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U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL NO 994
MAY
1980

MICRO PHOTO DIVISION

BELL & HOWELL

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

May 6, 1980 Volume 994 Number 1

CONTENTS

	Page
Patent and Trademark Notices	
Patent Cooperation Treaty (PCT) Information	994 OG 2
Reissue Applications Filed	994 OG 2
Patent Notices	
Certificates of Correction for the Week of May 6, 1980	994 OG 3
Disclaimers	994 OG 3
Disclaimer and Dedication	994 OG 3
Dedications	994 OG 3
Patents Available for Licensing or Sale	994 OG 3
National Technical Information Service	994 OG 5
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	994 OG 7
Condition of Patent Applications	994 OG 8
Defensive Publications (994,001)	1
Reissue Patents Granted (30,265)	3
Plant Patents Granted (4,530)	7
Patents Granted	
General and Mechanical (4,200,937)	9
Chemical (4,201,547)	1215
Electrical (4,201,882)	309
Design Patents Granted (254,876)	369
Index of Patentees	PI 1
Indices of Applicants of Defensive Publications, Reissues, Plants and Designs	PI 38
Classification of	
Patents (Including Reissues)	PI 41
Designs, Plants and Defensive Publications	PI 43
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 44
Designs, Plants and Applicants of Defensive Publications	PI 45
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,833,548, Re. S.N. 118,112, Filed Feb. 4, 1980, Cl. 229/48, METHOD OF ASCERTAINING VALIDITY OF HEAT SEAL AND PRODUCT OF SAID METHOD, Michael Taterka, et al., Owner of Record: *C. R. Bard Inc., Murray Hill, N.J.,* Attorney or Agent: Ronald A. Schapira, et al., Ex. Gp.: 241

3,941,752, Re. S.N. 120,465, Filed Feb. 11, 1980, Cl. 528/287, FLAME RETARDING LINEAR POLYESTERS AND SHAPED ARTICLES THEREOF, Hans-Jerg Kleiner, et al., Owner of Record: *Hoechst Aktiengesellschaft, Frankfurt am Main, Germany,* Attorney or Agent: Henry W. Koster, Ex. Gp.: 144

4,069,378, Re. S.N. 119,758, Filed Feb. 8, 1980, Cl. 526/328, SELF-EMULSIFYING ANAEROBIC COMPOSITION, Joann Demarco, Owner of Record: *Loctite Corporation, Newington, Conn.,* Attorney or Agent: Eugene F. Miller, et al., Ex. Gp.: 144

4,080,190, Re. S.N. 121,725, Filed Feb. 15, 1980, Cl. 71/67, SILOXANE-TIN COATINGS AND THEIR USE FOR PROTECTING MATERIALS FROM GROWTH OF PESTIFEROUS ORGANISMS, Gabriel H. Law, et al., Owner of Record: *Ameron, Inc., Monterey Park, Calif.,* Attorney or Agent: Robert L. Parker, et al., Ex. Gp.: 121

4,081,676, Re. S.N. 119,389, Filed Feb. 7, 1980, Cl. 250/272, ON-LINE SYSTEM FOR MONITORING SHEET MATERIAL ADDITIVES, Alexander Buchnea, et al., Owner of Record: *Sentrol Systems Ltd., West, Downsview, Ontario, Canada,* Attorney or Agent: Henry L. Shenier, et al., Ex. Gp.: 256

4,083,511, Re. S.N. 116,245, Filed Jan. 28, 1980, Cl. 242/107.4 A, SEAT BELT RETRACTOR, Haruyuki Ikesue, Owner of Record: *NSK-Warner K.K., Tokyo, Japan,* Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 242

4,085,230, Re. S.N. 120,761, Filed Feb. 11, 1980, Cl. 426/262, PROCESS FOR PRODUCING A ROASTED PEANUT PRODUCT, William M. Green, Owner of Record: *Inventor,* Attorney or Agent: B. B. Olive, Ex. Gp.: 172

4,109,703, Re. S.N. 110,923, Filed Jan. 10, 1980, Cl. 165/1, ENGINE COOLING SYSTEM FLUSHING APPARATUS AND METHOD, John A. Babish, et al., Owner of Record: *Wynn Oil Company, Fullerton, Calif.,* Attorney or Agent: William W. Haelfliger, Ex. Gp.: 345

4,114,101, Re. S.N. 119,664, Filed Feb. 8, 1980, Cl. 455/455, DIGITAL FREQUENCY DISPLAY DEVICE, Tadao Sekiguchi, Owner of Record: *Trio Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Melvin R. Jenney, et al., Ex. Gp.: 233

4,115,235, Re. S.N. 118,450, Filed Feb. 4, 1980, Cl. 204/195 S, APPARATUS FOR CONVEYING A GAS SAMPLE THROUGH AN ANALYZER CHAMBER, David M. Capone, Owner of Record: *Ametek Inc., New York, N.Y.,* Attorney or Agent: Stanley J. Price, Jr. et al., Ex. Gp.: 114

4,136,308, Re. S.N. 121,458, Filed Feb. 14, 1980, Cl. 318/696, STEPPING MOTOR CONTROL, Kenyon M. King, Owner of Record: *Inventor,* Attorney or Agent: Robert L. Parker, et al., Ex. Gp.: 217

4,138,182, Re. S.N. 119,665, Filed Feb. 8, 1980, Cl. 339/89 M, PIN TYPE JACK-AND-PLUG COUPLING DEVICE, Hiroshi Muratsuka, Owner of Record: *Trio Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Melvin R. Jenney, et al., Ex. Gp.: 322

4,146,745, Re. S.N. 082,299, Filed Oct. 5, 1979, Cl. 179/1 E, LOUDSPEAKER ENCLOSURE WITH MULTIPLE ACOUSTICALLY ISOLATED DRIVERS AND A COMMON PORT, Thomas A. Froeschle, et al., Owner of Record: *Bose Corporation, Framingham, Mass.,* Attorney or Agent: Charles Hieken, Ex. Gp.: 345

4,161,325, Re. S.N. 093,862, Filed Nov. 13, 1979, Cl. 280/81 R, SUPPLEMENTARY SUPPORT FOR VEHICLES, Herbert Schneider, Owner of Record: *Sud Chemie AG, Munchen, West Germany,* Attorney or Agent: Max Dressler, et al., Ex. Gp.: 316

4,162,908, Re. S.N. 121,078, Filed Feb. 13, 1980, Cl. 65/60 D, METHOD OF PRODUCING SYNTHETIC QUARTZ GLASS, APPARATUS FOR THE PRACTICE OF THE METHOD, AND USE OF THE SYNTHETIC QUARTZ GLASS, Karlheinz Rau, et al., Owner of Record: *Heraeus Quarzschmelze GmbH, Hanau, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 173

4,179,420, Re. S.N. 120,373, Filed Feb. 11, 1980, Cl. 260/21, WATER SOLUBLE INSULATING VARNISH, Deno Laganis, Owner of Record: *Schenectady Chemicals, Inc., Schenectady, N.Y.,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 144

PATENT NOTICES

Certificates of Correction for the Week of May 6, 1980

Re. 30,200	4,168,781	4,178,432	4,185,121
D. 254,017	4,169,077	4,179,303	4,185,184
D. 254,127	4,169,535	4,179,448	4,185,311
3,927,017	4,169,848	4,179,491	4,185,342
3,993,069	4,171,062	4,179,798	4,185,416
4,070,152	4,171,220	4,180,626	4,185,437
4,076,892	4,172,090	4,180,992	4,185,487
4,092,074	4,172,804	4,181,259	4,185,618
4,105,072	4,172,632	4,181,370	4,185,720
4,109,076	4,172,808	4,181,427	4,185,957
4,120,355	4,173,987	4,181,507	4,186,069
4,129,705	4,174,670	4,181,509	4,186,114
4,135,729	4,175,795	4,182,044	4,186,175
4,136,052	4,176,092	4,182,079	4,186,201
4,138,712	4,176,167	4,183,604	4,186,268
4,144,738	4,176,560	4,183,914	4,186,519
4,153,978	4,176,575	4,183,963	4,186,707
4,155,764	4,176,706	4,184,871	4,186,804
4,156,268	4,177,211	4,184,430	4,186,856
4,160,079	4,177,706	4,184,483	4,188,040
4,161,438	4,177,778	4,184,564	4,188,139
4,161,660	4,177,816	4,184,724	4,189,607
4,163,518	4,178,098	4,185,030	

Disclaimers

3,412,562.—*Samuel Clifford Doughty,* Burlingame, Calif. STRUCTURAL WALL AND METHOD. Patent dated Nov. 26, 1968. Disclaimer filed Jan. 23, 1980, by the assignee, *Santa Fe-Pomeroy, Inc.*

Hereby enters this disclaimer to claims 9 and 10 of said patent.

4,069,788.—*Randall D. McClure,* Decatur, Ill. INSULATION RETAINER AND ATTACHMENT METHOD THEREFOR. Patent dated Jan. 24, 1978. Disclaimer filed Mar. 7, 1980, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1 through 10 of said patent.

Dedication

3,905,895.—*Klaus Peter Hupe,* Karlsruhe, Germany. MIXING CHAMBER. Patent dated Sept. 16, 1975. Dedication filed Feb. 22, 1980, by the assignee, *Hewlett-Packard GmbH.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers and Dedications

3,985,345.—*Peter Michael Jakob.* Offenbach, Germany. CONTINUOUS COMPOUNDING AND MIXING APPARATUS. Patent dated Oct. 12, 1976. Disclaimer and Dedication filed Mar. 14, 1980, by the assignee, *Colortronic Reinhard & Co. KG.*

Hereby disclaims and dedicates to the Public all claims of said patent.

4,097,382.—*Ronald DeWayne Cruea,* Carlisle, Ohio. DEWATERING SCREEN. Patent dated June 27, 1978. Disclaimer and Dedication filed Mar. 6, 1980, by the assignee, *The Black Clawson Company.*

Hereby disclaims and dedicates to the Public all claims of said patent.

Patent Applications Available for Licensing or Sale

4,179,637. INCANDESCENT LIGHT BULB WITH MULTIFILAMENTS PROVIDING MULTIPLE LIVES. James V. Santora, 1228 Irvine Ave., Newport Beach, Calif. 92660.

4,063,374. GRAVE OPENING AND CLOSING MACHINE. Corinthian Washington, P.O. Box 1302, Mansfield, La. 71052

3,979,852. AUTOMATIC FISHING MACHINE. Gilbert C. Johnson, P.O. Box 303, Dyer, Ind. 46311.

3,941,132. INTERCONNECTED SURGICAL SPONGES. Arlene Lenaghan, 674 Rudgate Road, Bloomfield Hills, Mich. 48013.

Re. 29,178. SHEET RECIRCULATOR. Richard H. Colwill. 1007 Hellam St., Monterey, Calif. 93940.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Building #500, Room 218, Schenectady, N.Y. 12345.

4,188,781. NON-LINEAR DUAL MODE REGULATOR CIRCUIT.

Application for license may be addressed to the General Electric Company, Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston, Ave. Bridgeport, Conn. 06602.

4,132,860. PULSATING HAIR DRYER.

The RCA Corporation offers to grant nonexclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Vice President, Licensing, 30 Rockefeller Plaza, New York, N.Y. 10020.

Re. 30,173. CURRENT MIRROR AMPLIFIER.

4,176,432. METHOD FOR ESTABLISHING UNIFORM CATHODE-TO-GRID SPACING IN AN ELECTRON GUN.

4,176,551. FIBER-OPTIC THERMOMETER.

4,176,552. FIBER-OPTIC THERMOMETER.

4,177,392. CURRENT SWITCHING NETWORKS.

4,177,393. DRIVE CIRCUIT FOR A TELEVISION DEFLECTION OUTPUT TRANSISTOR.

4,178,190. METHOD OF MAKING A BIPOLAR TRANSISTOR WITH HIGH-LOW EMITTER IMPURITY CONCENTRATION.

4,178,191. PROCESS OF MAKING A PLANAR MOS SILICON-ON-INSULATING SUBSTRATE DEVICE.

4,178,531. CRT WITH FIELD-EMISSION CATHODE.

4,178,546. ALTERNATOR TEST APPARATUS AND METHOD.

4,178,564. HALF WAVE PROTECTION LAYERS ON INJECTION LASERS.

4,178,605. COMPLEMENTARY MOS INVERTER STRUCTURE.

4,178,614. READOUT OF A DENSELY PACKED CCD.

4,178,974. FLOW CONTROLLER.

4,179,178. PLUG-IN CIRCUIT CARTRIDGE WITH ELECTROSTATIC CHARGE PROTECTION.

4,179,308. LOW COST HIGH EFFICIENCY GALLIUM ARSENIDE HOMOJUNCTION SOLAR CELL INCORPORATING A LAYER OF INDIUM GALLIUM PHOSPHIDE.

4,179,642. RASTER CORRECTION CIRCUIT WITH LOW DISSIPATION RESISTIVE DAMPING.

4,179,703. SYSTEM FOR TRANSMITTING TWO COLOR TV SIGNALS.

4,179,708. OPTICAL PLAYBACK SYSTEM HAVING INCREASED DEPTH-OF-FIELD.

4,180,760. FLAT CATHODE RAY TUBE HAVING MAGNETICALLY COLLIMATED ELECTRON BEAM DEVICE.

4,180,781. BIASING AND DRIVE CIRCUITRY FOR QUASI-LINEAR TRANSISTOR AMPLIFIERS.
4,180,782. PHANTOM FULL-BRIDGE AMPLIFIER.
4,180,783. PHASE LOCK LOOP DATA TIMING RECOVERY CIRCUIT.
4,180,820. CIRCULARLY POLARIZED ANTENNA SYSTEM USING A COMBINATION OF HORIZONTAL AND BENT VERTICAL DIPOLE RADIATORS.
4,180,822. OPTICAL SCANNER AND RECORDER.
4,180,830. DEPTH ESTIMATION SYSTEM USING DIFFRACTIVE EFFECTS OF THE GROOVES AND SIGNAL ELEMENTS IN THE GROOVES.
Re. 30,195. GUIDED BEAM FLAT DISPLAY DEVICE.
4,181,755. THIN FILM PATTERN GENERATION BY AN INVERSE SELF-LIFTING TECHNIQUE.
4,181,862. HIGH SPEED RESETTABLE DYNAMIC COUNTER.
4,181,864. MATCHING NETWORK FOR SWITCHABLE SEGMENTED ULTRASONIC TRANSDUCERS.
4,181,871. PROXIMITY FOCUSED ELECTRON BEAM GUIDE DISPLAY DEVICE INCLUDING MESH HAVING APERTURES NO GREATER THAN 26 MICRONS IN ONE DIMENSION.
4,181,874. TELEVISION S-CORRECTION CIRCUIT WITH IMPROVED LINEARITY.
4,181,915. LED CHANNEL NUMBER DISPLAY RESPONSIVE TO AMBIENT LIGHT LEVEL.
4,181,916. LIQUID CRYSTAL CHANNEL NUMBER DISPLAY RESPONSIVE TO AMBIENT LIGHT LEVEL.
4,182,961. INHIBITABLE COUNTER STAGE AND COUNTER.
4,182,968. ELECTRON MULTIPLIER WITH ION BOMBARDMENT SHIELDS.
4,182,969. ELECTRON MULTIPLIER DEVICE WITH SURFACE ION FEEDBACK.
4,182,994. PHASE LOCKED LOOP TUNING SYSTEM INCLUDING STABILIZED TIME INTERVAL CONTROL CIRCUIT.
4,182,995. LASER DIODE WITH THERMAL CONDUCTING, CURRENT CONFINING FILM.
4,183,002. WINDING STRUCTURE.
4,183,020. AMPLIFIER WITH FIELD EFFECT AND BIPOLAR TRANSISTORS.
4,183,041. SELF BIASING OF A FIELD EFFECT TRANSISTOR MOUNTED IN A FLIP-CHIP CARRIER.
4,183,044. REMOTE CONTROL TV SUBCARRIER PHASE SHIFTER SYSTEM.
4,183,045. CHROMA KEYING SELECTOR SYSTEM.
4,183,059. TRACK SKIPPER FOR A VIDEO DISC PLAYER.
4,183,060. CAPACITANCE DISTANCE SENSOR APPARATUS FOR VIDEO DISC PLAYER/RECORDER.
4,183,062. ROW ADDRESSING APPARATUS FOR A BISTABLE DISPLAY DEVICE.
4,184,123. DOUBLE-TUNED OUTPUT CIRCUIT FOR HIGH POWER DEVICES USING COAXIAL CAVITY RESONATORS.
4,184,163. BROAD BAND, FOUR LOOP ANTENNA.
4,184,174. COMB FILTER SYSTEM.
4,184,750. NOVEL LIQUID CRYSTAL DYESTUFFS AND ELECTRO-OPTIC DEVICES INCORPORATING SAME.
4,185,210. CONTACT DE-BOUNCING CIRCUIT WITH COMMON MODE REJECTION.
4,185,211. ELECTRICAL CIRCUITS.
4,185,212. LEVEL SHIFTING CIRCUIT.
4,185,299. SYNCHRONIZATION SIGNAL SEPARATOR CIRCUIT.
4,185,319. NON-VOLATILE MEMORY DEVICE.
4,185,585. APPARATUS FOR SIMULTANEOUSLY PROCESSING A PLURALITY OF SUBSTRATES.
4,186,032. METHOD FOR CLEANING AND DRYING SEMICONDUCTORS.
4,186,330. VOLTAGE REGULATOR FOR A TELEVISION DEFLECTION CIRCUIT.

The General Electric Company is prepared to grant non-exclusive licenses under the following patents on reasonable terms to domestic manufacturers and requests publication of this notice in the Official Gazette:

4,155,262. METAL OXIDE VARISTOR PRESSURE SENSOR AND METHOD.
4,161,730. RADIO DETERMINATION USING SATELLITES TRANSMITTING TIMING SIGNALS WITH CORRECTION BY ACTIVE RANGE MEASUREMENT.
4,161,734. POSITION SURVEILLANCE USING ONE ACTIVE RANGING SATELLITE AND TIME OF ARRIVAL FROM AN INDEPENDENT SATELLITE.
4,167,730. COMPRESSION OF DATA ON STATUS OF REMOTE EQUIPMENT.

Applications for licenses should be addressed to: Division Patent Counsel, General Electric Company, Space Division P.O. Box 8555, Philadelphia, Pa. 19101.

Applications for licenses may be addressed to the Patent Counsel, Mobile Radio Products Department, General Electric Company, Mountain View Road, Lynchburg, Va. 24502.

4,179,661. CIRCUIT FOR PROGRAMMING THE SEARCH CIRCUIT OF A RADIO RECEIVER.

Applications for license may be addressed to: Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Avenue, Philadelphia, Pa. 19142.

4,086,459. ROD ARRAY VACUUM SWITCH FOR HIGH VOLTAGE OPERATION.

Patented on April 25, 1978 on an application of Joseph A. Rich.

4,128,748. HIGH-CURRENT VACUUM SWITCH WITH REDUCED CONTACT EROSION.

Patented on December 5, 1978 on an application of James M. Lafferty.

Bankruptcy Sale: For sale U.S. Patents 3,752,527—Collapsible crutch and 3,730,198—Pneumatic hospital bed. Sale of trustee's right, title and interest subject to approval of Bankruptcy Court. Submit offers to A. J. Calhoun, Trustee for Medical Directions, Inc., 100 N. Main Building, Memphis, Tenn. 38103. Phone 901–525–4742.

4,136,513. AUTOMATIC TIME COMPENSATOR FOR WATCHES AND CLOCKS NEUTRALIZING TIME LOSS AND TIME GAIN. Licenses available from V. A. Leonard, P.O. Box 2184, Denton, Tex. 76201.

Application for license may be addressed to: Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

4,184,186. CURRENT LIMITING DEVICE FOR AN ELECTRIC POWER SYSTEM.

Application for license may be addressed to: the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,431,903. FURNACE HUMIDIFIER MOUNTING MEANS.
3,437,318. DUAL-MOUNT FURNACE HUMIDIFIER.
3,736,765. APPLIANCE INCLUDING ELECTRIC DIAGNOSIS MEANS.
3,921,254. HINGE STRUCTURE.
4,173,865. AUXILIARY COIL ARRANGEMENT.
4,175,575. DISHWASHER WITH OSCILLATING ROTARY SPRAY ARM.
4,180,231. VIBRATION DAMPENING SUPPORT.
4,180,297. SEALING GROMMET IN A REFRIGERATOR CABINET.

The following two patents are offered by Chuck Henderson, 12300 39th Ave., Kenosha, Wis., 53142.

4,166,517. PILOTS POWER ELEVATOR.
4,153,000. FLOATING AIR ERECTING PAINTING PRINT.

The following patents are offered by Champion International Corporation, Knightsbridge, Hamilton, Ohio 45020.

4,142,967. PROCESS FOR ENHANCING RECOVERY OF TALL OIL SOAP FROM BLACK LIQUOR.
4,140,288. METHOD FOR SPLICING PLASTIC SHEET MATERIAL.
4,138,356. ENCAPSULATED FLAME RETARDANT SYSTEM.
4,137,977. HYDRAULIC WEIGHING SYSTEM.
4,134,322. USE OF MICROENCAPSULATED GLUE IN THE MANUFACTURE OF ENVELOPES.
4,113,919. PROCESS FOR IN SITU FORMATION OF A TREE DERIVED RESINOUS ADHESIVE COMPOSITION.
4,112,173. CONCRETE MODULE UNIT.
4,109,041. CONSTRUCTION PANEL WITH NON-SKID SURFACE AND METHOD OF FABRICATION.
4,094,187. STACK GAS ANALYZING SYSTEM WITH CALIBRATING/SAMPLING FEATURE.
4,056,342. FIBREBOARD MANUFACTURE.
4,028,551. APPARATUS AND METHOD FOR CORONA DISCHARGE PRIMING A DILECTRIC WEB.
4,028,537. PRODUCT PROCESSING SYSTEM WITH PRICE PRINTER.
3,994,110. THREE HOUR FIRE RESISTANT DOOR, PANEL OR BUILDING ELEMENT.
3,986,951. CHLORINE BASED BLEACHERY EFFLUENT TREATMENT.
3,968,060. ENCAPSULATED FLAME RETARDANT SYSTEM.
4,093,256. LOCKING MECHANISM FOR AUTOMOBILE SKIRTS.
4,180,374. BRISTOW WELL PUMP PROTECTION SYSTEM.
3,715,871. SMOG ELIMINATOR.

Send Correspondence to: Brames, Bopp, & Haynes, 900 Sycamore Building, 19 South Sixth St., Terre Haute, Ind. 47807.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents & Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

Chief, Intellectual Properties Division
OTJAG, DEPARTMENT OF THE ARMY
Room 2D/444, Pentagon, Washington, D.C. 20310

Patent application 6–003,175. Near Carrier AM-FM Calibration Technique. Filed Jan. 15, 1979.

Patent application 6–009,000. Tire Removing Tool. Filed Feb. 5, 1979.

Patent application 6–010,551. Blinker Aiming Post Light. Filed Feb. 9, 1979.

Patent application 6–011,480. Digital Fluidic Output Force Balance Accelerometer. Filed Feb. 12, 1979.

Patent application 6–021,037. A Method for the Removal of Phosgene Impurities from Boron Trichloride. Filed Mar. 16, 1979.

Patent application 6–025,632. Magnesium Anodize Bath Control. Filed Mar. 30, 1979.

Patent application 6–029,421. Array Antenna Controller. Filed May 11, 1979.

Patent application 6–033,936. Projectile Pallet Truck. Filed Apr. 27, 1979.

Patent application 6–042,681. Output Coupling System for Near-Millimeter Microwave Source. Filed May 25, 1979.

Patent application 6–042,688. Multi-Beam Antenna Controller. Filed May 25, 1979.

Patent application 6–047,675. Optical Memory with Fiber Optic Light Guide. Filed June 12, 1979.

Patent application 6–047,676. Improved Null Mask. Filed June 12, 1979.

Patent application 6–050,365. Multilayer Store Beam Accessed Memory. Filed June 20, 1979.

Patent application 6–056,581. Chemical Protective, Fire Resistant Composition. Field July 11, 1979.

Patent application 6–066,598. Castable TNT Compositions Containing a Broad Spectrum, Preformed Thermoplastic Polyurethane Elastomer Additive. Filed Aug. 14, 1979.

Patent application 733,658. Snap Ring Bearing for a Gun Barrel Bushing. Filed Oct. 18, 1976.

Patent application 842,835. Optical Sight Mount. Filed Oct. 17, 1977.

Patent application 871,171. Helical Lock for Automatic Gun. Filed Jan. 23, 1978.

Patent application 904,052. Electrically Energized Impact Detonated Projectile with Safety Device. Filed May 8, 1978.

Patent application 916,167. Cartridge for Reducing Bore Erosion and Extending Barrel Life. Filed June 16, 1978.

Patent application 921,390. Prepackaged Ammunition System. Filed July 3, 1978.

Patent application 930,827. Front Sight for Small Arms. Filed Aug. 3, 1978.

Patent application 931,356. Constant Power Regenerative Magnetic Switching Regulator. Filed Aug. 7, 1978.

Patent application 939,760. Method of Bonding Propellants Containing Mobile Constituents. Filed Sept. 5, 1978.

Patent application 940,545. Technique for Passivating Stainless Steel. Filed Sept. 8, 1978.

Patent application 941,446. Bead Breaker. Filed Sept. 11, 1978.

Patent application 944,489. Method for Connecting to Semiconductor Chips without the Use of Wires. Filed Sept. 21, 1978.

Patent application 962,436. Rifle Adapter Assembly with Hold Open Feature. Filed Nov. 20, 1978.

Patent 4,104,953. Machine Gun Barrel for Firing Blanks. Filed Feb. 14, 1977. Patented Aug. 8, 1978. Not available NTIS.

Patent 4,126,080. High Velocity Anti-Surge Spring Assembly. Filed Apr. 29, 1977. Patented Nov. 21, 1978. Not available NTIS.

Patent 4,126,955. High Velocity Tapered Bore Gun and Ammunition. Filed Mar. 17, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,128,040. Blank Firing Adapter. Filed June 2, 1977. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,128,041. Weapon Elevating Mechanism Having an an Automatic Clutch. Filed Oct. 3, 1977. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,128,754. Arc Spray Welding Replaceable Electrode Tip. Filed Mar. 6, 1978. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,131,052. Drum Cam with Anti Hang-Fire Feature. Filed July 5, 1977. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,137,893. Riot Control Weapon. Filed Oct. 31, 1977. Patented Feb. 6, 1979. Not available NTIS.

Patent 4,141,276. Locking and Firing Mechanism for Rotating-Cam Actuated Weapons. Filed Aug. 1, 1977. Patented Feb. 27, 1979. Not available NTIS.

Patent 4,152,091. Numerical Controlled Rotary Cutting Tool Extension. Filed Nov. 25, 1977. Patented May 1, 1979. Not available NTIS.

Patent 4,160,927. Ferroelectric Ceramic Devices. Filed Apr. 5, 1977. Patented July 10, 1979. Not available NTIS.

Patent 4,162,499. Flush-Mounted Piggyback Microstrip Antenna. Filed Oct, 26, 1977. Patented July 24, 1979. Not available NTIS.

Patent 4,164,650. Means for Reducing Nuclear Radiation-Induced Fluorescence Noise in Fiber-Optics Communications Systems. Filed July 8, 1977. Patented Aug. 14, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 6–060,066. Fully Asynchronous Input/Output Data Buffer Apparatus. Filed July 24, 1979.

Patent application 6–063,510. Insulated Structural Bushings. Filed Aug. 3, 1979.

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Patent 4,168,273. Method for the Preparation of Glycidyl 2,2-Dinitro-2-Fluoroethoxide. Filed May 14, 1974. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,465. Tapered Hole Capacitive Probe. Filed Dec. 15, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,532. Multimode Data Distribution and Control Apparatus. Filed Feb. 24, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,169,267. Broadband Helical Antennas. Filed June 19, 1978. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,169,268. Metallic Grating Spatial Filter for Directional Beam Forming Antenna. Filed May 11, 1978. Patented Sept. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
National Institutes of Health
Chief, Patent Branch, Westwood Bldg., Bethesda, Md. 20205

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U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Streets NW.,
Washington, D.C. 20240

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Patent 4,164,460. System for the Dielectrophoretic Separation of Particulate and Granular Materials. Filed April 17, 1978. Patented Aug. 14, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents., Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6–063,506. Antisparking Electrodes for Dielectrophoretic Filters. Filed Aug. 3, 1979.

Patent application 6–066,220. Sea Hunt System. Filed Aug. 13, 1979.

Patent application 6–067,646. An Anti-Blooming Shield for Two-Dimensional Charge-Injection Devices. Filed Aug. 17, 1979.

Patent application 6–073,399. Treatment of Body Tissue by Means of Internal Cavity Resonance. Filed Sept. 7, 1979.

Patent application 966,717. Apparatus for Expanding the Memory of a Mini-Computer System. Filed Dec. 5, 1979.

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Patent application 944,433. Ejected Roller Shaft Disconnect Mechanism. Filed Sept. 21, 1978.

Patent application 952,169. Rotary Shaft Decoupling Mechanism. Filed Oct. 17, 1978.

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Patent 4,115,753. Filter Optic Accustic Array. Filed July 18, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,123,732. Method of Making Tuned Resonance Passive Electronic Filters. Filed Jan. 31, 1977. Patented Oct. 31, 1978. Not available NTIS.

Patent 4,128,300. Optical Logic Elements. Filed Sept. 26, 1977. Patented Dec. 5, 1978. Not available NTIS.

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Patent 4,131,444. Method for Increasing the Strength and Density of Lead Titanate Ceramic Bodies. Filed Aug. 25, 1977. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,139,403. Dinitroalkyl and Fluorodinitroalkyl Silicon Compounds. Filed Aug. 19, 1977. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,139,897. Fast Two Dimensional Fourier Transform Device. Filed Mar. 18, 1977. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,140,057. Axisymmetric Stabilized Liner Implosion System. Filed May 2, 1978. Patented Feb. 20, 1979. Not available NTIS.

Patent 4,141,295. Actuation Mine Simulator. Filed Feb. 13, 1978. Patented Feb. 27, 1979. Not available NTIS.

Patent 4,142,145. Method for Determining Conduction-Band Edge and Electron Affinity in Semiconductors. Filed Dec. 22, 1977. Patented Feb. 27, 1979. Not available NTIS.

Patent 4,143,299. Charged-particle Beam Acceleration in a Converging Waveguide. Filed Feb. 22, 1978. Patented Mar. 6, 1979. Not available NTIS.

Patent 4,143,838. Folding Fin Assembly Detent. Filed Aug. 22, 1977. Patented Mar. 13, 1979. Not available NTIS.

Patent 4,144,488. Investigation of Near-Surface Electronic Properties in Semiconductors by Electron Beam Scanning. Filed Dec. 22, 1977. Patented Mar. 13, 1979. Not available NTIS.

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Patent 4,145,484. Safe High Energy Density Battery. Filed Jan. 23, 1978. Patented Mar. 20, 1979. Not available NTIS.

Patent 4,145,713. Composite Video Signal Field Recognition Circuit. Filed Aug. 29, 1977. Patented Mar. 20, 1979. Not available NTIS.

Patent 4,145,972. Dual-Mode Warhead Initiation System. Filed Dec. 17, 1976. Patented Mar. 27, 1979. Not available NTIS.

Patent 4,146,329. Autoalignment System for High Power Laser. Filed Sept. 14, 1977. Patented Mar. 27, 1979. Not available NTIS.

Patent 4,148,032. Method and Means for Defocusing Engine Cavity Reflected Energy. Filed Oct. 27, 1977. Patented Apr. 3, 1979. Not available NTIS.

Patent 4,149,770. Single-Fiber Duplex Coupler. Filed Nov. 21, 1977. Patented Apr. 17, 1979. Not available NTIS.

Patent 4,150,341. High Input Power Laser Device. Filed Dec. 28, 1976. Patented Apr. 17, 1979. Not available NTIS.

Patent 4,152,934. Vector Measuring Current Meter. Filed Mar. 1, 1978. Patented May 8, 1979. Not available NTIS.

Patent 4,153,368. Electro-Optical Detector Protection Device. Filed Dec. 12, 1977. Patented May 8, 1979. Not available NTIS.

NATIONAL AERONAUTICS & SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP–2, Washington, D.C. 20546

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Patent 4,168,287. Compound Oxidized Styrylphosphine. Filed May 19, 1978. Patented Sept. 18, 1979. Not available NTIS.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
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	St. Louis Public Library	(314) 241-2288 Ext. 214
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New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 5, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids: Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-5-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-19-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	8-2-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-12-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	10-25-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-23-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	9-5-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-12-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-8-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-15-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-9-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-8-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements, Clutches.	11-28-78

Expiration of patents: The patents within the range of numbers indicated below expire during April 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,083,367 to 3,088,113, inclusive
Plant Patents ..... Numbers 2,244 to 2,257, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MAY 6, 1980

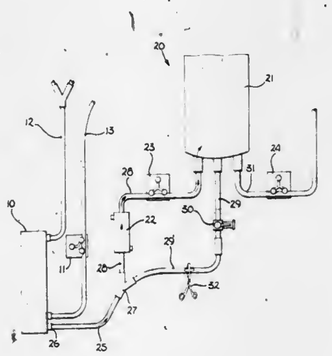
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T994,001
HYPOTHERMIC CARDIOPLEGIA ADMINISTRATION SET

Gerald D. Buckberg, 13238 Riviera Ranch Rd., Los Angeles, Calif. 90049, and Charles W. Dyson, 1734 S. Westgate Ave., Los Angeles, Calif. 90025

Filed Jun. 26, 1978, Ser. No. 918,799
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—214 R
1 Sheets Drawing. 16 Pages Specification

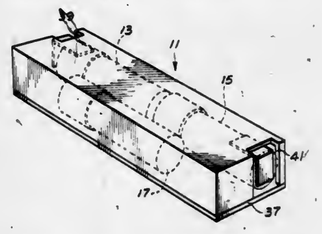


The invention is an improved delivery system for injecting a cardioplegic solution made mostly of a patient's own blood into his heart in order to arrest it. The delivery system is used in combination with a cardiopulmonary bypass apparatus which includes an oxygenator, a roller pump, and typing connecting the patient's heart to the oxygenator so that patient's blood will flow into the oxygenator and the roller pump will pump it out of the oxygenator back into the patient's heart. The delivery system includes a blood bag for storing a portion of the patient's blood, a Y-shaped tubing having a first end with a single opening and a second end with a pair of openings with the single end mechanically coupled to the oxygenator so that the blood will travel from the oxygenator into the Y-shaped tubing, and a heat exchanger disposed between the blood bag and one of the pair of openings of the second end of the Y-shaped tubing and connected thereto so that blood may be pumped from the oxygenator through the heat exchanger into the blood bag by a first small roller pump. The delivery system also includes a stopcock which is connected to the other opening at the second end of the Y-shaped tubing and is also connected to the blood bag so that drugs may be injected into the patient's blood in the blood bag in order to form the cardioplegic solution through the stopcock. A clamping device is used to first clamp off second opening of the Y-shaped tubing and then to clamp off first end thereof. There is also an output tubing and a second small roller pump for pumping the cardioplegic solution into the heart in order to arrest it.

T994,002
BATTERY PACKAGE AND ASSEMBLY

Frederick W. Harvey; Norman E. Hess, and Gurdip S. Sethi, all of 1669 Lake Ave., Rochester, N.Y. 14650

Filed Jun. 11, 1979, Ser. No. 47,397
Int. Cl.[2] H01M *2/24*
U.S. Cl. 429—158
1 Sheets Drawing. 8 Pages Specification



Three cylindrical battery cells are physically disposed in a plastic housing with two of the cells spaced coaxially adjacent one another and the third cell spaced laterally adjacent the coaxial cells spanning the distance between the coaxial cells. An insulating band encircles the end of each cell, between the end cap and a current-collecting sleeve, to prevent shorting between the current collectors. The three cells are connected electrically by conductive elements, such as end caps or straps, that place the third cell in series between the coaxial cells.

T994,003
AZO DYES, AZO DYE-RELEASING COMPOUNDS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING THEM

Kenneth N. Kilminster, Kodak Limited, London, England

Division of Ser. No. 870,314, Jan. 18, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 77,876
Int. Cl.[3] G03C *5/54*
U.S. Cl. 430—242
No Drawing. 81 Pages Specification

Photographic elements, diffusion transfer assemblages and processes are described which employ a novel nondiffusible compound having a novel releasable azo dye. The dyes are azophenols, or precursors of azophenols, and have an electron withdrawing group in one of the positions ortho to the phenolic hydroxy group and a carbamoyl electron withdrawing group in the other position ortho to the phenolic hydroxy group.

T994,004
PROCESS FOR THE PREPARATION OF DIPHENYLMETHANE DICARBAMATES AND POLYMETHYLENE POLYPHENYL CARBAMATES USING SOLID ACID CATALYSTS

Edward T. Shawl, 208 Martroy La., Wallingford, Pa. 19086

Continuation of Ser. No. 8,307, Feb. 1, 1979, abandoned. This application Aug. 23, 1979, Ser. No. 69,005
Int. Cl.[3] C07C *125/07*
U.S. Cl. 560—25
No Drawing. 19 Pages Specification

Diphenylmethane dicarbamates and polymethylene polyphenyl carbamate homologs and derivatives of these compounds are produced by the condensation of N-aryl carbamic acid esters, such as ethylphenylcarbamate, with formaldehyde, para-formaldehyde or trioxane in the presence of strongly acidic sulfonated aromatic ion exchange resins or perfluoroalkane sulfonic acid resins, at temperatures of from ambient to about 150° C. and optionally in the presence of an inert solvent.

REISSUES

MAY 6, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

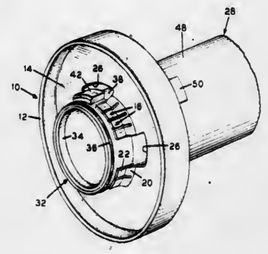
Re. 30,265
PRESIZING DISC WITH SELF-LOCKING MEANS

Vytautas Kupcikevicius, Chicago, and Anton L. Mika, Downers Grove, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Original No. 4,034,441, dated Jul. 12, 1977, Ser. No. 635,275, Nov. 26, 1975. Application for reissue Sep. 1, 1978, Ser. No. 939,136

Int. Cl.² A22C *13/00*

U.S. Cl. 17—41 **33 Claims**



1. An improvement in a presizing disc for a shirred tubular casing length utilized in a stuffing apparatus, wherein said presizing disc is confined within an unshirred portion of said tubular casing length and is adapted to be mounted on a support sleeve of a stuffing horn assembly of a stuffing apparatus, said support sleeve having a first barrier and a second barrier and an annular groove disposed adjacent said first barrier, and wherein said presizing disc includes an annular casing length contacting portion and a wall support which is integrally associated with said contacting portion and extends inwardly therefrom to a terminal end portion of said wall support to thereby define an annulus adapted to mount said presizing disc onto said support sleeve, the improvement comprising self-locking means disposed on said terminal end portion of said wall support, said self-locking means including a resilient member integrally associated with said terminal end portion which is adapted to be urged outwardly away from the central axis of said presizing disc upon being advanced over said first barrier of said support sleeve and to resume its original configuration when confined in self-locking engagement on said sleeve in said annular groove disposed adjacent said first barrier, and being further adapted to be permanently deformed in a manner such as to clear said first barrier upon removal of said disc from said support sleeve.

Re. 30,266
ANIMAL DRYER

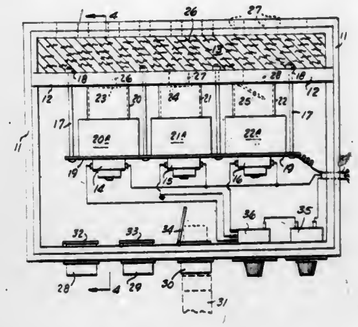
Edwin R. Greene, and Rodney F. Greene, both of 1634 Michael Dr., Pinole, Calif. 94564

Original No. 4,044,476, dated Aug. 30, 1977, Ser. No. 712,057, Aug. 6, 1976. Application for reissue May 11, 1978, Ser. No. 904,940

Int. Cl.² F26B *19/00*

U.S. Cl. 34—86 **9 Claims**

8. A hair dryer comprising a substantially airtight compartment, means for admitting surrounding air to said compartment, a partition having a plurality of openings for directing the air to said compartment, a plurality of valves in said openings for selectively permitting the air to leave said openings, a plurality of motors each having an air inlet connected to one of said openings, fans driven by the motors to blow the air past the motors and to thereby warm the air from the heat of the motors, means for



collecting the warm air from the motors, and means for attachment to the collecting means for conducting warm air to a user.

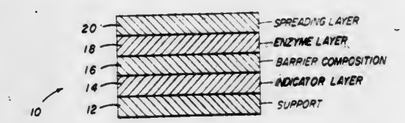
Re. 30,267
MULTILAYER ANALYTICAL ELEMENT

Barbara J. Bruschi, Olathe, Kans., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 4,066,403, dated Jan. 3, 1978, Ser. No. 688,446, May 20, 1976. Continuation-in-part of Ser. No. 588,755, Jun. 20, 1975, abandoned. Application for reissue May 18, 1978, Ser. No. 907,362

Int. Cl.² G01N *33/16, 31/22*

U.S. Cl. 23—230 B **52 Claims**



51. In an integral element useful in the analysis of a fluid sample for a predetermined analyte, the element including

1. a reagent capable of producing ammonia vapor from the fluid sample; and

2. a reagent capable of interacting with said ammonia to provide a detectable change;

the improvement comprising

a barrier composition separating substantially all of said reagent (1) from said reagent (2), said barrier composition being substantially uniformly permeable to said ammonia and substantially impermeable to interferants.

Re. 30,268
HYDRODYNAMICALLY LOADED WEB PRESS WITH SLIPPER BEARING SHOES

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

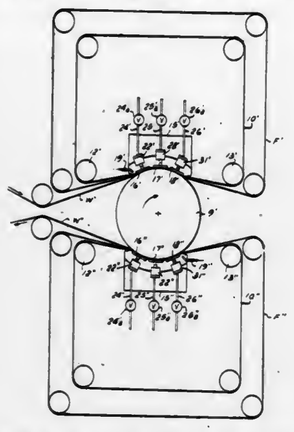
Original No. 3,783,097, dated Jan. 1, 1974, Ser. No. 258,103, May 30, 1972. Application for reissue Sep. 16, 1977, Ser. No. 833,808

Int. Cl.² D21F *3/04, 3/06*

U.S. Cl. 162—360 R **20 Claims**

10. A press mechanism for removing liquid from a traveling fibrous web comprising in combination,

a press nip formed between first and second members for receiving a traveling fibrous web therebetween,
one of said members being a traveling flexible impervious belt,
the other of said members being a cylindrical roll with the belt wrapped over an arc of the roll,
force means engaging the outer surface of said belt including a sliding shoe having a concave surface *along the full length of the shoe so that a dewatering pressure extends along*



the full length of the concave surface, said surface being of substantially the radius of said roll extending transversely and also in the direction of belt travel with means for pressing the shoe toward the belt,
means supporting said shoe accommodating movement of the shoe about an axis parallel to the axis of the roll,
means for providing lubrication between the shoe and the belt,
and means for receiving liquid pressed from the web between the roll and belt.

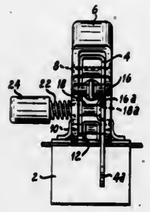
Re. 30,269
WOOD FLY ASH REDUCTION METHOD
Erwin C. Betz, 525 Mill Valley Rd., Palatine, Ill. 60067
Original No. 3,978,197, dated Aug. 31, 1976, Ser. No. 607,469, Aug. 25, 1975. Application for reissue Jul. 3, 1978, Ser. No. 921,363

Int. Cl.² C01B *33/32*
U.S. Cl. 423—332 **12 Claims**

1. A method for reducing the potassium oxide content of the wood fly ash contained in the combustion products generated by the burning of wood particles, which comprises:
mixing with the wood particles, an alkali metal silicate having a melting point below 1200° C., a secondary alkali metal compound having a melting point below 1200° C., and silica;
burning the mixture; and
withdrawing a stable potassium oxide containing silicate product having a melting point below 1200° C. from the combustion products as a molten slag;
wherein the alkali metal silicate, the secondary alkali metal compound, and the silica are present in amounts effective to form the stable silica product in the presence of wood particles containing potassium oxide;
wherein the secondary alkali compound has a melting point not greater than the melting point of the stable silicate product; and wherein the mixture is kept deficient in alkali metal silicate *product* in order to withdraw the potassium oxide from the wood fly ash.

Re. 30,270
OFF LOCKING IN-LINE TRIGGER SWITCH
Earl T. Piber, Oconomowoc, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Original No. 3,872,274, dated Mar. 18, 1975, Ser. No. 448,413, Mar. 5, 1974. Division of Ser. No. 316,343, Dec. 18, 1972, Pat. No. 3,829,645. Application for reissue Oct. 26, 1978, Ser. No. 955,208

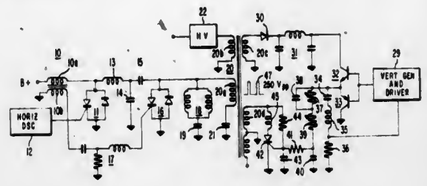
Int. Cl.² H01H *3/20*
U.S. Cl. 200—157 **1 Claim**



1. A self-enclosed trigger switch for a portable electric tool affording intended operation of the tool but automatically locking it against accidental operation whenever the switch is released comprising:
an insulating housing for the switch mechanism;
a trigger mounted to said housing for limited reciprocal sliding movement between an "on" position wherein the switch is in operation and an "off" position wherein the switch is not in operation;
a frame mounting said trigger to the top of said housing;
a return spring normally biasing said trigger into its extended "off" position and being depressible into its "on" position;
and an automatically engaging off lock for said trigger comprising:
a locking recess in the left side of said trigger having a keyhole shaped first depth forming a locking slot and a larger second depth forming a clearance slot for release of the lock;
a spring-biased locking pin mounted on the left side of said frame for limited axial movement with the right end thereof extending into said recess and the left end thereof having a pushbutton that is accessible for depression by the right hand thumb of the user;
a symmetrical enlarged locking head on said right end of said locking pin disposed within said recess;
said recess having an opening extending up to the top of the trigger affording access for said enlarged locking head on assembly of the trigger switch;
said locking slot being keyhole shaped so as to have a narrow section just wide enough to receive the stem of said locking pin but not the enlarged head thereof and a wider mouth portion at the entrance to said narrow section for receiving said enlarged head whereby said enlarged head abuts both sides of [side] *said* mouth to lock said trigger in its "off" position and said locking pin *pushbutton must be depressed against the force of its bias* spring to move the stem of said pin adjacent the narrow section of said locking slot and said enlarged head into said clearance slot to allow movement of said trigger to "on" position;
and the part of said trigger defining the upper side of said locking slot being at least partly confined against said frame to strengthen said off lock.

Re. 30,271
SIDE PINCUSHION CORRECTION SYSTEM
Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.
Original No. 3,962,602, dated Jun. 8, 1976, Ser. No. 510,096, Sep. 27, 1974. Application for reissue Apr. 17, 1978, Ser. No. 897,299

Int. Cl.² H01J *29/70*
U.S. Cl. 315—370 **31 Claims**



27. A pincushion correction circuit for a kinescope deflection apparatus including horizontal and vertical deflection generator systems, comprising:
a horizontal deflection winding coupled to the horizontal deflection generator system for accepting scanning current therefrom;
an impedance circuit including an inductor;
first coupling means for coupling said impedance circuit with said deflection winding;
controllable switch means including a control electrode and a controlled current path serially coupled with said impedance circuit; and
control means coupled to the horizontal and vertical deflection generator and to said control electrode for operating said controllable switch means at a time during the second half of the horizontal retrace interval which time is progressively advanced during a first portion of the vertical scan interval and which is progressively retarded during a second portion of the vertical scan interval for altering said scanning current in a manner to reduce pincushion distortion.

PLANT PATENTS

GRANTED MAY 6, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,530

PEAR TREE

Glen E. Handy, Rte. 2, Box 347, Troutdale, Oreg. 97060

Filed Apr. 24, 1978, Ser. No. 899,691
Int. Cl.² A01H 5/00
U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of flowering pear tree substantially as herein shown and described, characterized particularly as to novelty by a globe shaped form which is normally apparent when the tree is two to three years old, a vigorous rate of growth, thornless branched, waxy foliage, which turns consistently a red to red-purple color in the fall, profuse blooms which begin appearing when the tree is extremely young, and sparse fruit production.

4,531

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Gantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 27, 1978, Ser. No. 963,853
Int. Cl.² A01H 5/00
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat. plant known by the name Lancer and particularly characterized as to uniqueness by the combined characteristis of flat capitulum form, spooned daisy capitulum type, dark lavender pink ray floret color, diameter across face of capitulum up to 100 mm., tall plant height, semi-spreading branching pattern, average natural season flowering date of September 22 and average flowering response period of seven weeks in photoperiodic controlled short day programs.

4,532

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 2,051
Int. Cl.² A01H 5/00
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African Violet, as described and illustrated, known by the cultivar name Boston and characterized by the combined features of strong upright stems carrying intensive pink flowers having frilled edges; compact and vigorous growth habit, and by its leaves which are cupped to form a flat funnel, with the leaves having serrated edges and light green centers.

4,533

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 2,052
Int. Cl.² A01H 5/00
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African Violet, as described and illustrated, referred to by the cultivar name Nashville and particularly characterized by the combined features of compact and vigorous growth habits; red-purple, frilled, non-dropping flowers; strong and upright stems; relatively quick saleability due to its vigorous growth habit, and by its generally funnel-shaped leaves having light-green centers.

PATENTS

GRANTED MAY 6, 1980

ERRATA

For CLASS	See PATENT NO.
433-007	4,200,979
433-008	4,200,980
433-060	4,200,981
368-073	4,201,038
368-241	4,201,039
368-035	4,201,040
368-085	4,201,041
368-170	4,201,042
368-010	4,201,043
083-355	4,201,112
074-594.2	4,201,120
124-023 R	4,201,177
181-173	4,201,230
162-162	4,201,264
273-073 F	4,201,381
282-027.5	4,201,404
430-222	4,201,578
430-323	4,201,579
430-319	4,201,580
430-396	4,201,581
430-351	4,201,582
430-097	4,201,583
430-389	4,201,584
430-376	4,201,585
430-621	4,201,586
430-224	4,201,587
430-167	4,201,588
430-139	4,201,589
430-617	4,201,590
430-619	4,201,591
430-114	4,201,685
424-078	4,201,706
264-157	4,201,711
546-041	4,201,713
568-413	4,201,726
568-442	4,201,727
568-454	4,201,728
585-730	4,201,730
585-361	4,201,731
525-363	4,201,732
428-212	4,201,777
430-005	4,201,800
525-398	4,201,857
544-277	4,201,860
375-053	4,201,884
375-106	4,201,885

ERRATA—Continued

For CLASS	See PATENT NO.
370–068	4,201,889
370–068	4,201,890
370–058	4,201,891
370–104	4,201,892
370–058	4,201,893
370–058	4,201,894
455–608	4,201,909
375–017	4,201,942
455–185	4,201,943
455–155	4,201,944
455–183	4,201,945
367–095	4,201,971
367–040	4,201,972
371–050	4,201,976

PATENTS

GRANTED MAY 6, 1980

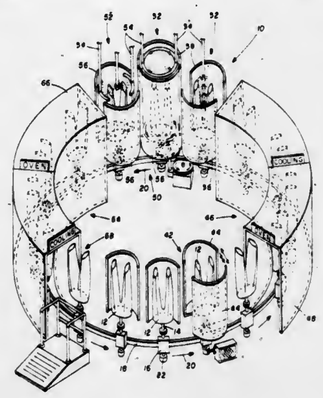
GENERAL AND MECHANICAL

4,200,937

METHOD OF MANUFACTURING GARMENTS

Joseph W. A. Off, Irving, and Judson H. Early, Dallas, both of Tex., assignors to Haggar Company, Dallas, Tex.

Continuation of Ser. No. 849,769, Nov. 9, 1977, Pat. No. 4,145,388. This application Dec. 21, 1978, Ser. No. 971,709
Int. Cl.[2] A41D *1/06, 13/00;* B32B *5/04, 5/14*
U.S. Cl. 2—227 3 Claims



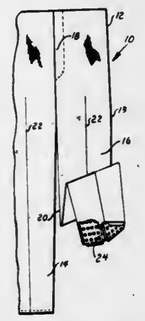
1. A garment, comprising:
a nonwoven mass formed in the shape of the desired garment;
said mass including a plurality of fiber layers formed by depositing activatable fibers over a mold member corresponding to the desired garment, orienting at least some of the fibers constituting at least one of the fiber layers in accordance with the elasticity requirements of corresponding portions of the garment, and activating the fiber layers to bond the nonwoven mass into the garment.

4,200,938

ADJUSTABLE PANT LEG SYSTEM

Thomas R. LeTourneau, 820 Brook St., Elgin, Ill. 60120

Filed Oct. 25, 1977, Ser. No. 844,604
Int. Cl.[2] A41D *27/10*
U.S. Cl. 2—269 8 Claims



1. An adjustable pant leg system comprising:
trousers having a pair of legs;
a strip provided with first interengageable means applied to the inside of each trouser leg adjacent the lower edge extremity of each trouser leg and disposed generally symmetrically about the vertical axis of each leg;
second interengageable means applied without stitching or seams to the inside of each trouser leg adjacent the first interengageable means and extending vertically upwardly therefrom inside of each trouser leg;
orientation means on the interengageable means for positioning without stitching or seams the interengageable means in pre-selected orientation with respect to the vertical axis of each trouser leg;
calibration means on the second interengageable means disposed without stitching or seams in pre-selected relationship with the axis of each trouser leg when disposed in selected orientation therewith;
the calibration means including plural measuring indicia disposed in pre-arranged relationship with the vertical axes of the respective trouser legs to facilitate precise repeated and selective adjustment of trouser leg length without stitching or seams by engaging the interengageable means of the strip in selected relationship with the calibration means to provide a seamless system for extending or shortening trouser legs.

4,200,939

METHOD FOR FIXATION OF PROSTHESES TO BONE

Zale Oser, Bound Brook, N.J., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Oct. 19, 1977, Ser. No. 843,754
Int. Cl.[2] A61F *1/00*
U.S. Cl. 3—1.9 4 Claims

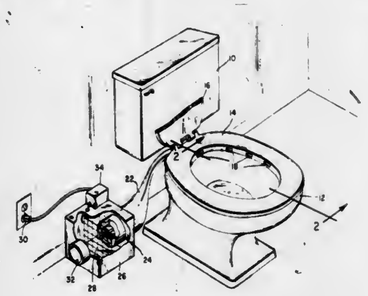
1. In a method for securing an artificial prothesis within a bone member wherein the prosthesis is inserted into a cavity in the bone member and permanently secured therein with a void filling, cementitious composition, the improvement comprising filling the void space around the prosthesis within the cavity of the bone member with said cementitious composition consisting essentially of a formable, thermoplastic polymer at a temperature in the range of 45° to 75° C. and thereafter allowing the polymer to cool to a hard, rigid solid at body temperature whereby the prosthesis is firmly secured within said bone member.

4,200,940

TOILET SEAT VOLATILE GAS INCINERATOR

Wes Buchanan, 2703 Pine Ave., Manhattan Beach, Calif. 90266

Filed Nov. 13, 1978, Ser. No. 960,463
Int. Cl.[2] E03D *9/05*
U.S. Cl. 4—348 4 Claims



1. A system for removing odorous volatile body gases associated with the use of a toilet stool comprising:
a hollow toilet seat having an annular opening and a plurality of radial openings for providing an air passageway between said annular openings and said hollow toilet seat,
an incinerator device comprising electrical discharge cir-

cuits in the air passageway for igniting and burning odorous volatile body gases,

said electrical discharge circuits consist of a plurality of screen wire located orthogonally and insulated from each other to form a grid,

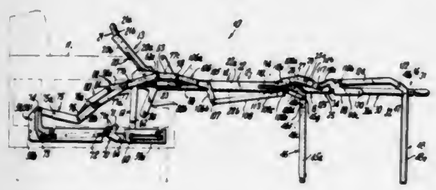
a vacuum device connected by a conduit with said hollow toilet seat and said incinerator device for drawing air from said annular opening through said radial openings through said hollow toilet seat and through said incinerating device whereby the odorous volatile gases are burned and the odor-free by-products in question are discharged into the atmosphere.

4,200,941

PULL-OUT SOFA BED AND HARDWARE THEREFOR

Glenn G. Gill, Bayonne, N.J., and Izchak Cycowicz, Brooklyn, N.Y., assignors to Mohasco Corporation, Amsterdam, N.Y.

Filed Apr. 6, 1978, Ser. No. 894,194
Int. Cl.[2] A47C *17/14*
U.S. Cl. 5—13 **5 Claims**



1. In a folding sofa-bed assembly of the type including at each side thereof:

(A) a primary body frame section having a longitudinally-extending slot bounded by a front slot wall and a rear slot wall;

(B) a secondary body frame section pivotally connecting its rear end region with the front end region of the primary section;

(C) a front foot section pivotally connecting its rear end region with the front end region of the secondary section;

(D) rear linkage folding means for moving the sections between an end-limiting collapsed sofa position, in which the foot section generally overlies at least a part of the primary section, and an end-limiting extended bed position, in which the foot section generally lies in a generally horizontal plane with the secondary section and with the primary section part,

said rear linkage means having a drive arm pivotally mounted on one of the frame sections; and

(E) a rear leg pivotally mounted on one of the frame sections for movement between a bed-supporting position and a collapsed position in response to operation of the rear linkage means;

the improvement at each side of the sofa-bed assembly comprising:

means for stabilizing the rear leg in its bed-supporting position, including

(i) a hook lock link having a rear portion pivotally connected at a drive point to the drive arm, and a front portion on which a pivot anchor pin is mounted, said anchor pin being mounted for reciprocating sliding movement in the slot, said drive point being spaced from the front slot wall at a predetermined distance in the extended bed position,

(ii) a rear leg support link having one end region pivotally mounted on said pin, and its opposite end region pivotally connected to the rear leg, and

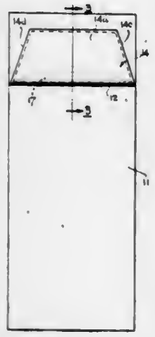
(iii) said hook lock link having an oversized length greater than said predetermined distance such that the anchor pin is forwardly urged into tight frictional jamming engagement with the front slot wall in the extended bed position, said anchor pin being fixedly anchored under tension by the oversized hook lock link at the front slot wall in the extended bed position to thereby fixedly anchor the rear leg support link and in turn the rear leg, whereby the rear leg is reliably supported in its bed-supporting position without excessive wobble.

4,200,942

TOWEL HAVING INFLATABLE PILLOW INCORPORATED THEREIN

Marianna Case, 4308 Via Marina, No. B, Marina Del Rey, Calif. 90291

Filed Oct. 30, 1978, Ser. No. 955,656
Int. Cl.[2] B32B *1/06, 3/02*
U.S. Cl. 5—419 **4 Claims**



1. A towel device having a pillow incorporated therein comprising:

an elongated main body portion fabricated of a washable, moisture-absorbent material,

a flap member attached to said main body portion solely along a seam line running across said main body portion at a position spaced between a pair of opposite ends thereof and towards one of said ends, said flap member having side, top and bottom wall portions which are joined together to form a compartment, a slit being formed in the bottom wall portion, said main body portion extending in opposite directions from said seam line separate and apart from said flap member whereby said flap member is adapted to be alternatively positioned with the bottom wall portion thereof abutting against a part of the main body portion between said one of said ends thereof and said seam line or the top wall portion thereof abutting against a part of the main body portion between the other of said pair of ends thereof and said seam line, and

an inflatable pillow installed within said compartment, said compartment slit being adapted to pass said pillow in its deflated state from the outside of said compartment to the inside thereof and vice versa, but not to pass said pillow therethrough in its inflated state, said pillow having an inflation valve which is located along said compartment slit.

4,200,943

AUTOMOBILE TOOL

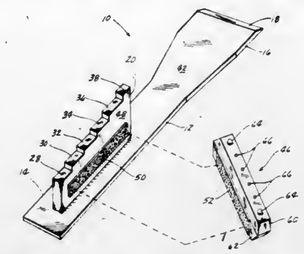
Eli C. Fredin, 402 SE. "D" Ave., Gilmore City, Iowa 50541; James W. Morgan, 1412 Elmhurst Ave., Humboldt, Iowa 50548, and Milo H. Waimer, Arnolds Parks, Iowa 51331

Filed Oct. 30, 1978, Ser. No. 955,939
Int. Cl.[2] B25F *1/00*
U.S. Cl. 7—100 **6 Claims**

1. An automobile tool device comprising,

an elongated support element having forward and rearward ends, said forward end having a beveled edge adapted for removing ice from a windshield, and

a jam means to hold the operating lever of a gasoline pump handle in an operating condition, said jam means being associated with said support element and comprising a member having an upper edge of a plurality of stepped surfaces, each of said surfaces adapted to engage the operating lever of a gasoline pump handle.

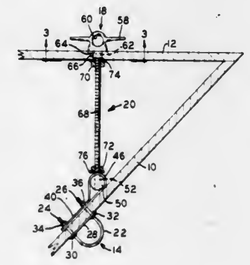


4,200,944

BOW OR KEEL SOLID LIFT ASSEMBLY FOR BOATS

Herman L. Gillespie, and Harlow E. Baumgartner, both of Fort Wayne, Ind., assignors to Lois C. Baumgartner, Fort Wayne, Ind.

Filed Oct. 25, 1977, Ser. No. 845,029
Int. Cl.[2] B63B *21/00*
U.S. Cl. 9—1.1 **6 Claims**



1. A lift assembly for boats comprising: a rigid strap mounted to the bow of a boat and having an arcuate closed loop portion with a slot in said loop portion extending in the arcuate direction, a cylindrical nut rotatably received in the closed loop portion of said strap, said nut having an internally threaded bore aligned with said slot, a rigid rod passing through said slot with one end of said rod being threaded into said bore, a lifting eye mounted to the deck of said boat, the other end of said rod being connected to said lifting eye, and a generally U-shaped eye member extending through the bow of the boat and being connected to said strap.

4,200,945

BOOK AND HANGING DEVICE

Leslie E. Ellis, P.O. Box 52298, Jacksonville, Fla. 32201

Filed Aug. 24, 1978, Ser. No. 936,515
Int. Cl.[2] B42C *1/00*
U.S. Cl. 11—1 ET **20 Claims**

1. A method of making a book and hanging device which is attached to said book and projects beyond the top edge thereof comprising the steps of:

assembling a plurality of leaves in proper order and orientation for binding; and

binding a cover having front and rear cover portions to said leaves along a binding edge, each of said cover portions comprising a hanging tab projecting beyond said top edge, and having perforations formed therein which extend along said top edge.

20. A method of making a book having a bound edge, a top edge, an open side edge and a bottom edge, and a hanging device attached thereto and projecting beyond said top edge, comprising the steps of:

assembling a plurality of signatures in proper order and orientation for binding;

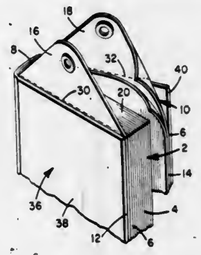
binding a first cover to said signatures along said bound edge;

trimming said first cover and said signatures along said top, side and bottom edges to open said signatures into leaves and obtain straight edges;

laminating a second cover, larger than said first cover, to said first cover;

trimming said second cover along said side and bottom edges;

perforating said second cover along said top edge;



die cutting the portion of said second cover which projects beyond said top edge in the general shape of a portion of an oval, whereby any adhesive which may have escaped from said bound edge at its top end is removed along with the adjacent projecting strip of said second cover, and said portion of said second cover which projects beyond said top edge is cut into two separate, parallel, opposed hanging tabs;

punching a hole in each of said hanging tabs near the top center thereof; and

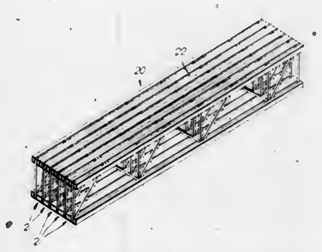
reinforcing each of said holes with an eyelet, whereby said book may be suspended upright in a closed position on a peg or other support received in said eyeleted holes, and said hanging tabs may be readily manually removed by tearing along said perforations when no longer needed.

4,200,946

LOAD-SUPPORTING STRUCTURES

Derek I. Lawrence, Crewkerne, England, assignor to Westland Aircraft Limited, Yeovil, England

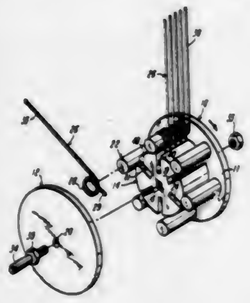
Filed Nov. 16, 1978, Ser. No. 961,204
Int. Cl.[2] E01D *9/00*
U.S. Cl. 14—4 **27 Claims**



1. A load supporting structure comprising a plurality of similar longitudinally extending truss members, each said truss member having upper and lower spaced-apart chords and intermediate joining members, wherein said upper and lower chords and said joining members are constructed of tubular material having a rectangular cross-section, said rectangular

joining members of each truss being located in a nominal plane parallel and to one side of the upper and lower chords of that truss and so that one of the side surfaces of the joining members overlap one of the side surfaces of the chords and are attached thereto, said plurality of truss members arranged in side-by-side relationship so that the other one of the side surfaces of the upper and lower chords of a truss member overlap the other one of the side surfaces of the joining members of an adjacent truss member, fixedly attaching said plurality of adjacent members to each other so as to form the load supporting structure.

4,200,947
ROTARY STRIPPER DEVICE
Frank F. Ali, 2973 Pascal Dr., Fairborn, Ohio 45324
Filed Jan. 23, 1978, Ser. No. 871,507
Int. Cl.[2] A46B 7/10, 13/00
U.S. Cl. 15—198 15 Claims



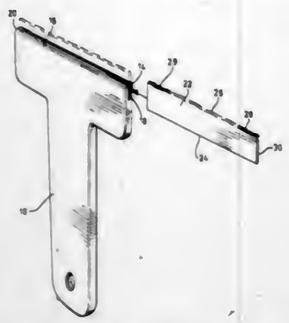
1. A rotary stripper device comprising a hub assembly, a plurality of stripper elements projecting peripherally of said hub assembly and in circumferentially spaced relation thereto, said hub assembly including as one part thereof means mounting said stripper elements in connection therewith and to have end portions project generally radially outwardly therefrom, the connections being formed to accommodate a floating movement of said stripper elements and the projected outer ends thereof in a sense generally longitudinally of said hub assembly, said hub assembly including as another part thereof means defining opposed surfaces for receiving and containing therebetween and serving as a guide for inner end portions of said stripper elements accommodating and maintaining their floating movement in a controlled path and in a sense generally longitudinally of said hub assembly on rotation of said mounting means and application thereof to a surface to be worked, said another part of said hub assembly being spaced radially inward from said one part thereof, the arrangement precluding interference between or misalignment of said stripper elements and their projected ends.

4,200,948
PAINT SCRAPER
Arthur E. Nesseth, Komoka, Ontario, Canada
Filed Mar. 28, 1979, Ser. No. 24,633
Int. Cl.[2] A47L 17/06
U.S. Cl. 15—236 R 5 Claims

1. A paint scraper comprising a handle portion and a blade holding portion, said blade holding portion having an elongated blade receiving slot extending along at least a major portion of the width of said blade holding portion, with an open mouth of said slot presented along the end of the blade holding portion;

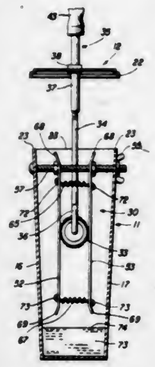
a scraper blade having a first scraping edge of straight, generally smooth configuration, and a second, opposed scraping edge of toothed, serrated configuration;

said scraper blade being adapted to be releasably received in said slot in a first position in which the first scraping edge of said blade protrudes beyond the mouth of said slot and beyond the end of the blade holding portion, and in a second position in which the second scraping edge of said



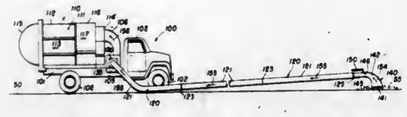
blade protrudes beyond the mouth of said slot and beyond the end of the blade holding portion.

4,200,949
CONTAINER FOR STORING PAINT AND A ROLLER-TYPE PAINT APPLICATOR
William V. Heniff, Jr., 12632 S. Harold St., Palos Heights, Ill. 60463
Filed Oct. 2, 1978, Ser. No. 947,496
Int. Cl.[2] A47L 13/56; B08B 3/00
U.S. Cl. 15—257.06 11 Claims



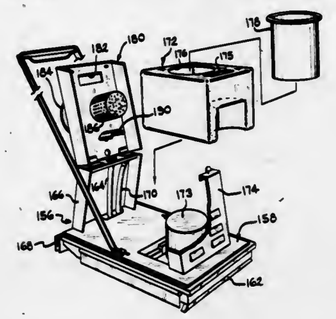
1. A container for receiving a quantity of paint and for storing a roller-type paint applicator therein so that the applicator is at all times ready for use, said container comprising a receptacle portion having a bottom wall, upstanding side wall means, and an open upper end, said receptacle portion being adapted to receive a quantity of paint, a removable cover for closing the open end of said receptacle portion, and combined support and wiping means in said receptacle portion for engaging the roller of a roller-type paint applicator and holding said roller in a fixed position above the level of the paint in said receptacle portion, said support and wiping means also being operable to wipe excess paint from the roller of said applicator as the latter is shifted while the roller is engaged with said support and wiping means, the cover of said container preventing paint is said receptacle portion and in the roller of said applicator from hardening when said applicator is positioned in said receptacle portion and said cover is engaged with the open end of said receptacle portion.

4,200,950
LARGE AREA CLEANING SYSTEM
Roger D. Coverley, 11 Eastcliff Dr., Joliet, Ill. 60436
Filed Apr. 21, 1978, Ser. No. 898,636
Int. Cl.[2] A47L 9/00
U.S. Cl. 15—314 7 Claims



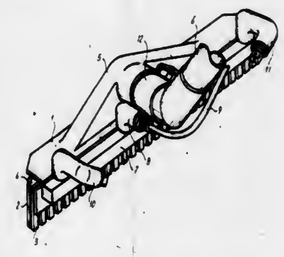
1. A system for cleaning large areas such as baseball parks and football stadiums and picnic areas and zoos, comprising a portable chassis, a refuse compactor mounted on said chassis for packing refuse into a small volume therein, a blower mounted on said chassis and constructed and arranged to draw air and entrained refuse into an inlet for said blower and to blow the refuse from said blower into said compactor, a substantial length of flexible hose having one end thereof connected to the inlet to said blower and a pickup nozzle connected to the other end of said hose, said pickup nozzle having an inlet end with an opening therein substantially greater in area than the internal area of said hose, said blower creating a stream of air entering the inlet end of said nozzle and carrying refuse therewith and along said hose and through said blower and into said compactor thereby rapidly to clean refuse from large areas and to compact the refuse into a small volume in said compactor, a hose support member including a sleeve for supporting and receiving said hose therethrough for sliding motion with respect thereto, and a clamp for mounting said sleeve upon the railing of an upper deck to assist in holding said hose during cleaning of the upper deck.

4,200,951
MACHINE FOR CLEANING SURFACES
Jack L. Burgoon, Toledo, Ohio, and William R. Smith, Beaver Dam, N.Y., assignors to The Scott & Fetzer Company, Lakewood, Ohio
Filed Oct. 11, 1977, Ser. No. 840,735
Int. Cl.[2] A47L 7/00
U.S. Cl. 15—321 12 Claims



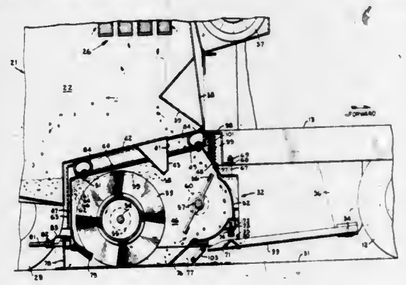
1. A surface cleaning machine comprising a frame, a recovery container supported on said frame for receiving cleaning solution from a surface being cleaned, means for establishing a vacuum in said recovery container, a supply container supported on said frame for containing cleaning solution, means for supplying cleaning solution from said supply container to the surface, a rotatable brush rotatably supported from said frame, means supported from said frame for rotating said brush, a rear squeegee and a nozzle carried by said frame for movement toward and away from the surface, wheel means supporting part of said frame on the surface, a forward nozzle carried by said frame in front of said brush, and passage means for alternately connecting said rear nozzle and said forward nozzle with said recovery container, said recovery container being located in said supply container, a lid carried by said machine, said means for establishing a vacuum comprising a vacuum blower carried by said lid and having an inlet positioned to extend into said recovery container when said lid is closed over said containers.

4,200,952
DEVICE FOR CLEANING FLOORS BY MEANS OF A LIQUID
Jan F. Smies, Amsterdam, and Leo Dijkmans, Haarlem, both of Netherlands, assignors to Cemsto B.V., Amsterdam, Netherlands
Filed Nov. 7, 1978, Ser. No. 958,497
Claims priority, application Netherlands, Nov. 15, 1977, 7712580
Int. Cl.[2] A47L 11/20
U.S. Cl. 15—322 4 Claims



1. Device for cleaning floors with the aid of a liquid, said device comprising a tube, said tube at its one end being in communication with a suction device and at its other end opening into an elongated suction mouth-piece, and a conduit, which at its one end is in communication with the source of a cleansing fluid under pressure and at its other end is in communication with at least one spray nozzle, said nozzle being mounted at a fixed position above the suction port of the suction mouth-piece and being directed towards a point lying beyond one of the long sides of the suction mouth-piece, characterized in that two spray nozzles are mounted adjacent the small sides of the suction mouth-piece, said spray nozzles being directed to each other obliquely inwardly.

4,200,953
SURFACE SWEEPER WITH FLOATING BROOM CHAMBER
Billy J. Overton, Laquinta, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Oct. 5, 1978, Ser. No. 948,846
Int. Cl.[2] A47L 5/30
U.S. Cl. 15—349 13 Claims



10. A mobile sweeper for cleaning an underlying surface and having a framework and a hopper mounted on the framework

to receive dust and debris through an inlet aperture therein, a floating broom chamber having an outlet aperture, means for mounting said floating broom chamber on said framework with said outlet aperture in registration with the inlet aperture of the hopper and for supporting said floating broom chamber in a down position, a broom adapted for contact with the underlying surface, means for mounting said broom for rotation within said floating broom chamber whereby dust and debris is swept off of the surface into said floating broom chamber, said last named means providing limited vertical movement between said broom and said floating broom chamber, means for urging the swept dust and debris from said floating broom chamber through said outlet and inlet apertures into the hopper, a resilient tubular seal disposed between the hopper and said floating broom chamber surrounding both said outlet and inlet apertures, said tubular seal being transversely collapsible, whereby said floating broom chamber may be moved upward from said down position while said broom is retained in contact with the underlying surface so that the surface is swept substantially continuously during operation.

4,200,954

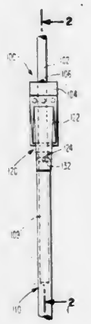
TELESCOPING HEAT RESPONSIVE RELEASING MEANS

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation-in-part of Ser. No. 676,413, Apr. 13, 1976, Pat. No. 4,040,304, and Ser. No. 779,044, Mar. 18, 1977, Pat. No. 4,099,292, which is a continuation-in-part of Ser. No. 676,483, Apr. 13, 1976, Pat. No. 4,041,570. This application Dec. 27, 1977, Ser. No. 864,579

Int. Cl.² E05F *15/20*

U.S. Cl. 16—48.5 **10 Claims**



10. A heat responsive releasing device, comprising:

(a) a mounting member;

(b) a pawl member which slidably engages said mounting member, and tracks relatively along said mounting member between at least restrained and activated positions defined along said mounting member;

(c) bimetallic means mounted on said mounting member for restraining said pawl member relative to said mounting member in response to a preselected normal ambient temperature and for releasing said pawl member in response to at least a preselected increase in said ambient temperature whereby said pawl member and said mounting member may then slide relative to each other, said bimetallic means comprising:

(i) a bimetal;

(ii) a latching means for at least receiving and engaging at least a portion of said pawl member when said pawl is moved relatively away from said actuated position into said restrained position and in response to at least said normal ambient temperature, said latching means comprising a pin attached to said bimetal; said pin having at least one beveled surface and said pawl having at least one recess to find therein adapted to receive said pin when said pawl is in the restraining position relative to said mounting member and said ambient temperature is said normal temperature;

(d) remotely controlled electric heating means located on said bimetal for heating said bimetal;

(e) primary power source for delivering electric current to said heating means; and

(f) secondary power means for automatically delivering an electric current to said heating means when said primary power source fails.

4,200,955

GIRDER ROLLER FITTINGS

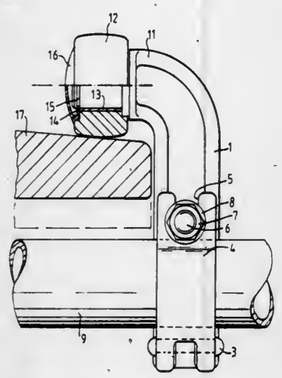
Roger M. Kitchen, Sheffield, and Dennis Braithwaite, Barnsley, both of England, assignors to Deborah Services Limited, Wakefield, England

Filed Sep. 5, 1978, Ser. No. 939,699

Claims priority, application United Kingdom, Sep. 19, 1977, 38959/77

Int. Cl.² E05D *13/02*

U.S. Cl. 16—106 **9 Claims**



1. A roller fitting adapted to be secured to a length of scaffold tube for suspending said scaffold tube from a horizontal flange of a flanged girder, said fitting comprising:

a main body, the major length of which extends in the vertical direction;

a clamp pivotally mounted on said main body,

said clamp and main body being so configured as to cooperatively receive and hold therebetween said length of scaffold tube,

substantially horizontally disposed fastening means for releasably securing said clamp to said main body,

a portion of said main body extending, at a position remote from the pivotal connection of said clamp, in a direction substantially perpendicular to the major length of said main body,

said main body and clamp being secured to said scaffold tube at a position adjacent an edge portion of said girder flange such that said portion of said main body overlies the upper surface of said horizontal flange of said flanged girder, and

a roller rotatably mounted on said portion of said main body by means of a bearing and operatively engaged with said upper surface of said horizontal flange of said flanged girder for rotatably suspending said scaffold tube from said girder,

whereby, said fastening means is subjected to substantially zero vertical loading from said scaffold tube and, in the event of failure or break-up of said roller or bearing, said portion of said main body can engage the flange of said girder in a fail-safe manner.

4,200,956

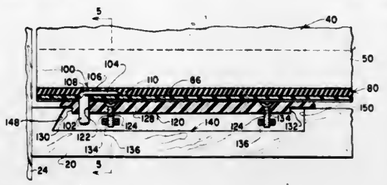
HINGE, HANDLE AND DETENT

Myron E. Ullman, Jr., Canfield, Ohio, assignor to M.M.G., Inc., Youngstown, Ohio

Continuation-in-part of Ser. No. 806,698, Jun. 15, 1977. This application Mar. 31, 1978, Ser. No. 892,332

Int. Cl.² E05D *7/04*

U.S. Cl. 16—130 **35 Claims**



1. A system for mounting opposed ends of a door panel between a pair of frame members for pivotal movement of the door panel relative to the frame members, comprising:

(a) a pair of panel-engaging members each having a U-shaped cross section defined by a pair of spaced leg portions interconnected by a base portion and each being configured to receive a separate one of the door panel ends between its leg portions, the leg portions having parts which clampingly engage the door panel end received therebetween without the need for fasteners to penetrate or extend through the panel, the leg portions being of elongate configuration and each having first and second end regions with the first end regions of both legs being interconnected by the associated base portion, and the parts which clampingly engage the door panel end being provided near the second end regions of the legs;

(b) each panel-engaging member cooperating with the panel end received therein to define a substantially U-shaped channel extending between such parts of the panel-engaging member as do not clampingly engage its associated panel end and the door panel end;

(c) a resilient liner positioned in the U-shaped channel intermediate the base portion and that portion of the door panel end opposite the base portion;

(d) a pair of elongate projection means each extending from a separate one of the base portions for defining a pivot axis of the door panel; and,

(e) a pair of projection-receiving means each being provided on a separate one of the frame members for journaling a separate one of the projection means to mount the door panel on the frame members for movement about the pivot axis between open and closed positions.

4,200,957

SELF-CLOSING DOOR HINGE

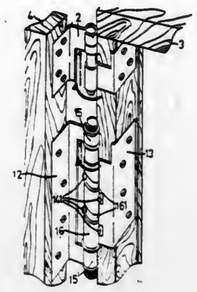
Yun T. Hsu, 30-27, Chun In Rd. Chun In Village, Tong Sun, Hsiang, I Lan Hsien, Taiwan

Filed May 19, 1978, Ser. No. 907,860

Int. Cl.² E05F *1/06*

U.S. Cl. 16—154 **6 Claims**

1. A self-closing door hinge arrangement comprising, a main hinge which may be fixed in a middle position of a door and door frame, and two auxiliary hinges respectively fixed on the upper and lower position of said door and frame; said main hinge including a right hinge leaf with sleeve having a plurality of grooves, said grooves having an inclined portion and a horizontal portion and left hinge leaf with pivot, said pivot removably fixedly mounted to said left hinge leaf; said pivot pivotably and vertically movable in said sleeve, and being axially disposed in said sleeve; having a plurality of extended pin rollers each engaging a corresponding one of the grooves on said sleeve; and vertically supporting said pivot and said door such that the pivot and door are raised as each of said pins moves upward along the incline of said groove of said sleeve as said door is opened; and rollers moving identically in said corresponding grooves, said pivot and door falling automatically along the groove to close the door when each of said rollers are in said inclined portion of said grooves and said door is released.



4,200,958

KITCHEN UTENSIL

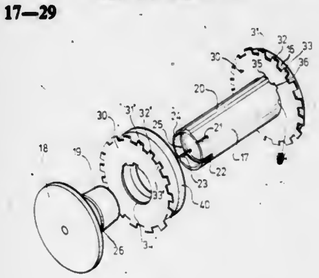
Vladslav J. Jurida, 370 Ridelle Ave. #303, Toronto, Ontario, Canada (M6B 4B4)

Filed Oct. 19, 1977, Ser. No. 843,635

Claims priority, application Canada, Sep. 20, 1977, 287111

Int. Cl.² A22C *9/00*

U.S. Cl. 17—29 **3 Claims**



1. In a machine for tenderizing meat, said machine having a handle member and a spool rotatably mounted by said handle member, the combination comprising:

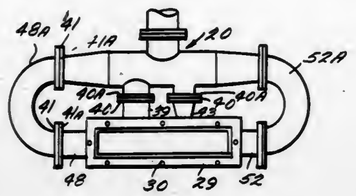
a plurality of tenderizing blades mounted on said spool, said blades each comprising a plate-like body with spaced apart teeth extending radially therefrom beyond said spool;

a plurality of ring-like spacer elements separate from said blades and mounted on said spool between adjacent blades;

means for orienting and maintaining the teeth of each individual blade in an alternately projecting relationship relative to the teeth of an adjacent blade; and

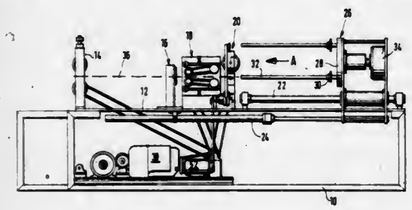
said spool comprises a first section having a first end cap and a first cylinder projecting therefrom and a second section having a second end cap and a second cylinder projecting therefrom, said first cylinder being engaged in said second cylinder.

4,200,959
APPARATUS FOR FORMING BACON PRODUCT ANALOGUES AND THE LIKE
Earl J. Cheney, Calgary, Canada, assignor to Burns Foods Limited of Calgary, Alberta, Canada, Calgary, Canada
Filed Mar. 31, 1978, Ser. No. 892,024
Claims priority, application Canada, Jul. 14, 1976, 256928
Int. Cl.² A22C 7/00
U.S. Cl. 17—32 **19 Claims**



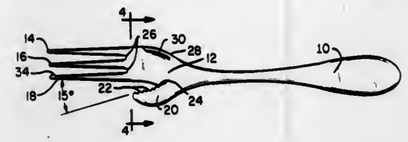
1. Apparatus for forming a multi-component product from combining a first viscous component with a second viscous component comprising:
(a) a housing;
(b) a die means, said die means including a matrix compartment and an injector compartment;
(c) a first manifold for receiving a first viscous component, said first manifold communicating with said housing and said matrix compartment of said die;
(d) a second manifold for receiving a second viscous component, said second manifold communicating with said housing and said injector compartment of said die; and
(e) means for moving said first and said second visous components to said die means for joining said components in said die means in a configuration determined substantially by the configuration of said matrix compartment and said injector compartment of said die means.

4,200,960
METHOD AND APPARATUS FOR SHIRRING OF SYNTHETIC TUBES, PARTICULARLY CASINGS FOR SAUSAGE PRODUCTION
Gunter Kollroos, Wallerstadter weg 20, 6081 Dornheim, Fed. Rep. of Germany
Filed Oct. 14, 1977, Ser. No. 842,353
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646848
Int. Cl.² A22C 13/02
U.S. Cl. 17—42 **8 Claims**



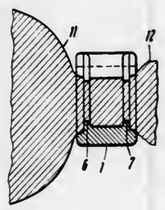
1. A device for the shirring of casings, particularly sausage casings, comprising a guide mandrel over which the casing is fed, first and second rotating shafts having eccentric portions, a shirring head supported on said eccentric portions of said shafts for oscillation thereby during rotation of said shafts, at least two rotatable profile rollers carried on said shearing head having peripheries disposed radially in respect to said guide mandrel at spaced locations around said guide mandrel, means for inflating the casing, means for drawing off the casing from said mandrel, and means for rotating said shafts to cause gyration of said profile rollers around said casing to feed the casing in a spiral shape off said guide mandrel.

4,200,961
SEPARATING MEAT FROM SHELL
Joseph F. Mueller, 56 Holbrook Ave., Hull, Mass. 02045
Filed Feb. 13, 1978, Ser. No. 877,171
Int. Cl.² A22C 29/00
U.S. Cl. 17—73 **10 Claims**



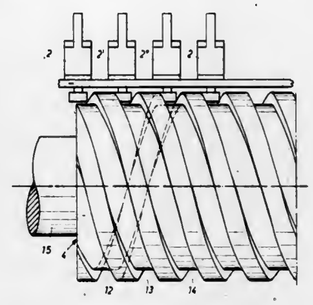
1. a fork comprising a handle,
a midsection formed at the end of said handle,
and tines extending from said midsection,
said tines all being generally in an arcuate plane, said plane defining a common surface, said tines including a plurality of generally parallel tines and an outermost claw tine shorter than said parallel tines, said claw tine being disposed at an angle in said common surface to the other said tines.

4,200,962
U-SHAPED CLIP MADE FROM STRIP MATERIAL
Herbert Niedecker, Am Ellerhang 6, Königstein 2, Fed. Rep. of Germany (6240)
Continuation-in-part of Ser. No. 766,416, Feb. 7, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,717
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1976, 2606658
Int. Cl.² B65D 77/12
U.S. Cl. 24—30.5 W **6 Claims**



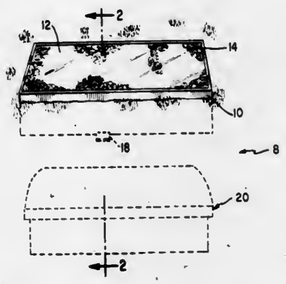
1. In a U-shaped clip made from substantially flat strip material and intended to close bags and flexible tubes, said clip comprising a web connecting two limbs having outwardly angled end lugs, the improvement which comprises providing on the surface of the clip which is to engage a bag a pair of spaced parallel beads extending longitudinally along the outer edges of the web and limbs, the material forming said beads being displaced inwardly from the outer longitudinal edges of the strip, whereby such beads serve to grasp the bag more securely.

4,200,963
MACHINE FOR SIMULTANEOUS BIAXIALLY STRETCHING
Eberhard Kamfe, Wiehl, and Willi Schmidt, Nümbrecht-Elsenroth, both of Fed. Rep. of Germany, assignors to Firma Erwin Kampf GmbH & Co. Machinenfabrik, Mühlen, Fed. Rep. of Germany
Filed Nov. 2, 1978, Ser. No. 957,035
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749185
Int. Cl.² B29D 7/24; D06C 3/00
U.S. Cl. 26—73 **3 Claims**



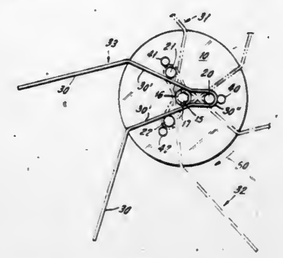
1. Simultaneous biaxally stretching machine for thermoplastic films, having tongs guide ways arranged on both sides of a running-in zone, a stretching zone, a fixing zone, and conveying means for the tongs, there being provided, at least, in individual straight sections of the tongs guide ways, spindles having screw guide ways, partly with changing lead, for the tongs, characterized in that the spindles (4) are provided as multiple-threaded spindles.

4,200,964
GRAVE SITE COVER
Fred H. Freitag, 182 E. Mary La., Valley Cottage, N.Y. 10989
Filed Mar. 5, 1979, Ser. No. 17,471
Int. Cl.² E02D 19/00
U.S. Cl. 27—30 **7 Claims**



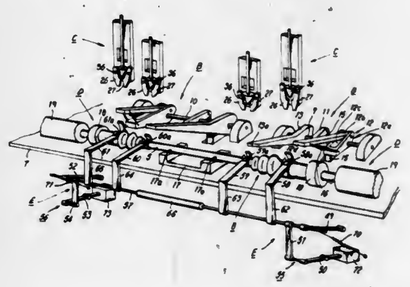
1. A grave site cover comprising:
a substantially box-shaped rigid outer casing having a size and shape to fit over a casket;
a similarly sized and shaped inner casing adapted to fit snugly into said outer casing;
anchoring means extending outwardly from at least one side wall of said outer casing; and
a transparent cover plate adapted to fit between said outer casing and said inner casing.

4,200,965
ROTARY STRIPPER
Robert B. Roth, New York, N.Y., assignor to Coastal Abrasive & Tool Company Inc., Trumbull, Conn.
Filed Aug. 21, 1978, Ser. No. 935,258
Int. Cl.² B21C 43/00; B23D 79/12; B23P 25/00
U.S. Cl. 29—81 J **16 Claims**



1. A rotary stripper comprising:
a plate having a periphery, a plate driving element secured to and extending normally of said plate;
a plurality of studs radially spaced from said plate driving element and upstanding from said plate;
at least one stripper member supported by and retained on each said stud; each said stripper member comprising wire means shaped to have two legs and said legs being connected at one end thereof in a sharp bend;
each said stripper member being placed such that said bend thereof passes around and engages a respective said stud on the side of that said stud away from said plate driving element; said legs of said stripper member extending from said bend past said plate driving element, with said plate driving element extending between said legs, and said legs extending beyond said periphery of said plate at the side of said plate away from the respective said stud, whereby each said stripper member defines two said stripper legs for stripping purposes.

4,200,966
APPARATUS FOR FIXING METAL CLAMP BANDS
Masatane Nakao, Fukuroi, and Yoshiji Ikuta, Iwata, both of Japan, assignors to NTN Toyo Bearing Company, Osaka, Japan
Filed Mar. 27, 1978, Ser. No. 890,393
Claims priority, application Japan, Mar. 25, 1977, 53-4690; May 10, 1977, 52-53830
Int. Cl.² B23P 11/00
U.S. Cl. 29—243.5 **4 Claims**



1. An apparatus for fixing a metal clamp band having a stick member and buckle members onto an object to be clamped, said apparatus comprising:
(a) a stick tilting means for tilting the stick member of said band towards the object, said stick tilting means including

a rotatable shaft member extending parallel to the axis of said object, arm means fixed to said shaft member for tilting said stick member when said shaft member is rotated and means for rotating said shaft member;

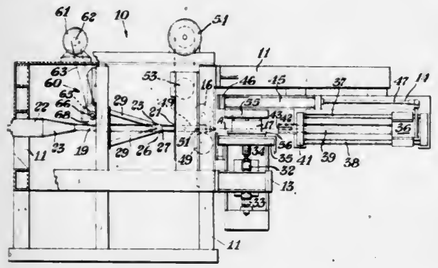
(b) buckle bending means for bending said buckle members to engage said stick member after said stick member has been tilted, said buckle bending means including a first and second cylinder means, pawl means coupled on said first and second cylinder means, said pawl means engaging said buckle members and bending said buckle members around said stick member when said first cylinder means is actuated and said pawl means engaging said bent buckle members and pressing said bent buckle members against said stick member when said second cylinder means is actuated, whereby said buckle members surround and engage said stick member.

4,200,967

METHOD AND APPARATUS FOR RECLAIMING POLYMER FROM SCRAP PLASTIC FILM ROLLS

Edward V. Dettmer, Linwood, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1978, Ser. No. 957,117
Int. Cl.² B26D 7/08
U.S. Cl. 29—426.2 **10 Claims**



1. A method for the separation of plastic film from a core upon which plastic film is wound, the steps of the method comprising

providing a roll of plastic film, the roll comprising a hollow generally cylindrical core having wound on the outer surface thereof a synthetic resinous film in a generally spiral configuration,

forcing the core of the roll over a generally elongate cylindrical mandrel while simultaneously

cutting through the film in a generally axial direction relative to the mandrel and core,

forcing the core and the cut film through a stripping means of a size sufficient to pass the core but insufficient to pass the film, to thereby separate the film from the core subsequently

slitting the core in an axial direction and removing the core from the mandrel.

4,200,968

VMOS TRANSISTOR AND METHOD OF FABRICATION

James E. Schroeder, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

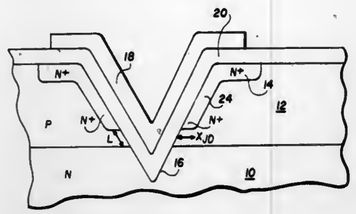
Filed Aug. 9, 1978, Ser. No. 932,232
Int. Cl.² B01J 17/00
U.S. Cl. 29—571 **15 Claims**

1. A method of fabricating a vertical insulated gate field effect transistor on a first layer of semiconductor material of a first conductivity type and a second layer of semiconductor material of a second conductivity type opposite said first conductivity type on said first layer comprising:

selectively diffusing impurities into said second layer of semiconductor material to form a surface region of said first conductivity type;

removing a portion of said surface region and said second layer of semiconductor material to form a groove whose depth is less than the thickness of said second layer;

introducing impurities into said groove to form a region of said first conductivity in said groove;



removing a portion of said second layer and said first layer to increase the depth of said groove into said first layer;

applying a layer of insulation in the groove; and

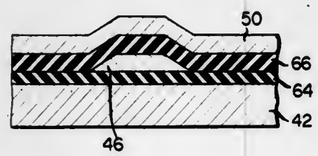
forming a gate electrode in the groove on said layer of insulation.

4,200,969

SEMICONDUCTOR DEVICE WITH MULTI-LAYERED METALIZATIONS

Masaharu Aoyama; Shunichi Hiraki, both of Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Sep. 9, 1977, Ser. No. 831,873
Claims priority, application Japan, Sep. 10, 1976, 51/107888
Int. Cl.² B01J 17/00
U.S. Cl. 29—577 R **12 Claims**



1. A process for fabricating a semiconductor device with multi-layered metalizations comprising the steps of:

preparing a semiconductor body;

forming on the major surface of said semiconductor body a first insulating layer with first contact holes arranged in a predetermined pattern;

forming a first metal layer on said first insulating layer, said first metal layer contacting the major surface of said semiconductor body through said first contact holes;

coating a second metal layer onto said first metal layer, said first metal layer having a lower etching rate than the etching rate of said second metal layer, said first and second metal layuers constituting a first conductive member;

forming a mask layer with a predetermined pattern on said first conductive member;

combining into a single etching means suitable etchants for each of said first metal layer and said second metal layer in concentrations selected from a wide range of useable and workable alternative combinations;

etching said first conductive member by etching means and by using said mask layer as a mask to remove unnecessary portions thereof so that said first conductive member has the side wall portions diverged to widen toward said semiconductor body;

removing said mask layer;

forming on said first conductive member a second insulating layer with second contact holes in a predetermined pattern;

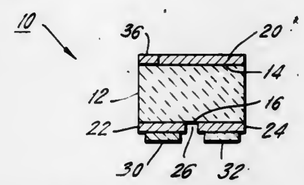
forming a second conductive member including at least one metal layer on said second insulating layer, said second conductive member contacting with said first conductive member through said second contact holes.

4,200,970

METHOD OF ADJUSTING RESISTANCE OF A THERMISTOR

Milton Schonberger, 195 Fern St., Westwood, N.J. 07885

Filed Apr. 14, 1977, Ser. No. 787,422
Int. Cl.² H01C 7/04
U.S. Cl. 29—593 **38 Claims**



1. A method of adjusting the resistance of a thermistor, comprising:

forming a first and a second electric contact on one surface area of an element of thermistor semiconductor material;

forming a third electric contact on another surface area of the element of thermistor semiconductor material, the contacts being formed such that the one and the other surface areas overlapping such that the first and second electric contacts overlap the third electric contact;

and the element of thermistor semiconductor material and the first, second and third contacts together comprise a thermistor;

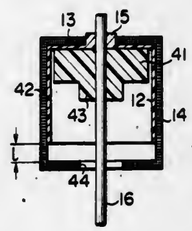
adjusting the resistance of the thermistor by trimming off part of at least one contact to reduce its area while keeping the one and the other surface areas overlapping such that the first and second electric contacts overlap the third electric contact after said trimming.

4,200,971

METHOD OF MANUFACTURING CUP-SHAPED COIL ASSEMBLY OF ELECTRIC MOTORS

Makoto Shimizu, and Kunikazu Shirakawa, both of Maruko, Japan, assignors to Shinano Kenshi Co., Ltd., Japan

Filed May 16, 1978, Ser. No. 906,558
Claims priority, application Japan, May 17, 1977, 52-56025
Int. Cl.² H02K 15/02
U.S. Cl. 29—598 **8 Claims**



1. A method of manufacturing a cup-shaped coil assembly for an electric motor which includes a cup-shaped coil having its one end left open and its other end closed by a coil wire and also including an output shaft which extends through the coil in the axial direction thereof; the method comprising the steps of

(a) assembling a coil bobbin assembly which includes a cylindrical member, a disc connected with one end of the cylindrical member to close it, a cap member adapted to be fitted into an opening in the other end of the cylindrical member, and an output shaft disposed in alignment with the axis of the cylindrical member and having its one end mounted in the disc and its other end extending through the cap member, the disc and the cap member being centrally formed with an outwardly projecting boss,

(b) providing a skewed winding of wire around the boss of the disc and the boss of the cap member to thereby form a coil,

(c) moving the cap member into the cylindrical member to leave an opening in one end face of the coil which is created by the boss of the cap member,

(d) enlarging the opening outwardly to provide an open end of the coil, and

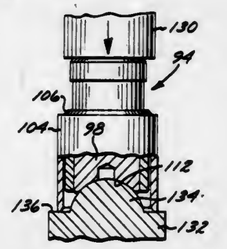
(e) removing the cap member from the coil.

4,200,972

METHOD OF MANUFACTURING A SOLENOID

Jay R. Katchka, Cypress, and Samuel T. Kelly, Torrance, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 816,656, Jul. 18, 1977, Pat. No. 4,142,169.
This application Oct. 16, 1978, Ser. No. 951,598
Int. Cl.² H01F 41/02
U.S. Cl. 29—602 R **5 Claims**



1. A method for forming a stationary pole piece for a solenoid assembly having a predetermined annular air gap which comprises:

distally mounting a shading ring on the end of a pole piece having a central, raised annular rim;

placing a flux ring over the assembly and onto said annular rim; and

advancing said flux ring into a predetermined axial position on said rim by pressing said assembly against a tool having a central boss to seat against the end of said pole piece and an annular shoulder at a precise, predetermined axial position relative to said central boss to engage said flux ring.

4,200,973

METHOD OF MAKING SELF-TEMPERATURE REGULATING ELECTRICAL HEATING CABLE

Richard W. Farkas, Stow, Ohio, assignor to Samuel Moore and Company, Aurora, Ohio

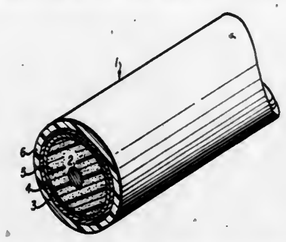
Filed Aug. 10, 1978, Ser. No. 932,552
Int. Cl.² H05B 3/10
U.S. Cl. 29—611 **6 Claims**

1. In a method of making an improved flexible self-temperature regulating electrical heating cable comprising at least two substantially parallel spaced-apart elongate electrical conductors electrically interconnected by means of an extruded, radiation cross-linked, electrically semi-conductive composition having a positive temperature coefficient of electrical resistance, said composition containing at least one polymeric component therein to provide sufficient crystallinity to promote the self-temperature heat regulating characteristics thereof and containing an amount of electrically conductive

particles dispersed therein that is controlled within the range of 17% to 25% by weight to the total weight of the composition, the method including the steps of:

(a) Extruding the cross-linkable composition about at least two substantially parallel spaced-apart elongate electrical conductors in such a manner as to provide a form having a cross-sectional shape transverse to the longitudinal axis thereof that is suitable for use as a heating cable and having the semi-conductive composition electrically interconnecting the spaced-apart conductors;

(b) Disposing a radiation penetrable shape retaining covering in encompassing relationship about the extruded composition and conductors that has a melt temperature that is



higher than the temperature chosen to anneal the composition such that the covering prevents or minimizes distortion of the composition during the annealing process;

(c) Annealing the covered cross-linkable semi-conductive composition at a temperature that is at least at the melt temperature thereof for a period of time sufficient to promote the electrical characteristics desired;

(d) Cross-linking the annealed semi-conductive composition by means of radiation; and

(e) Annealing the radiation cross-linked composition at a temperature that is at least at the melt temperature thereof for a period of time sufficient to promote the electrical characteristics desired.

4,200,974

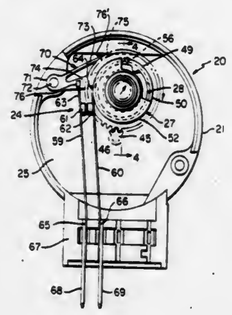
METHOD OF MAKING ELECTRICAL SWITCH CONSTRUCTION

Edgar E. Marquis, Newtown, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 742,756, Nov. 18, 1976, Pat. No. 4,100,381. This application Apr. 13, 1978, Ser. No. 896,048

Int. Cl.² H01H *43/10*

U.S. Cl. 29—622 **10 Claims**



1. In a method of making an electrical switch construction having an electrical switch provided with different operating conditions and having means operatively associating with said switch for causing said switch to be repetitively in one condition thereof a certain percentage of a certain increment of time and for being in another condition thereof for the remainder of said certain increment of time, said means being adapted to select the amount of said certain percentage of said certain increment of time within certain limits and including a rotatable cam member having a cam part for camming said switch to one of said operating conditions thereof during each revolution of said cam member, the improvement comprising the steps of forming said cam part of said cam member to be radially movable relative thereto, and forming said means to be adaptable to select a radial position of said cam part for camming said switch or a radial position of said cam part that will not cam said switch.

4,200,975

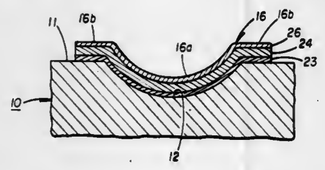
ADDITIVE METHOD OF FORMING CIRCUIT CROSSOVERS

Richard P. Deblec, LaGrange Park, and William T. Wydra, Darien, both of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,989

Int. Cl.² H01R *43/00*

U.S. Cl. 29—827 **16 Claims**



1. A method of forming a circuit crossover, with an arched intermediate region, for subsequent use in crossing over an intervening circuit element of a substrate-supported circuit, comprising the steps of:

forming a mask-defined, exposed area on one planar surface of a frame member such that said exposed area extends across and a predetermined distance beyond opposite sides of a groove, previously formed with a concave base, in the one surface of the frame member;

plating said exposed surface area of said frame member to form a metallic crossover, of predetermined thickness, with two planar end regions interconnected by an intermediate arched region, the latter being formed within the concave base of said groove, said completely formed crossover thereafter remaining on the frame member until subsequently transferred to an associated circuit.

4,200,976

SHAVING UNITS

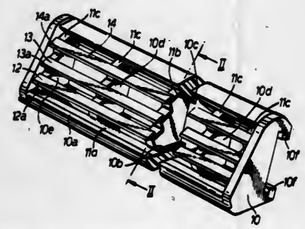
Trevor F. Gooding, Guildford, England, assignor to Wilkinson Sword Limited, England

Filed Nov. 14, 1977, Ser. No. 851,423

Claims priority, application United Kingdom, Nov. 16, 1976, 47631/76

Int. Cl.² B26B *21/06*

U.S. Cl. 30—47 **6 Claims**



1. A shaving unit comprising an open framework having a front edge, a rear edge, two end portions and at least one web extending between the front edge and the rear edge intermediate said end portions, a razor blade having a cutting edge spaced at a predetermined distance from said front edge, said front edge providing a guard surface for the cutting edge of said razor blade, the ends of said razor blade being secured to respective ones of said end portions and a portion of said razor blade intermediate its end being secured to said web, said web being positioned in a plane parallel to said end portions and being stepped in the area where said razor blade is secured thereto, the cutting edge of said razor blade protruding past the front edge of said step.

4,200,977

CUTTER KNIFE

Toshihiko Kageyama, and Hidehei Kageyama, both of Kawagoe, Japan, assignors to Kotobuki & Co. Ltd., Kyoto, Japan

Continuation of Ser. No. 862,913, Dec. 21, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 950,031

Claims priority, application Japan, Jan. 17, 1977, 52-4093; Feb. 21, 1977, 52-19882; Feb. 21, 1977, 52-19883; Feb. 21, 1977, 52-19884

Int. Cl.² B26B *1/08*

U.S. Cl. 30—162 **5 Claims**



1. A cutter knife comprising:

(a) a band-shaped blade with an opening at the rear end thereof;

(b) a flat tubular holder with front and rear planar sides for holding said blade between said sides so as to make it movable in an axial direction of said holder, said holder being provided with an axial elongated hole in the front side thereof and with a plurality of engaging surfaces disposed along the axial direction on the rear side thereof and in alignment with the axial elongated hole, and

(c) an operating member disposed in the axial elongated hole including a manually operating portion for operating a lug penetrating from the front side of the holder through said opening in said blade and selectively engaging one of said engaging surfaces.

4,200,978

SHIELD FOR GRASS TRIMMER

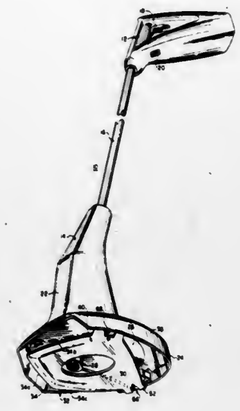
Edward A. Irelan; Robert L. Bartlett, and John W. Walch, all of Columbia, Mo., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Dec. 6, 1978, Ser. No. 966,879

Int. Cl.² H01G *3/06*

U.S. Cl. 30—276 **10 Claims**

7. A shield for a grass trimmer including a housing having a base wall, a motor mounted in said housing, a hub member of a predetermined height extending from the base wall of said housing, a cutting line element attached to said hub member and extending outwardly therefrom, said hub member being coupled to said motor and driven rotatably thereby, said housing including a rim extending about the perimeter of said base wall, the height of at least a portion of said rim being greater than said hub member and first mounting means and a locking rib mounted on said rim portion, said shield comprising a generally planar member having a shape similar to that of said base wall of said trimmer housing, said member including second mounting means for engagement with said first mounting means on said trimmer housing for attaching said shield to said trimmer housing in spaced relation from said base wall with said hub member interposed therebetween and a resilient locking lever including means for lockingly engaging said locking rib on said trimmer housing upon engagement of said first and second mounting means for removably securing said shield on said trimmer housing.



4,200,979

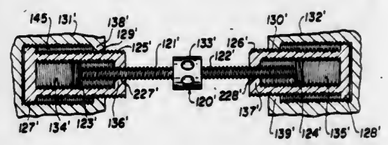
ORTHODONTIC BIASSING DEVICE WITH SCREW DISENGAGEMENT PREVENTING MEANS

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Filed Apr. 7, 1977, Ser. No. 785,587

Int. Cl.² A61C *7/00*

U.S. Cl. 433—7 **75 Claims**



1. An orthodontic biassing device comprising:

at least one body member having a threaded bore therein;

an elongated threaded member which is threadably engaged in said threaded bore of said body member, said elongated threaded member comprising an outer threaded member threadably engaged in said at least one body member and having a threaded internal bore therein, and an inner threaded member which is threadably engaged in said threaded bore of said outer member; and

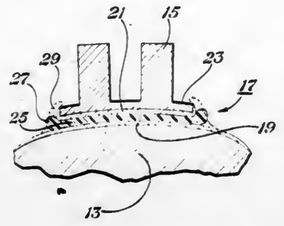
means adapted to couple said biassing device to at least one tooth for applying an orthodontic force to at least one tooth.

4,200,980

ORTHODONTIC FORMULATION AND METHOD

Reece W. Johnston, Fort Worth, Tex., assignor to Advance Dental Corporation, Fort Worth, Tex.

Filed Mar. 6, 1978, Ser. No. 883,408
Int. Cl.² A61C 7/00
U.S. Cl. 433—8 **22 Claims**



1. A method of affixing to at least one tooth a dental appliance, comprising the steps of;

a. effecting on a predetermined surface of the tooth to which a portion of a dental appliance is to be bonded a layer of catalyst that will effect polymerization of a bonding resin; said surface of said tooth being cleaned and dried so as to effect a good bond;

b. effecting on a cleaned and dried surface of at least a portion of said dental appliance that is to be bonded to said tooth a layer of said catalyst that would effect polymerization of said bonding resin; said surface of said at least a portion of said dental appliance being that which is to be disposed adjacent and bonded to said tooth;

c. applying intermediate said two layers of catalyst a layer of said bonding resin that will be polymerized by said catalyst and positioning said at least a portion of said dental appliance adjacent said surface of said tooth with the intermediate layer of resin between the two layers of catalyst on, respectively, said at least a portion of said dental appliance and said tooth surface so as to sandwich the thin layer of resin between the layers of catalyst and obtain polymerization of the resin and hence the necessary bonding of said at least a portion of the dental appliance to the surface of the tooth;

d. after allowing a cure time interval for completion of the cure of said bonding resin sufficiently that said at least a portion of the dental appliance is firmly affixed to said tooth, affixing the remainder, if any, of said dental appliance; and

e. a filler added to said resin to obtain the desired viscosity of said resin, to avoid creep and to obtain the desired wetability of the tooth and catalyst to said resin; said filler being present in a concentration in the range of 4–10 percent by weight.

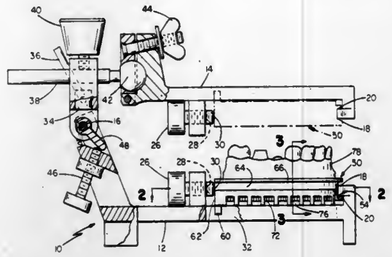
4,200,981

DENTAL ARTICULATOR AND TRAY SYSTEM

Ronald J. Fine, P.O. Box 2548, Framingham, Mass. 01701

Filed Sep. 26, 1977, Ser. No. 836,791
Int. Cl.² A61C 11/00
U.S. Cl. 433—60 **15 Claims**

1. A dental articulator and tray system in which said articulator comprises a pair of opposed tray mounting arms pivotally connected together and in which preformed dental model mounting trays are secured to said arms, each arm and the mounting tray secured thereto comprising cooperating means mutually engaged at positions spaced longitudinally along said arm adapted to resist lateral, vertical, and longitudinal movement of said tray relative to said arm, characterized in that said cooperating means comprises: an abutment on said arm having vertical side surfaces and a horizontal surface vertically spaced from and facing said arm and vertical side surfaces and a horizontal surface facing away from said arm on said tray respectively engaging said abutment side and horizontal surfaces to prevent lateral and vertical movement of said tray, said side and horizontal surfaces of said abutment and said tray being defined by a projection on one of said abutment and said tray extending into a recess on the other thereof; a clamp member spaced longitudinally along said arm from said abutment and



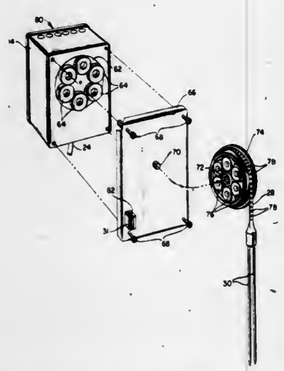
having an abutment surface releasably engaging a surface of said tray with force components directed toward said abutment and said arm to prevent longitudinal and vertical movement of said tray; and, adjacent said clamp member, mutually engageable means on said articulator and said tray to prevent lateral movement of said tray.

4,200,982

APPARATUS FOR AUTOMATICALLY SENSING AND RECORDING DATA IN A SEWAGE SYSTEM

Frederick N. Mueller, Dallas, and Ronald W. Chandler, Plano, both of Tex., assignors to Tetradyne Corporation, Carrollton, Tex.

Division of Ser. No. 803,773, Jun. 6, 1977, Pat. No. 4,136,561.
This application Sep. 29, 1978, Ser. No. 947,191
Int. Cl.² G01B 23/04
U.S. Cl. 33—126.6 **15 Claims**



7. A liquid level detector comprising:

a detector module mounted above the liquid level,

a reel rotatably mounted on said module, means in said module for rotating said reel,

a flexible elongated tape wound on said reel and having a lower portion hanging from said module,

probe means attached to said lower portion of said tape for detecting the presence of liquid,

apertures spaced along said tape,

means in said module responsive to said structure for determining the position of said probe means including a plurality of vertically spaced light emitting means, and

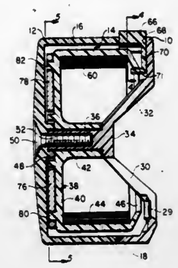
light responsive means for generating electrical signals representative of the passage of said apertures.

4,200,983

SELF-EXTENDING RULE

Robert F. West, West Simsbury, and James Elmore, Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Feb. 8, 1979, Ser. No. 10,302
Int. Cl.² G01B 3/02; B65H 75/16
U.S. Cl. 33—138 **9 Claims**



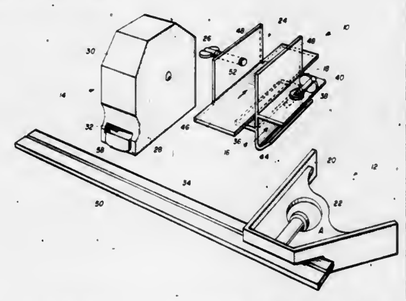
1. A case for a self-extending rule having a resilient blade which assumes a straight position in its relaxed state comprising a pair of case sections having flat top, bottom, and back walls, and arcuate side walls enclosing a generally cylindrical chamber, a front wall on the case having a generally arcuate opening in a lower sector thereof defined by a rim on the adjacent side wall and the edge of an reentrant web extending from the opposite side wall, the innermost portion of the web having a center post extending from its underside and projecting axially into the chamber, a cup having a hub rotatably mounted on the center post and having its open side facing the front wall, said cup being adapted to receive nested convolutions of the blade inserted endwise through said opening and underneath the edge of the web, a brake mounted for rectilinear movement in a radial opening in the flat top wall of the rule, said brake having a portion engageable with the open lip of the cup, and a spring biasing the brake into engagement with the cup.

4,200,984

DETACHABLE TOOL COMBINING BRACKET AND METHOD

Ray D. Fink, R. D. #1, Box 419, York Haven, Pa. 17370

Filed Mar. 12, 1979, Ser. No. 19,451
Int. Cl.² G01B 3/10; B43L 7/00
U.S. Cl. 33—138 **4 Claims**



1. A detachable tool combining bracket to interchangeably assemble in a relative right-hand or alternately a left-hand use application combined fixed spaced relationship of one to the other a combination square tool and a tape measure tool such that a tape measure rule of said tape measure tool is disposed to be retractibly extended perpendicularly away of the rectilinear external edge of a square rule of said combination square tool thereby enabling the quick and efficient accomplishment of measurement and marking off along a longitudinal workpiece at least one longitudinal dimension thereof perpendicular thereto, said bracket comprising in combination:

a. a support frame having interconnected horizontal and vertical members,

b. a first integrally formed channel member of said support frame adapted to receive and detachably retain therein by a first compressive means an adjustable head element right angle segment of said combination square tool,

c. a second integrally formed channel member of said support frame adapted to receive and detachably retain therein by a second compressive means a tape measure housing of said tape measure tool, and

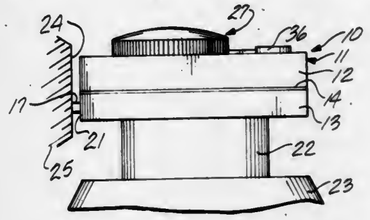
d. means to respectively effect self-supporting unattended balance upon said longitudinal workpiece, and longitudinally guide therealong, said combination square tool during extension of said tape measure rule in the accomplishment of perpendicular dimension measurement and marking functions being respectively an upwardly disposed laterally projecting flange integral to said support frame adapted to supportively engage the upward disposed surface of said longitudinal workpiece and a downwardly disposed flange integral to said support frame and communicating perpendicularly of said upwardly disposed laterally projecting flange to form a recessed right-angle configuration therewith adapted to cooperatively communicate with the longitudinally disposed outward projecting right-angle juncture surfaces of said longitudinal workpiece during measurement and marking displacement longitudinally thereof.

4,200,985

VISUAL INDICATOR FOR ALTERNATE UNITS OF MEASURE

Irven H. Culver, Playa del Rey, and Oleg Szymber, Palos Verdes, both of Calif., assignors to Primus Mfg., Inc., San Lorenzo, P.R.

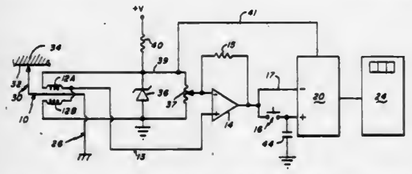
Filed Jan. 18, 1978, Ser. No. 870,466
Int. Cl.² G01B 3/12
U.S. Cl. 33—141 R **21 Claims**



1. Mechanical apparatus for alternately displaying measurements, in either one of two different units of measure, the apparatus having an input shaft rotatable about an axis fixed in a frame and comprising dimensionless rotary indicator means carried by the frame at a fixed location thereon to be visually observable by a user, the indicator means having rotatable input means and including scale means calibrated in units and selected fractions thereof, motion amplifying gear means carried by the frame and continuously coupled to the indicator means for operating the indicator input means faithfully in response to rotation of the apparatus input shaft, the gear means including alternate input gears rotatable about separate axes alternately engageable in a more directly driven relation than the other with a single common drive gear driven in response to rotation of the apparatus input shaft, and selectively operable mode selector means operable for engaging one or the other of the alternate input gears in said more directly driven relation, the gear ratios between the input gears and the indicator input means being different by an amount corresponding to the conversion factor between the two different units of measure, the scale means itself being dimensionless

with the same aspects thereof operable to display a measurement when one of the alternate input gears is more directly engaged with the apparatus input shaft as when the other alternate input gear is more directly engaged with the apparatus input shaft.

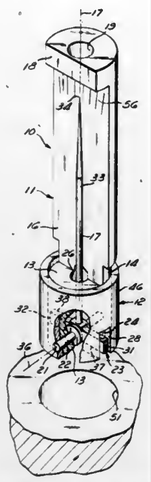
4,200,986
DIGITAL INDICATOR
Gary M. Ackerman, and Nicholas Edgington, both of Worcester, Mass., assignors to AIT Corporation, Worcester, Mass.
Filed Sep. 21, 1978, Ser. No. 944,347
Int. Cl.² G01B 7/34
U.S. Cl. 33—174 P **14 Claims**



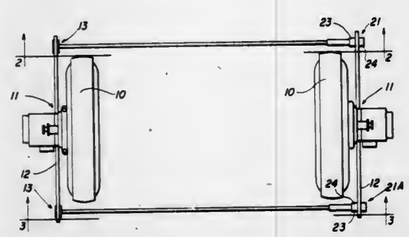
1. An indicator for digitally displaying measurement in surface deviation from a reference measurement, comprising;
cantilever means having contact means for contacting the surface to be measured,
means supporting the cantilever means so that the contact means is positioned to contact with the surface,
strain gage means associated with the cantilever means for providing a control signal,
ditigal meter and display means having differential inputs,
a hold means having one side coupled to one of the differential inputs,
and means coupling the control signal to the other side of the hold means and to the other of the differential inputs,
said hold means including means for receiving the control signal to establish a substantially constant level at said one of the differential inputs, both said differential inputs being initially nulled at the constant level and means for maintaining said one of the differential inputs at the substantially constant level during a measurement period, the control signal coupled to the other of the differential inputs providing a deviation reading at the display means.

4,200,987
GAUGE
Marvin G. Schmitt, 9475 Cormorant Cir., Fountain Valley, Calif. 92708
Filed Oct. 10, 1978, Ser. No. 949,746
Int. Cl.² G01B 3/42, 3/46, 5/08
U.S. Cl. 33—178 R **12 Claims**

1. A gauge comprising a support providing a cylindrical surface having a first axis, said cylindrical surface having a first diameter a sufficient amount smaller than the diameter of hole to be measured to permit easy insertion of said cylindrical surface into said hole, a paddle journaled on said support for pivotal movement about a second axis substantially perpendicular to said first axis and providing oppositely extending extensions, each extension providing an end face aligned with said cylindrical surface when said paddle is in a first position, said paddle providing a first diagonal having a length equal to the minimum diameter of a hole to be measured and a second diagonal equal to the maximum diameter of a hole to be measured, and operator means operable to pivot said paddle around said second axis while said paddle and cylindrical surface are in a hole to be measured from said first position toward a second position in which said first diagonal is perpendicular to said first axis and toward a third position in which said second diagonal is perpendicular to said first axis.

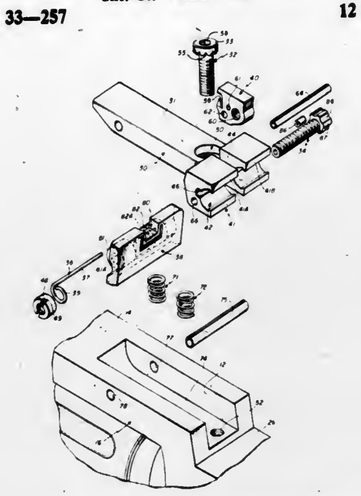


4,200,988
WHEEL ALIGNMENT CHECKING DEVICE
Lee Hunter, 13501 Ladue Rd., Creve Coeur, Mo. 63141
Filed Sep. 14, 1978, Ser. No. 942,315
Int. Cl.² G01B 5/24
U.S. Cl. 33—203.2 **6 Claims**



1. A vehicle wheel alignment checking device for determining the toe condition of a pair of vehicle wheels, said device comprising: support bars mounted one on each of the wheels in positions to extend rearwardly beyond the wheel treads and to extend forwardly beyond the wheel treads; retainer means carried by one of said support bars; measuring means carried by the other one of said support bars in opposed alignment with said retainer means, said measuring means being a reel tape having casing means enclosing the tape and from which the tape is extendable to have an end held by said opposed retainer means; and measurement calculating means cooperating with said measuring means in its extended position for determining the difference in the measured distance rearwardly and forwardly of the wheel treads, said calculating means including an index member establishing the measurement forwardly of the wheel treads, said index member being mounted adjacent said casing means to be adjacent the path of tape extension toward said retainer means; and a member positioned adjacent and movable relative to said index member for displaying the measurement obtained rearwardly of the wheel treads in relation to said index member.

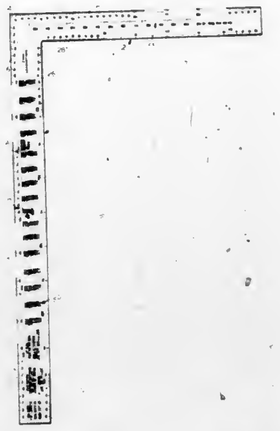
4,200,989
GUN SIGHT
Paul E. Brouthers, Monson, Mass., assignor to D.W.A. Associates, Inc., Monson, Mass.
Filed Mar. 23, 1979, Ser. No. 23,259
Int. Cl.² F41G 1/16
U.S. Cl. 33—257 **12 Claims**



1. A rear sight for a hand gun accommodated in a slot in the top strap of the gun frame over the cylinder opening comprising:
a somewhat elongated body disposed in the frame slot having means pivoting the body from the frame at its front end, a horizontal dovetail channel and a centrally disposed vertical slot,
an elevation screw,
a windage screw,
a sighting blade having means slideably interlocking with the dovetail channel of the body and means for receiving the windage screw in a horizontal attitude,
a windage plate disposed in the vertical slot in the body and having means for threadedly receiving the windage screw,
said body having means for receiving the elevation screw in a vertical attitude,
said elevation screw accommodated in a tapped hole in the gun frame rearwardly of the cylinder opening,
the pivot for the body being at a location spaced forwardly of the elevation screw and over the cylinder opening.

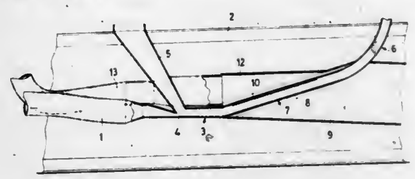
4,200,990
METRIC RAFTER SQUARE AND METHOD OF USING SAME
Robert F. West, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Oct. 19, 1978, Ser. No. 952,691
Int. Cl.² B43L 7/00
U.S. Cl. 33—476 **15 Claims**

1. A metric rafter square comprising a body and a tongue intersecting at a right angle at one end thereof, said body and tongue having respective lengths of at least 400 and 300 millimeters and scales graduated in millimetres along the outer edges thereof commencing at said intersection of the outer edges of said tongue and body, said body having between the edges thereof a rise per metre table and said tongue having a rectilinearly extending rise per metre scale thereon with graduations and with numerical values increasing from said intersection towards the opposite end thereof, said rise per metre table being based upon a preselected pivot point along said body scale within the range of 175–225 millimetres, the numerical values of said rise per metre scale of said tongue being cooperatively compressed along the length thereof and being greater than the actual values for the unit length designated thereby and cooperating with the values set forth in said rise per metre table to establish the required angles between said preselected



pivot point on said body scale and a cooperating point on the tongue scale aligned with the graduation on said rise per metre scale determined from said table.

4,200,991
DRIER FOR SMALL SIZED MATERIALS
Domenico Gazzoni, Como, Italy, assignor to Sorema, Srl, Erba, Italy
Filed Jun. 19, 1978, Ser. No. 916,862
Int. Cl.² F26B 17/00
U.S. Cl. 34—57 R **5 Claims**



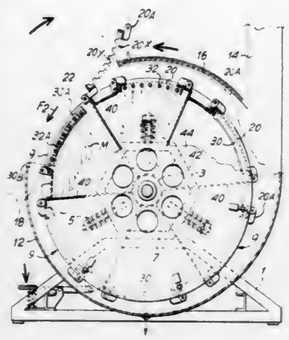
1. A drier for lightweight material of small particle size comprising a main air stream duct for introducing a main air stream for conveyance, a plenum communicating with said main air stream duct, a hopper communicating with said plenum for introducing material, said hopper being placed at the outlet of said main air stream duct, a duct communicating with said plenum for conveyance of the material by means of said air stream from said plenum, said conveyance duct forming an acute angle with said main air stream duct and having a gridlike wall for retaining the material and deflecting it in the direction of conveyance, and at least one secondary airflow duct communicating with said conveyance duct through bores formed through a wall thereof opposite to the gridlike wall aforesaid for introducing a secondary airflow, said bores being so formed that said secondary stream enters the conveyance duct by forming an acute angle with said gridlike wall and flows in a direction concordant with that of the main air stream.

4,200,992

DRIERS FOR DRYING SKEINS OF YARNS AND OTHER PURPOSES

Antonio Zumpano, Via del Pozzo 13, Catena, Quarrata, Pistoia, Italy

Filed Mar. 9, 1979, Ser. No. 19,243
Claims priority, application Italy, Mar. 16, 1978, 9378 A/78
Int. Cl.² F26B *11/04*
U.S. Cl. 34—58 **6 Claims**



1. In a rotary drier suitable for drying skeins of yarn suspended on rods, a rotor mounted for rotation about a horizontal axis, said rotor including means defining a shell and enclosing a hollow interior and opening means defined in said shell to provide access to the interior of the rotor, doors for closing the openings, and support means adjacent the openings for receiving the ends of said rods with the skeins suspended thereon, and within said shell and means for rotating said rotor to provide a centrifugal effect and for effecting air circulation through said hollow interior for drying.

4,200,993

APPARATUS FOR DRYING BOOTS

Roger Blanc, Izeaux, (Isere), and Serge Jorcin, Corenc Montfleury, (Isere), both of France

Filed Jul. 14, 1978, Ser. No. 924,713
Claims priority, application France, Oct. 24, 1977, 77 32832
Int. Cl.² F26B *9/10*
U.S. Cl. 34—104 **9 Claims**



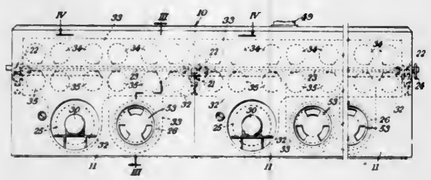
1. An apparatus for drying boots, said apparatus comprising:
a hollow housing having an upright side wall formed with a plurality of upper pairs of apertures and a plurality of lower pairs of apertures;
means including a blower in said housing for expelling air from said apertures;
a plurality of upwardly inclined tubes each having a lower end secured to said housing over one aperture of a respective pair of said apertures and an upper end formed with an outlet hole, each of said tubes and the respective one aperture being positioned with respect to the other aperture of the respective pair so that when a boot is hung over the tube heated air from the other aperture of the respective pair passes over the boot; and
means including an upwardly open trough offset from said housing and extending under said upper pairs of apertures for catching liquid dripping from boots over the respective tubes and for conducting said liquid away from boots on the tubes of the underlying lower apertures.

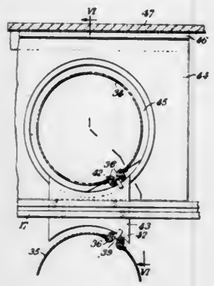
4,200,994

DRYING APPARATUS

Leslie Mellor, Blackburn, England, assignor to Edgar Pickering (Blackburn) Ltd., Lancashire, England

Filed Jul. 18, 1978, Ser. No. 925,876
Claims priority, application United Kingdom, Jun. 28, 1978, 33010/78
Int. Cl.² F26B *13/02*
U.S. Cl. 34—158 **4 Claims**





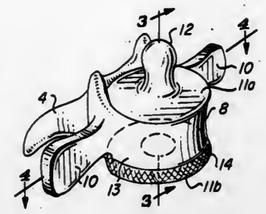
1. A drying apparatus, for use in drying tufted carpets following application of latex thereto, comprising a housing for engaging the edges of the carpet during its passage through the housing, one stenter chain occupying a fixed position in the housing and the other stenter chain being laterally adjustable to suit the width of the carpet, said housing including a space above the carpet for circulation of hot air, tubes in the housing which are disposed above and below the stenter chains and extend transversely to the direction of travel of the carpet, the tubes having longitudinal slots constituting nozzles which direct hot air onto the top and bottom surfaces of the carpet, means for blowing hot air into the tubes, tapes coupled to the adjustable stenter chain and movable with it to blank off the portions of the slots which are offset from the carpet and a screen mounted for lateral movement with said adjustable stenter chain to increase and decrease said space in accordance with the adjustment imparted to said chain.

4,200,995

JOINT CONSTRUCTION FOR SKELETAL MODEL

Phyllis L. Trella, 2264 Calle Iglesia, Mesa, Ariz. 85202

Continuation-in-part of Ser. No. 772,579, Feb. 28, 1977, abandoned. This application May 25, 1978, Ser. No. 909,533
Int. Cl.² G09B *23/34*
U.S. Cl. 35—17 **10 Claims**



1. A movable joint construction for skeletal models, said construction comprising:
a plurality of simulated skeletal members each of which having one or more mating surfaces,
each of said skeletal members corresponding to a single skeletal element of a real skeletal system which said construction simulates,
each said skeletal member further fashioned of a deformable plastic material with connection means formed integrally therein,
said connection means capable of snappably attaching one of said skeletal members to a second adjacent skeletal member at said respective mating surfaces,
said connection means comprising a plurality of emanating connection members and a plurality of receiving socket portions capable of snappably receiving said respective connector members of an adjacent skeletal member,
said connection means positioned and dimensioned to permit relative movement between said skeletal members in a manner characteristic to the action of the real skeletal elements being simulated thereby;
at least one of said first or second adjacent skeletal members having proximate its respective mating surfaces thereof a simulated cartilage portion,
said simulated cartilage portion being integrally formed as part of one or more of said plurality of simulated skeletal members,
said adjacent skeletal members sandwiching said cartilage portion therebetween when said one skeletal member is snappably attached to said second skeletal member.

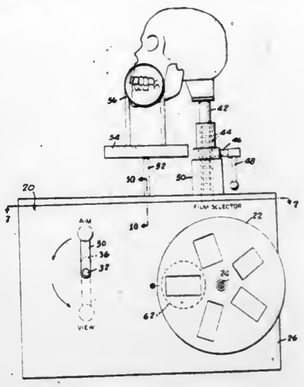
4,200,996

TEACHING DEVICE AND METHOD FOR DENTAL X-RAY TECHNIQUES

Albert G. Richards, 395 Rock Creek Dr., Ann Arbor, Mich. 48104

Filed Jul. 21, 1978, Ser. No. 926,909
Int. Cl.² G09B *23/28*
U.S. Cl. 35—17 **18 Claims**

3. A teaching device for the development of skill in X-ray techniques which comprises:
(a) an object subject to radiographic examination,
(b) a plurality of displayable unit X-ray records derived from X-ray exposures of said object in a multiplicity of incremental varying positions,
(c) a first means forming an informational storage bank of said plurality of unit records,
(d) a second means to simulate an X-ray source,
(e) a third means movably to mount said second means adjacent a representation of said object,
(f) fourth means to display a single unit record from said storage bank, and



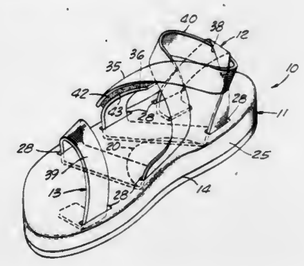
(g) selector means responsive to the positioning of said second means to position for display a particular single unit record from said storage bank.

4,200,997

SANDAL

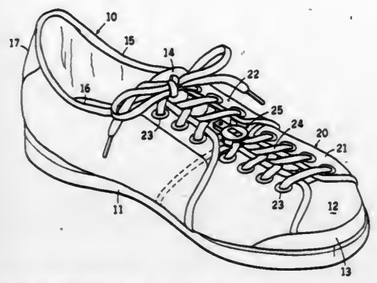
Myron G. Scheinhaus, 11213 Tiara St., North Hollywood, Calif. 91601, and Paul R. Jacobson, 10641 Stagg St., Sun Valley, Calif. 91352

Filed Feb. 21, 1978, Ser. No. 879,139
Int. Cl.² A43B *3/12*
U.S. Cl. 36—11.5 **22 Claims**



1. A sandal comprising:
a sole assembly having an insole and an outsole provided with first and second flattened passages arranged at an acute angle in the same direction crosswise of the mid-length of said sole assembly;
first and second straps having their remote ends secured to the opposite edges of said sole assembly adjacent the opposite ends thereof;
said first strap having the rear end portion thereof forming a heel-embracing loop and its forward end portion passing through said first passage with the free end thereof exposed adjacent one side of said sole assembly;
said second strap having its forward end portion forming a toe-embracing loop before entering said second passage and having its rear end portion operatively connected with said heel-embracing loop and so arranged as to form a figure-eight loop about the wearer's heel and arch; and
means for releasably securing the free ends of said first and second straps together.

4,200,998
LACING ASSEMBLY FOR A SHOE
Thomas M. Adams, c/o Kaepa, Inc., 10203 IH 35 North, San Antonio, Tex. 78233
Filed May 30, 1978, Ser. No. 910,774
Int. Cl.² A43B 11/00; F16G 11/04
U.S. Cl. 36—50 2 Claims



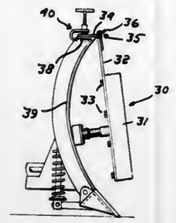
1. In a lacing assembly for a shoe:
(a) side quarters including separate lower and upper vamp sections,
(b) a single, continuous lace having only one pair of ends, the single lace lacing both and extending between the lower and upper vamp sections, and having the one pair of lace ends selectively tied at the top of the upper vamp section, and
(c) a clamp interconnecting the single lace at the top of the lower vamp section for selectively fixing or loosening the lace at the top of the lower vamp section and adjusting the fit of the lower vamp section for the comfort of the wearer independently of the upper vamp section, the said one pair of lace ends being separately, selectively tied at the top of the upper vamp section and adjusting the fit of the upper vamp section for the comfort of the wearer independently of the lower vamp section.

4,200,999
PIVOTABLE MEANS FOR DECREASING DRAG EFFECTS ON A GENERALLY CYLINDRICAL DREDGE PIPE
John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.
Filed May 30, 1978, Ser. No. 910,424
Int. Cl.² E02F 3/90
U.S. Cl. 37—54 16 Claims



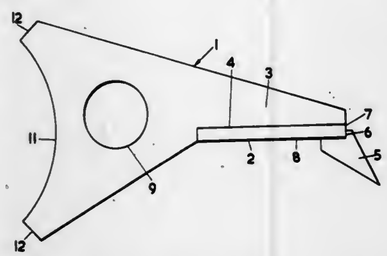
1. In a length of pipe having a longitudinal axis and intended to be moved through the water in a direction transverse to the longitudinal axis, the improvement comprising a flat relatively thin plate pivotally connected to the length of pipe, the plate pivoting about an axis located radially outwardly of the pipe circumference and substantially parallel to the longitudinal axis of the pipe and the plate extending along at least a major portion of the length of the pipe, whereby the drag and vibration stress exerted on the pipe during such transverse motions through water is substantially reduced.

4,201,000
SNOW PLOW ATTACHMENT
George H. Stanford, 191 Spurwink Rd., Scarborough, Me. 04074
Continuation-in-part of Ser. No. 830,569, Sep. 6, 1977, abandoned. This application May 30, 1978, Ser. No. 910,373
Int. Cl.² E02F 3/76
U.S. Cl. 37—117.5 11 Claims



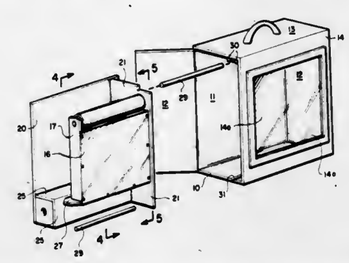
1. An attachment for a concave snow plow blade to enable a vehicle equipped with such a plow to push a bumper-equipped vehicle, said attachment including a first part that is to engage the vehicle bumper and of substantial vertical extent, hinge means detachably attaching said part at least to the upper portion of the blade in a position such that only the vehicle bumper is engaged during the pushing thereof, a second part and means connecting said second part to said first part to extend rearwardly thereof, said second part including a member engageable with a zone of substantial length in the central portion of the blade, vertically considered, when the first part is attached to the plow blade and then operable to brace the first part against any material rearward movement from said position while a vehicle is being pushed, the width of said first part less than the vertical extent thereof and the length of said member greater than the width thereof so as to then prevent any material lateral displacement of said second part.

4,201,001
EARTH MOVING EQUIPMENT
Robert L. Croucher, Sherwood, Martins Hill La. Burton, and Ernest G. Robson, 19 Seafield Rd., Friars Cliff, both of Christchurch, Hampshire, England
Continuation of Ser. No. 744,347, Nov. 23, 1976, abandoned, which is a continuation of Ser. No. 568,813, Apr. 17, 1975, abandoned. This application Jun. 12, 1978, Ser. No. 914,690
Claims priority, application United Kingdom, Jan. 22, 1975, 2480/75
Int. Cl.² E02F 3/24
U.S. Cl. 37—190 1 Claim



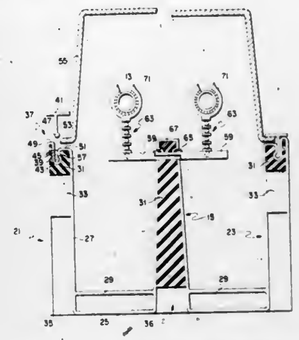
1. An earth excavating machine adapted to cut, break and excavate soil and minerals over a wide swathe incorporating a cutting tool assembly comprising an axially rotatable drum member and a plurality of cutting tools mounted on and extending radially from said rotatable drum member, in evenly spaced circumferential and axial relationship and distributed substantially symmetrically in pairs about the plane passing through the mid-point of the rotatable drum member perpendicular to the axis thereof, each cutting tool comprising a support arm narrow in the axial direction having an inner end fixed to the rotatable member and an outer end remote from the rotatable member, a shovel member having an unenclosed, flat working face relatively wide with respect to the narrow dimension of said support arm mounted at the outer end of the support arm, and a plurality of cutting teeth disposed in parallel spaced relationship fixed to each shovel member and extending radially outwardly therefrom forwardly of its working face, with the teeth of circumferentially successive cutting tools being offset from one another in the axial direction, the shovel member being mounted with its flat working face in a plane radial with respect to the axis of rotation of said rotatable member and being substantially free of projections other than said teeth, and means for guiding excavated material towards a desired location, said means comprising a deflector casing which partially surrounds the cutting tool assembly from the level of the unexcavated earth in front of the cutting tool assembly upwardly and over said assembly and is so shaped and positioned in relation to the cutting tool assembly that the gap between the tips of the cutting teeth and the inner surfaces of the casing gradually increases in the intended direction of rotation of the cutting tool assembly, the rear edge of said casing lying rearwardly of the path of movement of the cutting teeth of said cutting tools so that, as the machine moves forward and the cutting tool assembly rotates, excavated material is carried upwardly and then rearwardly over the cutting tool assembly between said assembly and the casing.

4,201,002
CONTINUOUS VISUAL DISPLAY APPARATUS
Edson K. Barton, 552 W. 750 S., Orem, Utah 84057
Filed May 20, 1977, Ser. No. 798,892
Int. Cl.² G09F 11/12
U.S. Cl. 40—524 10 Claims



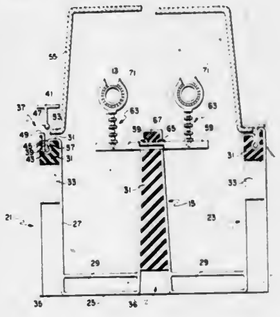
9. A display apparatus for continuously exhibiting matter on an endless belt or the like, comprising a cabinet having a bottom forming a floor inside of the cabinet, a back panel, a front panel, at least a portion of said front panel comprising a display area, and side panels, at least one of which opens to give access to the inside of the cabinet; an essentially flat plate in said cabinet, said plate being positioned flatwise directly behind and spaced from the display area in said front panel, with the bottom edge of said plate being spaced from the floor of the cabinet, an essentially horizontally disposed drive roller positioned along the top of said plate, with the longitudinal axis of said drive roller being essentially parallel with the plane of said plate; mutually spaced, retaining members positioned above the drive roller; a nip roller positioned in the space between the retaining members and supported by the drive roller; means for driving the drive roller; a storage space behind the flat plate; a floating idler roller located below the flat plate; an endless display belt or web continuously movable in a circuitous path from the storage space to and beneath said floating idler roller, then between the flat plate and the display area in said front panel to the drive roller, then between the drive roller and the nip roller, and back to the storage space wherein the excess slack in the belt or web is stored in loose folds; and means for biasing the floating idler roller so that it cants toward the back of the apparatus.

4,201,003
APPARATUS FORMING THREE DIMENSIONAL SIGN DISPLAY CHARACTER
Frank A. Witt, Lexington, S.C., assignor to Colite Industries, Inc., West Columbia, S.C.
Continuation of Ser. No. 700,218, Jun. 28, 1976, Pat. No. 4,122,616. This application Oct. 16, 1978, Ser. No. 951,511
Int. Cl.² G09F 13/04
U.S. Cl. 40—545 8 Claims



1. In a sign character element of the type housing gas-filled tubes, or the like, spaced above the base of the character element for luminous sign letter display, a tube supporting structure comprising:
standard means for defining a supporting structure, said standard means having a bottom portion unitarily molded with the base of a sign character element, and formed of a shape for rising upward from the base to provide support at a distance spaced above the base;
platform means rotatably mounted to said standard means at a position spaced above the base, said platform means rotatable about a first axis of rotation transverse to the base; and
tube stand means rotatably mounted to said platform means for rotation about a second axis of rotation spaced laterally with respect to said first axis of rotation, said tube stand means for supporting a gas-filled tube.

4,201,004
APPARATUS FORMING THREE DIMENSIONAL SIGN DISPLAY CHARACTER
Frank A. Witt, Lexington, S.C., assignor to Colite Industries, Inc., West Columbia, S.C.
Continuation of Ser. No. 700,218, Jun. 28, 1976. This application Oct. 16, 1978, Ser. No. 951,512
Int. Cl.² G09F 13/04
U.S. Cl. 40—545 3 Claims



1. In a sign character element of the type housing gas-filled

tubes, or the like, spaced above a base of the character element for luminous sign letter display, a tube supporting structure comprising:

a hollow light fixture support standard thinly molded from a plastic-type material;

and including an indentation formed in said support standard in the area of the top thereof;

flexible material disposed within the hollow of said support standard in the area of said formed indentation, said flexible material compressible within the hollow for providing an expansive force against the wall of the standard when said flexible material is compressed by a force applied to the wall of the standard; and

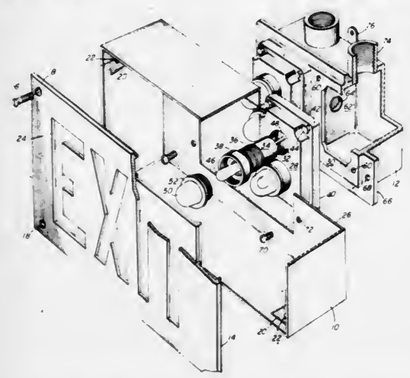
means coupled to said standard at said indentation for applying a force to the wall of the standard for compressing said flexible material thereby coupling said means to said standard said means further including tube securement means for securing a gas-filled tube with respect to said support standard.

4,201,005

EMERGENCY ILLUMINATION APPARATUS

James A. Hunt, 19 Frost La., Marblehead, Mass. 01945

Filed May 5, 1978, Ser. No. 903,086
Int. Cl.[2] G09F *13/04*
U.S. Cl. 40—570 **18 Claims**



1. An electrical illuminated sign apparatus for emergency illumination in hazardous atmosphere locations comprising:

(a) a housing comprising a forward compartment, a substantially sealed rear compartment, and a divider wall between them having sealed lighting sockets for receiving a plurality of illuminating lamps on the forward compartment side;

(b) said forward compartment having a substantially opaque forward face with translucent lettering or sign areas; and,

(c) said rear compartment having sealed electrical connections to at least two independent power sources.

4,201,006

OSCILLATING FLASHER FOR DEEP WATER FISHING

Milo N. Wetherald, P.O. Box 1053, Port Angeles, Wash. 98362

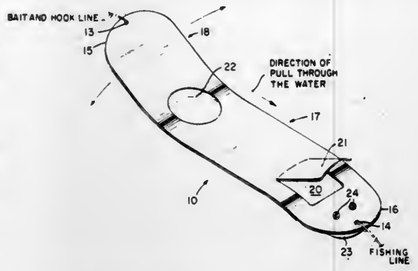
Filed Jun. 2, 1978, Ser. No. 911,968
Int. Cl.[2] A01K *85/04*
U.S. Cl. 43—42.06 **9 Claims**

1. A flasher for attracting fish comprising:

an elongated, non-floatable planar body whose length-to-width ratio ranges from 3:1 to 5:1 having an upper surface and lower surface, a flat center portion, a downstream portion curved upwardly across the entire width thereof relative to the center portion and an upstream portion curved downwardly across the entire width thereof relative to the center portion,

means for securing a fishing line to the upstream end of the flasher and for securing bait and a fish hook to the downstream end of the flasher, and

a substantially square opening in the upstream portion of the body having a width and length greater than half the width of the body and a flap substantially the size of the opening connected to the downstream side of the opening,



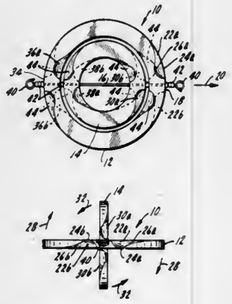
the flap extending upwardly on the upper side of the body of the flasher at an angle with respect to the flat center portion of the body of about 20° to cause the flasher body, when pulled through the water, to oscillate horizontally about a vertical axis extending through its point of connection to the fishing line.

4,201,007

FISHING LURE

Arthur Backstrom, 7204 S. Avers Ave., Chicago, Ill. 60629

Filed Aug. 28, 1978, Ser. No. 937,044
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.12 **2 Claims**



1. A fishing lure comprising:

a rod;

an outside circular spinner rotatably mounted on the rod and having pairs of primary and secondary bevelled surfaces located on the front outside and following inside rim respectively, each pair being located adjacent to and on either side of the rod, the primary and secondary surfaces on a first side of the rod beginning at the rim on a first face of the spinner and angling across the spinner thickness to a second spinner face while the primary and secondary surfaces on the second side of the rod begin at the rim of the second spinner face and angle across the spinner thickness to the first face; and

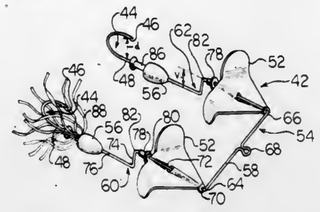
an inside circular spinner rotatably mounted on the rod and having pairs of primary and secondary bevelled surfaces located on the front outside and following inside rim respectively, each pair being located adjacent to and on either side of the rod, each bevelled surface of the inside spinner angling across the spinner thickness in the opposite direction from the correspondingly located surface on the outside spinner so that the spinners rotate in opposite directions about the rod.

4,201,008

FISHING LURE AND SPINNER

James M. Sparkman, Rte. 1, Box 118-B, Brookline, Mo. 65619

Filed Jan. 18, 1979, Ser. No. 4,555
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—43.13 **10 Claims**



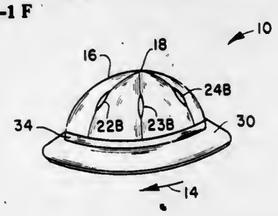
1. A spinner for use on a fishing lure comprising a blank made from a sheet of metal having lugs at opposite ends thereof bent in parallel planes and at substantially right angles to the plane of said blank and on opposite sides thereof, said lugs having holes therethrough for revolvably supporting said spinner upon a supporting wire, a substantially circular opening through said blank spaced approximately equidistant from said lugs, a pair of concial protrusions extending outwardly from the plane of said blank, each of said protrusions having its base portion at said opening and its vertex adjacent to said lug, each of said protrusions being on opposite sides of said blank from the lug adjacent thereto, and having laterally directed curved and oppositely bent impeller blades extending outwardly from a line connecting said holes.

4,201,009

COMBINED HAT AND THROWABLE AMUSEMENT DEVICE

Len Burridge, Jr., Longwood, Fla., assignor to Ronald G. Haag, Haines City, Fla.

Filed Jul. 17, 1978, Ser. No. 924,969
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—1 F **7 Claims**



1. A combined hat and throwable amusement device, comprising in combination:

a hat crown having an inverted bowl shape with a top region and a lower terminating edge;

a substantially symmetrical hat brim extending from said terminating edge of said hat crown;

said hat crown and said hat brim being a flexible and a water-absorbent material for increasing the weight of the hat upon immersion in water;

the increased weight of the hat as a result of the absorbed water increasing the aerodynamic stability of the device;

a plurality of slot apertures uniformly located about said hat crown with each of said slot apertures extending only partially between said top region and said lower terminating edge enabling air current to flow through said plurality of slot apertures to increase the aerodynamic stability of the device when the device is sailed through the air;

said plurality of slot apertures slightly opening as a result of the centrifugal force of the rotation of the device as the device sails through the air; and

a hat band extending about said hat crown comprising a buoyant material to provide flotation to the device upon immersion of the device in water

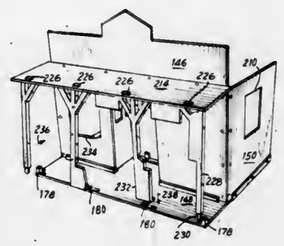
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4,201,010

TOY HOUSE WITH ROOF-SUPPORTING STANCHIONS

D. David Abrams, Kowloon, Hong Kong, assignor to Mego Corp., New York, N.Y.

Division of Ser. No. 777,850, Mar. 15, 1977, Pat. No. 4,107,869.
This application Mar. 13, 1978, Ser. No. 885,750
Int. Cl.[2] A63H *33/08*
U.S. Cl. 46—12 **8 Claims**



1. A toy house assembled from a plurality of panels and comprising a plurality of flat planar panels, said panels including

(a) a first panel, said first panel being a vertically oriented panel.

(b) a second panel, said second panel being horizontally oriented for assembly and including a central floor section and two lateral sections on opposite sides of the central floor section, each lateral section being connected along one edge thereof to said central floor section by a bendable connection, so that said lateral sections are capable of being elevated to form upright wall sections perpendicular to said central wall section.

(c) connection means along one side edge of each upright wall section and mating connection means along both vertical edges of said first panel, so that said first panel and said upright wall sections are connectable perpendicular to each other,

(d) a third panel, said third panel being a roof panel mountable along one edge thereof to said first panel and supported along the opposite edge by a plurality of stanchions, each of said stanchions extending vertically from attachment of said third panel to mounting means along an edge of said second panel, and

(e) the matable connection means provided so that the first panel and each of the upright wall sections are connectable perpendicular to each other comprising a plurality of spaced apart L-shaped protrusions along each vertical edge of the first panel which are slidable into lock position in corresponding spaced apart L-shaped protrusions along one side edge of each of the upright wall sections.

4,201,011

TOY MOTORCYCLE

John S. Cook, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 5, 1978, Ser. No. 922,149
Int. Cl.[2] A63H *29/20*
U.S. Cl. 46—209 **15 Claims**

12. In a toy motorcycle, the combination comprising:

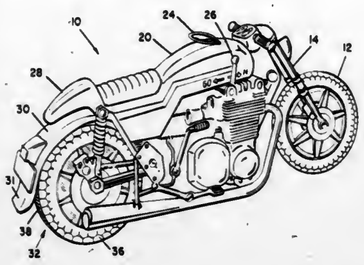
a framework;

a front wheel rotatably mounted on said framework;

a rear drive wheel assembly coupled to said framework;

manually operable motor means mounted at least partially within said framework;

gear means interconnecting said manually operable motor means and the drive wheel of said drive wheel assembly for rotating the drive wheel in response to operation of said motor means; and



a weighted fender member mounted on said framework above and rearwardly of said drive wheel, said fender member having a weight sufficient to enable said toy motorcycle to commence travel with said front wheel elevated when said motor means are operative with the drive wheel engaging a supporting surface.

4,201,012

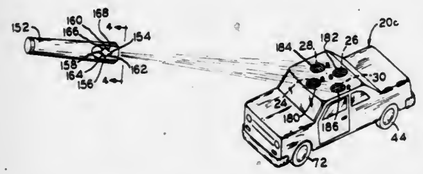
REMOTE CONTROL VEHICLE

Harry L. Marshall, 14330 Zubrick Rd., Roanoke, Ind. 46783

Filed Apr. 13, 1978, Ser. No. 895,859

Int. Cl.² A63H *30/00*

U.S. Cl. 46—256 **10 Claims**



1. A remote controllable vehicle apparatus comprising:

a vehicle body having a self-contained power supply mounted therein;

first, second, third, and fourth light responsive members mounted on said body and spaced from one another to be selectively illuminated;

first motor means coupled to said power supply in motor driving power receiving relation for providing a rotative drive in first and second rotative directions;

steering means being mounted to said vehicle body for steering said vehicle body in rightward and leftward directions;

said first motor means being drive-coupled to said steering means to steer said vehicle body in a rightward direction upon a first rotative drive direction and in a leftward direction upon a second rotative drive direction;

a manually pointable light source for selectively illuminating said members;

said first and second light responsive members being coupled to said first motor means and said power supply to couple said first motor means to said power supply to provide a rotative drive in said first direction when said first member is illuminated by said light source and to provide a rotative drive in said second direction when said second member is illuminated by said light source;

a second motor means coupled to said power supply in motor driving power receiving relation for providing a rotative drive in first and second rotative directions;

propelling means being mounted to the vehicle body for propelling said vehicle body in forward and reverse directions;

said second motor means being drive-coupled to said propelling means to propel said vehicle body in a forward direction upon a first rotative drive direction of said second motor means and in a rearward direction upon a second rotative drive direction of said second motor means;

said third and fourth light responsive members being coupled to said second motor means and said power supply to couple said second motor means to said power supply to provide a rotative drive in said first direction of said second motor means when said third member is illuminated by said light source and to provide a rotative drive in said second direction of said second motor means when said fourth member is illuminated by said light source.

4,201,013

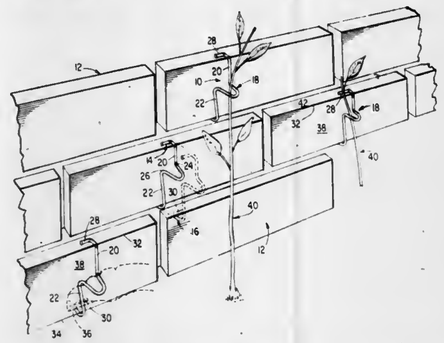
VINE SUPPORT AND/OR GUIDE CLIP FOR INSTALLATION ON BRICK WALLS

Raymond E. Robbins, Rte. 1, Lowell, Ark. 72745

Filed May 10, 1978, Ser. No. 904,394

Int. Cl.² A01G *9/12*

U.S. Cl. 47—44 **7 Claims**



1. A support and/or guide clip for climbing vines, especially for masonry building walls consisting of individual generally rectangular masonry units and comprising a unitary, resilient wire clip having an intermediate generally horizontally outwardly projecting return bent formation having spaced ends, a pair of oppositely directed, generally vertically oriented offset arm portions at the spaced ends of said return bent formation, said arm portions having terminal ends and a pair of angular formations at the terminal ends of said arm portions extending in a plane generally normal thereto but in a direction opposite that of said return bent formation, said angular formations each comprising a first leg at the terminal ends and a second leg, the second legs of said angular formations extending in relative opposite directions and having free ends terminating in a location offset one from the other taken along a vertical plane, each angular formation occupying a horizontal plane generally normal to its respective arm portion, said arm portions being arranged along first and second intersecting planes, the intersection of which defines an obtuse angle whereby the clip is bowed inward yet is spreadable for installation engaged across the face of the masonry unit with the angular formations engaged on the lengthwise generally parallel side surfaces of the masonry unit with the arm portions generally parallel and the return bent formation defining with the face of the masonry unit, a loop to receive the stem of a climbing vine therethrough.

4,201,014

OPERATING MECHANISM FOR A MOTORCAR WINDOW

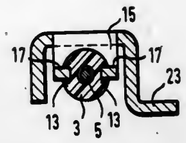
Peter Hess, Coburg, Fed. Rep. of Germany, assignor to Metallwerk Max Brose GmbH, Coburg, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,138

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1976, 2656428

Int. Cl.² E05F *11/48*

U.S. Cl. 49—325 **9 Claims**



1. In a window operating mechanism including a window carrier movable in a predetermined path, a driving device, an elongated bowden cable including a tension member and a compression member, said tension member drivingly connecting said carrier and said device, and said compression member being formed with a longitudinal bore therethrough receiving said tension member, and retaining means associated with respective, longitudinally terminal portions of said compression member adjacent said carrier and said device respectively for abuttingly retaining the associated portions, the improvement which comprises:

(a) said compression member essentially consisting of flexible material, and at least one of said longitudinally terminal portions thereof being of non-circular cross section,

(b) the retaining means associated with said one portion including a retaining member conformingly engaging said one portion and thereby preventing angular movement of the engaged portion about an axis longitudinal of said bowden cable, and

(c) said retaining member being formed with a recess receiving said one longitudinally terminal portion, and said retaining means including yieldably resilient means opposing longitudinal movement of said compression member inward of said recess.

4,201,015

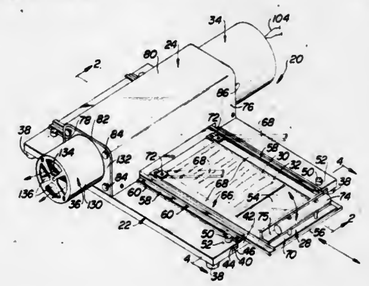
FILM IMAGE REMOVAL PROCESS AND APPARATUS

William K. Reim, 20 Oak Ave., Penndel, Pa. 19047

Filed Jul. 20, 1978, Ser. No. 926,464

Int. Cl.² B24B *7/02*

U.S. Cl. 51—74 R **8 Claims**



1. Apparatus for removing an image disposed on a surface of a section of film comprising a housing, carrier means and scaling means, said scaling means comprising a rotatable wheel about which a strip of abrasive material is releasably secured by clamping means, said carrier means comprising a tray arranged for reciprocation into said housing and under said wheel, with the distance said tray is disposed below said wheel being adjustable, said tray including a clamping means in the form of a hingedly secured generally U-shaped frame comprising a pair of side legs and a cross-piece defining an opening, said frame arranged for disposition over edge portions of said film section to secure said film section on said tray with its image carrying surface exposed in the opening, said carrier means being moved relative to said scaling means to carry said film section into contact with said scaling means, whereupon said scaling means scraps along the exposed surface of said film section to remove the image therefrom.

4,201,016

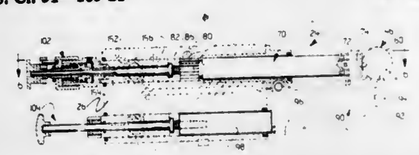
APPARATUS FOR GRINDING A WORKPIECE

Calvin K. Kirk, Shrewsbury; Glover C. Joyce, and Francis L. Messier, both of Worcester, all of Mass., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Mar. 16, 1978, Ser. No. 886,996

Int. Cl.² B24B *5/04*

U.S. Cl. 51—105 SP **16 Claims**

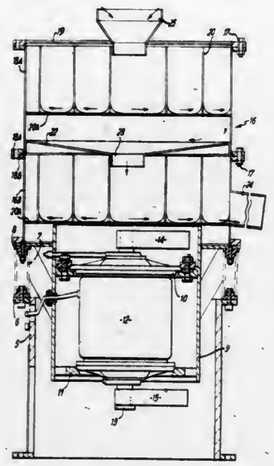


1. An apparatus for use in an initial grinding operation in which a workpiece is ground to a first diameter and in a second grinding operation in which the workpiece is ground to a second diameter which is smaller than the first diameter to which the workpiece is ground during the initial grinding operation, said apparatus comprising a base, a movable steadyrest member, support surface means disposed on said steadyrest member for engaging the workpiece during the initial and second grinding operations, first drive means for moving said steadyrest member relative to said base through a predetermined distance between a first reference position and a second reference position in which said support surface means is closer to the workpiece than in the first reference position by an amount equal to the predetermined distance, second drive means for moving said steadyrest member relative to said base from the first reference position to press said support surface means against the workpiece during the initial grinding operation and for moving said steadyrest member relative to said base from the second references position to press said support surface means against the workpiece during the second grinding operation, said second drive means including means for moving said first drive means through the predetermined distance relative to said base with said steadyrest member upon movement of said steadyrest member between the first and second reference positions, sensor means for detecting when the workpiece is out-of-round upon completion of the initial grinding operation, and control means connected with said sensor means and said first and second drive means for effecting operation of said second drive means to move said steadyrest member relative to said base from the first reference position to engage the workpiece with said support surface means during the initial grinding operation, for effecting operation of said first drive means to move said steadyrest member from the first reference position to the second reference position in response to said sensor means detecting that the workpiece is out-of-round upon completion of the initial grinding operation, and for effecting operation of said second drive means to move said steadyrest member from the second reference position to engage the workpiece with said support surface means during the second grinding operation.

4,201,017
METHODS AND APPARATUS FOR THE TREATMENT OF PRODUCTS

Anthony F. Davenport, and Harry B. Brailsford, both of Stoke-on-Trent, England, assignors to William Boulton Limited, Stoke-on-Treat, England

Continuation-in-part of Ser. No. 723,844, Sep. 16, 1976, abandoned. This application May 19, 1978, Ser. No. 907,731
Int. Cl.² B24B *31/00*
U.S. Cl. 51—163.2 **12 Claims**

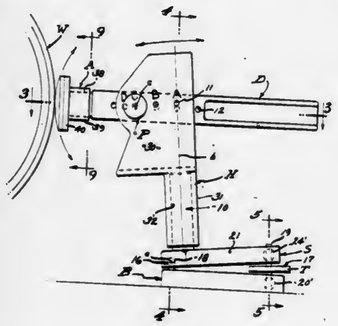


1. A method of treating products comprising introducing a charge of at least two products into a treatment vessel, subjecting the vessel to a vibratory movement in the form of a rotary oscillation about a generally vertical axis with an up and down component superimposed thereon, constraining the charge to travel along and around a spiral path of gradually increasing radius in a horizontal plane from a central receiving zone to a peripheral discharge zone, and discharging the products at said discharge zone.

4,201,018
CABBING DEVICE FOR GEMSTONES

Clarence Pool, 8321 Passons Blvd., Pico Rivera, Calif. 90660

Filed Oct. 23, 1978, Ser. No. 953,643
Int. Cl.² B24B *9/16*
U.S. Cl. 51—229 **16 Claims**



1. A device for generating the convex surface of a cabochon selectively about two right angularly related axes, by offering the same up to a grinding surface, and including;

a horizontally disposed base centered on a vertical plane before said grinding surface,

a standard with means adjustably positioning the same with respect to said grinding surface, and comprised of a platform disposed over the base and a substantially vertical pivot standing upward therefrom to move in said plane toward the grinding surface,

a hub free to be revolvably manipulated about the first mentioned pivot and having a horizontal series of transversely disposed pivot openings extending from the first mentioned pivot,

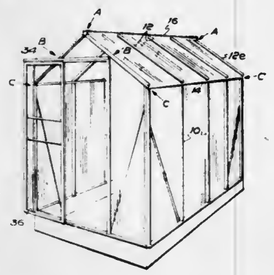
and an elongated dop-head arm free to be revolvably manipulated about the second mentioned pivot openings and having a multiplicity of transverse pivot openings in a series extending longitudinally thereof to be individually and selectively aligned with one of said series of pivot openings on the hub,

the dop-head arm being coupled a selective position by a replaceable pivot pin, whereby a workpiece carried by a head at the forward extremity thereof swivels about two distinct selected axes of rotation into engagement with the grinding surface to form a compound curvature thereon.

4,201,019
GREENHOUSES

Colin Jones, Sheffield, England, assignor to Linkman Building Company Limited, Tinsley, England

Filed Jul. 14, 1978, Ser. No. 924,907
Claims priority, application United Kingdom, Dec. 1, 1977, 50170/77
Int. Cl.² A01G *9/14*
U.S. Cl. 52—15 **4 Claims**



1. In a greenhouse, a ridge member of hollow section; a T-slot in the underside of the ridge member; respective corner jointing brackets disposed at opposite ends of the ridge member and secured thereto by T-bolts depending from the T-slot; and pairs of endmost sloping glazing bars secured to said jointing brackets, said respective corner jointing brackets being provided with pairs of shallow projections flanking respective holes through which the T-bolts extend, said projections engaging the mouth of the T-slot to stiffen the resulting joints.

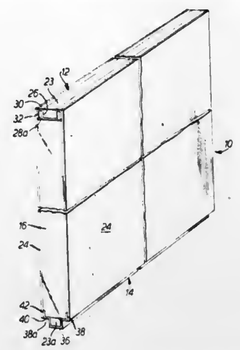
4,201,020
BUILDING PANEL AND PANEL ASSEMBLY

Frederick H. Saunders, 13 McAllister St., Breakwater, Victoria, Australia

Filed Aug. 4, 1977, Ser. No. 821,800
Claims priority, application Australia, Aug. 6, 1976, PC6908; Feb. 3, 1977, PC8936
Int. Cl.² E04C *1/10*; E04B *2/28*
U.S. Cl. 52—580 **10 Claims**

1. In combination to form a panel assembly, a pair of building panels each comprising a facing sheet, a plurality of substantially parallel, mutually spaced apart elongate primary beams secured along longitudinal faces to one side of the sheet

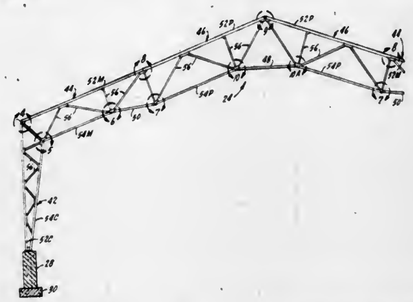
and respective pluralities of spaced beam segments bracing each pair of said primary beams, wherein the panels are coupled edge to edge by bridging together in a plurality of pairs adjacent beam segments of the respective panels.



4,201,021
BUILDING FRAME CONSTRUCTION

John Aldag, Chicago, Ill., and Willis L. Wells, Clayton, Mo., assignors to Bantam Systems, Inc., Chicago, Ill.

Filed May 8, 1978, Ser. No. 903,752
Int. Cl.² E04B *7/02*; E04C *3/08, 3/11*
U.S. Cl. 52—93 **4 Claims**



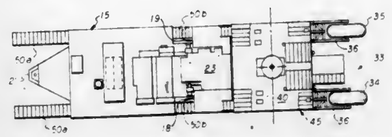
1. In a building frame of the type having a plurality of transverse sub-frames which form the roof support beams and side wall columns of the building, with girts and purlins interconnecting the sub-frames, and end wall columns and girts enclosing the building frame, each sub-frame comprising a plurality of interconnected truss units and each truss unit including an inner main beam and an outer main beam interconnected by a plurality of braces, the improvement comprising a main beam construction for the truss units which permits attachment of any number of purlins and girts at any point along the beam, each outer main beam comprising a pair of angle members each having integrally formed at the edge of at least one of its legs a flange extending substantially ninety degrees inwardly toward the opposite leg, the pair of angle members being aligned so that their flanges are in facing relation but are separated by a slot between the angle members, the slot running uninterruptedly the length of the outer main beam to provide an attachment point for a purlin or girt fastener at any point along its length;

and spacer means for holding the pair of angle members in their spaced facing relationship.

4,201,022
WHEELED PORTABLE WELL DRILLING AND WORKOVER APPARATUS

Gary L. Jennings, Houston, Tex., assignor to Pyramid Manufacturing Company, Houston, Tex.

Filed Sep. 8, 1978, Ser. No. 940,761
Int. Cl.² E04H *12/34*
U.S. Cl. 52—118 **1 Claim**



1. In a portable well drilling and workover apparatus for a well location having a telescoping mast, drawworks and a base substructure support, the invention comprising:

a. first trailer means including wheels for moving said trailer means over the terrain;

b. second trailer means including wheels for moving said trailer means over the terrain, said wheels on said second trailer means being constructed and arranged whereby they may be elevated when said second trailer means is on the well location;

c. said first trailer means including support means to support the telescoping mast and drawworks thereon;

d. said second trailer means including an upright structure and A-frame for transferring the telescoping mast from said first trailer means to said second trailer means to support the mast in upright position on said second trailer means to conduct well operations;

e. cooperating means on said first and second trailer means to position them together to form the base substructure support;

f. additional means on said first trailer means to support the telescoping mast on said first trailer means in position for pivotal engagement with said A-frame on said upright structure of said second trailer means whereby it may be transferred to said second trailer means for raising to an upright position for conducting well operations said additional means including:

1. elevated platform means on said second trailer means; and

2. ramp means connected to said elevated platform means on said second trailer means whereby said first trailer means may be positioned on said elevated platform to position the telescoping mast for pivotal engagement with said upright portion; and

g. said first trailer means including a platform to provide a working floor adjacent the drawworks which is lower in vertical elevation than the upper end of said upright structure.

4,201,023
THREE-DIMENSIONAL STRUCTURES MADE OF BEAMS AND PLATES

Otto Jungbluth, Frankensteiner Strasse 99, 6100 Darmstadt-Eberstadt, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 874,878
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1977, 2704953
Int. Cl.² E04H *12/00*
U.S. Cl. 52—334 **17 Claims**

1. A three dimensional structure comprising:

a plurality of substantially parallel profiled metal frame beams (1) arranged in a substantially horizontal direction;

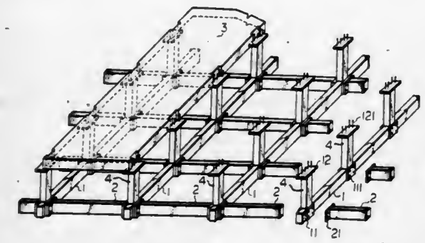
a plurality of spaced apart substantially vertical profiled metal web members (4) coupled to said horizontal frame beams (1);

adjacent ones of said horizontal frame beams (1) being

spaced apart a greater distance than the spacing between adjacent vertical web members (4) but no more than three times the spacing between adjacent vertical web members (4);

a plurality of substantially parallel profiled metal joists (2) connected between adjacent ones of said horizontal frame beams (1) and extending substantially perpendicularly to said frame beams in a substantially horizontal direction;

said frame beams (1) each having substantially vertical side flanges;



connecting and reinforcing means (11, 21, 211) coupled to said side flanges of said frame beams (1) and to ends of said joists (2) for connecting said side flanges of a frame beam (1) with respective joists (2) to provide greater resistance to bending, transversal force and torsion and for reinforcing the respective junction areas of a frame beam (1) and respective joists (2);

a top sheet-like member (3); and

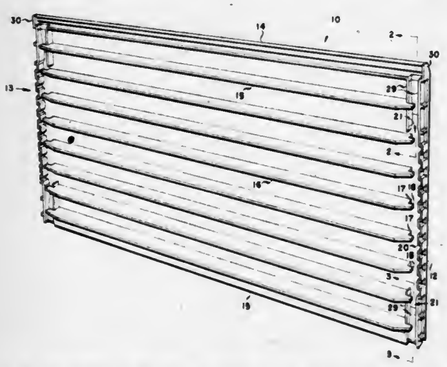
plate means (12,121) connecting top portions of said vertical web members (4) to said sheet-like top member (3).

4,201,024

PLASTIC/COMPOSITE STRUCTURAL PANEL

George A. Lafitte, Jr., Atlanta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jan. 17, 1977, Ser. No. 759,884
Int. Cl.[2] E04B 1/62; E04C 2/38
U.S. Cl. 52—394 7 Claims



1. A two-sided, non-metallic structural panel of a rectangular shape with a first and second pair of opposite panel edges comprising;

first means incorporated along each of said first pair of opposite panel edges and on the same side of the panel to provide a pathway extending substantially the entire longitudinal length of the panel edges for a support flange to slideably pass therethrough when the panel is mounted on a pair of spaced support flanges;

second means incorporated along each of said second pair of opposite panel edges of mutually opposing configuration that are interlockingly engageable so that adjacent panels can be interconnected and when so connected can be both pulled and pushed relative to the support flanges when mounted thereon, said second means along one panel edge comprises a channel extending substantially the longitudinal length of the edge and having a first channel wall distal to the outermost limit of the edge and a second channel wall spaced from and confronting said first channel wall and proximal to the outermost limit of the edge, said first channel wall formed as a concave arcuate undercut and said second channel wall formed by an upstanding flange, said second means along the other panel edge comprises an edge outermost limit surface of a convex arcuate shape compatible with the concave arcuate undercut forming the first channel wall in the first panel edge and extending substantially the longitudinal length of the edge, and a longitudinally extending channel along said other panel edge and spaced from the convex arcuate shaped surface so as to receive the upstanding flange on the first panel edge of an adjacent panel when two panels are interconnected and the concave and convex arcuate surfaces are in contact with each other;

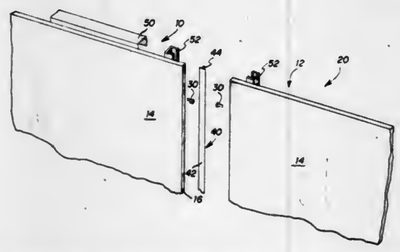
and third means extending between said first pair of opposite panel edges for resisting deflections between the first pair of opposite panel edges while minimizing resistance to arcuate deflections of the panel between the second pair of opposite panel edges.

4,201,025

PREFINISHED VINYL WALL SYSTEM

Elliott Williamson, 11915 Quincy La., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 824,901, Aug. 15, 1977, abandoned. This application Apr. 13, 1978, Ser. No. 896,093
Int. Cl.[2] E04B 5/52
U.S. Cl. 52—489 7 Claims



1. A method for mounting wall panels to structural supports in an office building to form office modules, comprising the steps of:

inserting clipping means into the abutting edges of first and second prefinished wall panels;

securing adjacent first prefinished wall panels onto ceiling and floor tracks disposed in parallel relation to one another;

guiding a second panel into abutment with said first panel so that clipping means inserted in said second panel engages the freely floating temporary retaining means disposed rearward the joint of the abutting panels; and

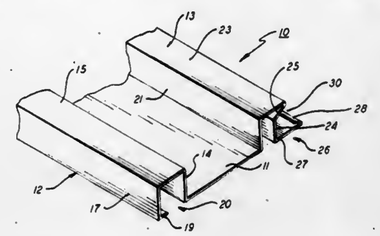
permanently cementing the rearward side of said first and said second panels away from the edges thereof to studs attached to the building and disposed in said ceiling and in said floor tracks.

4,201,026

STRUCTURAL MEMBER

Wesley T. Murphy, Auburn, N.Y., assignor to E.T.I. Corporation, Auburn, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,826
Int. Cl.[2] E04C 3/32
U.S. Cl. 52—731 6 Claims



1. A structural member in channel-like form including

an elongated web having first and second open-sided flanges depending laterally from the opposed edges thereof,

said flanges each including a base that is parallel with the web and projected to one side thereof by means of a perpendicular inner side wall, and further including an outer side wall in parallel alignment with the inner side wall which terminates in the plane of the web to establish an opening that faces the opposite side of the web,

said first flange being rectangular in form and having a foreshortened arm secured to the terminal end of its outer side wall which is turned inwardly to restrict the flange opening, and

said second flange having a base that extends outwardly beyond its outer side wall a distance at least equal to the length of the foreshortened arm of the first flange, an inclined leg joining the extended end of the base to the outer side wall and a rail outwardly extended in the plane of the web from the terminal edge of the outer side wall, said rail having a lip on the extended end thereof that is turned back toward the inclined leg, the overall length of the rail being equal to or less than the inside width of the first flange as measured between its two side walls whereby the rail of one structural member is receivable within the rectangular first flange of another similar structural member so that the foreshortened arm of said rectangular first flange is able to be turned into the space provided between the inclined leg and the base of the rail supporting second flange thereby locking the two structural members together.

4,201,027

DEVICE FOR INSERTING TAPE CASSETTES OR THE LIKE AND ENCLOSURES PARTICULARLY INTO HINGED BOXES

Heino Ilsemann, Wehkamp 3, 2800 Bremen, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 934,198
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737196; Aug. 2, 1978, 2833862
Int. Cl.[2] B65B 57/06, 43/39
U.S. Cl. 53—53 9 Claims

1. A device for inserting tape cassettes or the like and enclosures into hinged boxes, comprising:

(a) a revolving head having a drive shaft and a vertical axis of rotation and capable of being turned in a step-wise manner by means of work gearing;

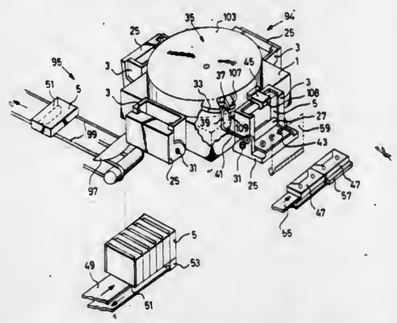
(b) said worm gearing including a worm gearing portion, which is rigidly connected to the drive shaft of said revolving head, and also including a continuously driven screw which is in engagement with said work gear portion and whose pitch is zero along a first angular range, preferably of 210°, and whose pitch is different from zero along a second angular range, preferably 150°;

(c) four holding devices being arranged at the periphery of said revolving head which are angularly offset relative to each other by 90°, said holding devices each serving to receive a hinged box;

(d) each holding device having two vertically arranged holding jaws for grasping the short narrow sides of one hinged box having a cover in such a manner that the hinged box is arranged with its plane tangential relative to said revolving head and with the axis of rotation of its cover at the bottom, and a flap with a vacuum suction member, which flap is rotatably supported so as to be in alignment with points of rotation of said cover or with the axis of rotation;

(e) a stationary cam disc with a control cam is arranged parallel to the plane of rotation of said revolving head and concentrically thereto, in which curved rollers engage which are assigned to each holding device and are arranged on said revolving head and which, by means of a curved lever and a pull rod connected thereto which are arranged on said revolving head, open or close the flap of the respective holding device depending on the angular position of said revolving head;

(f) the revolving head having a periphery, opposite which, are arranged in a stationary manner and always offset by 90°, a box inserting station, a cassette inserting station, a station for pushing out rejects and a normal pushing-out



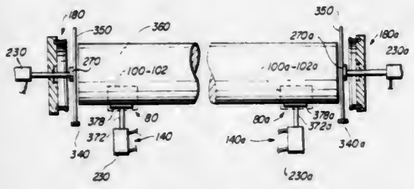
station; said box inserting station having a conveyor belt for feeding empty hinged boxes in an upright position in which they stand on a narrow side of the cover and in which the folding direction for opening said cover is directed away from said revolving head, and having a sliding member for inserting always one box into a holding device of said revolving head, which holding device is located opposite said box inserting station; said cassette inserting station having a conveyor belt for supplying said cassettes in a position in which they are lying on said conveyor belt in such a way that the long narrow side of the tape of the cassette is facing towards said revolving head, having a stacking tower which is arranged above the travel path of the supplied cassettes and assigns an enclosure to each cassette to be inserted, and devices for always inserting a cassette and an enclosure into an open box which is located in a holding device of said revolving head, said holding device being arranged opposite said cassette inserting station; said station for pushing out rejects having a keying device for checking whether a filled box can be opened which is arranged in a holding device of said revolving head, which holding device is located opposite said pushing-out station for pushing out rejects and with a sliding member for ejecting those boxes from the respective holding device which cannot be properly opened; said normal pushing-out station having a sliding member for pushing out from the respective holding device a filled cassette which is arranged in the flat

holding device of said revolving head which is positioned opposite said normal pushing-out station and having a device for conveying away the ejected, filled hinged boxes; and wherein a complete rotation of the driven screw of said worm gearing corresponds to a 90° rotation of the drive shaft of said revolving head and, thus, to a work cycle, wherein, in the first partial angular range of said screw in which its pitch is zero, a holding device each is arranged in a stationary manner opposite each of the box inserting stations, the cassette inserting station, the station for pushing out rejects and the normal pushing-out station, and in the second partial angular range of said screw in which its pitch is different from zero, further rotation of said revolving head takes place so that the several holding devices are moved ahead toward the respective subsequent station.

4,201,028
APPARATUS FOR APPLYING END CAPS TO ROLLS OF SHEET STOCK

George Melehan, Downers Grove, Ill., assignor to Chippewa Paper Products Corporation, Hillside, Ill.

Filed Sep. 15, 1977, Ser. No. 833,437
Int. Cl.[2] B65B *49/08*
U.S. Cl. 53—137 2 Claims



1. Apparatus for applying end caps to end faces at each of opposed ends of a roll of sheet stock,

said apparatus comprising,

a generally horizontally-extending, elongated frame,

cradle means carried on said frame for supporting a roll of sheet stock thereon to extend longitudinally therealong,

said cradle means includes low friction means to facilitate rotation of said roll about a longitudinal axis thereof while supported on said frame,

a pair of longitudinally spaced end-cap-shaping assemblies including generally parallel end plate means having surfaces facing corresponding end faces of the roll and extending essentially normally to a longitudinal axis thereof, for abutment against the end faces of the roll,

slide rail means carried on said frame and extending longitudinally between said end-cap-shaping assemblies,

one of said assemblies being slidably shiftable along a substantial lineal expanse of said slide rail means,

means for selectively adjusting lineal spacial separation between opposed said end-cap-shaping assemblies for accommodating rolls of different overall length on said frame,

and means for locking said shiftable end-cap-shaping assembly in each of a plurality of selectible positions along said slide rail means,

means supporting said end plate means on said frame endwise of, in alignment with, and generally paralleling respective corresponding end faces of the roll,

means for releasably supporting end-cap-forming discs between said end plate means and end faces of the roll, preparatory to applying the discs as caps to the opposed ends of the roll,

said means for releasable supporting said discs including vacuum plate means for contacting of said discs thereagainst, and aspirator means for controlling air passage through said vacuum plate means,

means for shifting said end plate means longitudinally along said frame toward the roll to engage the end-cap-forming discs and to urge the discs to abut corresponding end faces of the roll,

said means for shifting said end plate means including fluid controlled piston and cylinder means to move said end plate means selectively to approach and to recede from the ends of the roll, and valve means for fluid-flow control,

means for deforming the discs at bounding margins thereof to overlie the end faces and peripheral annular end portions of the roll to provide caps therefor,

said means for deforming the discs comprising annular flange means projecting normally of said end plate means, said flange means including a ring-like sector having a fixed internal radius substantially equal to but not less than a radius of the roll of sheet stock at ends thereof, said means for shifting said end plate means constituting means to urge said flange means against the discs and to position said ring-like sector into sleeve-like, encircling, stressing engagement over ends of the roll, to conform peripheral margins of the discs into contiguous contact with the roll at annular edge portions thereof,

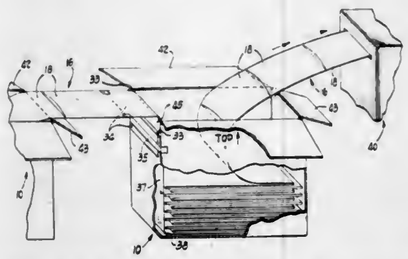
said annular flange means include an annular lip integral with and flared outwardly from said ring-like sector at an inwardly-directed roll-facing extremity thereof, thereby to guide and to center said ends of the roll into and within said ring-like sector,

spring means resiliently supporting said annular flange means to permit shifting thereof in a plane paralleling said abutment surface of said end plate means thereby to facilitate alignment of said fixed ring-like sector with and entry of the end of a roll therewithin.

4,201,029
METHOD AND APPARATUS FOR PACKAGING

Bernard Lerner, Peninsula, and Dana J. Liebhart, Streetsboro, both of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Aug. 14, 1978, Ser. No. 933,424
Int. Cl.[2] B65B *5/10*
U.S. Cl. 53—429 6 Claims



1. A method of shipping and dispensing a web of interconnected bags each open along one face at its top comprising:

(a) feeding the bags, closed end first, into an inverted carton through an opening near the bottom of the carton;

(b) positioning the web in layers paralleing the top of the carton by feeding the web back and forth zig-zag fashion to arrange the web in layers with folds at both ends of each layer;

(c) forming alternate folds near each end of the carton first adjacent to and then spaced from the end to develop a relatively flat plicated array while allowing the weight of the web itself to compress the array;

(d) closing the bottom of the carton once filled;

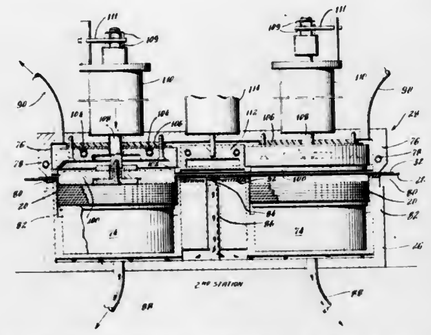
(e) transporting the carton and its contents to a dispensing station and positioning the carton right side up at the dispensing station; and,

(f) dispensing the bags from the top of the carton on a first in, first out, last in, last out basis.

4,201,030
PACKAGING APPARATUS AND TECHNIQUES FOR FORMING CLOSURE TOPS

Reid A. Mahaffy, Montclair, and Walter A. Mainberger, Wayne, both of N.J., assignors to Mahaffy & Harder Engineering Co., Totowa, N.J.

Continuation of Ser. No. 822,088, Aug. 5, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,997
Int. Cl.[2] B65B *31/02*
U.S. Cl. 53—432 26 Claims



12. For making vacuum or gas-filled packages of the type wherein a film of packaging material, sealed to a flanged cup of packaging material containing the product, is stretched to extend into the cup in telescoping fashion to tightly grip the product within the cup; the improved method comprising the following steps:

heating the film in regions thereof to be stretched into the cup;

placing the heated film and the cup in a vacuum chamber with the film overlying the cup flanges and the cup mouth to define a complete package;

closing said chamber to seal the interior thereof from outside atmosphere;

applying vacuum to said chamber and the interior of said package to initiate evacuation thereof;

after initiating evacuation of said sealed chamber and package, moving a plug against said film while it is still hot, to stretch-form the film down into the cup to a position at least immediately adjacent the upper surface of the product therein substantially over the entire upper surface thereof;

before or after said movement of said plug, sealing said package material to provide a complete hermetic seal of said package; and

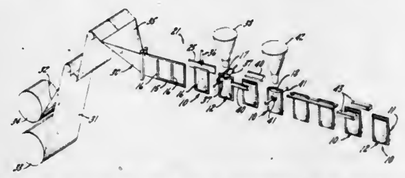
pressurizing said vacuum chamber above said film to at least substantially atmospheric pressure while said plug is pressed against said film, the pressure forcing said film tightly against the product in said cup to effect close, intimate and essentially void-free contact therebetween.

4,201,031
METHOD OF MAKING, OPENING, FILLING AND SEALING A TWO-COMPARTMENT POUCH

Jerald R. Wiles, Sarasota, Fla., assignor to Rexham Corporation, New York, N.Y.

Filed Sep. 27, 1978, Ser. No. 946,111
Int. Cl.[2] B65B *43/04*
U.S. Cl. 53—455 2 Claims

2. A method of making, opening, filling and sealing a pouch having two opposing side panels and having a divider panel located between the side panels and dividing the interior of the pouch into two compartments, said method comprising the steps of, advancing a web along a predetermined path, said web having a lower layer of predetermined width and having an upper layer with a width which is less than said predetermined width, said upper layer being positioned with one of its longitudinal margins adjacent one of the longitudinal margins of the lower layer, folding the web upwardly during its advance about a longitudinal line which is spaced farther from said one margin of said lower layer than from the other margin of said lower layer thereby to form two side panels and a divider panel with the top margin of a first one of said side panels and the top margin of the divider panel being located above the top margin of the second one of said side panels, sealing the side panels and the divider panel together at longitudinally spaced increments and along their bottoms to form side seals and a bottom seal, cutting through the panels between the edges of each side seal thereby to separate individual

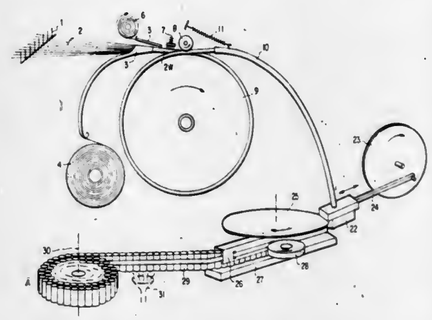


pouches from the web, advancing the separated pouches along a predetermined path, separating the upper margin of the divider panel of each pouch from the upper margin of the first side panel of the pouch as the pouch is advanced, pulling the divider panel and the second side panel of each pouch away from the first side panel of the pouch to open one compartment of the pouch, depositing product into said one compartment, sealing the divider panel to the top margin of said first side panel to close the upper end of said one compartment, pulling the divider panel and the first side panel of each pouch away from the second side panel thereof to open the other compartment of the pouch, depositing product into said other compartment, and sealing the top margin of said second side panel to said divider panel to close the upper end of said other compartment.

4,201,032
APPARATUS FOR MAKING BUNDLES OF TEXTILE STRANDS

Silvio Sangalli, Caluire, France, assignor to Rhone-Poulenc-Textile, Lyon Cedex, France

Filed Feb. 16, 1978, Ser. No. 878,462
Claims priority, application France, Mar. 21, 1977, 77 08618
Int. Cl.[2] D04H *11/00, 13/00;* D01G *37/00*
U.S. Cl. 53—522 19 Claims



1. An apparatus for cutting textile strands and forming the cut strands into bundles comprising:

(a) a means for supplying and feeding the textile strands;

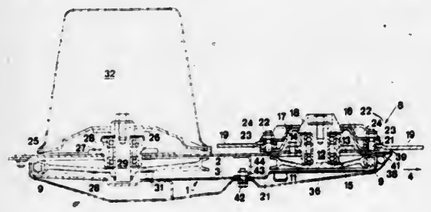
(b) means for positioning the textile strands cooperating with said means for supplying and feeding;

(c) means for gathering the strands into a parallel relation cooperating with said means for positioning;
(d) means for wrapping the parallel relation of strands cooperating with said means for gathering;
(e) means for continuously feeding the wrapped, parallel relation of strands cooperating with said means for wrapping, said means for continuously feeding including a rotating capstan around which the textile strands are wound and a flexibly supported accumulator pipe connected to the capstan;
(f) means for cutting the wrapped, parallel relation of textile strands to form a bundle of strands having top ends and bottom ends cooperating with said means for continuously feeding; and
(g) means for joining the bottom ends of the bundle of strands connected to said means for cutting.

4,201,033
DISC MOWERS

Nigel W. Meek, Madges, Long Crendon; John Robb, Myitkyina, Main St., Grendon Underwood, and James A. Munro, 39 Elm Trees, Long Crendon, all of Aylesbury, Buckinghamshire, England

Filed Aug. 16, 1978, Ser. No. 934,246
Claims priority, application United Kingdom, Aug. 18, 1977, 34640/77
Int. Cl.² A01D *55/26, 55/18*
U.S. Cl. 56—13.6 **13 Claims**



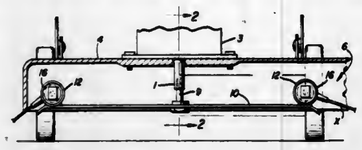
1. A disc mower comprising:
(a) a casing of generally elongate shape and when in the operative position extending generally transverse to the intended direction of operative travel;
(b) at least one pair of rotatable cutter discs mounted on top of the casing and operably extending therewithin;
(c) at least one generally radially-extending knife carried by each cutter disc at the periphery thereof;
(d) a transmission belt housed within the casing and co-operable with said cutter discs for driving operation thereof;
(e) said casing comprising a base portion and an upper portion hingedly connected together along one edge and
(f) a plurality of skid means engageable with the opposite edge of the base portion and upper portion of the casing for releasably securing said base portion and upper portion together along said edge opposite to the hinge edge, the skid means when in use being contactable with the ground to support the mower.

4,201,034
ATTACHMENT FOR DRIVE SHAFT OF ROTARY LAWN MOWERS

Alfred A. Frantello, Satellite Beach, Fla., assignor to Corinth Co. Inc., Melbourne, Fla.

Continuation-in-part of Ser. No. 880,987, Feb. 24, 1978. This application Jul. 17, 1978, Ser. No. 925,530
Int. Cl.² A01D *55/18*
U.S. Cl. 56—295 **3 Claims**

1. An attachment for the drive shaft of a rotary lawn mower comprising, in combination, a transversely extending element adapted for rotation and having centrally disposed means for enabling its attachment to the end of the drive shaft of the rotary lawn mower, a pair of rigid cylindrical sleeves secured to the most distantly spaced portions of said transversely extending element, a longitudinally compressible spool disposed in each of said distantly spaced rigid cylindrical sleeves of a supply of flexible cutting line carried by each of said spools,

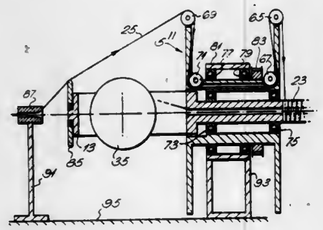


each of said rigid cylindrical sleeves having at least one aperture in the side-wall thereof whereby the outer end of said line may be threaded through and made to adjustably project from the outer end of said rigid cylindrical sleeves.

4,201,035
WINDING MACHINE

John P. S. Nolan, Northwood, England, assignor to John Nolan Design Limited, London, England

Filed Aug. 7, 1978, Ser. No. 931,733
Claims priority, application United Kingdom, Aug. 11, 1977, 21642/76
Int. Cl.² D07B *7/06*; B21F *3/04*
U.S. Cl. 57—6 **20 Claims**



1. A winding machine for winding a filament on a mandrel, the winding machine comprising means for feeding the filament substantially along an axis of rotation, a single winding element which is rotatable about said axis of rotation, said winding element having one or more guide means for entraining the filament in a radial loop, said loop extending substantially from said axis of rotation to said guide means on one side of said axis only and rotating about said axis when said winding element is rotated; means for removing turns of the filament from the mandrel; restraining means to prevent rotation of said mandrel, and means for supplying a binding or positioning element longitudinally of the mandrel, the binding or positioning element being provided for binding or positioning turns of the filament which are wound on and subsequently removed from the mandrel, said means for supplying the binding or positioning element being located on an extension of the mandrel outside the zone of rotation of said winding element but within the zone of rotation of said radial loop.

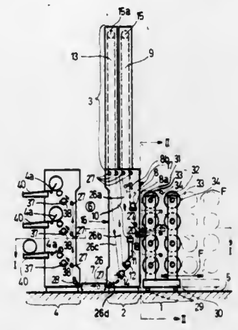
4,201,036
FALSE TWIST MACHINE

Hans Schellenberg, Winterthur; Eduard Schenkel; Andreas Schwander, both of Seuzach, and Dieter Thalmann, Winterthur, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Aug. 21, 1978, Ser. No. 935,110
Claims priority, application Switzerland, Jan. 3, 1978, 2195/78
Int. Cl.² D02G *1/02*; D01H *13/28*
U.S. Cl. 57—291 **16 Claims**

1. A false twist machine for textile thread comprising
a creel for a plurality of bobbins;

a texturizing station having a first supply device for taking in a thread from said creel, a first heat treatment zone located above said first supply device to receive the thread from said first supply device, a cooling zone below said heat treatment zone to cool the thread, a false twist device below said cooling zone for the thread, a second supply device for taking the thread from said false twist device, a second heat treatment zone adjacent said first heat treatment zone to receive the thread from said second supply device, and a third supply device for taking the thread

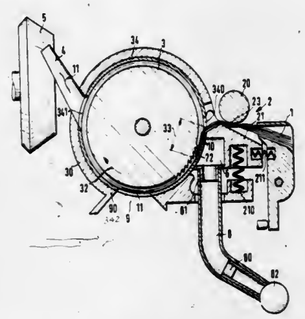


from said second heat treatment zone, said supply devices, false twist device and cooling zone defining a texturing part having a back facing said creel and an operating side opposite said back;
a thread transfer device for guiding the thread from said creel into the immediate vicinity of said first supply device; and
a winding apparatus for receiving the thread from said third supply apparatus, said winding device having an operating side facing said operating side of said texturing part in spaced relation to define an operating alley therebetween.

4,201,037
METHOD AND APPARATUS FOR CLEANING FIBROUS MATERIAL

Peter Artzt, Pfullingen; Rudolf Hehl, Albstadt; Gerhard Egbers, Reutlingen, and Anton Schenek, Bempflingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,708
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648715
Int. Cl.² D01H *11/00, 1/12*
U.S. Cl. 57—301 **11 Claims**

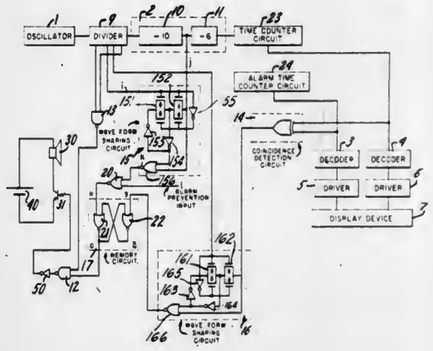


1. A method of cleaning fibrous material which is fed in the form of a sliver to an opening roller and is opened by said opening roller into individual fibers and subsequently fed to an open-end spinning device, said method comprising:
simultaneously subjecting said fibrous material to the action of the opening roller and to a flow of air sucked outwards with respect to the opening roller while said fibrous material is carried in the direction circumferential to the opening roller, and subjecting said flow of air to said fibrous material while said fibrous material is still retained as a fiber tuft.

4,201,038
ALARM ELECTRONIC WATCH

Kenichi Kondo, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Apr. 25, 1978, Ser. No. 900,005
Int. Cl.² G04C *21/34, 21/38*
U.S. Cl. 368—73 **4 Claims**



1. An electronic alarm watch comprising, in combination:
means for developing a repetitive time standard signal having a repetition rate defining passage of time;
a dividing circuit receptive of said time standard signal for dividing the same and for developing repetitive output signals having respective repetition rates less than the repetition rate of said time standard signal;
a counting circuit receptive of one of the output signals of said dividing circuit for counting the output signal and for developing a count representative of the passage of time;
a first waveform shaping circuit receptive of the output signal of said counting circuit and a higher repetition rate output signal of said dividing circuit for developing a pulse signal at a repetition rate equal to that of said counting circuit output signal and having a pulse width equal to that of said dividing circuit output signal;
a coincidence detecting circuit for detecting when the count of said counting circuit and an alarm time signal coincide and for developing an output signal in response to the detected coincidence between the count of said counting circuit and said alarm time signal;
a second waveform shaping circuit receptive of the output of said coincidence detecting circuit for developing in response to said coincidence detecting circuit output signal a pulse signal having a pulse width greater than the pulse width of said first waveform shaping circuit output signal;
alarm means receptive of an output signal of said dividing circuit and responsive to an enabling signal for developing a repetitive alarm signal at a repetition rate determined by the repetition rate of the dividing circuit output signal applied thereto when said enabling signal is applied thereto; and
means comprising a memory circuit responsive to the respective output signals of said first and second waveform shaping circuits for applying said enabling signal to said alarm means in response to the output of said second waveform shaping circuit so that detection of coincidence between the count developed by said counting circuit and said alarm time signal is effective to enable said alarm

means, and for terminating said enabling signal in response to the output of said first waveform shaping circuit so that said alarm signal is terminated within a predetermined time equal to the repetition rate of said first waveform shaping circuit output signal.

4,201,039

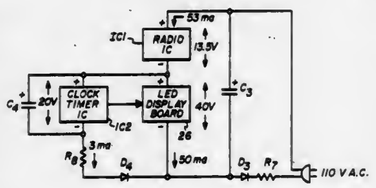
NUMERICAL DISPLAY USING PLURAL LIGHT SOURCES AND HAVING A REDUCED AND SUBSTANTIALLY CONSTANT CURRENT REQUIREMENT

Roland M. Marion, LaFayette, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 803,574, Jun. 6, 1977. This application Nov. 1, 1978, Ser. No. 956,536

Int. Cl.[2] G04B *19/30, 37/12*

U.S. Cl. 368—241 **3 Claims**



1. A transformerless clock radio comprising:

(1) an LED time display having four character display sites for displaying minutes, tens of minutes, hours and tens of hours, the first three of said display sites each containing seven light emitting diodes at positions "a" to "g" respectively on a vertically elongated parallelogram with a central horizontal bar, said positions being identified as follows:



(2) a light emitting diode energization network for said four display sites having polarized first and second input terminals, each of three display sites having four mutually parallel energization branches connected between said input terminals, each branch including a current stabilizing means, one to three forward poled, serially connected light emitting diodes designed to be selectively de-energized by shunt switches, said energization network having a predetermined voltage requirement and a current requirement for the said three sites substantially equal to twelve times that of a light emitting diode at maximum design brightness irrespective of the characters displayed or the operating brightness,

(3) an integrated radio circuit having a predetermined voltage requirement and a current requirement approximating that of said diode energization network, and

(4) a dc power supply energized from an ac main comprising a half wave rectifier, a voltage dropping resistor and a filter capacitor between whose output terminals said diode energization network and said radio integrated circuit are serially connected for energization, said dc power supply having an output voltage substantially equal to the sum of said voltage requirements at a current adequate for said energization network and said radio integrated circuit.

4,201,040

WATCH MOVEMENT CONSTRUCTION

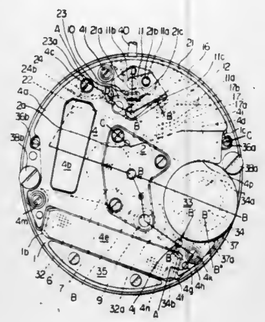
Yasuaki Nakayama, Hanno, Japan, assignor to Citizen Watch Co., Ltd., Japan

Filed Apr. 13, 1978, Ser. No. 896,146

Claims priority, application Japan, Apr. 15, 1977, 52-42526

Int. Cl.[2] G04B *19/24, 33/00*

U.S. Cl. 368—35 **3 Claims**



1. A movement construction for an electronic wristwatch powered by a battery having a reduced diameter portion comprising:

a base plate;

a reduction wheel train mechanism provided at a central portion of said base plate;

a time dial mounted on one surface of said base plate;

a circuit board mounted on another surface of said base plate and having a cutout formed at a position near an outer circumference of said movement construction to accommodate said battery in a fixed place such that a circumferential periphery of said battery is partially aligned with the outer circumference of said movement construction; and

a calendar display member disposed between the front surface of said base plate and said time dial and having its center displaced from the central portion of said base plate so that a line passing through a center of said battery, a center of said base plate and a center of said calendar display member makes an obtuse angle whereby said calendar display member and said battery are substantially out of overlapping state to reduce the thickness of said movement construction.

4,201,041

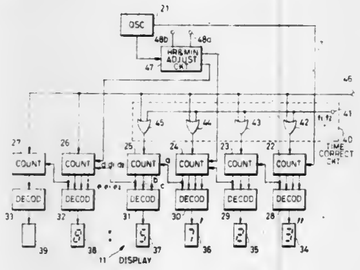
DIGITAL ELECTRONIC TIMEPIECE HAVING A TIME CORRECTING MEANS

Toyonaru Tanaka, Tokyo, Japan, assignor to Jeco Company Limited, Kawasaki, Japan

Filed Aug. 5, 1977, Ser. No. 822,375

Int. Cl.[2] G04B *27/00*

U.S. Cl. 368—85 **3 Claims**



1. A digital electronic timepiece comprising:

oscillator means for generating reference clock-pulse signals;

a plurality of counter means of successive stages for successively counting the reference clock-pulse signals and respectively producing output signals for displaying numerals at respective digit positions for seconds, tens of seconds, minutes, tens of minutes, hours, and tens of hours, said counter means exclusive of the first-stage counter means being arranged in cascade connection for counting operation initiated by carry signals from the counter means of respectively preceding stages, the counter means for producing an output signal for display at the digit position for tens of minutes supplying as a carry signal a signal of a duty ratio of ⅓ to the counter means for producing an output signal for display at the digit position for hours;

means for digitally displaying time in response to signals for output display of the counter means; and

means for supplying a time correction reset signal to the counter means for producing as output signals for display at the digit positions respectively for seconds, tens of seconds, minutes, and tens of minutes, said time correction reset signal resetting the counter means so that the output signal thereof becomes a signal for "0" display, and said counter means for producing an output signal for display at the digit position for tens of minutes operating, when supplied with said reset signal in the time interval from (n−1) hours 40 minutes to n hours 40 minutes, to produce as output a signal for causing the counter means for outputting the signal for display at the digit position for hours to produce an output signal for displaying n hours.

4,201,042

REGULATOR FOR A TIMEPIECE MOVEMENT

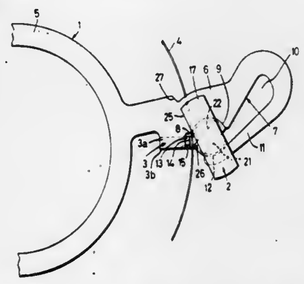
Gérald Visconti, Bellach, and Beat Gilomen, Biel, both of Switzerland, assignors to A. Schild S.A., Grenchen, Switzerland

Filed May 1, 1978, Ser. No. 901,810

Claims priority, application Switzerland, May 12, 1977, 5983/77

Int. Cl.[2] G04B *17/13*

U.S. Cl. 368—170 **8 Claims**



1. In a regulator for adjusting the active length of a balance-spring in a timepiece movement, of the type having an annular portion to be fitted on said movement coaxially with said balance-spring, a lug having a cut-out portion and an opening into said cut-out portion, and a first limiting member fitted in said cut-out portion and held rotatably adjustable about an axis parallel to the axis of rotation of said regulator, the improvement which comprises:

a second limiting member disposed opposite said first limiting member and formed by an integral lateral portion of said lug bent in a rounded bend, about a line running towards said opening, into a plane parallel to the axis of rotation of said regulator, and

at least two straight, parallel, projecting banking elements respectively forming part of said first and said second limiting member, said banking elements being visible between said opening and said rounded bend when viewed at right angles in the dial-down position of said movement.

4,201,043

WRISTWATCH CALCULATOR IMPUT KEY POSITIONING ASSEMBLY

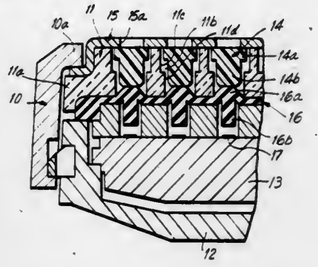
Yasutaka Tarusawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 21, 1977, Ser. No. 817,779

Claims priority, application Japan, Jul. 16, 1976, 51-94852[U]

Int. Cl.[2] H01H *9/00*; G04C *3/00*

U.S. Cl. 368—10 **8 Claims**



4. A digital display electronic wristwatch having a calculator therein, comprising a watch and calculator body means including multi-input means; watch case means for receiving said watch and calculator body means and a cover glass mounted in said watch case means including at least two stepped openings therethrough; each stepped opening formed with a larger portion and a smaller portion and positioned in registration with an input of said multi-input means; the larger portion of said stepped openings formed on the outer surface of said cover glass; a panel formed with at least two openings of smaller size than said larger portion of said stepped openings and positioned on said cover glass so that each said panel opening is in registration with and partially closes the larger portion of a stepped opening through said cover glass; a key member formed with a flange and mounted for displacement in each of said watch case means stepped openings, said flange having a lateral dimension larger than a corresponding lateral dimension of said smaller portion of said stepped opening and being dimensioned for receipt in the larger portion thereof; and a unitary resilient packing sheet means for biasing said key to a first position away from said multi-input means by the displacement of said key members through said openings to effect selective actuation of said multi-input means.

4,201,044

FUEL SYSTEMS FOR GAS TURBINE ENGINES

Alec G. Dodd, Belper, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 22, 1978, Ser. No. 888,992

Claims priority, application United Kingdom, Mar. 31, 1977, 13599/77

Int. Cl.[2] F02G *3/00*

U.S. Cl. 60—39.09 R **5 Claims**

1. A fuel system having a main fuel flow for a gas turbine engine, said fuel system comprising:

two filter means;

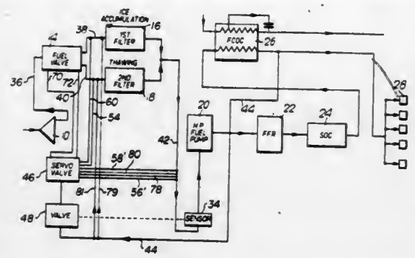
a spool valve means for receiving and passing the main fuel flow to said two filter means, said spool valve means having three operating positions, a first operating position in which the main fuel flow is delivered to both said filter means, and second and third operating positions in which the main fuel flow is delivered to only one of said two filter means respectively;

a supply of pressurized fuel operatively connected to said

spool valve means for moving the same to its operating positions;

a second valve means controlling the supply of pressurized fuel to said spool valve means;

temperature sensor means for sensing the temperature of fuel downstream of the filter means, said temperature sensor means being connected to means for controlling the flow of pressurized fuel to said second valve means to cause said second valve means to deliver pressurized fuel to said spool valve means to cause said spool valve means to



move from said first operating position when fuel temperature is below substantially 0° C.;

pressure sensing means for sensing the inlet fuel pressure to each of said filter means and the outlet fuel pressure from each of said filter means, said pressure sensor means being operatively connected to said second valve means to cause the second valve means to move said spool valve means between said second and third positions when a predetermined quantity of ice has accumulated in the filter means in use;

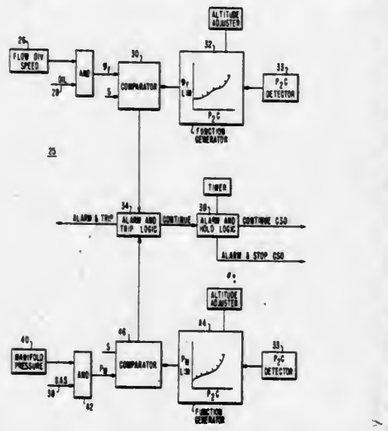
and means for thawing accumulated ice in said filter means.

4,201,045

FUEL LIMITER FOR COMBUSTION TURBINES

Elo N. Vani, Cherry Hill, N.J., and Roy W. Kiscaden, Morton, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 21, 1978, Ser. No. 935,430
Int. Cl.² F02C 9/04
U.S. Cl. 60—39.09 R 6 Claims



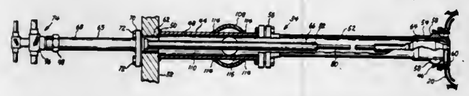
1. A fuel limiter for a combustion turbine fuel valve control comprising means for generating a signal representative of the combustor shell pressure, means for generating a signal representation of the rate at which fuel is being supplied to the turbine, means for generating a fuel limit as a function of the combustor shell pressure, means for comparing the fuel signal and the fuel limit, and means for generating at least one control signal when the fuel signal and fuel limit are related to each other in a predetermined manner.

4,201,046

BURNER NOZZLE ASSEMBLY FOR GAS TURBINE ENGINE

Michael A. De Negris, Wolcott, and Philip Lees, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,677
Int. Cl.² F02C 7/22
U.S. Cl. 60—39.37 10 Claims



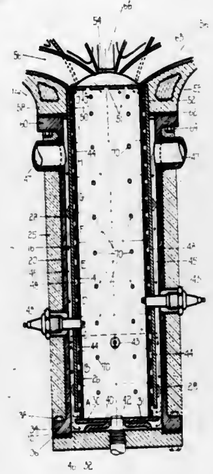
1. In an axial flow gas turbine engine having a combustion section, the combination comprising: means defining a plenum for said combustion section, at least one burner can in said plenum having a forward end with a nozzle opening, said plenum defining means including a wall spaced forwardly of said burner can and having a nozzle opening aligned with said nozzle opening of said burner can, and a nozzle assembly for injecting fluent materials into said burner can through said nozzle opening thereof, said nozzle assembly including a tubular housing in said plenum fixed to said wall and extending from said wall to said burner can, said tubular housing having a bore communicating with both of said nozzle openings and having a straight central axis generally colinear with the axis of said nozzle openings, a nozzle head slidably received in said tubular housing in the vicinity of said nozzle opening of said burner can for spraying fluent material into said burner can, an elongated feeder passing through said nozzle opening in said wall for conducting fluent material to said nozzle head, means releasably connecting said feeder to said wall and sealing said nozzle opening therein, said feeder having an inboard tubular portion fixed to said nozzle head and extending through said tubular housing from said wall to said nozzle head and said feeder also having an outboard tubular portion communicating with said inboard portion and extending from said wall in the direction away from said plenum, said inboard portion of said feeder having an external diameter substantially smaller than the internal diameter of said tubular housing so as to define a passage therebetween, means defining a flow path for fluent material past said nozzle head from said passage to the interior of said burner can, a first fluent material supply conduit, means releasably connecting said first fluent material supply conduit to said outboard portion of said feeder to supply a first fluent material to said feeder, and another fluent material supply conduit passing through and fixed to said wall and communicating with said passage between said inboard feeder portion and said tubular housing to supply another fluent material from outside said plenum to said passage, said nozzle head having a cross-sectional shape smaller than that of the bore of said tubular housing and of said nozzle opening in said wall so that when said means releasably connecting said feeder to said wall and said means releasably connecting said first fluent material supply to said outboard portion of said feeder are released said feeder and said nozzle head may be removed by withdrawing them axially from said tubular housing through said nozzle opening in said wall.

4,201,047

LOW EMISSION COMBUSTORS

Glenn B. Warren, 1361 Myron St., Schenectady, N.Y. 12309, and J. Randolph Morgan, 13248 N. Avenue Victor Hugo, Phoenix, Ariz. 85032

Continuation of Ser. No. 694,907, Jun. 10, 1976, abandoned.
This application Apr. 4, 1978, Ser. No. 893,451
Int. Cl.² F02G 3/02; F02B 19/02
U.S. Cl. 60—39.63 10 Claims



1. A low emission prime mover system including an external combustion engine having an intake portion and an exhaust portion; and a combustor, comprising:

(a) a plurality of concentric shells including a flame tube having an inlet end and an exit end, said exit end being connected in fluid communication with said intake portion;

(b) primary means, including a primary fuel and air supply system having fuel and air inlet openings at said inlet end, for establishing thereat a helically swirling, fuel-rich primary combustion flame;

(c) air passage means between said concentric shells and extending about and along the length of said flame tube for

(1) regeneratively cooling said flame tube and the primary combustion flame therein, and

(2) conveying selected amounts of regeneratively heated air to said flame tube in a helically swirling motion at a plurality of regions intermediate said inlet and exit ends to cool the combustion products of said flame and provide for secondary combustion of any unburned fuel supplied by said primary fuel supply means;

(d) secondary means including a secondary fuel and air supply system having fuel and air inlet openings at said exit end; and

(e) automatic fuel control means for regulating fuel flow to said primary means in a quantity less than that required for full load operation, and for regulating the fuel flow to said secondary means in a continuous flow as required to achieve a desired higher load operating condition without subjecting the inlet end of said flame tube to the otherwise high temperature, heavy combustion load, and resulting production of NO_x.

4,201,048

EXHAUST SYSTEM CONNECTOR

Roy G. Fisher, 3965 Newport St., Denver, Colo. 80207, and Michael S. Fisher, 6521 S. Logan, Littleton, Colo. 80121

Filed Oct. 13, 1977, Ser. No. 841,615
Int. Cl.² F01N 7/00; F16L 27/12
U.S. Cl. 60—322 3 Claims

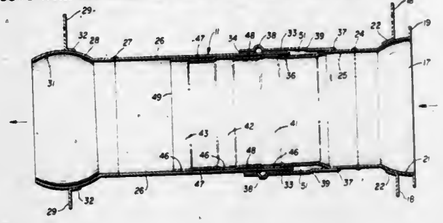
1. In a connector for use on the exhaust system of internal combustion engines to provide a pressure tight seal between components of such systems that are subjected to differential movement patterns including:

telescopically interfitting inner and outer circular sleeves;

means joining the inner of said sleeves to a first upstream component of the exhaust system,

means joining the outer of said sleeves to a downstream or outlet component of said exhaust system, whereby gases from said engine are delivered interiorly of said sleeve connector for flow toward the downstream component, the improvement which comprises:

(a) a circular pressure collar having one contracted end interconnected with the inner sleeve and interconnected by a sleeve abutting shoulder with the remainder of a diameter greater than the external diameter of the outer sleeve with the terminal end of the outer sleeve telescoped



in the pressure collar through the uncontracted end, and having a roll bead adjacent the uncontracted end providing concentricity thereof,

(b) a plurality of longitudinally spaced ribs formed on one of the inner and outer sleeve providing a plurality of circumferential, short cylindrical, axially flat, contact areas with the cylindrical surface of the outer sleeve, which areas are less than the total circumferential axial area between the two telescoped sleeves, providing reciprocal and rotational motion between the two sleeves while maintaining contact therebetween at said contact areas,

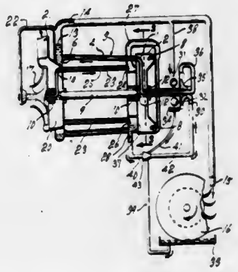
(c) there being spaced chambers between said ribs for the entrapment of exhaust gases that have passed any upstream rib area providing reduced differential pressures from chamber to chamber.

4,201,049

TURBINE POWER PLANT

Arno W. Tobber, 1010 Sixth Ave., Dorval, Quebec, Canada

Filed Nov. 29, 1978, Ser. No. 964,810
Int. Cl.² F16D 33/00
U.S. Cl. 60—325 10 Claims



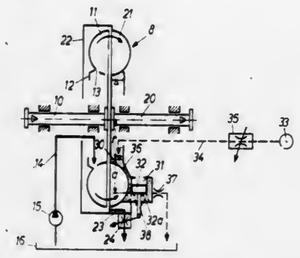
1. A turbine power plant comprising a fuel combustion unit operatively producing combustion gas under pressure, combustion gas outlet means including at least one tubular gas outlet connected in communication with said combustion unit, an auxiliary liquid supply communicating with said tubular gas outlet and producing spaced-apart slugs of auxiliary liquid in the outward flow of combustion gas in said tubular gas outlet, said slugs accelerating while in said tubular gas outlet by the

expansion of the combustion gas therein, a collector manifold connected to said tubular gas outlet and operatively receiving the accelerated slugs of auxiliary liquid, and an impeller device connected to said collector manifold and operatively driven by said auxiliary liquid.

4,201,050
FLUID COUPLING

Fritz Nixel, Grimmschwinden, Fed. Rep. of Germany, assignor to Voith Turbo GmbH & Co., KG, Crailsheim, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,277
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757252
Int. Cl.² F16D *33/06*
U.S. Cl. 60—357 **12 Claims**



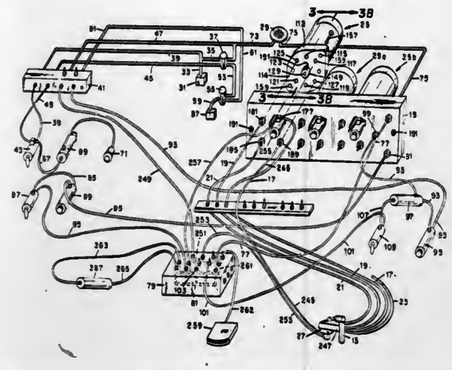
1. A rotating fluid coupling comprising:
a primary coupling half and a secondary coupling half which together form a working chamber which can be filled with working fluid;
a control device connected with said secondary coupling half for rotating therewith and for regulating the rotary take-off drive speed of said coupling; said control device including comparing means for comparing an operating value, which depends on the rotary take-off drive speed, with a variable command value, and for initiating adjustment of the rotary take-off drive speed when the operating value differs from the command value;
said control device comprising a fluid container which rotates with said secondary coupling half; said comparing means communicating with the fluid in said fluid container for being adjusted thereby; a line for delivering control fluid to said fluid container; an outlet opening from said fluid container at a radial distance from the axis of rotation of said coupling.

4,201,051
PRESSURIZED FLUID CONTROL CIRCUIT

Arthur L. Hall, 520 Bardon Rd., Knoxville, Tenn. 37919

Continuation-in-part of Ser. No. 722,609, Sep. 13, 1976, Pat. No. 4,145,813. This application Dec. 4, 1978, Ser. No. 965,787
Int. Cl.² F15B *11/06*
U.S. Cl. 60—407 **5 Claims**

1. A system for providing pressurized gas from a single pressurized gas source to a plurality of gas-powered tools, including at least one high pressure tool requiring gas at a substantially greater pressure than the pressure required for the remaining conventional tools, comprising conduit means connecting said gas source to a pilot gas regulator, individual conduit means connecting said pilot gas regulator to a plurality of individual switches, each one of said individual conduit means connecting each of said switches to a control air inlet of one of a plurality of actuating valves, each actuating valve being associated with one of said tools, conduit means connecting said gas source to a low pressure drive gas regulator, low pressure drive gas conduit means connecting said low pressure drive gas regulator to each of said actuating valves, conduit means connecting said actuating valves associated with said conventional tools to said conventional tools, conduit means connecting said pressurized gas source to a high pressure inlet of a relay valve, conduit means connecting the drive gas outlet of the actuating valve associated with said high pressure tool to a low pressure inlet of said relay valve and conduit means connecting a high pressure outlet of said relay valve to said

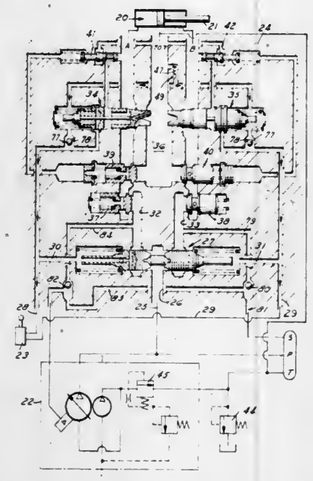


high pressure tool, whereby pilot gas flow to each individual actuating valve actuates low pressure drive gas flow from each of said valve and low pressure drive gas flow from said equivalent valve associated with said high pressure tool to said relay valve actuates high pressure drive gas flow to said high pressure tool.

4,201,052
POWER TRANSMISSION

Robert H. Breeden, Metamora; Robert G. Farrell, Ortonville, and Henry D. Taylor, Pontiac, all of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed Mar. 26, 1979, Ser. No. 24,058
Int. Cl.² F16H *39/46*; F15B *11/16*
U.S. Cl. 60—445 **40 Claims**



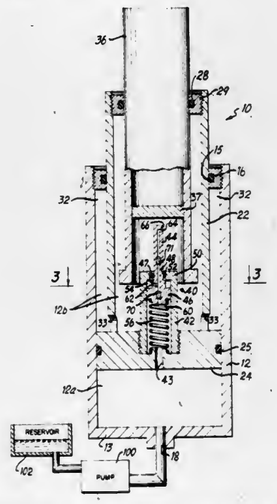
12. For use in hydraulic control system comprising a hydraulic actuator having opposed openings adapted to alternately function as inlets and outlets for moving the element of the actuator in opposite directions, and a variable displacement pump with load sensing control for supplying fluid to said actuator,
a meter-in valve to which the fluid from the pump is supplied,
said valve being pilot controlled,

a pair of lines extending from said meter-in valve to the respective openings of an actuator,
a meter-out valve associated with each line to the actuator for controlling the flow out of said actuator,
each said meter-out valve being adapted to be pilot operated by the pilot pressure from a pilot controller.

4,201,053
TELESCOPIC CYLINDER AUTOMATIC SYNCHRONIZER

Richard E. Atkey, Memphis, Tenn., assignor to Dover Corporation, Memphis, Tenn.

Filed Nov. 6, 1978, Ser. No. 957,832
Int. Cl.² F15B *15/16*
U.S. Cl. 60—459 **6 Claims**



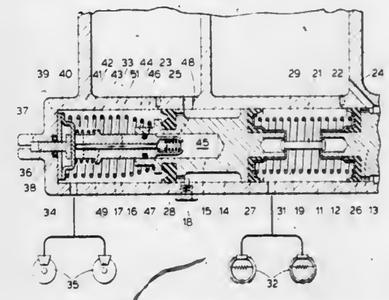
1. In a telescopic hydraulic cylinder apparatus comprising a base cylinder closed at its lower end, at least one intermediate cylinder, and a piston rod extending outwardly from the upper end of said main cylinder, a piston secured to the inner end of the innermost intermediate cylinder dividing said main cylinder into a lower chamber between said piston and said lower end, and an upper chamber between said piston and said upper end, means for supplying hydraulic fluid under pressure into said lower chamber, and flow means for permitting fluid to flow in one direction only from said lower chamber into said upper chamber, the improvement wherein said flow means comprises a compensator pump means, said piston rod arranged so as to engage selectively said pump means at certain operating states of said apparatus, said pump means including means for permitting fluid to flow from said lower chamber into said pump means when said piston rod engages said pump means, and for pumping said fluid within said pump means into said upper chamber when said piston rod is moved out of engagement from said pump means.

4,201,054
HYDRAULIC MASTER CYLINDER

Wilfred Bainbridge, Banbury, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Jun. 9, 1978, Ser. No. 914,042
Claims priority, application United Kingdom, Jun. 17, 1977, 25342/77
Int. Cl.² B60T *11/20*
U.S. Cl. 60—562 **5 Claims**

1. A master cylinder for a motor vehicle split hydraulic braking system having disc brakes for acting on one set of wheels and drum brakes for acting on another set of wheels, the master cylinder comprising:
a housing body;
first and second bore portions in the housing body;
a first piston slidable in the first bore portion and a second piston slidable in the second bore portion;
a first chamber in the housing body for connection to the drum brakes and which in use is pressurized by the first piston;
a second chamber in the housing body for connection to the disc brakes and which in use is pressurized by the second piston;
a blind bore in one of said pistons;
a control piston connected to said housing body;
said control piston slidably positioned in said blind bore;
a control chamber in said one piston defined by the blind bore and the control piston, pressure in the control chamber acting to retard movement of the second piston in the brake-applying direction;

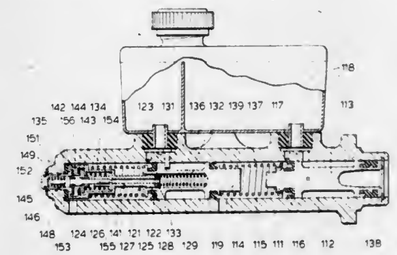


first valve means operable to trap a quantity of hydraulic fluid in the control chamber, and second valve means operable to release fluid from the control chamber, the arrangement being such that after an initial movement of the second piston in the brake-applying direction the first valve means operates to allow the control piston to pressurize the control chamber and prevent a substantial increase in the pressure in the second chamber until the pressure in the first chamber has risen to a predetermined magnitude to cause further movement of the second piston at which the second valve means operates to reduce pressure in the control chamber to allow movement of the second piston to increase pressure in the second chamber.

4,201,055
HYDRAULIC MASTER CYLINDER

Wilfred N. Bainbridge, Banbury, and David Parsons, Kenilworth, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Filed Aug. 15, 1978, Ser. No. 933,880
Claims priority, application United Kingdom, Aug. 18, 1977, 34757/77
Int. Cl.² B60T *11/20*
U.S. Cl. 60—562 **3 Claims**



1. A master cylinder for a motor vehicle split hydraulic

braking system having disc brakes for acting on one set of wheels and drum brakes for acting on another set of wheels, the master cylinder comprising a housing body, first and second bore portions in the housing body, first and second pistons slidable in said first and second bore portions respectively, a first chamber in the housing body for connection to the drum brakes and which in use is pressurized by the first piston, a second chamber in the housing body for connection to the disc brakes and which in use is pressurized by the second piston, a blind bore in one of said first and second pistons, a control piston connected to said housing body, the control piston being slidable in said blind bore, a control chamber in said one piston defined by the blind bore and the control piston, pressure in the control chamber acting to retard movement of the second piston in the brake applying direction, first valve means operable to trap a quantity of hydraulic fluid in the control chamber when the second piston has made an initial movement in the brake-applying direction and second valve means operable to release fluid from the control chamber when pressure in the control chamber has risen to a predetermined magnitude, wherein the improvement comprises:

said first valve means comprises a first valve seat in the housing body, a valve member for co-operation with said first valve seat to close communication from the control chamber to the second chamber, a valve plunger movable by pressure in the second and control chambers and a first control spring acting to bias the valve plunger against the pressure in the second and control chambers, the valve plunger acting on the valve member under the bias of said first control spring to unseat the valve member from said first valve seat;

and said second valve means comprises a second valve seat on the valve plunger which co-operates with the valve member to prevent communication from the control chamber to the second chamber and a second, preloaded, control spring which acts between the valve member and the valve plunger to seat the valve member on said second valve seat, the valve plunger being further movable by the pressure in the second and control chambers against said second control spring to unseat the valve member from said second valve seat.

4,201,056

BRAKE BLEEDER ADAPTER

David L. De Martelaere, Troy, and William E. Bogard, Sterling Heights, both of Mich., assignors to Kent-Moore Corporation, Mich.

Filed May 1, 1978, Ser. No. 901,593
Int. Cl.[2] B60T *11/30*; F15B *7/10*
U.S. Cl. 60—584 12 Claims

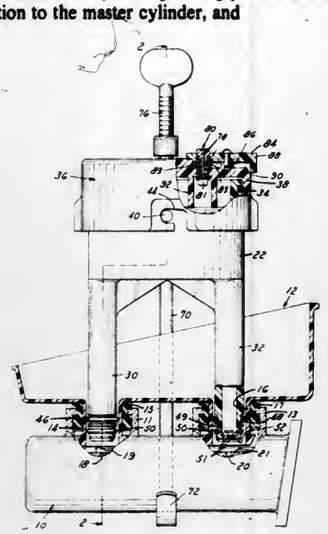
1. A brake bleeder adapter for use with a master cylinder having an upwardly open fragile reservoir thereon, comprising, in combination:

a body portion having a hollow interior for receiving hydraulic brake fluid under pressure,

means for de-aerating pressurized brake fluid delivered to the body portion,

a hollow leg portion on the body portion communicating with de-aerated fluid therein to be extended down through the upwardly open reservoir for communication with the master cylinder essentially independent of the reservoir,

means for removably sealing the leg portion in the aforesaid relation to the master cylinder, and



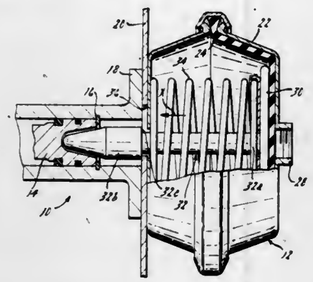
means for cooperating with the adapter and master cylinder independently of the reservoir to releasably retain the leg portion in the aforesaid relation with the master cylinder.

4,201,057

AIR HYDRAULIC BRAKE ACTUATOR

Terence A. Martin, Chelmsford, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1978, Ser. No. 929,752
Claims priority, application United Kingdom, Aug. 31, 1977, 36275/77
Int. Cl.[2] F15B *15/18*
U.S. Cl. 60—593 1 Claim



1. An air/hydraulic actuator for a vehicle braking system, comprising a hydraulic master cylinder having a bore open at one end and adapted for mounting adjacent the open end of the bore to one face of a vehicle member, a piston slidable in the bore, a stop in the cylinder for limiting movement of the piston in one direction, a pneumatic actuator adapted to be mounted to an opposite face of the vehicle member and including a push rod engagable with the piston to move it away from the stop on application of compressed air to the actuator, the push rod normally being biased away from the piston, the push rod extending in use through an aperture in the vehicle member and being formed with a stop surface engageable with said one face of the vehicle member;

said stop surface being in the form of an annular shoulder at right angles to the longitudinal axis of the push rod; and

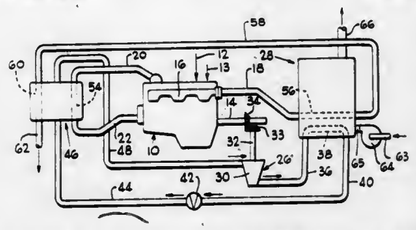
a vehicle member having an aperture for passage of the push rod, the aperture being elongate with a narrow portion dimensioned to engage said stop surface and a broad portion dimensioned to permit the stop surface to pass therethrough during assembly and disassembly.

4,201,058

METHOD AND APPARATUS FOR GENERATING STEAM

Raymond C. Vaughan, 135 E. Main St., Hamburg, N.Y. 14075

Division of Ser. No. 655,477, Feb. 5, 1976, Pat. No. 4,087,974.
This application Oct. 25, 1977, Ser. No. 844,877
Int. Cl.[2] F01K *23/10*
U.S. Cl. 60—618 9 Claims



1. Apparatus for generating vapor such as steam comprising:

(a) an internal combustion engine having a mechanical energy output and a waste heat output;

(b) a heat pump having a low temperature side and a high temperature side;

(c) means operatively connected to said engine and to said heat pump for coupling mechanical energy output from said engine to said heat pump for driving said pump;

(d) means operatively connected to said engine and to said heat pump for transmitting waste heat output from said engine to the low temperature side of said heat pump;

(e) an unfired boiler having an inlet for receiving water and an outlet for releasing steam generated in said boiler and

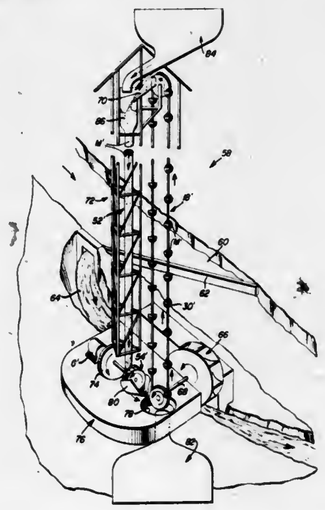
(f) means operatively connected to said heat pump and to said boiler for placing said boiler in heat exchange relationship with the high temperature side of said heat pump.

4,201,059

HYBRID ENERGY CONVERTOR

Hubert C. Feder, 1517 Roosevelt Ave., Alamogordo, N. Mex. 88310

Filed Oct. 26, 1977, Ser. No. 845,781
Int. Cl.[2] F03G *3/04*
U.S. Cl. 60—639 7 Claims



1. A method of energy transmission which changes the energy in both form and substance wherein the output speed is constant regardless of the input speed so long as the input torque is equal to or greater than the output torque, comprising the steps of:

(a) translating an input kinetic energy of a variable velocity into a potential energy of a predetermined height by raising a plurality of substantially equal masses to said height and channeling the masses directly to a free fall location without providing for storage of the masses;

(b) translating the potential energy into an output kinetic energy of a constant velocity which is a function of the height of the potential energy and independent of the velocity of the input kinetic energy by allowing the masses to free fall through a distance substantially equal to said height under the force of gravity; and

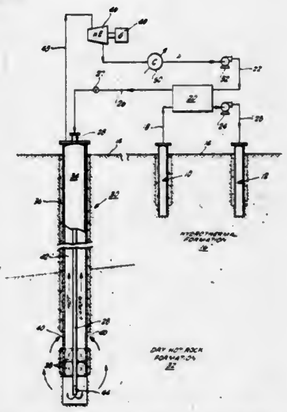
(c) raising the masses after free fall thereof to said height without providing for storage of the masses.

4,201,060

GEOTHERMAL POWER PLANT

Harry D. Outmans, Laguna Beach, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Aug. 24, 1978, Ser. No. 936,609
Int. Cl.[2] F03G *7/00*
U.S. Cl. 60—641 12 Claims



1. A method for generating electricity using the thermal energy contained in a subterranean hydrothermal formation and a subterranean dry hot rock formation, which comprises:

(a) producing a hot geothermal fluid from said hydrothermal formation;

(b) passing said hot geothermal fluid in heat exchange relationship with a liquid working fluid, thereby forming a cool geothermal liquid and supplying a substantial amount of sensible heat to preheat said working fluid;

(c) passing the preheated working fluid through a first well into heat exchange relationship with said dry hot rock formation, thereby further heating and vaporizing said working fluid to form a hot vapor;

(d) recovering said hot vapor; and

(e) utilizing said hot vapor in a heat engine/generator to generate electricity.

4,201,061

AUTOMATIC CHILLED WATER SETPOINT TEMPERATURE CONTROL

Edward J. Heffernan, Skaneateles, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

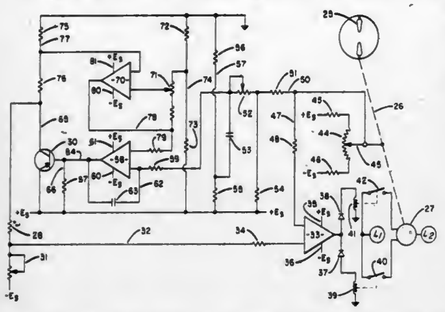
Filed Mar. 22, 1978, Ser. No. 889,089
Int. Cl.[2] F25D *17/00*; F25B *1/00*
U.S. Cl. 62—98 11 Claims

1. In a control for a mechanical refrigeration machine having means to produce a first electric control signal having a magnitude that is a function of the amount of work done by a com-

pressor of the machine, and means to produce a second electric control signal having a magnitude which represents a variable component of a setpoint temperature, the improvement comprising:

means to sense the magnitude of the first electric control signal;

means to change the magnitude of the second electric control signal in response to a change in the magnitude of the



first electric control signal so that the variable component of the setpoint temperature changes in response to a change in the amount of work done by the compressor; and

means to delay changing the magnitude of the second electric control signal so that the amount of work done by the compressor becomes stable before the variable component of the setpoint temperature changes.

4,201,062

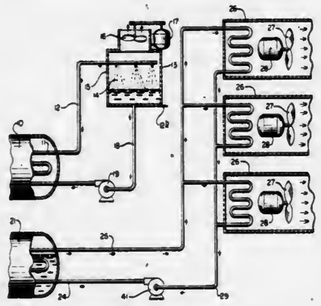
METHOD AND APPARATUS FOR CONSERVING ENERGY IN AN AIR CONDITIONING SYSTEM

George Martinez, Jr., P.O. Box 1141, Gonzales, La. 70737

Filed Jul. 27, 1978, Ser. No. 928,537

Int. Cl.² F25B *5/00*; F28D *5/00*; F25B *1/00*

U.S. Cl. 62—117 **8 Claims**



1. An air conditioning system comprising:

a. condenser means;

b. evaporator means;

c. cooling source means;

d. compressor means for conveying vaporous refrigerant from said evaporator means to said condenser means;

e. means for conveying liquid refrigerant from said condenser means to said evaporator means;

f. first liquid circuit means for circulating liquids between said evaporator means and said cooling unit means;

g. second liquid circuit means for circulating liquids between said condenser means and said cooling source means;

h. reservoir means for containing refrigerant;

i. means for transferring liquid refrigerant from said reservoir means to said condenser means and said evaporator means to fill both said condenser means and said evaporator means with liquid refrigerant; and,

j. pump means for circulating said liquid refrigerant between said condenser means and said evaporator means after said condenser means and said evaporator means have been filled.

5. A method for conserving energy in an air conditioning system having condenser means, evaporator means, cooling source means, cooling unit means, first liquid circuit means for circulating liquids between said evaporator means and said cooling unit means, second liquid circuit means for circulating liquids between said condenser means and said cooling source means, means for conveying liquid refrigerant from said condenser means to said evaporator means, and means for conveying vaporous refrigerant from said evaporator means to said condenser means comprising:

a. de-energizing said means for conveying vaporous refrigerant from said evaporator means to said condenser means;

b. substantially filling said condenser means and said evaporator means with liquid refrigerant;

c. circulating said liquid refrigerant between said evaporator means and said condenser means; and,

d. circulating liquids through said second liquid circuit means to transfer heat from said condenser means.

4,201,063

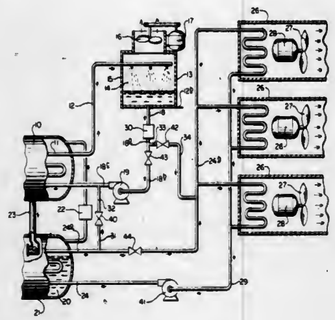
METHOD AND APPARATUS FOR CONSERVING ENERGY IN AN AIR CONDITIONING SYSTEM

George Martinez, Jr., P.O. Box 1141, Gonzales, La. 70737

Filed Jul. 27, 1978, Ser. No. 928,538

Int. Cl.² F25B *5/00*; F28D *5/00*; F25B *1/00*

U.S. Cl. 62—117 **19 Claims**



1. An air conditioning system comprising:

a. condenser means;

b. evaporator means;

c. cooling tower means;

d. cooling unit means;

e. means for conveying liquid refrigerant from said condenser means to said evaporator means;

f. means for conveying refrigerant from said evaporator means to said condenser means;

g. first liquid circuit means for circulating liquids between said evaporator means and said cooling unit means;

h. second liquid circuit means for circulating liquids between said condenser means and said cooling tower means;

i. means for connecting said first liquid circuit means to said second liquid circuit means to permit said liquids in said first liquid circuit means and said liquids in said second liquid circuit means to commingle and flow through said first and said second liquid circuit means.

13. A method for conserving energy in an air conditioning system having condenser means, evaporator means, cooling tower means, cooling unit means, first liquid circuit means for circulating liquids between said evaporator means and cooling unit means, second liquid circuit means for circulating liquids between said condenser means and said cooling tower means, means for conveying liquid refrigerant from said condenser means to said evaporator means, and means for conveying

refrigerant from said evaporator means to said condenser means, comprising:

a. de-energizing said means for conveying refrigerant from said evaporator means to said condenser means;

b. connecting said first liquid circuit means to said second liquid circuit means to permit said liquids in said first liquid circuit means and said liquids in said second liquid circuit means to commingle and flow through said first and said second liquid circuit means; and,

c. circulating said liquids in said first liquid circuit means and said second liquid circuit means through said first and said second liquid circuit means.

4,201,064

AIR CONDITIONER FOR A BUS

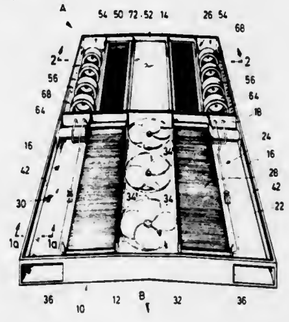
Martin Krug, Möglingen, and Paul R. Bihl, Ditzingen, both of Fed. Rep. of Germany, assignors to Sutrak Transportkalte, GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Apr. 27, 1978, Ser. No. 900,739

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 7714617[U]

Int. Cl.² B60H *3/04*

U.S. Cl. 62—239 **17 Claims**



1. An air conditioner unit adapted to be mounted on the roof of a motor vehicle, said unit comprising a housing with a front wall, two side walls and an upper cover, at least two elongated condensor units being arranged side by side within said housing behind its front wall and extending substantially parallel to said side walls, at least two elongated evaporator units being arranged side by side within said housing behind the condensor units and extending substantially parallel to said side walls, said at least two condensor units being parallel to said side walls, said at least two condensor units being adapted to receive air flowing substantially transversely to their longitudinal axes and parallel to said upper cover, and means for directing such transversely flowing air toward the condensor units.

4,201,065

VARIABLE CAPACITY VAPOR COMPRESSION REFRIGERATION SYSTEM

Charles K. Griffin, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,516

Int. Cl.² F25B *1/10*

U.S. Cl. 62—510 **5 Claims**

1. A vapor compression refrigeration system comprising:

evaporator means for evaporating refrigerant;

compressor means for compressing vaporous refrigerant;

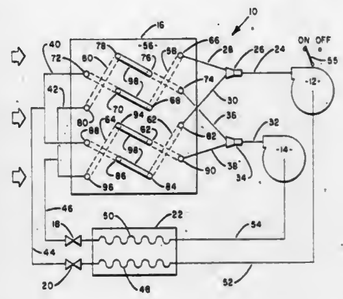
low pressure refrigerant line means for passing refrigerant from the evaporator means to the compressor means;

a condenser including a plurality of generally parallel heat exchange fins and a plurality of refrigerant circuits running through the condenser generally transverse to the heat exchange fins, wherein groups of the refrigerant circuits cover in overlapping fashion the area of the condenser transverse to the direction of the flow of an external heat exchange medium moving thereover;

condenser-evaporator refrigerant line means for conveying condensed refrigerant from the condenser to the evaporator means;

expansion means located in the condenser-evaporator line means for reducing the temperature and pressure of refrigerant passing therethrough;

a plurality of high pressure refrigerant lines for passing refrigerant from the compressor means to the condenser;



refrigerant distribution means in each of the high pressure refrigerant lines, wherein each group of refrigerant circuits is connected to a different distribution means; and

means for selectively preventing the flow of refrigerant through at least a selected one of the high pressure refrigerant lines, wherein the group of circuits connected to the distribution means in the selected refrigerant line is removable from service without appreciably reducing the effective heat exchange area of the condenser.

4,201,066

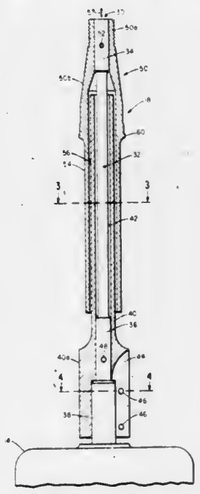
FLEXIBLE SHAFT CONSTRUCTION FOR A HIGH INERTIA CENTRIFUGE

Thomas E. Nolan, Jr., Medfield, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Filed Mar. 29, 1978, Ser. No. 891,341

Int. Cl.² F16C *1/00*, *3/00*

U.S. Cl. 64—1 V **10 Claims**



1. In a centrifuge that includes a motor secured on an elastomeric mount, a rotor vertically spaced above the motor, and a flexible shaft connected at its upper end to a rotor adapter that replaceably supports the rotor and at its lower end to the

motor to transmit rotational energy from the motor to the rotor, the shaft having a relatively long, thin flexible portion intermediate said connections, wherein the improvement comprises a shaft construction comprising,

a first tubular member connected to and extending vertically from the motor toward the rotor,

a second tubular member connected to and extending vertically from said rotor adapter toward said motor,

said first and second tubular members each surrounding said shaft and defining first and second annular clearances between said shaft and one another,

said first and second tubular members each being substantially vertically coextensive with said shaft, and

said shaft being structured and vertically positioned with respect to said motor and said rotor to produce self-balancing of said rotor through a flexure in said flexible portion of said shaft during rotation at the first and at least the second critical speeds,

the lengths of said first and second tubular members and the dimensions of said first and second clearances being selected to limit the lateral deflection of said shaft due to a deformation at any point along its length so that said shaft is not permanently deformed, said deformation including deformation characteristic of the first and at least the second critical speeds.

4,201,067

SAFETY DEVICE IN A CIRCULAR KNITTING MACHINE

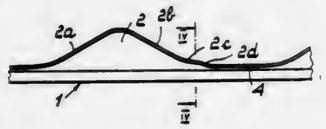
Francesco Lonati, Brescia, Italy, assignor to Costruzioni Meccaniche Lonati S.p.A., Brescia, Italy

Filed Apr. 24, 1978, Ser. No. 899,661

Claims priority, application Italy, Apr. 28, 1977, 22937 A/77

Int. Cl.² D04B 15/32, 15/66

U.S. Cl. 66—222 **5 Claims**



1. A safety device in a circular knitting machine, in particular a high speed single cylinder stocking knitting machine of the type having tiltable pattern jacks, intermediate jacks thereover, needles arranged over said intermediate jacks, and a pattern jack guiding ring, said pattern jacks each having a base face and a lower butt having a bottom face, and said pattern jack guiding ring comprising:

(a) at least one cam having a substantially triangular profile having an upward and a downward sloping portion for lifting and lowering said pattern jacks by engagement with said lower butts,

(b) at least one horizontally extending portion downstream of said at least one cam adapted to permit said pattern jacks to tilt in and out, and

(c) a continuous base surface inside said guiding ring for engaging said base face of said pattern jacks when said lower butts are not being engaged by said at least one cam, wherein said at least one cam further comprises, at the end of said downward sloping portion,

(i) a curvilinear portion joining said downward sloping portion and having a smaller radius of curvature than an ideal radius of connection of said downward sloping portion to said at least one horizontally extending portion, said curvilinear portion tending to reach, with respect to said base surface, a level substantially corresponding to the level of said bottom face of said lower butts of said pattern jacks with respect to said base face of said pattern jacks, and

(ii) a further downward sloping portion between said curvilinear portion and said at least one horizontally extending portion.

4,201,068

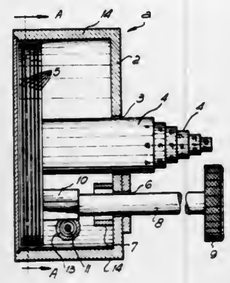
COMBINATION LOCK

Luis Morana, Paraguay 3074, 3000 Ciudad de Santa Fe, Argentina

Filed Nov. 14, 1978, Ser. No. 960,651

Int. Cl.² E05B 37/04, 37/02

U.S. Cl. 70—310 **4 Claims**



1. New combination lock of the type including a box containing a latch operating and latch blocking mechanism; wherein said latch being formed by a axially movable body is provided with a toothed ratchet like section engaging a pinion located at the end of a rod the opposite end of which is provided with a handle for manual operation located outside said box; in said block being installed a number of laminar bodies which are mounted with a rotating character and have their respective centers joined to respective shafts, said shafts forming a telescopic assembly and having their respective operating sections externally in reference to said box; and each one of said laminar bodies has multiple holes equally separated from the center; one hole of each body being of circular section and having a slightly greater diameter than the pinion external diameter; and the remaining holes of each disc having a section of such shape that allows the pinion ingress but blocks the rotation thereof; said rod being installed in a bushing for blocking said pinion, the cross section of said bushing being adapted to block said pinion rotation.

4,201,069

KNOB FOR A DOOR LOCK

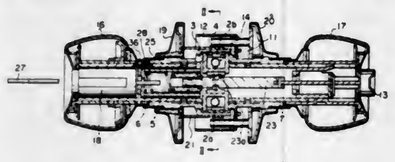
Akira Katayama, 195-2 Kubo Tamaki-cho, and Osamu Shimoi, 2-202 Koyosokushinjyutaku 541-4 Akeno Obato-cho, both of, Watarai-gun, Mie-pref., Japan

Filed Nov. 27, 1978, Ser. No. 964,060

Claims priority, application Japan, Nov. 29, 1977, 52-159170[U]; Dec. 10, 1977, 52-165846[U]; Dec. 28, 1977, 52-179530[U]

Int. Cl.² B60R 25/02; E05B 63/00

U.S. Cl. 70—422 **8 Claims**



1. An improved knob for use with a door lock which door knob is prevented from being forcibly twisted and disconnected from the door lock to prevent releasing of the door lock, the door lock having a spindle, the improvement of which comprises:

a knob shaft having a plurality of breakable projections at the end thereof, the knob shaft transmitting rotation of the knob to the spindle;

a knob back plate to which the plurality of projections at the end of the knob shaft are affixed;

a knob face plate at the foremost end of the knob integrally superposed with the knob back plate;

the knob having a hollow portion and a rear end portion adjacent thereto;

a knob bottom plate loosely positioned on the knob shaft near the rear end of the knob;

a locking projection portion formed on the knob shaft; and

means for resiliently locking the knob bottom plate with the locking projection portion of the knob shaft whereby an excessive twisting force applied to the knob causes the breakable projections of the knob shaft to break permitting the knob shaft to freely rotate on the door lock spindle and whereby pulling out of the door knob from the door lock shaft is prevented by the resilient locking of the knob bottom plate with the locking projection portion of the knob shaft.

4,201,071

MANDREL FOR HIGH PRESSURE TUBE EXTRUSION PRESS

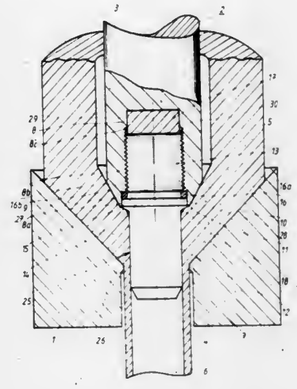
Bertil Mattsson, and Jan Nilsson, both of Robertsfors, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Jan. 27, 1978, Ser. No. 872,873

Claims priority, application Sweden, Feb. 7, 1977, 7701308-

Int. Cl.² B21C 23/32, 25/04

U.S. Cl. 72—60 **5 Claims**



1. A mandrel for use in conjunction with a corresponding cylindrical die located in the cylinder of a high-pressure press useful for hydrostatically extruding tubes, said mandrel comprising:

an elongated tip member including a tip disposed at one end thereof adapted to be positioned in the opening of the die to present an annular gap for shaping material into tubes;

a carrier structure for said tip member and adapted for mounting in said cylinder to fix the position of the tip relative to said die opening, said structure including means presenting a tip member receiving bore having a relatively inner internally threaded portion and an outer cylindrical mouth portion with a diameter which is at least as great as the root diameter of the threads of the threaded portion,

said tip member including a threaded segment at its other end in threaded engagement in said threaded portion of the bore, an annular flange disposed between said tip and said threaded segment and a neck segment disposed between the threaded segment and the flange, the outer diameter of the flange being substantially the same as the inner diameter of the mouth portion and the diameter of the neck segment being no greater than the root diameter of the threads of the threaded segment, said threads of the threaded segment, said flange and said neck segment thereby defining an annular slot in said tip member,

said neck segment and said flange being disposed on the tip member such that said annular slot and at least a portion of the flange are positioned within said mouth portion of the bore when the threaded segment of the tip member is threadably engaged in the threaded portion of the bore, to thus present an annular space in said mouth portion surrounding said neck segment; and

a divided ring element constructed of a material capable of withstanding the pressures and temperatures of a high pressure extrusion operation and comprising a pair of half-ring sections mounted on said flange in said space and in surrounding relationship to said neck segment to facilitate assembly and disassembly of the mandrel.

4,201,070

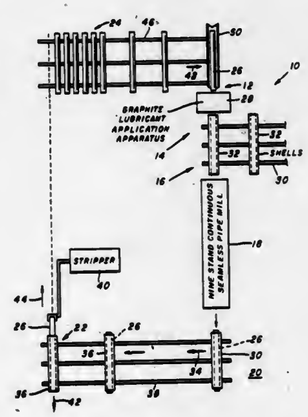
GRAPHITE LUBRICANT APPLICATION METHOD

John J. Seaton, Greentree Borough, and James K. Slagle, Washington Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 730,410, Oct. 7, 1976, Pat. No. 4,132,096. This application Oct. 2, 1978, Ser. No. 947,967

Int. Cl.² B21B 17/04, 45/02

U.S. Cl. 72—42 **2 Claims**



1. The method of lubricating mandrels employed within a seamless pipe mill with a nonsmoking lubricant, said method comprising:

moving the mandrels from an exit portion of the seamless pipe mill toward an entrance end thereof;

cooling the mandrels as they are moved from the exit end of the mill toward the entrance end;

aligning the mandrels along a longitudinal axis parallel to a line of travel of the mandrel within the seamless mill; and

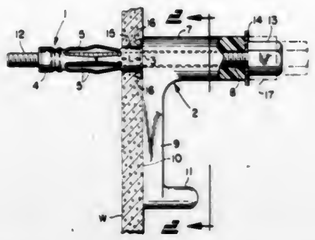
selectively applying a coating of graphite and water mixture, with a binder additive, to each successive mandrel just prior to its insertion within the pipe mill and a seamless pipe shell.

4,201,072

TOOL FOR INSTALLATION OF TOGGLE-SCREW ANCHORS

John H. Snell, 1300 S. Broadway, Lantana, Fla. 33462

Filed Dec. 20, 1978, Ser. No. 971,346
Int. Cl.[2] B21J 15/38
U.S. Cl. 72—114 3 Claims



1. A tool for installation of a toggle-screw anchor of the type including an anchor sleeve having flanged and threaded ends with an intermediate longitudinally slotted section which is radially expanded upon axial movement of the threaded end toward the flanged end; said tool comprising an L-shaped body having an elongated tubular leg with a central passage therethrough and an elongated radially extending leg at one end of said tubular leg having a plane surface perpendicular to the axis of said passage and flush with said one end of said tubular leg; and an actuating screw having head means bearing on the other end of said tubular leg and having a shank extending through said passage and axially beyond said one end for screwing thereonto an anchor sleeve with its flanged end snugly engaged with said one end whereby said projecting screw end and anchor sleeve thereon may be inserted into a hole in a wall or the like with said plane surface of said radially extending leg engaged with the outer surface of the wall to retain said tubular leg, screw, and anchor sleeve perpendicular to the wall; said screw, upon turning thereof with respect to the anchor sleeve by torque applied on its head while said radially extending leg is held against the wall and against rotation, being operative to expand the anchor sleeve to grip the inside surface of the wall around the hole; the radial extremity of said radially extending leg having an axial projection parallel to said tubular leg to facilitate holding of said body against the wall and against rotation when said actuating screw is turned.

4,201,073

REACTION BENDER FOR PIPE

Homer L. Eaton, Leucadia, Calif., assignor to Eaton-Leonard Corporation, Carlsbad, Calif.

Filed Mar. 17, 1978, Ser. No. 887,725
Int. Cl.[2] B21D 7/04
U.S. Cl. 72—155 49 Claims

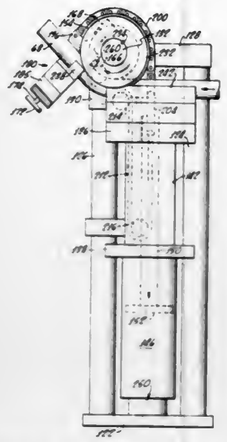
6. In a pipe bending machine wherein a pipe to be bent is clamped between rotary bend and clamp dies and pressed against another member by a pressure die to frictionally restrain and axially tension the pipe while the bend and clamp dies are rotated by a bending force, the improvement comprising

means for driving said pressure die toward said other member with a force that is a function of said bending force,

said machine including a rotary shaft, said bend die being mounted on said shaft,

a clamp die carrier mounted on said shaft for motion toward said bend die, said clamp die being mounted on said carrier,

means for rotating said bend die in response to motion of said clamp die carrier, and



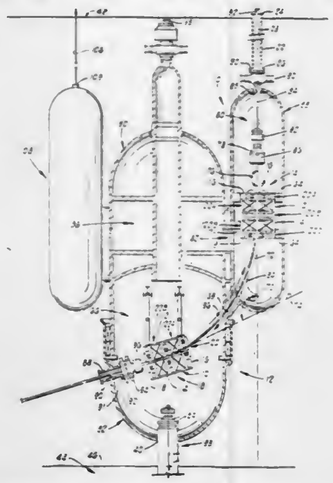
means for applying said bending force to said clamp die carrier to rotate said clamp die carrier and said bend die.

4,201,074

SUBMERSIBLE PIPE INSTALLATION SYSTEMS

John W. Cox, Oklahoma City, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.

Division of Ser. No. 733,377, Oct. 18, 1976, Pat. No. 4,095,437.
This application Jun. 9, 1978, Ser. No. 914,573
Int. Cl.[2] B21D 3/02; F16L 4/00
U.S. Cl. 72—168 26 Claims



1. An apparatus for forming a pipe, comprising:

a frame assembly means;

at least three surfaces supported on the frame assembly means and spaced apart a predetermined distance to form a pipe passageway, the three surfaces each being movable to an engaged position for engaging and forming the portions of the pipe passing through the pipe passageway in a predetermined radius and at least one of the surfaces each being movable to a disengaged position for disengaging the surfaces from the pipe to permit separation of the pipe from the surfaces and the frame assembly means;

means for movably positioning the surfaces on the frame assembly means to the engaged position and to the disengaged position; and

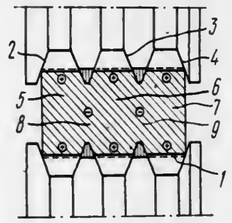
means for separating the surfaces and the frame assembly means from the pipe in the disengaged position of the surfaces.

4,201,075

METHOD OF ROLLING SECTION BILLETS

Julian M. Chumanov, ulitsa Rozy Ljuxemburg, 65, kv.33; Valentin M. Klimenko, bulvar Pushkina, 29, kv. 34; Grigory M. Shulgin, ulitsa Izjumovskaya, 5, kv. 232; Vyacheslav F. Gubaidulin, ulitsa Schorsa, 23, kv. 16, all of Donetsk; Vladimir P. Timofeev, ulitsa Kievskaya,12, kv. 63, Dnepropetrovsk; Vladimir P. Slednev, ulitsa Artema, 147 V, kv. 35, Donetsk; Stanislav N. Ignatiev, ulitsa Saratovskaya, 24, Donetsk; Pavel A. Levichev, ulitsa Orbity, 131, Donetsk, and Jury P. Lyashenko, ulitsa Universitetskaya, 58, kv. 53, Donetsk, all of U.S.S.R.

Filed Feb. 6, 1978, Ser. No. 875,414
Int. Cl.[2] B21B 1/00
U.S. Cl. 72—204 16 Claims



1. A method of rolling section billets in at least two stages comprising the steps of rolling a slab successively so as to form a plurality of juxtaposed billets including outer billets, all having central portions and lateral side portions interconnected by bridge zones, using a series of passes formed of opposing rolls having a gap therebetween and a plurality of transversely aligned grooves by reducing the value of longitudinal tensile stresses in the central portions of said billets at at least one of said stages by changing the position of zones of prevailing reduction transversely of said billets so that said zones are displaced from the zone of said bridges and the lateral sides of the outer billets towards the central portions of said billets, and separating said billets from one another after said billets have been finally shaped; whereby surface flaws and internal flaws in said central portions of said billets are minimized by the reduction of said longitudinal tensile stresses in said portions or zones of said billets.

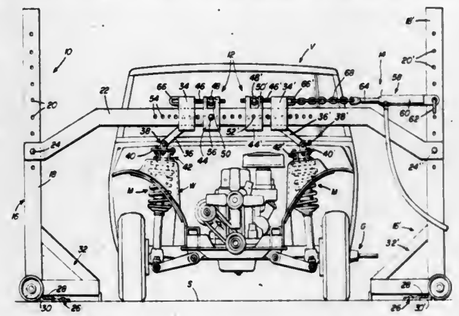
4,201,076

FRONT END ALIGNMENT SYSTEM

Davis R. Jarman, 612 Ward Dr., and Virgil H. Hinson, 206 Fairway Oaks Dr., both of Brunswick, Ga. 31520

Filed Jun. 15, 1978, Ser. No. 915,808
Int. Cl.[2] B21D 1/12, 25/00
U.S. Cl. 72—392 4 Claims

1. An alignment system for non-adjustable motor vehicle front end suspensions, said system comprising support means anchorable relative to an adjacent vehicle being repaired, connector means movably mounted on the support means for removable connection to an element to be straightened, pull means movably mounted on the support means and connectible to the connector means for biasig the connector means and moving the element being straightened a desired amount, said support means including a pair of stands anchorable on a surface supportig the stands, the stands being arrangeable on opposite sides of a vehicle being repaired, a beam connected to and arranged extending between the stands, said support means further including a continuous anchor track having a slot-forming flange and affixable to the support surface, said track being arranged for surroundingly receiving a vehicle being repaired, each of the stands being provided with tongue means for engaging the slot-forming flange and being restrained from movement toward the vehicle, said connector means including a sleeve slidably disposed on the beam, an arm extending cantilever-fashion from the sleeve and connectible to a strut to be straightened, an adapter plate affixed to a upper end of the strut, said arm being attached to the adapter plate, the adapter plate being provided with a plurality of slots to permit the adapter plate to be employed with struts having various stud spacings on the upper end thereof, the connector means further including a collar slidably mounted on the beam and adjustably attached to the sleeve, the collar provided with an opening and the beam being provided with a plurality of holes, a pin en-



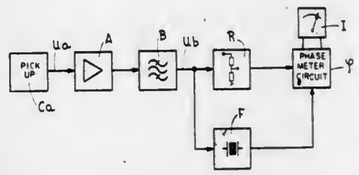
gageable in the opening and a selected one of the holes for restraining the collar, and sleeve, from movement relative to the beam, the collar and sleeve comprising one of a pair of sets of a collar and sleeve, with one of the sets being connected to a respective strut of a pair of struts, and the other of the sets being connected to the other of the struts, with the pulling means including a linear motor pivotally connectible to a one of the stands and to the collar of one of the sets of collar and sleeve for pulling the collar, and associated sleeve, toward the one of the stands to which the motor is connected, the other of the collars being secured to the beam by the pin being inserted in the opening of the collar and a selected one of the holes provided in the beam.

4,201,077

METHOD FOR MEASURING THE RATE OR THE FREQUENCY ERROR OF A QUARTZ TIMEPIECE AND MEASURING APPARATUS FOR CARRYING OUT THIS METHOD

Jacques Froidevaux, La Chaux-de-Fonds, Switzerland, assignor to Electronic Time Company ETIC S.A., La Chaux-de-Fonds, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,993
Claims priority, application Switzerland, Oct. 10, 1977, 12339/77
Int. Cl.[2] G04D 7/12
U.S. Cl. 73—6 10 Claims



1. Method of measuring the frequency error of a timebase frequency signal of a quartz crystal timepiece relative to a reference frequency comprising:

producing an input signal from the timepiece having a frequency equal to the timebase frequency signal,

applying the input signal to a passive quartz crystal filter having a resonant frequency equal to the reference frequency,

producing at least one phase comparison signal corresponding to the phase difference between the input signal and an output signal of the passive quartz crystal filter produced in response to the input signal being applied thereto, and

displaying said frequency error in response to said phase comparison signal on a meter including a dial graduated in units of frequency error.

4,201,078

HORIZONTAL-TYPE HEAD FORM IMPACT TESTER

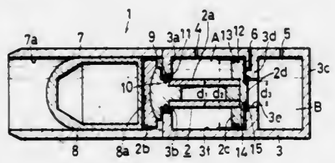
Masaru Morinaga, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 17, 1978, Ser. No. 952,197

Claims priority, application Japan, Oct. 19, 1977, 52-140245[U]

Int. Cl.² G01N *3/30*

U.S. Cl. 73—12 **3 Claims**



1. A horizontal-type headform impact tester comprising:

a cylindrical ram support having a front wall with an axial hole, a closed rear wall and three air inlets, the first of which is for set air, the second of which is for load air and the third of which is for trigger air;

a ram separate from and supported by said ram support;

a cannonball-like headform slidably received within said cylinder and adapted to be shot from said cylinder when said ram is pushed forward;

said ram being maintained stationary when set air pressure is equal to load air pressure within said ram support, but slid forward when the equality between the set and load air pressures is lost by the introduction of compressed trigger air through the third inlet into said ram support.

4,201,079

REMOTE FLOW TRANSDUCER FOR COMMUNICATION CABLE

Leslie Worcester, Los Altos, Calif., assignor to Mark Telephone Products, Inc., Mountain View, Calif.

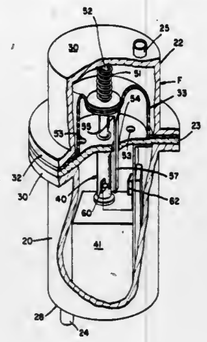
Continuation of Ser. No. 520,192, Nov. 1, 1974, Pat. No. 4,007,628. This application Sep. 29, 1976, Ser. No. 727,746

The portion of the term of this patent subsequent to Feb. 15, 1994, has been disclaimed.

Int. Cl.² G01M *3/28*; G01F *1/22*

U.S. Cl. 73—40.5 R **1 Claim**

1. Apparatus for remotely monitoring air flow at a central station to the interior of a remotely located cable sheath surrounding a plurality of communication conduits, said apparatus comprising: a source of dehumidified air; an air conduit between said source of dehumidified air and the interior of said cable sheath for supplying dehumidified air to the interior of said sheath, a flow meter inserted in said air conduit proximate said sheath for passing at least part of the air there through to said sheath, said flow meter including a housing having an inlet for receiving at least part of said air, an outlet for discharging at least part of said air, and a biased diaphragm mounted for movement with respect to said housing responsive to changes in flow of said dehumidified air from said conduit to said cable sheath, means for defining an aperture in said diaphragm, a tapered member mounted to said housing and coacting with said aperture for defining changing air flow areas between said inlet and outlet upon changing concentric movement of said aperture over said tapered member responsive to changes in fluid flow between said inlet and outlet; a member having variable optical density within said meter operatively attached to said diaphragm for relative movement to said meter with said diaphragm responsive to fluid flow; a light source in said flow meter on one side of said member of variable optical density; a photo sensor on the other side of said member of variable optical density for receiving from said light source a signal proportional to the diaphragm actuated movement of



said member of variable optical density; at least a pair of electrical conduits extending between said central station and said flow meter; means for remotely monitoring and powering said light source and photo sensor through said pair of electrical conduits; means for connecting said photo sensor across said pair of electrical conduits to impart between said conduits said signal proportional to the diaphragm actuated movement of said member of variable optical density; and meter means at said central power station connected across said electrical conduits for reading said proportional signal.

4,201,080

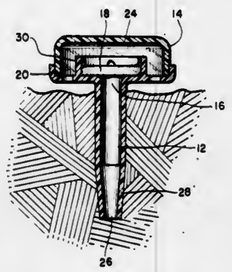
MOISTURE INDICATOR

Bernard Slepak, 252 Greenbay Rd., Highland Park, Ill. 60035; John E. Tucker, Cincinnati, Ohio, and William P. Heinrich, McHenry, Ill., assignors to Bernard Slepak, Chicago, Ill.

Continuation of Ser. No. 744,738, Nov. 24, 1976, abandoned. This application May 18, 1978, Ser. No. 906,942

Int. Cl.² G01N *25/56*

U.S. Cl. 73—73 **17 Claims**



10. A soil moisture indicator comprising:

an upper chamber, said upper chamber being defined by a supporting collar and a cap of transparent material positioned upon said collar, said upper chamber containing vents to the outer atmosphere;

a lower chamber, said lower chamber being provided with a stem portion having a bottom opening for communication with the subsurface of the soil;

passageway means interconnecting said upper chamber and said lower chamber;

a membrane positioned across said interconnecting means of said chambers, and separating said upper and lower chambers whereby substantial portions of moisture communicating between said upper and said lower chamber traverse said membrane; and

an indicator composition contained on said membrane having a color change responsive to a relative humidity above about 70%.

4,201,081

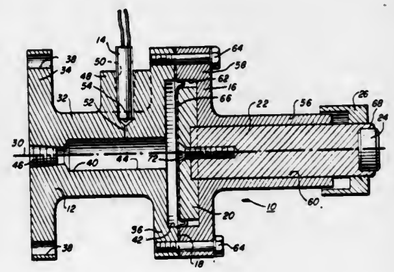
PRESSURE RESPONSIVE SENSING DEVICE

Melvin E. Bonomo, Bloomington, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Filed Jul. 17, 1978, Ser. No. 925,046

Int. Cl.² G01G *5/04*

U.S. Cl. 73—141 R **3 Claims**



1. An improved pressure sensitive transducer measurement device comprising, in combination:

a housing, said housing defining a chamber open at one end having a tubular housing wall;

a generally non-compressible fluid within the chamber;

a constricted passage through the housing wall to the chamber for receipt of said fluid;

an electronic transducer device attached to the housing in communication with the constricted passage and on the outside of the chamber;

a cover plate over the open end of the housing and attached to enclose the chamber;

a diaphragm member retained between the cover plate and the housing and defining a generally planar interior surface of the chamber at the open end;

a plate member retained by the cover plate in opposed relation with the diaphragm member on the side of the diaphragm member opposite the interior of the chamber;

said cover plate having a bearing passage defining a bearing surface; and

a stem connected to the plate member and having an anvil attached to an end, said end generally frictionlessly projecting through the bearing passage in the cover plate for receipt of a force, said stem transmitting said force through the plate member against the diaphragm and to the noncompressible fluid within the chamber, so that the pressure in the fluid is equal to the force divided by the area of the interior surface of the diaphragm member, said pressure being transmitted through the constricted passage to the electronic transducer device, the diameter of the constricted passage and the ratio of the area of said plate member to the anvil so dimensioned to thereby avoid hysteresis in the output of said device, the ratio of the length of the bearing surface to the diameter of the stem being greater than 2.0 to 1.

4,201,082

PROCESS AND EQUIPMENT FOR DETERMINING THE DENSITY OF A LOADED DRILLING FLUID FROM A DEEP WELL, IN PARTICULAR AN OIL WELL

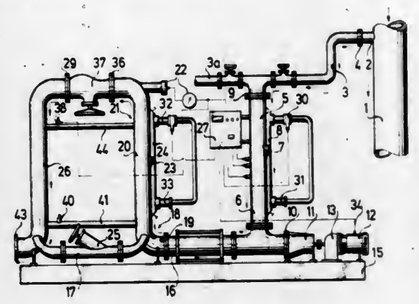
Wolfgang Dockhorn, Frankenwaldstr. 13A, D-4460 Nordhorn, Fed. Rep. of Germany, and Arnoldus Achterberg, Herodotuslaan 43, Assen, Netherlands

Filed May 23, 1978, Ser. No. 908,667

Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723618; May 18, 1978, 2821746

Int. Cl.² E21B *47/06*

U.S. Cl. 73—153 **18 Claims**



1. A process for measuring the gas content of a loaded, well drilling fluid comprising the steps of:

obtaining a sample of the fluid from the well;

supplying the fluid sample to a first chamber having a first pressure condition therein;

ascertaining the density of the drilling fluid under the first pressure condition;

removing the fluid sample from said first chamber and supplying same to a second chamber having a second pressure condition therein different from the first pressure condition;

ascertaining the density of the drilling fluid under the second pressure condition; and

determining, by means of the densities ascertained under the first and second pressure conditions, the gas content of the drilling fluid.

4,201,083

VELOCITY DETECTING APPARATUS

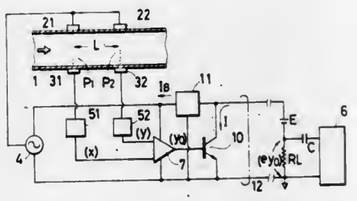
Yoshio Kurita, and Yukitake Shibata, both of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 912,954

Claims priority, application Japan, Jun. 10, 1977, 52-69269

Int. Cl.² G01P *5/18*; G01F *1/70*

U.S. Cl. 73—194 E **4 Claims**



1. A velocity detecting apparatus comprising:

a two wire transmission line connecting a detecting end with a receiving end;

an operational circuit located on the detecting end receiving electric power through said transmission line and capable of detecting noise signals obtained from a relatively moving object at two points spaced apart from each other in

the direction of the motion and of producing an output signal responsive to the difference between the two noise signals;

a current control element located on the detecting end and connected to said transmission line to control the current flowing therein by the output signal of said operational circuit;

a d-c power source and current detecting means located on the receiving end and connected in series with said transmission line; and

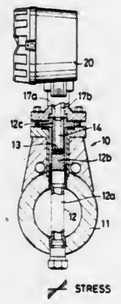
analysis means located on the receiving end to receive an input signal from said current detecting means and provide a signal related to the velocity of said moving object.

4,201,084

VORTEX FLOW METER

Ichizo Ito; Toshio Aga, and Tetsuo Ando, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Nov. 9, 1978, Ser. No. 959,323
Claims priority, application Japan, Nov. 14, 1977, 52-136416; May 24, 1978, 53-61903
Int. Cl.² G01F *1/32*
U.S. Cl. 73—194 VS **10 Claims**



1. In a vortex flow meter having a vortex generator for producing Karman's vortices proportional to the flow velocity in a fluid to be measured and a piezoelectric sensor for detecting a vortex signal based on the Karman's vortices as a change in the quantity of electric charges comprising in combination:

(a) a charge amplifier coupler to said piezoelectric sensor for converting the alternating charge output of said sensor into an AC signal voltage;

(b) a filter circuit having a low-pass characteristic coupled to said charge amplifier;

(c) means coupled to said filter circuit for inactivating the low-pass filter characteristics of said filter circuit when said signal voltage exceeds a predetermined level;

(d) means coupled to said filter circuit for converting said signal voltage into a pulse signal;

(e) a time constant circuit having said pulse signal applied thereto;

(f) a logic circuit having said pulse signal and the other of said time constant circuit applied thereto functioning as an exclusive OR gate for producing an output pulse signal whose duty ratio corresponds to the vortex frequency; and

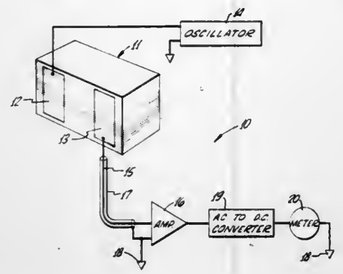
(g) an output circuit coupled to said logic circuit for converting the pulse output of said logic circuit into a DC signal representing the flow velocity or quantity of the fluid to be measured.

4,201,085

APPARATUS FOR DETERMINING THE LIQUID LEVEL IN A TANK

Roger G. Larson, 911 Laguna Rd., Fullerton, Calif. 92635

Filed Dec. 14, 1978, Ser. No. 969,334
Int. Cl.² G01F *23/26*
U.S. Cl. 73—304 C **8 Claims**



1. Apparatus for determining the liquid level in a tank comprising:

a pair of electrode plates secured to the outside surface of said tank in parallel, horizontally spaced relationship whereby the capacitance between said plates increases as the liquid level in said tank increases;

means for generating an AC voltage of a sufficiently high frequency that the capacitive portion of the current between said plates is large compared to the resistive portion thereof;

means for coupling said AC voltage to one of said plates;

differentiator circuit means having an input and an output;

means for coupling the other of said plates to said input of said differentiator circuit means; and

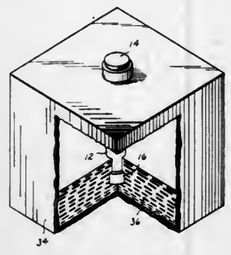
indicator means operatively coupled to said output of said differentiator circuit means for providing a quantitative indication of the volume of liquid in said tank.

4,201,086

VIEWING ROD FOR DETERMINING THE LEVEL OF LIQUID WITHIN A RECEPTACLE

Ira D. Jones, 1023 S. Main St., South Bend, Ind. 46601

Filed Nov. 20, 1978, Ser. No. 962,285
Int. Cl.² G01F *23/02*
U.S. Cl. 73—327 **1 Claim**



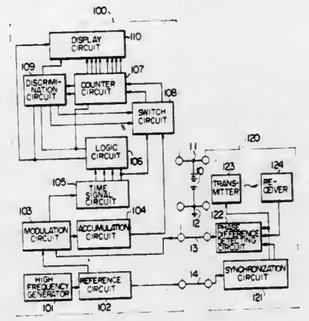
1. A device for viewing the level of liquid within a receptacle comprising a rod having light transmitting properties and an axis, said rod including a viewing end and an image transmitting end, said transmitting end having an end face interrupted by a concave conical depression defining a concave conical surface and being surrounded by an opaque sleeve, said sleeve extending from the end face of said image transmitting end to intermediate said rod ends, said rod having an exterior surface laterally disposed from said rod axis and about said conical surface, a transverse bore through said rod and sleeve in communication with said depression, a hollow pin fitted into said bore at the sleeve to secure the sleeve to the rod, and means for anchoring said rod to said receptacle in a vertical orientation, whereby the level of said liquid when reaching said rod transmitting end will cause the venting of said depression and a change in visual observation of the transmitting end when viewed from the viewing end of said rod along said rod axis.

4,201,087

APPARATUS FOR MEASURING TEMPERATURE

Sigeyuki Akita, Nukata, and Hisato Wakamatsu, Toyota, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 13, 1978, Ser. No. 924,229
Claims priority, application Japan, Jul. 20, 1977, 52/87087
Int. Cl.² G01K *11/00*
U.S. Cl. 73—339 A **6 Claims**



1. An apparatus for measuring the temperature of an object which is a medium for ultrasonic sound wave propagation, said apparatus comprising:

pulse generator means for generating first pulse signals continuously at a predetermined frequency;

transmitter means for transmitting ultrasonic sound waves toward said object in synchronized relation with said first pulse signals of said pulse generator means;

receiver means for receiving said ultrasonic sound waves transmitted through said object at a location spaced from said transmitter means by a predetermined distance, said receiver means generating second pulse signals in synchronized relation with the received ultrasonic sound waves, said receiver means including,

a transducer for producing transducer signals across output terminals thereof in response to said received ultrasonic sound waves, and

a comparator connected to receive said transducer signals across input terminals thereof for converting said signals into said second pulse signals, said comparator being provided with a resistor between the output terminal and one of said input terminals thereof such that said second pulse signals is kept independent of the temperature;

detector means for detecting the phase difference between said first and second pulses to generate third pulse signals having time intervals equal to the detected phase difference; and

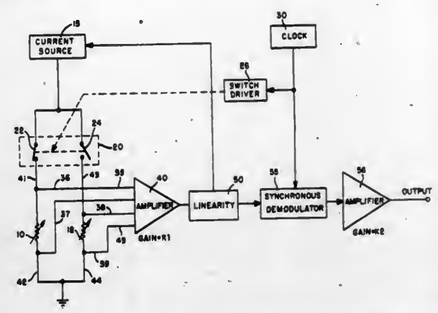
measuring means for measuring said time intervals of said third pulses to provide output values indicative of the temperature of said object in proportion to the measured time interval.

4,201,088

DIFFERENTIAL MEASURING SYSTEM

Harry L. Trietley, Jr., Yellow Springs, Ohio, assignor to Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

Filed Dec. 4, 1978, Ser. No. 966,261
Int. Cl.² G01K *7/16*
U.S. Cl. 73—342 **6 Claims**



2. Apparatus for measuring the differential between a plurality of physical quantities, including

a plurality of transducers for sensing the physical quantities,

a single, controlled power source,

means for connecting said power source sequentially to said transducers,

amplifier means,

cable means for connecting said transducers to said connecting means and to said amplifier means,

said amplifier means having inputs connected to said transducers through said cable means for measuring continuously a signal developed by said transducers and other signals developed in said transducers and said cable means,

means for modifying the magnitude of the output of said power source in response to the output of said amplifier means to linearize the output of said amplifier means, and

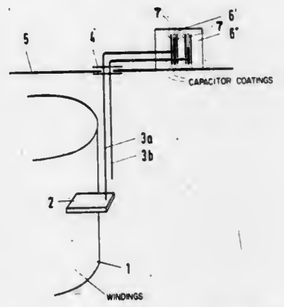
output circuit means connected to the output of said amplifier means for indicating the differential between the physical quantities sensed by said transducers.

4,201,089

TEMPERATURE MEASURING DEVICE FOR TRANSFORMERS AND REACTORS

Willibald Felber, and Elmar Woschnagg, both of Weiz, Austria, assignors to Elin-Union Aktiengesellschaft, Vienna, Austria

Filed Oct. 11, 1977, Ser. No. 840,675
Claims priority, application Austria, Oct. 8, 1976, 7480/76
Int. Cl.² G01K *1/20*
U.S. Cl. 73—350 **10 Claims**



1. A thermometer for measuring the temperature of at least one selected portion of an electrically-operated device disposed in a container,

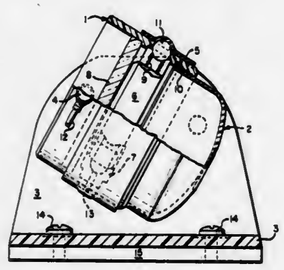
comprising in combination:
- a first electrically non-conducting liquid, having a predetermined coefficient of thermal expansion, in good thermal contact with the selected portion of said electrically-operated device, and adapted to be disposed in said container,
- a first upwardly extending conduit adapted to communicate interiorly with said container, a portion of said first liquid occupying said first conduit,
- an indicating capacitor defining a first chamber communicating with said first conduit, said indicating capacitor including a first dielectric material, at least a portion of said first dielectric material being constituted by another portion of said first liquid,
- a second electrically non-conducting liquid, having substantially said predetermined coefficient of thermal expansion, a second conduit closed at one end thereof, a portion of said second liquid occupying said second conduit, and
- a reference capacitor defining a second chamber communicating with said second conduit, said reference capacitor including a second dielectric material, at least a portion of said second dielectric material being constituted by another portion of said second liquid,
- whereby any change in temperature in said first liquid will result in a change of the volume of said first liquid in said first chamber, so that any operative difference of the capacities of said indicating and reference capacitors will be proportional to any temperature change of the selected portion of said electrically-operated device.

4,201,090

BUOYANT INSTRUMENT CASE AND HOLDER

William M. Davidson, Box 74, Mountain Lakes, N.J. 07046

Filed Sep. 7, 1978, Ser. No. 940,331
Int. Cl.[2] G01D *11/24*; G04B *37/08*
U.S. Cl. 73—431 7 Claims



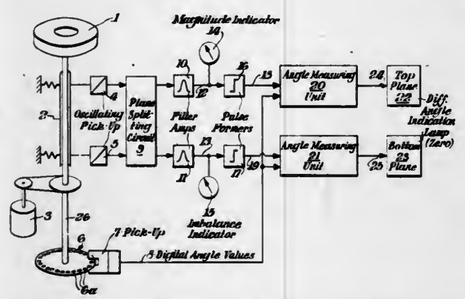
1. A water-tight, buoyant instrument case to enclose one of a variety of selected instruments employing crown or plunger-type controls, such as timers, comprising:
- a water-tight housing consisting of two sections, a first section being a chamber closed at one end by a lens sealed thereto, and a second section being a closure, such as a cap, wherein said second section is releasably engaged to and sealed with said first section, such as by threadable means, for purposes of instrument installation and removal; said first section having a chamber to receive a selected one of the instruments with plunger-type controls; and wherein, the combined displacement volume of said first and second sections is sufficient to offset the weight of case and instrument and provide positive buoyancy therefor, in order to insure flotation thereof, when said case with instrument enclosed is immersed in water;
- flexible sealing means compressed between said first and second sections to form a water-tight enclosure when said two sections are engaged;
- a plunger-type control in said instrument, said instrument supported by a removable support segment, mounted near the middle portion of said first section, said instrument being viewed through said lens which is made a part of said first section;
- at least one aperture near the middle portion of said first section for access to instrument controls through said one of the apertures, thereby providing means for instrument actuation by manual depression of said plunger-type control;
- elastic band sealing means, consisting of a flat, flexible band elastically stretched to fit peripherally over the outer surface of said first section, thereby providing resilient sealing means for said one of the apertures and permitting actuation of said instrument control through said aperture by manual depression of said control with said flexible seal;
- mounting means, such as trunnions, affixed to said case for use in coupling to a mounting bracket or cord carrying means.

4,201,091

METHOD AND APPARATUS FOR DETERMINING THE ANGLE OF IMBALANCE OF A BALANCING MACHINE

Volker Guyot, Buettelborn; Otfrid Maus, Darmstadt, and Martin Mueller, Bickenbach, all of Fed. Rep. of Germany, assignors to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,839
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2324696
Int. Cl.[2] G01M *1/22*
U.S. Cl. 73—462 3 Claims



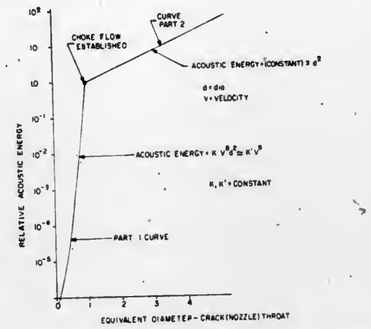
1. A method of determining the angle of imbalance of a rotating body during imbalance measurement on balancing machines with a digital angular position sensor and of rotating the body into the balancing position, comprising the steps of obtaining angle reference pulses from an incremental generator without a zero reference mark connected to the rotating body and imbalance angle representing pulses from vibration sensing means via suitable plane separating, filtering and pulse forming means, transmitting the angle reference pulses initially during the imbalance measurement process to a synchronous counter, dependent on an imbalance representing pulse, subsequently operating the synchronous counter to count on incremental pulses as a continuous counter, utilizing the imbalance angle representing pulses and a counting pulse representing the 180° position of the synchronous counter to control a flip-flop, utilizating the flip-flop to supply the pulses coming from the incremental generator through a reducing divider to a mean value counter during a number of revolutions of the incremental generator equal to the divider factor, whereby the content of the mean value counter represents digitally obtained angle information further during subsequent rotation into a balancing position, counting out the content of the mean value counter directly in response to pulses of the incremental generator in opposite direction beginning with a counting pulse representing the 180° position of the synchronous counter, and achieving the correct angular balancing position when the mean value counter is in the zero position.

4,201,092

METHOD OF DETECTING AND MONITORING A LEAK CAUSED BY A THROUGH WALL CRACK IN A HIGH PRESSURE FLUID SYSTEM

Gary J. Dau, Palo Alto, Calif., assignor to Electric Power Research Institute, Inc., Washington, D.C.

Filed Sep. 6, 1977, Ser. No. 830,988
Int. Cl.[2] G21C *17/00*; G01N *9/24*
U.S. Cl. 73—587 1 Claim



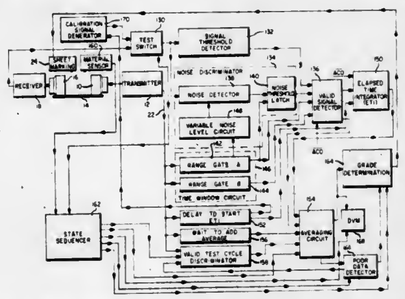
1. A method of detecting and monitoring a leak caused by a through wall crack having a throat diameter in a high pressure fluid system comprising the following sequential steps: sensing the acoustic energy emitted by said wall crack, monitoring the change of said sensed energy over time, ascertaining that a choke flow condition exists wherein the escaping fluid velocity through said throat of said crack is sonic thus rendering the acoustic energy equal to a constant, $k\rho_o A^3_o$, multiplied by the square of the crack throat diameter, determining any crack enlargement in accordance with said change of said sensed energy.

4,201,093

ULTRASONIC SHEET MATERIAL TESTING APPARATUS

James D. Logan, Pullman, Wash., assignor to Metriguard, Inc., Pullman, Wash.

Filed Jul. 20, 1978, Ser. No. 926,702
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—618 28 Claims



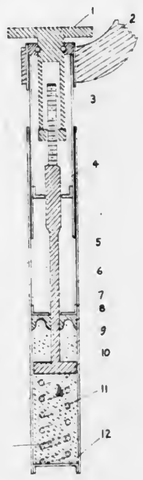
1. A rolling apparatus for ultrasonic testing of sheet material which couples ultrasonic signals in either direction between a focusing surface of a transducer and the plane of the sheet, comprising:
- wheel support means;
- wheel means mounted to said wheel support means for rotation about the axis of said wheel means, said wheel means defining an interior transducer chamber for receiving the transducer and including a rim having a cylindrical contact surface for rolling in contact with the sheet;
- focusing means projecting inwardly into said transducer chamber from said contact surface for transmitting said ultrasonic signals in said either direction between the transducer focusing surface and plane of the sheet;
- said focusing means comprising an annular focusing ring which rotates about the axis of said wheel means with the rolling of said rim.

4,201,094

AUTOMATIC SPEED SHIFT FOR BICYCLES AND THE LIKE

Richard K. Rathmell, 12 Pine Tree Rd., Ramsey, N.J. 07446

Filed Nov. 28, 1977, Ser. No. 855,172
Int. Cl.[2] F16H *11/00*
U.S. Cl. 74—217 B 9 Claims



1. An automatic force-responsive shift control for a vehicle having:
- a. At least one power driven wheel;
- b. Pedals to receive input force provided by the rider;
- c. An adjustable speed force transmission system, to transmit force from the pedals to a wheel, wherein the transmission speed represents a ratio of wheel speed to pedal speed, and the speed ratio can be shifted by a push or pull action;
- d. A force sensing element having means to produce a motion signal in response to a force change;
- e. A motion linkage system, with means to receive the said motion signal and to deliver a push or pull action to the force transmission system;

wherein the said force sensing element is restrained by a hydraulic damping system having means to prevent undesirable fast speed shifting due to shock loads, and means to prevent cyclic shifting due to the normal cyclic applications of force to the pedals.

4,201,095

SEMI-AUTOMATIC GEARSHIFT FOR DUAL DERAILLEUR BICYCLE

Salvatore Cirami, Long Island City, N.Y., assignor to Jack Myles, Freeport, N.Y., a part interest

Continuation-in-part of Ser. No. 763,604, Jan. 28, 1977, abandoned, Continuation-in-part of Ser. No. 607,432, Aug. 25, 1975, abandoned. This application Jun. 1, 1978, Ser. No. 911,460
Int. Cl.[2] F16H *9/00*; G05G *9/00, 13/00*
U.S. Cl. 74—217 B 4 Claims

1. For use on a bicycle having multiple front sprockets that differ from each other in pitch diameter and are mounted for rotation together around a common pedal crank axis, multiple rear sprockets that differ from each other in pitch diameter and are mounted for rotation together around a common rear

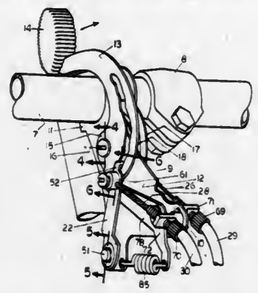
wheel axis, a closed loop of roller chain connecting together one each of said front and rear sprockets, a conventional front derailleur having a front transfer cage that is moved alternately in opposite directions between adjacent front sprocket alignment positions in response to a corresponding movement of a first cable means, and a conventional rear derailleur having a rear transfer cage that is moved alternately in opposite directions between adjacent rear sprocket alignment positions in response to a corresponding movement of a second cable means;

a semi-automatic gearshift in which the unitary result attained is characterized by a single handle member positioning cam means for simultaneous control of the sprocket alignment position of said front and rear transfer cages to mechanically program a progressive series of different drive ratio combinations of said front and rear sprockets; the mode of physical attainment comprising:

support means adapted for attachment to said bicycle;

cam means secured to said support means for placement in any one of multiple drive ratio positions, said cam means providing first and second guide surfaces that are placed in corresponding drive ratio positions, at each of said positions a given point on each of said guide surfaces being designated a drive ratio point, each such pair comprising a corresponding pair of drive ratio points;

the drive ratio points on said first guide surface being located relative to a first common reference on said cam means, at different distance-locations equal in number to the number of said front sprockets and differing sufficiently in distance-location that they program different front sprocket alignment positions of said front transfer cage;



the drive ratio points on said second guide surface being located relative to a second common reference on said cam means, at different distance-locations equal in number to the number of said rear sprockets and differing sufficiently in distance-location that they program different rear sprocket alignment positions of said rear transfer cage;

a handle member connected to said cam means for manual placement of said guide surfaces in any one of said drive ratio positions;

means to stabilize said handle member and said guide surfaces at any one of said drive ratio positions;

limit means to restrict said handle member and said guide surfaces to movement alternately in opposite directions between extreme opposite drive ratio positions;

a first cam follower secured to said support means and adapted to follow said first guide surface;

a second cam follower secured to said support means and adapted to follow said second guide surface;

the combination being so constructed and arranged that in each of said drive ratio positions when said first cam follower is aligned with a drive ratio point on said first guide surface said second cam follower is aligned with the corresponding drive ratio point on said second guide surface;

means for attachment of said first cable means to said first cam follower such that when the first cam follower is moved alternately in opposite directions said front transfer cage is moved alternately in opposite directions;

means for attachment of said second cable means to said second cam follower such that when the second cam follower is moved alternately in opposite directions said rear transfer cage is moved alternately in opposite directions;

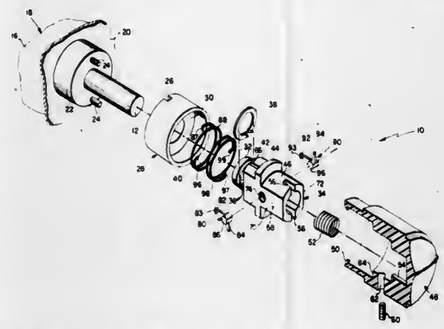
said corresponding pairs of drive ratio points each programming a different drive ratio combination of said front and rear sprockets such that the lowest and highest drive ratio combinations are obtained at said extreme opposite drive ratio positions of said handle member and intermediate drive ratio combinations are obtained in consecutive increments ordered from said lowest to said highest drive ratio positions of said handle member.

4,201,096

SPRING LOCK KNOB ASSEMBLY

Raymond C. Morrison, Scituate, and Albert R. Pratt, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 19, 1977, Ser. No. 861,915
Int. Cl.² G05G 5/16, 1/10; F16D 13/14
U.S. Cl. 74—531 **8 Claims**



1. A control knob assembly for mounting on an end portion of a rotatable shaft and comprising:

a bushing rotatably disposed to encircle the end portion of the shaft and having first interlocking means for transmitting rotary motion to the shaft;

a non-rotatable race disposed adjacent an end portion of the bushing, the race including an annular end wall extended outwardly of the bushing end portion and an attached outer cylindrical wall disposed in spaced encircling relationship with the bushing end portion;

windingly operated spring means annularly disposed between the bushing end portion and the cylindrical wall of the race for exerting radial pressure and releaseably locking the bushing to the non-rotatable race to prevent rotation of the bushing in either angular direction, the windingly operated spring means including an axially aligned pair of oppositely wound coil springs having respective portions disposed for engagement with the bushing end portion;

a knob shell supported rotatably about the bushing and having second interlocking means for transmitting rotary motion thereto;

release means axially aligned with a portion of the knob shell and disposed in engagement with the windingly operated spring means for controllably unlocking the bushing from the nonrotatable race in response to an axial force applied to the shell; and

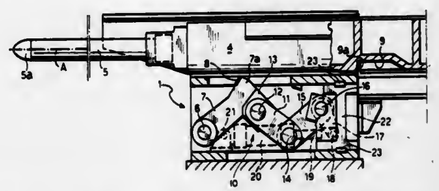
axially operated spring means disposed between the knob shell and the bushing for resiliently positioning the shell with respect to the bushing.

4,201,097

DEVICE FOR LOCKING AND RELEASING THE MANDREL-HOLDING CARRIAGE OF A PIERCING PRESSURE MILL

Teresio Passoni, Magenta; Alberto Mascheroni, Cormano, both of Italy, and Jean P. Calmes, Lausanne, Switzerland, assignors to Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Apr. 18, 1978, Ser. No. 897,544
Claims priority, application Italy, May 19, 1977, 23754 A/77
Int. Cl.² G05G 5/06
U.S. Cl. 74—529 **4 Claims**



1. A device for locking and releasing a mandrel-holding carriage of a piercing pressure mill comprising:

a mandrel-holding carriage selectively movable along a mandrel axis;

at least one lever including a first end pivotally mounted on a horizontal shaft, said horizontal shaft being orthogonally positioned relative to said mandrel axis, and a second end of said lever being selectively rotatable to engage and disengage an abutment formed in said mandrel-holding carriage;

at least one toggle mechanism including a first rod pivotally connected to a second rod, said first rod including a free end being pivotally connected to said second end of said lever and said second rod including a free end being connected to a second horizontal shaft longitudinally displaced along said mandrel axis from said first horizontal shaft;

drive means operatively connected to said second horizontal shaft for actuating said toggle mechanism to selectively rotate said lever to engage and disengage said abutment formed in said mandrel-holding carriage;

said first and second rods being angularly disposed relative to each other upon actuation of said drive means to disengage said lever from said abutment formed in said mandrel-holding carriage; and

said first and second rods being aligned relative to each other upon actuation of said drive means to engage said lever with said abutment formed in said mandrel-holding carriage.

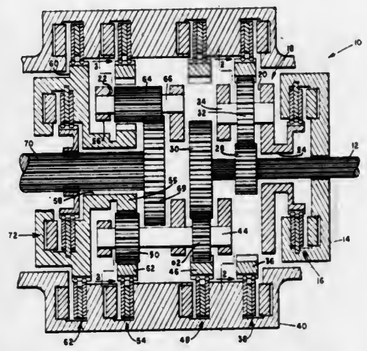
4,201,098

TRANSMISSION

James R. Harvey, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 735,379, Oct. 26, 1976, abandoned.
This application May 30, 1978, Ser. No. 910,394
Int. Cl.² F16H 57/10
U.S. Cl. 74—761 **12 Claims**

1. A transmission comprising: a drive shaft; a driven shaft; first, second, and third axially spaced planetary units have a rotatable common planet carrier spanning the shafts; said first planetary unit including a first sun gear secured to the drive shaft, a first rotatable ring gear surrounding the first sun gear, and a first planet gear journaled in the planet carrier meshing with the first sun gear and the first ring gear; first brake means for selectively braking and releasing the first ring gear; first clutch means for selectively coupling the planet carrier and the drive shaft together; said second planetary unit including a second sun gear secured to the drive shaft axially spaced from the first sun gear, a second rotatable ring gear surrounding the second sun gear, and a second planet gear journaled in the planet carrier for rotation relative to the first planet gear meshing with the second sun gear and the second ring gear; second brake means for selectively braking and releasing the second ring gear; said third planetary unit including a third and fourth relatively rotatable gun gears, a third ring gear surrounding said third sun gear, a third planet gear journaled in the planet carrier meshing with the third sun gear and the third ring gear, and a fourth planet gear journaled in the planet carrier meshing with the third planet gear and the fourth sun gear; third brake means for selectively braking and releasing the third ring gear;



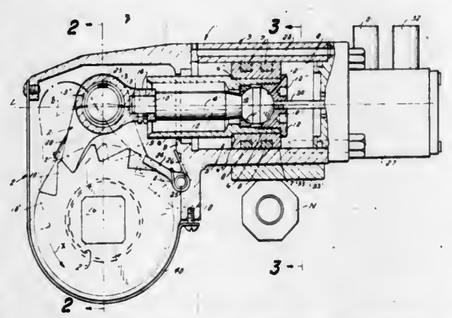
fourth brake means for selectively braking and releasing the third sun gear; second clutch means for selectively coupling the third and fourth sun gears together whereby the driven shaft is rotatable at six different forward ratios when the first, second, and fourth brakes are selectively braked and released and the first and second clutches are selectively coupled and released and whereby the driven shaft is rotatable at two different reverse ratios when the first and second brakes are alternately braked and released with the third brake braked.

4,201,099

HYDRAULIC WRENCH

John K. Junkers, 7 Arrow Head La., Saddle River, N.J. 07458

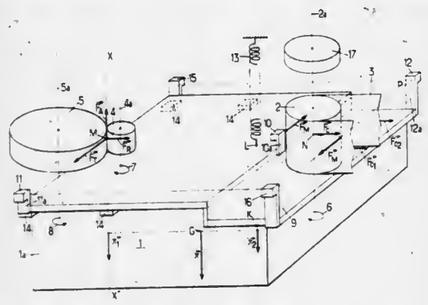
Filed Aug. 14, 1978, Ser. No. 933,134
Int. Cl.² B25B 13/46
U.S. Cl. 81—57.39 **14 Claims**



1. A hydraulic wrench comprising a housing having a first housing portion and an elongated second housing portion extending transverse to said first housing portion and forming a cylinder having an axis extending in the longitudinal direction of said second housing portion; piston means reciprocatable in said cylinder; shaft means having an axis extending transverse to that of said cylinder and being turnably mounted in said first housing portion with an end portion of said shaft means projecting outwardly from said housing; a piston rod connected at one end to said piston means; at least one drive lever mounted in the region of one end turnable about the axis of the shaft means and being pivotally connected at the other

end thereof to the other end of said piston rod; a ratchet wheel fixed to said shaft means for rotation therewith; a ratchet pawl on said drive lever and engaging the ratchet wheel to rotate said shaft means upon reciprocation of said piston means in said cylinder; exchangeable socket means mounted on said end portion of said shaft means for engaging a polygonal head of a threaded connector for turning the latter, whereby during such turning of the threaded connector in one direction a force is created tending to turn said housing about the axis of said shaft means in the opposite direction; and means connected to said second housing portion and extending laterally spaced from said shaft means substantially parallel thereto and adapted to engage a fixed abutment adjacent to the threaded connector engaged in said socket means for counteracting said force.

4,201,100
MACHINES, PARTICULARLY MACHINE-TOOLS, DRIVEN THROUGH A GEAR DEVICE
Marcel F. M. Bruyére, Bois Colombes, France, assignor to Societe dite: Berthiez, Paris, France
Filed Dec. 21, 1978, Ser. No. 972,082
Claims priority, application France, Dec. 23, 1977, 77 38940
Int. Cl.² B23B *9/00*
U.S. Cl. 82—2 D **10 Claims**



1. A machine, particularly a machine-tool, driven by drive means through a gear device, in which the output movement of the gear device is transmitted to the machine by an output pinion of the gear device thereof meshing with a fixed axis ring gear of the machine, said gear device being housed in a casing independent of the machine and fixed thereon by resilient means, wherein said resilient means, on the one hand, comprise at least one spring fixed to the casing so that to cancel out that component of the weight of the casing which is not borne by the meshing axis of the output pinion of the gear device with the ring gear of the machine and, on the other hand, are arranged so that the forces (actions and reactions) exerted on the gear device casing are either borne by the meshing axis of the output pinion of the gear device with the ring gear of the machine, or else are situated in the mean plane (P) of the gear device output pinion which is perpendicular to the axis of said pinion, whereby it is possible to maintain as accurately as possible an equipollence between the axis of the output pinion of the gear device and the fixed axis of the ring gear of the machine.

4,201,101
CUTTING METHOD AND APPARATUS WITH AUTOMATIC TOOL SHARPENING
Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.
Division of Ser. No. 790,149, Apr. 22, 1977, Pat. No. 4,133,235. This application May 25, 1978, Ser. No. 909,506
Int. Cl.² B26D *7/12*
U.S. Cl. 83—22 **6 Claims**

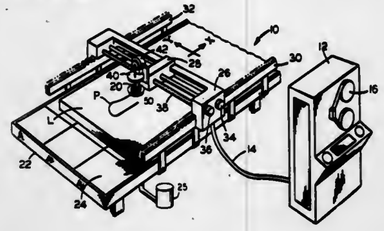
1. A method of cutting limp sheet material with an automatically controlled cutting machine having a cutting blade with a sharp leading cutting edge comprising:

generating fundamental machine command signals for translating the cutting blade and the limp sheet material relative to one another along a predetermined cutting path and translating the blade and material relative to one another in accordance with the command signals with the cutting edge of the blade in cutting engagement with the sheet material;

sensing the force of the material rearwardly against the advancing blade as the blade and material translate relative to one another in cutting engagement;

generating a dull-tool signal in accordance with the sensed rearward force on the blade when the rearward force exceeds a given level; and

sharpening the cutting edge of the blade in response to the dull-tool signal.

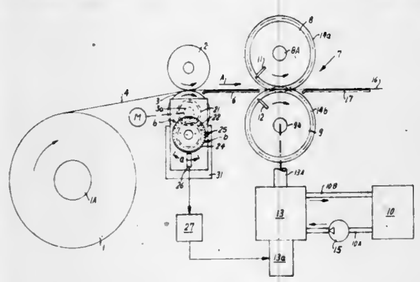


5. In a combination in an automatically controlled cutting machine having a cutting blade with a cutting edge, a blade sharpener for sharpening the cutting edge of the blade and displacement means for guiding the cutting blade in cutting engagement with the material in a spread condition along a predefined line of cut, the improvement comprising:

detecting means comprising a load sensor connected with the blade and detecting rearward forces on the blade as the blade advances along the line of cut, the sensor producing an output indicative of the condition of the cutting edge of the blade during the interaction of the blade and material; and

reacting means including a control regulating the operation of the blade sharpener and responsive to the output of the sensor to control initiation of a sharpening operation.

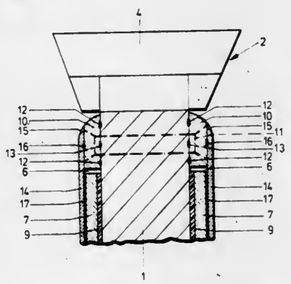
4,201,102
APPARATUS FOR SUBDIVIDING RUNNING WEBS INTO SECTIONS OF VARYING LENGTH
Willy Rudszinat, Dassendorf, Fed. Rep. of Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Fed. Rep. of Germany
Filed Oct. 24, 1978, Ser. No. 954,093
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749363
Int. Cl.² B26D *5/20*
U.S. Cl. 83—298 **10 Claims**



1. Apparatus for severing a running web at variable intervals

to subdivide the web into sections of desired length, comprising means for advancing the web lengthwise along a predetermined path at a predetermined speed; at least one rotary cutter adjacent to said path and having means for severing the running web in at least one predetermined angular position thereof; and means for driving said cutter including a signal-responsive variable-stepping-rate stepping motor having output means operatively connected with said cutter and means for controlling the stepping rate of said motor, including means for transmitting to said motor signals at a first frequency in said predetermined angular position of said cutter to thereby rotate the cutter at said predetermined speed and at a selected one of a plurality of second frequencies to thereby rotate said cutter at a selected one of a plurality of second speeds in other angular positions of said cutter so that the interval of time which elapses between two successive movements of said cutter to said predetermined angular position is a function of the selected second frequency.

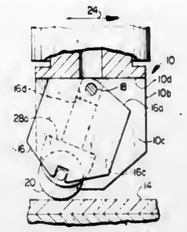
4,201,103
CIRCULAR SAW TOOL
Ernst Salje, Bendestorf, and Ulrich Bartsch, Brunswick, both of Fed. Rep. of Germany, assignors to Ernst Salje, Bendestorf, Fed. Rep. of Germany
Filed Oct. 11, 1978, Ser. No. 950,282
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 2746192
Int. Cl.² B27B *33/08*
U.S. Cl. 83—835 **28 Claims**



1. A circular saw comprising a main blade provided with teeth, and on at least one side of the main blade a cover element, an intermediate layer between the cover element and the main blade, and mechanical holding means, at least adjacent the periphery of the cover element holding the cover element on the main blade independently of the intermediate layer and allowing the intermediate layer to perform a damping function subject to thrusting stresses.

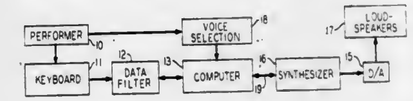
4,201,104
GLASS CUTTER
Thomas A. Insollo, Bristol, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.
Filed Nov. 9, 1978, Ser. No. 959,329
Int. Cl.² B26D *3/08*; C03B *33/10*
U.S. Cl. 83—886 **10 Claims**

1. A glass cutter for use in a glass cutting machine having a head adapted to traverse a glass sheet in one direction and to return in the opposite direction, said glass cutter comprising depending holder means mounted in the head for limited angular movement about a vertical axis said holder means defining a downwardly open slot, a movable member in said slot and having an upper surface with two discrete segments for selectively cooperating with upper portions of the inner surface of said holder means slot, a glass engageable tool carried by said movable member for scoring the glass sheet, means pivotally supporting said member in said holder means slot for pendulous movement in said slot between two limit positions defined by the abutment between said upper surface portions of said holder means slot and said two discrete segments of said member respectively, whereby said member is moved to one of said two limit positions while said tool is in contact with the glass



sheet in response to traversing motion of said holder member in one direction and to the other of said two limit positions in response to motion of said holder means in the return direction again while said tool is in contact with glass sheet.

4,201,105
REAL TIME DIGITAL SOUND SYNTHESIZER
Harold G. Alles, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 1, 1978, Ser. No. 901,489
Int. Cl.² G10H *5/10, 5/02*
U.S. Cl. 84—1.01 **27 Claims**



1. A synthesizer for producing digital pulse-coded signal samples corresponding to predetermined analog signal samples in response to received digital signals defining constituent tones of said analog signal samples, the synthesizer comprising

means, responsive to digital amplitude control signals, for generating digital output signals representing corresponding analog samples of different ones of said tones,

a ramp signal generator, responsive to said received digital signals, for producing sets of digital amplitude control signals to control said generating means for each of said tones, and

means for combining selectable different outputs of said generating means to produce the first-mentioned digitally coded samples of analog signals.

16. In a digital sound synthesizer,

means for providing functions of a plurality of digital oscillators,

means for fixing at least one cyclical base signal waveform comprising a fundamental waveform of said sound,

means, responsive to received digital signals, for storing digital oscillator function word sets, one for each of said oscillators, and each set including at least a coefficient word for fixing a predetermined modification of said base waveform for such oscillator, and

means in said providing means, and responsive to each of said coefficient words, for separately modifying said base signal waveform of the oscillator corresponding to said set including such coefficient word to produce a digitally coded amplitude sample of a different constituent tone of said sound, said amplitude samples of each tone being produced at a rate at least equal to twice the highest frequency of said sound.

4,201,106

ELECTRONIC MUSICAL INSTRUMENT

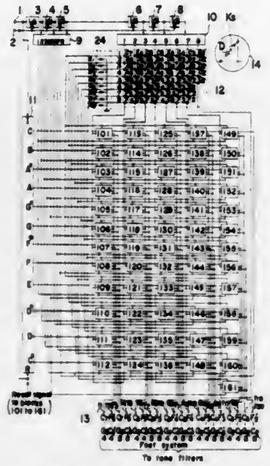
Takeji Kimura, Hirakata; Toyoki Takemoto, Tsuzuki; Michihiro Inoue, Hirakata, and Masaharu Sato, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 23, 1977, Ser. No. 799,316

Claims priority, application Japan, May 24, 1976, 51-59137; Dec. 20, 1976, 51-153999; Mar. 2, 1977, 52-22947; Mar. 14, 1977, 52-28176

Int. Cl.[2] G10H *3/00, 1/02*

U.S. Cl. 84—1.09 **16 Claims**



1. An electronic musical instrument comprising:

a plurality of selectively actuable keying means, each of said keying means corresponding to a single musical note;

a scanning means connected to said plurality of keying means for sequentially scanning said keying means for detection of the actuation of said keying means;

a memory means connected to said scanning means having a plurality of capacitive elements, each of said capacitive elements corresponding to one of said plurality of keying means and storing a predetermined electrical charge when said scanning means detects the actuation of said corresponding keying means;

an electrical discharging means connected to said memory means for sequential connection to each of said capacitive elements for partial discharge of said electrical charge stored therein; and

a plurality of musical tone generators, each connected to a corresponding one of said capacitive elements, each for generation of a musical tone signal having a frequency proportional to said corresponding musical note and an amplitude proportional to said charge stored in said corresponding capacitive element.

4,201,107

AUDIO POWER PERCUSSION PICKUPS

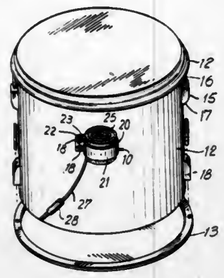
Harold G. Barber, Jr., 2136 Paddock Rd., Levittown, N.Y. 11783, and Charles L. Raimond, 142 Mariners Way, Copiague, N.Y. 11726

Filed Jun. 19, 1978, Ser. No. 917,321

Int. Cl.[2] H04M *1/04*; F16F *15/04*; H04R *1/28*

U.S. Cl. 84—1.14 **4 Claims**

1. Improved audio pickup structure for musical instruments comprising: a clamping means in the form of a strap defining a generally cylindrically shaped opening, said strap including a pair of mutually abutted ends defining congruent slots for the reception of mounting screw means, a foam coil strip vibration absorbing members disposed within said cylindrically shaped opening, and a pickup substantially enclosed and supported by said vibration absorbing means; whereby upon the mounting of said clamping means upon a musical instrument, said pickup is substantially insulated from the effects of mechanical vibrations emanating from said instrument, and is responsive to generated sound waves produced by said instrument.



4,201,108

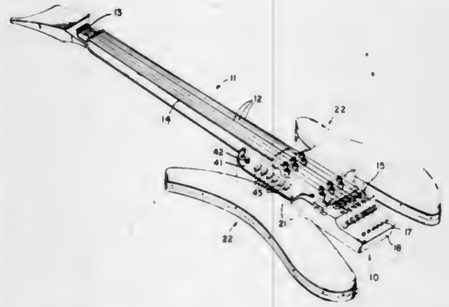
ELECTRIC STRINGED INSTRUMENT

David D. Bunker, Sumner, Wash., assignor to Bunker Instruments, Inc., Tacoma, Wash.

Filed May 22, 1978, Ser. No. 908,377

Int. Cl.[2] G10D *1/08, 3/04, 3/14*

U.S. Cl. 84—1.16 **7 Claims**



1. A stringed instrument having a body portion with an elongated neck structure extending therefrom, the neck structure having a finger board mounted thereon and extending along the neck member, a string supporting bridge mounted on the body portion in alignment with the neck member, a complement of strings for the instrument anchored at one end to the lower end of the body portion spaced from the bridge and extending along the neck and finger board and anchored at the other end to the upper end of the neck, and electrical pickup means for the strings, the improvement comprising:

a metal plate surrounding the body portion except for the upper surface thereof adjacent the strings, the metal plate including slots in each of the side surfaces of the body portion,

a pair of separate elongated wing bodies of sculptured design each wing body having protruding stems extending therefrom adapted to be received in the respective slots in each of the side surfaces of the body portion for securing the wing bodies to the body portion so that the wing bodies can be removably secured to opposite sides of the body portion adjacent the strings, said wing bodies providing the user of the instrument the flexibility of adding electronic add-on components or changing the color, finish and shape of the instrument.

4,201,109

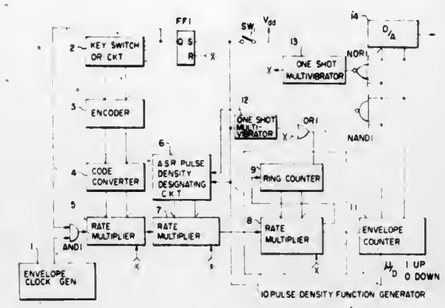
ENVELOPE WAVEFORM GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENTS

Hiroshi Kitagawa, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Aug. 15, 1977, Ser. No. 824,535

Int. Cl.[2] G10H *1/02*; G06M *3/00*

U.S. Cl. 84—1.26 **2 Claims**



1. An envelope waveform generator for electronic musical instruments, comprising:

a first circuit for converting envelope clock pulses from an envelope clock generator into a clock pulse train having a frequency proportional to a musical sound frequency, said first circuit being composed of a first rate multiplier receiving the envelope clock pulses and for producing an envelope speed corresponding to a key being depressed and a code converter for controlling said first rate multiplier corresponding to said key, said first rate multiplier thereby generating an output with a frequency proportional to said depressed key;

a second circuit being composed of an ASR pulse density designating circuit and a second rate multiplier, said second rate multiplier producing an output clock pulse with variable frequency in response to said ASR circuit, said frequency corresponding to the attack, sustain, and release portions of the envelope;

a pulse density function generator composed of a ring counter whose output changes upon each occurrence of a constant number of output clock pulses of said second rate multiplier and a third rate multiplier for controlling the output clock pulse frequency of said pulse density function generator in accordance with the output from said ring counter; and

an envelope counter for counting the output pulses from said third rate multiplier to provide the sum of pulse density functions as an envelope waveform.

4,201,110

HUB NUT WITH WASHER

Kiyoshi Hanai, Toyota, and Toshio Sugiura, Nishio, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Sugiura Seisakusho Co. Ltd., Nishio, both of, Japan

Filed Nov. 9, 1977, Ser. No. 850,050

Claims priority, application Japan, Dec. 29, 1976, 51/177808[U]

Int. Cl.[2] F16B *37/00, 43/00*; B23P *19/08*

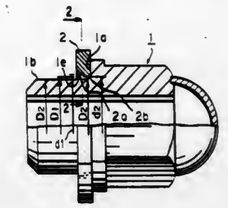
U.S. Cl. 85—32 R **3 Claims**

1. A hub nut with a washer, comprising:

a nut having a base upon which a cylindrical part is formed, said cylindrical part having an internally threaded longitudinal opening therein;

an annular band formed on the outside of said cylindrical part and adjacent to, but separated from, said base, said band providing alternating ridges of a diameter greater than said cylindrical part and grooves of a diameter smaller than said cylindrical part; and

a washer having a stepped inside surface, the larger diameter stepped portion of said washer being larger than said diameter of said ridges and the smaller diameter stepped portion of said washer being smaller than said diameter of said ridges, said smaller diameter stepped portion being



press fitted over said ridges of said band and being entirely located about the portion of said cylindrical part existing between said band and said nut base, said washer being freely rotatably about said hub nut.

4,201,111

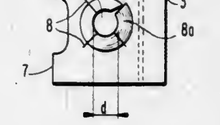
SHEET METAL FASTENER AND METHOD OF MAKING

Otto Kuttler, Loerrach, Fed. Rep. of Germany, assignor to A. Raymond, Lorrach, Fed. Rep. of Germany

Continuation of Ser. No. 753,443, Dec. 22, 1976, abandoned. This application Jan. 3, 1978, Ser. No. 866,257

Int. Cl.[2] F16B *17/00*

U.S. Cl. 85—32 V **4 Claims**



1. A fastener comprising a sheet-metal plate having a central stamped portion shaped to define an internal screw thread formed by an aperture, said stamped portion having a plurality of slits extending generally radially of said aperture and spaced generally equally around said thread forming a plurality of independent substantially equally sized sectors, said slits being gapless and the lateral edges of said sectors being contiguous, said aperture having a mean diameter sized smaller than the root diameter of a screw to be used therewith.

4,201,112

ICE CREAM DISPENSER

James D. Owens, P.O. Box 14943, Orlando, Fla. 32857

Filed Jul. 17, 1978, Ser. No. 925,236

Int. Cl.[2] B26D *4/42*

U.S. Cl. 83—355 **19 Claims**

1. An ice cream dispenser for a home freezer, or the like, comprising in combination:

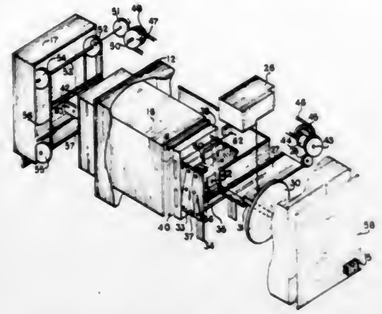
container means for holding a block of ice cream therein said container means having a front cover thereon;

attachment means for attaching said container to the inside of a freezer;

delivery means for pushing a block of ice cream in said container upon actuation of said delivery means; and

cutting means for cutting ice cream from one end of a block

of ice cream located in said container means front cover, whereby predetermined portions of ice cream are deliv-



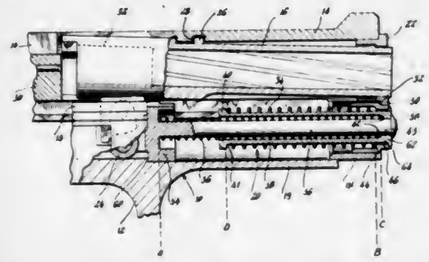
ered from a block of ice cream inserted in said ice cream dispenser upon actuation thereof.

4,201,113

TELESCOPING RETURN-SPRING ASSEMBLY FOR AUTOMATIC HANDGUNS

Lueder Seecamp, 62 Shelter Cove Rd., Milford, Conn. 06460

Filed Aug. 29, 1978, Ser. No. 937,765
Int. Cl.[2] F41D *11/12*
U.S. Cl. 89—199 **17 Claims**



1. A return-spring assembly for a slide-type automatic pistol having a frame-member and a breech-closing slide-member reciprocably mounted thereon for movement into and out of battery, said return-spring assembly being mounted between said members for returning said slide-member to battery and comprising

outer and inner elongate coil springs arranged coaxially in telescoping relation and

an elongate sleeve-like spring coupling device disposed co-axially of said springs and having an external spring-retainer adjacent one end and an internal spring-retainer adjacent its opposite end,

at least a portion of said outer spring being disposed externally of said spring-coupling device and restrained at one end by said external spring-retainer from axial movement in one direction relative to said spring-coupling device, the other end of said outer spring being restrained by one of said members such that said outer spring is under compression when said slide-member is in battery,

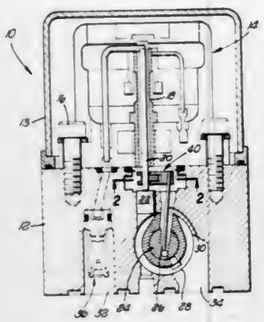
at least a portion of said inner spring being disposed within said spring-coupling device and restrained at one end by said internal spring-retainer from axial movement in the opposite direction relative to said spring-coupling device, the other end of said inner spring being restrained by the other of said members such that said inner spring is also under compression when said slide-member is in battery.

4,201,114

ELECTROHYDRAULIC SERVOVALVE HAVING REMOVABLY ATTACHED FEEDBACK ELEMENT

Clyde E. Cobb, Lakeview Terrace, and Donald A. Muths, Lake Hughes, both of Calif., assignors to Textron Inc., Providence, R.I.

Filed Oct. 23, 1978, Ser. No. 953,652
Int. Cl.[2] F15B *13/16*
U.S. Cl. 91—3 **12 Claims**



1. Electrohydraulic servovalve comprising:

(A) a torque motor having a member driven responsive to electrical signals applied thereto to produce pressure signals;

(B) a spool movable responsive to application of said pressure signals thereto;

(C) a mechanical feedback member connected between said spool and said driven member for providing spool positional signals to said driven member during normal operation of said valve;

(D) a tang extending radially from said driven member;

(E) a holder for receiving said feedback member and having:

(1) a body, and

(2) first and second opposed flanges extending from said body and defining aligned apertures therethrough for receiving said driven member,

(3) one of said flanges defining an indexing aperture intersecting said opening therein for receiving said tang, said indexing aperture being displaced from the normal operational position of said feedback member; and

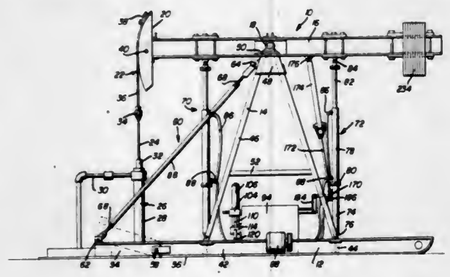
(F) means for clamping said holder to said tang to position said feedback member in a normal operational position.

4,201,115

OIL WELL PUMP JACK WITH DUAL HYDRAULIC OPERATING CYLINDERS

Ethridge F. Ogles, Rte. 4, Box 201, Ada, Okla. 74820

Filed Jul. 11, 1978, Ser. No. 923,666
Int. Cl.[2] F01L *15/00*; F16D *31/00*
U.S. Cl. 91—218 **10 Claims**



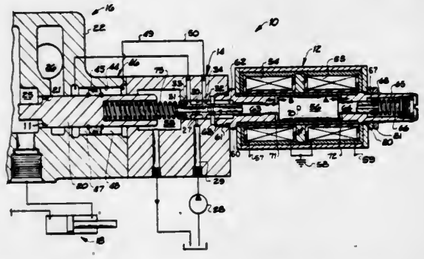
1. In combination, a pump jack for well pumps comprising a support, a beam mounted on said support for pivotal movement about a generally horizontal transverse axis, a horse head at one end of said beam for connection with a polish rod of a well pump, a pair of hydraulic fluid pressure operated piston and cylinder assemblies connected to said beam for powering the beam about its pivot axis, a counterbalance weight on said beam on the opposite side of the transverse axis from the horse head, each of said piston and cylinder assemblies being powered from a hydraulic pump having a separate conduit connected to each end of the cylinders, a reversing valve communicating the pump with the conduits, and means interconnecting the reversing valve and the beam for controlling the position of the reversing valve in response to movement of the beam, said means controlling the reversing valve including a mechanical linkage, said linkage including adjustment means enabling variation in the stroke of the piston and cylinder assemblies, means cushioning high pressure hydraulic fluid moving from the reversing valve to the piston and cylinder assemblies for cushioning movement of said beam, said cushioning means including a cylinder communicated with said conduits, a piston movable in said cylinder in peripherally sealed relation thereto whereby said piston will move longitudinally in the cylinder in response to pressure changes in the conduits for cushioning movement of the hydraulic fluid in the conduits.

4,201,116

ELECTRO-HYDRAULIC PROPORTIONAL CONTROL SERVO VALVE

Robert J. Martin, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Jul. 11, 1977, Ser. No. 814,764
Int. Cl.[2] F15B *13/16*
U.S. Cl. 91—387 **10 Claims**



8. An electro-hydraulic proportional control servo valve including a conventional directional control valve and control valve spool;

a double acting cylinder connected to the directional control valve spool having first and second chambers;

a double acting solenoid having a pair of coils capable of actuating the solenoid core in opposite directions;

a pressure fluid source and drain;

a four-way pilot valve including a valve spool connected to one end of the solenoid core which controls the position of said double acting cylinder, the pilot spool having a neutral flow blocking position; a first operating position connecting said pressure source with a first chamber of said double acting cylinder while connecting the opposing second chamber of said cylinder to drain, and a second operating position connecting the pressure source with the second chamber while draining the first chamber;

a first spring means positioned between the pilot spool and the control valve spool providing a feedback function urging the pilot spool toward its first operating position;

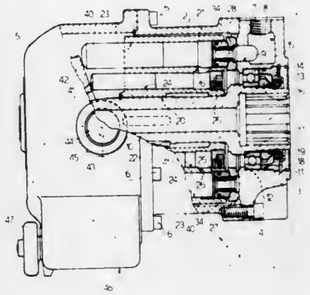
a second spring means having a spring rate greater than the first spring means connected to the solenoid core, acting in opposition to the first spring means urging the pilot spool toward its second operating position, the second spring means being so positioned that when the solenoid is not energized and the control valve spool is neutrally positioned, the pilot spool will be neutrally balanced between the two spring means, and the combined spring rates of the first and second spring means being greater than the rate of force change of the solenoid with respect to solenoid travel.

4,201,117

HYDRAULIC MOTOR

Lidio Gherner, Via Valdellatorre, 279, 10091 Alpignano (Torino), Italy

Filed Apr. 3, 1978, Ser. No. 892,490
Claims priority, application Italy, Apr. 5, 1977, 67744 A/77
Int. Cl.[2] F01B *13/04*
U.S. Cl. 91—499 **5 Claims**



1. A hydraulic motor with axial pistons comprising a casing; a central shaft rotatably supported by said casing; a rotor mounted in a cavity in said casing and keyed onto said shaft; a plurality of pistons axially mobile in a sealed manner along respective axial bores provided through said rotor; said pistons being arranged to move with this latter with one of their ends in contact with a plate facing an axial end of said rotor and forming an angle with the axis thereof; first and second header means facing the other axial end of said rotor to connect said cavity to an inlet and outlet respectively for a pressurized fluid; and rotating distribution means disposed in a sealed manner between said header means and the rotor to connect a first and second part of said axial bores to said first and second header means respectively; said rotating distribution means comprising a toroidal member cooperating in a sealed manner with said header means, and a plurality of key means each engaging in a sealed manner in a respective one of said axial bores to angularly connect said toroidal member and said rotor together; each of said key means being connected to said toroidal member by an articulated joint, duct means being provided through each of said key means and through said toroidal member to connect each of said axial bores to one of said header means, and said articulated joint including an elastically deformable tubular rivet extending in a sealed manner along the respective said duct means and gripping against opposing surfaces of the relative key means and said toroidal member.

4,201,118

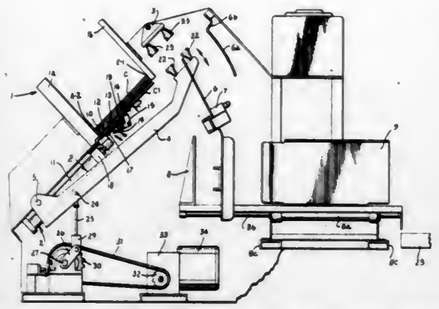
MACHINE FOR MANIPULATING A COLLAPSED BASKET STYLE CARTON INTO SET-UP CONDITION AND FOR ADHERING END FLAPS TO END PANELS AT EACH END OF THE CARTON

Rodney K. Calvert, Dunwoody, and Alton J. Fishback, Austell, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 24, 1978, Ser. No. 963,202
Int. Cl.[2] B31B *1/76*
U.S. Cl. 93—39 R **8 Claims**

1. A machine for withdrawing the lowermost carton (C) from a stack of cartons in a hopper (1) said machine comprising a reciprocable feeder arm (10) disposed below the hopper (1) and having an upwardly projecting part (12) for engaging an

edge (A2) of said carton and for sliding such carton from the hopper, suction cup means (13) pivotally mounted on said feeder arm, biasing means (19) for imparting swinging movement to said suction cup means (13) downwardly and away



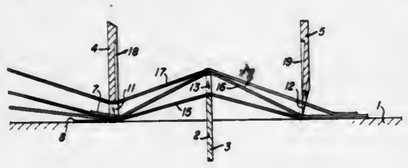
from said hopper (1), and fixed abutment means (17) disposed for engagement by a part of said suction cup means (13) for swinging said suction cup means into engagement with said carton at approximately the beginning of a feeding stroke of said feeder arm and in opposition to said biasing means.

4,201,119

FILTER PLEATING MACHINE

Roger P. Wolf, Mars, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Sep. 8, 1978, Ser. No. 940,552
Int. Cl.[2] B31B *3/26*; B31F *1/22*
U.S. Cl. 93—60 **1 Claim**



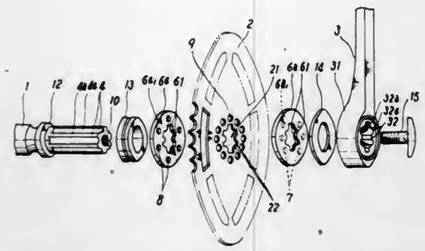
1. In a filter pleating machine in which a laterally and vertically movable pusher bar and a parallel vertically movable stripper bar are normally spaced apart laterally above a table, and a vertically movable breaker bar is between the other two bars and normally below the table top in a plane parallel to the other two bars, the improvement in which the pusher bar and the stripper bar each has a plurality of longitudinally spaced upwardly extending slots in its lower edge for receiving parallel separator tapes above a filter strip extending along the table beneath said bars, and the breaker bar has a plurality of longitudinally spaced downwardly extending slots in its upper edge for receiving parallel separator tapes below such a strip when the breaker bar is raised, said tapes being unattached to said strip, said upwardly extending slots having upper end walls for engagement by the upper tapes after said breaker bar has moved upwardly a predetermined distance to start forming a fold in the filter strip, and said downwardly extending slots having lower end walls for engaging and lifting the lower tapes after said breaker bar has moved upwardly a predetermined distance, whereby to form tape folds of less depth than the filter folds.

4,201,120

GEAR CRANK FOR BICYCLES

Takashi Segawa, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Feb. 2, 1978, Ser. No. 874,530
Claims priority, application Japan, Feb. 5, 1977, 52/12710[U]
Int. Cl.[2] G05G *1/14*
U.S. Cl. 74—594.2 **6 Claims**



1. A gear crank for a bicycle, comprising a crank shaft, a pair of crank arms and a chain gear, at least one of said crank arms being formed separately from said crank shaft to be fixed thereto together with said chain gear by a fixing means, said gear crank further comprising;

a plurality of concave and convex portions formed at the outer periphery of at least one axial end of said crank shaft and extending axially thereof;

a boss formed at one lengthwise end of one of said crank arms, said one crank arm being mounted to said one axial end of the crank shaft together with said chain gear, said boss having a bore therein which defines at its inner periphery concave and convex portions which are fitted with said concave and convex portions of the crank shaft;

a bore formed at the center of said chain gear through which bore said chain gear is fitted onto said crank shaft;

gear-fixing plates for fixing therewith said chain gear to said crank shaft, each of said plates being formed in a ring-like shape and having at the inner periphery concave and convex portions fitted with said concave and convex portions at said crank shaft respectively, and being inserted onto said crank shaft axially adjacent said chain gear respectively so as to be supported in relation of being non-rotatable and not axially movable with respect to said crank shaft;

an engaging means provided between said plates and chain gear so as to prevent said chain gear from being rotated with respect to said crank shaft; and,

a stopper provided at said one axial end of the crank shaft inwardly of the concave and convex portions for restricting said gear-fixing plates from being axially inwardly moved;

said fixing means comprising screw means screwed with said crank shaft to urge said crank arm toward said stopper to sandwich said gear-fixing plates and chain gear between said stopper and said boss of said crank arm.

4,201,121

METHOD OF VENTING HEAT FROM HOMES

Frank J. Brandenburg, Jr., Rte. 1- Box 487-5, Ashland, Va. 23225

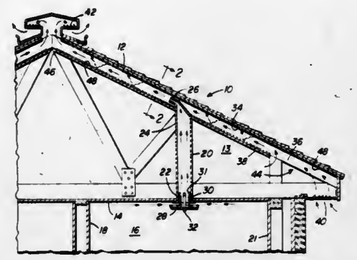
Filed Jul. 31, 1978, Ser. No. 929,825
Int. Cl.[2] F24F *7/00, 7/06*
U.S. Cl. 98—33 R **7 Claims**

1. In a building having a roof and at least one environmental space separated from the roof by at least a ceiling and an attic-like space between the roof and the ceiling, apparatus for causing heated air from the upper portions of the room to be vented from the building, comprising:

a siphon duct member extending between the ceiling and upper portions of the attic-like space, the siphon duct member being opened at lower and upper ends, the lower end of the siphon duct member communicating with the upper portions of the room;

means for defining a draft channel within the attic-like space, the upper end of the siphon duct member extending into the draft channel and communicating with the interior thereof to discharge air from the room into the draft channel;

vent means for causing a flow of air through the draft channel from and to wherein the vent means comprise:



a soffit vent formed in a lower portion of the roof and communicating the interior of the attic-like space with ambient, the soffit vent channeling a flow of ambient air into the attic-like space and subsequently into the draft channel; and,

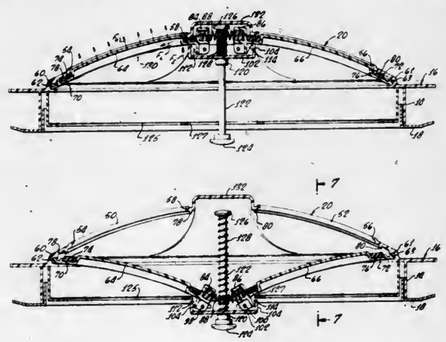
a ridge vent formed in an upper portion of the roof and communicating the interior of the draft channel with ambient, flow of air from the soffit vent passing through the draft channel and out of the building through the ridge vent.

4,201,122

SNAP DOOR VENT

Edmund D. Maciag, Torrance, Calif., assignor to Elixir Industries, Gardena, Calif.

Filed Nov. 3, 1978, Ser. No. 957,449
Int. Cl.[2] B60H *1/26*; E05F *9/00*
U.S. Cl. 98—2.14 **29 Claims**



1. a vehicle vent assembly comprising

a vent frame adapted to be mounted in an opening of a vehicle and having front, back and side portions,

a vent cover fixed to said frame and having a cover body extending rearwardly and outwardly from a front portion of said vent frame to provide an area of decreased pressure as said vehicle moves forwardly, said cover body having a cover opening extending across at least a part of said area of decreased pressure laterally toward a side portion of said vent frame,

a resilient door,

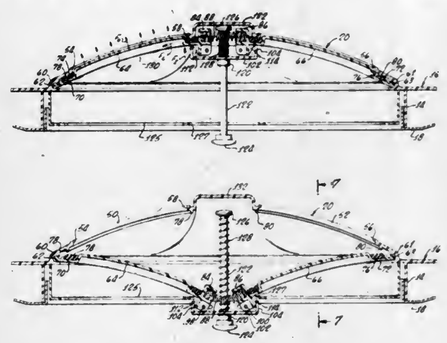
means for mounting said door for motion to a first position wherein said cover opening is closed and sealed by said door and to a second position wherein said door is displaced inwardly from said cover opening at said area of decreased pressure, and toggle means including said resilient door for holding said door in said second position.

4,201,123

SNAP DOOR VENT WITH SPRING

Edmund D. Maciag, Torrance, and Garold D. Frymire, Buena Park, both of Calif., assignors to Elixir Industries, Gardena, Calif.

Filed Nov. 3, 1978, Ser. No. 957,450
Int. Cl.[2] B60H *1/26*; E05F *9/00*
U.S. Cl. 98—2.14 **5 Claims**



1. A vehicle vent assembly comprising

a vent frame adapted to be mounted in an opening of a vehicle and having front, back and side portions,

a vent cover fixed to said frame and having a cover body extending rearwardly and outwardly from a front portion of said vent frame to provide an area of decreased pressure as said vehicle moves forwardly, said cover body having a cover opening extending across at least a part of said area of decreased pressure laterally toward a side portion of said vent frame,

a resilient door,

means for mounting said door for motion to a first position wherein said cover opening is closed and sealed by said door and to a second position wherein said door is displaced inwardly from said cover opening at said area of decreased pressure, and toggle means including a compression spring abutting an edge portion of said door for holding said door in said second position, wherein said spring tends to compress and said door tends to bend as the door moves between said portions, and wherein compliance of said door is greater than compliance of said spring whereby said door will experience a greater dimensional change than the spring during motion between said positions.

4,201,124

TEMPERATURE SENSITIVE TIMING DEVICE FOR TOASTER APPLIANCE

Peter E. Huggler, Columbia, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Feb. 27, 1978, Ser. No. 881,612
Int. Cl.[2] A47J *37/08*
U.S. Cl. 99—327 **14 Claims**

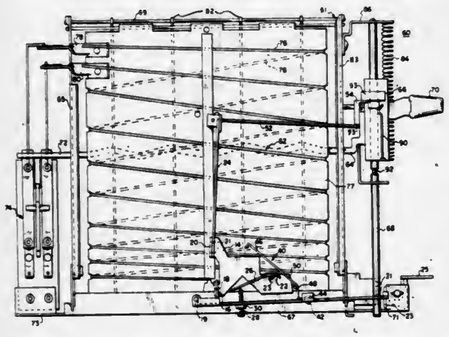
1. In a toaster appliance including housing means defining a bread toasting cavity, a bread carrier for conveying slices of bread and the like to be toasted movable between toasting and nontoasting positions, to position said bread slices into and out of said toasting cavity, respectively, means biasing said carrier to said nontoasting position, latch means for holding said carrier in said toasting position against the force of said biasing means, said latch means including resettable latch release means operable between set and released positions for releasing

said latch means thereby permitting said carrier to be moved from said toasting to said nontoasting position, said latch release means being operable to said set position in accordance with the return of said carrier to said nontoasting position and heating means operable upon said carrier being moved to said toasting position for toasting said bread slices carried in said carrier,

a temperature sensitive timing device for controlling the length of said toasting cycle and the positioning of said latch release means between said set and released positions, said device including:

a support member mounted on a base member for pivotal movement in first and second directions with respect to said base member, means biasing said support member in said first direction, first and second bimetal elements mounted at opposite ends of and on said support member, each said bimetal element being bendable at a predetermined rate in a predetermined direction upon heating, said first bimetal element being bendable in a direction opposite from said first direction of movement of said support member and normally being positioned for maintaining said latch release means in said set position,

limiting means engageable with said second bimetal element for limiting the movement of said support member in said first direction, said second bimetal element being bendable at a predetermined rate in a direction away from said limiting means when heated, and locking means mounted



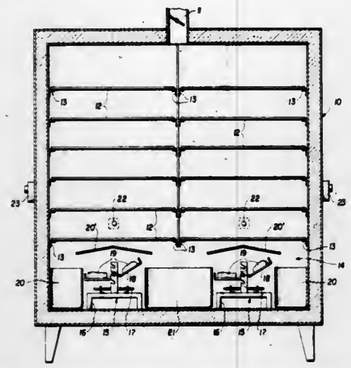
adjacent said support member, movable between a first normal position, out of engagement with said support member to a second locked position, into engagement with said support member in response to the movement of said bread carrier from said nontoasting to toasting position for securing said support member against movement by said biasing means in said first direction, said locking means releasing said support member for movement by said biasing means in response to the movement of said bread carrier from said toasting to said nontoasting position, said first and second bimetal elements bending in said predetermined directions, respectively, when heated in response to the operation of said heating means, said latch release means being movable to said released position upon said first bimetal element bending to a predetermined position, whereby said latch means is operable to release said bread carrier for movement from said toasting to said nontoasting position, said locking means releasing said bimetal element support member in response to the movement of said bread carrier toward said nontoasting position, whereby said support member moves in said first direction a predetermined distance determined by the repositioning of said second heated bimetal element with respect to said limiting means, whereby said first bimetal element is moved with said support member for holding said latch release means in said set position in preparation for a subsequent toasting cycle.

4,201,125

WOOD RESIN COOKING APPARATUS

Clarence E. Ellis, 724 Monument Rd., Ponca City, Okla. 74601

Filed Jan. 5, 1979, Ser. No. 1,215
Int. Cl.[2] A23B *4/04*; A47J *37/06*
U.S. Cl. 99—446 2 Claims



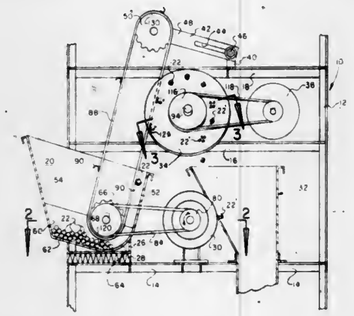
1. A slow cooking apparatus comprising an upright housing having a top vent, vertically spaced superposed food racks supported within the housing in two side-by-side rows across the housing horizontally, a pair of laterally spaced heating elements and associated supports for slow burning fuel elements within the housing near the bottom wall thereof and below the two rows of food racks and being centered relative to the two rows laterally, a thermostat switch and a timer switch for each heating element on the housing, each heating element being serially coupled between its individual thermostat switch and timer switch, and each heating element and its serially coupled thermostat and timer switches being coupled in parallel with the other heating element and its thermostat and timer switches, and means for connecting the parallel coupled heating elements and thermostat and timer switches to a source of electrical power.

4,201,126

NUT CRACKING APPARATUS

Kenneth R. Evans, 834 Runneberg Rd., Crosby, Tex. 77532

Continuation-in-part of Ser. No. 796,475, May 12, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 962,707
Int. Cl.[2] A23N *5/00*
U.S. Cl. 99—574 14 Claims



1. A nut cracking apparatus comprising:

a hopper for storing a supply of uncracked nuts;

a cracking means for separating the shell from the meat of said uncracked nuts including a pair of opposed discs, rotating at the same speed about different axes, such that said discs are in adjustable angular offset relationship to one another;

transport means located between and operatively associated with said hopper and said cracking means for delivering said uncracked nuts to a first location between said opposed discs where said uncracked nuts are wedged therebetween by said transport means and then displaced arcuately to a second location by the rotational movement of said opposed discs for cracking with a cracking force proportional to the size of said uncracked nuts; and

collapsible nut-receiving receptacles located on said transport means for supporting said uncracked nuts while being delivered between said cracking means, said collapsible nut-receiving receptacles having a first position and second position constricted from said first such that said receptacles collapse from a first to a second position while moving through said pair of opposed discs.

9. A nut cracking apparatus comprising:

a hopper for storing a supply of uncracked nuts;

cracking means for separating the shell from the meat of said uncracked nuts including a pair of opposed discs, rotating at the same speed about different axes, such that said discs are in adjustable angular offset relationship to one another;

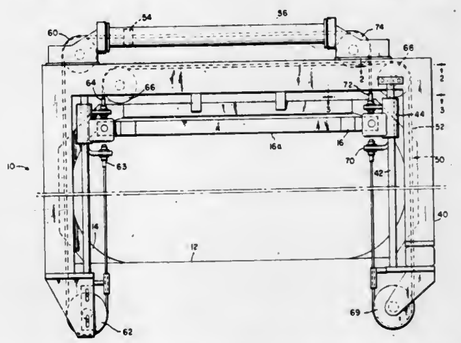
transport means located between and operatively associated with said hopper and said cracking means for delivering said uncracked nuts to a first location between said opposed discs where said uncracked nuts are wedged therebetween by said transport means and then displaced arcuately to a second location by the rotational movement of said opposed discs, for cracking with a cracking force proportional to the size of uncracked nuts, and said opposed discs having an angular relationship to provide a minimum and maximum separation distance therebetween.

4,201,127

HOLD-DOWN ACCELERATION DEVICE

James A. Pasic, Montesano, Wash., assignor to Ovalstrapping, Inc., Hoquiam, Wash.

Filed May 24, 1978, Ser. No. 908,814
Int. Cl.[2] B65B *13/20*
U.S. Cl. 100—7 10 Claims



1. Apparatus for compacting and accelerating an article comprising:

a movable conveyor having a conveying surface,

means for accelerating the conveyor,

compactor means overlying the conveyor,

means for moving the compactor means away from and toward the conveyor surface for positioning the compactor means at a variety of positions remote from and closely adjacent to the conveying surface, and

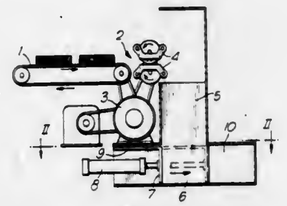
undriven mounting means for mounting the compactor means on said positioning means for allowing free unpowered unrestricted movement over the conveying surface along a path parallel to the conveying surface when the compactor means is in engagement with the article thereby holding the article against the conveying surface and being moved along said path solely by the article.

4,201,128

APPARATUS FOR THE COMPACTING AND TREATMENT OF MATERIALS SUCH AS SHREDDED PAPER

Gareth D. J. Whitehead, 6 Haven Rd., and Thomas H. Gardner, 8 Haven Rd., both of St. Thomas Exeter EX28BP, England

Filed Sep. 5, 1978, Ser. No. 939,685
Claims priority, application United Kingdom, Sep. 2, 1977, 36704/77; Feb. 10, 1978, 5375/78
Int. Cl.[2] B30B *15/30, 15/08*
U.S. Cl. 100—45 4 Claims



1. Apparatus for the shredding, compacting and packing of paper, particularly waste newspapers, said apparatus comprising,

(a) means for shredding sheets of paper,

(b) guide means for feeding paper sheets to be shredded to the said shredding means,

(c) a press having a compaction chamber,

(d) means for delivering shredded paper from the said shredding means to the compaction chamber of said press,

(e) a fluid pressure-actuated compacting ram movable through the compaction chamber and adapted to compact shredded paper therein,

(f) an ejection chamber arranged to receive compacted shredded paper from the compaction chamber, the discharge end of the ejection chamber having a bag placed thereover, the bag forming one wall of the ejection chamber,

(g) an ejection device for ejecting shredded paper from the ejection chamber and into said bag,

(h) means responsive to fluid pressure in said compacting ram to provide an enabling output only when said fluid pressure which actuates the ram reaches a predetermined threshold value corresponding to a desired degree of compaction of the shredded paper,

(i) control means operable in response to said enabling output to enable the said ejection device for operation thereafter when the said ram reaches a predetermined limit position of its compacting stroke.

4,201,129

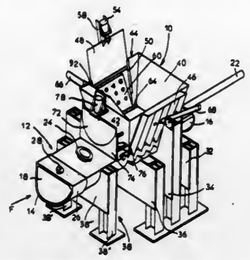
MACHINE FOR CHARGING FURNACES

Pierre Matthys, Marne la Coquette, France, assignor to Etablissements Matthys and Societe G.A.R.A.P., Rouen, France

Filed Apr. 3, 1979, Ser. No. 26,756
Int. Cl.[2] B30B *7/00*
U.S. Cl. 100—233 6 Claims

1. A machine for charging furnaces with scrap to be incinerated comprising, a hopper for receiving various types of bulk scrap to be incinerated, said hopper having an open bottom, a rectilinear and horizontal tubular body having opposite ends, one of said ends being connected to the inlet of a furnace, said tubular body having an intermediate portion with an open top which communicates with said open bottom of the hopper, a push member slidably mounted in said tubular body, said tubular body having an interior passage which is substantially equal to that of said push member, said hopper having a first lateral

wall constituted by a trap door capable of being raised and lowered, a crushing head pivotably connected to said hopper, said head being exposed when said lateral wall is raised and covered by said lateral wall when said wall is lowered, means for pivotably lowering said head with said trap door raised to



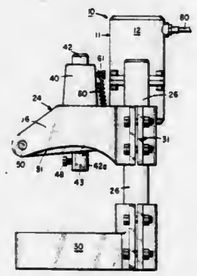
compress the scrap against the bottom of the tubular body, and a second wall of the hopper facing said first wall and pivotably connected for movement between a raised position where said second wall forms a wall of the hopper and a lowered position where the second wall constitutes an upper wall closing the interior passage of the tubular body.

4,201,130

FLUID-OPERATED PRESS

Alfred R. Stahl, Chapala-Jocotepec, Mexico, assignor to Michael P. Breston, Houston, Tex., a part interest

Filed Mar. 26, 1979, Ser. No. 24,217
Int. Cl.² B30B *1/08*
U.S. Cl. 100—271 **3 Claims**



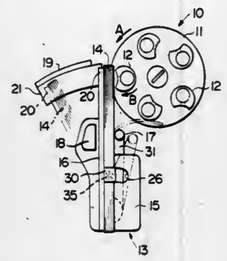
1. A fluid-pressure actuated press comprising:
(a) a column structure;
(b) a ram having a piston and an associated piston rod, the free end of the piston rod reciprocating downwardly;
(c) a support adjustably supporting the ram on the column structure;
(d) a lever bar having a proximate free end in engagement with the free end of the piston rod, the distal end of the lever bar being pivoted about a fixed fulcrum carried by the support; and
(e) a chuck rod slidably mounted relative to the support along an axis which is substantially parallel to the axis of the piston rod, the chuck rod being pivotably associated with the lever bar at a point intermediate the ends of the lever bar whereby the force of the ram produced on the piston rod is multiplied by the lever and is reproduced on the chuck rod.

4,201,131

SEALING DEVICE FOR USE IN A NOTE COUNTING MACHINE

Tuyoshi Miyagawa; Eiichi Kokubo, and Minoru Yoshida, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1978, Ser. No. 951,142
Int. Cl.² G06M *9/02*; B41K *5/08*
U.S. Cl. 101—4 **3 Claims**



1. A sealing device for use in a note counting machine wherein a bunch of notes wrapped by a sealing tape is held by a note holder in a counting section of the note counting machine and the notes composing the bunch are counted by being deflected one at a time by suction shafts provided on a rotary cylinder which comprises,
a note holder mounting on a rotary shaft adjacent to the rotary cylinder and including a note supporting plate for supporting the bunch of notes and an upstanding plate vertically connected to said note supporting plate, said note supporting plate being provided with an arcuate slot about said rotary shaft,
a supporting arm pivotably mounted on said rotary shaft and including a vertical pressing rod provided on the end of the supporting arm and a cylinder portion which substantiary lies below said arcuate slot of said note supporting plate, said pressing rod vertically holding the bunch of notes together with said upstanding plate of said note holder,
a seal impression rigidly mounted within a seal impression holder which is positioned within said cylinder portion of said supporting arm and is vertically movable through said arcuate slot, and
means for vertically driving said seal impression holder to affix a seal on a sealing tape of the bunch of notes at the bottom side thereof.

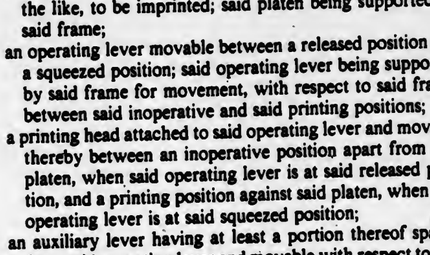
4,201,132

METHOD OF AN APPARATUS FOR EQUALIZING LONGITUDINAL STRESSES IN AN ADVANCING WEB

Peter Zimmer, and Hans Kudlich, both of Kufstein, Austria, assignors to Maschinenfabrik Peter Zimmer Aktiengesellschaft, Kufstein, Austria

Filed Apr. 28, 1978, Ser. No. 880,366
Int. Cl.² B41L *13/00*
U.S. Cl. 101—118 **10 Claims**

1. An apparatus for equalizing longitudinal stresses in a web of flexible material advancing along a predetermined path, comprising:
central roller means extending transversely across said path;
main drive means for rotating said central roller means to entrain a web engaged thereby;
two lateral roller pairs positioned to engage opposite longitudinal edges of said web at a location upstream of said central roller means;
separate ancillary drive means for independently rotating said lateral roller pairs in substantial synchronism with said central roller means and at peripheral speeds having velocity components parallel to said longitudinal edges approximately equaling the speed of the entrained web at said longitudinal edges;
individual mounting means for each of said lateral roller pairs enabling limited displacement thereof in a direction generally parallel to said longitudinal edges in response to any deviation of said velocity components from the web speed at the respective longitudinal edges; and



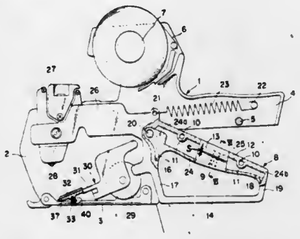
switch means coupled to said mounting means for varying the speed of said ancillary drive means upon a displacement of either of said lateral roller pairs generally parallel to said longitudinal edges from a predetermined position in a sense tending to return the respective lateral roller pair to said predetermined position thereof.

4,201,133

PRINTING PRESSURE DAMPING MECHANISM FOR HAND LABELER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Apr. 4, 1978, Ser. No. 893,332
Claims priority, application Japan, Apr. 12, 1977, 52/44806[U]
Int. Cl.² B41J *5/00*
U.S. Cl. 101—288 **11 Claims**



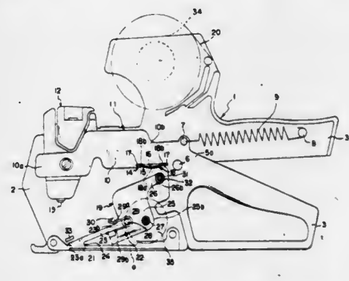
1. A printing pressure damping mechanism for use with an apparatus for imprinting a label, or the like, comprising:
a support frame a printing platen for supporting a label, or the like, to be imprinted; said platen being supported by said frame;
an operating lever movable between a released position and a squeezed position; said operating lever being supported by said frame for movement, with respect to said frame, between said inoperative and said printing positions;
a printing head attached to said operating lever and movable thereby between an inoperative position apart from said platen, when said operating lever is at said released position, and a printing position against said platen, when said operating lever is at said squeezed position;
an auxiliary lever having at least a portion thereof spaced from said operating lever and movable with respect to said operating lever; said auxiliary lever being so placed with respect to said operating lever such that motion of said auxiliary lever in one direction urges said operating lever to said squeezed position thereof;
first shock-absorbing means connecting said operating lever and said auxiliary lever and biasing said operating and said auxiliary levers apart; said auxiliary lever being biased away from said one direction thereof, whereby force on said operating lever, through said auxiliary lever, is damped and thereby damps the pressure on said platen that is exerted by said printing head moving to said printing position thereof;
second shock-absorbing means between said frame and said platen for biasing said platen toward said printing head and for absorbing impact of said printing head against said platen, thereby further damping printing pressure of said printing head; said second shock-absorbing means comprising a compression spring between said platen and said frame and compressible by motion of said platen under influence of said printing head at said printing position thereof.

4,201,134

PRINTING PRESSURE DAMPING MECHANISM FOR HAND LABELER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

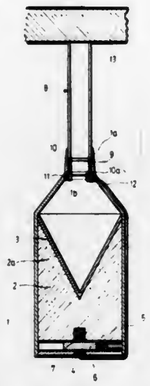
Filed Apr. 18, 1978, Ser. No. 897,489
Claims priority, application Japan, Apr. 22, 1977, 52-045832
Int. Cl.² B41F *1/54*
U.S. Cl. 101—288 **26 Claims**



1. A printing pressure damping mechanism for a hand labeler, or the like, comprising:
a frame;
a platen pivotally mounted to said frame at a platen pivot on said frame; said platen having a printing portion at one side of said pivot and said printing portion being pivoted as said platen is pivoted; said platen having another side at the other side of said pivot from said printing portion;
an operating lever movable with respect to said frame between a released position and a squeezed position; at said released position, said operating lever being spaced apart from said platen other side; said operating lever being movable toward engagement with said platen other side;
a printing head carried by said operating lever and movable with said operating lever between an inoperative position wherein said printing head is apart from said printing portion of said platen when said operating lever is at said released position, and a printing position of said printing head wherein said printing head abuts said platen printing portion, when said operating lever is at said squeezed position;
shock-absorbing means interposed between said operating lever and said platen other side, such that motion of said operating lever toward said squeezed position causes engagement between said operating lever and said platen other side through said shock-absorbing means, and further motion of said operating lever to said squeezed position biases said platen other side to move said platen printing portion to pivot toward said printing head; said shock-absorbing means being adapted to absorb force applied by said operating lever against said shock-absorbing means,

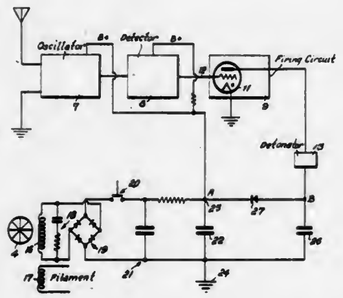
whereby the squeezing force of said operating lever against said platen is damped.

4,201,135
HOLLOW CHARGE CONSTRUCTION AND RANGE SPACER THEREFOR
Peter Nikowitsch, Mühlried, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany
Filed Mar. 6, 1978, Ser. No. 883,594
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710612
Int. Cl.² F42B 1/02, 13/10
U.S. Cl. 102—56 SC 12 Claims



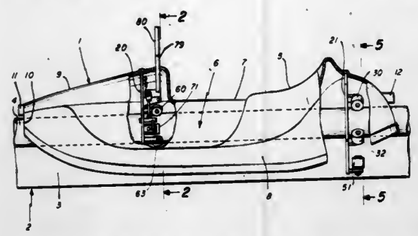
1. A range spacer for hollow target destroying charges, which extends axially ahead of a bursting charge and serves to time the firing or detonation of the charge at a specified range ahead of the target, comprising, a prestressed material which is destructible by impact dispersion to piece parts.

4,201,136
SAFETY CONTROL FOR ELECTRONIC CIRCUITS
George V. Morris, Chicago, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 19, 1951, Ser. No. 206,756
Int. Cl.² F42B 13/04
U.S. Cl. 102—214 3 Claims



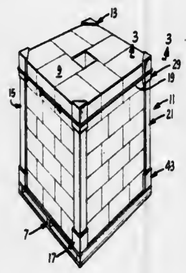
1. An electronic control circuit, a plate supply for said circuit, an electronic grid-controlled power tube controlled through its grid by the output of said control circuit, a translating device energize by said power tube in response to the output of said control circuit, a condenser connected to serve as a plate supply source for said power tube, circuit connections for charging said condenser from said plate supply, an unsymmetrical resistance in said circuit connections arranged to offer a high impedance to passage of charging current from said first plate supply to said condenser, but to offer low impedance to discharge of said condenser into the plate supply, whereby upon reduction of said plate supply voltage below a safe operating level, said condenser voltage will be rapidly reduced to a value below the operating value.

4,201,137
SLED AND SLIDE CONSTRUCTION
Andry Lagadin, Hanover, Mass., assignor to American Zephyr Corporation, Intervale, N.H.
Filed Apr. 3, 1978, Ser. No. 892,988
Int. Cl.² A63G 21/04
U.S. Cl. 104—69 3 Claims



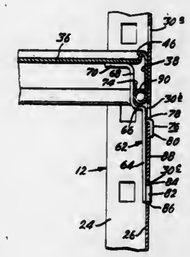
1. A sled for use on a monorail slide, the rail having a cross-sectional configuration in the form of at least a segment of a tubular member and a web extending from said tubular member, comprising a shell, said shell having a passenger seat intermediate its ends, forward and rear bulkheads each having its periphery secured to the inner surface of said shell, a pair of wheel means, said wheel means each comprising a plurality of radially arranged wheels supporting and guiding said shell on said monorail, means supporting one of said wheel means on the forward and the other wheel means on the rear bulkheads, brake means having brake pads, means supporting said brake means on said forward bulkhead with said brake pads positioned forward of said seat to operatively engage said tubular member intermediate said wheels of said wheel means on said forward bulkhead, said brake means including an operating lever and a pair of lever linkages commonly controlled by said operating lever and each operatively connected to said brake pad.

4,201,138
CORNERBOARD FOR PALLETS
Clayton E. Cox, 1371 Eureka Canyon Rd., Watsonville, Calif. 95076
Filed Oct. 4, 1978, Ser. No. 948,546
Int. Cl.² B65D 19/06, 85/00
U.S. Cl. 108—55.1 3 Claims



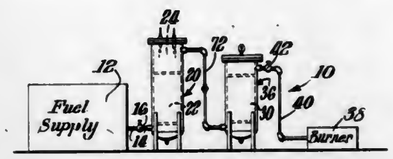
1. A corner structure for a pallet comprising in combination:
a. a top member, said member having a top cap adapted to extend over the corner of a loaded pallet and having a top side member extending downward from the top cap, said top side member being composed of two flat elements held at right angles to each other and each having a slot therein, each said slot being open only at the bottom of said flat elements and joined at the intersection of said flat elements;
b. a middle side member, said middle side member having two thin elements maintained in a right angle configuration to fit into the slots in said top side member, and
c. a bottom member of substantially the same configuration as the top member having flat side members held at right angles to each other with enclosed slots to receive the middle side member, said slots being open only at the top of said flat side members and joined at the intersection of said flat side members.

4,201,139
SHELVING SYSTEM
James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.
Filed Jan. 15, 1979, Ser. No. 3,498
Int. Cl.² A47B 57/24
U.S. Cl. 108—109 2 Claims



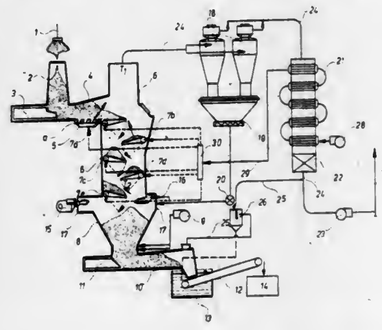
1. A system of shelving comprising at least one shelf having a supporting surface, support means for holding said shelf in a fixed position above a floor, said support means having front and rear surfaces, and clip means located adjacent said front surface of said support means for securing said shelf to said support means, said support means having a first opening adapted to receive a hook, said first opening providing access from said front surface to the rear surface of said support means, and a second opening spaced from said first opening and adapted to receive a projection, said clip having a lower section, a hook extending from said lower section through said first opening, said hook having a depending tab engaging said rear surface, and said lower section also having a projection spaced from said hook in a direction such that said depending tab points toward said projection, said projection extending into said second opening, and said clip also having an upper section connected to said lower section by a horizontally extending clip section and offset from said lower section so that it is spaced from said front surface, and extending from said horizontally extending clip section in generally parallel relation to said front surface in a direction opposite to the direction in which said depending tab extends, said upper section having horizontally extending means at its upper end engaging the underside of said shelf and said shelf having apron means extending between said front surface and said upper section the space between said upper section and said front surface being such that, when said apron is located between said upper section and said front surface, said upper section is urged away from said front surface, and said projection is urged into said second opening whereby said hook cannot become disengaged from said first opening while said apron is in place between said upper section and said front surface of said support means and in which said apron means is provided with a rolled lower edge located below said supporting surface and above and spaced from said horizontally extending clip section, and projecting in the direction away from said front surface of the support means and in which said upper section is provided with rounded projecting means projecting toward said front surface, said rolled edge and said rounded projecting means being in engagement with each other, with at least part of said rolled edge being located below at least part of said rounded projecting means whereby said shelf is removably secured against upward vertical movement away from said clip means.

4,201,140
DEVICE FOR INCREASING EFFICIENCY OF FUEL
T. Garrett Robinson, P.O. Box 128, Galena, Md. 21635
Filed Apr. 30, 1979, Ser. No. 34,411
Int. Cl.² F23K 5/00
U.S. Cl. 110—218 19 Claims



1. A device for increasing the efficiency of fuel comprising an inlet chamber into which the fuel is fed, a first magnet chamber disposed downstream from said inlet chamber, distributor means connecting said inlet chamber to said first magnet chamber for feeding the fuel from said inlet chamber into said first magnet chamber in a predetermined array of spaced locations, a plurality of sets of vertically arranged magnets located in said first magnet chamber for applying a magnetic flux to the fuel flowing therethrough, an electrode chamber downstream from said first magnet chamber, said electrode chamber having electrode means for applying an electrostatic force to the magnetically treated fuel, a second magnet chamber downstream from said first magnet chamber and having inlet means for feeding the treated fuel therein, said second magnet chamber having a plurality of sets of vertically arranged magnets for applying a further magnetic flux to the treated fuel before the fuel is fed to a burner, and outlet means for said second magnet chamber for discharging the treated fuel therefrom.

4,201,141
METHOD OF AND APPARATUS FOR INCINERATING RESIDENTIAL WASTE
Constantin Teodorescu, and Radu Polizu, both of Bucharest, Romania, assignors to Institutul National Pentru Creatie Stiintifica si Tehnica-Increst, Bucharest, Romania
Filed Mar. 29, 1978, Ser. No. 891,196
Claims priority, application Romania, Apr. 18, 1977, 90060
Int. Cl.² F23G 5/04
U.S. Cl. 110—259 4 Claims



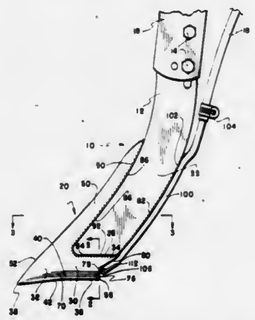
1. A method of incinerating residential waste material which comprises the steps of:
(a) initially heating a vertical furnace with a liquid-fuel

burner to produce combustion gases at a temperature at an outlet from said furnace of substantially 450° to 500° C.;
(b) preheating combustion air with exhaust gase from said furnace to a temperature of 200° and 250° C. and admitting said combustion air to said furnace at least in part through hollow tilting elements vertically staggered in said furnace;
(c) simultaneously with step (b) passing quantities of waste material downwardly through said furnace on said tilting elements and burning the waste material with said combustion air and concurrently firing said furnace by a second burner with liquid fuel supplied at a lower rate than in the first mentioned burner, said first burner being cut off, thereby raising the temperature of exhaust gas from said furnace to 800° to 950° C. and the temperature of the combustion air preheated by the exhaust gas to a temperature of about 400° to 450° C.;
(d) extinguishing said second burner and continuing the feed of waste material and combustion air to said furnace to maintain the last mentioned temperature autogenous combustion of the waste material;
(e) collecting ash below said tilting elements in said furnace; and
(f) cooling said ash with air and permitting the air used to cool the ash to rise in said furnace.

4,201,142
AMMONIA APPLICATOR BLADE

Lee K. Stump, Belleville, Kans., assignor to Ausherman Manufacturing Co., Inc., Belleville, Kans.

Filed Jul. 17, 1978, Ser. No. 925,209
Int. Cl.² A01C *23/02*
U.S. Cl. 111—7 **6 Claims**

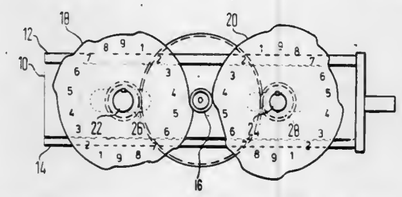


1. A point for use in ammonia applicator blades, said point comprising a unitary metallic body having a minimum hardness of about 500 BHN, said body having a medial vertical plane of symmetry and comprising a substantially horizontally extending foot having toe and heel portions at its forward and rear ends respectively and a shin joined to the toe portion and extending upwardly and rearwardly therefrom, said foot and toe portion thereof having a bottom surface that is, throughout substantially their longitudinal extent, generally horizontal in both vertical transverse and longitudinal sections, said foot and the toe portion thereof having lateral sides with side surfaces that, throughout substantially their longitudinal extent, have a vertical transverse section that extend downwardly substantially vertically for a major proportion of their height and thence are in their lowermost extents offset outwardly for a vertical interval to define outwardly projecting lips extending along the lower side edges of the foot and its toe portion, with the lateral sides, including their lowermost extents, being rearwardly divergent in an arrangement such that the outward projection of the lips progressively increases rearwardly along the foot and its toe portion, said shin and its juncture with the toe portion being contoured to present in vertical profile a reclining V-shaped configuration and to present in horizontal section substantially throughout their heights a generally ogive forward configuration, said heel portion being notched to define a rear surface for the foot that extends upwardly substantially vertically from the bottom surface of the foot to a position above the lips of the latter, and which thence extends upwardly and rearwardly to the top of the foot in approximate parallelism with the shin, and said shin having a rear surface and the foot having a top surface that jointly define an opening of a generally reclining V-shape adapted to receive a blade shank therein.

4,201,143
CAM DRIVEN SLIDING NEEDLE BAR

Stanley P. Jackson, Shipley, England, assignor to Firth Carpets Limited, Brighouse, England

Filed Jul. 17, 1978, Ser. No. 925,152
Claims priority, application France, Jul. 18, 1977, 77 22995; Jun. 20, 1978, 78 19400
Int. Cl.² D05C *15/00*
U.S. Cl. 112—79 R **5 Claims**



1. A tufting machine comprising a needle bar, an apertured, elongate needle bar carrier member connected to said needle bar, guide means mounting said needle bar carrier member for longitudinal movement therein, a pair of longitudinally spaced cams of conjugate shape situated at one side of said needle bar carrier member, cam drive means situated on the other side of said carrier member and including respective drive shafts for mounting said cams, said drive shafts passing through the apertures in the needle bar carrier member, and a centrally situated cam follower member secured directly to and carried by said needle bar carrier member between said cams and having diametrically opposed regions engaged directly by said cams, and said needle bar carrier member being displaceable in response to rotation of said cams by said drive shafts to effect said longitudinal movement of said needle bar carrier member in said guide means.

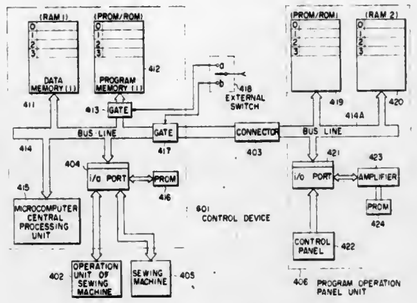
4,201,144
CONTROL SYSTEMS FOR AUTOMATIC SEWING MACHINES

Takao Manabe, Sunto; Shigetugu Matunaga, Numazu, and Shinji Machi, Mishima, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1978, Ser. No. 895,652
Claims priority, application Japan, Apr. 15, 1977, 52-43803
Int. Cl.² D05B *21/00*
U.S. Cl. 112—121.12 **19 Claims**

1. A control system of an automatic sewing machine of the type having a sewing head mounted on a table, cloth clamping plates, cloth clamping plates driving means including pulse motors for moving said cloth clamping plates on said table in X and Y axis directions of rectangular coordinates, and pulse generating means, for applying driving pulses to said pulse motors, characterized in that said control system comprises first memory means including a first code region representing the type of control corresponding to a predetermined number of addresses and a second code region to store data required for respective sewing steps; a sewing machine operation panel unit including means for generating control signals for controlling the operation of said sewing machine; a bus line extending between said first memory means and said sewing machine

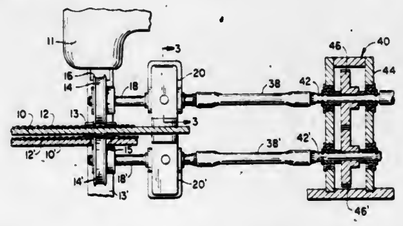
operation panel unit; second memory means connected to said bus line and including a first memory region for storing drive pulses supplied to said pulse motors and said control signals, and a second region for storing data corresponding to an address count value which designates an address of said first memory means, and for storing the type of control and the data in said second code region of said first memory means; a central processor unit connected to said bus line; and a third memory means in the form of a programmable memory means connected to said first and second memory means and to said central processor unit through said bus line, said third memory means containing a program of various instruction groups for sequentially forming operation instructions for operating said pulse motors and said head.



4,201,145
SEW LENGTH CONTROL AND MEASURING APPARATUS

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed May 19, 1978, Ser. No. 907,800
Int. Cl.² D05B *27/16*
U.S. Cl. 112—306 **10 Claims**

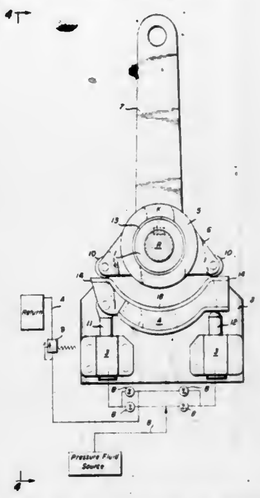


1. In combination with a sewing machine of the type having reciprocating feed dog means for drawing one or multiple limp workpieces through the sewing machine, apparatus for controlling the lengths of the workpieces as they are drawn through the sewing machine, the controlling apparatus comprising a pair of wheels, means for separately, rotatably supporting the wheels and for biasing each of them into rolling engagement with a separate one of the workpieces, means for intercoupling the wheels to control the rotational velocity of one of the wheels as a proportion of the rotational velocity of the other wheel, and wherein the controlling apparatus is attached to the sewing machine ahead of the feed dog means taken in the direction of travel of the workpieces through the sewing machine.

4,201,146
DEVICE FOR RELIEVING THE RUDDER SHAFT IN SHIPS

Bilen Branislav, Kursulina 5, 11000 Beograd, Yugoslavia

Filed May 1, 1978, Ser. No. 901,981
Claims priority, application Yugoslavia, Jun. 6, 1977, 1401/77
Int. Cl.² B63H *25/06*
U.S. Cl. 114—163 **2 Claims**



1. Apparatus for disconnecting from the steering mechanism of a ship one of a plurality of rudders when the rudder is in a jammed condition, each of said rudders having a generally vertical shaft, comprising
(a) an annular hub member (1) adapted for mounting in keyed relation concentrically about said one rudder shaft;
(b) a plate (2) rigidly secured to and extending normal to the axis of said hub member;
(c) a pair of pressure fluid piston-cylinder motors (3) mounted in spaced parallel relation on said plate, the axes of said motors being parallel to said plate and being arranged on opposite sides of, and parallel to, a first plane which is normal to said plate and which contains the longitudinal axis of said hub member, the piston rods (11, 12) of said motors extending generally in the direction of said hub;
(d) a guide member (4) pivotally connected at one end with the free end of one (11) of said pistons, said guide member being generally parallel with said plate and being spaced from said hub member, the other end of said guide member being in engagement with, and supported by the free end of, the other (12) of said pistons, the face (14) of said guide member adjacent said hub member being planar and normal to said first plane, said guide member planar face containing adjacent its center a semi-circular recess (18);
(e) an annular tiller ring (5) rotatably mounted concentrically about said hub member, said tiller ring including a stirrup portion (6) carrying a pair of rollers (10) adjacent the planar face of said guide member on opposite sides of said recess, respectively;
(f) a tiller member (7) rigidly connected with said tiller ring;
(g) means including one-way valve means (8) for normally supplying pressure fluid to said motors to force said piston rods and said guide member toward said hub member to a position in which said rollers engage portions of said planar guide surface on opposite sides of said recess, whereby pivotal movement of said tiller member is conducted to said hub member via the engagement between said rollers and said guide plate; and
(h) pressure-responsive safety valve means (9) for releasing pressure fluid from said motors when the fluid pressure thereof exceeds a predetermined value, whereby in the

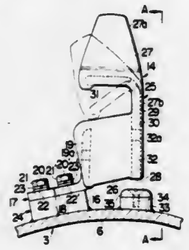
event that the rudder is in a jammed condition, pivotal movement of the tiller member causes operation of the safety valve means to vent the motors to disable the guide member relative to said rollers.

4,201,147

TIRE PRESSURE DROP WARNING APPARATUS

Norio Goshima, Musashino, and Akira Matsuda, Higashimurayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,214
Claims priority, application Japan, Dec. 26, 1977, 52-156939
Int. Cl.² B60C *23/04*
U.S. Cl. 116—34 B **4 Claims**



1. A tire pressure drop-warning apparatus for a vehicle, which apparatus is provided in an air chamber defined by a pneumatic tire and a wheel rim assembled with said pneumatic tire so as to mechanically strike said wheel rim for emitting an alarm-giving sound when the tire inner pressure drops in said air chamber below an allowable limit, comprising in combination:

a securing member secured to said wheel rim;

a blow-striking hammer provided spacedly from said securing member in the direction perpendicular to the radial direction of said wheel rim; and

a connecting member made of a resilient material and having one end connected with the radially outer end of said securing member and the other end connected with said blow-striking hammer;

said blow-striking hammer having at its radially outer end a protrusion extending radially outwardly from the radially outer end of said connecting member said blow-striking hammer having at its radially inner end a blow-striking portion for striking said wheel rim, so that when the wheel is rotated in use the inner surface of said pneumatic tire is periodically brought into pressed engagement with the radially outer end of said protrusion if when said tire inner pressure is dropped in said air chamber below said allowable limit the connecting member is thereby caused to be shearingly and bendingly deformed so that the blow-striking portion will strike said wheel rim to themselves alone emit said alarm-giving sound discernable over other noises of said vehicle.

4,201,148

POINTER AND SCALE INDICATING ASSEMBLY

Frank W. Bizzak, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 29, 1978, Ser. No. 964,756
Int. Cl.² G01D *13/22*; H03J *1/02*
U.S. Cl. 116—241 **16 Claims**

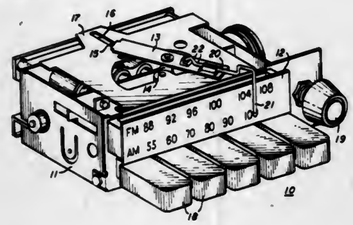
1. An improved pointer and scale indicating assembly comprising:

scale means, with indicia thereon, fixedly mounted in said chassis;

pointer arm means moveably mounted in said chassis, the position of said pointer arm means with respect to said chassis corresponding to a quantity which it is desired to visually display; and

pointer means mounted on said pointer arm means for integral movement therewith and having first and second end portions, said first end portion visually cooperating with said scale means to produce a visual indication of the position of said pointer arm means with respect to said chassis;

wherein said scale means has a surface with said indicia thereon, said pointer arm means being located on one side of said scale surface and said first end portion of said pointer means being located on an opposite side of said scale surface;



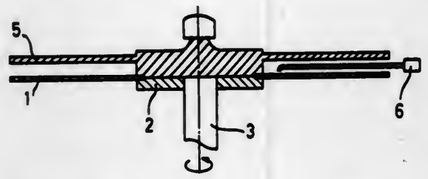
wherein the improvement comprises said pointer arm means having a first planar surface with at least one holding projection rising thereabove and a raised surface including a ramp rising above said first planar surface, said second end portion of said pointer means being at least partially resilient and being slidably hand insertable onto said pointer arm means with said projection holding a part of said second end portion of said pointer means and said ramp of said raised surface contacting and flexing said second end portion of said poihter means during the slidable hand insertion thereof to create a retaining force maintaining said second end portion in contact with said raised surface and said projection, thereby attaching said pointer means to said pointer arm means.

4,201,149

APPARATUS FOR SPIN COATING IN THE PRODUCTION OF THIN MAGNETIC LAYERS FOR MAGNETIC DISCS

Eberhard Koester, Frankenthal; Paul Deigner, Weisenheim; Roland Falk, Achern; Karl Uhl, Frankenthal; Dieter Schaefer, Ludwigshafen; Dieter Mayer, Ludwigshafen; Herbert Motz, Ludwigshafen, and Peter Felleisen, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 641,356, Dec. 16, 1975, Pat. No. 4,133,911.
This application Sep. 27, 1978, Ser. No. 946,355
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1974, 2459541
Int. Cl.² B05C *11/08*
U.S. Cl. 118—52 **4 Claims**



4. An apparatus for spin coating, in the production of thin magnetic layers for magnetic discs, a rigid base disc with a pourable dispersion of magnetic materials in a binder mixture, said apparatus comprising:

variable-speed drive means for rotating said base disc,

means for applying said dispersion to said base disc while said drive means are rotating said disc at a relatively slow speed,

a rigid, generally disc-shaped member, and

means for attaching said member to said base disc for rotation therewith and in closely spaced parallel-planar relation thereto at least while said drive means rotate said disc at a relatively high speed during the spin-coating operation, so as to define between the flat surface of said base disc, which carries said dispersion, and the opposing flat surface of said member, a generally cylindrical air space open along its entire circumference, through which open circumference excess dispersion is spun off, and cause the air column extending in said space between said two flat surfaces to rotate, in the manner of an aerodynamic boundary layer, in a substantially stationary relationship to the surface of said disc,

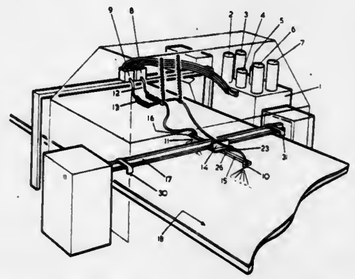
whereby the formation of surface irregularities during the production of said magnetic layer is substantially avoided.

4,201,150

APPARATUS FOR COATING A WEB

Harry Edwards, Blackley, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 818,266, Jul. 22, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,258
Claims priority, application United Kingdom, Apr. 13, 1977, 15284/77
Int. Cl.² B05C *5/00*
U.S. Cl. 118—323 **10 Claims**



1. Apparatus for dispensing a liquid reaction mixture onto web or sheet material which comprises a frame constructed to be mounted above advancing web or sheet material, said frame having guide means supporting a carriage which is arranged to be driven in a reciprocating fashion in a line of motion transverse to the direction of advancement of said web or sheet material, and a distributor connectable to a supply of liquid reaction mixture for depositing said mixture onto said web or sheet material, said distributor being attached to said carriage by an attachment device which permits limited free movement of said distributor relative to said carriage and transversely to the direction of advancement of said web or sheet material when the carriage is decelerated prior to reversal of its direction of motion.

4,201,151

APPARATUS AND METHODS OF COATING FILAMENTS WITH POLYMERS

Mokhtar S. Maklad, and Pablo C. Pureza, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

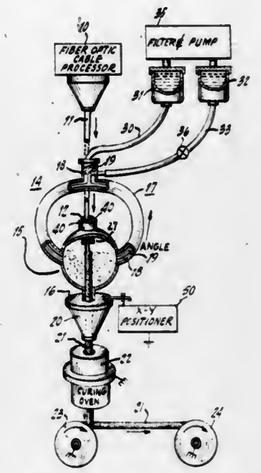
Filed Apr. 17, 1978, Ser. No. 896,842
Int. Cl.² B05B *5/00*
U.S. Cl. 118—642 **12 Claims**

1. Apparatus for uniformly coating an elongated member with a polymer formed by the mixing of a first base component and a second catalyst component comprising:

a mixing vessel having an inlet and outlet port along a given axis, each communicating with an internal hollow of said vessel and adapted to receive the elongated member;

first and second component ports relatively transverse to said inlet and outlet ports and each communicating with said internal hollow;

an annular tubular delivery means coupled between component ports, said means including an outer tube adapted to receive one of said components and an inner coaxial tube



adapted to receive said other component, said annular tubular means directed at a predetermined angle with respect to said axis of said inlet and outlet ports; and

means for moving said elongated member at a predetermined rate through said inlet and outlet ports and hence, through said hollow of said vessel to cause mixing and agitation of said components as delivered to said hollow by said delivery means to cause said elongated member as directed to be coated with said polymer.

4,201,152

TRANSFER AND TEMPERATURE MONITORING APPARATUS

Paul E. Luscher, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 27, 1978, Ser. No. 881,340
Int. Cl.² C23C *13/08*; H01L *21/68*
U.S. Cl. 118—712 **19 Claims**

1. Apparatus for monitoring the temperature of an object located at a treating station and for enabling the object to be transferred from a carriage to the treating station, and vice versa, said apparatus comprising:

a metal holder for the object,

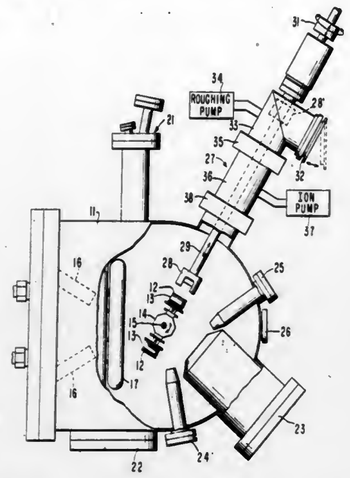
first and second metal contact pins at the treating station, said pins being arranged to selectively contact a surface of the holder, said first contact pin and surface when contacting forming a first thermocouple junction, said second contact pin and surface when contacting forming a second thermocouple junction, said junctions having dissimilar properties so that a voltage indicative of the temperature of the object is derived between them while the pins and surface contact each other,

said treating station including means for selectively fixedly holding the holder,

said carriage including means for selectively fixedly holding the holder,

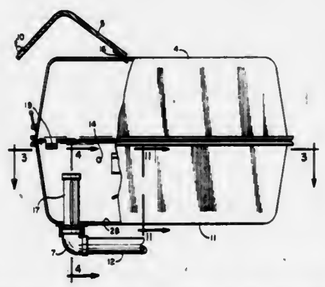
said treating station and carriage including means for transferring the holder between the carriage and the treating station, said transferring means including means for providing translational and rotational motion between the

holder and the treating station during a transfer of the holder, and



means for preventing contact between the holder surface and the pins during the rotational motion.

4,201,153
ANIMAL ENCLOSURE SYSTEM
George W. Nace, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Mar. 27, 1978, Ser. No. 890,520
Int. Cl.[2] A01K *61/00, 64/00*
U.S. Cl. 119—3 14 Claims

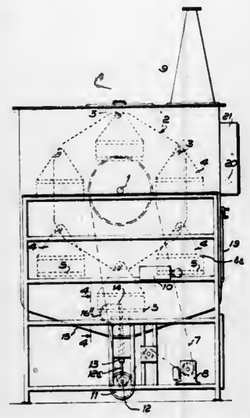


1. An animal enclosure comprising a pan having a bottom surface and sides, a top having an upper surface and sides, said top being configured to coincide with said pan, said top being selectively removeable from said pan, a drain extending from the interior of said pan to an external drain line,

said pan being adapted to receive and retain against lateral movement a selective plurality of shelves, said shelves being at different levels with respect to each other, and being provided with means for animal access from one said shelf to another and to the said bottom surface of said pan,

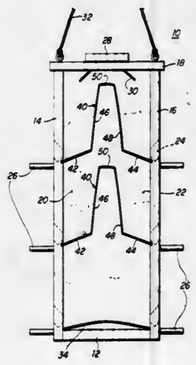
said means to receive and retain said shelves including a plurality of studs and a plurality of indexing means, each of said studs at least partially supporting one shelf, when a shelf is positioned over said stud, and each indexing means coacting with a portion of one shelf when a shelf is positioned adjacent said indexing means, to prevent lateral movement of said shelf.

4,201,154
CHAMBERS FOR HOUSING ANIMALS IN TOXYCOLOGY LABORATORIES
Eric Gowrie, Knutsford, England, assignor to E. Gowrie Limited, Manchester, England
Filed May 12, 1978, Ser. No. 905,469
Claims priority, application United Kingdom, May 13, 1977, 20154/77
Int. Cl.[2] 119 *22;* A01K *1/03*
U.S. Cl. 119—15 4 Claims



1. An inhalation chamber for housing animals in toxycology laboratories comprising a hermetically sealed casing, a rotary shaft supported by the casing, a motor drive connected to said shaft, a disc at each end of the shaft, a plurality of platforms, brackets pivoted on the discs and adapted to support the platforms, mesh cages carried by the platforms so that during rotation of the discs each of the cages is maintained in a horizontal position, means for introducing a controlled atmosphere to the casing and maintaining the atmosphere therein below atmospheric pressure, a droppings tray below each cage, a scraper for removing the droppings from a tray, and means including cam means driven by said motor for periodically activating the scraper to cleanse the lowermost of said droppings trays.

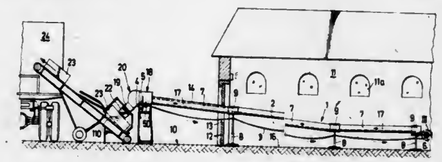
4,201,155
BIRD FEEDER
Donald B. Hyde, Jr., Waltham, Mass., assignor to Hyde's Incorporated, Waltham, Mass.
Filed Aug. 11, 1977, Ser. No. 823,786
Int. Cl.[2] A01K *39/01*
U.S. Cl. 119—51 R 8 Claims



1. In a bird feeder comprising a relatively elongated housing for holding a supply of bird feed and having a plurality of feeding apertures located at different heights thereon:

the improvement of providing means for retaining supplies of bird feed at feeding apertures located at different heights, said means for retaining including at least one baffle for retaining seed at the height of the baffle independent of a lower level, said baffle permitting some seed to pass to the lower level.

4,201,156
LIVE POULTRY CONVEYING, COUNTING AND CRATING DEVICE
Werner Kühler, Post Hennstedt, D-2246 Norderheistedt, über Heide, Fed. Rep. of Germany
Filed May 19, 1978, Ser. No. 907,748
Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723686
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—82 4 Claims



1. A live poultry conveying, counting and crating device comprising:

(a) a chicken house;

(b) a counting station;

(c) live poultry conveying means for conveying live poultry inside and out of the chicken house through said counting station;

(d) a loading chute having a bottom downwardly inclined at an acute angle on which said live fowl can slide downwardly, an inlet opening at the upper end of the latter and adapted for receiving live poultry from said live poultry-conveying means, and an outlet opening at the lower end of said inclined bottom; said counting station being associated with said chute for counting live poultry passing down the latter;

(e) a transport mechanism for transporting empty coops having an aperture in their top face to the outlet opening of said chute and coops filled with live poultry away from said outlet opening of said chute;

said transport mechanism comprising means for stopping each coop as it arrives at said outlet opening for a time sufficient to fill said coop with a determined number of live poultry, tilting means for tilting each coop as it sojourns at said outlet opening of said chute, at an angle whereby said aperture of said coop is inclined by an acute angle toward said outlet opening, and

wherein the angle of inclination of the coop, when in tilted position, toward the outlet opening of said chute is about 25 to 50 degrees toward the horizontal plane.

4,201,157
PORTABLE ANIMAL HANDLING UNIT
Joe Lambert, Smith Center, Kans. 66967
Filed May 25, 1978, Ser. No. 909,544
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—82 8 Claims

1. A self contained, mobile animal handling apparatus, comprising:

(a) frame means including a bed arranged for an animal walkway,

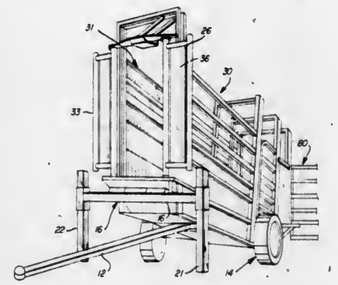
(b) a wheeled under-carriage mounted having wheels mounted on pivoted lateral axes to lower at least one set of wheels to raise said frame into a travel position and raise the at least one set of wheels to lower said frame into contact with the supporting surface in a general horizontal position,

(c) hydraulic means for raising and lowering said undercarriage including a hydraulic fluid reservoir and and a hand pump providing motivating power for said hydraulic means,

(d) draft means depending outwardly from one end of said frame for towing,

(e) elevating means adjustable secured at a final angle to the draft end of said frame for sloping said frame downwardly from the draft end forming as animal ramp,

(f) upwardly depending side means mounted perpendicularly on each side of said bed forming an animal walkway,



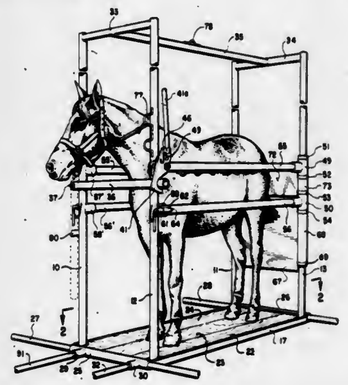
(g) one said side means being pivotally mounted to said bed for tilting inwardly forming an animal holding means including means for tilting said side means,

(h) each said side means including at least one gate means arranged for opening and closing providing access to a held animal,

(i) gate means at each end of said bed, and

(j) closure means at the draft end of each side means arranged for filling the gap at each end of each perpendicular side when said frame is sloped downwardly from the draft end.

4,201,158
LIVESTOCK RESTRAINING CHUTE
Floyd J. Parker, 86 E. 1700 South, Farmington, Utah 84025
Filed Jan. 3, 1978, Ser. No. 866,241
Int. Cl.[2] A61D *3/00*
U.S. Cl. 119—98 9 Claims



1. A livestock restraining chute, comprising four uprights defining respective corners of a substantially parallelepiped framework of size sufficient to enclose an animal to be restrained and having substantially rectangular top and bottom faces and substantially rectangular and open side and front and

rear faces; respective restraining structures attached to and normally extending between corresponding uprights at respective opposite side faces of said framework for closing said side faces and restraining lateral movement of said animal; restraining gate structure attached to and normally extending between but openable and closeable with respect to the two corresponding uprights that define the rear end face of said framework to provide entry into and exit from the chute for the animal and to restrain rearward movement of said animal within the chute; front restraining structure normally extending and releasably secured between the two corresponding uprights that define the front end face of said framework to restrain forward movement of the animal and, when released, to drop freely downwardly so as to open said opposite end face of the framework and free an animal hung up on said front restraining structure, said front restraining structure comprising a bar pivotally attached on a horizontal axis at one of its ends to one of the two front-face-defining uprights of the framework so as to pivot downwardly against the upright to which it is attached; and manually operable latch means carried by the other of the two front-face-defining uprights to receive and hold the free end of said bar when such bar is in substantially horizontal position across the open front face of said framework for normally securing said front restraining structure across said opposite, front face of the framework and for releasing such front restraining structure as and when desired, said latch means comprising a manually operated latching hook for engaging the free end of the bar as a keeper, and means for locking the latching hook in latched position.

4,201,159

ELECTRONIC CONTROL METHOD AND APPARATUS FOR COMBUSTION ENGINES

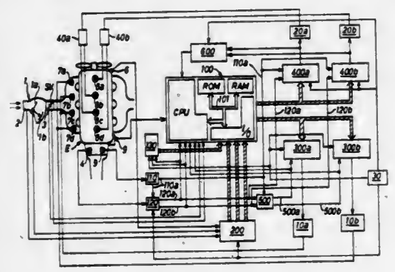
Hisasi Kawai, Toyohashi, and Toshikazu Ina, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 9, 1978, Ser. No. 885,076

Claims priority, application Japan, Mar. 23, 1977, 52-32733; Aug. 3, 1977, 52-93492

Int. Cl.² F02B 3/00

U.S. Cl. 123—32 EB **9 Claims**



1. In an electronic control apparatus for a combustion engine having an output shaft driven by mechanical energy converted from heat energy caused by the combustion of air-fuel mixture, said engine being provided thereon with fuel control means for controlling the amount of fuel metered into said engine and ignition control means for controlling the timing of the sparks supplied to said engine, the control apparatus comprising:

a first electronic circuit for generating a binary number electric signal indicative of the air intake of said engine;

a second electronic circuit for generating a binary number electric signal indicative of the rotation speed of said output shaft;

detecting means for detecting a predetermined angular position of said output shaft to generate a first reset signal therefrom per one rotation of said output shaft;

means for generating a second reset signal with a predetermined phase lag in relation to the first reset signal from said detecting means;

a digital computer for repetitively determining first and second values corresponding to respective settings of said fuel and ignition control means in accordance with the binary number electric signals from said first and second electronic circuits upon sequentially receiving the first and second reset signals, said computer determining the first and second values respectively from a first function describing a desired relationship among the setting of said fuel control means, the air intake of said engine and the rotation speed of said output shaft and from a second function describing another desired relationship among the setting of said ignition control means, the air intake of said engine and the rotation speed of said output shaft;

a third electronic circuit coupled between said digital computer and said fuel control means for converting the first calculatec value into the setting of said fuel control means in response to the second reset signal; and

a fourth electronic circuit coupled between said digital computer and said ignition control means for converting the second calculated value into the setting of said ignition control means in response to the first reset signal;

the improvement wherein an electronic control circuit is coupled between said fourth electronic circuit and said digital computer for generating an electric control signal with a predetermined period of time in response to the setting of said ignition control means, said control signal being applied to said computer to halt the determination of the first value during the predetermined period of time defined by the control signal even if said computer is conditioned to determine the first value in response to the second reset signal, the remaining determination of the first value being subsequently performed after lapse of the predetermined period of time.

4,201,160

FUEL INJECTION SYSTEMS

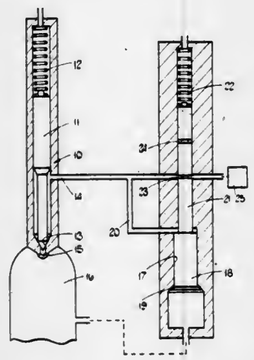
Ivor Fenne, Greenford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 12, 1978, Ser. No. 905,515

Claims priority, application United Kingdom, Jun. 9, 1977, 24207/77

Int. Cl.² F02B 3/00

U.S. Cl. 123—32 G **9 Claims**



1. A fuel injection system for supplying fuel to a combustion space of a reciprocating piston internal combustion engine more particularly a diesel engine, the system comprising a fuel injection nozzle having a fuel inlet and including a valve member movable by fuel under pressure to an open position to allow fuel to flow into the combustion space and resilient means for moving said valve member to a closed position, the system further including a fuel pump for supplying fuel under pressure to said inlet of the nozzle in timed relationship with the associated engine, means whereby a small quantity of fuel can be supplied to the combustion space through the nozzle in advance of the main quantity of fuel supplied by the pump, said means comprising a piston slidable within a cylinder, said cylinder having an inlet at one end for connection in use to the combustion space of the engine, an outlet from the other end of said cylinder connected to the inlet of the nozzle and valve means operable by said piston, said valve means being interposed between the fuel pump and the inlet of the nozzle and being arranged to be closed until said piston is at or adjacent said other end of the cylinder, the arrangement being such that the piston is moved to said other end of the cylinder during the compression of air within the combustion space, such movement acting to displace fuel from said other end of the cylinder to the injection nozzle and the combustion space to initiate combustion therein, the main quantity of fuel being supplied by the pump to the nozzle when said valve means has operated to place the pump in communication with the inlet of the nozzle.

4,201,161

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

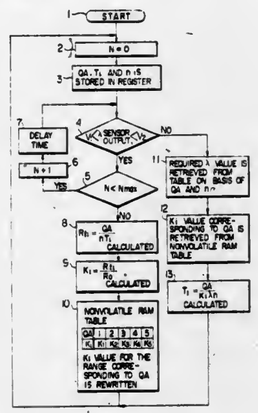
Takao Sasayama, Hitachi, and Seiji Suda, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 12, 1978, Ser. No. 950,572

Claims priority, application Japan, Oct. 17, 1977, 52-124262

Int. Cl.² F02D 5/00

U.S. Cl. 123—32 EB **10 Claims**



1. A control system for the internal combustion engine, comprising:

sucked air flow rate detector means for detecting an electrical signal related to the flow rate of the air sucked into the internal combustion engine,

number-of-revolutions detector means for detecting the number of revolutions of said engine,

air-fuel ratio detector means for detecting the air-fuel ratio of the mixture gas sucked into said engine as an electrical signal related to said air-fuel ratio,

fuel supply means for supplying fuel into the path of the air sucked into said engine, and

control means for supplying a control signal to said fuel supply means for controlling the quantity of fuel supplied by said fuel supply means, on the basis of an air flow rate signal produced from said sucked air flow rate detector means, a number-of-revolutions signal detected by said number-of-revolutions detector means and an air-fuel ratio signal detected by said air-fuel detector means;

said control means further comprising:

an air-fuel ratio correction factor control section including a first memory means for storing said air flow rate signal, said number-of-revolutions signal and the control signal supplied to said fuel supply means, in a repetition period longer than the delay time of transmission of the air-fuel ratio between said fuel supply means and said air-fuel ratio detector means, said air-fuel ratio correction factor control section judging that said air-fuel ratio signal is maintained within a predetermined level range for the period longer than said air-fuel ratio transmission delay time within said repetition period from the time of said storage in said first memory means, said control section calculating the air-fuel ratio, when the air-fuel ratio signal is maintained within said level range longer than said delay time, as a function of said control signal and the ratio between said air flow rate signal and said number-of-revolutions signal stored in said first memory means, said control section including a second means for storing an air-fuel ratio correction factor which is the ratio between said calculated air-fuel ratio and an initial air-fuel ratio stored already in said second memory means, and

a special operation control section for reading out from said second memory means, when said engine is under a special operating condition, an air-fuel ratio stored therein suitable for said special operating condition, said special operation control section controlling the quantity of fuel from said fuel supply means on the basis of an air-fuel ratio obtained by correcting said read-out air-fuel ratio according to said air-fuel ratio correction factor.

4,201,162

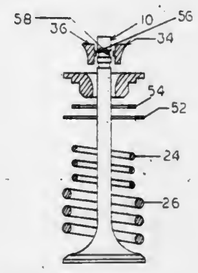
ALUMINUM VALVE SPRING RETAINER

Frank H. Speckhart, 534 Dellwood Dr., Knoxville, Tenn. 37919

Filed May 12, 1978, Ser. No. 905,445

Int. Cl.² F01L 3/10

U.S. Cl. 123—90.67 **8 Claims**



1. An improved valve spring retainer for use in an internal combustion engine having a valve stem, an engine block, a valve spring retainer having a bore encircling a portion of said valve stem, keeper means mounted on said valve stem and engaging said valve spring retainer, valve spring means encircling said valve stem engaging said valve spring retainer and pressing against said engine block, said valve spring retainer characterized in that said bore is a smooth surface of revolution having a first angle of taper at the end of said valve spring retainer adjacent to said valve spring means and a second angle of taper at the end of said valve spring retainer opposite to said valve spring means said second angle of taper being at least about 10° larger than said first angle of taper.

4,201,163

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tadashi Hattori; Minoru Nishida; Yoshiki Ueno, all of Okazaki; Kunio Makita, Chiryu, and Masaaki Kurii, Kasugai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Jan. 3, 1977, Ser. No. 756,272

Claims priority, application Japan, Jan. 12, 1976, 51-2544

Int. Cl.² F02P 5/04

U.S. Cl. 123—117 R **4 Claims**

1. In an ignition system for an internal combustion engine, an ignition timing control device for electronically controlling

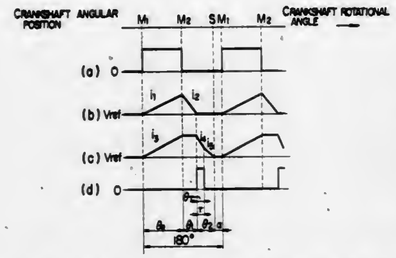
the timing of ignition of an internal combustion engine, comprising:

(a) angular position detecting means for detecting first and second different angular positions of a crankshaft of said engine to produce first and second detection signals corresponding to said first and second angular positions;

(b) a first integrator circuit having a first capacitor;

(c) a first charge/discharge control circuit connected to said angular position detecting means for charging said first capacitor at a predetermined current in response to said first detection signal from said angular position detecting means and discharging said first capacitor at a predetermined discharge current in response to said second detection signal;

(d) a timing circuit connected to said first integrator circuit for producing a timing signal of a predetermined time width when the potential across said first capacitor of said first integrator circuit is decreased to a predetermined value by said discharging, said timing circuit including a monostable circuit which produces said timing signal;



(e) a second integrator circuit having a second capacitor;

(f) a charge control circuit connected to said angular position detecting means and said second integrator circuit for charging said second capacitor at a predetermined current in response to said first detection signal from said angular position detecting means and stopping the charging of said second capacitor in response to said second detection signal;

(g) a discharge control circuit connected to said timing circuit and said second integrator circuit for discharging said second capacitor at a predetermined discharge current in response to said timing signal from said timing circuit and discharging said second capacitor at another current smaller than said discharge current in response to the termination of said timing signal; and

(h) an ignition signal generating circuit connected to said second integrator circuit for producing an engine ignition timing signal in accordance with the output of said second integrator circuit.

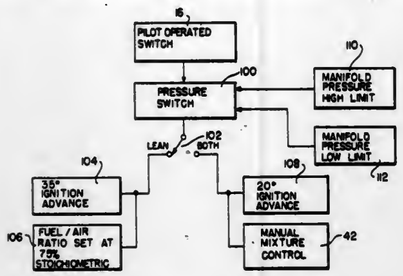
4,201,164

ENGINE ECONOMIZER CONTROL UNIT

Anthony A. duPont, 21515 Hawthorne Blvd., Torrance, Calif. 90503

Filed Oct. 17, 1977, Ser. No. 842,415
Int. Cl.² F02D *39/00*
U.S. Cl. 123—117 R **4 Claims**

1. A control unit for use in conjunction with a piston engine for providing for reduced fuel consumption during operation of the engine, said control unit including: first ignition control means for providing an ignition timing in the engine of substantially 20° before top dead center; a first manually-controllable mixture control means for providing a relatively rich fuel-to-air ratio in the engine which is manually controllable over a predetermined range; second ignition control means for providing an ignition timing in the engine of substantially 35° before top dead center; second mixture control means for providing a relatively lean fuel-to-air ratio of substantially 75° of stoichiometric in the engine; and switching means for connecting the first ignition control means and the first mixture control means to the engine for one operating position thereof and for connecting the second ignition control means and the



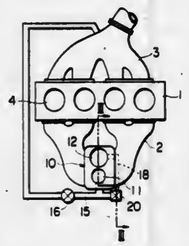
second mixture control means to the engine for a second operating position thereof.

4,201,165

INTERNAL COMBUSTION ENGINE WITH DUAL INDUCTION SYSTEM AND WITH EGR SYSTEM

Toshiaki Tanaka, Fujisawa, and Yukihiro Etoh, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 7, 1978, Ser. No. 958,500
Claims priority, application Japan, Feb. 24, 1978, 53/23194[U]
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **2 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder formed therein;

a piston reciprocably mounted within said cylinder;

a cylinder head positioned on one end of said cylinder;

a primary induction system adapted to direct a first fluid charge into said cylinder to swirl therein under all of the operating conditions of the engine;

a secondary induction system adapted to direct a second fluid charge into said cylinder in such a direction as to impede the swirling of first fluid charge under a predetermined operating condition of the engine;

an exhaust system adapted to discharge exhaust gas from said cylinder;

an exhaust gas recirculation conduit leading from said exhaust system to said primary induction system;

an exhaust gas recirculation control valve adapted to control exhaust gas passing through said exhaust gas recirculation conduit;

a branch conduit leading from said exhaust gas recirculation conduit at a location downstream of said exhaust gas recirculation control valve to said secondary induction system; and

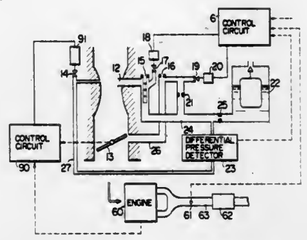
a second valve closing said branch conduit, said second valve being operative to open said branch conduit in response to load of the engine.

4,201,166

AIR TO FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yutaka Nishimura, and Yoshishige Oyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 19, 1978, Ser. No. 952,737
Claims priority, application Japan, Oct. 20, 1977, 52-126438
Int. Cl.² F02M *7/12*
U.S. Cl. 123—119 EC **38 Claims**



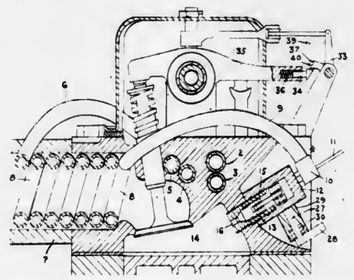
1. An air to fuel ratio control system for an internal combustion engine having a fixed venturi type carburetor, including a main fuel path connecting a nozzle opened to a venturi of a suction tube to a bottom of a float chamber and having a main jet and a main air bleed, and a slow fuel path connecting an opening formed near a throttle valve of said suction tube to an area of said main fuel path downstream of said main jet and having a slow jet and a slow air bleed; said air to fuel ratio control system comprising a feedback main air bleed provided in said main fuel path in parallel with said main air bleed, a feedback slow air bleed provided in said slow fuel path in parallel with said slow air bleed, means for establishing an air to fuel ratio setting, means for extracting a pressure corresponding to a relieved vacuum at said venturi, means for extracting a fuel static pressure downstream of said main jet, detecting means for detecting a difference between the extracted pressures, and controlling means for controlling opening areas of said feedback main air bleed and said feedback slow air bleed in accordance with an output from said detecting means to attain the preset air to fuel ratio.

4,201,167

METHANOL VAPORIZATION AND INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Richard I. Bayley, 1076 Wunderlich Dr., San Jose, Calif. 95129

Filed May 5, 1978, Ser. No. 903,076
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 E **4 Claims**



1. A four stroke alcohol fueled internal combustion engine comprising:

an engine block and cylinder head means forming two or more combustion chambers, said cylinder head means being air-cooled and having interior bottom portions capable of operating at a temperature of approximately 400° F.;

movable compression and expansion members disposed within said chambers, said expansion members being operative to compress working fluid within said chambers and being movable by expansion of fluid within said chambers to mechanically couple energy to an external drive means;

intake valve means for admitting fresh air into each said chamber;

exhaust valve means for exiting exhaust gases from each said chamber;

valve actuating means for actuating said intake valve means and said exhaust valve means;

thermally insulated exhaust manifold means through which said exhaust gases flow;

means for vaporizing liquid alcohol input at a high pressure to a vapor pressure of approximately 800 psi and a temperature of approximately 600° F. and including means forming a heat exchanging tubular passageway within said cylinder head means and which originates in the hottest interior portion thereof and then extends into said exhaust manifold where it follows a generally helical path along the inside of the wall thereof;

alcohol vapor injector means for injecting metered amounts of high pressure, high temperature alcohol vapor into each said combustion chamber near the peak of the chambers compression stroke and including injector actuating means energized by said valve actuating means for opening and closing said vapor injector means; and

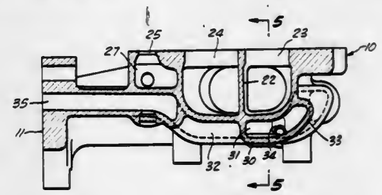
means forming a thermally insulated high pressure passageway connecting the downstream end of said tubular passageway to said injector means.

4,201,168

INTAKE MANIFOLD FOR ENGINE

Yasumichi Ohama, Mitaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1978, Ser. No. 924,626
Claims priority, application Japan, Jul. 18, 1977, 52-84982
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 AB **4 Claims**



1. For use with an internal combustion engine having a plurality of main combustion chambers and a plurality of auxiliary combustion chambers, an intake manifold comprising, in combination: a main primary opening communicating with a main distribution cavity for a relatively lean air-fuel mixture, a main secondary opening communicating with the same cavity, an auxiliary opening communicating with an auxiliary distribution cavity for a relatively rich air-fuel mixture, passages in the intake manifold establishing communication from said main distribution cavity to the engine, additional passages in the intake manifold establishing communication from the auxiliary distribution cavity to the engine, said main distribution cavity being divided by wall means to form a first sub-cavity and a second sub-cavity, said first and second sub-cavities communicating with the main primary opening and the main secondary opening respectively, a hot water jacket positioned below the main and auxiliary distribution cavities having a water passage spaced apart from the area below the second sub-cavity, in order to avoid direct contact and rapid transfer of heat between said second-subcavity and said water passage, both bottom walls of the auxiliary distribution cavity and the first

sub-cavity being in direct contact with said water passage for rapid transfer of heat into the auxiliary distribution cavity and the first sub-cavity, means for introducing hot water into heating chamber, and an outlet from said heating chamber.

4,201,169

CONTROL INSTALLATION FOR THE IDLING ROTATIONAL SPEED OF INTERNAL COMBUSTION ENGINES

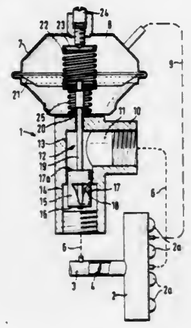
Athanasios Michassouridis, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,892

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1976, 2655171

Int. Cl.² F02M *69/00*

U.S. Cl. 123—124 R **9 Claims**



1. A control installation for the idling rotational speed of internal combustion engines, comprising a by-pass control valve means disposed in parallel to a selectively actuatable throttle valve means and controlled by an adjusting means dependent on the suction pipe pressure, the opening cross section of the by-pass control valve means increasing with increasing suction pipe pressure, characterized in that the rate of increase of the opening cross section of the by-pass control valve means with increasing suction pipe pressure is progressive.

4,201,170

FUEL INJECTION PUMP WITH POSITIVE DISPLACEMENT DELIVERY VALVE HAVING TWO PORT AREAS OPENED ACCORDING TO FUEL FLOW RATE

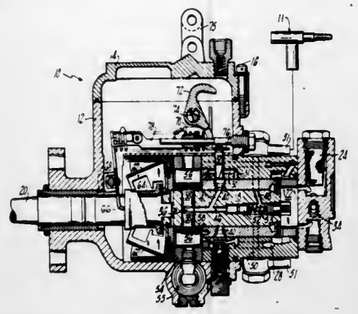
Norbert W. Overfield, Bloomfield, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Jul. 31, 1978, Ser. No. 929,820

Int. Cl.² F02M *41/08*; F04B *39/10*

U.S. Cl. 123—139 BD **6 Claims**

1. A liquid fuel injection pump for a multicylinder internal combustion engine having a fuel injection nozzle for each cylinder for injecting a fuel charge into the cylinder when supplied with fuel under pressure above a predetermined level, a charge pump operable to generate periodic pulsed charges of pressurized fuel, a fuel distributor between the charge pump and the injection nozzles providing a delivery passage for sequentially delivering the pulsed charges of fuel to the several nozzles, a reciprocable delivery valve disposed in said delivery passage and providing a passageway for conducting fuel past the delivery valve, said delivery passage providing a stop for fixing the closed position of the delivery valve, and a spring biasing the delivery valve toward the stop against the pressure generated by the charge pump, characterized in that the delivery valve is a positive displacement delivery valve which closes said passage to prevent the flow of fuel in either direction when the delivery valve is engaged with the stop, said passageway having port means providing a restricted passage to accommodate only a low fuel flow rate when the delivery valve is displaced from the stop by a first distance, said port means providing a larger fuel flow area when the delivery valve is displaced from the stop its maximum distance to accommodate the unrestricted flow of fuel at high fuel flow rates



whereby the delivery valve retracts after the delivery of each pulsed charge of fuel to a nozzle to reduce the residual pressure downstream of the delivery valve below the predetermined level at all fuel flow rates and to a lower level at high fuel flow rates than at low fuel flow rates.

4,201,171

IGNITION SYSTEM FOR A MULTICYLINDER ENGINE

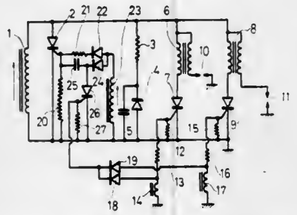
Hirotoshi Nanjo, and Kimihiro Boyama, both of Susono, Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

Filed May 3, 1978, Ser. No. 902,292

Claims priority, application Japan, May 4, 1977, 52-51494

Int. Cl.² F02P *1/08*

U.S. Cl. 123—148 AC **8 Claims**



1. An ignition system for a multicylinder engine comprising a magneto having an igniting exciter coil to induce an AC voltage in synchronism with rotation of the engine;

ignition coils each having a primary coil portion and a secondary coil portion connected to an ignition plug for each cylinder of said engine to supply a high voltage across said ignition plug;

a primary current controlling semiconductor switch connected in parallel with said igniting exciter coil;

a control circuit to control said primary current controlling semiconductor switch so that the primary current controlling semiconductor switch is turned on in advance of each igniting position of the respective cylinders and is turned off when a timing signal is applied to the control circuit;

a signal generating means driven by said engine and having signal coils which generate the timing signals at said respective igniting positions of the cylinders;

primary current conducting semiconductor switches corresponding to said ignition coils and connected in series with the respective primary coil portions of the ignition coils, the respective series connections of the primary coil portions and the primary current conducting semiconductor switches being connected in parallel with said igniting exciter coil;

said signal coils being coupled to the respective primary current conducting semiconductor switches so that the respective primary current conducting semiconductor switches are turned on by the respective timing signals;

and said signal coils being further coupled to said control circuit to supply the timing signals thereto;

whereby said primary current controlling semiconductor switch is turned off at the same time as said primary current conducting semiconductor switches are turned on at the respective igniting positions of the cylinders and a high voltage is established across said secondary coil portions of said ignition coils to spark the corresponding ignition plugs.

4,201,172

FUEL INJECTION NOZZLE ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

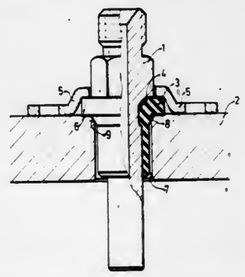
Günther Jäggle, Stuttgart; Herbert Scharl, Ditzinger, and Rudolf Krauss, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 546,671, Feb. 3, 1975, abandoned, which is a continuation of Ser. No. 365,631, May 31, 1973, abandoned. This application Jun. 9, 1976, Ser. No. 694,288

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1972, 2233919

Int. Cl.² F02M *61/14*

U.S. Cl. 123—139 AW **7 Claims**



1. A fuel injection nozzle assembly for use in an externally ignited internal combustion engine, comprising:

(a) a fuel injection nozzle having an elongated body portion in the outer surface of which there is formed a recess;

(b) a flanged sleeve having a surface defining a bore into which the nozzle body is received, said surface including a protrusion which is received within said recess in a form-fitting manner for retaining the nozzle in engagement with the sleeve; and

(c) fastening means engageable with the flange of said sleeve for mounting the sleeve and nozzle to the engine.

4,201,173

IGNITION APPARATUS FOR MULTI-CYLINDER RECIPROCATING INTERNAL COMBUSTION ENGINE

Tomoyuki Okada, Tsuchiura, and Noboru Sugiura, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 21, 1978, Ser. No. 898,683

Claims priority, application Japan, Apr. 22, 1977, 52/45783; Jun. 8, 1977, 52/66637

Int. Cl.² F02P *15/02*

U.S. Cl. 123—148 C **11 Claims**

1. An ignition apparatus for a multicylinder reciprocating internal combustion engine comprising;

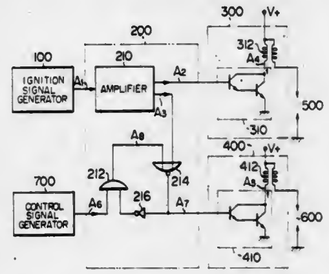
a plurality of spark plugs arranged in each cylinder;

a plurality of high voltage generating circuits each connected to corresponding one of said plurality of spark plugs;

an ignition signal generating circuit for generating an ignition signal indicative of ignition timing in accordance with the rotation of the engine;

means responsive to a predetermined condition for generating a disabling signal to disable the sparking operation of selected at least one of said plurality of spark plugs; and

actuation signal generating means connected to said ignition signal generating circuit and said disabling signal generating means, for applying actuation signals in response to said ignition signal to said respective plurality of high voltage generating circuits to cause said high voltage generating circuits to generate high voltages thereby producing sparks at said corresponding spark plugs, said actuation signal generating means being operative in respect to said disabling signal in a manner so that said actuation signal generating means applies the actuations signals, in response to the ignition signal, to selected at least one of said high voltage generating circuits connected to said corresponding selected at least one of said plugs spark in the absence of said disabling signal and to



said high voltage generating circuits other than said selected high voltage generating circuits irrespective of said disabling signal, said actuation signal generating means being operative in response to the generation of said disabling signal with respect to the application of the actuation signal to said selected high voltage generating circuit in a manner so that said actuation signal generating means allow said selected high voltage generating circuit to continue the igniting operation until the igniting operation is completed if said selected high voltage generating circuit has been actuated at the time when said disabling signal is generated and inhibits further application of the actuation signal to said selected high voltage generating circuit after the completion of said igniting operation while it inhibits the subsequent application of the actuation signal if said selected high voltage generating circuit is not being actuated at the time when said disabling signal is generated, said inhibition of the application of the actuation signal being continued so long as said disabling signal continues.

4,201,174

ROTARY VALVE SYSTEM FOR MOTORS AND THE LIKE HAVING IMPROVED SEALING MEANS

Tony E. Vallejoe, Paramount, Calif., assignor to Alto Automotive, Inc., Deerfield, Ill.

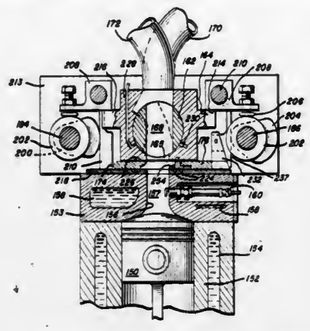
Continuation-in-part of Ser. No. 801,634, May 31, 1977, Pat. No. 4,119,077, which is a continuation-in-part of Ser. No. 653,195, Jan. 28, 1976, Pat. No. 4,098,238. This application Jan. 19, 1978, Ser. No. 870,921

Int. Cl.² F01L *3/00, 1/28*

U.S. Cl. 123—188 B **19 Claims**

1. In a motor having a combustion chamber, fuel inlet and outlet means communicating with said combustion chamber through a single, common port coaxially located with said combustion chamber, a shaft, and rotary valve means operated in registry with said shaft, controlling flow through said inlet and outlet means and port, the improvement comprising, in

combination: sliding valve means, positioned to control flow through the port between said rotary valve means and combustion chamber, comprising first and second sliding plates positioned together in facing, overlaping relationship and free of spring-biased pressure together, said first and second sliding plates each defining an aperture, said plates being movable between a first sliding position in which said apertures overlap to define a flow path through said plates and said port, and a second sliding position in which said apertures are spaced from



each other to prevent flow through said plates and port; arm means attached to said sliding plates, and cam means on said shaft positioned in engaging relation with said arm means, and adapted to move said plates between first and second sliding positions and to allow said plates to remain stationary in said second sliding position, whereby rotation of said shaft reciprocates said plates between the first and second sliding positions in a manner correlating with the opening and closing of said rotary valve.

4,201,175

CYLINDER HEAD CONSTRUCTION

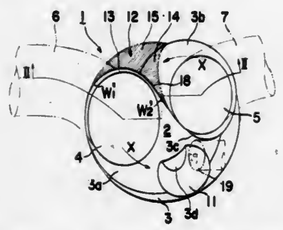
Kazuyuki Tanaka, Hiroshima; Kazuo Kobayashi, Aki; Itsuro Okabe, Hiroshima, and Toshimitsu Tanaka, Kuga, all of Japan, assignors to Toyo Kogyo Co., Ltd., Aki, Japan

Continuation of Ser. No. 795,186, May 9, 1977, abandoned. This application Sep. 6, 1978, Ser. No. 940,134

Claims priority, application Japan, May 14, 1976, 51/55921

Int. Cl.[2] F02B *23/08*

U.S. Cl. 123—191 M **4 Claims**



1. A cylinder head construction which includes:

a mating surface for connection to a cylinder block;

an inner surface defining a multi-hemispheric combustion chamber and having large-radius of curvature wall portion which is provided with an intake port through which an air-fuel mixture enters said combustion chamber and a small-radius of curvature wall portion which is provided with an exhaust port through which exhaust gases produced by combustion of said mixture leave said combustion chamber;

ignition means in said cylinder head for igniting said mixture in said combustion chamber;

valve means actuatable to selectively open and close said intake port and exhaust port, said intake port and exhaust port having valve seats therein on which said valve means are seated; and

guide wall means extending from said inner surface of said cylinder head towards said mating surface and having a first wall surface which faces said intake port and is generally parallel to the periphery of said intake port (and), a second wall surface which faces said exhaust port and curving outwardly from said exhaust port and which is generally smoothly connected with said small-radius of curvature wall portion of said inner surface and extending toward said mating surface in a downward slope to form a junction with a portion of said first wall surface, and a third wall surface which is at the level of said mating surface, said first wall surface of said guide wall means having an inner end closer to the center of the cylinder head than the remainder of said guide wall means and having an outer end adjacent the periphery of the cylinder head adjacent said intake port, said (first wall surface and said second wall surface joining in a) junction (which is) being a smooth continuation of the line of junction of said large-radius and small-radius of curvature wall portions, the ratio of the distance between the inner end of said guide wall means and the center of said cylinder head to the radius of said cylinder head being in the range of 0.1 to 0.7 and the angle defined between a diametrical line extending from the outer end of said guide wall means through the center of said cylinder head and a line extending from said center of the cylinder head to the center of said ignition means, said angle being measured through said large radius of curvature wall portion, is from 180° to an angle less than 180°.

4,201,176

RADIAL BEARING FOR AN INTERNAL COMBUSTION ENGINE

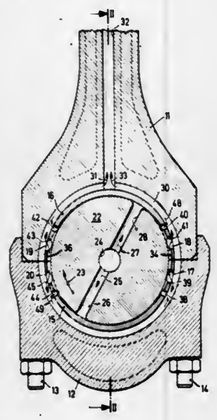
George Lustgarten, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 29, 1977, Ser. No. 865,515

Claims priority, application Switzerland, Jan. 4, 1977, 45/77

Int. Cl.[2] F01M *1/04*

U.S. Cl. 123—196 M **9 Claims**



1. In combination,

a radial bearing having a groove in an inner surface thereof and at least one orifice communicating said groove with a lubricant chamber outside said bearing;

a shaft rotatably mounted in said radial bearing, said shaft having an axial duct for communication with a lubricant supply and at least one radial duct extending from said axial duct to a surface of said shaft within said radial bearing and circumferentially aligned with said groove in said bearing whereby said axial duct, said radial duct, said groove and said lubricant chamber define a lubricant flow path; and

a feed way communicating said lubricant flow path with a terminal region of said groove which a point on said shaft initially passes over relative to the direction of rotation of said shaft, said feed way being of a cross-sectional area smaller than the cross-sectional area of said orifice.

4,201,177

COMPOUND BOW

Rudolph G. Holman, Laguna Beach, and Frank W. Ketchum, Manton, both of Calif., assignors to AMF Incorporated, White Plains, N.Y.

Filed Dec. 7, 1977, Ser. No. 858,138

Int. Cl.[2] F41B *5/00*

U.S. Cl. 124—23 R **6 Claims**



5. In a compound archery bow having an eccentric cable pulley, a cable connected to said pulley, and means for changing the eccentricity of said pulley, a socket formed on said pulley, a ball formed on said cable, said ball being removably nested in said socket for quick disconnect of said cable from said pulley, and said means comprising a slot in said pulley, the eccentric axis of said pulley being aligned with said slot, and manually operable gear means contiguous and connected to said pulley for quick shift of said pulley with respect to said axis.

4,201,178

ENGINE FLAMEPROOFING

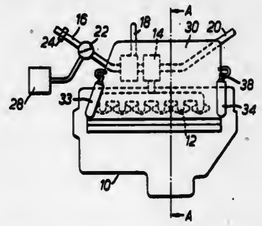
Philip G. Tyrer, Brighton, and John Pluck, Henfield, both of England, assignors to Pyroban Limited, Horsham, England

Filed Apr. 4, 1977, Ser. No. 784,639

Claims priority, application United Kingdom, Jun. 3, 1976, 22986/76; Apr. 5, 1976, 13777/76

Int. Cl.[2] F02B *77/08*; A62C *35/02*

U.S. Cl. 123—198 D **19 Claims**



1. An internal combustion engine assembly comprising an engine having an engine air inlet and having a hot external surface exposed to a normally combustion-supporting environment, a sensor for detecting the presence of flammable gases externally of the engine in the vicinity of the assembly, a canopy shrouding said hot surface of the engine, and a source of non-flammable fluid operable responsive to signals from the sensor from detection of the presence of flammable gases externally of the engine in the vicinity of said assembly to inject a sufficient quantity of said non-flammable fluid into the space between the canopy and the said external surface for preventing said flammable gases from burning due to contact with said external surface, by both cooling said surface and by substantially diminishing the combustion-supporting character of said normally combustion-supporting environment.

4,201,179

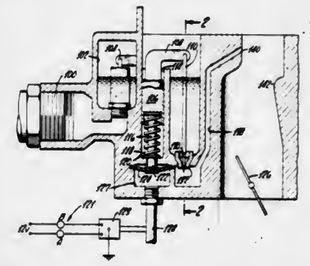
SPLIT ENGINE VACUUM CONTROL FUEL METERING SYSTEM

Arthur Garabedian, Fullerton, Calif., assignor to Dudley B. Frank, Santa Ana, Calif.

Division of Ser. No. 629,178, Nov. 5, 1975, Pat. No. 4,076,033. This application Jan. 16, 1978, Ser. No. 869,413

Int. Cl.[2] F02M *13/04*; F02D *17/00*

U.S. Cl. 123—198 F **14 Claims**



1. A split engine carburetor for independently controlling the flow of fuel to respective halves of the number of an engine's cylinders, said carburetor comprising:

a first fuel path located in said carburetor;

a second fuel path located in said carburetor, said first fuel path in fluid communication with one-half of said cylinders, said second fuel path in fluid communication with the other half of said cylinders;

valving means for controlling the flow of fuel through said second fuel path to said other half of said cylinders, said valving means in fluid communication with an intake manifold of said one-half of said cylinders, wherein said valving means comprising:

a metering block; and

a power valve mounted in said metering block, said power valve and said metering block modified to have two separate fuel flow lines, with one fuel flow line going through said metering block and the other fuel flow line going through said power valve, said other fuel flow line having an inlet fuel channel within said power valve, said inlet channel being movable with said power valve, said power valve allowing flow of fuel only to said other half of said cylinders when said power valve is opened by said biasing means;

means connected to said valving means for biasing said valving means toward an open position; and

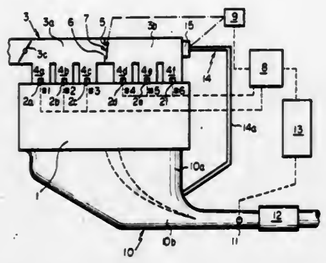
means connected to said valving means and responsive to a specified vacuum in said intake manifold for moving said valving means toward a closed position, said engine operating on only said one-half of said cylinders when said vacuum in said manifold is above said specified level by closing said valving means and preventing said fuel flow to said other half of said cylinders.

4,201,180

SPLIT ENGINE OPERATION OF CLOSED LOOP CONTROLLED MULTI-CYLINDER INTERNAL COMBUSTION ENGINE WITH AIR-ADMISSION VALVE

Haruhiko Iizuka, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 2, 1978, Ser. No. 947,638
Claims priority, application Japan, Nov. 29, 1977, 52/159832[U]
Int. Cl.² F02D 17/00
U.S. Cl. 123—198 F 6 Claims



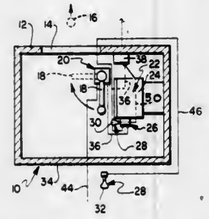
1. A multi-cylinder internal combustion engine comprising:
a first cylinder group comprising certain of a plurality of cylinders;
a second cylinder group comprising the remainder of said plurality of cylinders;
a first induction passage communicating, at one end, with said first cylinder group and, at the other end, with the atmosphere and having a throttle valve therein;
a second induction passage communicating, at one end, with said second cylinder group and, at the other end, with said first induction passage downstream from said throttle valve;
a first exhaust passage communicating, at one end, with said first cylinder group and, at the other end, with the atmosphere;
a second exhaust passage communicating, at one end, with said second cylinder group and, at the other end, with said first exhaust passage;
an oxygen sensor disposed in said first exhaust passage, said sensor including means for generating an output signal representative of the oxygen content in the exhaust gases;
a three-way catalytic converter disposed in said first exhaust passage downstream from the portion of said second exhaust passage communicating with said first exhaust passage;
a first fuel injector disposed in said first induction passage for feeding fuel to said first cylinder group;
a second fuel injector disposed in said second induction passage for feeding fuel to said second cylinder group;
an air admission valve disposed at the portion of said second induction passage communicating with said first induction passage, said valve selectively establishing and blocking the communication between said first and second induction passages;
an exhaust gas recirculation (EGR) device having an EGR passage leading from said second exhaust passage to said second induction passage and including an EGR valve disposed in said EGR passage;
means for controlling said first and second injectors in response to the output signal of said oxygen sensor such that both of said first and second injectors operate when the engine is operated under a heavy load condition, and only said first injector operates when the engine is operating under a light load condition;
means for controlling said air admission valve in response to engine operation, such that said air admission valve controlling means opens said valve when the engine is operating under a heavy load condition and closes said valve when the engine is operating under a light load condition; and
means for controlling said EGR device, wherein said EGR device controlling means opens said EGR valve and recirculates exhaust gas from said second exhaust passage to said second induction passage when the engine is operating under a light load condition.

4,201,181

TRAP LOADER SAFETY ASSEMBLY

Ormonde C. Becker, 404 E. Lake Dr., Sarasota, Fla. 33582

Filed Aug. 9, 1978, Ser. No. 932,275
Int. Cl.² F41B 7/00
U.S. Cl. 124—6 7 Claims



1. The combination of a trap target throwing maching and a safety assembly therefor, said target throwing machine being electrically operated and normally in operating circuit with a source of electric power to operate the machine, said machine being manually loaded by a loader operator positioned in a safe position proximate the machine and having means to throw a target; signal means operable between first and second conditions for indicating to a person when the loader is, respectively, in and out of said safe position; circuit control means operable between a first condition for placing said machine in an operating mode in said operating circuit and placing said signal means in said first condition indicating to the shooter and loader that the loader is in said safe position, and a second condition taking said machine out of said operating circuit and placing said signal means in said second condition indicating to a remote shooter and the loader that the loader is out of said safe position; and operating means operable to a first condition and responsive to the body or gravity weight of the loader indicating that the loader is in said safe position for operating said control means to said first condition and operable to a second condition and operable in response to the removal of the body weight of the loader indicating to a remote shooter and the loader that the loader is out of said safe position to operate said control means to said second condition.

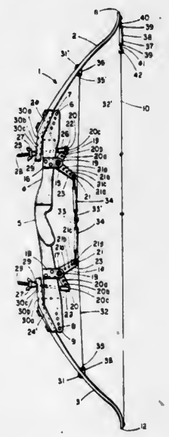
4,201,182

COMPOUND BOW

Dennis L. Butler, Wilmington, Ill., assignor to Bass Research and Design, Inc., Joliet, Ill.

Filed Apr. 15, 1977, Ser. No. 787,912
Int. Cl.² A41B 5/00
U.S. Cl. 124—24 R 23 Claims

1. A compound bow, comprising limb means movable between a released position and a cocked position, bowstring means connected to said limb means to move said limb means from said released position to said cocked position when drawn, and variable leverage means connected to said limb means to apply variable leverage force on at least two points on said limb means as it is moved from said released to said cocked position, wherein said limb means includes a centrally disposed elongated frame member having a hand grasp section thereon, first and second limb members, said first limb member being mounted on said elongated frame member at one side of said hand grasp section thereof, said second limb member being mounted on said elongated frame member at the opposite side of said hand grasp section, wherein said variable leverage means includes first and second pivot members each having a pivotal axis, said pivot members each including a first anchor point spaced radially from said pivotal axis along a first radius, a second anchor point spaced radially from said pivotal axis along a second radius angularly displaced from said first radius, said first limb member being directly connected to said first anchor point of said first pivot member, first direct connecting means extending in a substantially straight line between the point of connection to said first limb member and said first anchor point of said first pivot member, said second limb member being directly connected to said second anchor point of said first pivot member, second direct connecting means extending in a substantially straight line between the point of connection to said second limb member and said second anchor point of said first pivot member, said second limb member



being directly connected to said first anchor point of said second pivot member, third direct connecting means extending in a substantially straight line between the point of connection to said second limb member and said first anchor point of said second pivot member, said first limb member being directly connected to said second anchor point of said second pivot member, and fourth direct connecting means extending in a substantially straight line between the point of connection to said first limb member and said second anchor point of said second pivot member, wherein when viewed from one side said first anchor point of said first pivot member is at approximately the one o'clock position in relation to its pivotal axis when said bowstring means is in its released position and said first anchor point of said second pivot member is at approximately the five o'clock position in relation to its pivotal axis when said bowstring means is in its released position.

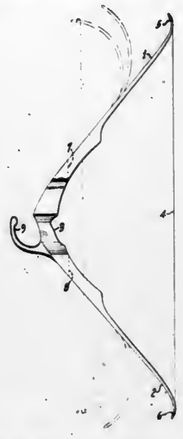
4,201,183

BOW HAVING A SELF HELD COCK POSITION

Lawrence E. Bodkin, 1833 Ryar Rd., Jacksonville, Fla. 32216

Filed May 8, 1978, Ser. No. 903,937
Int. Cl.² F41B 5/00
U.S. Cl. 124—24 R 25 Claims

19. A bow having a rigid central handle portion joining two resiliently flexible limbs, each said limb when unstressed extending from said handle portion in a rearwardly inclined direction for a respective first length portion adjacent said handle portion and curving from such direction into a forwardly inclined resiliently bendable end portion terminating in a limb nock, a section of each limb between its end portion and said handle being resilient and recurved, a bowstring connected between said nocks of said limbs having a length equal to the distance between said limb nocks when drawn to a position in which a portion in each of said sections is substantially straightened whereby said bow is maintained in a self-holding cock position of high brace without the assistance of any external force, said limbs being selectively releasable by a separate force supplied by a user on said bowstring or bow to



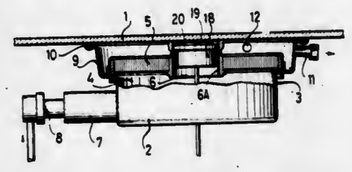
trigger movement of said bowstring and limbs to a position of low brace.

4,201,184

GLASS CERAMIC STOVE AND SUBASSEMBLIES THEREFOR

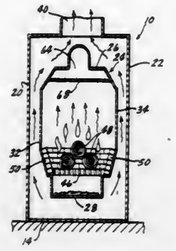
Herwig Scheidler, Mainz; Dietmar Wennemann, Alzey, and Bernd Schwank, Koeln-Marienbrueck, all of Fed. Rep. of Germany, assignors to Jenaer Glaswerk Schott & Gen., Fed. Rep. of Germany

Filed May 11, 1977, Ser. No. 795,940
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621801; Mar. 19, 1977, 2712164
Int. Cl.² F24C 3/04
U.S. Cl. 126—39 J 27 Claims



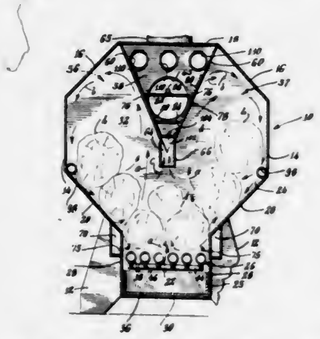
1. A cooking stove assembly having a glass-ceramic cooking plate in combination with at least one burner assembly, each such burner assembly having a housing and a perforated burner plate in combination therewith, said burner plate and said housing together defining a burner chamber, said burner plate being disposed generally across an upper portion of said housing, said burner plate being generally spatially located in spaced parallel relationship to the underside of said cooking plate, said housing and said burner plate being maintained in fixed relationship to said cooking plate by a peripherally extending generally upstanding ring member secured on its lower edge portions to said housing and/or to said burner plate, and secured on its upper edge portions to said underside by elastic sealing means, said burner plate, said cooking plate, said ring member, and said sealing means together defining a heating chamber, each such burner assembly further having located in said heating chamber (A) a temperature sensor for temperature limitation, serving to detect when said cooking plate is exposed to predetermined excessive temperatures, (B) an ignition means for igniting gas, (C) an ignition safety means for detecting if gas ignition does not occur after operation of said ignition means, and (D) an energy regulating sensor adapted to sense temperatures within preselected temperature ranges.

4,201,185
METHOD AND MEANS FOR HEATING BY WOOD BURNING
Milton W. Black, Box 64, Gibbon, Minn. 55335
Filed Aug. 21, 1978, Ser. No. 935,370
Int. Cl.[2] F24C 1/14; F24B 5/00; F23M 7/00
U.S. Cl. 126—77 **11 Claims**



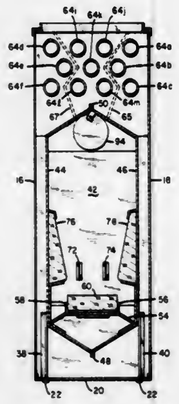
10. A wood burning furnace comprising:
a furnace housing having a firebox therein, said firebox having upper and lower ends,
a flue opening in said firebox adjacent said upper end thereof;
a flue extending through said housing and being in communication with the interior of said firebox through said flue opening;
a grate within said firebox and spaced downwardly from said upper end of said firebox for supporting burning fuel whereby the heated gases from said burning fuel will rise and exit from said firebox through said flue opening;
a main draft opening in said housing positioned to provide communication of air from the exterior of said housing to the interior of said firebox adjacent said grate;
a heat saving baffle within said housing and positioned in spaced relation below said flue opening and spaced relation above said grate so as to deflect rising partially combusted gases and thereby delay their exit through said flue opening;
a secondary draft opening within said housing positioned in spaced relation above said grate and spaced relation below said baffle whereby the venturi effect of said rising gases will draw fresh air into said firebox through said secondary draft opening and will mix with and preheat said fresh air prior to the time said rising gases are delayed by said baffle.

4,201,186
SOLID-FUEL BURNER
Patrick J. Paquin, 765 Paradise Ave., Hamden, Conn. 06514
Filed Mar. 17, 1978, Ser. No. 887,749
Int. Cl.[2] F24C 15/28; F24B 13/04
U.S. Cl. 126—83 **11 Claims**



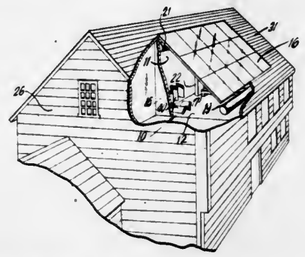
1. A wood burner comprising a casing forming a combustion chamber having a pair of planar bottom wall means for supporting a load of wood to be burned, said planar bottom wall means being inclined downwardly toward the center of said combustion chamber,
means located adjacent the lower edges of said planar bottom wall means for supplying air to said combustion chamber to form a primary fire zone substantially vertically above said air supply,
the slope of said planar bottom wall means being gradual enough to provide space within the combustion chamber for said wood outward of said fire zone, while being steep enough to ensure the wood stacked against said bottom walls gravitates into said primary fire zone as the wood in said zone is consumed by the fire, and
a substantially V-shaped partition disposed in the upper portion of said combustion chamber centrally thereof with the apex of said V-shaped partition extending downward into close proximity to said primary fire zone, such that unburned combustion products rising therefrom are deflected outwardly by said V-shaped partition into the upper portions of the combustion chamber on opposite sides of said partition and recirculated as they cool downwardly into said primary fire zone,
said partition having a restricted exhaust opening adjacent its apex for continuously exhausting combustion products from said combustion chamber.

4,201,187
MODULAR SOLID FUEL FURNACE SYSTEM
Lynn R. Skow, North Branch, Minn., assignor to Gemini Systems, Inc., North Branch, Minn.
Filed Sep. 8, 1978, Ser. No. 940,747
Int. Cl.[2] F24H 3/02
U.S. Cl. 126—110 E **2 Claims**



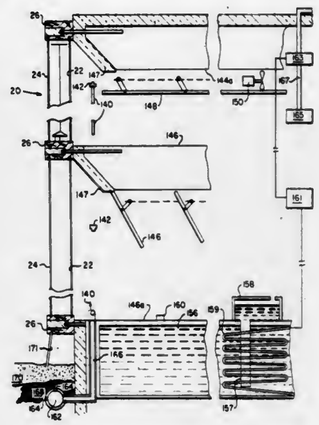
1. A solid fuel burning furnace to be used in combination with a fluid fuel furnace heating system, comprising:
(a) a cabinet;
(b) a firebox means located within said cabinet for holding solid fuel to be burned;
(c) a first enclosed chamber means formed in said cabinet connected to said firebox for channeling hot gas-laden air to the upper portion of said cabinet;
(d) first and second sets of tubular heat exchange members, the first set having one open end entering said enclosed chamber for receiving said hot gas laden air and transporting same to a location proximate the opposite end of said tubular heat exchange members;
(e) manifold means at said location for routing said hot gas laden air back through said second set of tubular heat exchange members;
(f) an outlet port means coupled to the end of said second set of tubular heat exchange members for passing said gas laden air to a chimney; and
(g) a second chamber means within said cabinet which is isolated from said first chamber for routing fresh air from the base of said cabinet and over the exterior surfaces of said first and second sets of tubular heat exchange members;
(h) a temperature-sensing element means located in said cabinet for producing an electrical signal proportional to the temperature therein;
(i) means for comparing said electrical signal to a first threshold and for producing a control signal when said electrical signal exceeds said first threshold;
(j) means responsive to a call for heating in the space being heated for initiating a time interval of a predetermined length; and
(k) means for turning on said fluid fuel furnace if said electrical signal fails to exceed said first threshold during said time interval.

4,201,188
SOLAR COLLECTOR AND HEAT TRAP
Richard D. Cummings, Reading, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Filed May 4, 1978, Ser. No. 902,857
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—429 **13 Claims**



1. A solar collector unit comprising:
a generally triangular housing member including a vertical back wall, a horizontal base, end walls and a sloped light transparent front surface for receiving solar radiation;
a corrugated heat trap member defining longitudinally extending tunnels and valleys suspended in front of at least part of said back vertical wall and adapted to receive solar radiation;
means for introducing cool air adjacent to horizontal base near said front surface; and
means for removing war air from adjacent the vertical back wall near the top thereof whereby at temperatures below about 150° F. air flows through said collector in the direction from said front surface to said vertical back wall and then upwardly through said tunnels and valleys of said heat trap member, and at temperatures above about 150° F. air which would normally flow within the valleys of the heat trap member rises in the collector and moves towards the front surface, thereby rejecting some excess heat to ambient atmosphere.

4,201,189
CURTAIN ASSEMBLY
Norman B. Saunders, 15 Ellis Rd., Weston, Mass. 02193
Continuation of Ser. No. 795,101, May 9, 1977, abandoned, which is a division of Ser. No. 607,568, Aug. 25, 1975, abandoned, which is a division of Ser. No. 529,235, Dec. 3, 1974, Pat. No. 3,952,947. This application Nov. 6, 1978, Ser. No. 957,744
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—429 **6 Claims**



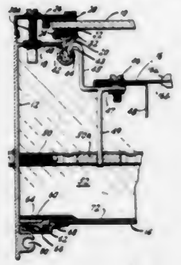
1. For use in an enclosed structure having a ceiling, a transparent window transmissive to light and sun energy and mounted in a wall of said structure, and a floor, an assembly comprising, in combination:
a sheet of material absorptive to said light and sun energy and reflective to heat provided in said structure;
means for mounting said sheet within said structure parallel to and spaced from the adjacent surface of said window so as to provide a space between said sheet and each of said window, ceiling and floor;
means spaced from said ceiling for guiding air along the underside of said ceiling and comprising a plurality of panels pivotal between a closed position wherein said panels are spaced from said ceiling and substantially coplanar with one another so that a path is provided for the guided air between said ceilingand said panels, and an open position wherein said panels are parallel but spaced from one another so as to expose radiation from said ceiling to the interior of said enclosure; and
means for drawing air through the space between said window and said sheet so as to heat said air and for drawing air along the underside of said ceiling;
wherein said sheet is spaced from said window such that air along said adjacent surface is substantially stagnant while air drawn by said means for drawing air, draws air between the substantially stagnant air and said sheet.

4,201,190
SOLAR ENERGY COLLECTOR ASSEMBLY AND SUB-ASSEMBLIES THEREOF
John C. Bowen, Huntingdon Valley, Pa., assignor to Ametek, Inc., Paoli, Pa.
Filed Aug. 21, 1978, Ser. No. 935,406
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—450 **22 Claims**

1. In a solar energy collector assembly including elongated side members having a top and bottom edge, a transparent sheet top cover member disposed at the top of said side members, and a bottom closure member disposed at the bottom of said side members, said side members, transparent sheet and closure member together forming an enclosed space housing

within which is disposed a solar energy collector means, the improvement consisting of:

(a) bottom closure member securing means comprising (i) a projection, extending inwardly into said enclosed housing space, along the length of said side members near the bottom thereof, the inner edge of said projection overlapping the outer portion of said bottom closure member along the periphery thereof, said projection including spring channel retaining tips, and (ii) a spring channel including a portion abutting said closure member on the surface portion thereof opposite that which overlaps the inner edge of said projection, said spring channel adapted to be engaged and retained by said tips, and thereby to secure bottom closure member between said spring channel and said inwardly extending projection;



(b) collector member securing means comprising a plurality of stiff low thermal conductivity wire retainers disposed at spaced intervals about the periphery of said collector, each such retainer being attached to said collector and to said side members; and

(c) top cover securing and sealing means comprising a seal engaging the bottom surface of said top cover along and inward of the periphery thereof and clamping means pressing said top cover downwardly into engagement with said seal, the edge of said bottom horizontally disposed surface between said seal and said periphery being free of engagement with any mating surface to prevent retention of condensate thereon.

4,201,191

LIQUID FUELS VAPORIZATION

John S. Zink, and Robert D. Reed, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Jan. 30, 1978, Ser. No. 873,728
Int. Cl.² F24H *1/20*; F22B *13/00*
U.S. Cl. 126—360 A **10 Claims**

9. Apparatus for vaporization of liquids having a boiling point lower than that of water, comprising;

(a) at least a first, narrow planar plenum, oriented with its plane vertical, the first and second walls of said plenum being of metal and of substantial horizontal length;

(b) a plurality of nozzles spaced along the top of said plenum, for injecting fuel gas downwardly into said plenum, between said first and second walls and means to inject combustion air downwardly into said plenum, the bottom of said plenum closed;

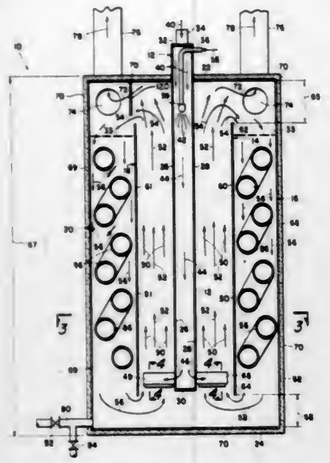
(c) at least a second, narrow planar plenum contiguous with said first plenum;

(d) means to selectively flow said combustion products from the bottom of said first plenum into the bottom of said second plenum through horizontal short lengths of pipe, closed at their outer ends and welded to said first and second walls near the bottom of said first plenum, each of said pipes having a plurality of ports along the underside thereof;

(e) at least a third plenum contiguous with said second plenum;

(f) the outer wall of said third plenum taller than the inner wall of said third plenum, and including a top and bottom closure attached to said outer wall and said third plenum;

(g) said second and third plena filled to a selected level with water;



(h) a plurality of horizontal spaced pipes arranged in zig-zag connection within said third plenum, for carrying liquid to be vaporized; and

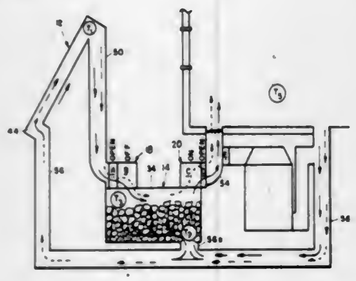
(i) at least one stack means connected to the space above said second and third plena for the escape of cooled products of combustion to the atmosphere.

4,201,192

SOLAR HEAT AIR SYSTEM

DeWayne A. Coxon, and Timothy P. Gates, both of Cedar Springs, Mich., assignors to Jordan College, Cedar Springs, Mich.

Filed Jan. 3, 1978, Ser. No. 866,545
Int. Cl.² F24J *3/02*
U.S. Cl. 126—422 **4 Claims**



1. In a forced air solar heating system for an environmental space, including a solar collector having a high energy portion and a low energy portion and a heat storage unit having a high energy portion and a low energy portion and a heat storage medium;

dual air mover and damper subassemblies including a first blower and a first damper associated therewith, and a second blower and a second damper associated therewith;

a first duct means for conducting heated air from the high energy portion of said collector through said first blower and first damper to said storage unit high energy portion;

a second duct means for conducting heated air from said storage unit high energy portion to said environmental space;

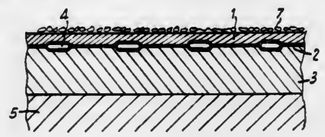
third duct means for conducting air flow from said environmental space to said storage unit low energy portion and to said collector low energy portion; and thermostatic control circuit means associated with said collector high energy portion, said storage high energy portion, said storage low energy portion, and said environmental space, and connected with said first blower, first damper, second blower, and second damper, for causing selective air flow (a) from said collector to said storage and return, (b) from said storage to said environmental space and return, (c) from said collector to said environmental space and return and (d) from said collector and also through said storage medium to said environmental space and return to both.

4,201,193

SOLAR ENERGY ABSORBING ROOF

Michel Ronc, St-Priest, France, assignor to Elf Union, Paris, France

Filed Mar. 17, 1978, Ser. No. 887,938
Claims priority, application France, Mar. 18, 1977, 77 08152
Int. Cl.² I24J *3/02*
U.S. Cl. 126—448 **4 Claims**



1. A solar roofing structure combining the covering and waterproofing functions of a conventional roof with the functions of a solar energy-collecting panel, which can be used to heat or air-condition the premises it covers, and which comprises:

a supporting base;

a layer of insulating material on said base;

waterproofing cover means of a material selected from the group consisting of elastomers and bitumen, the outer surface of which is covered on its upper surface with mineral particles selected from the group consisting of gravel, glass and ceramic particles; and

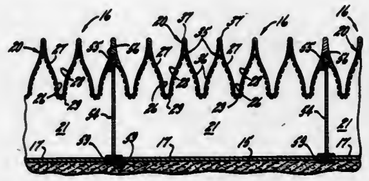
means separate from said waterproofing cover means defining circulation channels for a liquid, in close contact with and below the waterproofing cover means, and between said waterproofing cover means and the insulating material and in contact with each.

4,201,194

SOLAR HEAT COLLECTOR WITH CHANNELED PANEL

Paul A. S. Charles, c/o Heliodyne, Inc. 4571 Linview Dr., Rockford, Ill. 61109

Filed Jan. 6, 1978, Ser. No. 867,467
Int. Cl.² F24J *3/02*
U.S. Cl. 126—449 **7 Claims**



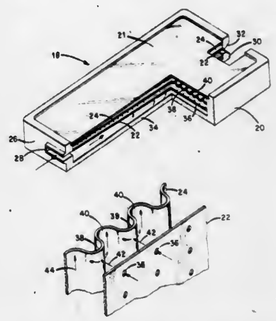
1. A solar heat collector comprising a panel adapted for mounting exteriorly of the wall of a building in spaced relation with the wall whereby a flow space is defined between the panel and the wall, said panel being made of a material which is capable of retaining its shape under a wide range of ambient temperature conditions, said panel being of serpentine cross-section and having an outer side defined by a series of outwardly opening and substantially V-shaped channels, each side wall of each channel being of a permanent shape and of low reflectivity and having a concavely curved outer end portion and a convexly curved inner end portion, the outer end portion of the side wall of each channel merging gradually with the inner end portion thereof.

4,201,195

JET IMPINGEMENT SOLAR COLLECTOR

Ravinder K. Sakhuja, Lexington, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Oct. 25, 1978, Ser. No. 954,727
Int. Cl.² F24J *3/02*; F24F *3/04*; F24B *1/06*
U.S. Cl. 126—449 **10 Claims**



7. A solar collector for heating air comprising:

a rigid plastic frame of generally rectangular cross-section, said frame having an upstream endwall with an inlet for admitting air to be heated into the collector and a downstream endwall with an outlet for discharging heated air from the collector;

a glass cover sealably mounted in the top of said frame substantially parallel to the base thereof and adapted to transmit solar radiation into the collector;

a metallic absorber plate adapted to absorb solar radiation transmitted through the cover, said plate spaced between said glass cover and said base and having corrugations forming channels extending from the upstream endwall to the downstream endwall; and

a jet plate mounted between said absorber plate and said base parallel to said absorber plate and having a plurality of circular holes therethrough for directing jets of air upward to impinge against the absorber plate for efficient heating of air passing through the collector, the holes in said jet plate being present at locations of minimum gap between said jet plate and the corrugations of said absorber plate whereby the channels adjacent to the point of impingement of an air jet permit downstream passage of air subsequent to jet impingement with minimal interference to said jets.

4,201,196

SOLAR ENERGY AIR HEATING DEVICE

David A. Zani, P.O. Box 165, Kingshill, St. Croix, V.I. 00850

Continuation-in-part of Ser. No. 795,855, May 11, 1977, Pat. No. 4,078,546. This application Mar. 6, 1978, Ser. No. 884,015
The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.
Int. Cl.² F24J *3/02*
U.S. Cl. 126—450 **5 Claims**

1. A solar energy air heating device comprising:

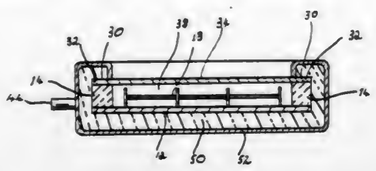
a. a base plate;

b. a wall member extending perpendicular from the plane of the base plate;

c. a panel having a peripheral portion bearing against said wall member to form an enclosure with said base plate and

wall member, said panel having a transparent central portion capable of transmitting solar energy therethrough;

d. a heat absorbing surface mounted within the enclosure, the wall member of the enclosure having an aperture whereby air can be passed therethrough during use to extract solar energy absorbed in the enclosure;



e. insulation covering the outside of the enclosure excepting said transparent central portion of the panel to form a rigid structure to enclose the transparent panel, wall member and base plate; and

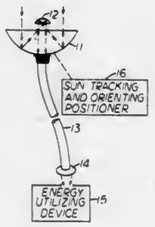
f. an elastomeric membrane covering the outside of the insulation.

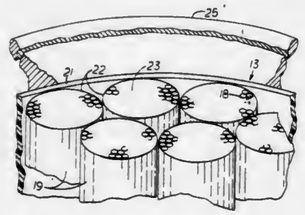
4,201,197

SOLAR ENERGY COLLECTOR HAVING A FIBER-OPTIC CABLE

Raymond H. Dismer, 2730 14th Ave., Moline, Ill. 61265

Filed Mar. 20, 1978, Ser. No. 888,376
Int. Cl.² F24J *3/02*
U.S. Cl. 126—451 **1 Claim**





1. A solar energy concentrating system comprising:

a collector of radiant energy, a fiber optic cable connected to said collector,

said collector having first and second concave reflectors, said second reflector being substantially smaller than said first reflector, each of said reflectors having a front reflecting surface,

means for rigidly supporting said second reflector at a predetermined distance in front of said first reflector, said reflecting surfaces facing each other,

control means connected to said first reflector, said control means being operable to track the sun and to turn said reflecting surface of said first reflector toward the sun, said first reflector being paraboloidal for concentrating radiant solar energy over a wave front coinciding with said reflecting surface of said second reflector,

said fiber-optic cable being connected to said collector by having a first end of said cable for input of radiant energy positioned through an opening in said first reflector to expose said first end to energy reflected from said reflecting surface of said second reflector, said second reflector being concave for concentrating radiant solar energy over a wavefront coinciding with said first end,

lens positioned to receive energy from a second end of said fiber-optic cable at a distance from said input for concentrating solar energy transmitted through said fiber-optic cable on an energy utilizing device, and

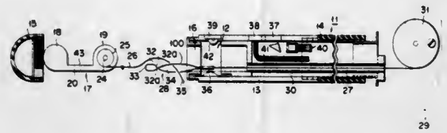
wherein said fiber-optic cable has a plurality of fibers of sufficient diameter to transmit infra-red rays of solar energy substantially independent modes, said fibers being divided into groups over a substantially length at said first end of said fiber-optic cable, and an opaque inwardly reflective coating surrounding each of said groups.

4,201,198

ENDOSCOPE HAVING A SEPARABLE CONNECTION TO A PHOTOGRAPHING DEVICE

Takeshi Okada, Hachioji, and Mototugu Ogawa, Chofu, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1977, Ser. No. 861,284
Claims priority, application Japan, Dec. 27, 1976, 51-176551[U]
Int. Cl.² A61B *1/04*
U.S. Cl. 128—4 **5 Claims**



1. An endoscope comprising:

a sheath;

a distal end portion provided at one end of the sheath;

a photographing device disposed in said distal end portion;

a film feeding wire for feeding a rolled film loaded in said distal end portion;

an operation wire extending through the sheath;

a stop having a diameter larger than the diameter of the film feeding wire connected to one end of the film feeding wire; and

a latch formed of an elastic wire for connection between respective ends of the film feeding wire and the operation wire and comprising

a first loop connected to that one end of the operation wire which is disposed nearer said one end of the sheath,

a second loop disposed opposite to said one end of the operation wire with respect to the first loop and having such an opening as prevents the stop from passing through, and a neck formed by those portions of the elastic wire which are between the first and second loops.

4,201,199

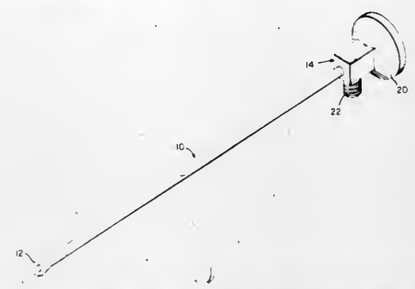
ENDOSCOPE ATTACHMENT TO A VIEWING INSTRUMENT FOR INSERTION INTO THE UTERINE CAVITY

Donald C. Smith, 7442 SE. 22nd, Mercer Island, Wash. 98040

Filed Jan. 13, 1978, Ser. No. 869,257
Int. Cl.² A61B *1/30*
U.S. Cl. 128—7 **2 Claims**

1. An attachment for an endoscope of the type to be inserted through the cervix into the uterine cavity and having a light and image transmitting tube with an eyepiece end for viewing through the tube, said eyepiece end having a portion of increased transverse dimension with respect to the transverse dimension of said tube, and a distal viewing end for location close to the uterine cavity wall under investigation, said attachment comprising:

a rigid, transparent, generally spherical bulb of a diameter substantially greater than the diameter of the light and image transmitting tube for separating the walls of the uterine cavity, said bulb having a relatively thin wall and an inside radius of approximately between 3 and 4mm, said bulb being carried by the end of a rigid outer tube to which said bulb is smoothly faired, said outer tube having an inside diameter approximately equal to the outside



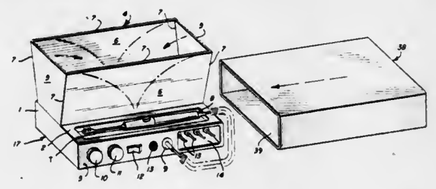
diameter of said light and image transmitting tube so that said outer tube snugly fits over said light and image transmitting tube, the length of said outer tube being such that when the end of said outer tube opposite said bulb abuts the portion of increased diameter of said eye piece end, the distal end of the outside surface of said bulb is spaced approximately between 2 to 3 mm beyond the distal end of said light and image transmitting tube.

4,201,200

APPLIANCE FOR THE CARE AND CLEANING OF TEETH AND GUMS

Otto Hübner, Mauerkircher Strasse 199, Herzog Park, Munich (8000 Munchen 81), Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,525
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735427; Dec. 15, 1977, 2756042
Int. Cl.² A61H *9/00*
U.S. Cl. 128—66 **9 Claims**



1. In an appliance, for the cleaning and care of teeth and gums, that employs an electrically-driven pump means for discharging from the appliance a high pressure, pulsating, water jet, the improvement comprising, in combination:

a tube pump that includes an elongated flexible tube, along which a water column is to be moved, a backing member for a portion of the flexible tube, a rotor that includes arcuately spaced rollers for engaging, compressing and pinching portions of said flexible tube against said backing member to advance the water in the tube along the tube;

means for introducing air into the water in the tube upstream of the backing member of the tube pump;

the tube being resilient, whereby as the pump's rotor rotates, the water-air mixture is pressurized by a pair of spaced rollers that pinch the tube against the backing member, and the water-air mixture is then pressurized by compression of the compressible air therein, so that upon release of pressure of the leading roller against the resilient tube and backing member, the expanding compressed air in the water-air mixture expands to aid in providing a pulsating pressurized discharge of a water jet from the pump means.

7. In an appliance for treating teeth and gums with a pressurized, pulsating, water jet delivered from a refillable water container by tube means, pump means, and electric motor means, the improvement of a compact construction for such appliance, permitting same to be packaged and stored as a travel appliance, comprising in combination:

a lower housing of substantially rectangular configuration with a substantially top planar surface, said lower housing being of a size adapted to house therein said tube means, pump means and electric motor means; and

an upper, refillable, water-proof, foldable when inoperative, container having a bottom wall with a downwardly extending inlet nipple thereon, adapted for effecting flow communication from the interior of said container to the tube means in said lower housing, said container being substantially rectangular in cross-section and being provided with two pairs of opposed sides, a first pair of opposed sides being flexible to fold inwardly toward each other between the second pair of opposed sides, and the second pair of opposed sides being foldable toward each other to overlie the first pair of folded sides and to overlap to a flat folded condition toward and against said top surface of the lower housing.

4,201,201

ORTHOPEDIC DEVICE FOR PROPPING AND ALIGNING THE VERTEX END POINT OF A SUNKEN NOSE

Ruben L. Vergara, 28-5 Graciela, Col., Guadelupe Tepeyac, Mexico City, 14, Mexico

Continuation of Ser. No. 727,218, Sep. 27, 1976, abandoned. This application May 26, 1978, Ser. No. 910,004
Int. Cl.² A61F *5/08*
U.S. Cl. 128—76 C **12 Claims**

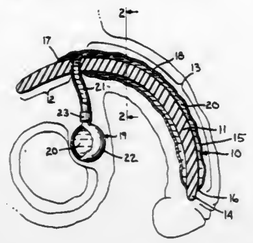


1. A device for improving the appearance of a nose, said device comprising two separate propping elements each having an elongated flexible body portion and two terminal portions at the respective ends of said body portion, and each element substantially concealed from view when so accommodated in one nostril of the nose that said flexible body portion urges said terminal portions into contact at the regions of the nasal fossa and of the tip of the nose with the mucous membrane bounding the one nostril to thereby prop the tip region and prevent the undesired shifting of said propping element both into the nasal fossa and out of one nostril, said body portion being provided with a projection having outer surface so shaped as to correspond to and engage the mucous membrane at the region of the septum when said element is accommodated in the one nostril.

4,201,202
PENILE IMPLANT

Roy P. Finney, Tampa, Fla., and Henry W. Lynch, Racine, Wis., assignors to Medical Engineering Corp., Racine, Wis.

Filed Sep. 25, 1978, Ser. No. 945,757
Int. Cl.[2] A61F 5/00
U.S. Cl. 128—79 8 Claims

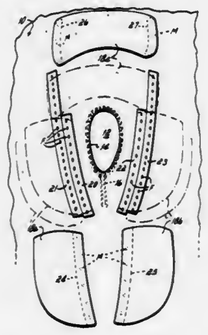


1. A penile implant comprising:
(a) an elongated, flexible rod of physiologically inert material having a relatively short proximal portion adapted to be inserted into the root end of the corpus cavernosum of a penis, and a longer distal portion adapted to be implanted in the corpus cavernosum of the pendulous penis;
(b) a sleeve axially positioned about an intermediate section of the distal portion of said rod and sealed at each end of the rod to form an elongated pressurizable chamber;
(c) a pressure bulb for pressurizing fluid for said chamber;
(d) means connecting the chamber and the pressure bulb so that pressurizing fluid can be introduced into and removed from the chamber; and
(e) valve means for controlling the flow of fluid between the chamber and the bulb.

4,201,203
KNEE BRACE

Leslie T. Applegate, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio

Filed Jun. 26, 1978, Ser. No. 919,378
Int. Cl.[2] A61F 3/00
U.S. Cl. 128—80 C 13 Claims

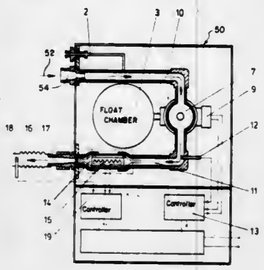


1. A knee brace comprising:
a one-piece tubular sleeve exhibiting substantial circumferential elasticity in a knee-encircling direction and configured to encircle the leg of a user in the region extending between points above and below the knee, said sleeve having a circumference when unstretched which is less than the girth of a user's leg in the region of the knee to apply inwardly directed compressive force to the user's knee region when encircled thereabout,
said sleeve having an opening therein defined by a peripheral margin to permit projection of the user's patella therethrough when said sleeve encircles said user's knee region,
a substantially inelastic flexible drawstring ring connected to and coextensive with said margin to prevent enlargement of said patella opening and to maintain snug engagement between said opening and the periphery of a user's patella projecting therethrough when the user's knee joint is flexed and said elastic sleeve stretched, said inelastic flexible drawstring ring being adjustable in circumference to facilitate drawing said margin of said patella opening snugly around the periphery of different sized patellas, and
a guide secured to said peripheral margin, said inelastic flexible drawstring ring slidingly engaged by said guide to facilitate relative motion therebetween to permit adjusting the circumference of said patella opening to snugly embrace the periphery of differently configured patellas.

4,201,204
BREATHING GAS HUMIDIFIER

Gerhart Rinne, Stockelsdorf, and Jürgen Sachtler, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 19, 1978, Ser. No. 870,634
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2702674
Int. Cl.[2] A61M 16/00
U.S. Cl. 128—203.27 2 Claims



1. A breathing gas humidifier for connection between a respirator and a patient, comprising a water and breathing gas mixture chamber, means for maintaining a predetermined level of water in said mixing chamber, a respiratory gas connection line having a first portion with one end including means connectable to a respirator and extending from said one end into said mixing chamber, said gas connection line having an opposite second portion extending out of said mixing chamber and having a second portion end, an air tube having one end connected to said second portion end and an opposite end including means connectable to said respirator, first heater means in said mixing chamber for heating the water therein to vaporize it and to permit it to be picked up by the breathing gas being passed over the water level in said mixing chamber through said gas connection line second portion, second heater means in said gas connection line second portion for overheating the breathing gas with vaporized water from said mixing chamber, temperature-sensing and control means connected to said first and second heater means, said means for maintaining a predetermined level of water in said mixing chamber including a float chamber, and means connected to said float chamber containing distilled water for supplying water to said float chamber, a float valve in said float chamber for closing the connection between said distilled water containing means and said float chamber when a predetermined level of water is reached in said float chamber, said mixing chamber comprising a lower vaporizer chamber of a size substantially smaller than said float chamber for containing a quantity of water substantially smaller than a quantity of water in said float chamber and an upper water vapor and breathing gas mixing chamber, said first heater means disposed in said lower vaporizer chamber, said lower vaporizer chamber being sufficiently small so that said first heater means vaporizes substantially all the water therein, and a top conduit connection connected between said upper water vapor and breathing air mixing chamber and the top of said float chamber whereby the predetermined level of water in said float chamber is maintained in said vaporizer chamber, said temperature sensing and control means controlling said first heater means for heating and vaporizing said smaller quantity of water thereby when mixed with said breathing gas in said upper chamber said breathing gas is maintained at about 35° C. and at a humidity level of 100%, and controlling said second heater means for overheating said breathing gas from said upper water vapor and breathing gas mixing chamber to at least partially compensate for cooling of the breathing gas with vaporized water in said gas connecting line second portion and said air tube to thereby maintain said breathing gas at about 35° C. having a humidity level of 100%.

4,201,205
OXYGEN MASK

Victor L. Bartholomew, Hemet, Calif., assignor to Hudson Oxygen Therapy Sales Company, Temecula, Calif.

Filed Jan. 20, 1978, Ser. No. 871,151
Int. Cl.[2] A61M 15/00
U.S. Cl. 128—205.25 12 Claims



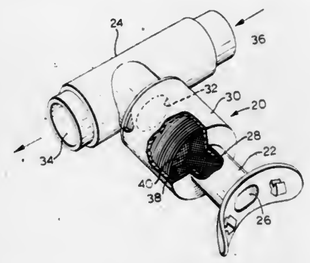
1. An oxygen mask having improved means for being secured over the nose and mouth of a user, the improvement comprising;
non-elastic flexible tubing means adapted for extending over and behind both ears of the user and downwardly beneath the user's chin and having two ends, and two lengths of elastic flexible tubing, each length having a first and second end, each first end being secured to a different one of said non-elastic tubing ends, and means securing each second end of said elastic flexible tubing to said mask and wherein said non-elastic tubing ends and said first elastic tubing ends are adapted to be joined between said mask and the user's ears.

4,201,206
HEAT RECEIVER FOR DIVERS

Lorne A. Kuehn, Downsview, and Louis A. Pogorski, Toronto, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Canadian Minister of National Defence, Ottawa, Canada

Filed Sep. 18, 1978, Ser. No. 943,491
Int. Cl.[2] A62B 7/00
U.S. Cl. 128—201.13 4 Claims

1. A device for collecting sensible heat from a diver's exhaled breath and for exposing breathing mixture to this heat during inhalation to limit a diver's respiration heat loss, the device comprising:
a housing having poor heat-conducting qualities and adapted to be coupled to a breathing system adjacent to a portion of the system which is normally in contact with a diver's mouth, the housing having first and second ports between which breathing mixture is to pass along a flow path in one direction and between which exhaled breath will pass in the opposite direction;
a plurality of thin heat-conductive elements spaced-apart in generally parallel relationship inside the housing, these elements being arranged to lie across said flow path in series and being perforated for passage of the breathing mixture and of the exhaled breath sequentially through the elements;
a plurality of thin, relatively non-conductive and non-hygroscopic spacers sandwiched one between each adjacent pair of said heat-conductive elements, each of the spacers also being perforated whereby flow of exhaled breath will

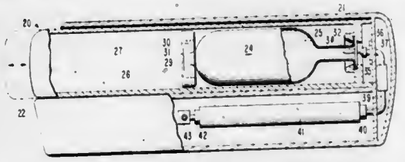


warm the heat conductive elements sequentially so that each element will be slightly cooler than the last element and there will be no direct heat conduction from one element to the next element, and whereby there will be minimal heat stored in the spacers and the moisture content of the exhaled breath will be substantially unaffected by passage through the device so that upon drawing breathing mixture through the device there will be a gradual warming of this mixture as it collects heat from the elements and a substantial part of the sensible heat originally in the exhaled breath will be reclaimed by the breathing mixture; and
means adapted to couple the housing to a breathing system.

4,201,207
BLADDER FOR LIQUID DISPENSER

Richard G. Buckles, Redwood City, and Harold M. Leeper, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 598,490, Jul. 23, 1975, abandoned, which is a continuation-in-part of Ser. No. 344,861, Mar. 26, 1973, abandoned. This application Nov. 26, 1976, Ser. No. 745,132
The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.
Int. Cl.[2] A61M 5/00; B65D 35/18; C08C 19/00, 19/04
U.S. Cl. 128—214 F 17 Claims



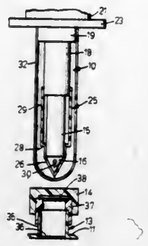
1. In a dispenser for dispensing a liquid under pressure comprising an expansible elastic bladder for holding the liquid under pressure, the elastic force in whose walls provides the force by which the liquid is dispensed, a flow passage from the bladder, and flow metering means in the flow passage, the improvement wherein the bladder is made of vulcanized, synthetic polyisoprene having a stress relaxation of less than about 10% and a low frequency hysteresis of less than about 10%.

4,201,208

STERILE CONNECTING DEVICE

Orlando D. Cambio, Jr., Bristol, Wis., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 30, 1977, Ser. No. 855,647
Int. Cl.[2] A61M 5/00
U.S. Cl. 128—214.2 10 Claims



1. A fluid transfer system which substantially reduces contamination comprising:

a container for sterile fluids;

a closure secured to said container including a hollow tubular passageway sealed by means of a first pierceable diaphragm and a second pierceable diaphragm, said first diaphragm positioned remote from said container and said second diaphragm positioned proximal thereto to provide a sterile chamber therebetween and said closure including a shoulder section disposed outwardly from said first diaphragm;

a hollow piercing pin having a pointed end and adapted to be inserted into said tubular passageway and penetrate said diaphragms;

a hub member extending from said piercing pin opposite said pointed end;

a sheath surrounding the pointed end of said piercing pin and in direct contact with the pointed end thereof, said sheath attached to said hub member and defining a shoulder member intermediate a portion contacting said pointed end and a portion attached to said hub member, said sheath surrounding said piercing pin including said pointed end and said hub member in a uniform manner;

so that upon contact with said first diaphragm said portion of said pin sheath surrounding the pointed end of said piercing pin will pierce through said first diaphragm and upon further movement said sheath shoulder member will contact said shoulder section of said container closure, and said pin sheath surrounding the pointed end of said piercing pin will break away laterally exposing the pointed end of said piercing pin and said sheath will uniformly surround the hub of said piercing pin as said pointed end of said piercing pin pierces through said second diaphragm.

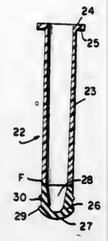
4,201,209

MOLDED HYPODERMIC PLUNGER WITH INTEGRAL SHAFT AND ELASTOMERIC HEAD

Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y. 11220, and Robert F. LeVeen, 122 S. 51st St., Omaha, Nebr. 68132

Filed May 24, 1978, Ser. No. 908,945
Int. Cl.[2] B29D 9/00; B29F 1/00; A61F 5/315
U.S. Cl. 128—218 P 1 Claim

1. A molded plunger for a hypodermic syringe having a rigid thermoplastic shaft and a head portion made of a thermoplastic polymer having elastomeric properties compatible with the



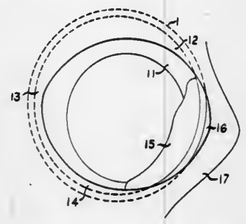
material of said shaft and integrally united therewith by co-injection molding the materials of said shaft and said head.

4,201,210

VETERINARY OCULAR RING DEVICE FOR SUSTAINED DRUG RELEASE

David E. Hughes, and George W. Pugh, Jr., both of Ames, Iowa, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 698,632, Jun. 22, 1976, abandoned.
This application Nov. 28, 1977, Ser. No. 855,495
Int. Cl.[2] A61M 7/00
U.S. Cl. 128—260 16 Claims



1. A method for releasing over a prolonged period of time a therapeutic agent into the region of an eye of an animal comprising inserting into the conjunctival sac of said eye a substantially ring-shaped device releasably containing said therapeutic agent, and releasing said agent into said eye region over a prolonged period.

4,201,211

THERAPEUTIC SYSTEM FOR ADMINISTERING CLONIDINE TRANSDERMALLY

Santosh K. Chandrasekaran, Palo Alto, Calif.; Siegfried Darda, Ingelheim am Rhein, Fed. Rep. of Germany; Alan S. Michaels, Atherton, and Gary W. Cleary, Palo Alto, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif. and Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

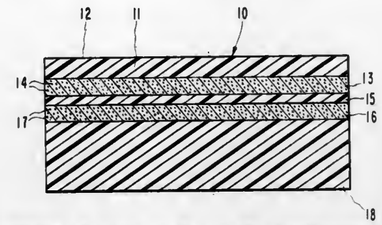
Filed Jul. 12, 1977, Ser. No. 815,033
Int. Cl.[2] A61F 7/02
U.S. Cl. 128—268 14 Claims

1. A therapeutic system in the form of a skin patch for administering clonidine continuously and transdermally through a predetermined area of unbroken skin in a controlled manner for a prolonged time period to effect central alpha-adrenergic stimulation comprising:

(a) a backing that is substantially impermeable to clonidine, one face of which forms the top of the patch;

(b) a clonidine reservoir adjacent the opposite face of the backing that contains an amount of clonidine sufficient to provide clonidine for said prolonged time period at a central alpha-adrenergic stimulating rate;

(c) means for releasing clonidine from the reservoir at said rate to said predetermined area of skin; and



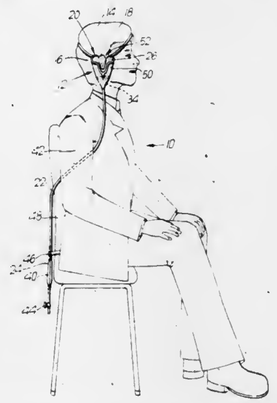
(d) means for affixing the patch to said predetermined area of skin.

4,201,212

SURGICAL APPARATUS FOR USE IN SYRINGING A PATIENT'S EAR

Margaret E. Bradley, Fairholme, Higher Hill, Tockholes, Near Darwen, Lancashire, England

Filed Mar. 20, 1978, Ser. No. 888,366
Claims priority, application United Kingdom, Mar. 24, 1977, 12368/77
Int. Cl.[2] A61F 5/44
U.S. Cl. 128—275 8 Claims



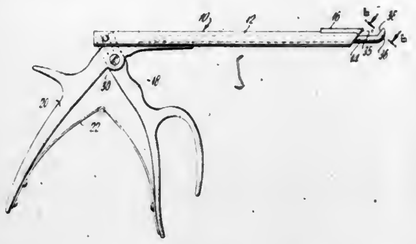
1. Surgical apparatus for use in the syringing of a patient's ear, comprising a receptacle having an upwardly extending wall shaped to fit the side of the patient's head, the wall having a first downwardly extending recess to receive the ear to be syringed with the portions of the wall on either side of the recess extending upwardly, in front of and behind the ear, the wall having a second downwardly extending recess opposite the said first recess, through which a syringe can be inserted to pass across the receptacle and into the ear, and fastening means to hold the receptacle in position on the patient's head and urge the wall of the receptacle into sealing engagement with the side of the patient's head, the receptacle comprising a rigid frame member defining the upper extremities of the wall of the receptacle, and a flexible bag releasably connected to the frame member in such a manner that the flexible bag is suspended from the frame member.

4,201,213

SURGICAL TOOL

Paul R. Townsend, Hull, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Jan. 30, 1978, Ser. No. 873,347
Int. Cl.[2] A61B 17/32
U.S. Cl. 128—312 4 Claims



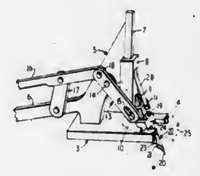
1. A surgical tool comprising: an elongated slidable barrel having a hollow passageway therethrough and having an outwardly facing cutting section on its distal end; an elongated shaft positioned in said passageway and having an inwardly facing cutting section on its distal end, said inwardly facing cutting section projecting beyond said distal end of said barrel, said cutting sections adapted to oppose each other in jaw-like fashion; and means for sliding said barrel over said shaft to change the spacing between said respective jaw-like cutting sections and to apply force to the object held between the same, said outwardly facing cutting section being formed on an insert, said insert being attached to said distal end of said barrel.

4,201,214

APPLICATORS

William B. Whiteley, Via Orange, Australia, assignor to Marie Ellen Whiteley, Via Orange, Australia, a part interest

Filed Sep. 16, 1977, Ser. No. 834,033
Claims priority, application Australia, Aug. 15, 1977, PD1238
Int. Cl.[2] A01K 11/00; A61B 17/00
U.S. Cl. 128—330 12 Claims



1. An ear tag applicator comprising first and second handles, means connecting the second handle to the first handle so that the second handle is movable in a plane towards and away from said first handle; a slotted base member to which said first handle is rigidly connected; a rigid guide member having a longitudinal surface in a plane substantially normal to the plane of said base member; a spear member adapted for mounting thereon of a tag for application to an animal's ear, said spear member being adapted to travel lengthwise of said rigid guide member; pivot means permitting said spear member to pivot relative to said guide member, means connecting said second handle and said spear member such that when said second handle is moved towards said first handle said spear member is forced to move relative to said rigid guide member towards said base member and wherein the slotted portion of said base member is so configured that the portion of the spear member

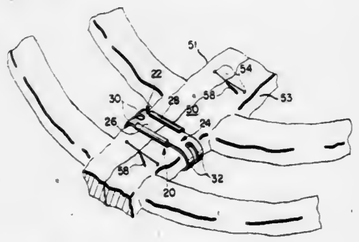
carrying the ear tag may enter and pivot in said slot relative to said guide member at the end of the downstroke of said spear member relative to said rigid guide member.

4,201,215

APPARATUS AND METHOD FOR CLOSING A SEVERED STERNUM

E. S. Crossett, 1501 Arizona Ave., El Paso, Tex. 79902, and Willard L. McCormick, 4906 Souther SE., Albuquerque, N. Mex. 87100

Filed Sep. 6, 1977, Ser. No. 830,567
Int. Cl.² A61B *17/08*
U.S. Cl. 128—335 11 Claims



1. A sternum clamp comprising:
a first elongate clamp member including a substantially planar body portion and turned over flange portions on opposite sides thereof defining a pair of longitudinally extending recesses; and
a second elongate clamp member including a substantially planar body portion slidingly received in the recesses of said first clamp member so as to overlie at least a part of the body portion of said first clamp member;
said first and second clamp members each including a pair of clamping hooks at one end thereof, said pairs of clamping hooks, in use, engaging opposed sides of the severed sternum, and each of said pairs of clamping hooks being spaced apart to define means for enabling engagement with the respective jaws of a pair of pliers so that the two members can be brought into tighter engagement when said clamping hooks are in place in the sternum, said hooks being generally U-shaped in cross-section, the free ends of the U-shaped hook lying in a plane substantially parallel to the planes of the planar body portions of said first and second clamp members and being rounded at the tips thereof, said clamping members being fabricated of stainless steel having a grain which extends transversely to the longitudinal axis of the clamping members.

4,201,216

ABSORBABLE COATING COMPOSITION FOR SUTURES

Frank V. Mattei, Piscataway, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 751,002, Dec. 15, 1976, abandoned. This application Feb. 9, 1979, Ser. No. 10,761
Int. Cl.² A61L *17/00*
U.S. Cl. 128—335.5 23 Claims

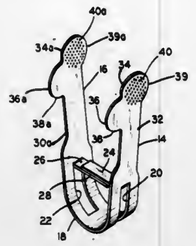
1. A synthetic, absorbable, multifilament suture having improved and substantially equal dry and wet tie-down properties, said suture being coated with from about 2 to 15 percent by weight of a composition comprising a mixture of a substantially water-insoluble, absorbable salt of a C_6 or higher fatty acid and an absorbable, film-forming polymer, the ratio of said fatty acid salt to said polymer being from about 1:4 to 4:1.

4,201,217

NOSTRIL EXPANDER

Robert L. Slater, 7102 Grenlock Dr., Sylvania, Ohio 43560

Filed Jul. 12, 1978, Ser. No. 923,979
Int. Cl.² A61M *29/00*
U.S. Cl. 128—342 6 Claims



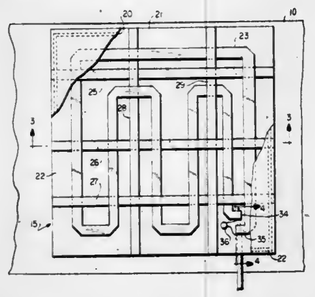
1. A nostril enlarging device comprising: a U-shaped member of sheet material with flexible upstanding legs having anterior, posterior, and upper end side edges; said posterior side edge of each leg having a rounded protuberance for locking into the lower posterior nostril cavity; said anterior edge of each leg being provided with a rounded protuberance having a lower concave surface for engaging the anterior nostril wall; said anterior protuberances being spaced upwardly from said posterior protuberances so that the angular distance between the edges of the anterior and posterior protuberances is greater than the distance between the edged of the posterior protuberance and the directly opposite anterior edge of the leg; and said legs being constructed and arranged for resilient spreading action.

4,201,218

THERAPEUTIC HEAT APPLICATION

Henry L. Feldman, 8844 Town & Country Blvd., Ellicott City, Md. 21043; Philip G. Berman, 11517 Karen Dr., Potomac, Md. 20854, and William L. Washburn, 7704 Jansen Dr., Springfield, Va. 22152

Filed Dec. 22, 1978, Ser. No. 972,346
Int. Cl.² A61F *7/00*; H05B *3/06*
U.S. Cl. 128—402 5 Claims



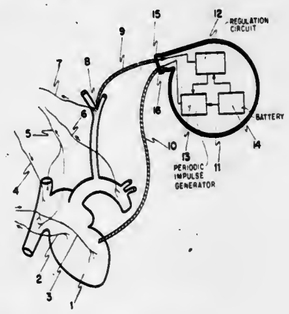
1. A portable therapeutic heating device for localized heating of a body part comprising the combination of
first and second flexible thermally conductive and electrically nonconductive sheets of substantially liquid impermeable material bonded to each other along their margins to form a sealed envelope;
a thermally conductive and electrically nonconductive liquid contained in and substantially filling said envelope;
an electric heat source comprising a semiconductor electron valve immersed in said liquid;
bandage means attached to said envelope for holding said envelope in contiguous heat-transferring relationship with a selected portion of a body;
a portable source of electrical energy; and
control circuit means for interconnecting said source of energy and said valve, whereby said valve is energizied by current from said source and the heat generated thereby is transferred to said liquid and to said selected portion of the body.

4,201,219

CARDIAC PACE-MAKER

José L. Bozal Gonzalez, C/Tilos, 30 - Urbanizacion Montecarlos, Pozuelo de Alarcon, (Madrid-23), Spain

Filed Mar. 3, 1978, Ser. No. 883,251
Claims priority, application Spain, Mar. 3, 1977, 226.859[U]
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 PG 3 Claims



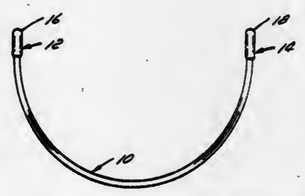
1. A cardiac pace-maker comprising:
neurodetector means, connectable to nerve vias or receivers in the heart of a patient, for detecting a train of nerve impulses therein and for converting such detected train of nerve impulses into electrical signals representative of physiological activity of the heart of the patient;
periodic impulse generator means for supplying electrical impulses to the heart of the patient; and
regulation circuit means, connected to said neurodetector means and to said periodic impulse generator means, for generating a modifying signal proportional to the cardiac frequency necessary for the physiological activity of the heart as a function of said electrical signals, for supplying said modifying signal to said periodic impulse generator means, and for thereby modifying the frequency of said electrical impulses from said periodic impulse generator means to correspond to said necessary cardiac frequency.

4,201,220

BRASSIERE WIRES

Ross F. Rowell, 5361 Belmore, Montreal, Quebec, Canada

Filed Apr. 19, 1978, Ser. No. 897,850
Int. Cl.² A41C *1/14*
U.S. Cl. 128—476 8 Claims



1. In an elongated wire for use as a stiffening member in garments, the improvement wherein said wire has at least one flexible end, said end having a sheath of a flexible material thereabout, said sheath encasing a portion of said wire end which has been detached from the main body portion of the wire.

4,201,221

DIAGNOSTIC TEST FOR ALLERGIC DISORDERS AND KIT THEREFOR

Majid Ali, 19 Edgemont Pl., Teaneck, N.J. 07666, and Donald J. Nalebuff, 89 Lake Shore Dr., Oakland, N.J. 08106

Filed Apr. 14, 1978, Ser. No. 896,296
Int. Cl.² A61B *5/00, 6/00, 9/00, 10/00*
U.S. Cl. 128—630 14 Claims

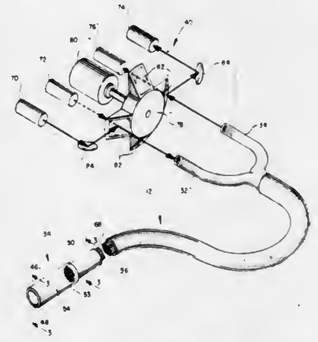
1. A method of determining sensitivity of a patient to allergens comprising contacting a biologic fluid of the patient with anti-IgE or allergen; contacting the reaction product with a non-immune serum of a first animal; contacting the resulting reaction product with (a) a second animal anti-human IgE diluted in an inert carrier to greater than 1:5 and less than 1:1000 or (b) an enzyme conjugated first animal anti-second animal IgG diluted in an inert carrier to greater than 1:5 and less than 1:1000, followed by contacting the reaction product thus formed with the other of said (a) or (b); and thereafter contacting the reaction product thus formed with a chromogenic reagent capable of reacting with the enzyme to develop color.

4,201,222

METHOD AND APPARATUS FOR IN VIVO MEASUREMENT OF BLOOD GAS PARTIAL PRESSURES, BLOOD PRESSURE AND BLOOD PULSE

Thomas Haase, 2996 Alta Laguna, Laguna Beach, Calif. 92651

Filed Aug. 31, 1977, Ser. No. 829,420
Int. Cl.² A61B *5/02, 5/00*
U.S. Cl. 128—634 7 Claims



1. A catheter for use in making at least one blood-related measurement including the partial pressure of at least one blood gas comprising:
wall means defining chamber means for light absorption spectral analysis of said one blood gas, said chamber means being of a size small enough to allow the chamber to be placed within a blood carrying member of a human body, said chamber means having first and second spaced apart regions defining a void space therebetween;
said wall means including a semi-permeable membrane at said first region of the chamber means, said wall means having an interior surface facing toward said chamber means, said semi-permeable membrane being permeable to at least said one blood gas and substantially not permeable to blood whereby when the semi-permeable membrane is placed in contact with blood it allows said one blood gas to pass through the semi-permeable membrane into the chamber means to fill the void space and substantially prevents the blood from passing through the semi-permeable membrane into the chamber means so that the blood gas in the chamber means is separated from the blood;

first elongated light-conducting means for conducting light to said second region of said chamber means so that the light can pass along a light path through said void space and through the blood gas in said chamber means and be at least partially absorbed by said one blood gas;

second elongated light-conducting means for conducting light away from the chamber;

means for attaching the first and second light-conducting means to said chamber means;

a reflector within said chamber means including a reflective coating on said interior surface of said membrane for receiving light at said first region of the chamber means after the light has passed through at least some of the void space and the blood gas in the chamber means, the light path from the first elongated light-conducting means to the reflector being unobstructed except for the blood gas in the chamber means, said reflector reflecting at least some of the light it receives toward the second elongated light-conducting means for transmission away from the chamber means whereby an indication of the partial pressure of said one blood gas can be obtained; and

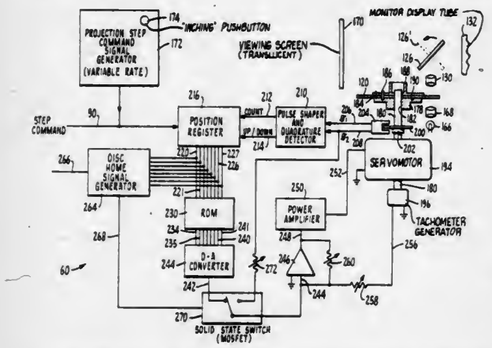
said semi-permeable membrane being resiliently deformable into the void space by the blood with which it is placed in contact whereby blood pressure and heart rate information can be obtained.

4,201,223

INTERNAL BODY ORGAN MOTION PICTURE SYNTHESIZING APPARATUS

Howard H. Barney, Los Altos Hills, Calif., assignor to Dunn Instruments, Inc., San Francisco, Calif.

Filed Jun. 20, 1977, Ser. No. 808,340
Int. Cl.[2] A61B 1/04
U.S. Cl. 128—653 **8 Claims**



1. Internal body organ motion picture synthesizing apparatus, comprising:

film moving means for so intermittently moving a piece of photographic film as to serially present a plurality of areas thereof for exposure during a cycle of a cyclically functioning internal body organ; and

synchronizing means for substantially synchronizing the presentation of each of said areas for exposure with the occurrence of a corresponding phase of successive cycles of said cyclically functioning internal body organ.

4,201,224

ELECTROENCEPHALOGRAPHIC METHOD AND SYSTEM FOR THE QUANTITATIVE DESCRIPTION OF PATIENT BRAIN STATES

E. Roy John, 930 Greacen La., Mamaroneck, N.Y. 10546

Filed Dec. 29, 1978, Ser. No. 974,445
Int. Cl.[2] A61B 5/04
U.S. Cl. 128—731 **23 Claims**

1. The method of determining the brain state of a patient including the steps of:

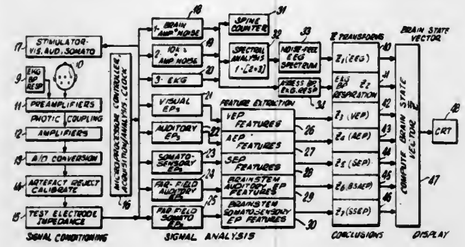
(a) attaching a plurality of electrodes to the scalp of a comatose patient or a patient with other brain dysfunctions to detect the patient's brainwaves in the form of electroencephalographic (EEG) and evoked response (EP) data;

(b) amplifying the electrical signals detected at each electrode;

(c) using a programmed computer based system as the control for stimulating the patient with a series of multi-sensory stimulations to elicit evoked responses from cortex and brain stem;

(d) obtaining and analyzing on-line digital EEG or EP data by connecting analog-digital converters to each amplifier, and digitizing all data as it is gathered;

(e) obtaining sets of on-going EEG and average evoked



response data for the patient and using said computer based system to extract diagnostically useful features from such sets of data, and automatic construction of a Z-transform for each such feature based upon a comparison with stored normative data obtained by computing mean values and standard deviations for each feature from groups of subjects or patients without head trauma or brain dysfunction;

(f) computing a state vector for the patient comprising a vector sum based upon those Z-transformed features which are significantly deviant from normative values; and

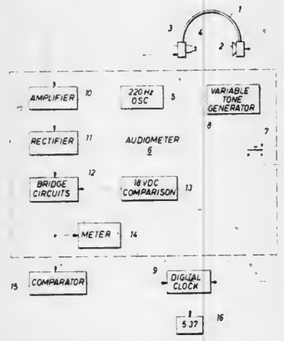
(g) visually displaying the length (severity), orientation (quality) and change with time of said state vector.

4,201,225

METHOD AND APPARATUS FOR MEASURING STIMULATED ACOUSTIC REFLEX LATENCY TIME

James W. Bethea, III, 1421 Rosedown St., Longview, Tex. 75604; O. Clayton Mitchell, 905 Judson Rd., and George B. Richards, 805 Coleman, both of Longview, Tex. 75601

Filed Sep. 2, 1977, Ser. No. 830,162
Int. Cl.[2] A61B 5/12
U.S. Cl. 128—746 **14 Claims**



1. A method for computing the stimulated response time of the human auditory system, comprising:

maintaining a first tone at a constant frequency and sound pressure level in one ear, of a patient,

introducing a second tone into the same or the other ear, of said patient,

detecting the change in acoustic compliance of one of said ears corresponding to the introduction of said second tone, and

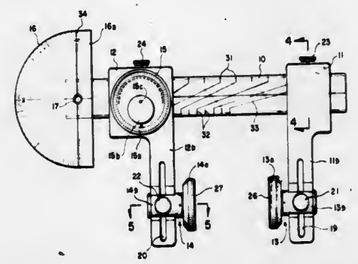
calculating the time delay between the introduction of said second tone and said change in acoustic compliance, and comparing said time to an acceptable time delay value as a measure of the hearing ability of the patient.

4,201,226

COMBINATION INSTRUMENT FOR TAKING BIOMECHANICAL MEASUREMENTS

Robert L. Phillips, 900 Eighth Ave. S., Great Falls, Mont. 59405

Filed Jul. 26, 1977, Ser. No. 819,003
Int. Cl.[2] A61B 5/10
U.S. Cl. 128—774 **4 Claims**



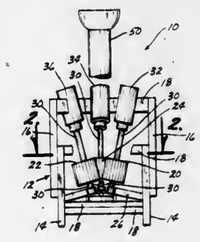
1. A combination measuring instrument for use in the taking of various biomechanical measurements, comprising a scaled straightedge; a set of elongate, mutually cooperative, caliper arms slidably attached to the straightedge for relative movement therealong and including means for rigidly fixing said arms in adjusted positions relative to each other and to the straightedge; a set of body-contacting pads having stub stem members, respectively, slidably attached to respective caliper arms, for movement longitudinally therealong, and having body-contacting pad members pivotally attached to the respective stem members so as to accommodate body irregularities; means for fixedly securing said pads to said arms in adjusted relative positions; and a gravity meter attached to one of said caliper arms.

4,201,227

CORN SHELLING DEVICE

Hamid Al-Jalil, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 13, 1978, Ser. No. 869,375
Int. Cl.[2] A01F 11/06
U.S. Cl. 130—8 **8 Claims**



1. A corn sheller comprising,

a support means having a vertical axis therethrough,

a plurality of rollers rotatably mounted within said support means with the longitudinal axis of each of said rollers disposed at a first acute angle with said vertical axis of said support means, each of said rollers having a plurality of projections on the outer surface thereof adapted for rubbing kernels off an ear of corn, and

power means for rotating each individual roller at unequal speeds.

4,201,228

NON-TOBACCO CONTAINING SMOKING PRODUCT

Olga Lewinger, 11 Niles Pl., Staten Island, N.Y. 10314

Filed Jun. 13, 1977, Ser. No. 805,989
Int. Cl.[2] A24D 1/18; A24C 5/00
U.S. Cl. 131—2 **6 Claims**

2. A tobacco substitute, smoking product having the characteristics similar to tobacco containing cigarette products but without containing nicotine, the product consisting of 55% sugar beet leaves, 25% white beet leaves, 10% sugar cane leaves and 10% of the white inner part of the grapefruit peel.

4,201,229

PROCESS FOR TREATING A FLOW OF TOBACCO LEAVES

Jacques Chouteau, Bergerac, and Pierre Magne, Saumur, both of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, France

Filed Jul. 22, 1977, Ser. No. 818,216
Claims priority, application France, Jul. 22, 1976, 76 22316
Int. Cl.[2] A24B 3/00, 5/00, 5/14
U.S. Cl. 131—146 **6 Claims**

1. Process for treating a flow of tobacco leaves wherein the parenchyma is removed from the ligneous parts at a time when at least said ligneous parts of the leaves have a relative humidity of at least 70%, separating the leaf fragments thereby obtained into two homogeneous flows composed respectively of the parenchyma and the ligneous parts and treating separately the parenchyma and the ligneous parts.

4,201,230

BONG WITH FULL-BORE REMOVABLE PLUG STANDARD

Joseph R. Howell, Jr., 20 Ford Ave., Boonsboro, Md. 21713

Filed Nov. 6, 1978, Ser. No. 958,936
Int. Cl.[2] A24F 1/30
U.S. Cl. 131—173 **6 Claims**



1. A bong-type smoking pipe, which includes:

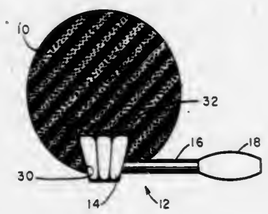
a generally upright main tube with a longitudinal bore open at the upper and lower ends thereof,

an auxiliary tube surmounted by a smoking bowl,

the main tube having a sidewall through which said auxiliary tube extends so as to have an inner, lower end disposed within the main tube below a notional cooling and filtering liquid level; and

a base unit, including:
a handwheel member having an internally threaded socket opening through one face thereof and having an opposite face which provides a support surface for standingly supporting the pipe; and
a generally cylindrical plug having a bolt with the head thereof embedded nonrotatively therein and on externally threaded shank thereof projecting therefrom;
said plug being removably force fit in the lower end of said main tube bore, said handwheel internally threaded socket threadably receiving said bolt shank and said handwheel being tightened axially compressing and radially expanding the plug to simultaneously removably plug the lower end of said main tube bore and provide a standard for the pipe.

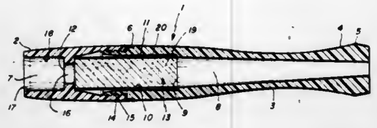
4,201,231
PIPE COVER AND HOLDER
Michael A. Palmer, 815 W. 14th St., Williston, N. Dak. 58801
Filed Nov. 23, 1977, Ser. No. 854,091
Int. Cl.² A24F *5/10*
U.S. Cl. 131—176 **8 Claims**



1. In a smoker's pipe having a bowl with an upper open end portion at the entrance to a generally cup-shaped chamber adapted to receive a smokable substance, and having a hollow stem member attached to said bowl for conducting smoke from said bowl to the smoker, the improvement comprising:
a bowl cover for retaining said smokable substance, said bowl cover being a spongy mass of open-celled elastic material, said mass having an opening dimensioned to yieldingly receive a portion of said bowl for releasably securing said portion within said mounting bore;
first retaining means mounted in said opening for preventing said smokable substance from directly contacting said bowl cover; and
second retaining means mounted within said cup-shaped chamber for preventing said smokable substance from entering said hollow stem member, said first and second retaining means being in spaced apart relation to each other when said bowl is secured within said mounting bore and adapted to cooperate with each other to retain said smokable substance therebetween, said spongy mass being spherical in shape with a diameter at least twice the length between said first and second screens when said bowl cover is secured to said bowl.

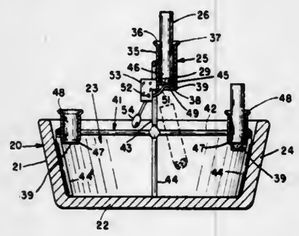
4,201,232
CIGARETTE HOLDER WITH FILTER
Paul Kaye, Farmington Hills, Mich., assignor to Aquafilter Corporation, Fort Lauderdale, Fla.
Filed Jun. 28, 1978, Ser. No. 919,813
Int. Cl.² A24F *13/06*
U.S. Cl. 131—187 **5 Claims**

1. A cigarette holder and filter cartridge combination comprising:
a holder assembly including interconnected mouthpiece and cigarette holding sections which when connected define a cylindrical filter cartridge chamber connected at one end to a passage through the mouthpiece section and at the other end to an enlarged cigarette receiving opening at the other end, and
a filter cartridge comprising:
a cylindrical core having a mixture of absorbent and non-absorbent fibers admixed with a water soluble adhesive



and an expandible paper wrapper about the cylindrical surface of said core, said cartridge when dry having a diameter less than the diameter of said chamber and when wet having a diameter equal to the diameter of said chamber.

4,201,233
CIGARETTE RETARDING AND SNUFFING DEVICE
Albert L. Jean, 49 Merrimack Ter., Dracut, Mass. 01826
Filed Dec. 22, 1977, Ser. No. 863,227
Int. Cl.² A24F *13/18, 19/14*
U.S. Cl. 131—237 **4 Claims**

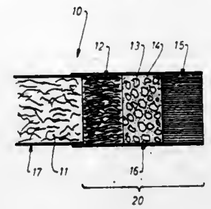


1. A combined ashtray and cigarette holder comprising
an ash receptacle having a bottom and an upstanding side wall;
an elongated tube having a generally cylinderical wall of predetermined inside diameter slightly greater than the diameter of a cigarette, an outwardly flared open upper end and an open lower end; and
an arm centrally pivoted on said tube proximate the open lower end thereof, said arm having a counter weight at one end, and
said arm having a pin like tip at the other end normally located within the open lower end of said tube and spaced from the wall thereof
said arm tip being selectively movable from cigarette snuffing position within said tube, to cigarette combustion retarding position just below said open lower end to inactive position far removed from said lower end.

4,201,234
FILTER FOR SMOKING ARTICLE, MAINLY CIGARETTE
Serge Neukomm, Antagnes sur Oilon, Switzerland, assignor to Sasmoco, S.A., Lenzerheide, Switzerland
Filed Feb. 21, 1978, Ser. No. 879,625
Claims priority, application Switzerland, Feb. 21, 1977, 2116/77
Int. Cl.² A24B *15/02*; B01D *25/02, 26/06, 27/02*
U.S. Cl. 131—265 **11 Claims**

1. A tobacco smoke filter comprising: two substantially cylindrically shaped filtering segments each comprised of fibrous material and being spaced apart in the longitudinal direction of the filter to define a cavity therebetween, said

cavity containing a particulate filtering material, said particulate filtering material being composed of a mixture of two different groups of non adhered granules, the average diameter



of said granules of the first said group being 20 to 50 times greater than the average diameter of said granules of the second said group.

4,201,235
AMINO ACID-VITAMIN FORMULATIONS FOR SKIN, HAIR AND SCALP CONDITIONERS
Vitale G. Ciavatta, East Hanover, N.J., assignor to Mare Corporation, Fairfield, N.J.
Filed Jan. 3, 1978, Ser. No. 866,348
Int. Cl.² A45D *19/16*; A61K *7/06*
U.S. Cl. 132—7 **20 Claims**

1. A composition for topical application to hair and scalp to enhance softness and luster and impart fuller body to the hair comprising a mixture of amino acids and vitamins in the following proportions given in grams per liter of the final composition:

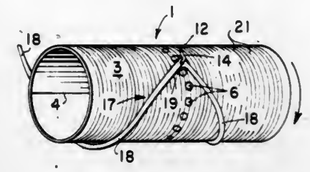
	Minimum	Maximum
Vitamin B_6	1.80 grams	12.00 grams
Vitamin B_5	1.80	15.00
Vitamin B_3	1.20	7.50
Methionine	0.75	4.00
Arginine	0.54	5.00
Cysteine	1.60	6.20
Phenylalanine	0.45	2.50
Leucine	0.30	2.25
Lysine	0.20	3.00
Glycine	0.28	2.50
Valine	0.10	2.00
Iso-leucine	0.12	2.00
Tryptophane	0.06	1.20
Histidine	0.05	0.50
Tyrosine	0.03	0.20
Threonine	0.40	3.40
Zinc sulfate	2.50	3.00
Vitamin D	100,000.0 I.U.	200,000.0 I.U.
Vitamin A	34,000.0 I.U.	170,000.0 I.U.
Vitamin E	13,050.0 I.U.	43,000.0 I.U.

10. A method of treating hair and scalp to enhance softness and luster and to impart fuller body to the hair comprising the step of topically applying to the hair and scalp, as an active composition, the mixture of amino acids and vitamins according to claim 1.

11. The method of treating hair and scalp according to claim 10, comprising the steps of applying sufficient heat to open the pores of the scalp, topically applying said composition to said hair and scalp, and drying the treated hair and scalp.

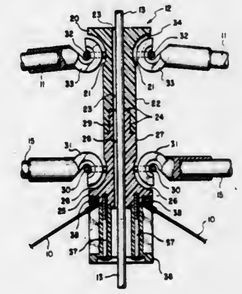
4,201,236
HAIR TREATMENT DEVICE
Joe Morefield, 400 Reynolds St., Springhill, La. 71075
Filed Jul. 24, 1978, Ser. No. 927,149
Int. Cl.² A45D *2/00*
U.S. Cl. 132—40 **7 Claims**

1. A hair treatment device comprising:
(a) a hollow, split tension roller essentially cylindrical in shape with the split edges of said roller bevelled and normally spaced apart, said roller having a plurality of apertures in the outer surface thereof;
(b) securing means positioned between said tension roller



and the scalp of a user after hair is rolled on said tension roller and said split edges of said roller abut; and
(c) first bias means carried by said securing means and cooperating with one of said apertures for applying tension to said hair.

4,201,237
PIVOTAL FRAME STRUCTURE FOR COLLAPSIBLE UMBRELLA TYPE TENT
Paul J. Watts, 1204 E. 8285 South, Sandy, Utah 84074; Lynn D. Crawford, 3364 Sunnybrooke Dr., Salt Lake City, Utah 84119, and Philip T. Nichols, 3950 Squire Crest Dr., Salt Lake City, Utah 84118
Filed Oct. 10, 1978, Ser. No. 950,029
Int. Cl.² A45B *25/08*
U.S. Cl. 135—2 **8 Claims**



1. In a collapsible shelter of the umbrella-tent type wherein the shelter includes a foldable frame and a cover of sheet material affixed to the frame, with said frame comprising an erecting guide; a plurality of support members for supporting said cover when said frame is erected; a first hub mounted on said erecting guide; means for pivotally connecting mutually respective ends of said support members to said first hub, so that when the shelter is erected, the support members extend outwardly and downwardly from said first hub, and when the shelter is collapsed, the support members extend downwardly as a bundle, with the support members being in proximate side-by-side relationship; a second hub mounted on said erecting guide below said first hub, said first and second hubs being adjustable between a collapsed position, in which said first and second hubs are located at the top and bottom of said erecting guide, respectively, and an erected position, in which the first and second hubs are proximate to each other; a plurality of rib members, equal in manner to the number of support members; means for pivotally connecting mutually respective ends of said rib members to the second hub; means for pivotally connecting the other mutually respective ends of said rib members to corresponding support members, such that when the shelter is erected, said rib members extend substantially radially outwardly from said erecting guide, and when the shelter is collapsed, said rib members extend downwardly, substantially

within said bundle of collapsed, support members; the improvement wherein:

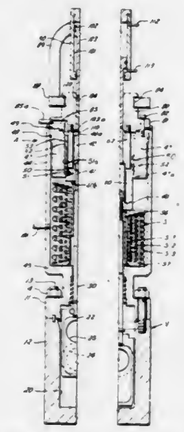
the means for pivotally connecting said support members to said first hub comprises a neck portion in said first hub formed from a concave-shaped, reduced cross section in said first hub intermediate between an upper cap portion and a lower collar portion of said first hub; a ring member encircling said neck portion; and circular, ring-shaped hooks on the respective ends of the support members which are adapted to be attached to said ring member, with the outside circumference of the hooks being such that the hooks nest within the concave shaped neck portion of said first hub for pivotal movement about said ring member which encircles said neck portion.

4,201,238

EMERGENCY OVERRIDE WITH HERMETIC SEAL

Benton F. Baugh, Houston, Tex., assignor to Vetco, Inc., Ventura, Calif.

Filed Mar. 13, 1978, Ser. No. 885,476
Int. Cl.[2] F01B 7/00; F16K 31/143
U.S. Cl. 137—68 R **3 Claims**



1. In a hydraulically actuated gate valve including a hydraulic piston slidably mounted in a cylindrical body and connected to a valve stem for moving the stem and a valve gate mounted therewith for opening and closing the valve, the improvement comprising:

(a) a hermetically sealed header secured to the upper end of said cylindrical body having a passage extending therethrough for receiving an override actuator piston for moving said hydraulic piston when its hydraulic piston system fails;

(b) a rupturable hermetic seal means secured in said header passage for closing said passage to provide a hermetic seal to exclude moisture and foreign substances from said hydraulic piston and rupturable by said override actuator piston upon actuation of same.

4,201,239

SEALING DEVICE FOR A VALVE

Masao Kawamura, Tokyo, Japan, assignor to Kitamura Valve Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1978, Ser. No. 879,265
Claims priority, application Japan, Mar. 30, 1977, 52/37721
Int. Cl.[2] F16K 5/06
U.S. Cl. 137—72 **11 Claims**

1. In a valve which comprises:

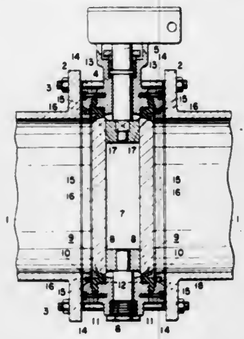
a valve body formed with a cavity and an annular recess which extends around the periphery of the cavity and which has a side recess face and a bottom recess face which joins the wall of the cavity;

and a valve member which is mounted within the cavity so as to rotate about an axis of rotation substantially perpendicular to the central longitudinal axis of the cavity, and whose surface is part of a surface of revolution generated by rotating a curve about said axis of rotation;

a seal device comprising:

a retainer attached to the valve body in a manner to oppose the annular recess therein;

a flexible annular seal of substantially uniform composition partly located in the recess, and having an inner peripheral surface adapted to co-operate with the outer surface of the valve member to form a seal therebetween, and an outer peripheral surface in contact with the side recess face of the recess;



an annular pressure member located between the retainer and the valve body and which has an inner peripheral surface adapted to co-operate with the outer surface of the valve member and a surface facing the valve body adapted to co-operate with the part of the surface of the valve body which it confronts, should the annular seal be destroyed, said annular seal lying partly between said pressure member and said valve body;

and a spring means which is located between the retainer and the pressure member and which urges the pressure member towards the valve body;

said urging being resisted solely by the interposition of said annular seal between said pressure member and said valve body, with the configuration of said seal and pressure member being such that said urging has no effect on the sealing contact between the inner peripheral surface and valve member.

4,201,240

ELECTRONIC LIQUID LEVEL MONITOR AND CONTROLLER

Richard P. Case, Webster City, Iowa, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 21, 1978, Ser. No. 927,156
Int. Cl.[2] F16K 21/16
U.S. Cl. 137—392 **9 Claims**

1. An electronic liquid level monitor and controller comprising:

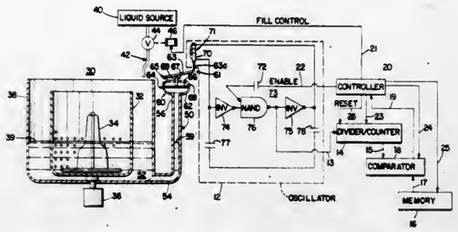
a circuit including a passive component;

an element associated with the passive component and movable relative thereto, the movement of the element relative to the passive component varying the impedance value of the passive component;

mechanical linking means for moving the element relative to the passive component in proportion to a varying liquid level to be monitored;

means for generating a measured value in a digital format in proportion to the impedance value of the passive component;

means for storing at least one predetermined digital format value indicative of a known level of said liquid level to be monitored;



means for comparing the measured value to the predetermined value; and

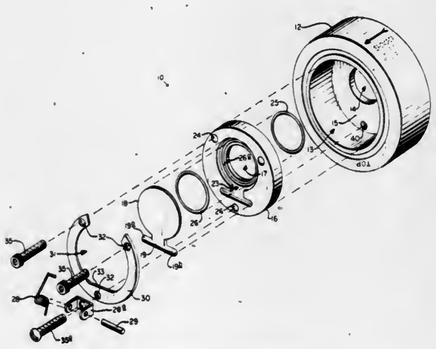
means for providing a control signal when said measured value and said predetermined value, upon being compared, are in a predetermined relationship, the control signal being utilized to regulate the level of the liquid.

4,201,241

CHECK VALVE WITH REMOVABLE SEAT

William E. Schertler, R.R. 1, Red Level, Ala. 36474

Filed Jun. 29, 1977, Ser. No. 810,927
Int. Cl.[2] F16K 15/03
U.S. Cl. 137—527 **6 Claims**



1. A pipeline check valve, comprising:

a. a valve body provided with a recess, said valve body having a flow opening therethrough communicating with said recess;

b. a removable valve seat, said valve seat provided with a fluid opening therethrough, said valve seat corresponding to said recess and being attachable to said valve body within said recess with said flow opening of said body and said fluid opening of said seat aligning to allow fluid flow through said aligned openings;

c. a valving member in operative connection with said valve seat, said valving member being capable of effecting a substantially fluid tight seal with said fluid opening in said valve seat when fluid flows through said opening of said valve seat in a backflow direction; and

d. temporary attachment means for securing said removable valve seat to said valve body, said attachment means comprising:

i. a plurality of openings in said valve seat;

ii. a corresponding plurality of aligning openings in said valve body;

iii. at least one mounting bolt inserted through said aligned openings connecting said valve seat with said valve body; and

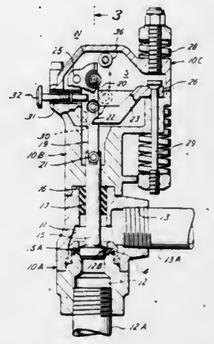
iv. a retainer member being entirely attached during operation to said removable valve seat on the downstream face side thereof, with said valving member occupying a pivotal position during operation between said retainer member and said valve seat, said retainer providing a plurality of openings corresponding to and aligning during operation with said plurality of openings provided in said valve body and through said valve seat.

4,201,242

PRESSURE RELIEF VALVE

John N. Troxell, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 13, 1978, Ser. No. 914,997
Int. Cl.[2] F16K 15/00
U.S. Cl. 137—531 **8 Claims**



1. A pressure relief valve, comprising a body having a flowway therein with an inlet to and an outlet from the flowway, a closure member movable within the flowway between positions opening and closing the inlet and having a pressure responsive surface exposed to fluid within the inlet in the closed position thereof for urging the closure member to its open position, means for holding said closure member in closed position until fluid within the inlet reaches a predetermined pressure level and then releasing said closure member for movement to open position, additional means for automatically returning the closure member to closed position independently of the holding means, including a part mounted on the body for movement between a first position which permits the closure member to move to open position and a second position which moves the closure member from open to closed position, and means for moving said part to its first position in response to fluid pressure within the inlet which is less than the predetermined level required to open the closure member, and for moving said part to its second position, in response to a predetermined low pressure level of fluid within the flowway.

4,201,243

CHECK VALVES

Benjamin Martin, Kirkburton, England, assignor to The Drum Engineering Company Limited, Bradford, England

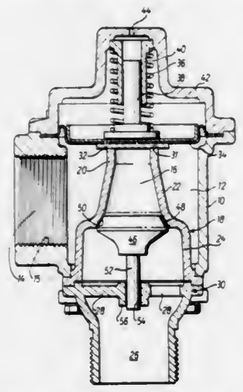
Filed Dec. 15, 1978, Ser. No. 969,704
Int. Cl.[2] F16K 31/12
U.S. Cl. 137—510 **8 Claims**

1. A check valve for connection between a source pressure medium and a pressure medium reservoir to allow passage of pressure medium from said source to the reservoir but to prevent reverse flow from the reservoir to the source, the check valve comprising:

(1) a housing defining a first chamber;

(2) an inlet coupling on the housing for connection to the

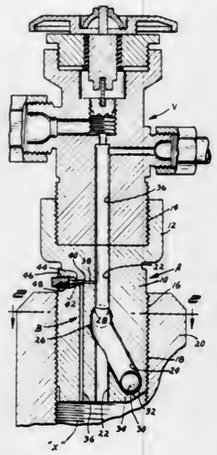
source of pressure medium; said inlet coupling being in direct communication with said first chamber;
(3) an outlet coupling on the housing for connection to the reservoir;
(4) first and second valve means disposed in series in the housing;
(5) the upstream valve means, considered in the direction of forward flow from the inlet to outlet, including:
(a) flow tube means disposed in said first chamber;
(b) a first valve seat formed on one end of said flow tube means;
(c) a diaphragm closing one end of said first chamber;
(b) a first closure member carried by said diaphragm;
(e) spring means biassing the diaphragm and first closure



member so that the latter engages said first valve seat when the force on the diaphragm resulting from the pressure in said first chamber is less than the combined force on the diaphragm resulting from said spring biassing means and the pressure in said flow tube means downstream of the said first valve seat; and
(6) the downstream valve means including:
(f) a second valve seat formed internally of said flow tube means downstream of said one end; and
(g) a second closure member disposed in said flow tube means downstream of said second valve seat such that it is held in a closed position in which it engages said second valve seat only when the pressure downstream of the second valve seat is higher than the pressure in said first chamber.

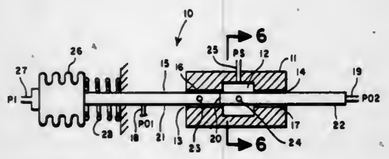
4,201,244
AUXILIARY SAFETY VALVE FOR A PRESSURIZED FLUID SYSTEM
Leo Quirk, Box 84, Mountain Iron, Minn. 55768
Filed Aug. 3, 1978, Ser. No. 930,708
Int. Cl.[2] F16K *15/18, 15/04*
U.S. Cl. 137—614.2 **1 Claim**

1. An auxiliary safety valve for interposition in a pressurized container system comprising:
(a) a cylindrical valve body,
(b) means for connecting said valve body to the outlet end of a pressurized container for communication therewith,
(c) said valve body having a main bore extending therethrough adapted to align with the outlet end of a pressurized container and in communication with said outlet end pressure,
(d) said valve body having an auxiliary bore formed therein at an acute angle to said main bore and in communication with said outlet end pressure and joining with said main bore and in communication therewith,
(e) a ball seat formed substantially where said auxiliary bore joins said main bore,
(f) said auxiliary bore having a valve seat formed therein,
(g) said valve seat having a restricted passage restricted in size relative to the size of the auxiallary bore formed therein and in communication with said outlet end pressure,
(h) a ball mounted in said auxiliary bore for movement therein and to said ball seat to close off said main bore due to pressure through said restricted passage when the pressure through said main bore exceeds a predetermined value and
(i) means for connecting said valve body to an outlet control valve for communication therewith,



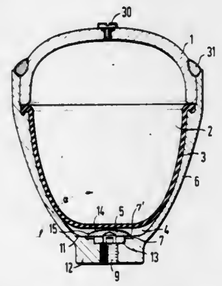
(j) said valve body having a conduit extending from the pressurized container out end and in communication with said outlet end pressure and terminating at and in communication with said main bore at a point intermediate said ball seat and the control valve
(k) valve means for opening and closing said conduit whereby pressure may be reduced in said restricted passage whereby said ball may be moved from said ball seat to said valve seat to allow said main bore to reopen.

4,201,245
DWELL RELAY
Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 4, 1976, Ser. No. 738,816
Int. Cl.[2] F16K *11/06;* **G05D** *16/00*
U.S. Cl. 137—624.11 **15 Claims**



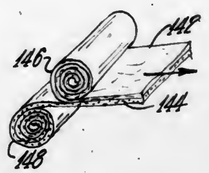
1. A dwell relay comprising:
input means for supplying an input;
supply means for the supply of a supply pressure;
first output means for the supply of a first output pressure;
second output means for the supply of a second output pressure; and,
first means for connecting said supply means to said first output means and second means for connecting said supply means to said second output means, said first and second means connected to said input means whereby as said input increases said first output pressure increases from a first reference level to a second reference level and, upon a further increase in said input, said second output pressure decreases from a third reference level to a fourth reference level, wherein said increase of said first output pressure is separated by a dwell period from said decrease of said second output pressure.

4,201,246
PRESSURE ACCUMULATOR
Alfred Wirth, Schweinfurt; Hans Reimer, Waigolshausen; Klaus Mackert, Schweinfurt; Franz Diehl, Schwanfeld, and Klaus Splett, Schonungen, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany
Filed Jul. 20, 1978, Ser. No. 926,400
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 2738684
Int. Cl.[2] F16L *55/00*
U.S. Cl. 138—30 **26 Claims**



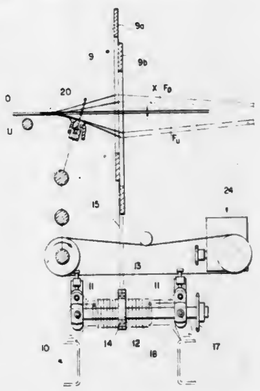
1. An accumulator comprising: a rigid container including a bottom wall and defining a cavity enclosed by said container; means defining continuously-open passage means through said bottom wall, said bottom wall including an annular wall portion contiguous with said passage means; a resilient partition separating said cavity into a first and a second compartment, said first compartment being in direct flow communication with said continuously-open passage means; a pressurized fluid within said second compartment effective to cause expansion of said resilient partition to bring said resilient partition to abutting engagement with said bottom wall over said continuously-open passage means when fluid pressure in said first compartment is below a predetermined level; and shielding means rigidly fastened with said container and exposed within said first compartment to abutting engagement with said resilient partition for preventing said resilient partition from being drawn into said continuously-open passage means; said shielding means comprising a continuous frontal surface formed with a generally smooth uninterrupted configuration exposed within said first compartment and oriented to generally face toward said second compartment, means defining an annular rim surface located adjacent and spaced from said annular wall portion of said bottom wall, said annular rim surface and said annular wall portion being arranged to define an annular space bounded by said annular rim surface and said annular wall portion together with said resilient partition when said partition is in abutting engagement with said shielding means, and means defining a continuously-open orifice maintaining said annular space in flow communication with said continuously-open passage means.

4,201,247
FIBROUS PRODUCT AND METHOD AND APPARATUS FOR PRODUCING SAME
Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Jun. 29, 1977, Ser. No. 811,234
Int. Cl.[2] D04H *1/58;* **B32B** *5/06, 5/22, 17/00*
U.S. Cl. 138—141 **12 Claims**



1. A fibrous product comprising a body of crystallizable mineral fibers and a body of amorphous glass fibers adhered by a resinous binder to the body of mineral fibers.

4,201,248
PROCESS AND APPARATUS FOR SINGLE-FILLING MANUFACTURE OF DOUBLE-NAP FABRICS
Philippe Delaplace, and Pierre Bernard, both of Amiens, France, assignors to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany
Filed Oct. 4, 1978, Ser. No. 948,579
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744795
Int. Cl.[2] D03D *39/16*
U.S. Cl. 139—21 **11 Claims**



1. In the method for the single-filling manufacture of double nap fabrics, wherein the filling yarn for the face and back fabrics is inserted at the same place into the shed,
the improvement comprising superposing an additional lifting motion to the normal motion emanating from a dobby at least for shafts forming the shed of the warp for one of the two fabrics.

4,201,249

MACHINE FOR THE FILLING OF LIQUIDS INTO CONTAINERS

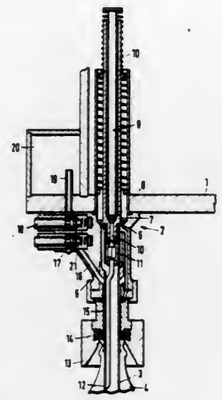
Wolfgang Borstelmann, Dortmund, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund-Wambel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 913,867, Jun. 8, 1978, Pat. No. 4,146,065. This application Oct. 10, 1978, Ser. No. 949,471

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1977, 2745641

Int. Cl.² B65B *31/00*

U.S. Cl. 141—39 **7 Claims**



1. A filling machine for filling of liquids into a container, such as a bottle or the like, comprising a liquid vessel; filling elements operatively connected with said liquid vessel and including a liquid input conduit, an advance and return gas conduit, and a pressure relief conduit communicating the interior of the container with the outer atmosphere; means for establishing a pressure difference between the interior of the container and the interior of said liquid vessel, said establishing means including a channel adapted to be maintained at a pressure which is lower than that in said liquid vessel and higher than that of the outer atmosphere, and a branch conduit communicating the interior of the container with the interior of said channel; and means for automatically closing said branch conduit when the pressure in said channel increases and opening said branch conduit when the pressure in said channel decreases relative to the pressure in the interior of the container.

4,201,250

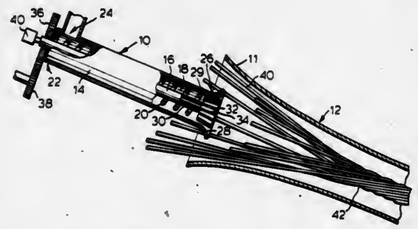
POWDER DISTRIBUTOR FOR FILLING A CABLE

Jörg-Hein Walling, St. Hubert, and Jean Bouffard, Lachine, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 13, 1978, Ser. No. 876,873

Int. Cl.² H01B *19/00*

U.S. Cl. 141—250 **7 Claims**



1. A device for filling the interstices of a multi-stranded electric cable with powder in which a plurality of strands are fed into a closing die having an outwardly flaring inlet wall, a device comprising:

a cylindrical housing;

a tube concentric with the housing and spaced inwardly therefrom to form with the housing an annular chamber having an outlet end, and an aperture opening into the chamber for feeding powder thereto;

a helical screw concentrically mounted within the chamber and means to rotate the screw oxially whereby powder is moved along the chamber from the aperture to the outlet end thereof; and

a drive shaft passing axially through the tube and having an impeller coaxially mounted at the end thereof, the impeller being located at the outlet end of the chamber, and means to rotate the drive shaft axially and independently of movement of the screw whereby powder moved along the chamber is dispersed laterally from the outlet end thereof, the outlet end of the chamber being locatable within the inlet wall of the closing die and spaced therefrom.

4,201,251

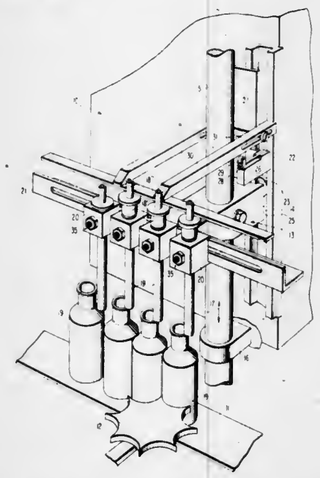
ANTI-SPILLING SAFETY DEVICE FOR HIGH-SPEED FILLING MACHINES

Richard N. Bennett, Arbutus, and Albert Lichaa, Baltimore, both of Md., assignors to National Instrument Co., Inc., Baltimore, Md.

Filed Jun. 5, 1978, Ser. No. 912,317

Int. Cl.² B65B *43/42*; B67C *3/20*

U.S. Cl. 141—284 **8 Claims**



1. An anti-spill safety mechanism for high-speed filling machines, comprising reciprocable nozzle means supported by nozzle holder means forming part of a nozzle support structure operable to move in the downward and upward direction in predetermined timed relationship to the cycle of operation of the filling machine, characterized in that a respective nozzle means is releasably held relative to its nozzle holder means, and safety means responsive to relative movement between the nozzle means and the nozzle holder means when the nozzle means encounters an obstruction in its movement in the direction toward a respective container to be filled, to stop the operation of the filling machine and thereby prevent spilling.

4,201,252

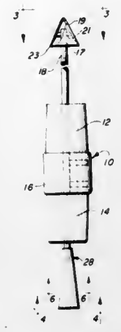
NON-CLOGGING GRAVITY TRANSFER CONNECTOR FOR CLOSED CONTAINERS

Eugene M. Noel, 1215 S. Portofino Dr., Sarasota, Fla. 33581

Continuation-in-part of Ser. No. 824,333, Aug. 15, 1977, abandoned. This application Aug. 10, 1978, Ser. No. 932,445

Int. Cl.² B65B *3/06*

U.S. Cl. 141—286 **3 Claims**



1. In a viscous liquid transfer connector for gravity transfer of such material from one closed container having an outlet opening to another container having an inlet opening, said connector comprising a generally tubular body having upper and lower end portions formed for stopper-like insertion in the outlet opening of said one container and the inlet opening of the other container, respectively, and an air vent tube having upper and lower end openings mounted within said body to extend axially therethrough and beyond each end therefo, the improvement in the vent tube comprising a downwardly and outwardly flared deflector means extending from the lower end of the vent tube for widening the opening into the same and thereby preventing material flowing through said body and around said vent tube from gathering about and clogging the lower end opening of said tube and preventing the free flow of air thereinto from said other container, and an inverted cup-like cap mounted on the upper end of said vent tube and having a downward and outward divergence relative to the axis of the tube to position the end opening of the cap below the upper end opening of the tube.

4,201,253

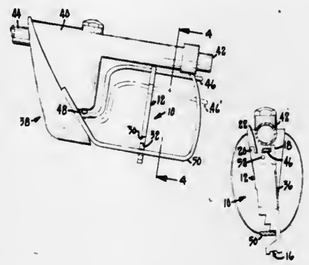
GAS PUMP LEVER BLOCKING MEMBER

Michael J. Maloney, 4800 Oxborough La., Minneapolis, Minn. 55437

Filed Aug. 25, 1978, Ser. No. 936,899

Int. Cl.² B65B *1/04, 3/00*; B67C *3/00*

U.S. Cl. 141—392 **2 Claims**



1. A gas pump lever blocking member for use with a gas pump having a nozzle, a valve for regulating gas flow through the nozzle, a manually operable lever arm to open the valve, means for biasing the lever arm in a position whereby the valve is normally closed, and a lever arm guard disposed about the leverarm, comprising:

(a) an elongated member having an elongation axis, first and second ends disposed along said elongation axis, and opposite side portions, one of said side portions having a plurality of notches formed therein and spaced apart along said elongation axis, each of said notches defining engagement surfaces facing generally toward said second end of said member, said engagement surfaces disposed to engage the inner surface of the lever guard; and

(b) a pair of members projecting from said first end and spaced apart at a distance greater than the width of the lever arm to define a slot sized to receive the valve actuating lever arm whereby the lever arm is held in a valve opening position against the biasing means with said elongated member releasably engaged between the lever guard and the lever arm with said first end of said elongated member engaging the lever arm at a point spaced apart from the end of the lever arm.

4,201,254

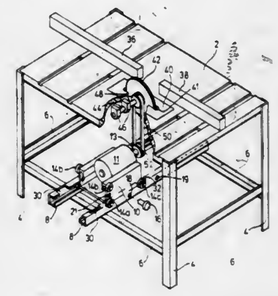
MULTIPLE PURPOSE WOODWORKING STRUCTURE

Mustafa Fehric, c/o Douglas S. Johnson, 133 Richmond St. West, Toronto, Ontario, Canada (M5H 2L7)

Filed Jun. 9, 1978, Ser. No. 914,039

Int. Cl.² B27C *9/00*

U.S. Cl. 144—1 G **5 Claims**



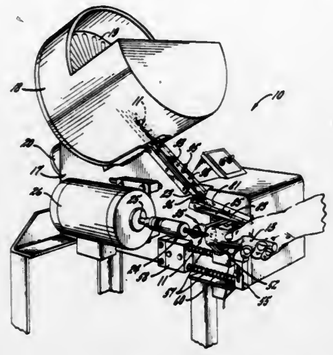
1. A multiple purpose woodworking table having a single motor for performing a plurality of different woodworking operations and having a table surface with a single working area where said plurality of different woodworking operations are performed, said motor being located below the table surface and being rotatable from a locked horizontal position to a locked vertical position and vice-versa, said motor having an output shaft which when said motor is rotated, is moved away from said single working area, a motor mount supporting said motor, a first set of wheels at one side of said motor mount, a second set of wheels at another side of said motor mount and a third set of wheels at the corners joining the sides, a pair of opposing channel members for rollingly securing said sets of wheels, said channel members including spaced cut-out portions positioned to permit releasing of said first set of wheels from said channel members while fitting said second set of wheels into said channel members and vice versa as said motor and its mount are rotated, said channel members providing a runway for said sets of wheels when fitted therein; and locking means for securing said motor and mount in both the horizontal and vertical working position.

4,201,255

MACHINE FOR THREADING FASTENERS INTO WORKPIECES

Joseph W. Donnelli, and Richard D. Barnes, both of Rockford, Ill., assignors to Southern Imperial, Inc., Tupelo, Mich.

Filed Nov. 6, 1978, Ser. No. 958,036
Int. Cl.[2] B25B *23/10*
U.S. Cl. 144—32 R **17 Claims**



1. A machine for driving elongated threaded fasteners into workpieces, said machine comprising a support, means on said support for storing a supply of fasteners and for delivering the fasteners one at a time to a loading station, a power-rotated chuck mounted on said support and adapted to grip a fastener and to rotate the fastener about its own axis, the improvement in said machine comprising, a holder mounted on said support to move laterally between a first position in which the holder is located in said loading station and a second position in which the holder is alined laterally with said chuck, means for moving said holder between said first and second positions, said holder receiving a fastener in said loading station when said holder is in said first position and moving the fastener laterally as the holder is moved to said second position, and means on said support adjacent the second position of said holder for supporting said chuck and a workpiece for relative movement toward one another whereby, when such movement occurs with said holder in said second position, the fastener on the holder will be moved into the chuck and will be threaded into the workpiece upon being rotated by the chuck.

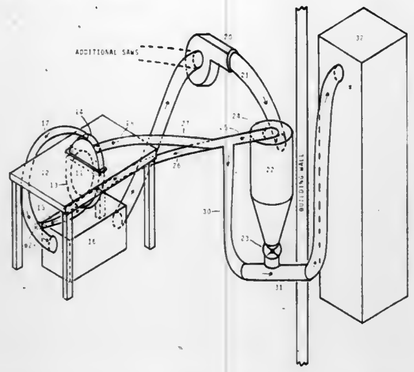
4,201,256

SAWDUST COLLECTOR

Andrew Truhan, P.O. Box 467, Granite Falls, N.C. 28630

Filed Jan. 10, 1979, Ser. No. 2,464
Int. Cl.[2] B27G *19/00*; B26D *7/22*; B01D *50/00*
U.S. Cl. 144—252 A **5 Claims**

1. A dust collecting apparatus for a cutting tool, comprising:
a chip and dust separator;
chip and dust inlet means for said chip and dust separator;
gas and dust outlet means for said chip and dust separator;
a cutting tool safety cover including a vacuum duct and positioned adjacent the cutting area of said cutting tool;
a vacuum conveyor duct connecting said cutting tool safety cover and said vacuum duct to said inlet means to said chip and dust separator;
a fan;
a vacuum conveyor conduit means coupling said gas and dust outlet means of said chip and dust separator to the input of said fan;
a cyclone separator including an inlet, a clean air outlet, and a particle discharge chute;
a pneumatic conveyor conduit coupling the output of said fan to said input of said cyclone separator;
a dust storage container;
clean air conduit means connected to said clean air outlet and to said cover and said vacuum duct;
a first conduit coupling said particle discharge chute to said dust storage container;



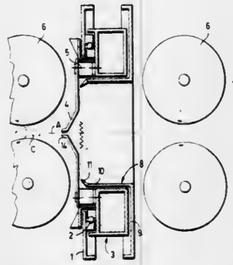
a second conduit coupling said clean air conduit means to said first conduit whereby the particles from said particle discharge chute and a portion of the air in said clean air conduit means from said clean air outlet are mixed to form a fluid suspension.

4,201,257

TIMBER PROCESSING MACHINE

Antti T. Valo, P.O. Box 29, 08100 Lohja 10, Finland

Filed Jan. 24, 1978, Ser. No. 871,905
Claims priority, application Finland, Mar. 18, 1977, 770860
Int. Cl.[2] B27L *1/00*
U.S. Cl. 144—208 E **7 Claims**



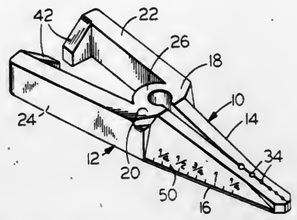
1. A timber processing machine which comprises a frame, a hollow rotor rotably mounted in said frame, through which rotor a tree trunk to be processed is to be fed longitudinally, barking and lopping knives journalled pivotally on the rotor and directed towards the center of the rotor, feeding means for feeding the tree trunk to be processed longitudinally through the hollow rotor, a non-rotatable guide ring surrounding the path of movement of the tree trunk to be processed arranged on the inlet side of the knives of the hollow rotor to bend branches projecting from the tree trunk parallel with the tree trunk as the tree trunk is fed, by the feeding means, through the guide ring and the hollow rotor, the leading edge of each knife being a cutting edge at least on the portion of the blade that extends radially inside the guide ring, and wherein the circumferential edge of the guide ring adjacent the knives is provided with at least one tooth which projects diagonally in the direction of feed of the tree trunk, inwardly toward the rotor axis and in opposition to the direction of rotation of the rotor.

4,201,258

NAIL HOLDER

I. James Elmore, Simsbury, and Robert F. West, West Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Jan. 22, 1979, Ser. No. 5,440
Int. Cl.[2] B25C *3/00*
U.S. Cl. 145—46 **9 Claims**



1. A holder for nails and the like comprising:
A. a pair of operating members each including an elongated jaw portion, a handle portion, and a pivot portion intermediate said jaw and handle portions; and
B. pivot means connecting said operating members at said pivot portions thereof and normally biasing said jaw portions into contact with each other in the normal condition of said holder, said handle portions being spaced apart in said normal condition and being movable towards each other to open said jaw portions against the biasing pressure of said pivot means, said jaw portions having top faces, bottom faces, opposed generally vertically extending inner side faces and inclined outer side faces tapering from said top faces outwardly from said inner side faces to adjacent said bottom faces to define a reduced cross section at said top faces and a broad cross section adjacent said bottom faces, said bottom faces of said jaw portions lying in a common plane with the lowest surfaces of said handle portions whereby said holder may be stably positioned upon a work surface, the inner side faces of said jaw portions being adapted to retain a nail or the like therebetween with the head thereof projecting outwardly of said top faces to facilitate striking of the associated nail by a hammer or the like, the outer side face of at least one of said jaw portions having measuring indicia spaced along at least a portion of the length thereof.

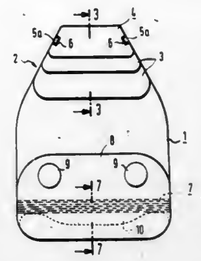
4,201,259

SECURITY POUCH TO BE CLIPPED TO ARTICLES OF CLOTHING

Franz Alsdorf, Amalienstrasse 28, 8000 München 40, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,380
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808348
Int. Cl.[2] A45C *13/18, 13/20*
U.S. Cl. 150—47 **13 Claims**

1. A security pouch for attachment to an article of clothing and for the receipt of articles, especially money, cards and the like, comprising a slim flexible container portion and a resilient clip member fastened thereto and capable of being brought grippingly into engagement with an article of clothing, said clip member comprising an inner member with a substantially hook-shaped cross-section and an outer member which resiliently encloses the inner member and which has a cross-section shaped to exert a compressive force on the inner member.

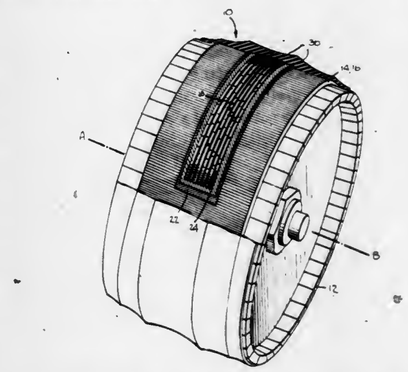


4,201,260

METHOD FOR MAKING A RADIAL PLY TIRE IN A SINGLE BUILDING STAGE

Henri J. Mirtain, Compiegne, France; Daniel Shichman, Trumbull, Conn., and James J. Neville, Newfoundland, N.J., assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal a Societe Anonyme, Clairoix, France

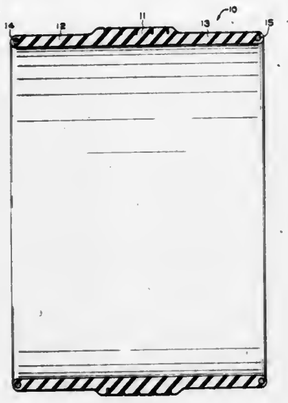
Continuation-in-part of Ser. No. 684,415, May 7, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,863
Int. Cl.[2] B60C *9/22*
U.S. Cl. 152—361 DM **24 Claims**



19. A single stage built radial ply tire having sidewalls, beads and a tread, said tire comprising:
(a) a bead-anchored toroidally shaped carcass composed of a body layer including at least one body ply of cord fabric defining sidewall regions and a crown region, with all of the cords in said body layer extending from bead to bead and in substantially radial planes relative to said beads and the axis of said body layer;
(b) a breaker layer positioned circumferentially about said body layer in said crown region of the latter, said breaker layer including a multiplicity of breaker plies of bias angled cord fabric, the cords of said breaker layer being parallel in each ply and oppositely disposed in adjacent plies and forming in each ply a bias angle of between at least about 35° and not more than about 60° with the mid-circumferential plane of said carcass; and
(c) a cap band positioned circumferentially about said breaker layer intermediate the same and the tread, said cap band being constituted by a small number of reinforcing cords extending in helical screw thread fashion around the radially outer surface of said breaker layer for at least a selected plurality of full turns, with said reinforcing cords of said cap band being oriented at a substantially 0° bias

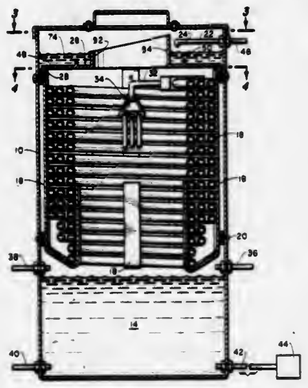
angle relative to said mid-circumferential plane of said carcass and tightly embracing said breaker layer.

4,201,261
VEHICLE TIRE
Donald R. Bartley, Cuyahoga Falls; James Sidles, Richfield, and Stephen C. Sabo, Barberton, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Aug. 10, 1977, Ser. No. 823,304
Int. Cl.[2] B60C 5/12
U.S. Cl. 152—357 A 6 Claims



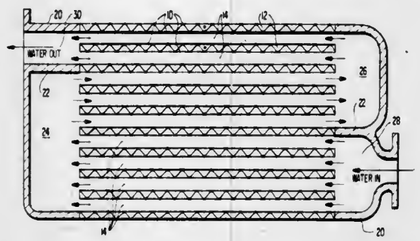
1. A vehicle tire of generally toroidal configuration with axially spaced rim mounting bead portions each individually reinforced by at least one annular bead core, the carcass of the tire being formed entirely of a vulcanized elastomer blend of a monoolefin copolymer rubber and a polyolefin, characterized in that the vulcanized elastomer exhibits biaxial molecular orientation.

4,201,262
COOLER FOR CHILLING A WORKING FLUID
Stanley A. Goldstein, 4458 Estrondo Dr., Encino, Calif. 91631
Filed Aug. 7, 1978, Ser. No. 931,599
Int. Cl.[2] F28D 3/04
U.S. Cl. 165—117 14 Claims



1. A cooler for extracting heat from a working fluid comprising:
a tank;
a reservoir at the bottom of said tank;
a plurality of cooling coils mounted in said tank;
an inlet for delivering a working fluid to be cooled in said tank;
metering means for metering the flow of working fluid over said cooling coils;
said metering means comprising a circular plate having a plurality of metering holes aligned with the respective coils in said plurality of cooling coils;
distribution control means for controlling the distribution of working fluid evenly over said metering plate;
said distribution control means comprising an overflow hole in the center of said metering plate;
an overflow barrier around said overflow hole;
a distribution barrier on said plate between said overflow barrier and said metering holes said inlet positioned to deliver working fluid onto said metering plate between said overflow barrier and said distribution barrier;
said overflow barrier having a predetermined height greater than the height of said distribution barrier whereby said working fluid flows through said inlet onto said metering plate and flows at a substantially even rate through all the metering holes.

4,201,263
REFRIGERANT EVAPORATOR
James H. Anderson, 2422 S. Queen St., York, Pa. 17402
Filed Sep. 19, 1978, Ser. No. 943,711
Int. Cl.[2] F28F 9/22
U.S. Cl. 165—146 3 Claims

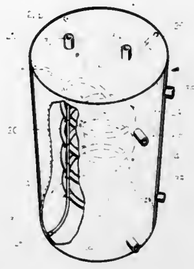


1. An evaporator comprising a casing having a plurality of plates arranged in pairs in vertical planes and in spaced parallel relation to one another, each pair of plates defining a passageway and each pair of plates defining a passage between adjacent pairs of plates for the passage of water, a refrigerant consisting of a boiling fluid at a constant temperature flowing through said passageways in a crossflow path to said passages, said casing having inlet and outlet water openings therein defined by internal abutments, said abutments engaging certain of said plates and forming a sinuous path for the water moving through said passages from said inlet to said outlet with the initial series of water passages being greater in number than the next series which is in turn greater in number than the next series that communicates with the outlet opening.

4,201,264
SOLAR WATER TANK
Michael H. Platt, Corning, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jul. 31, 1978, Ser. No. 929,864
Int. Cl.[2] F28F 9/00
U.S. Cl. 165—162 8 Claims

1. A liquid heat exchange tank having a continuous sidewall and top and bottom head walls fastened together to define a fluid type chamber, an inlet through one of said walls, an outlet through one of said walls, and a continuous heat exchanger coil of tubing disposed inside said chamber, the tubing thereof being connected outside of said chamber through said inlet and outlet, respectively, adapted for circulation of a fluid media through said coil of tubing, the improvement therein comprising

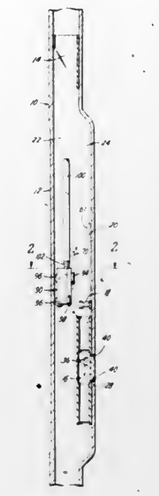
plural legs inside the said chamber for bracing the heat exchanger coil and supporting it against excessive movement in said chamber, said legs being flared outwardly near their opposite ends and their opposite ends engaging the interior of the tank adjacent a juncture point between

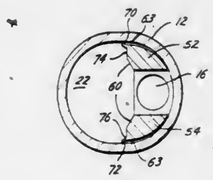


the sidewall and said top head wall and said bottom head wall, and
means for fastening each of said plural legs to the heat exchanger coil at locations that are spaced from each other, whereby the said heat exchanger coil is provided with longitudinal and transverse support inside the tank independent of the inlet, outlet connections of the coil along the tank walls.

4,201,265
SIDEPOCKET MANDREL AND METHOD OF MAKING
James M. Thomason, and Francis D. Logan, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.
Filed Jan. 11, 1979, Ser. No. 2,528
Int. Cl.[2] E21B 7/06
U.S. Cl. 166—117.5 6 Claims

1. In a sidepocket mandrel for use in a well tubing having a hollow body having an inside with an open bore extending therethrough and an offset bore, said body having an opening in communication with the offset bore, a valve pocket positioned inside the body and beside the body opening for receiving flow control devices, a deflector guide positioned in the offset bore above and connected to the pocket and having a pair of rails having longitudinal outer edges with a gap between the outer edges and the inside of the body and forming a guide path therebetween for allowing the entrance of flow control devices into said pocket but preventing the entrance of open bore tools into the guide path, a locking lug secured to the deflector guide, and an orienting sleeve positioned in the open bore, the improvement comprising,
the longitudinal outer edges of each of said rails adjacent the open bore having a deformable lip protruding outwardly from said rail,





said lips being bent outwardly towards the inside of the body for closing the gaps between the inside of the body and said rails.

4,201,266
ROTATABLE WASHER SELF-CLEANING HELICAL SPRING SCREEN AND METHODS
Reynaldo Calderon, and Billy H. Towell, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Nov. 2, 1978, Ser. No. 957,253
Int. Cl.[2] E21B 37/02, 43/08
U.S. Cl. 166—231 13 Claims

1. A method for assembling a self-cleaning helical spring screen that will simultaneously clean itself of foreign material between the coils of the helical spring screen in a well while producing filtered liquid from the well comprising the steps of,
(a) fixedly mounting a helical spring screen between both ends of a perforated screen housing,
(b) inserting a first cleaning washer means with a large opening therein between two coils at a first end of the helical spring screen, and
(c) rotatably mounting a controllable rod means of a substantially smaller circumference than the washer opening on top of the perforated screen housing for movement into the helical spring screen for connecting with the first cleaning washer means for rotating the cleaning washer means between the coils to a second end of the helical spring screen for cleaning the foreign material from between the coils and for simultaneously producing filtered liquid through the cleaning washer means large opening while sliding over the rod from the first end of the helical spring screen to its second end.

7. A self-cleaning helical spring screen for being cleaned of foreign material from between the coils of the spring screen in

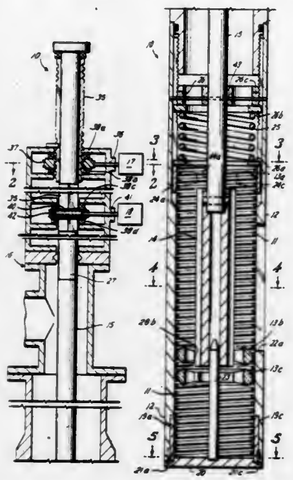
a well while simultaneously producing filtered liquid from the well comprising,

(a) helical spring screen means secured at its first and second ends in an elongated open screen housing,

(b) cleaning washer means having a large opening therein rotatably mounted between two coils at said first end of the helical spring screen means,

(c) controllable rod means having a substantially smaller circumference than said washer opening for moving into said helical spring screen means,

(d) said controllable rod means being responsive to a rod



extendible means for being extended into said helical spring screen means for engaging said cleaning washer means, and

(e) said controllable rod means being responsive to a rod rotating means for rotating said cleaning washer means between the coils from said first end to said second end of said helical spring screen means for cleaning the foreign material from between the coils and for simultaneously producing filtered liquid through said cleaning washer means large opening while sliding over the rod means from said first end of said helical spring screen means to its second end.

4,201,267

WILD WELL CONTROL METHOD AND APPARATUS

Louis H. Ramhorst, 538 W. McKinley, Blackwell, Okla. 74631

Filed Nov. 13, 1978, Ser. No. 959,690

Int. Cl.[2] E21B *33/03*

U.S. Cl. 166—315 **7 Claims**

1. A method for controlling uncontrolled fluid flow from an open cased well comprising:

(a) inserting a probe tool having an elongated lower cylindrical probe member slideably fitable inside the casing (the member having a seal circumscribing its diameter and a valve about its upper end) into the end of the casing such that the flow is shut off,

(b) fastening the valve to the end of the casing,

(c) withdrawing the probe, and

(d) shutting off the valve;

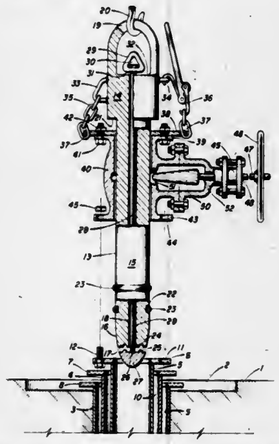
wherein the probe tool has an upper body member of sufficient diameter as to be uninsertable in the casing, wherein the upper body has attachment means for a lifting means therefor, wherein the probe member seal is about the lower circumference of the probe member and is adapted to provide a seal between the interior circumference of the probe member and the casing, and wherein the valve about the upper end of the probe member is situated about the seal and is adapted to be sealably fastenable to the upper end of the casing; wherein the probe tool has a bore along its vertical axis, a flattened shoulder at its lower end, a stem valve situated in the bore having an upper lifting attachment means, an elongated vertical stem, and a lower valve head sealable upon upward urging against the flattened shoulder at the lower end of the probe tool, the closed valve head and lower end of the probe tool defining a bullet shape; and wherein the upper body of the probe tool has attachment means for attaching a lifting mechanism adaptable for lifting a detachable valve carrier attached to the upper end of the valve.

3. Apparatus for closing off uncontrolled fluid flow from the casing of an open cased well comprising:

(a) a probe tool having an upper body member of sufficient diameter as to be uninsertable in the casing;

(b) the upper body having attachment means for a lifting means therefor,

(c) the tool having a lower cylindrically shaped, vertically elongated probe member of a diameter to be slideably fitable in the casing;



(d) the probe member having a sealing means situated about the lower circumference thereof, the sealing means adapted to provide a seal between the interior circumference of the casing and the exterior lower circumference of the probe means;

(e) situated about the upper portion of the probe member above the sealing means, a valve means having an open bore slideably fitable about the probe member and adapted to be sealably fitable to the upper end of the casing; wherein

the probe tool has a bore along its vertical axis, a flattened shoulder at its lower end, a stem valve situated in the bore having an upper lifting attachment means, an elongated vertical stem, and a lower valve head sealable upon upward urging against the flattened shoulder at the lower end of the probe tool, the closed valve head and lower end of the probe tool defining a bullet shape.

4,201,268

ADJUSTMENT MECHANISM FOR DOZER BLADE

Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 23, 1978, Ser. No. 953,827

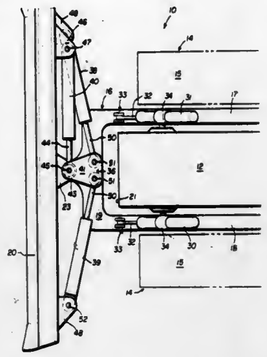
Int. Cl.[2] E02F *3/76*

U.S. Cl. 172—804 **12 Claims**

11. In an earth-working vehicle, a frame comprising a generally C-shaped structure having opposed arms, the free ends of said arms being connected to said vehicle, the other ends of said arms being connected by a transverse cross beam, a ground engaging blade, means for universally mounting said blade on the forward end of said transverse cross beam, the improvement comprising:

a vertical mast upstanding from said transverse cross beam,

an angling and pitching control for said blade including a pair of extensible and retractable piston-cylinders pivotally connected at one of their ends to said vertical mast at approximately mid-way of its longitudinal extent and their



opposed ends pivotally connected to respective sides of said blade,

said vertical mast being generally "f" shaped and the pivotal axes on said vertical structure for said pair of piston-cylinders are rearwardly of said blade universal mounting means.

4,201,269

IMPACT DEVICE WITH LINEAR SINGLE ACTING AIR SPRING

Frederick W. Ross, 755 Klamath Dr., Del Mar, Calif. 92014

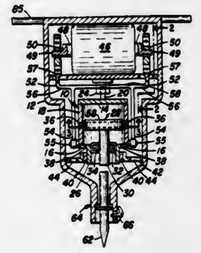
Division of Ser. No. 762,003, Jan. 24, 1977, Pat. No. 4,099,580.

This application Apr. 6, 1978, Ser. No. 894,093

The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.

Int. Cl.[2] E25B *15/00*

U.S. Cl. 173—1 **5 Claims**



1. The method of operating an impacting device of the type wherein a rotating crankshaft having at least one crank thereon actuates resilient coupler means mounted on a frame to drive ram means into impacting motion against impact tool means upon each rotation of the crankshaft, and the resilient coupler means comprises a single acting air spring including a vented cylinder mounted for reciprocation in the frame upon rotation of the crankshaft an end element enclosing only one end of the cylinder, and the ram means including a piston slidably mounted in the cylinder and arranged to close the vent and enclose an internal open space of variable volume in the cylinder upon each rotation of the crankshaft, wherein th method comprises:

for a selected frequency w_o of crankshaft rotation and a selected mass m of said ram means; providing a sufficiently short crank length and, in combination therewith, selecting the piston with sufficient cross-sectional area A normal to the path of piston motion and arranging the cylinder and vent location to enclose a substantially constant quantity of air of volume Ah at pressure p_i upon each enclosure of the internal open space by the piston during each cycle of crankshaft rotation to determine a ratio p_iA/h providing air spring stiffness k for said resilient coupler means of sufficient magnitude to limit piston travel toward said end element during impacting operation to the point in piston travel at which the minimum volume of said internal open space is 0.3 Ah thereby restricting such excursions within a range for which said air spring stiffness is substantially constant, and

further providing sufficient magnitude for said air spring stiffness k, in combination with said selected mass m, to provide a magnitude of natural frequency w_n of the air spring ram mass combination equal or sufficiently close to the selected frequency w_o of said rotating crankshaft to insure driving said ram means during impacting operation into reciprocating excursions greater than said sufficiently short crank length thereby inducing dynamic amplification of the motion of said ram means.

4,201,270

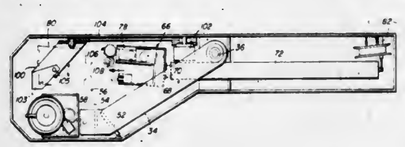
ROOF BOLTER

William A. Ribich, Lexington; Hans A. Hug, Weston, and Alfred H. Bellows, Belmont, all of Mass., assignors to Foster-Miller Associates, Inc., Waltham, Mass.

Filed May 15, 1978, Ser. No. 906,237

Int. Cl.[2] E21C *5/00*

U.S. Cl. 173—43 **10 Claims**



1. An operator controlled roof bolting system for drilling holes in the roof strata of a mine and for inserting roof bolts into the drilled holes while the operator is in a safe area, said system comprising:

(a) a frame with an outby operator's station;

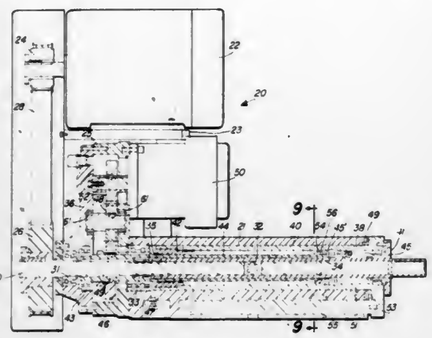
(b) roof drill means for drilling a hole in the roof strata, said roof drill means mounted to said frame for pivotal movement about an axis between a rest position and a working position;

(c) first means operatively connected to said roof drill means and said frame for pivotally moving said roof drill means about said axis between said rest position and said working position:

(d) roof bolt inserter means for inserting a roof bolt into a hole drilled in the roof strata by said roof drill means, said roof bolt inserter means mounted to said frame for movement between a retracted position and an extended position, said roof bolt inserter means including slide means mounted to said frame for pivoting movement about said axis; and

(e) second means operatively connected to said roof bolt inserter means and said frame for moving said roof bolt inserter means between said retracted position and said extended position, said roof bolt inserter means proximate to said operator's station when in said retracted position, whereby the operator can place a roof bolt in said roof bolt inserter means while remaining at said operator's station.

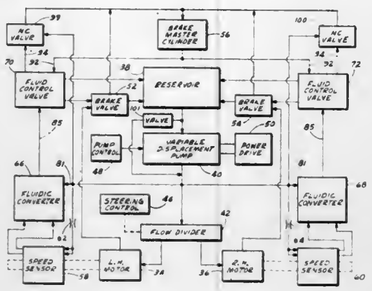
4,201,271
QUILL DRIVE WITH VARIABLE FEED
Larry Evans, 5222 Botsford, Sterling Heights, Mich. 48077
Filed Jul. 10, 1978, Ser. No. 923,459
Int. Cl.[2] B23Q *5/027, 5/033*
U.S. Cl. 173—146 **8 Claims**



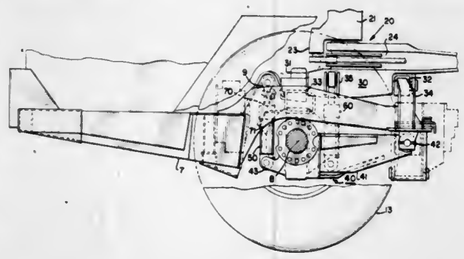
1. A quill drive with variable feed comprising:
a quill shaft slidably mounted for movement along its longitudinal axis;
a spindle shaft rotatably mounted for rotation with respect to said quill shaft and carried longitudinally by said quill shaft during its longitudinal movement;
a first motor drivably connected to an input shaft, said input shaft rotatably mounted within said spindle shaft;
said input shaft having disposed along its inner end a male spline;
said male spline drivingly engaging a female spline disposed at one end of said spindle shaft, said male spline providing rotational drive from said input shaft to the female spline of said shaft during the longitudinal movement of said quill shaft;
said quill shaft being of tubular construction and having attached thereto a ball nut as its inner end and within its inside diameter;
a ball screw threadingly engaging said ball nut, said ball screw being of tubular construction, the inside diameter of said ball screw tube surrounding but not touching the outer diameter of the inner end of said quill shaft, said ball screw extending inwardly a distance equal to the desired longitudinal travel of said quill; and
said ball screw being rotatably supported at its outer end and driven at its outer end by a variable speed, variable direction motor, the speed and direction of said variable speed and variable direction motor determining the direction and rate of feed of said quill.

4,201,272
INTEGRAL HYDRAULIC VEHICLE DRIVE SYSTEM
Lawrence L. Midolo, 1475 Black Oak Dr., Centerville, Ohio 45459
Filed Oct. 24, 1978, Ser. No. 954,944
Int. Cl.[2] B62D *11/04*
U.S. Cl. 180—6.48 **3 Claims**

1. A hydraulic drive and braking system for a vehicle comprising: a pair of wheel drive axles; means for supporting said drive axles; a pair of wheels secured to said drive axles; a pair of positive displacement hydraulic motors supported on said drive axle supporting means and connected to said drive axles; a variable displacement hydraulic pump; means for driving said pump; means for selectively controlling the output of said pump; means for connecting the output of said variable displacement pump to said hydraulic motors; means connected between the variable displacement pump and said motors for selectively dividing the output of the variable displacement pump to said hydraulic motors; means for selectively blocking the output of said hydraulic motors to thereby provide braking for the vehicle; said means for selectively blocking the output of said hydraulic motors including a master cylinder and a valve, in the output line of each of the hydraulic motors, responsive to an output from said master cylinder; means, responsive to the rotational speed of the drive axles for reducing the portion of the output of the master cylinder applied to the valves in the output lines of the hydraulic motors as the rotational speed of the drive axles approaches zero speed.

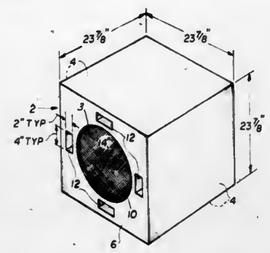


4,201,273
VEHICLE AXLE SUSPENSION SYSTEM
Hardin Joyce, Jr., Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.
Filed Mar. 6, 1978, Ser. No. 883,804
Int. Cl.[2] B62D *1/00*
U.S. Cl. 180—12 **15 Claims**



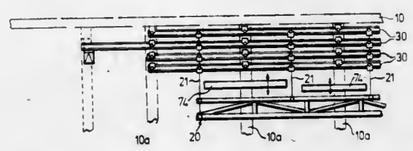
1. A vehicle suspension system for use with an articulated vehicle having a tractor portion carried on a tractor main frame and a trailer portion coupled thereto by a hitching connection which allows the vehicle portions to tilt relative to each other about a coincident axis extending longitudinally through the vehicle tractor and trailer portions comprising;
axle support means pivotally connected to a tractor main frame for supporting a pair of tractor drive wheels for vertical movement relative thereto,
fluid responsive cylinder means coupled between said axle support means and a tractor main frame to oppose and dampen vertical movement of said axle support means relative to said tractor main frame,
hitch connection means for connecting a tractor portion of an articulated vehicle with a trailer portion of said vehicle to allow relative tilt movement therebetween about a coincident axis extending longitudinally through said portions of said vehicle, and
fluid responsive cylinder means coupled between said axle support means and said hitch means to oppose and dampen tilting movement of said portions of said vehicle relative to each other.

4,201,274
SYMMETRICAL SPEAKER HAVING STRUCTURAL REINFORCING PORTS
Christopher F. Carlton, 16001 SW. 102 Ave., Miami, Fla. 33157
Filed Nov. 20, 1978, Ser. No. 962,562
Int. Cl.[2] H05K *5/00*
U.S. Cl. 181—156 **6 Claims**



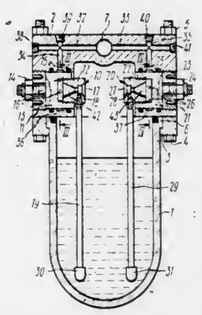
1. An enclosure body for housing a speaker, comprising,
—a cubicle hollow housing having six panels,
—said housing having uniform dimensions,
—one of said panels having a centrally disposed aperture formed therein,
—a speaker mounted within said enclosure body so that its vibratile diaphragm is in registration with said aperture,
—a plurality of rectangular ports having a major dimension and a minor dimension formed in said apertured panel in equi-distant, radial relationship,
—said major dimensions of said rectangular ports lying along the outer periphery of the apertured panel so that the ends of center axes along such major dimensions lie in an imaginery circle concentric with the circular aperture.

4,201,275
MEANS FOR THE RENOVATING AND REFURBISHING OF OVERHEAD STRUCTURES
Alexander S. Sinclair, Cheadle, and Barry C. Eccleston, Consett, both of England, assignors to A. Monk & Company Limited, Cheshire, England
Filed Oct. 18, 1977, Ser. No. 843,294
Claims priority, application United Kingdom, Oct. 20, 1976, 43429/76
Int. Cl.[2] E04G *3/12, 3/16*
U.S. Cl. 182—37 **3 Claims**



1. The method of treating a large span overhead structure which comprises:
(a) Securing beam trolley elements to ribs or frame members of the overhead structure at predetermined positions;
(b) Lifting runway beam sections and engaging same with the wheels of said trolley elements whereby said runway beams are displaceably associated with said ribs or frame members;
(c) Suspending lightweight mobile cradles from said runway beams;
(d) Adding further beam trolley elements to succeeding ribs or frame members utilising said mobile cradles;
(e) Lifting in further sections of runway beams and connecting same to the first sections;
(f) Repeating operations (d) and (e) until a sufficient number of ribs or frame members (depending upon the load to be supported) have been spanned by said runway beams;
(g) Lifting working platforms into operative proximity with the structure and suspending same from the runway beams via said beam trolley elements; and
(h) Treating succeeding sections of the overhead structure by alternately advancing the working platforms along the runway beams and the runway beams relative to the structure as required.

4,201,276
VORTEX-TYPE OIL MIST GENERATOR
Viktor P. Bardin, ulitsa Oktyabrskaya 17/3, kv. 43, Kolpino Leningradskoi oblasti; Evgeny A. Petrov, ulitsa Bela Kuna, 27, korpus 1, kv. 53, Leningrad; Viktor M. Rudelson, pereulok Makarenko, 3, kv. 32, Leningrad, and Jury L. Sternik, Zanevsky prospekt, 43, kv. 170, Leningrad, all of U.S.S.R.
Filed Nov. 2, 1978, Ser. No. 956,891
Int. Cl.[2] F16N *7/34*
U.S. Cl. 184—55 A **3 Claims**



1. A vortex-type oil mist generator comprising a first nozzle having tangential gas delivery channels to generate a rotating flow of gas, an oil delivery duct supplying the oil into the rotating flow of gas to create a rotating flow of oil mist, and an oil mist outlet; a second nozzle having tangential gas delivery channels to generate a rotating flow of gas, an oil delivery duct supplying the oil into the rotating flow of gas to create a rotating flow of oil mist, and an oil mist outlet; said outlet of said second nozzle facing said outlet of said first nozzle; said tangential gas delivery channels of said second nozzle being arranged so as to ensure the rotation of the oil mist flow exiting from said second nozzle outlet in the direction opposite to the direction of rotation of the oil mist flow exiting from said outlet of said first nozzle.

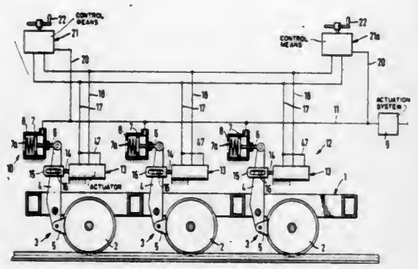
4,201,277
HYDRAULIC ACTUATION SYSTEM FOR A RAIL VEHICLE
Bruno Meier, Winterthur, and Otto Luginbuhl, Oberthal, both of Switzerland, assignors to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland
Filed Nov. 28, 1978, Ser. No. 964,361
Claims priority, application Switzerland, Nov. 28, 1977, 014531/77
Int. Cl.[2] F16D *65/56*
U.S. Cl. 188—196 D **16 Claims**

1. An hydraulic brake actuation system for a rail vehicle comprising at least one double-acting reciprocating actuator for selectively engaging and disengaging a brake, said actuator including
a cylinder;
a work piston slidably mounted in said cylinder to define a return cylinder chamber on one side and a work cylinder chamber on an opposite side thereof;
a screw-threaded spindle extending from said piston;

a reversible screw-threaded connection between said spindle and said work piston to permit rotation of said spindle relative to said piston;

a friction brake member mounted on said spindle, said member having rotatable brake surface thereon;

a release means including an insert in said cylinder having a stationary brake surface opposite said rotatable brake surface, and a disengaging piston slidably mounted in said insert to selectively move said friction brake member away from said insert and to define a disengaging cylinder chamber in said insert, said disengaging piston being disposed in facing relation to said rotatable brake member to separate said disengaging cylinder chamber from said work cylinder chamber; and



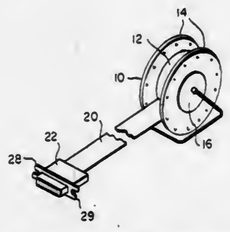
a relief valve between said disengaging cylinder chamber and said work cylinder chamber, said valve being movable between a closed position for blocking communication between said disengaging cylinder chamber and said work cylinder chamber with said brake surfaces in spaced relation and an open position for communicating said disengaging cylinder chamber with said work cylinder chamber with said brake surfaces in contact with each other.

4,201,278

PORTABLE ELECTRICAL CABLE INTERCONNECTION ASSEMBLY

Dan R. Balde, Flemington, N.J., assignor to db Systems Ltd., Flemington, N.J.

Filed Aug. 2, 1978, Ser. No. 930,231
Int. Cl.² H02G *11/02*
U.S. Cl. 191—12.4 **7 Claims**



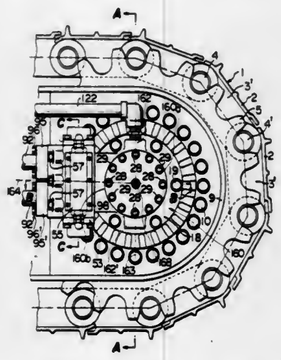
1. An electrical cable assembly comprising a rotatable reel including a drum mounted between a pair of side plates, and a flat, wire-containing cable adapted for being wound onto and from the drum, the outer end of said cable terminating in a first connector member providing electrical access to the wires of said cable, said connector member having a pair of ears extending in opposite directions, the distance from end to end of said ears being greater than the distance between said side plates, and each of said side plates having a number of openings therethrough spaced thereabout, each opening in one of said side plates being aligned with a corresponding opening in the other of said side plates, and said ears being dimensioned to fit within any of said aligned pairs of openings for locking said cable to said reel.

4,201,279

DRIVE CONTROLLING MECHANISM

Kiyozumi Fukui, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan

Division of Ser. No. 750,537, Dec. 14, 1976, Pat. No. 4,114,737.
This application May 5, 1978, Ser. No. 903,043
Claims priority, application Japan, Dec. 18, 1975, 50-171224[U]
Int. Cl.² B60T *17/04*; B60R *3/02*; F01B *13/06*
U.S. Cl. 192—3 N **9 Claims**



1. A drive controlling mechanism comprising in combination:

a hydraulic motor including a cylinder block, a rotary shaft extending axially of and positioned within said cylinder block, and rotating means operable to rotate said rotary shaft and having a pair of actuation ports through which fluid under pressure is introduced to rotate said rotary shaft;

a motor housing accommodating therein said hydraulic motor to define a drain chamber therebetween and opened at its axially inner end for facilitating the accommodation of said hydraulic motor in said motor housing;

an operative block assembly securely connected with said motor housing to close said axially inner end of said motor housing and having an axial through bore to rotatably receive said rotary shaft;

a parking brake arrangement including a hydraulic chamber formed in said operative block assembly to allow said rotary shaft to be projected therein in axial alignment therewith, a movable member slidably received in said hydraulic chamber to hydraulically be movable toward and away from said rotary shaft, and brake means provided in said hydraulic chamber to cause said rotary shaft to be engageable with and disengageable from said operative block assembly for braking and releasing said rotary shaft upon movement of said movable member;

a control valve arrangement provided to control rotation of said hydraulic motor and actuation of said parking brake arrangement;

a pair of inlet-outlet passages connecting said actuation ports of said rotating means of said hydraulic motor and said control valve arrangement;

a control conduit arrangement including a first control conduit having one end in fluid communication with said control valve arrangement and a second control conduit having one end in fluid communication with said hydraulic chamber and the other end opened at the longitudinally intermediate portion of said first control conduit where the other end of said second control conduit is opened and a shuttle valve is provided so as to permit fluid under pressure to be introduced into said hydraulic chamber from said control valve arrangement through said first and second control conduits and to permit fluid under pressure to be discharged from said hydraulic chamber through said first and second control conduits; and

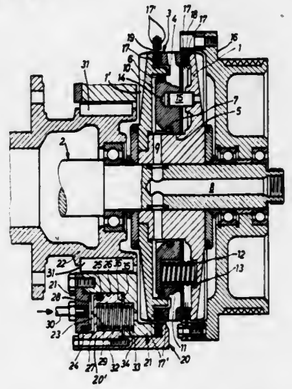
a drain passage arrangement having one end in fluid communication with the other end of said first control conduit and the other end in fluid communication with said drain chamber to allow fluid under pressure discharged into said first and second conduits from said hydraulic chamber to be introduced into said drain chamber.

4,201,280

CLUTCH-BRAKE UNIT FOR THE MAIN SHAFT OF A LOOM

Ernst Gattiker, Arbon, Switzerland, assignor to Adolph Saurer Limited, Arbon, Switzerland

Filed Apr. 28, 1978, Ser. No. 901,076
Int. Cl.² F16D *11/06*
U.S. Cl. 192—18 A **5 Claims**



1. Clutch-brake apparatus for the main shaft of a loom which includes a disconnectable friction coupling disposed between said main shaft and a driving motor, said apparatus comprising:

brake means rigidly connected to a frame portion of said loom;

a slidable pressure-piece having a first extreme position in which frictional engagement between the main shaft and the driving motor is effected;

said pressure-piece having a second extreme position in which frictional engagement between the main shaft and said brake means is effected; and

means operative to release said brake means without alteration of said second position of said pressure-piece.

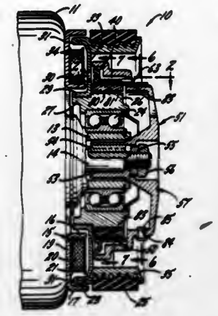
4,201,281

ELECTROMAGNETIC CLUTCH HAVING A CONTRACTIBLE FRICTION SHOE

J. G. Fraser MacDonald, Rockford, Ill., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed May 22, 1978, Ser. No. 908,354
Int. Cl.² F16D *13/08, 27/10*
U.S. Cl. 192—35 **11 Claims**

1. A normally disengaged clutch comprising a rotatable driving member having a hub, a driven member rotatable about the same axis as the driving member, a radially contractible shoe surrounding said hub, resiliently yieldable coupling means connecting said shoe and said driven member for rotation in unison, said coupling means enabling radial contraction of said shoe around said hub and normally holding said shoe out of radial engagement with said hub, a helically coiled spring telescoped over said shoe and having one end secured to said driven member to rotate with the latter, means associated with said driving member and selectively operable to cause the opposite end of said spring to rotate with said driving member thereby to cause said spring to wrap down on said shoe and contract said shoe radially into frictional gripping engagement



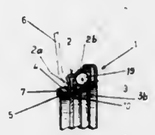
with said hub to transmit torque (1) from said hub to said shoe (2) from said shoe to said coupling means and (3) from said coupling means to said driven member.

4,201,282

CLUTCH RELEASE ASSEMBLY AND BEARING THEREFOR

Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 23, 1977, Ser. No. 809,208
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 7621572[U]
Int. Cl.² F16D *19/00*; F16C *19/10*
U.S. Cl. 192—98 **14 Claims**



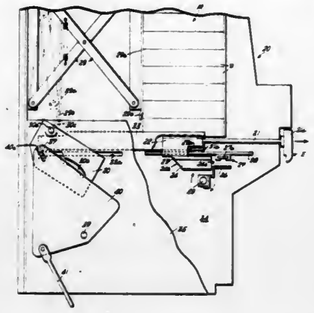
1. In a clutch throw-out device having a clutch bearing with first and running bearing ring means defining bearing races, at least a portion of said races being radially spaced apart, and rolling elements positioned in said races between said ring means and inhibiting relative radial displacement therebetween, diaphragm or dished clutch release spring means axially engaging said running bearing ring means, whereby radial play may exist between said clutch release spring means and said running bearing ring means, said running bearing ring means having an axially extending portion extending through a central bore in said clutch release spring means; the improvement comprising a damping member mounted radially between said axially extending portion of said running bearing ring means and said clutch release spring means.

4,201,283

PILFERAGE PROTECTION FOR SATELLITE VENDING MACHINE HAVING DUAL PRICING CAPABILITY

Philip F. Jacobs; Evelyn Friedman; Peter Southall, and William Carswell, all of Whitehall, N.Y., assignors to E. B. Metal Rubber Industries, Inc., Whitehall, N.Y.

Filed May 31, 1978, Ser. No. 911,223
Int. Cl.[2] G07F 11/20
U.S. Cl. 194—1 A 18 Claims



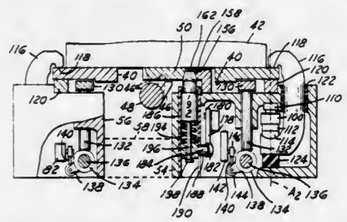
3. The combination of a parent vending machine with a satellite machine mounted thereon, a plurality of ejectors on each machine for selective manual pullout and return actuation thereof to dispense articles stored in the respective machine, a latch mechanism in each machine for locking and releasing the ejectors of the respective machine, a coin-actuated totalizer unit located in the parent machine having a latch release means adapted to unlatch the latch mechanism of the parent machine as a function of coin deposit in the parent machine, a linkage between said parent and said satellite latch mechanism for operating the satellite latch mechanism under direct control of the latch mechanism of the totalizer unit in the parent mechanism, and means, independent of said linkage, for normally maintaining unlatched said satellite latch mechanism and being responsive to pullout movement of a satellite ejector on predetermined coin deposit in the parent machine to release the satellite latch mechanism for positioning by said linkage in response to the positioning of the parent latch mechanism.

4,201,284

PALLET REGISTRY SYSTEM

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed Nov. 2, 1978, Ser. No. 957,300
Int. Cl.[2] B65G 47/00
U.S. Cl. 198—345 34 Claims



1. In a multiple station transfer machine in which workpieces are located and supported in pallets, and in which said pallets are sequentially moved along a transfer line and precisely located in each station for a work operation, that improvement which comprises:

(a) a registry frame,

(b) support means for pallets at each station on said frame,

(c) two fixed spaced lateral locator surfaces on said frame at each station,

(d) two fixed lateral locator surfaces on each pallet spaced similarly to those on the frame,

(e) a first lateral force application surface on said frame spaced between said locator surfaces on said frame and a predetermined distance away from a line connecting said locator surfaces,

(f) a second lateral force application surface on each said pallet located to register substantially with said first lateral force application surface when a pallet is brought to a particular station,

(g) each said lateral force application surface presenting non-parallel spaced areas angled with respect to each other and angled obliquely with respect to the line connecting said locator surfaces, and

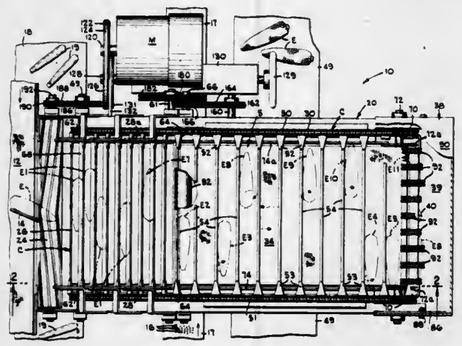
(h) means to interfit complementally with said spaced areas of said first and second lateral force application surfaces and movable into engagement with said first and second surfaces to move said force application surfaces with respect to each other to move a pallet into a proper registry position wherein said lateral locator surfaces of said frame and a pallet are in positive contact, and said first and second force application surfaces are positioned in desired final registration with respect to each other.

4,201,285

AUTOMATIC CORN CUTTER FEEDER

Neal C. Chamberlain, Hoopeston, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Jul. 14, 1976, Ser. No. 705,374
Int. Cl.[2] B65G 47/24
U.S. Cl. 198—400 6 Claims



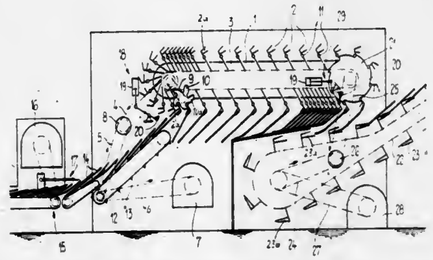
1. A feeder for feeding tapered elongate articles of varying length, such as ears of corn, to processing apparatus such as a corn cutter; said feeder comprising means for feeding individual articles at random end to end orientation to a preorienting conveyor; said preorienting conveyor having laterally spaced side walls and comprising means for simultaneously advancing individual articles with their axes in generally parallel relation along a path normal to the axes of the articles while shifting the articles along their axes toward the side walls to form two lanes with the smaller ends of the articles in one lane pointing in a direction opposite to that of the smaller ends of the articles in the other lane, and with the articles in one lane being staggered longitudinally of their path relative to the articles in the other lane, means for successively dropping the preoriented articles of each lane from the delivery end of said preorienting conveyor for gravity fall while their axes are disposed generally horizontally, and a downwardly inclined slide plate for receiving said falling articles, the improvement wherein said slide plate has downwardly directed, angularly diverging deflector plates with the vertex of their angle of divergence being substantially at the midplane of said slide plate, said deflector plates successively intercepting one end portion of the articles of each lane while accommodating continued sliding motion of said one end portion along the deflector and slide plates, the other, non-intercepted end portion of each article sliding freely down the slide plate to a position below its intercepted end portion, said slide plate having converging side walls for deflecting said other ends of the articles toward the midplane of the slide plate as the articles slide down off said deflector plates, said converging sidewalls bringing the articles into single file, end to end orientation with the smaller ends pointing in the same direction, said slide plate having an uninterrupted surface for supporting the sliding articles during said orientation, and conveyor means for receiving the oriented articles of both lanes from a lower portion of the slide plate and delivering them in end to end relationship to processing apparatus.

4,201,286

APPARATUS FOR THE INDIVIDUAL CONVEYING OF PRINTED PRODUCTS ARRIVING IN AN IMBRICATED PRODUCT STREAM

Jacques Meier, Gossau, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 22, 1978, Ser. No. 908,538
Claims priority, application Switzerland, Jun. 6, 1977, 6921/77
Int. Cl.[2] B65H 29/04
U.S. Cl. 198—461 10 Claims



1. An apparatus for individually conveying printed products arriving in an imbricated product stream, comprising:

a number of driven controlled grippers;

means for revolvingly driving and guiding said number of given controlled grippers in a closed path of travel for engaging the leading edge of the printed products;

said means for driving said grippers containing means for temporarily restraining the movement of the grippers;

said gripper drive means having at least one continuously driven sluice for the cycled recall of the restrained grippers;

an endless revolving conveyor element equipped with entrainment members engaging the trailing edges of the products operatively associated with said sluice;

said entrainment members being provided at a substantially uniform spacing at the conveyor element;

means for driving the conveyor element in cycle as concerns the entrainment members thereof with the sluice and opposite in sense to the sense of revolving movement of the grippers;

an infeed device having a drive means;

said sluice having a drive means; and

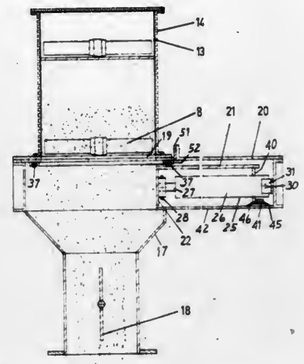
a synchronous control for operatively coupling the drive means of the infeed device with the drive means of the sluice.

4,201,287

DRAG CHAIN CONVEYOR

Paul Straub, and Heinrich Jost, both of Oberuzwil, Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,665
Claims priority, application Switzerland, Dec. 14, 1977, 15359/77
Int. Cl.[2] B65G 47/19
U.S. Cl. 198—530 3 Claims



1. Drag chain conveyor apparatus, comprising

(a) a conveyor having a floor with at least one bulk material discharge opening therein,

(b) discharge housing means, including a downwardly extending pipe, mounted under said floor, around said discharge opening,

(c) said discharge housing means having an aperture in a side wall thereof,

(d) a sealed slide box mounted outside said discharge housing means on said side wall thereof, over said aperture,

(e) a slide plate having a first generally horizontally extending portion adapted to seal said discharge opening in a first position thereof, and a second generally vertically extending portion thereof, and

(f) means for selectively moving said slide plate either to said first position beneath said discharge opening to block the flow of bulk material through said discharge opening, or to said second position in said slide box to permit discharge through said opening while sealing said aperture;

wherein said slide plate is a generally L-shaped member having said second portion at one end thereof, wherein a downwardly directed end cover is mounted near an opposite end thereof, and wherein a resilient wiper is mounted on a bottom edge of said end cover to engage a lower wall of said slide box during movement of said slide plate toward said first position.

4,201,288

LINK CHAIN CONVEYOR ASSEMBLY

Pieter van Capelleveen, Zeist, Netherlands, assignor to Gebr. van Capelleveen B.V., Netherlands

Filed Mar. 6, 1978, Ser. No. 883,974
Claims priority, application Netherlands, Mar. 8, 1977, 7702497; Jan. 19, 1978, 7800640
Int. Cl.[2] B65G 21/18
U.S. Cl. 198—778 11 Claims

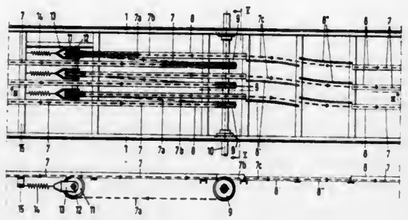
1. A link chain conveyor assembly for transporting dough pans through a proofing chamber and the like, and comprising:

a substantially helically-shaped, continuous track assembly made up of a plurality of parallel, substantially straight track sections forming a plurality of vertically spaced levels of said conveyor assembly, wherein each pair of straight track sections positioned on adjacent levels is

interconnected by a further curved track section sloping therebetween;

each of said straight and curved track sections including a pair of spaced side wall portions interconnected by at least one connecting member and each of said substantially straight track sections further including a drive shaft extending between said spaced side wall portions, with at least one pocket sheave fixedly mounted on each drive shaft;

an endless link chain assembly positioned between the spaced side wall portions of said track sections and sup-



ported on said connecting members, with a portion of endless link chain extending about a portion of at least one of the pocket sheaves mounted between the side walls of each of the substantially straight track sections, whereby rotation of said drive shafts and said attached pocket sheaves results in movement of said link chain along said continuous track assembly; and

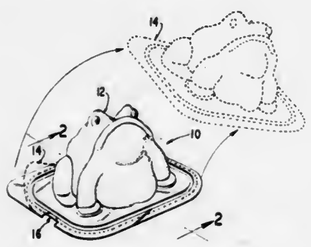
tensioning means mounted between the spaced side walls of each of said straight track sections for engaging and tensioning a portion of said link chain extending between a pair of adjacent pocket sheaves.

4,201,289

PRIMARY PACKAGE FOR A SPACE AIR TREATING DEVICE

Frank J. Mack, Kinnelon, and Walter M. Ronayne, Westfield, both of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,193
Int. Cl.² B65D *85/70*
U.S. Cl. 206—0.5 **4 Claims**



1. A combination mold and primary package for a space air treating device comprising:

A. an outer shell having

1. a cavity formed in its center in a predetermined pattern which is a replica of the shape of the space air treating device;
2. a flange surrounding said cavity;
3. sealing means defined in said flange entirely around said cavity;

B. an inner core extending into said outer shell and having

1. a cavity formed in its center, said cavity being smaller than said outer shell cavity, and with said outer shell defining a chamber;
2. a plurality of undercuts defined on the chamber side of said cavity;
3. a flange surrounding said cavity;
4. sealing means defined in said flange entirely surrounding said cavity and cooperating with said outer shell sealing means to form a liquid tight seal; and

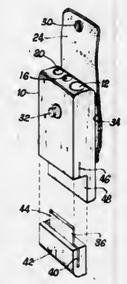
C. a hollow, space air treating device formed of a solid material disposed in said chamber and filling said predetermined pattern whereby said air treating device may be stored with said outer shell and inner core sealed together and may be activated by the removal of said outer shell.

4,201,290

CARRYING CASE FOR HERBS AND MEDICINE

Henry L. Madden, 1442 Oakdale, Shreveport, La. 71108

Filed Dec. 6, 1978, Ser. No. 966,942
Int. Cl.² A45C *15/00*; B65D *69/00*
U.S. Cl. 206—38 **3 Claims**



1. a carrying case for herbs and medicines comprising:

(a) a substantially solid block;

(b) a plurality of wells defined in said block to define spaces for medicinal treatment implements and containers;

(c) one side of said block having a flat, smooth surface thereon for use as a sorting and separating surface for medicinal particulates;

(d) said block defining a slot and including a straight edged divider blade removably retained in said slot for use in sorting and separating substances on said surface said blade having a handle releasibly retaining said blade and said handle being shaped to define a continuous uninterrupted surface with adjacent external surface portions of said block;

(e) a flexible flap mounted along one edge to said block and having a terminal fastener at one edge opposite said one edge to releasibly fasten to a portion of said block; and

(f) said flap being mounted and dimensioned such that when said terminal fastener is fastened said flap is extended substantially flush over said sorting surface to protect same and said wells to provide a cover for same.

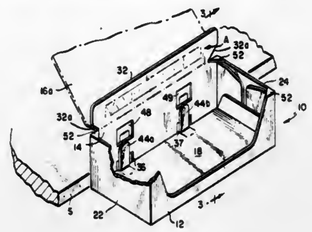
4,201,291

DISPLAY CARTON

Thomas L. Davidson, Uncasville, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Jan. 2, 1979, Ser. No. 136
Int. Cl.² B65D *5/64*
U.S. Cl. 206—44 R **7 Claims**

1. An improved display carton comprising top and bottom wall panels, front and rear wall panels, and a pair of end wall panels all hinged together to form a generally rectangular enclosure, said carton rear wall being formed of a plurality of plies, means adhering said plies together to form a relatively tear-resistant laminated wall structure, means defining one or more bracket-receiving openings in said carbon whereby said carton may be supported by way of its said rear wall, means defining a tear line extending over a portion of said carton around a closed path to facilitate the complete removal of at least a portion of said carton top wall so as to expose the contents of said carton, and a carton flap connected to one of said rear wall plies underneath said top wall so that when said



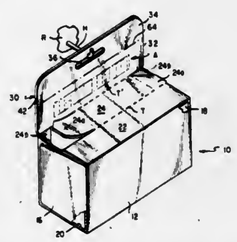
top wall portion is removed, said flap projects up out of the carton and stands more or less coplanar with the wall ply to which it is connected.

4,201,292

DISPENSER CARTON

Thomas L. Davidson, Uncasville, and Charles F. Gonet, Voluntown, both of Conn., assignors to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Jan. 12, 1979, Ser. No. 3,542
Int. Cl.² B65D *5/64*
U.S. Cl. 206—44 R **6 Claims**



1. In a dispensing carton including hinged-together panels defining a carton front wall, rear wall, bottom wall and a pair of end walls, the improvement comprising

A. a completely closed carton top wall,

B. means in the carton top wall to facilitate removing at least a section of the carton top wall from said carton to provide an opening into the carton,

C. said rear wall including a support panel projecting up at the junction between the carton rear wall and the carton top wall, said support panel including a lower portion whose dimensions correspond substantially to the removable section of the carton top wall and an upper portion hinged to the lower portion so that, when the removable wall section is removed, the opening left thereby can be closed by folding down the lower support panel portion over the opening with the upper support panel portion projecting through the opening into the carton.

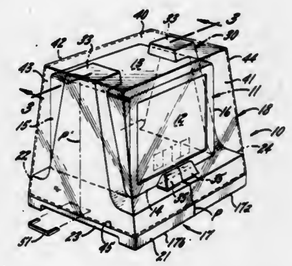
4,201,293

PACKAGE FOR PROTECTION AND DISPLAY OF CLOCKS AND THE LIKE

Anthony W. Rigazio, Oglesby, and Allen Rubin, Highland Park, both of Ill., assignors to Spartus Corporation, Skokie, Ill.

Filed Jan. 15, 1979, Ser. No. 3,705
Int. Cl.² B65D *5/50, 25/10, 25/54, 81/06, 85/40*
U.S. Cl. 206—45.19 **19 Claims**

1. In a package for protection and display of an object such as a clock, the combination comprising a flat base having a central supporting area and having front, back and lateral edges, the base having integral therewith narrow pedestals including vertical portions which extend upwardly along the lateral edges of the base, the pedestals having respective overhanging portions extending horizontally inwardly at the top thereof, the inside spacing between the vertical portions of the pedestals being substantially the same as the lateral dimension of the object, the inside height of the overhanging portions being substantially the same as the height of the object, spaced locating means including an embossment on the base defining the front-to-back dimension of the supporting area and spaced inwardly with respect to the front and back edges of the base, the spacing between the locating means being substantially the same as the depth dimension of the object so that the object is held captive and cradled against movement in any direction with respect to the base, the base having a vertical parting



plane permitting separation of the base into two halves for insertion of the object into seated position therebetween, the two halves being each integrally formed of resilient foamed plastic, an inverted cup-shaped shell of transparent plastic having a lower edge conforming to the profile of the base and having sufficient head room as to accommodate the pedestals, the lower edge of the shell being in snug area-engagement with the base and the inner wall of the shell being in mutually supportive area-engagement with the pedestals so that when the shell is applied the two halves of the base are clamped together with the object captive between them yet substantially in full view, and means for temporarily securing the shell to the base to discourage disassembly of the shell from the base and tending to insure that the object is viewed only through the shell and remains untouched and in new condition until the time of sale.

4,201,294

HAND LOCKED DISPLAY CARTON AND BLANK THEREFORE

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 7, 1979, Ser. No. 36,373
Int. Cl.² B65D *75/02, 65/16*
U.S. Cl. 206—45.14 **22 Claims**

1. A hand locked display carton for an elongated bottle having at one end a cap, while the other end thereof is a closed base portion, wherein the width and length of the carton are of greater width and length than the bottle and cap portion, with said carton providing an unobstructed view of two opposed sides of the bottle, said carton comprising:

an upper display panel;

two inclined panels hingedly connected to said upper display panel, each inclined panel including an upper aperture therein which substantially corresponds to the configuration of said cap portion of the bottle such that the cap portion of said bottle is engaged in said upper apertures to prevent lateral movement of the cap of the bottle within said carton;

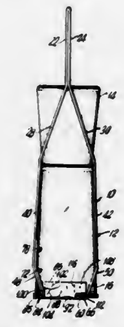
two main display panels respectively hingedly connected to the two inclined panels, with the inner surfaces of said main display panels abutting the front and rear sides of said bottle, said front and rear sides of said bottle being

orthogonal relative to the exposed opposed sides of the bottle;

first and second lower support panels hingedly connected to the main display panels, each of said lower support panels having a lower aperture therein such that the lower portions of the front and rear sides of said bottle project through and are engaged in said lower apertures to prevent lateral movement of the lower end of said bottle within said carton;

an inner bottom panel, hingedly connected to the second lower support panel, the upper surface of said inner bottom panel abutting the bottom of the bottle, said inner bottom panel including two locking flanges disposed adjacent the second lower support panel; and

a generally rectangular outer bottom panel hingedly con-



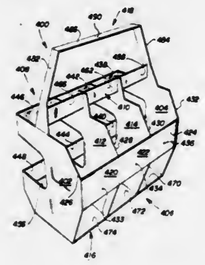
nected along one side thereof to the first lower support panel and disposed directly beneath said inner bottom panel, said outer bottom panel including two generally rectangular flanges hingedly connected along the other opposed side edges thereof, with the hinge connection, between each said generally rectangular flange and the outer bottom panel, extending perpendicularly from the hinge line disposed between the first lower support panel and the outer bottom panel to a point intermediate the length of the outer bottom panel, with the remaining distance along said perpendicular line defining a locking cut line, said generally rectangular flanges being disposed upright and generally perpendicular relative to said outer bottom panel such that said locking flanges engage said rectangular flanges along the locking cut lines thereby locking the carton in the closed position.

4,201,295

PLASTIC COLLAPSIBLE ARTICLE CARRIER

Paul J. Morcom, Rte. 1, Box 235, Henderson, Tex. 75652

Division of Ser. No. 667,679, Mar. 17, 1976, Pat. No. 4,113,087.
This application Apr. 24, 1978, Ser. No. 899,258
Int. Cl.[2] B65D *85/30*
U.S. Cl. 206—174 **6 Claims**



1. A plastic collapsible article carrier having open and closed positions and adapted to be formed by injection molding of plastic within opposing dies comprising:

first and second end walls parallel to one another when the carrier is in the open position;

first and second side walls parallel to one another and hingedly joined to edges of said first and second end walls to extend perpendicularly to said first and second end walls when the carrier is in the open position, portions of said side walls having heights less than the height of said end walls and portions of said first side wall being vertically spaced from portions of said second side wall, such that portions of said first side wall are disposed vertically intermediate from portions of said second side wall to enable molding thereof in opposed dies;

first and second dividing walls, parallel to one another and parallel to said end walls, said first and second dividing walls being hingedly joined at spaced locations to said first and second side walls and being disposed between said first and second side walls to form a plurality of receiving cellular compartments between said first and second side walls within the collapsible article carrier;

said second side wall comprising:

first upper and lower vertical strip members vertically displaced from one another and hingedly joined to and extending between edges of said first end wall and said first dividing wall;

second upper and lower vertical strip members vertically displaced from one another and disposed adjacent to said first upper and lower vertical strip members, said strip members hingedly joined to and extending between edges of said first dividing wall and said second dividing wall; and

third upper and lower vertical strip members vertically displaced from one another and disposed adjacent to said second upper and lower vertical strip members, said strip members hingedly joined to and extending between edges of said second dividing wall and said second end wall;

a medial wall being hingedly joined to said first and second end walls and disposed between and parallel to said first and second side walls and portions of said medial wall being vertically disposed above and below portions of said second side wall; and

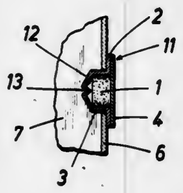
a bottom member hingedly joined to edges of at least one of said walls, wherein the collapsible article carrier may be folded about said hinged joints to a flat collapsed position and folded to the open position to form a plurality of open ended cellular compartments for receiving articles.

4,201,296

PRESERVATIVE FOR FILM

Heinrich Hrabik, Linz, Austria, assignor to Bonum-Werk Inhaber Friedrich Hetzmannseder, Linz, Austria

Filed Oct. 2, 1978, Ser. No. 947,533
Claims priority, application Austria, Aug. 7, 1978, 5704/78
Int. Cl.[2] B65D *81/24, 85/67*
U.S. Cl. 206—205 **7 Claims**



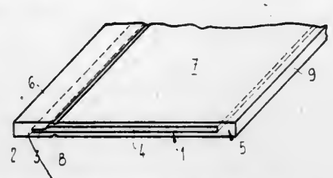
1. A preservative for protecting a film reel in a magazine, which comprises a capsule and a tablet containing compacted camphor powder, the tablet being sealed in the capsule.

4,201,297

PACKAGE ARRANGEMENT FOR A DOCTOR BLADE, ESPECIALLY FOR AN INTAGLIO OR GRAVURE PRINTING DOCTOR

Max Dätwyler, Bleienbach, Switzerland, assignor to Max Dätwyler & Co., Bleienbach, Switzerland

Filed May 21, 1979, Ser. No. 41,237
Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823603
Int. Cl.[2] B65D *85/54*
U.S. Cl. 206—349 **16 Claims**



1. A packaging arrangement for at least one doctor blade, especially for gravure printing, having at least one work edge at one longitudinal side thereof, comprising:

enclosure means surrounding at least part of said doctor blade;

said enclosure means having a portion covering the work edge of the doctor blade; and

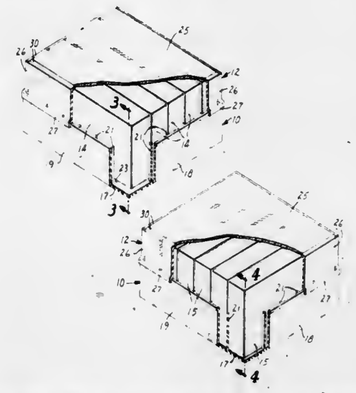
means defining a separation location for disconnectingly joining said covering portion of the enclosure means with a remaining portion of said enclosure means, so that upon disconnection of said covering portion the work edge of the doctor blade is exposed while the remaining portion of the enclosure means remains at the doctor blade.

4,201,298

STORAGE CASE

Donald A. Larson, Circle Pines, Minn., and Theodore J. Reichert, Turtle Lake, Wis., assignors to Hartzell Manufacturing, Inc., St. Paul, Minn.

Filed Feb. 14, 1979, Ser. No. 11,799
Int. Cl.[2] B65D *85/30*
U.S. Cl. 206—387 **4 Claims**



1. A storage case for two different sizes of rectangular objects, comprising:

a rectangular base having a rectangular end wall and rectangular side walls extending generally perpendicularly from said end wall a distance less than the height of the rectangular object having the greater height, a first pair of opposed side walls being spaced a distance generally equal to the length of a first of the rectangular objects and the second pair of opposed side walls being spaced a distance generally equal to the length of the second of the rectangular objects,

a plurality of ribs extending from the interior of said side walls, the length of said ribs running perpendicular to said end wall of said base and each rib being aligned with a rib on the opposed side wall, said ribs on the first pair of opposed side walls being spaced apart a distance generally equal to the width of the first rectangular object and said ribs on the second pair of opposed side walls being spaced apart a distance generally equal to the width of the second rectangular object, each rib adjacent an end of a said side wall being spaced from a plane connecting the free ends of the ribs on the adjacent side wall a distance equal to the spacing between said ribs on said side wall,

a plurality of ribs extending from the interior of said end wall of said base a distance equal to the difference in height between the rectangular objects, said end wall ribs running between the opposed side wall ribs on the pair of opposed side walls spaced apart the length of the rectangular object having the greater height, and

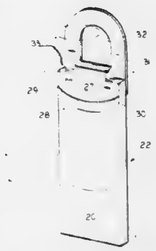
a rectangular cover having a rectangular end wall with generally the same dimensions as said base end wall and rectangular side walls extending generally perpendicularly from said cover end wall to align with said base side walls, said cover side walls extending from said cover end wall a distance equal to the difference between the height of the rectangular object having the greater height and the height of said base side walls, the edges of said cover side walls being formed to mate with the edges of said base side walls to position said cover on said base.

4,201,299

BAG

Robert L. Bumgarner, 7505 SW. 82 St., and Arthur O. Knutson, 1164 SW. 67th Ave., both of Miami, Fla. 33143

Filed Jun. 6, 1978, Ser. No. 913,200
Int. Cl.[2] B65D *85/62*
U.S. Cl. 206—554 **15 Claims**



1. A plastic bag comprising an elongated tubular, thin plastic film member which has two opposed sides, is closed on one end, and has at least one open edge on the other end, and hang means comprising a horizontally oriented slit means formed through both sides of the thin plastic film member and near the open edge at the other end thereof, for hanging the bag on an object, said slit having a length which is large enough to fit over the object and being surrounded by an unbroken area of film.

4,201,300

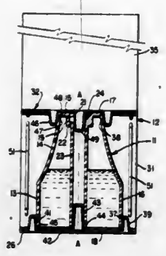
CAPSULE PACKAGE

Richard J. Klingaman, Darien, Conn., and Arthur V. Boyce, Jr., New York, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 734,903, Oct. 22, 1976, abandoned.
This application Jul. 5, 1978, Ser. No. 922,089
Int. Cl.[2] B65D *5/50*
U.S. Cl. 206—45.19 **7 Claims**

1. A package comprising a sealed closed liquid filled con-

tainer having axially aligned top and bottom tubular recesses, and a surrounding open-ended carton having top and bottom walls integrally formed with annular ribs projecting toward each other from the inner surfaces of said top and bottom walls and defining aligned opposed internally open wells extending peripherally around and receiving and confining the top and



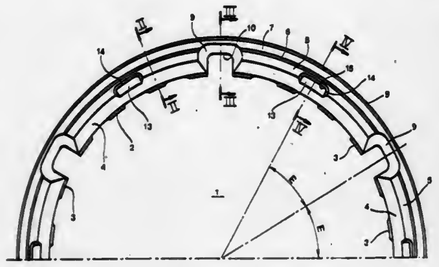
bottom respectively of said container, said wells containing integral coaxial posts surrounded by said ribs and projecting toward each other internally of the carton and of such size as to snugly enter said top and bottom recesses in the confined container, and said carton being formed from a single elongated strip of relatively stiff sheet material having a succession of carton wall sections joined by transverse hinge regions.

4,201,301

CONTAINER FOR THE TRANSPORT OR STORAGE OF FOOD, PARTICULARLY PIZZA

Giordano Aggio, 163/1, Via S. Faustino, 41100 Modena, Italy

Filed Mar. 14, 1979, Ser. No. 20,473
Claims priority, application Italy, Mar. 14, 1978, 40040 A/78
Int. Cl.[2] B65D *21/00, 85/72, 102/26*
U.S. Cl. 206—507 9 Claims



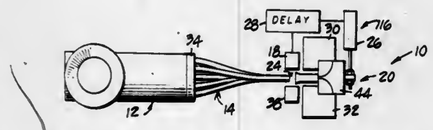
1. Container for the transport or storage of food, comprising:
a side wall shaped as a truncated cone or truncated pyramid with any chosen number of sides, growing narrower towards the bottom;
a bottom wall connected to the lower end of said side wall; and
a projecting upper grip and stiffener rim extending from the top of said side wall, said rim having a peripheral edge;
wherein said side wall includes:
a small peripheral step therein below and inside of the upper level of said peripheral rim, said peripheral step protruding to the outside compared to the portion of said side wall therebelow;
a plurality of first niches therein interrupting said peripheral step at intervals of constant width, which first niches grow narrower towards the bottom, the walls of said first niches originating at the upper level of said rim and extending to said bottom wall, said first niche-walls projecting towards the outside compared to the portion of said side wall below said peripheral step; and
a plurality of second niches therein, each said second niche being disposed at half the interval between successive ones of said first niches, the walls of each said niche originating at the level of said peripheral step and extending to a level above said bottom, wherein said second niches grow narrower toward the bottom and have a floor closing the bottom thereof, the level of said floor being at or above the level of the food anticipated to be carried by the container.

4,201,302

METHOD AND APPARATUS FOR DIVIDING FAT AND LEAN MEAT

Eldon N. Roth, 99 Madera Ct., San Ramon, Calif. 94583

Filed Oct. 10, 1978, Ser. No. 949,760
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—577 19 Claims



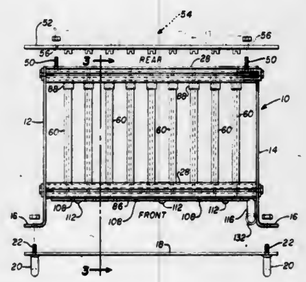
1. Apparatus for separating selected components of meat products, comprising
means for extruding a combination of the components into a plurality of generally continuous chains of material,
separation aparatus for dividing the components in each of said chains including
means for sensing the presence of the selected components along the length of each chain, and
means responsively coupled with said sensing means for diverting the respective components toward separate collection means.

4,201,303

CHASSIS FOR PRINTED CIRCUIT BOARDS

Jesse C. Smith, 12 Marian St., Waltham, Mass. 02154

Filed Oct. 3, 1978, Ser. No. 948,300
Int. Cl.[2] H05K *7/18*
U.S. Cl. 211—41 20 Claims



1. A chassis for printed circuit boards or cards comprising in combination, a pair of end plates of rectilinear shape having similar perforation patterns adjacent the corners thereof, extruded rails each having a pair of spaced channels therein extending equally between said end plates with the ends of said spaced channels in alignment with certain perforations in said patterns thereof, similar keys respectively adjacent each pattern of perforations and each having a hole therein and at least one prong extending through one perforation of each of said patterns thereof and into the end of one channel in the end of the rail adjacent each pattern of perforations, a self-tapping screw extending through the hole in each key and also through another perforation of each pattern and threaded into the end of another channel in the end of the rail abutting each pattern of perforations to secure said rails against turning about the

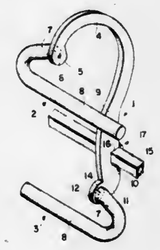
axes thereof, grooved guide members for said boards extending in opposed parallel pairs between opposite pairs of said rails in spaced relationship along said rails, and positioning means comprising projections respectively on the opposite ends of said guide members and interfitting with notches spaced along said rails to position said guide members at desired fixedly spaced locations along said rails and prevent relative movement between said guide members and rails in any direction.

4,201,304

AUXILIARY TOWEL HOLDER

June I. Wicklund, Rte. 1, Box 220, Grantsburg, Wis. 54840

Filed Mar. 1, 1978, Ser. No. 882,448
Int. Cl.[2] A47F *5/08*
U.S. Cl. 211—87 3 Claims



1. A towel holder comprising a vertical main support having an upper and a lower end; said upper and lower ends each having parallel horizontally disposed arms thereon; each of said arms being positioned in a vertical plane different from the other and each being further disposed in a vertical plane different from that of the main support; said horizontally disposed arms being rebent upon themselves to a J-shaped configuration and pivotally supported proximal the J-shaped portion with the arms being adjustingly positionable toward and away from each other and the main support and extending laterally to each side of said main support.

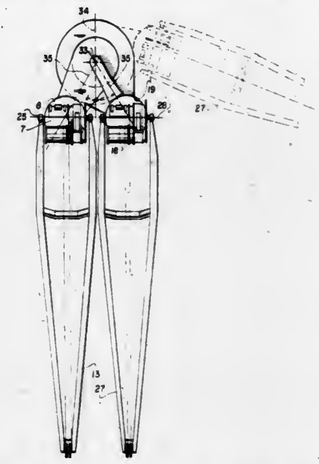
4,201,305

ROTATORY CRANE WITH PLURAL JIBS

Egon Frick, Lübeck, Fed. Rep. of Germany, assignor to Orenstein & Koppel Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 513,118, Oct. 8, 1974, abandoned. This application Jun. 10, 1976, Ser. No. 694,563
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1973, 2353954; Nov. 2, 1973, 2354975
Int. Cl.[2] B66C *5/02, 23/52*
U.S. Cl. 212—47 7 Claims

1. A double slewing crane comprising, in combination, an upright support column having a substantially vertical central axis; a ring gear affixed to the upper end of said column concentric with said central axis; anti-tilt anti-friction bearing means including bearing race means affixed to said column concentric with said axis, first and second rotatable bearing races concentrically mounted with respect to each other and said central axis; anti-friction elements positioned between said fixed and rotatable bearing races; a first carrier affixed to said first rotatable bearing race and concentric with said central axis and including a first centilever portion projecting radially thereform; a second carrier affixed to said second rotatable bearing race below said ring gear and concentric with said central axis and including a second cantilever portion projecting radially therefrom; said carriers being adjacent each other and spaced axially along said column from each other; a first crane, including a first upright crane control and operating tower rigidly affixed to said first cantilever portion and extending both upwardly and downwardly therefrom; a second crane, including a second upright crane control and operating tower rigidly affixed to said second cantilever portion and extending both upwardly and downwardly therefrom; said first and second crane control and operating towers being offset equal distances radially from said central axis; a first jib mounted on said first tower for pivoting about a first horizontal axis on said first tower; a second jib mounted on said tower for pivoting about a second horizontal axis on said second tower; said first and second horizontal pivot axes being at equal distances radially from said central axis and at the same level vertically of said support column; a first drive means on said first tower including a first pinion meshing with said ring gear; a second drive means a said second tower including a second



pinion meshing on said ring gear, whereby said first and second towers and their associated jibs are independently rotatable about said vertical central axis of rotation; when said jibs are disposed in a parallel position relative to each other, equal and opposite obtuse angles are formed at the intersection of a first horizontal line connecting the center of a respective tower and said common axis and a second horizontal line extending between said first and second horizontal pivot axes, and an angle of substantially less than 90° is formed between said first horizontal line and a third horizontal line that extends from said common axis and perpendicular to said second horizontal line.

4,201,306

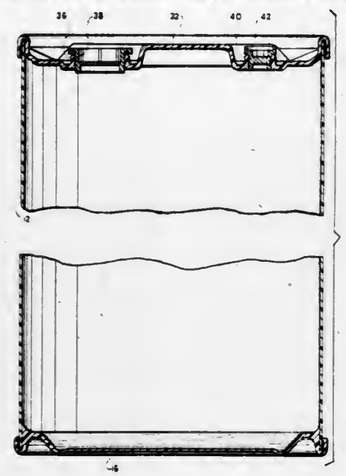
VARIABLE CAPACITY ALL-PLASTIC DRUM

Robert A. Dubois, and George F. Smith, both of Marion, Ohio, assignors to Greif Bros. Corporation, Delaware, Ohio

Filed Oct. 27, 1978, Ser. No. 955,352
Int. Cl.[2] B65D *25/00*
U.S. Cl. 220—5 R 16 Claims

1. An essentiall all-plastic drum of selected capacity comprising in combination:
an extruded tube defining the drum side wall of selected diameter and length proportional to the drum capacity desired and having an open upper end and an open bottom end;
an injection molded bottom closure having an annular periphery assembled to the bottom end of the tube and defining a cavity therebetween, the bottom closure being welded to and closing the bottom end; and
the weld between the bottom closure and the bottom end being defined by an induction melted welding material disposed in the cavity that was induction-heated and melted and under pressure caused to conform to the configuration of the cavity to bond to and secure together surfaces of the tube and bottom closure, the welding material being thermoplastic initially in the form of preformed material and includes excitable means which when exposed to induction heating causing the melting of the thermoplastic which flows under pressure into the cavity

and when set forms an annular seal and causing the bonding by welding of the bottom closure to the tube, the bottom closure including a circumferentially extended peripheral apron mating and engaging with the inner surfaces of the bottom end of the tube, and that portion of the apron in the tube being in engagement substantially throughout with the inner surface of the tube, the apron having a lower end extending continuously beyond said bottom end and an annular flange extending radially outwardly from said lower end, and a circumferential skirt spaced from the exterior surfaces of the bottom end of the tube and extending upwardly from the flange and terminating in an inwardly extending annular flange disposed in sealing engagement with the exterior surfaces of the bottom end of the tube, with the apron, radial flange, skirt and inwardly extending flange cooperating with the bottom end of the tube in defining an L-shaped cavity for receiving the melted welding material when exposed to induction heating and pressure.

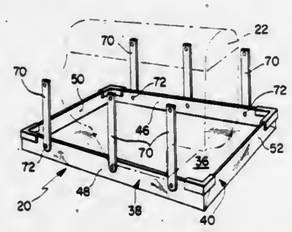


4,201,307

OIL COLLECTION RECEPTACLE

Frank H. Malloy, 19 Bragaw St., New London, Conn. 06320

Filed Mar. 23, 1979, Ser. No. 23,305
Int. Cl.² B65D *25/00, 5/24*
U.S. Cl. 220—62 **2 Claims**



1. A receptacle for collecting waste material in the form of oil and other liquids which drip from the underside of an engine comprising:

a sheet of semirigid plastic material in the form of a polygon having a plurality of outer edges defining its perimeter and a plurality of corners defining the limits of said outer edges, said sheet lying in a substantially flat plane, said sheet being impervious to the passage of liquids;

first lines formed in said sheet extending from one of said edges to another of said edges at a substantially constant distance inboard from each edge of said sheet, those portions of said sheet encompassed within all of said first lines being defined as a base, those portions of said sheet each bordering said base and encompassed within said first lines and one of said outer edges being defined as sidewalls, and those portions of said sheet in the regions of said corners each encompassed within said first lines and two adjacent ones of said outer edges being defined as corner members;

said base including a plurality of parallel spaced ribs formed on its surface for increasing its rigidity;

second lines formed in said sheet diagonally across said corner members extending from the intersection of each of said associated first lines to its associated said corner lying in the perimeter of said sheet;

each of said sidewalls having an inner surface and an outer surface and being foldable along its said associated first line between a first position substantially coplanar with said base through a second position lying in a plane transverse to the plane of said base, adjacent ones of said sidewalls lying in mutually intersecting planes when they assume the second position to a third position lying in a plane parallel to and contiguous with a plane of said base;

each of said corner members being foldable along said associated first and second lines into a contiguous relationship with said outer surface of an adjacent one of said sidewalls when said sidewalls assume their second positions;

retention means engageable with each of said corner members and an inner surface of each said associated sidewall for releasably holding each of said corner members in a contiguous relationship against its associated said outer surface when said sidewalls assume their second positions, thereby maintaining said sidewalls in their second positions, whereby said base, said sidewalls, and said corner members all together define a liquid tight vessel, said retention means including a fastener having first and second legs and a u-shaped bight connecting said first and second legs, said bight biasing said first and second legs toward one another, said fastener being selectively receivable over said sidewalls and said associated corner members when said sidewalls assume their second positions such that said first leg engages said inner surface and said second leg engages said corner member and holds it in a contiguous relationship against said outer surface, said inner and outer surfaces being roughened so as to have a sawtooth cross-section having successive troughs and ridges extending in a direction generally transverse to the direction of movement of said fastener as it is being applied to said corner members and said associated sidewall and wherein mutually facing surfaces of said first and second legs are similarly roughened such that said respective roughened surfaces are mutually engageable when said fastener is received in fitting relationship with its associated said sidewalls; and

a plurality of straps mounted on said sidewalls at spaced locations and extending beyond and transverse to said edges for suspending said receptacle beneath the engine.

4,201,308

WATER-BASED CONTAINER END SEALING COMPOSITIONS AND THEIR USE

Daniel L. Neumann, Waukegan, Ill., assignor to The Dexter Corporation, Windsor Locks, Conn.

Division of Ser. No. 785,332, Apr. 7, 1977, Pat. No. 4,138,384.
This application Jan. 6, 1978, Ser. No. 867,617
Int. Cl.² B65D *53/06*
U.S. Cl. 220—81 R **14 Claims**

1. In a container having at least one end connected and hermetically sealed to a body portion, the improvement being the use of a homogeneous, substantially solvent-free, set hermetic sealant composition substantially free of physical defects and blemishes, said sealant essentially consisting of

(a) synthetic, elastomeric, high molecular weight, acrylonitrile-butadiene copolymer having, on a weight basis, a predominance of butadiene,

(b) synthetic, elastomeric, high molecular weight, isobutylene-isoprene copolymer having, on a weight basis, a predominance of isobutylene, and

(c) small particles of compatible, thixotropic, mineral flow control agent,

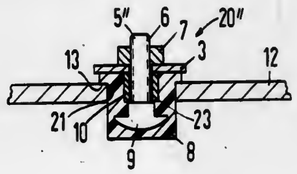
the weight ratios of said acrylonitrile-butadiene copolymer, said isobutylene-isoprene copolymer, and said flow control agent being about 15.2 to 23.4::about 39 to 24.4::about 29.4 to 83.1, respectively.

4,201,309

TEST PLUG AND SEALING PLUG FOR CABLE FITTINGS

Josef Bauer, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,185
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810840
Int. Cl.² F16J *15/10*; B65D *39/12*
U.S. Cl. 220—235 **10 Claims**



1. A sealing device for closing a test opening in a wall of a cable fitting comprising a bolt-shaped pressure component having a disk-shaped rim at one end and threads at the other end; a ring-shaped sealing member consisting of an elastic material arranged on the pressure component, said disk-shaped rim having a diameter corresponding to the exterior diameter of the sealing member; a thrust washer telescopically received on the other end of the pressure component for engaging the sealing member; a thrust nut threadably received on the threads of the pressure component to urge the thrust washer against the sealing member to compress the sealing member between the washer and rim; and means for limiting the amount of threading of the thrust nut on the threads of the pressure component to limit the maximum amount of pressure applied to the sealing member, said means for limiting comprising a spacing shell being telescopically received on the threaded other end of the pressure component and being surrounded by a portion of the sealing member.

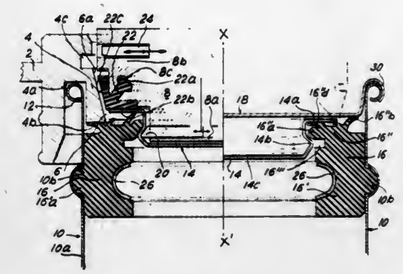
4,201,310

BIDIRECTIONAL JOINING DEVICE

Charles Glachet, Vendôme, France, assignor to La Calhene, Bezons, France

Filed Feb. 21, 1979, Ser. No. 13,667
Claims priority, application France, Feb. 24, 1978, 78 05331
Int. Cl.² B65D *51/28, 51/18*; F16J *15/32*
U.S. Cl. 220—256 **6 Claims**

1. A bidirectional joining device with an integral passage between a first enclosure having a flange serving as a seat for a first plug provided with a first gasket and a second enclosure having an opening, a second plug and a second gasket, whereby the first gasket is able to form the sealing between the first plug and the gasket and the first plug and the second plug when the latter are joined together, wherein the second enclosure has an opening provided with a lateral edge, the second plug has a peripheral edge perpendicular to the axis of the two plugs, a side wall having a convex portion and a bottom, the second gasket has an external lateral face, an internal lateral face and an upper face turned towards the outside of the second enclosure, said external lateral face being sealingly and not-detachably fixed to the lateral edge of the second enclosure, said inner lateral face having a first bead able to cooperate with the convex portion of the second plug to ensure the joining together of said second plug and the drum by locking the bead between the convex portion and the edge, said upper face being provided with an external annular contact area which is able to ensure by deformation sealing between the drum and the flange of the second enclosure when the two enclosures are joined together, a second annular contact area ensuring by elastic deformation the covering of the periphery of the peripheral edge of the second plug and sealing means between the upper face of the gasket and the peripheral edge of the plug.

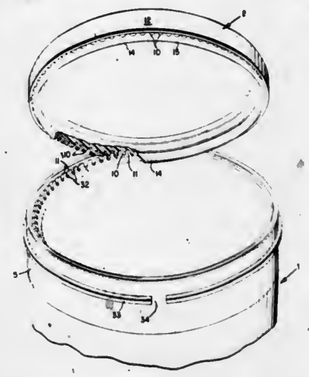


4,201,311

CONTAINER AND LID OF MOLDED PLASTIC MATERIAL

J. Larry Underwood, 104 Dixie Dr., Woodstock, Ga. 30188

Filed Jun. 21, 1978, Ser. No. 917,588
Int. Cl.² B65D *43/10*
U.S. Cl. 220—307 **10 Claims**



1. A container and lid of molded plastic material having a fastener structure integral with said container and lid to connect said lid onto said container, in which said lid has a peripheral channel facing the top edge of the wall of said container with the top edge of said wall in said channel, two peripheral series of similar complementary elements integral with the top edge of said wall and in said channel, each element being wider at its extremity in the peripheral direction than at its base adjacent its supporting member, so that the spaces between the elements are wider adjacent each of said members and are complementary to the elements, so that the interdigitated elements interlock against separation, the material of the members being sufficiently pliable for insertion and removal of at least one element from one series into space between elements of the other series when all remaining elements are interengaged, said elements of said two series having laterally inclined interengaging surfaces which act to apply force between said members radially of said container, said container and lid having continuous peripheral abutting surfaces and said later-

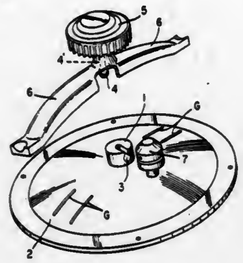
ally inclined surfaces on said elements applying force between said lid and container to press said abutting surfaces together tightly and seal said container.

4,201,312

PRESSURE COOKER CLOSURE FASTENING MEANS

Pedro Basile, Rua Pelotas, 183,, São Paulo, Brazil

Filed Jun. 16, 1978, Ser. No. 916,139
Claims priority, application Brazil, Sep. 26, 1977, 7706389
Int. Cl.² B65D *45/28*
U.S. Cl. 220—314 **4 Claims**



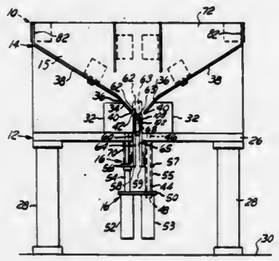
1. A closure for a pressure cooker comprising a lid, lid locking means and interfitting means attached to said locking means and arranged to be removably attached to said lid and means for preventing detachment of said interfitting means from said lid, said interfitting means including a key attached to said locking means and a lateral keyway formed at the center of the lid, said key engaging in said keyway, and said preventing means including a standpipe projecting up from said lid adjacent said keyway forming a vent passage through said lid and a pressure regulator which sits on said standpipe, said regulator preventing the removal of said key from said keyway as long as it is in position on said standpipe.

4,201,313

HOPPER FEEDER FOR SINGLY DISPENSING SHORT RODS OR TUBES

Jerry Kirsch, Grosse Pointe Farms, Mich., assignor to Auto-Place, Inc., Troy, Mich.

Filed Feb. 8, 1978, Ser. No. 876,019
Int. Cl.² B23Q *7/06*; B65H *3/24, 9/00*
U.S. Cl. 221—171 **4 Claims**



1. A hopper feeder for singly-moving short rod workpieces comprising

a supporting structure,

a workpiece-receiving hopper mounted on said structure and having spaced side walls and inclined downwardly-converging bottom walls defining a workpiece chamber with an elongated outlet opening disposed therebelow and a discharge opening disposed in spaced relationship thereto,

a pair of workpiece agitator members disposed side by side in spaced parallel relationship below said outlet opening and movable relatively to one another upward and downward in opposite directions past said outlet opening into and out of said workpiece chamber,

power-operated means for moving said workpiece agitator members upward and downward relatively to one another past said outlet opening,

a workpiece receiver mounted adjacent said hopper in alignment with said workpiece discharge opening,

a workpiece ejector mounted between said agitator members for substantially horizontal reciprocation between positions adjacent said outlet opening and said discharge opening respectively to push a single workpiece from said position adjacent said outlet opening to said position adjacent and through said discharge opening onto said workpiece receiver,

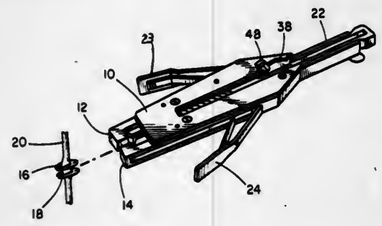
and power-operated means for reciprocating said workpiece ejector horizontally across said outlet opening in timed relationship with said power-operated means for moving said workpiece agitator.

4,201,314

CARTRIDGE FOR A SURGICAL CLIP APPLYING DEVICE

Peter B. Samuels, 14708 Sutton St., Sherman Oaks, Calif. 91403, and Ernest C. Wood, 2461 Ivanhoe Dr., Los Angeles, Calif. 90039

Filed Jan. 23, 1978, Ser. No. 871,532
Int. Cl.² B65H *1/12*
U.S. Cl. 221—198 **10 Claims**



1. A cartridge for supplying surgical clips to the jaws of a clip applicator comprising:

(a) a cartridge body having forward and rear ends and at least one clip channel for storing a plurality of said clips to be dispensed from said forward end to said jaws,

(b) means for forwardly urging said clips in said channel,

(c) means for selectively locking said urging means to prevent forward movement of clips in said channel, said locking means including a cam plate secured to said urging means for movement therewith, said plate having a recess provided in its lower portion, and a locking member pivotable between an unlocked position engaging a first portion of said cam plate and a locked position engaging a second portion of said cam plate and in which the locking member also engages the bottom of said cartridge, and

(d) manually operated means for moving said locking member between said locked and unlocked positions.

4,201,315

EMPTY HOPPER DETECTOR

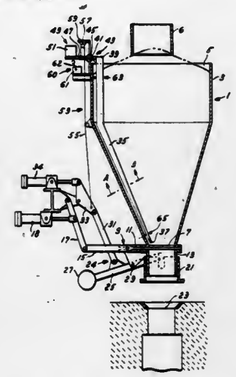
David M. Chuss, and Benjamin H. Pinckney, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 3, 1978, Ser. No. 957,514
Int. Cl.² F27D *3/00*
U.S. Cl. 222—66 **5 Claims**

1. In a batch charging hopper for granular material having a top charging opening, sidewalls converging downwardly to form a bottom discharging opening, closure means for opening and closing said bottom discharge opening, an extension below said bottom discharging opening, and a movable drop sleeve telescoped on said extension, the improvement comprising:

(a) a pivotable probe arm extending downwardly within said hopper adjacent a portion of the interior of said side wall and terminating in a lower end adjacent said bottom discharge opening and an upper end spaced upwardly from said lower end;

(b) pivot means connecting said upper end and said side wall for permitting said probe arm to pivot back and forth within said hopper;



(c) means for locking said probe arm adjacent said sidewall when said hopper is empty and for unlocking said probe arm after said hopper has been filled, to permit pivoting of said probe arm as said hopper empties;

(d) biasing means connected to said upper end for causing said probe arm to pivot away from said sidewall during discharge of said hopper when said hopper is substantially empty; and

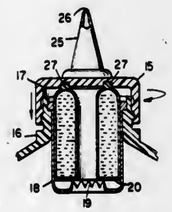
(e) electrical switch means activated by said probe arm for indicating when said hopper is empty.

4,201,316

CAPSULE HAVING FRANGIBLE WALL PORTION

Richard J. Klingaman, Darien, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 665,758, Mar. 11, 1976, Pat. No. 4,088,246, which is a continuation-in-part of Ser. No. 571,886, Apr. 25, 1975, Pat. No. 3,966,089. This application Sep. 26, 1977, Ser. No. 836,767
Int. Cl.² B65D *51/22*
U.S. Cl. 222—80 **13 Claims**



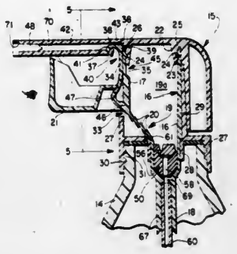
1. A sealed capsule adapted to contain fluent material to be dispensed comprising an external cylindrical lower side wall portion, an external upper side wall portion symmetrical about the axis of said lower portion and decreasingly tapered to a closed reduced diameter top wall, and a bottom wall peripherally sealed to the side wall bottom edges, said side wall portions being relatively stiff and shape retaining, and said bottom wall being appreciably more frangible than said said wall portions, said bottom wall comprising a sheet of thin synthetic plastics material sufficiently strong to support the weight of the capsule contents but being readily puncturable for discharge of said contents.

4,201,317

FINGER ACTUATED PUMP ASSEMBLY

Hans P. Aleff, Old Sneech Pond Rd., Pole 188 - R.D. 2, Cumberland, R.I. 02864

Filed Jul. 28, 1977, Ser. No. 819,880
Int. Cl.² B67D *5/42*
U.S. Cl. 222—207 **6 Claims**



1. A manually operable pump for dispensing non-compressible liquid product comprising, a body, said body including container sealing means for forming a liquid tight engagement with a product container at one portion thereof and a product discharge means including a discharge opening at another portion thereof, an axially collapsible bellows having a plurality of integral wall segments, said bellows positioned in said body and forming a chamber for receipt of product from said container and subsequent dispensing thereof outwardly of said body, actuation means operatively associated with said bellows for at least partially axially collapsing said bellows, product discharge valve means supported by said bellows at one end thereof and communicating with said body discharge opening to norally seal such wherein collapsing movement of said bellows sequentially alters the position of said discharge valve means from said normally closed position to an open position and forces product within said chamber outwardly of said discharge opening, and valve means positioned at the other end of said bellows for directing product into said chamber upon expansion of said bellows wherein said product moves axially through said chamber from one end to the other, said bellows disposed in a generally horizontal axial disposition and having an outer face defining said one end thereof, said actuation means including a trigger forwardly extending from said outer face at a lower end thereof distal from said discharge valve means, said body cooperating with said bellows outer face whereby rearward movement of said trigger simultaneously arcuately pivots said lower end with respect to said upper end and at least partially collapses said bellows, said discharge valve means including an actuation arm extending along said bellows outer face and forwardly connected thereto at said lower end thereof, said body and said bellows outer face fixed in a position wherein rearward trigger movement moves said arm downwardly so as to displace said discharge valve means away from said body discharge opening.

4,201,318

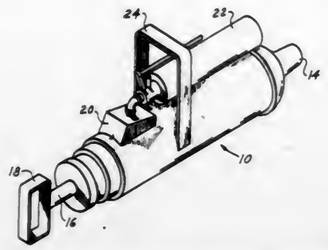
PACKING INJECTOR GUN

Harold R. Adams, St. Francisville, Ill. 62460

Filed Jun. 1, 1978, Ser. No. 911,380
Int. Cl.² B67D *5/42*
U.S. Cl. 222—324 **10 Claims**

1. A packing gun for injecting packing at high pressure through a nozzle, said packing gun comprising an elongated cylinder, a movable piston receiving packing on one side and a fluid under pressure on the other side, hydraulic pump means

for exerting pressure on said fluid, said means comprising a hydraulic pump mounted on said elongated cylinder and having a high pressure line communicating with said cylinder on said one side receiving fluid under pressure, said hydraulic pump being removably attached to the gun cylinder by a mounting plate, a U-shaped handle, said handle having leg



members attached to the side of the gun cylinder and a bight portion positioned above the hydraulic pump, the gun cylinder having packing dispensing nozzles at opposite ends of the gun cylinder and means for alternate loading of packing on opposite sides of the piston and alternate introduction of high pressure fluid on opposite sides of the piston.

4,201,319

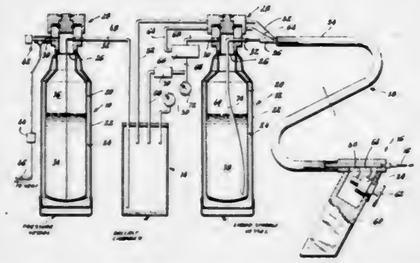
DISPENSING SYSTEM EMPLOYING LIQUID CRYOGEN

Joseph F. Andera, Trumbull, and Robert C. Eisenberg, Milford, both of Conn., assignors to Frigitronics of Conn., Inc., Shelton, Conn.

Continuation of Ser. No. 783,967, Apr. 4, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,816

Int. Cl.[2] B65D *83/14*

U.S. Cl. 222—396 **11 Claims**



1. A system for dispensing a liquid which comprises: a pressure vessel; a pressurizing liquid having a boiling point below ambient temperature contained within said pressure vessel and defining a vapor space thereabove; a ballast chamber having its interior in heat transfer relationship with the ambient atmosphere; a transfer conduit having a first end positioned within said pressure vessel below the normal level of pressurizing liquid therein and a second end positioned in said ballast chamber; a supply vessel containing therein a quantity of liquid to be dispensed; a liquid dispensing line having a first end positioned within said supply vessel below the normal level of liquid therein and a second, discharge, end at a liquid utilizatioon device; and means for selectively interconnecting the interior of said ballast chamber with the interior of said supply vessel to pressurize said supply vessel and dispense said liquid therefrom.

4,201,320

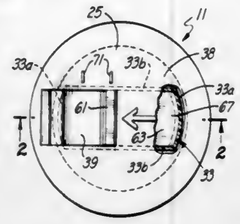
MEASURING DISPENSER

Lawrence C. Eppenbach, 419 Kennedy St., Juneau, Ak. 99801

Filed Aug. 25, 1978, Ser. No. 936,722

Int. Cl.[2] G01F *11/26*

U.S. Cl. 222—456 **13 Claims**



1. A measuring dispenser for divided material comprising:

first means for defining a receiving chamber of substantially fixed volume, said receiving chamber having an inlet whereby in at least one orientation of the measuring dispenser the divided material can flow through the inlet into a region of the receiving chamber;

a displacement slide;

means for mounting the displacement slide on the first means for movement along a path in the receiving chamber without varying the volume of the receiving chamber, said displacement slide being movable along said path so that the displacement slide can block at least a portion of said region from said inlet in at least one position of said displacement slide and can open at least a part of said portion of said region to said inlet in a second position of said displacement slide whereby the volume of said region available to receive the divided material from the inlet in said one orientation can be varied;

said receiving chamber having an outlet through which the divided material at said region can flow when the measuring dispenser is moved to a second orientation; and

said first means including an end wall having said outlet therein, said mounting means mounts the displacement slide to progressively open and close the outlet as the displacement slide is moved along said path.

4,201,321

APPLICATOR DEVICE FOR FLOWABLE REACTION MASSES

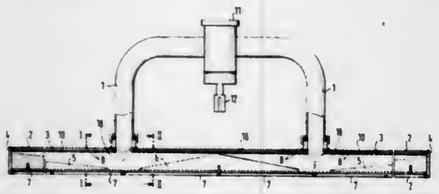
Heinrich Patzelt, Memmingen, and Horst Bokelmann, Bad Wildungen, both of Fed. Rep. of Germany, assignors to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany

Filed Jan. 24, 1978, Ser. No. 871,859

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703680

Int. Cl.[2] B67D *5/06*

U.S. Cl. 222—478 **3 Claims**



1. Device for distributing a flowable, foamable reaction mass for producing polyurethane foam, the device having a crossbeam made up of two coaxial inner and outer tubes, comprising means for feeding the reaction mass to the crossbeam, an inner hollow chamber located within the inner tube of the two coaxial tubes, and an outer hollow chamber located between the inner and the outer tubes of the two coaxial tubes, said feeding means comprising at least one reaction mass feed line extending radially through said outer tube and said outer hollow chamber and terminating in said inner hollow chamber of said inner tube, wedge-shaped inserts disposed in said inner hollow chamber on opposite sides of the termination of said feed line for reducing the cross section of said inner hollow chamber, said wedge-shaped inserts being upwardly inclined in direction away from said feed-line termination, said inner tube being formed at a highermost location thereof with axially spaced overflow openings through which reaction mass fed to said inner hollow chamber is overflowable into said outer hollow chamber, said overflow openings increasing in cross section with increasing distance thereof from said feed line termination, said outer tube being formed at a lowermost location thereof with slot-like discharge openings for the reaction mass overflowing into said outer hollow chamber.

4,201,322

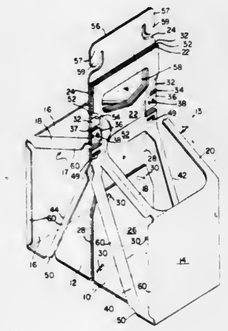
BOTTLE CARRIER

Kenneth Z. Crawford, Crawfordsville, Ind., assignor to Polycarrier Company, Crawfordsville, Ind.

Filed Apr. 18, 1978, Ser. No. 897,412

Int. Cl.[2] B65D *71/00*

U.S. Cl. 224—45 AB **42 Claims**



1. A carrier for bottles or the like in two rows of one or more per row, comprising

two bottom panels for supporting the bottoms of the bottles,

an outer face panel extending upward from the outer edge of each bottom panel and connected at the top to a top panel extending inward to a central position and having one or more bottle-receiving openings therein,

handle means above such central position,

center panel means to which the bottom panels are connected at their inner edges and which extends upward between the rows, said handle means being connected to said center panel means,

lift struts connected to the bottom panels at points spaced longitudinally of the bottle rows on such bottom panels and within the outer halves of the bottom panels, the struts connected to each bottom panel extending upward and inward across the center plane of the bottle row on such bottom panel and having their upper ends connected for lift by said handle means.

4,201,323

HIGH VELOCITY WEB FLOATING AIR BAR HAVING A RECESSED COANDA PLATE

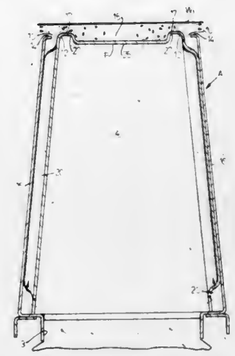
Paul H. Stibbe, DePere, and Robert A. Daane, Green Bay, both of Wis., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,742

Int. Cl.[2] B65H *17/32*

U.S. Cl. 226—97 **3 Claims**

3. An elongated and generally tubular air bar adapted to be positioned closely adjacent a running web for supporting said web on a cushion of air, said air bar defining a pressurizable central chamber into which pressurized air is conducted and having means communicating with a pressurized air supply, said bar having a recessed plate with spaced apart outer portions having curved edges extending transversely of and located closely adjacent said web, said bar also having a pair of air supply slots, one located and extending along each of said curved edges, said slots being in air receiving communication



with said central chamber for receiving pressurized air therefrom, whereby pressurized air in said central chamber is discharged through said slots for impingement against said web to form a pressurized air cushion between said web and said plate, said plate having a central and inwardly recessed portion which is located inwardly of said slots and outer portions to define space in said pressurized air cushion for the generation of air turbulence, vortexes and eddy currents for increased heat transfer of material on said web and increased web floatation pressure.

4,201,324

ARRANGEMENT FOR TRANSPORTING A MAGAZINE THROUGH A SETTING DEVICE

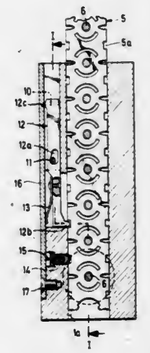
Elmar Maier, Tisis, Austria, and Othmar Heeb, Ruggell, Fürstentum, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Aug. 24, 1978, Ser. No. 936,593

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738848

Int. Cl.[2] B25C *1/14*

U.S. Cl. 227—9 **9 Claims**



1. Setting device for driving fastening elements comprises a housing, means in said housing for driving the fastening elements, a guide channel in said housing having an inlet end and an outlet end and arranged to receive a belt-shaped magazine

holding fastening elements in spaced relation, and transport means within said housing for moving a magazine through said guide channel in a step-wise manner in the direction from the inlet end to the outlet end for aligning individual fastening elements held by the magazine in the path of said driving means, said transport means comprising a transport pawl for engaging and moving a magazine through said guide channel, and an operating member for moving said transport pawl in a reciprocating manner in the direction between the inlet end and outlet end of said guide channel, wherein the improvement comprises linking means interconnecting said operating member and said transport pawl for moving said transport pawl in response to the movement of said operating member and for pivoting said transport pawl out of engagement with a magazine in said guide channel so that said transport pawl can be moved toward the inlet end of said guide channel preparatory to re-engaging the magazine for moving it in a step-wise manner through said guide channel toward the outlet end thereof, said linkage means comprises a recess in said transport pawl, and a pin secured to said operating member and extending into said recess in said transport pawl, said recess having a dimension in the direction between the inlet end and the outlet end of said guide channel which is greater than the diametral dimension of said pin so that in response to the movement of said operating member said pin can move in the direction between the inlet end and outlet end for a certain distance before commencing the movement of said transport pawl in the same direction, said recess having a surface in contact with said pin as said pin moves through said recess in the direction toward the inlet end of said guide channel so that the initial movement of said pin along the pin contact surface in said recess causes said transport pawl to pivot out of engagement with the magazine before said pin commences the movement of said transport pawl toward the inlet end of said guide channel.

4,201,325

FASTENING ELEMENT SETTING DEVICE

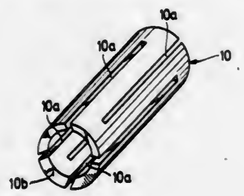
Peter Jochum, Meiningen, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 12, 1978, Ser. No. 950,545

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746120

Int. Cl.² B25C *1/18*

U.S. Cl. 227—9 **4 Claims**



1. Explosive power operated gun-like setting device for driving fastening elements, such as bolts, nails and the like, into a hard receiving material, such as steel, concrete and the like, comprising a housing forming an axially elongated opening from which the fastening elements can be expelled, an axially extending barrel positioned within the opening in said housing and the axis of the barrel being substantially in parallel relation with the axis of the opening, an axially extending holding member located within the opening in said housing and positioned between said barrel and the end of the opening from which the fastening element is propelled, said holding member being slotted in the axial direction and being radially expandable against the inherent tension of said holding member for holding a fastening element before it is driven from the housing, the axis of said holding member being in substantially parallel relation with the axis of said barrel, wherein the improvement comprises that said holding member is an open ended sleeve-like member having a plurality of axially extending slots spaced angularly apart around said sleeve-like member, each of said slots extending for a portion of the axial length of said sleeve-like member and adjacent said slots each extend from a different end of said holding member.

4,201,326

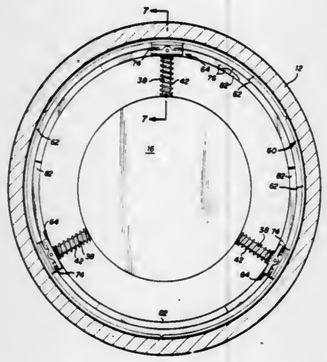
PIVOTAL BACK-UP PADS FOR WELDING

Talbert D. Connell, Spring, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 892,945, Apr. 3, 1978, Pat. No. 4,165,831. This application Jul. 19, 1978, Ser. No. 926,024

Int. Cl.² B23K *5/22*

U.S. Cl. 228—50 **11 Claims**



1. A back-up pad apparatus for use in externally welding a joint between ends of pipes in a pipeline, which comprises:

a plurality of arcuate back-up pads having curvatures complementary with the interior surfaces of the pipes to substantially span the inside circumference of the joint;

support shoe means connected to each of said back-up pads intermediate the ends thereof and pivotally supporting said pads for radial movement into and out of engagement with the interior surfaces of said pipes at the joint;

means for biasing each of said back-up pads for pivotal movement in the same direction; and

means for selectively effecting radial movement of said support shoe means and the back-up pads supported thereon.

4,201,327

METHOD OF PRODUCING A LAMINAR CONTACT MATERIAL INCLUDING A LAYER OF SILVER AND A METAL OXIDE DISPERSED THEREIN

Ulf O. Harmsen, Pforzheim, Fed. Rep. of Germany, assignor to Dr. Eugen Dürrwächter Doduco, Pforzheim, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,708

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725328

Int. Cl.² B23K *31/02*; H01R *9/04*

U.S. Cl. 228—176 **6 Claims**

1. In a method of producing a laminar, solderable contact material in which a first layer of silver or of an alloy of silver not substantially less resistant to atmospheric oxidation than silver is clad by hot rolling with a second layer or an alloy of silver with an oxidizable metal, and the compound material so obtained is exposed to an oxygen-bearing atmosphere at elevated temperature until said metal is converted to the oxide, the improvement which comprises said second layer being a casting in the metallographic as-cast condition and being produced prior to said hot rolling by continuous casting.

4,201,328

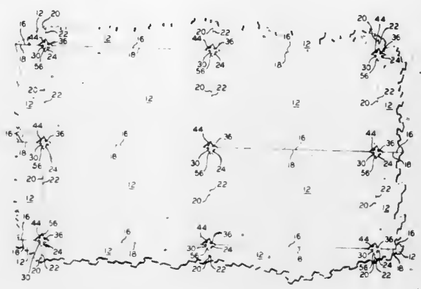
CONTAINER AND SIDEWALL BLANK THEREFOR

George E. MacEwen, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 31, 1979, Ser. No. 8,148

Int. Cl.² B65D *3/04*

U.S. Cl. 229—4.5 **38 Claims**



1. A container sidewall blank comprising:

a piece of sheet material having a top edge, a bottom edge, a first side edge, and a second side edge;

a first corner edge extending between said top edge and said first side edge, said first corner edge being generally straight through at least a portion of its full length and intersecting said top edge at a first included obtuse angle and intersecting said first side edge at a second included obtuse angle; and

a second corner edge extending between said top edge and said second side edge, said second corner edge comprising a first convex arcuate edge portion tangentially intersecting said top edge, and a first additional edge portion extending from said first convex arcuate edge portion and intersecting said second side edge at an angle in the range from about 45 degrees to about 135 degrees.

4,201,329

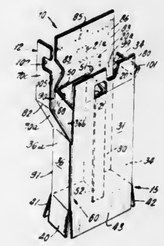
DOUBLE CELL SLIDE DISPENSER

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 22, 1979, Ser. No. 22,735

Int. Cl.² B65D *5/72*

U.S. Cl. 229—17 SC **6 Claims**



1. A reclosable dispensing carton made of a single sheet of carton blank and comprising a plurality of elongated tubular enclosures including first and second side panels and first and second end panels for said enclosures; said enclosures extending in the same plane at the upper and lower ends thereof and a common closure for said pair of enclosures;

said enclosures being closed by a single flap at one end and a second overlapping flap, the said flaps extending from opposite walls of said carton;

a pair of sets of apertures in each of said closure flaps each set of apertures registering with one of said enclosures;

a movable closure tab extending from a side wall of said carton, said closure tab being provided with an aperture;

said closure tab aperture being arranged on movement of said closure tab parallel to the upper end of said enclosures to register selectively and successively with one of the sets of aligned openings for one enclosure then one of the sets of aligned openings for the second enclosure and then with neither of said sets of aligned openings in order to seal the said carton.

4,201,330

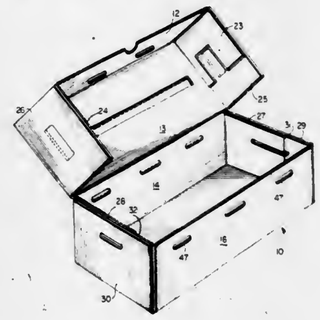
HINGED COVER CONTAINER WITH HAND HOLE LOCK

Earl F. Gilbert, Farmington Hills, Mich., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,251

Int. Cl.² B65D *5/00, 5/22*

U.S. Cl. 229—33 **6 Claims**



1. A blank of corrugated paperboard or the like, useful for making a hinged cover container with integral handholes and handhole locks comprising:

(a) a front cover panel, top cover wall, rear wall, bottom wall and front wall connected together in series by separated and parallel fold lines;

(b) a first pair of end cover flaps foldably attached to the ends of said front cover panel;

(c) a second pair of end cover flaps foldably attached to the ends of said top cover wall;

(d) a plurality of end wall flaps foldably attached to the ends of the rear wall, bottom wall and front wall respectively;

(e) a pair of handhole cut outs with integral locking tongues located substantially centrally of each of said second pair of end cover flaps;

(f) a pair of access cut outs located in the ends of said first pair of end cover flaps; and,

(g) a plurality of locking tongue receiving slots located in the ends of the end walls connected to said rear wall and front wall and substantially centrally of the end walls connected to said bottom wall.

4,201,331

BUTTERFLY CARTON AND BLANK FOR FORMING SAME

John J. Austin, Hinsdale, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 28, 1979, Ser. No. 24,877

Int. Cl.² B65D *5/10, 43/14*

U.S. Cl. 229—39 R **10 Claims**

1. A butterfly top carton of generally tubular configuration having a recloseable top portion comprising:

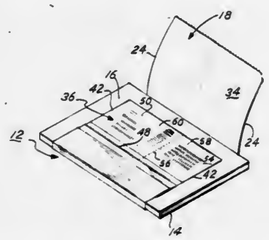
a generally rectangular, tubular side wall including alternatively hingedly connected side panels and locking side panels, each said locking side panel including an irregular V-shaped slot disposed in the upper portion thereof, said

V-shaped slot defining a plurality of angled tabs to maintain said top portion of said carton in the closed condition;
a bottom panel connected to said side wall;
two top panels, each respectively hingedly connected along a bottom edge thereof to the top edge of a side panel;
two butterfly tabs, including hingedly connected first and second wing segments, each said first wing segment being hingedly connected to a top panel along a line generally orthagonal to the hinged connection between said first and second wing segments, and with each said top panel further including buttressing tabs disposed along the edge thereof adjacent the hinged connection with the associated first wing segment and abutting the first wing segment associated with the opposed top panel; and
two locking top panels of generally triangular configuration and including an inner and an outer layer, with the base



portion of each respective inner layer being hingedly connected to the top edge of a locking side panel and with the base portion of each respective outer layer being hingedly connected to the aligned side edges of said top panels, each of said locking side panels being formed of three overlapping, hingedly connected, generally triangular sections whereby, in the closed condition of the carton, each locking top panel is coplanar and interengaged with the associated locking side panel, with a portion thereof extending through said V-shaped slot and internally of said locking side panel for maintaining said top portion in a locked condition, and the butterfly tabs are interengaged such that each said butterfly tab overlies the opposed top panel, and is maintained at an angle relative to the top of the carton by said buttressing tabs abutting the first wing segments thereby providing a secondary locking of the carton.

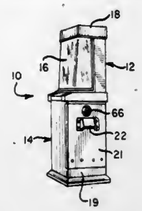
4,201,332
MAILING WRAPPER
Richard L. Wooten, St. Louis, Mo., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Jun. 12, 1978, Ser. No. 909,514
Int. Cl.² B65D *65/10, 65/14, 65/28*
U.S. Cl. 229—92 **5 Claims**



1. An improved mailing wrapper which is adapted to be wrapped about a magazine and the like during the mailing thereof, which may also be utilized to transmit information, such as a subscription renewal order notice and a business reply envelope, to solicit and facilitate the renewal of the subscription of the magazine and which is constructed and arranged such that the improved mailing wrapper and the magazine may still be permitted to be mailed at second class publication postal rates, comprising:
a first sheet adapted to be wrapped about the magazine while the same is being sent through the mails, the first sheet having an inside face adapted to be disposed adjacent to the magazine when the first sheet is wrapped about the magazine, an outside face, a first end, a second end, side edges extending between the first and second ends, a pre-selected width, extending between the side edges, and a pre-selected length extending between the first and second ends, with the pre-selected length being greater than the peripheral dimension of the magazine when the magazine is positioned for mailing;
a first perforation line formed in the first sheet and extending from one side edge to the other side edge of the first sheet for permitting the recipient of the magazine to manually sever the first sheet along the first perforation line, the first perforation line being spaced from the first and second ends of the first sheet and being spaced more closely adjacent the first end than the second end;
a second sheet for providing information to the recipient of the mailed magazine, the second sheet having an inside face, an outside face, a first end, a second end, side edges extending between the first and second ends, a pre-selected width that is no greater than the pre-selected width of the first sheet, and a pre-selected length that is less than the peripheral dimension of the front cover of the magazine when the magazine is in position for mailing;
means for securing the first end of the second sheet to the first sheet between the first end of the first sheet and the first perforation line so that the first ends of the first and second sheets are substantially aligned, so that a portion of the second sheet, remote from the first end of the second sheet, may be moved, with respect to the first sheet, about the first end of the second sheet, so that the second sheet is disposed between the side edges of the first sheet, so that the inside face of the second sheet is adjacent to the magazine, so that the outside face of the second sheet is adjacent to the inside face of the first sheet, and so that the second end of the second sheet is spaced from the first ends of the first and second sheets and from the second end of the first sheet; and
a second perforation line formed in the second sheet and extending from one side edge to the other side edge of the second sheet for permitting the recipient of the magazine to separate at least part of the portion of the second sheet from the first end of the second sheet, the second perforation line being disposed between the first perforation line and the first end of the second sheet when the first and second sheets are wrapped about the magazine and when the inside face of the first sheet and the outside face of the second sheet are disposed adjacent to each other.

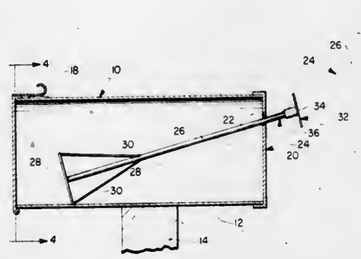
4,201,333
FARE COLLECTION APPARATUS
G. Robert Oslin, Chicago, and Clarence Seamans, Elk Grove Village, both of Ill., assignors to Qonaar Corporation, Elk Grove Village, Ill.
Filed May 24, 1978, Ser. No. 909,275
Int. Cl.² G07B *15/00*
U.S. Cl. 232—7 **22 Claims**

1. In an apparatus for receiving currency including a housing having a deposit section, a box for holding the currency, a recess in the housing for removably receiving the box, passage means for the currency defined between said deposit section and said recess, and entry means defined by the box adapted for communication with said passage means, blocking means for closing said entry means, lock means holding the blocking means in blocking position to prevent access to said box, and lock operating means for unlocking paid lock to enable movement of said blocking means from blocking position when the box is positioned within said recess, the improvement wherein said passage means comprise at least two passages for separately receiving bills and coins, said entry means comprising separate openings defined by the box, said blocking means comprising a horizontally movable plate, said plate being movable between positions covering said openings and exposing said openings, a rack secured to said plate, a shaft supported by said box, and a gear mounted on said shaft, said gear engaging said rack whereby rotation of said shaft operates to move said



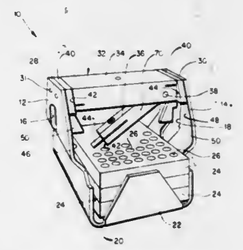
plate, movement of said plate providing communication of one passage with one opening and the other passage with the other opening, and compartments defined within said box, each opening communicating with a separate compartment whereby the bills and coins are separated within the box, said lock means comprising first and second locks associated with said shaft, a first key positioned within said recess for engagement with one lock at one end of said shaft when the box is received within said housing, and a second lock positioned at the other end of said shaft and exposed on the exterior of said box.

4,201,334
SIGNAL AND RECEPTACLE COMBINATION
John W. Janik, 40 S. Tyler St., Beverly Hills, Lecanto, Fla. 32661
Filed Sep. 12, 1978, Ser. No. 941,684
Int. Cl.² A47G *29/12*
U.S. Cl. 232—34 **2 Claims**



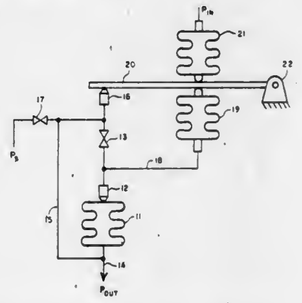
1. In combination of a receptacle and a signal device for automatically indicating the presence of an article within the receptacle, comprising in combination:
a bottom, top and side walls defining an inner volume of the receptacle;
a first end of the receptacle being adapted for inserting the article into the receptacle;
an end wall secured to the second end of the receptacle;
an aperture disposed in said end wall of the receptacle and located approximate the upper portion of the end wall;
a signalling member comprising a plate-like abutment member supported on the bottom of the receptacle;
a substantially rigid rod having a first end secured to said abutment member and extending through said aperture in said end wall of the receptacle;
an indicator disposed on a second end of said rod for movement in accordance with the abutment member;
means establishing the length of said rod and the position of said aperture in said end wall of said receptacle enabling said indicator to be disposed below the top of said receptacle when the abutment member is moved in the extreme position toward the first end of the receptacle indicating the absence of the article within the receptacle; and
said indicator being disposed above the top of the said receptacle upon movement of the abutment member from the first end toward the second end of the receptacle in response to the movement of the abutment member by the depositing of an article within the receptacle.

4,201,335
MICROTEST PLATE CARRIER OVERSPEED PROTECTION DEVICE
Thomas E. Conn, Palo Alto, and John R. Edwards, Mountain View, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Jun. 5, 1978, Ser. No. 912,699
Int. Cl.² B04B *7/06*
U.S. Cl. 233—26 **6 Claims**



1. A carrier assembly for pivotal mounting on a centrifuge rotor, said assembly comprising:
a frame for holding fluid samples, said frame being designed to operate below a specified force field; and
means connected to said frame and responsive to a force field greater than said specified force for automatically locking said fluid samples within said frame to prevent reuse of said carrier.

4,201,336
FLUIDIC SQUARE ROOT EXTRACTOR
Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 729,511, Oct. 4, 1976, abandoned. This application Oct. 11, 1978, Ser. No. 950,335
Int. Cl.² G06M *1/12;* **G05D** *15/00*
U.S. Cl. 235—200 WB **31 Claims**



1. A fluidic square root extractor comprising:

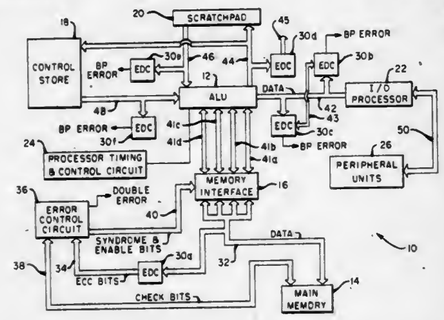
first input terminal means for connection to a source of main pressure;
output terminal means for supplying an output pressure;
second input terminal means for receiving an input pressure the square root of which is to be extracted;
first connecting means for connecting said first input terminal means to said output terminal means;
amplifier means connected to said first connecting means and to said second input terminal means for generating said output pressure as a function of said input pressure, said amplifier means having a feedback means;
squaring means connected to said first connecting means for providing a feedback pressure as a function of the square of said output pressure; and,
second connecting means connected to said squaring means and said feedback means for supplying said feedback pressure to said feedback means,
whereby said output pressure is a function of the square root of said input pressure.

4,201,337

DATA PROCESSING SYSTEM HAVING ERROR DETECTION AND CORRECTION CIRCUITS

Wayne J. Lewis, Escondido, and William P. Ward, Poway, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 1, 1978, Ser. No. 939,298
Int. Cl.[2] G06F *11/12*
U.S. Cl. 371–37 **13 Claims**



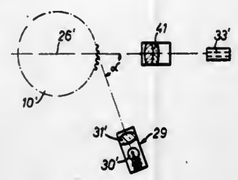
1. In a data processing system having a data bus carrying a plurality of data bits from a first location in the system to a second location in the system:
error detection and correction bit means for providing a plurality of error correction code (ECC) parity bits in response to the receipt of the data bits from said data bus, said error detection and correction bit means including means for logically combining predetermined ones of the data bits in order to provide each of the ECC parity bits;
error control means for receiving a plurality of ECC check bits associated with the data bits from the first location, for receiving the ECC parity bits from said error detection and correction bit means, for comparing the ECC parity bits and the ECC check bits, and for generating a plurality of syndrome bits indicating the bit position of any error in the data bits, the syndrome bits including a first group of syndrome bits indicating one of a plurality of groups of data bits where the error has occurred and a second group of syndrome bits indicating the bit position within one group of the data bits where the error has occurred; and
a plurality of identical data receiving circuits at the second location, each of said data receiving circuits for receiving one of the plurality of groups of the data bits and being selectively enabled by the first group syndrome bits in order to correct any one of the data bits in its associated group of the data bits, said data receiving circuits each including identical bit decoder means for receiving the second group of syndrome bits.

4,201,338

MOLD IDENTIFICATION

René Keller, Wettswil, Switzerland, assignor to Emhart Zurich S. A., Zurich, Switzerland

Continuation-in-part of Ser. No. 805,244, Jun. 9, 1977, abandoned. This application May 23, 1978, Ser. No. 908,605
Claims priority, application Switzerland, Jun. 14, 1976, 7512/76; May 25, 1977, 6424/77
Int. Cl.[2] G01N *21/16*; G01D *21/04*; G06K *7/10*
U.S. Cl. 235—454 **14 Claims**



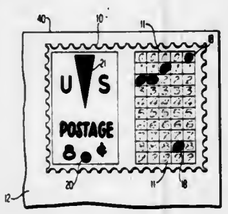
4. An apparatus for identifying a mold in which a vessel made from an optically transparent material has been molded, said vessel being provided with marks disposed about a path on the wall of the vessel, there being a first set of marks disposed above said path and a second set of marks being disposed below said path, one of said first or second sets of marks containing code marks and the other set containing timing marks, said apparatus comprising:
means for illuminating said marks;
means for moving the vessel past said illuminating means;
reading means including means for reading the incident light reflected by said code marks and means for reading the incident light reflected by said timing marks and means for converting the increase in illumination caused by the presence of a mark into an electrical signal; and
means for generating time impulses in response to the reading of incident light reflected by said timing marks for sequential reading of the incident light reflected by said code marks.

4,201,339

ARTICLE SORTING APPARATUS AND METHOD

Damon M. Gunn, 4007 49th St., NW., Washington, D.C. 20016

Division of Ser. No. 91,701, Nov. 23, 1970, Pat. No. 3,757,942. This application Jun. 27, 1973, Ser. No. 374,171
Int. Cl.[2] G06K *19/06, 19/08*
U.S. Cl. 235—487 **9 Claims**



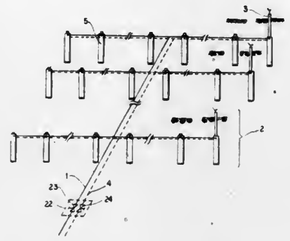
1. A postage stamp comprising a laminar body member, having means for securing same to a surface of a postal article,
means forming a grid on the outer surface of said laminar body member, said grid being adapted for receiving manually placed pattern of visible code markings,
grid locating means on the same surface as said grid and adapted to produce guide signals for subsequent orientation of said manually placed pattern relative to a reading station, and
said grid locating means comprising at least a pair of guide elements, one of which is an elongated geometrical shape.

4,201,340

METHOD OF AND A DEVICE FOR HYDRO-AUTOMATIC SPRINKLING WITH SINKING HYDRANTS

Vesselin Y. Georgiev, and Vladimir S. Mednikarov, both of Sofia, Bulgaria, assignors to Institute Po Mechanika I Biomechanika, Sofia, Bulgaria

Filed May 11, 1978, Ser. No. 904,922
Claims priority, application Bulgaria, May 12, 1977, 36270
Int. Cl.[2] A01G *25/16*
U.S. Cl. 239—66 **2 Claims**



1. A ground-irrigation system comprising:
at least one row of hydrants recessed in the ground and having raisable and lowerable hydraulically displaceable sprinkler supports;
a main pipeline connected with all of said hydrants;
a respective hydroautomatic device at each of said hydrants for causing the sequential raising and lowering of the supports thereof, each hydroautomatic device including:
a respective vertical passage communicating between said main pipeline and the bottom of the respective hydrant,
a cylinder affixed to the respective hydrant and having its axis at 90° to the respective passage,
a piston shiftable in said cylinder, said piston being formed with a chamber of predetermined axial length,
a head movably received in said chamber,
a gate connected axially to said head for blocking and unblocking communication through said passage between said main pipeline and the respective hydrant, and
means communicating between said passage and one side of each of the cylinders upstream of said gate; and
an additional pipeline pressurizable independently of the main pipeline and communicating with the opposite sides of each of the cylinders, and
means formed along the periphery of the piston for cooperation with a guide means fixed to the cylinder to provide for rotation of the piston upon a plurality of strokes of said piston coupled with no movement of said gate and at least one stroke of said piston towards the opposite side of said cylinder causing movement of said gate to an unblocking position and subsequent return movement of said piston towards said one side of the cylinder causing blocking movement of said gate.

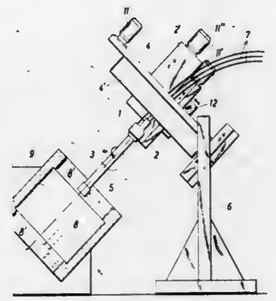
4,201,341

DEVICE FOR AUTOMATIC DEPOSITING BY WELDING

Erwin D. Hühne, Schallstadt, and Jochen H. Anders, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Castolin GmbH, Kriftel, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,290
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 7722908[U]
Int. Cl.[2] B05B *13/02*
U.S. Cl. 239—79 **1 Claim**

1. An apparatus for hard facing by powder flame spraying inner surfaces of bores of relatively large workpieces difficult to mount rotatably, such as Diesel engine blocks, and the like, said apparatus comprising,
a stand,
carriage support means pivotally mounted to said stand via holding means coupled to said stand and adapted to be adjustably inclined and to move vertically between a pair of supporting columns of said stand,
a carriage mounted on said carriage support means,
a burner assembly mounted to and extending transversely from said carriage,
said burner assembly comprising a burner mounting having a longitudinal member extending therefrom through which powder flame spray material is fed, said member terminating into a nozzle disposed transverse to the longitudinal axis of said longitudinal member, p2 said carriage being slidably mounted and having means for sliding said carriage along the axis of said longitudinal member,
said carriage in addition to being slidably mounted having means for rotating said carriage about the axis of said longitudinal member via a bearing ring, said longitudinal member and the nozzle thereof rotating with said carriage,
said bearing ring having guide rails cooperably associated with an eccentrically adjustable guide means for indexing said burner assembly and carriage along the carriage support means relative to bore to be sprayed.

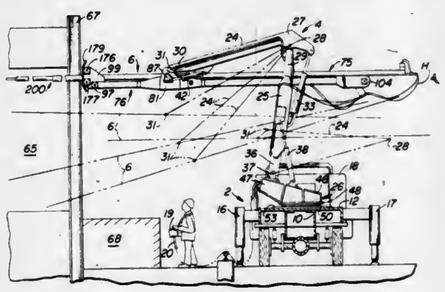


4,201,342

MOBILE REFRACTORY APPARATUS FOR REPAIRING INTERIOR FURNACE WALLS

George H. Stram, Manchester, Pa., assignor to Weldon Hydraulics, Inc., York, Pa.

Filed Jun. 26, 1978, Ser. No. 919,129
Int. Cl.[2] B05B *9/00*
U.S. Cl. 239—128 **18 Claims**



1. A refractory gunning apparatus for repairing the interior refractory walls of elongated high temperature industrial ovens such as a coke oven, said apparatus being capable of repairing the innermost areas of the refractory walls and including a reciprocal gunning lance, a slurry pipe mounted rotatably internally of the lance and having a nozzle disposed

externally of the lance, a pivotal support for the lance, drive means for reciprocating the lance longitudinally relative to the lance support to advance the lance into and retract the lance from an oven and control means for positioning the lance and nozzle selectively relative to the interior of the oven, the improvement comprising

(a) an elongated gunning lance adapted to be advanced deep into an oven to locate the slurry nozzle substantially beyond the mid-point of the oven,

(b) internal support means for the lance to stiffen the lance against deflection when the lance is advanced into the oven,

(c) cooling liquid conducting means disposed internally of the lance and extending substantially the full length of the slurry pipe to protect the slurry pipe from the heat of the oven and

(d) a rotatable articulated support having an upper end connected pivotally to the lance support and having a lower end connected pivotally to a rotatable carriage,

(e) said articulated support comprising an upper member and a lower member, said two members being connected pivotally to each other intermediate the rotatable carriage and the pivotal lance support,

(f) said upper support member being bifurcated to provide an elongated open space internally of said member to permit the gunning lance to be positioned selectively intermediate the bifurcated components of said upper member.

4,201,343

SELF-PROPELLED IRRIGATION SYSTEM

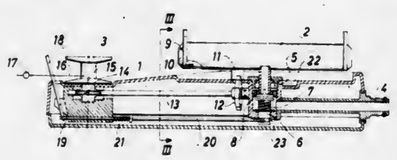
Eddie Stenild, Maglebo 11,, 2770 Kastrup, Denmark

Filed Jul. 7, 1978, Ser. No. 922,760

Claims priority, application United Kingdom, Sep. 2, 1977, 36675/77; May 30, 1978, 36675/77

Int. Cl.² B05B *3/06*

U.S. Cl. 239—189 **4 Claims**



1. A self-propelled irrigation system including an irrigator having an inlet adapted to be connected to a water hose, a water-driven rotor rotatable about a vertical axis and having spray nozzles in communication with the inlet by means of a pipe system, and a reel driven by the rotor for winding up a rope, the free end of the rope being securable to a fixed point in the area to be irrigated, the improvement comprising: a ratchet wheel mounted to directly drive the reel through a power transmission means that includes a horizontal drive shaft on one end of which is mounted said ratchet wheel and on the other end of which is mounted a worm gear, said reel being mounted on a vertical shaft that meshes with and is driven by said worm gear, said rotor being a horizontal tube rotatably mounted at its centre and driven by the reactive forces when water is discharged in jet streams through spray nozzles located adjacent the ends of said tube; and an impact member in the form of a downward projecting lug located on said tube and spaced from the axis of rotation, said impact member located so as to successively strike a tooth of said ratchet wheel during the rotation of said rotor so as to rotate said ratchet wheel and said drive shaft by an angle corresponding to the tooth pitch by the action of said rotor transmitting thereto at least part of the energy accumulated during rotation.

4,201,344

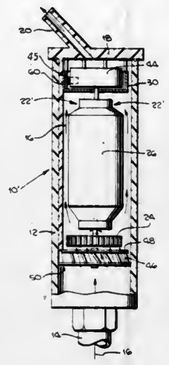
SHIFTABLE STATOR SPRINKLER HEAD

Leo J. Lichte, Riverside, Calif., assignor to The Toro Company, Riverside, Calif.

Filed Dec. 23, 1977, Ser. No. 864,016

Int. Cl.² B05B *3/16*

U.S. Cl. 239—242 **16 Claims**



1. In a sprinkler head having a body adapted for connecting to a conduit supplying fluid under pressure and including a vaned turbine for rotating in response to fluid flowing through the body, motor means driven by the turbine, and a nozzle for directing the fluid emerging from the body adapted for rotation by the motor, the improvement for causing the nozzle to be repeatably rotated between a first point and a second point comprising:

(a) means for directing the fluid flow against the turbine being switchable between a first position where the turbine is rotated in one direction and a second position where the turbine is rotated in the opposite direction, said switchable directing means comprising

(a1) a first support structure having a plurality of first holes therein, being disposed in the body of the sprinkler head between the connection to the source of fluid under pressure and the turbine, whereby at least a portion of the fluid is directed through said first holes,

(a2) a second support structure having a plurality of second holes therein, being disposed in parallel-spaced relationship to said first support structure between said first support structure and the turbine, said first and second support structures being rotatable with respect to one another about a common axis between a first position and a second position, and,

(a3) a plurality of deflecting vanes disposed between said first and second support structures, being hingedly attached to said first support structure on one side and hingedly attached to said second support structure on the opposite side, said deflecting vanes being longer between said points of attachment to said first and second support structures than the spacing between said first and second structures, so that said deflecting vanes are angularly disposed between said first and second support structures whereby fluid entering said first holes is angularly directed out said second holes against the vanes of the turbine by said deflecting vanes, said deflecting vanes being movable as said first and second support structures are rotated with respect to one another between said first and second positions of a first angular position wherein the fluid is directed to rotate the turbine in one direction and a second angular position wherein the fluid is directed to rotate the turbine in an opposite direction; and,

(b) means responsive to the position of the nozzle for switching said switchable directing means at said first point and said second point whereby the motor is driven and thereby the nozzle is rotated between the first point and the second point by the repeated switching of said switchable directing means between said first and second positions.

4,201,345

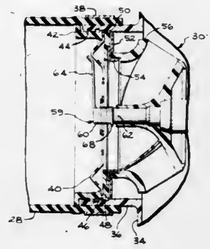
FOOD CUTTER FOR DISHWASHER

William D. Ziegler, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 4, 1978, Ser. No. 930,954

Int. Cl.² B02C *13/10*; F04D *29/70*

U.S. Cl. 241—46 R **10 Claims**



1. A rotary cutter comprising:

a rotary member;

means for rotating said member in a predetermined direction;

a cutter element driven by said rotary member, said cutter element comprising a wire form including a wound section, and further comprising an elongated cutter arm driven by one end of said wound section extending radially outward from said wound section;

said wound section received in concentric normally frictionally engaging relationship with a portion of said rotary member, with the direction of wind of said wound section being such that rotation of said cutter arm in said predetermined direction tends to cause said wound section to be radially expanded to reduce said frictional engagement upon contact of said cutter arm with articles introduced into said food cutter;

means for restraining relative rotation between the other end of said wound section and said rotary member;

whereby said means restraining said end portion of said wound section on said rotary member expands said wound section and releases said frictional interengagement upon restraint of said cutter arm to develop a predetermined torque level and whereby a clutch slipping action between said rotary member and said wire form is achieved.

4,201,346

DEVICE FOR CRUSHING SINTER AND THE LIKE

Erich Wiemer, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 811,686, Jun. 30, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,746

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2632061

Int. Cl.² B02C *13/02, 23/18*

U.S. Cl. 241—66 **5 Claims**

1. A device for crushing sinter material and the like, comprising:

(a) a horizontal shaft rotatably mounted;

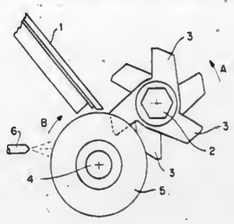
(b) a plurality of crusher arms spaced apart and fixed to said horizontal shaft;

(c) means for rotating said horizontal shaft;

(d) a horizontal axle freely rotatably mounted and positioned parallel to said horizontal shaft;

(e) a plurality of discs, disposed parallel to each other and spaced apart, fixed to said horizontal axle, said horizontal axle intersecting said discs through the central axle of said discs, said discs positioned, in relation to said crusher arms, to allow said crusher arms to move through said spaced apart relationship of said discs;

(f) an impact table disposed directly above and adjacent to said discs in a position sloped to absorb the impact of



sinter material or the like which falls onto said impact table and thence slides directly onto said plurality of said crusher arms, said impact table also being adjacent to said plurality of said crusher arms.

4,201,347

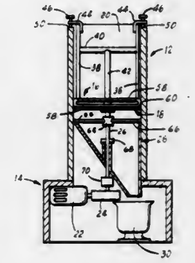
CREMATORY ASH GRINDER

B. Jack Elkin, Santa Clara, Calif., assignor to James D. McCampbell, Harbor City, Calif.

Filed Nov. 20, 1978, Ser. No. 962,131

Int. Cl.² B02C *7/12*

U.S. Cl. 241—92 **9 Claims**



1. A crematory ash grinder comprising

a vertically oriented cylindrical drum;

a grinding disk mounted coaxially relative to said drum and having a flat surface with multiplicity of apertures therethrough;

a bearing plate mounted coaxially relative to said drum above said grinding disk in spaced relationship thereto and having a downwardly facing flat bearing surface with a plurality of blunt protrusions extending axially a uniform distance therefrom and located across the expanse of said bearing surface;

adjustable means acting between said cylindrical drum and said bearing plate for varying the spacing therebetween;

a funnel positioned beneath said grinding disk for receiving ground ashes emanting through said apertures for collection in an urn located therebeneath;

drive means secured relative to said drum including an electric motor and speed reducing gears for slowly turning one of said grinding disk and said bearing plate in rotation relative to said drum; and

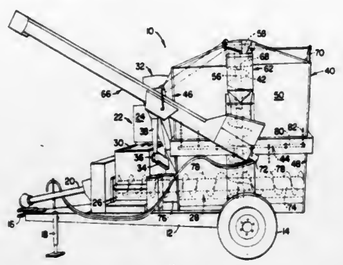
a rotation restraining means for immobilizing one of said bearing plate and said grinding disk from rotation relative to said drum.

4,201,348

FEED GRINDING AND MIXING APPARATUS

Marvin L. Bigbee, Ankeny; Harold R. Lindstrom, Des Moines, and Edward C. Ryan, Ankeny, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 1, 1978, Ser. No. 901,578
Int. Cl.[2] B02C 13/286
U.S. Cl. 241—101 B 12 Claims



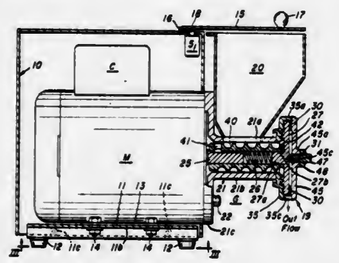
1. In a material-mixing apparatus comprising: a mobile frame; a mixing tank having upright end walls and side walls converging to a trough-shaped bottom; an upright auger conveyor adapted at its lower end portion to receive material from the bottom of said tank intermediate its end walls and convey it upwardly for discharge into said tank; a material-reducing unit having an outlet for transferring material to the mixing tank; a generally horizontal auger means carried within the tank for conveying material towards the upright auger, said auger means adapted to receive material from near each end wall of said tank and also along its length and convey said material towards the upright auger conveyor, said auger means carried between the end walls and above and along the bottom of the mixing tank, one end of said auger means projecting through one end wall and the outlet and into the material-reducing unit, for moving material from said unit into the tank; and powered drive means carried by the frame for driving said upright auger conveyor and horizontal auger means.

4,201,349

FOOD RETAILING GRINDING MACHINE

David E. Walsh, Fargo, N. Dak., assignor to General Nutrition Corporation, Pittsburgh, Pa.

Filed Nov. 13, 1978, Ser. No. 959,868
Int. Cl.[2] B02C 7/04
U.S. Cl. 241—247 15 Claims



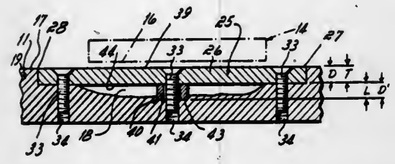
1. An improved apparatus for grinding food items such as nut kernels into a uniformly textured product which apparatus has a motor-driven shaft, a forwardly extending substantially cylindrical housing, a food advancing auger shaft secured to and extending from the driven shaft along said cylindrical housing for rotative actuation therewithin, a chute positioned above said cylindrical housing and open at its lower end therethrough to deliver food items on said auger shaft for forwardly advancing movement therealong, a front housing secured to and extending forwardly from a front end of said cylindrical housing and defining a radially extending food processing chamber therein, a pair of plate-like grinding heads each having a substantially planar grinding face, the grinding faces of said pair of heads being in an opposed operating position with respect to each other within said processing chamber, one of said pair of heads being mounted to project radially from the front end of said cylindrical housing, means securing the other of said heads in a forwardly positioned relation with respect to said auger shaft for rotative actuation thereby to effect relative rotational movement with respect to said one head, said one head having a centrally located inlet portion to receive food items being forwardly advanced by said auger shaft for introducing them substantially axially centrally into said processing chamber and radially between said opposed grinding faces, each said grinding face having a substantially planar central area portion provided with a group of peripherally widely and substantially equally spaced-apart sets of relatively coarse grinding teeth that extend as circularly curved line segments thereon, each said grinding face also having a rim-like group of finer teeth extending in circularly curved lines therealong adjacent the outer periphery thereof, open-end feed slot portions positioned in a substantially equally peripherally spaced-apart relation to extend outwardly across said group of finer teeth to separate them into relatively closely spaced-apart sets, said slot portions extending in an open-end relation between said planar central area portion to an outer peripheral edge portion of the associated said head for delivering finely ground food material from between said pair of heads into a radial outer portion of said processing chamber, means associated with said other head for thereafter advancing the food material across its outer periphery into a front portion of said processing chamber between said other head and said front housing, and said front housing having an outlet portion for delivering processed food material from the front portion of said chamber.

4,201,350

RECONDITIONED SAND MULLER

Jeffrey D. Eagens, Cincinnati, Ohio, assignor to Brunswick Industrial Supply Company, Cleveland, Ohio

Division of Ser. No. 808,361, Jun. 20, 1977, Pat. No. 4,126,922.
This application Sep. 13, 1978, Ser. No. 941,975
Int. Cl.[2] B02C 7/12
U.S. Cl. 241—298 5 Claims



1. Re-conditioned sand muller structure wherein a previously formed generally circular wear path in a circular bottom of a sand muller's vessel is covered, said wear path being in the form of an irregular depth ring having an inner and an outer periphery, and said structure comprising:

a first annular seat in said bottom beyond the outer periphery of said wear path, and have a pre-determined depth;

a second annular seat in said bottom within the inner periphery of said wear path and having a pre-determined depth; said depths being equal and less than the maximum depth of said wear path;

a wear plate means disposed over said wear path, said wear plate means having outer and inner circumferences respectively corresponding to the circumferences of said first and second annular seats;

said wear plate means having a thickness approximately equal to the depth of said seats;

the respective circumferences of said wear plate means being seated in respective ones of said first and second seats; and,

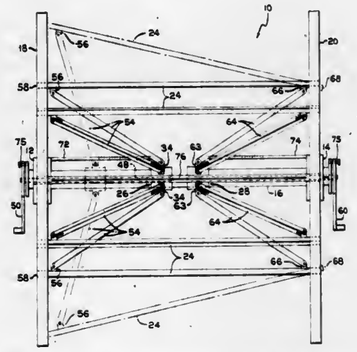
a bottom surface of said wear plate means overlying surfaces of said wear path and being spaced therefrom.

4,201,351

CUTTING STRETCHED INTERPLAYER SHEETING

Richard J. Tolliver, Greensburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 814,068, Jul. 8, 1977. This application Jun. 4, 1979, Ser. No. 45,561
Int. Cl.[2] B65H 19/20, 75/24
U.S. Cl. 242—56 B 2 Claims



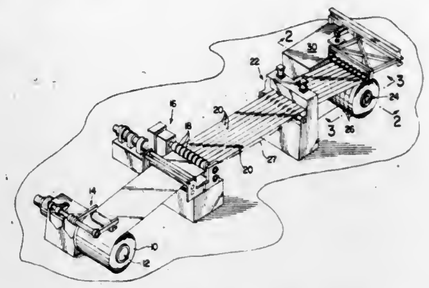
1. Apparatus for cutting a series of individual sheet sof thermoplastic interlayer material of a preselected trapezoidal shape and of a preselected size from a continuous ribbon of said material comprising a mandrel having a first end member and a second end member, a central pipe interconnecting said end members, a plurality of radially extending arms attached in equiangular relation about each of said end members, the radial arms attached to said first end member being aligned with corresponding radial arms attached to said second end mbmer, each of said radial arms having a longitudinally extending groove, a peripheral arm interconnecting each of said radial arms attached to said first end member to said corresponding radial arm attached to said second end member, each peripheral arm having one end portion engaging the longitudinally extending groove of one of said radial arms attached to said first end member and another end portion engaging the longitudinally extending groove of the corresponding one of said radial arms attached to said second end member, a first adjustment housing indepdently mounted to said central pipe for axial movement along one portion of one side of the center of said central pipe, a second adjustment housing independently mounted to said central pipe for axial movement along another portion to the other side of the center of said central pipe, link means interconnecting each of said adjustment housings to an adjacent end of each of said peripheral arms, separate crank means operatively connected independently to each of said abutment housings for moving one or the other of said adjustment housings independently of one another, whereby the adjusted circumference at each end of said mandrel is adjustable independently of the adjusted circumference at the other end of said mandrel so that the mandrel may be adjusted to receive plies of plastic interlayer material having different lengths at their opposite longitudinal edges approximately equal to an integral number of lengths of the opposite side edges of sheets of trapezoidal shape to be cut from said continuous ribbon and can be readily adjustable to accommodate trapezoidal shapes having different lengths along their opposite longitudinal edges, and means associated with said mandrel for cutting said plies along at least one line in a plane that intersects said central shaft.

4,201,352

METHOD AND COMBINATION FOR WINDING STRANDS OF WEB MATERIAL HAVING VARYING THICKNESSES ON A TAKE-UP DRUM

John F. Madachy, Mayfield Heights, Ohio, assignor to Loopco Industries, Inc., Twinsburg, Ohio

Filed Sep. 25, 1978, Ser. No. 945,210
Int. Cl.[2] B65H 35/02, 23/10
U.S. Cl. 242—56.2 25 Claims



1. A method for eliminating slack in one or more of a plurality of strands of web material being wound into coils on a take-up drum, where the strands have different thicknesses, comprising the steps of:

(a) connecting a portion of each strand to the drum so that rotation of the drum will cause the strands simultaneously to wind onto the drum;

(b) winding the strands onto the drum;

(c) connecting a portion of each strand to a previously wound portion of the same strand for forming a plurality of fixed diameter loops about the drum, the portion of each strand adjacent to the drum substantially conforming in size and shape to the outer surface of the drum;

(d) disconnecting the portion of each strand connected to the drum; and

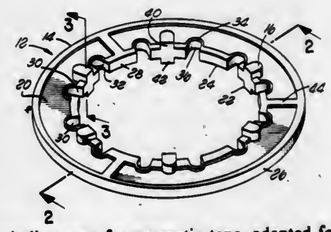
(e) reducing the outer diameter of the drum an amount sufficient to cause the loops to slip relative to the drum when the drum is rotated and a predetermined tension is reached in the strands, the frictional force between the strands and drum causing the loops to rotate with the drum until said predetermined tension is reached.

4,201,353

WINDING CORE FOR MAGNETIC TAPE ADAPTED FOR STACKING

S. Allen Schor, Rancho Palos Verdes, Calif., assignor to El Mar Plastics, Inc., Carson, Calif.

Filed Mar. 28, 1979, Ser. No. 24,850
Int. Cl.[2] B65H 75/18
U.S. Cl. 242—68.5 8 Claims



1. A winding core for magnetic tape, adapted for stacking between like first and second sandwiching cores, comprising: a substantially annular body having first and second substantially annular body surfaces, an outer circumferential body surface for winding the tape therearound, a discon-

tinuous inner circumferential body surface and a set of recess surfaces extending between said annular body surfaces and between portions of said discontinuous inner circumferential body surface, said recess surfaces defining a set of recesses for the core;

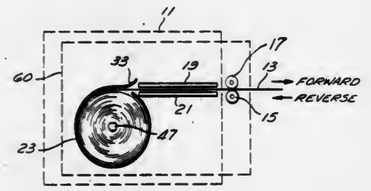
a set of projections rising from said first annular body surface, each for mating with a recess of the set of recesses of the first sandwiching core; and a set of projections rising from said second annular body surface, each for mating with a recess of the set of recesses of the second sandwiching core.

4,201,354

RELOADABLE PAPER DISPENSER

Felix R. Masiello, Parsippany, and John S. Kula, Budd Lake, both of N.J., assignors to AM International, Inc., Los Angeles, Calif.

Filed Oct. 13, 1978, Ser. No. 951,223
Int. Cl.² G03B 17/26; B65H 17/02
U.S. Cl. 242—71.7 **13 Claims**



1. Apparatus for dispensing and accumulating a driven web of selected rigidity and width without folding the web, the apparatus comprising:

enclosure means having a chamber defined therein and a shaft disposed in the chamber for storing the web thereon, said enclosure means having an opening of selected width disposed along the length of said enclosure means sufficient to accommodate passage of the web therethrough;

lid means pivotally affixed to the enclosure means and disposed over the opening and along the length of said enclosure means for preventing light from entering the enclosure means; and

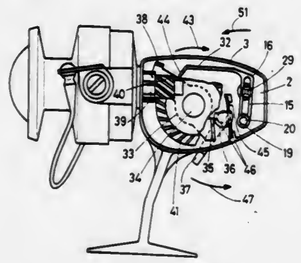
guide means disposed proximate to the enclosure means for guiding the driven web through said opening and under the lid means, enabling said web to be dispensed from the shaft and be accumulated in the chamber and about said shaft without becoming folded.

4,201,355

FISHING REELS

Jean Ruin, Thyez, France, assignor to Mitchell S.A., France

Filed Nov. 8, 1978, Ser. No. 958,949
Claims priority, application France, Nov. 30, 1977, 77 367881
Int. Cl.² A01K 89/00
U.S. Cl. 242—84.1 R **8 Claims**



1. A fishing reel comprising a housing having a wall with a circular opening therein, an audible warning device in said housing,

an operating member having a pivot portion rotatably received in said opening, an operating portion outside said wall and a profiled portion inside said housing with a peripheral flange inwardly of said profiled portion, said profiled portion and flange being of a size to pass through said opening, and

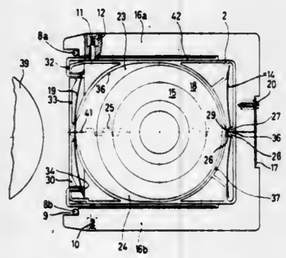
a resilient member removably mounted on the inner side of said wall for angular movement about a pivot axis spaced from said opening, said resilient member having a first portion resiliently engaging said profiled portion of said operating member for angular movement of said resilient member upon rotation of said operating member and cooperating with said peripheral flange to retain said operating member in said opening and to retain said resilient member on the inner side of said wall, and a second portion cooperating with said audible warning device.

4,201,356

CARTRIDGE ARRANGEMENT COMPRISING AN ADAPTER

Klaus Schoettle, Heidelberg; Karl Uhl, Frankenthal; Heinrich Wittkamp, Mannheim; Peter Dobler, Ludwigshafen, and Helmut Lewin, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,784
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712622
Int. Cl.² G11B 23/08
U.S. Cl. 242—197 **8 Claims**



1. A cartridge arrangement for permitting a relatively small cartridge containing at least one pack of tape-like recording medium to be used on a recording and/or playback apparatus designed for use with a relatively large cartridge, each said cartridge comprising two sections, hinge means pivotally connecting said sections together, and an automatically releasable locking member, and said apparatus having pivoting means for causing said sections to be spread apart, said arrangement comprising: an adapter frame dimensioned on the inside to receive said relatively small cartridge, having outside dimensions generally corresponding to those of the relatively large cartridge, and being provided with means for retaining said small cartridge as well as means carried by said retaining means and cooperating with the relatively short locking member of said small cartridge for releasing said cartridge upon insertion of said cartridge into said frame.

4,201,357

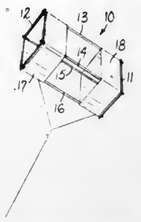
FRAMEWORK FOR A BOX KITE

Harry N. Gambardella, 388 Main St., East Haven, Conn. 06512

Filed Aug. 2, 1978, Ser. No. 930,533
Int. Cl.² B64C 31/06
U.S. Cl. 244—153 R **5 Claims**

1. A box-type kite comprising first and second formed unitary polygonal end frames having corners, a plurality of struts

equal in number to said corners, flexible sails disposed about said struts intermediate the ends of the struts, strut receiving passages defined in said frames at each of said corners and subtending more than 180°, and having openings for insertion of said struts therein, said struts having a cross-sectional dimension greater than the openings to said passages, said struts received in said passages in each of said frames adjacent the ends of said struts, said frames being sufficiently resilient so that said struts may be inserted in said passages through said openings and held therein.

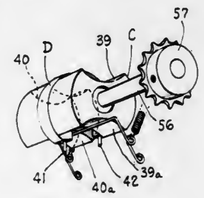


4,201,358

DOUGH DISPENSING AND SUPPORT APPARATUS

Jacob T. Nelson, 105 W. Lee Rd., Taylors, S.C. 29682

Continuation of Ser. No. 754,335, Dec. 27, 1976, Pat. No. 4,094,623. This application Apr. 18, 1978, Ser. No. 897,347
Int. Cl.² A47H 1/10
U.S. Cl. 248—283 **3 Claims**



1. Apparatus for positioning and supporting a dough chamber and dispensing device and the like having a horizontal centerline and having a dispensing outlet disposable in close proximity above a cooking compartment of an associated food preparation appliance, said apparatus comprising:

first bracket means adapted for being affixed to a vertical stationary supporting surface;

a cantilevered support means extending outwardly from said bracket means in a generally horizontal manner;

a first pivotal connection between said first bracket means and said cantilevered support means providing generally lateral movement of said cantilevered support relative to said bracket means in a first generally horizontal plane;

second bracket means carried adjacent a free end of said cantilevered support means, mounting bracket means adapted for mounting to said dough chamber, a horizontal pivot connection connecting said second bracket means and said mounting bracket means providing pivotable movement of said dough chamber in a second generally vertical plane transverse to said cantilevered support means;

said horizontal pivot connection including a pivot point well above the centerline of said dough chamber enabling said dough chamber to be swung manually and returned to a vertical position in a self-returning manner avoiding the attendant risk of tipping and spillage;

a third pivotal connection connected between said cantilevered support means and said second bracket means providing pivotable movement of said dough chamber generally in a horizontal plane perpendicular to said second plane enhancing the maneuverability and positioning of said dough chamber adjacent the free end of said cantilevered support means; and

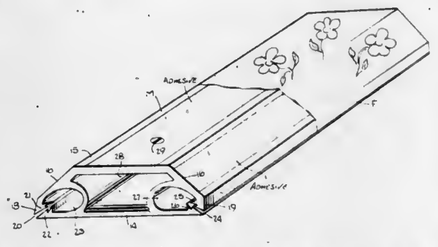
said dough chamber being pivotable about said horizontal pivotable connection to a raised position for clearing said associated appliance and subsequently pivotable to a lowered vertical position wherein said dispensing outlet is closely within said cooking compartment.

4,201,359

FABRIC-COVERED CHAIR RAIL

Floyd M. Baslow, 100 Lafayette St., New Bethlehem, Pa. 16242

Continuation-in-part of Ser. No. 680,703, Apr. 27, 1976, Pat. No. 4,018,260. This application Jan. 10, 1977, Ser. No. 758,203
The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.
Int. Cl.² E04F 19/02; A47B 95/00
U.S. Cl. 248—345.1 **7 Claims**



1. A fabric-covered chair rail for creating a horizontal waistline along the interior walls of a room or passage, said rail being constituted by pieces whose lengths are appropriate to the walls, each piece comprising:

a. a one-piece molding attachable to a wall and having upper and lower edges which are separated from a base to define therewith inlet jaws communicating with an internal storage channel running the full length of the molding, said molding being formed of extruded material having sufficient resilience to render said jaws dilatable, said base abutting said wall;

b. a replaceable band of fabric overlying the molding and conforming to the contour thereof, said fabric having upper and lower margins which initially extend beyond the edges of the molding, the fabric margins being inserted in said inlet jaws and being stuffed into said channels whereby the fabric fully covers the exposed portions of the molding and presents a smooth and attractive appearance; and

c. a layer of pressure-sensitive adhesive on said molding adjacent the upper and lower edges thereof to secure said fabric thereto.

4,201,360

INJECTION MOLDING OF EMBOSSED ARTICLES

James H. Schwartzburg; Eric A. Little, and Eddie A. Wilson, all of Lawrence, Kans., assignors to Packer Plastics, Inc., Lawrence, Kans.

Filed Jan. 27, 1978, Ser. No. 872,879
Int. Cl.² B29C 1/14
U.S. Cl. 249—140 **5 Claims**

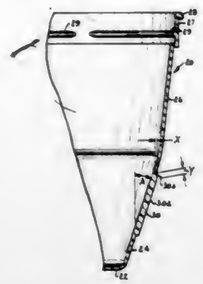
1. Unidirectional, injection molding apparatus for molding a thermoplastic article, said apparatus comprising:

inner and outer nondeformably rigid mold members supported for movement toward and away from one another along a mold axis, said inner and outer mold members presenting respective inner and outer mold surfaces inclined with respect to said mold axis and cooperating to present a space therebetween for receiving thermoplastic material to form a wall portion of the article;

an engraved area in said outer mold surface for receiving thermoplastic material to form a boss integrallly on said

wall portion in generally outward projection therefrom; and

a lead-in surface of said engraved area inclined with respect to said mold axis and having a first end adjoining said outer mold surface, said lead-in surface having a second



end located outwardly of said first end and offset therefrom in the direction of said mold axis,

said second end being located outwardly of said first end a short enough distance to permit disengagement of said boss from said lead-in surface during separating movement of said mold members along said mold axis.

4,201,361

CONCRETE FORM COMPONENT

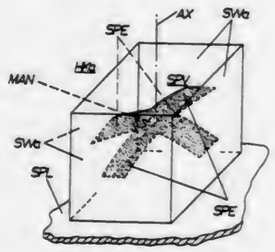
Herbert Kling, Untermättli 566, 8913 Ottenbach, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,246

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810287

Int. Cl.² F16M *11/14*

U.S. Cl. 249—183 **25 Claims**



1. A formwork component for use in concrete construction for the formation of a recess in a wall or ceiling, said component comprising a hollow body defining a central axis, said body having a resilient wall and at least one spreader mechanism adapted to adjust the shape of said hollow body to vary its cross-sectional dimensions, said resilient wall including at least one section bendable about an axis substantially co-planar with said central axis.

4,201,362

ELECTROMAGNETIC PILOT TYPE VALVE

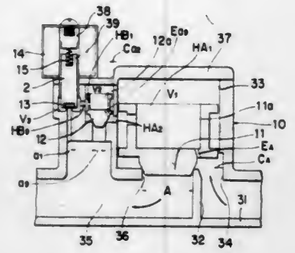
Ichiro Nishimi, Tokyo, and Hideaki Ōhira, Tokorozawa, both of Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,052

Int. Cl.² F16K *31/02, 31/102*

U.S. Cl. 251—29 **4 Claims**

1. A generally compact multi-piston type electromagnetic pilot valve comprising a single valve housing, a pilot port, a main valve port, at least one auxiliary pilot port provided between said pilot port and said main valve port having diameters progressively smaller than that of said main valve port and gradually increased at a predetermined rate with respect to that of said pilot port, cup-shaped piston valves for opening and closing said main valve port and said at least one auxiliary pilot port, said piston valves including front, rear and inner lower surfaces, first passages for communicating and acting on the front and the inner lower surfaces of said piston valves, second passages being defined by the outer circumference of said piston valves, said second passages communicating and acting on said front, said rear and said inner lower surfaces of



said piston valves, and a plunger being provided to open and close said pilot port, a first auxiliary pilot port adjacent to said pilot port being opened and closed by at least one of said auxiliary piston valves while opening and closing said pilot port with said plunger, and said piston valves, said pilot port, said auxiliary pilot port, said main valve port and said plunger are disposed in parallel relationship with each other within said valve housing; whereby a main valve body of a generally large diameter may be operated with a generally small electromagnetic pilot valve.

4,201,363

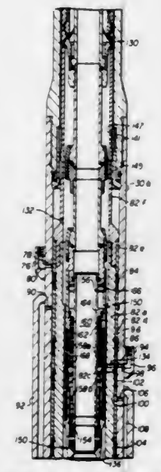
TUBING RETRIEVABLE SURFACE CONTROLLED SUBSURFACE SAFETY VALVE

Henry P. Arendt; Thomas M. Deaton, and Gary A. Kohn, all of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 17, 1978, Ser. No. 925,535

Int. Cl.² F16K *31/122*; E21B *33/00*

U.S. Cl. 251—62 **12 Claims**



1. A surface controlled subsurface safety valve comprising:

housing means for defining a flow path;

closure means for controlling flow through said flow path;

actuator means for controlling movement of said closure means and including:

operator means longitudinally movable with respect to said housing means and having a first position wherein said closure means prevents flow and a second position wherein said closure means permits flow,

fluid pressure responsive means for moving said operator means from said first position to said second position when affected by fluid pressurized at least to a selected value;

means for communicating control fluid between a control conduit and said pressure responsive means;

means for simultaneously moving said operator means to said second position and for preventing flow through said communicating means.

4,201,364

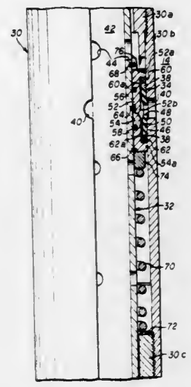
RADIALLY EXPANDABLE TUBULAR VALVE SEAL

Donald F. Taylor, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 27, 1978, Ser. No. 928,362

Int. Cl.² F16K *3/18*

U.S. Cl. 251—175 **16 Claims**



1. A valve comprising:

tubular housing means for defining two regions;

said tubular housing means including a sealing surface facing one of said two regions;

said tubular housing means including lateral port means extending between said two regions and opening in said sealing surface;

mandrel means extending along said sealing surface;

tubular seal means carried by said mandrel means and expandable into engagement with said sealing surface and contractable away from said sealing surface;

said tubular seal means having one longitudinal extreme end on one side of said lateral port means and having its other longitudinal extreme end on the other side of said lateral port means;

pressure responsive means for expanding said tubular seal means into engagement with said sealing surface and formed between said mandrel means and said tubular seal means;

said tubular seal means including means for admitting fluid into said pressure responsive means from the other of said two pressure regions.

4,201,365

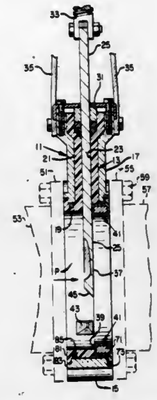
LINED GATE VALVE HAVING IMPROVED SEAT

George J. Paptzun, Portland; Collin C. Hall, Oregon City, and Benjamin B. Bullwinkle, Portland, all of Oreg., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,180

Int. Cl.² F16K *3/30*

U.S. Cl. 251—328 **8 Claims**



1. In a gate valve having a seat for engagement with a gate blade for shutting off flow through the valve,

said seat including a plastic layer having a seating portion defining an annular face for engagement with the blade and having a flow passage portion angularly related and integrally joined to said seating portion,

means defining a rigid back up structure for said layer,

said seat having a shear area constituted by the area of a band having a diameter equal to that of the exterior of said flow passage portion and a width equal to the thickness of said seating portion,

the ratio of said shear area to the area of said annular face being greater than 0.55 but less than 0.80.

4,201,366

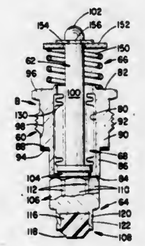
BELLOWS VALVE

Oliver L. Danko, 12184 Heath Rd., Chesterland, Ohio 44026; Bernard J. Gallagher, 6665 Gates Mills Blvd., Gates Mills, Ohio 44040; Earl D. Shufflebarger, 6609 Berkshire Dr., Mentor, Ohio 44060; David M. Simko, 6467 Huntington Dr., Solon, Ohio 44139, and Edward E. Kish, 7380 Raccoon Hill, Kirtland, Ohio 44094

Filed Mar. 13, 1978, Ser. No. 886,031

Int. Cl.² F16K *41/10*

U.S. Cl. 251—335 B **30 Claims**



1. A bellows valve comprising in combination:

a valve body having a cylindrical passageway extending thereinto for defining a valve chamber, a valve seat disposed along said passageway having a fluid inlet commu-

nicating therewith on one side of said valve seat and a fluid outlet communicating therewith on the other side of said valve seat;

a bonnet portion associated with said valve body and including a bonnet opening coaxially disposed with said passageway;

a valve assembly receivable in said bonnet opening as a unit with a portion thereof extending into said valve chamber and adapted to selectively control fluid flow between said valve inlet and outlet, said valve assembly including an adapter, a valve member, a valve stem and an open ended hollow bellows;

said adapter having inner and outer ends and being dimensioned to be closely received in said bonnet opening in a sealing relationship therewith, said adapter including an opening extending therethrough between said adapter inner and outer ends coaxial with said valve chamber;

said valve stem extending through said adapter opening and being elongated to have an outer end spaced from said adapter outer end, said stem inner end including said valve member with said valve member being cooperable with said adapter inner end defining a maximum spaced position for said valve member from said valve seat;

said bellows passing through at least a portion of said adapter opening and surrounding a portion of said stem, one end of said bellows being affixed to said adapter around said adapter opening adjacent said adapter outer end with the other end of said bellows being affixed to said valve stem adjacent said valve member thereby closing said adaptor opening and sealingly isolating said stem and whereby fluid passing through said valve from said inlet to said outlet exerts an external compressive force against said bellows;

first means for at least selectively urging said stem axially outward of said adapter so that said valve member is urged axially outward from said valve chamber away from said valve seat; and,

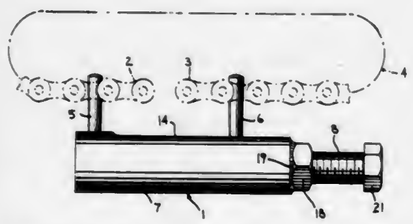
second means for at least selectively urging said stem axially inward of said adapter into said valve chamber for moving said valve member into engagement with said valve seat thereby closing said valve and preventing fluid flow therethrough.

4,201,367

CHAIN STRETCHER APPARATUS

Jerome P. Konen, Sr., 3037 E. Somers Ave., Cudahy, Wis. 53110

Filed Dec. 11, 1978, Ser. No. 968,117
Int. Cl.² B66F *3/10*
U.S. Cl. 254—67 **7 Claims**



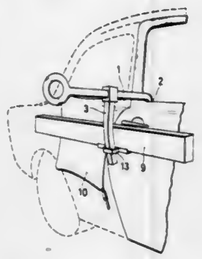
1. A chain stretcher apparatus for positioning the opposed ends of a roller-type link chain and the like in a machine, comprising an outer housing having an inner guide bore and longitudinal opening, a piston member slidably journaled within said bore for smooth guided sliding movement therein, resilient means urging the piston to one end of the bore of the housing, a first pin-like jaw secured to the piston member and projecting therefrom through said longitudinal opening, a second pin-like jaw interconnected to the housing adjacent said one end of the bore and in spaced relation to said first jaw, a power positioning means secured to the housing and including a jaw positioning member extending into the housing through the second end of the bore in abutting relation and releasably coupling with the piston member for positioning thereof within the housing against said resilient means and thereby positioning the first jaw relative to the second jaw for adjustment of the spacing between the jaws and thereby permitting the corresponding spacing of the chain ends.

4,201,368

ARRANGEMENT FOR EMERGENCY OPENING A VEHICLE DOOR

Manfred Vetter, Zülpich-Langendorf, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,362
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 7735079[U]
Int. Cl.² B66F *3/00*
U.S. Cl. 254—131 **17 Claims**



1. An arrangement for emergency opening of a vehicle door, comprising an elongated inner member arranged for abutting against an inner surface of a vehicle door; an elongated transverse member extending transverse to said inner member and arranged to extend through a window opening of the vehicle door, said transverse member being of one piece with and extending substantially normal to said inner member; an elongated outer member extending outside of the vehicle door substantially parallel to said inner member in spaced relationship with the latter and arranged for applying a force to the vehicle door for opening the latter, said transverse member extending through said outer member and the latter being movable lengthwise of said transverse member relative to the inner member so as to vary the distance between said outer and inner members whereby the vehicle door can be forcedly opened, said inner and outer members having inner faces facing toward one another and provided with thorn-like projections which prevent sliding off of the arrangement from the vehicle door, said outer member being arranged so that a beam can be located between said outer member and an outer face of of the vehicle door; and means for supporting the beam and arranged on said outer member.

4,201,369

PULLEY ARRANGEMENT FOR THE LAYING OUT OF ELECTRICAL LEADS IN A BUNDLE FASHION

Walter Betta, Bergamo, Italy, assignor to WABING S.r.L., Bergamo, Italy

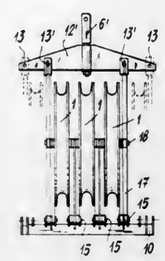
Filed Sep. 21, 1978, Ser. No. 944,610
Claims priority, application Italy, Oct. 7, 1977, 4219/77[U]
Int. Cl.² B66D *1/36*
U.S. Cl. 254—193 **3 Claims**

1. A pulley system for the laying out of electrical leads, wherein the number of pulleys assembled is equal to the number of electrical leads to be laid out, and comprising:

at least one pulley subassembly, said subassembly consisting of a pulley having a hub and having a central pin forming an axle, and further consisting of two support arms attached at one end to opposite ends of said central pin so as to extend parallel to the radius of said pulley, each arm having a hole in its free end;

a support beam subassembly, consisting of two parallel beams which are transversely connected, each beam having a plurality of holes for pin connection to the free ends of the support arms of said pulley subassembly, said pin connection holes on the beams being spaced at multiples of the width of said pulley subassembly such that alternate pairs of pulley support arms are connected alternately to one beam and to the other in staggered fashion such that each said pulley is positioned parallel to a single plane and transverse to the plane containing said parallel beams;

an upper cross piece having a swivelling central fixture for



attachment to a lifting line and having holes spaced at multiples of the pulley width, one pair of said holes being spaced for connection with said support arms of a single pulley subassembly;

two side plates having holes at each end for attachment to said support beams and to said upper cross piece respectively; and

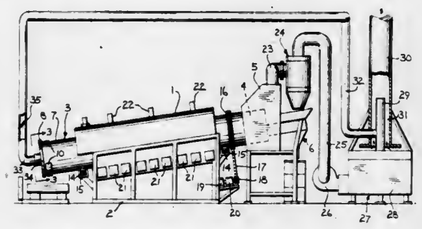
pins for connecting said support arms and said side plates, the central pin of each said pulley being connected to the central pin of the adjacent pulley and the central pins of the outermost pulleys being connected to said side plates when more than one pulley is used.

4,201,370

METHOD AND APPARATUS FOR HEAT TREATING MATERIALS TO REMOVE CONTAMINANTS

Marvin Evans, and David H. Miller, both of Milwaukee, Wis., assignors to College Research Corporation, Butler, Wis.

Filed Jul. 10, 1978, Ser. No. 923,019
Int. Cl.² F27D *7/00*; F27B *7/34*; F23B *5/04*
U.S. Cl. 266—44 **6 Claims**



1. An apparatus for treating materials to remove combustible substances thereform, comprising a furnace, a rotable inclined retort disposed within the furnace for conveying material to be treated, feeding means for introducing the material into the upper end of the retort, discharge means for removing the treated material from the lower end of the retort, heating means associated with the furnace for heating the retort and the combustible substances therein to produce combustible gases, gas combustion means separate from the retort and having an inlet to receive said combustible gases and having an outlet stack, first conduit means connecting one end of the retort and said inlet for conducting said combustible gases to said combustion means, the combustible portion of said gases being burned in said combustion means, and the combusted gases being discharged through the stack, second conduit means connecting said stack with the other end of said retort for conducting said combusted gases to said retort, closure means for enclosing said other end of the retort and having an opening to receive said second conduit means, and means for mounting the retort for rotation relative to said second conduit means.

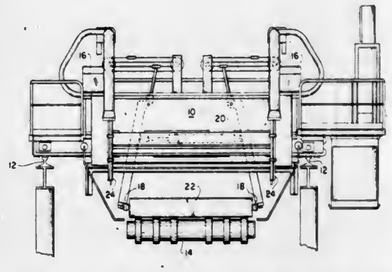
6. A method of treating scrap metal to remove contaminants therefrom, comprising the steps of feeding the scrap metal into the upper end of an inclined retort, rotating the retort to convey the scrap metal downwardly through the retort, heating the scrap metal being conveyed in the retort to vaporize the contaminants and generate combustible gases, discharging the treated scrap metal from the lower end of the retort, conducting the combustible gases from the upper end of the retort to a combustion chamber, combusting the combustible gases in said chamber and discharging the gases of combustion through a stack, returning a portion of said gases of combustion from the stack to the lower end of the retort, and passing the gases of combustion through the retort in contact with the scrap metal and in a countercurrent direction with respect to the direction of flow of the scrap metal.

4,201,371

CONTROL UNIT FOR TORCH-CUTTING MACHINES USED IN CONTINUOUS CASTING

René Pillon, Villeneuve le Roi, France, assignor to Fives-Cail Babcock, Paris, France

Filed Feb. 22, 1979, Ser. No. 14,084
Claims priority, application France, Mar. 10, 1978, 78 06935
Int. Cl.² B23K *31/10*
U.S. Cl. 266—50 **5 Claims**



1. Control unit for torch-cutting machine fitted with bars, hinged on the machine frame, which grip the sides of the cast product and ensure that the machine and the cast product move along together, as well as at least one cutting-torch carriage, which is movable in a direction at right angles to that of the machine, this control unit consisting of a first element carried by the cutting-torch carriage and a second element placed on the path followed by the first element during the carriage's travels, the two elements in combination ensuring that the carriage is halted when it reaches a predetermined position, and being characterized by the fact that the second element is kinematically linked to the grip-bar situated on the side of the cast product where the cut will begin, in such a way that the movements of the grip-bar move this second element in a direction parallel to the path of the cutting-torch carriage, at a speed equal to and in the same direction as the component, parallel to the path of the cutting-torch carriage, of the speed of the end of the grip-bar which comes into contact with the cast product.

4,201,372

BLAST FURNACE TUYERE

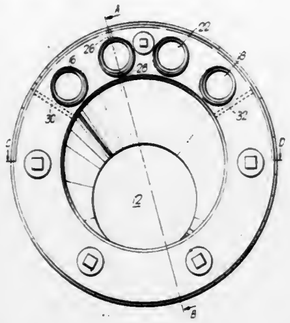
Colin F. Widmer, Cleveland, England, assignor to James Brown & Sons Limited, Cleveland, England

Filed May 9, 1979, Ser. No. 37,292

Claims priority, application United Kingdom, May 23, 1978, 21693/78

Int. Cl.[2] C21B 7/10

U.S. Cl. 266—270 3 Claims



1. A tuyere for a blast furnace having a nose and a rear end, a cooling chamber of annular cross-section with inner and outer walls, a first end wall towards the nose of the tuyere and a second end wall at the rear of the tuyere, inlet and outlet orifices in the second end wall through which cooling fluid may be passed into and out of the said chamber, a partition within the said chamber which runs the axial length of the said chamber and extends between the said inner and outer walls and which is located such that there is one said orifice each side of the said partition, and a guide member on each side of the said partition extending within the chamber from the said second end wall towards but not reaching the first end wall being so located that each orifice is between the said partition and a said guide member, the forward end of each guide member terminating adjacent the partition whereby fluid entering by a said orifice is guided into a stream which reaches that part of the said chamber which is near to both the said partition and the said first end wall.

4,201,373

GUIDING AND POSITIONING MECHANISM FOR A PLUGGING OR DRILLING DEVICE

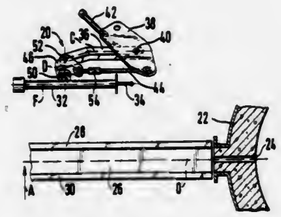
Léon Ulveling; Pierre Mailliet, both of Howald, and Jean Metz, Pierret, all of Luxembourg, assignors to Paul Wurth-S.A., Luxembourg, Luxembourg

Filed Sep. 18, 1978, Ser. No. 943,228

Claims priority, application Luxembourg, Jun. 1, 1978, 79749

Int. Cl.[2] C21B 7/12

U.S. Cl. 266—271 11 Claims



1. Apparatus for guiding and positioning a tool relative to a taphole of a shaft furnace, the taphole communicating with a pouring channel whereby molten metal may be withdrawn from the furnace, the taphole having an axis which lies in a vertical plane, the tool having a longitudinal axis, said apparatus comprising:

main pivot means, said main pivot means having a longitudinal axis which defines a first angle with respect to the vertical;

support arm means, said support arm means having a longitudinal axis and being mounted on said main pivot means for pivoting about said main pivot means axis;

guide bar means;

means coupling a first end of said guide bar means to said support arm means whereby said guide bar means will move with said support arm means during pivoting of said support arm means about said main pivot means axis;

intermediate support means, said intermediate support means being connected at a first point to said guide bar means adjacent the second end thereof;

means mounting the tool from said intermediate support means, said tool mounting means establishing a rigid connection between a second point on said intermediate support means and the tool, said rigid connection being adjustable to vary the angle of inclination of the tool axis with respect to the horizontal;

auxiliary pivot means, said auxiliary pivot means connecting a third point on said intermediate support means to a point on said support arm means which is displaced from said main pivot means, said auxiliary pivot means having an axis which is inclined in a first direction with respect to said main pivot means axis whereby said auxiliary pivot means axis defines a second angle with respect to a vertical, said second angle differing from said first angle; and

means for causing said support arm means to rotate about said main pivot means axis whereby the tool will be moved between an operative position with its axis generally aligned with the taphole axis and a retracted position.

4,201,374

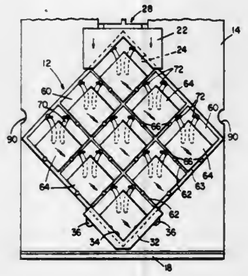
SUBSTRATE CARRIER

Ranulf W. Gras, Lincoln, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Dec. 21, 1978, Ser. No. 971,651

Int. Cl.[2] B25B 1/20

U.S. Cl. 269—37 16 Claims



1. Apparatus for supporting substrates that carry electrical components, comprising:

a base with a generally flat upper surface for supporting the undersides of said substrates,

a plurality of fence portions protruding from said upper surface for bearing against sides of said substrates,

a plurality of moveable arms for biasing said substrates against said fence portions,

said arms including portions exposed to the underside of said base and adapted for engagement with external actuating means positioned below said base, and

spring means for biasing said arms,

whereby said arms can be retracted by said external means while said upper surface is fully accessible for insertion of said substrates.

4,201,375

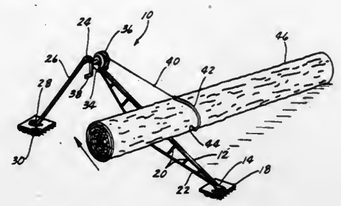
FIREWOOD CUTTING AID

Everett T. Pierce, R.F.D., Clare, Iowa 50524

Filed Jan. 2, 1979, Ser. No. 565

Int. Cl.[2] B66C 23/60

U.S. Cl. 269—46 9 Claims



1. A portable log handling device comprising,

an inclined skid member which is cylindrical in shape and provides an arcuate top surface which minimizes contact with logs which are to be lifted and slid up on said skid said skid having forward and rearward ends, the angle of incline being such that logs may be slid upon said skid, such that the weight of said logs tends to hold said skid in position,

bracing mounted on said skid underneath the surface of said skid which engages logs,

a foot support at its forward end, and

support means adjacent its rearward end to hold said skid in an inclined position,

a winching means attached to said skid near its rearward end for engaging logs and winching the same upon said skid to a midway position between the forward and rearward ends of said skid.

4,201,376

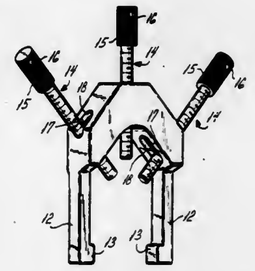
ADJUSTABLE CLAMP FOR V-BLOCK

Kochukadamthotil V. Phillps, 164-10 84th Ave., Jamaica, N.Y. 11432

Filed Dec. 26, 1978, Ser. No. 973,520

Int. Cl.[2] B25B 1/20

U.S. Cl. 269—156 2 Claims



1. An adjustable clamp for a V-block comprising means forming two legs joined together at an acute angle and each having an inwardly directed free end slidably positionable in the V-block, a first threaded hole formed through said means on an axis at least approximately bisecting said acute angle, a first externally threaded elongated member extending through said first hole and having its threads engaged by the threads of the first hole, a respective slot formed in each of the two legs at a location remote from the free end thereof, a respective block slidably received in each of the slots, respective second and third threaded holes formed through said blocks each on an axis at least approximately intersecting the axis of the first hole at points within the acute angle and within an imaginary line extending between the tips of the legs regardless of the positions of the blocks in the slots, and respective second and third externally threaded elongated members extending through said second and third holes and having their threads engaged by the threads of the second and third holes, whereby a workpiece of any cross section can be held rigidly on the V-block by the three elongated members.

4,201,377

CONVEYOR SYSTEM HAVING A LATERAL TAKE-OFF CONVEYOR FOR FLAT PRODUCTS, ESPECIALLY PAPER PRODUCTS

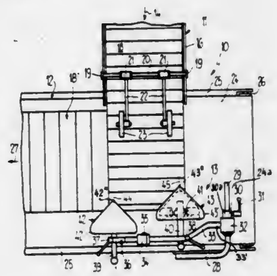
Werner Honegger, Tann-Ruti, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 22, 1978, Ser. No. 908,013

Claims priority, application Switzerland, May 27, 1977, 6530/77

Int. Cl.[2] B65H 5/00

U.S. Cl. 271—225 8 Claims



1. A conveyor system for substantially flat products, especially paper products, comprising:

an infeed conveyor for conveying the products in a first predetermined direction of travel;

said infeed conveyor having a discharge end;

an outfeed conveyor for conveying the products in a second predetermined direction of travel;

said outfeed conveyor traveling past the discharge end of the infeed conveyor and at an angle with regard to said first predetermined direction of conveying of the products;

a number of essentially conical clamping bodies each having a lengthwise axis and operatively associated with said outfeed conveyor;

means for mounting said essentially conical clamping bodies to be rotatable about their related lengthwise axis;

said mounting means arranging said essentially conical clamping bodies in succession in the second direction of conveying of the outfeed conveyor and in spaced relationship from the discharge end of the infeed conveyor;

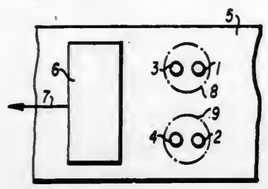
each of said clamping bodies having a tip directed towards the direction of conveying of the infeed conveyor;

each of said clamping bodies having an outer surface;

said outer surfaces of said clamping bodies together with the outfeed conveyor forming a respective product conveying gap which is effective in the second direction of conveying of the outfeed conveyor; and

the spacing of the successive clamping bodies increasing from the discharge end of the infeed conveyor in the conveying direction of the outfeed conveyor, said spacing being measured in a plane parallel to the conveying direction of and perpendicular to the plane of the outfeed conveyor.

4,201,378
SKEW DETECTOR
Kenneth A. Hams, Nazareth, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.
Filed May 16, 1978, Ser. No. 906,379
Int. Cl.[2] B65H 7/08
U.S. Cl. 271—261 **7 Claims**



1. A photoelectric skew detection system for monitoring the misalignment of rectangular articles travelling on a track and the condition of illumination elements in said system, said system comprising:

four illumination sensitive elements arranged on one side of said track in an elongated rectangular pattern, said pattern having an axis of elongation substantially normal to the direction of article travel, said first and second of said elements forming an upstream pair of illumination sensitive elements positioned on the upstream side of said elongated rectangular pattern, and said third and fourth elements forming a downstream pair of illumination sensitive elements positioned on the downstream side of said pattern, said elements being arranged so that said first and third elements are adjacent on the perimeter of said rectangular pattern and said second and fourth elements are adjacent on the perimeter of said rectangular pattern, each of said elements producing a change in electrical activity when illuminated;

two illumination means, the first illuminating means illuminating said first and third illumination sensitive elements, and the second illumination means illuminating said second and fourth illumination sensitive elements, said illumination means being positioned on th other side of said track from said illumination sensitive elements so that articles traveling on said track can block illumination from said illumination means; and,

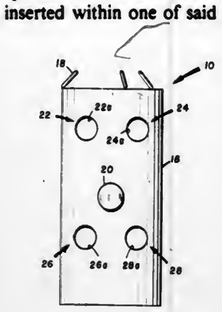
an electrical circuit means connected to said illumination sensitive elements for generating an error signal in response to changes in the electrical activity of said illumination sensitive elements when a trailing edge of a rectangular article traveling on said track unblocks at least one of said downstream pair of elements while one of said upstream illumination sensitive elements is still blocked.

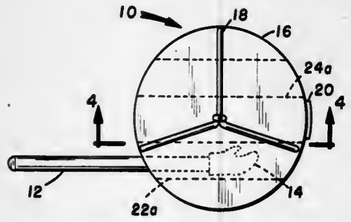
4,201,379
MARTIAL ARTS PRACTICE BAG
Clarence Williams, 2501 W. Lombard St., Baltimore, Md. 21223
Filed May 9, 1978, Ser. No. 904,217
Int. Cl.[2] A63B 69/00
U.S. Cl. 272—76 **6 Claims**

1. A martial arts practice system comprising:

a body means having a plurality of apertures therein, said body means being a cylindrically shaped bag-like structure having an exterior covering and additionally a top and bottom to enclose said cylindrically shaped bag-like structure, said structure being stuffed with a stuffing material, said plurality of apertures each being cylindrical and lined and passing through said body means, the exterior covering of said cylindrically shaped bag-like structure, the top, and the bottom of said cylindrically shaped bag-like structure, and the internal lining of said plurality of apertures through said body means are each attached together and attached to each other by a cementing material; and

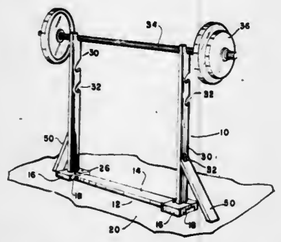
a plurality of operable extensions of rod-like structure, each removably inserted within one of said plurality of aper-





tures, each said operable extension having a padding means affixed to one end thereof.

4,201,380
PORTABLE DISASSEMBLABLE STAND FOR WEIGHT LIFTING EQUIPMENT
Arthur D. Birch, 45 Hillcrest Rd., Warren, N.J. 07060
Filed Mar. 16, 1978, Ser. No. 887,017
Int. Cl.[2] A63B 21/06, 13/00
U.S. Cl. 272—117 **4 Claims**



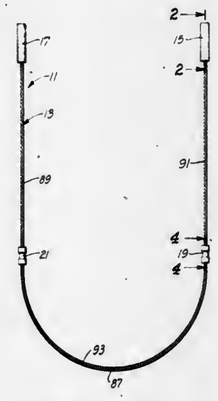
1. A barbell stand comprising a base formed of a cross piece adapted to rest flat on a surface, said piece having notches near the ends thereof; a pair of blocks on each side of said cross piece; one block of each pair having a notch adapted to register with the underlying notch of said piece; each block having a portion fitting over said piece with the ends of said portions abutting; uprights fitting in said notches, securing means fixed to one of said blocks and passing through an opening in one of said uprights and received in the other and opposite block of the same pair; vertical removable securing means fitting in registering openings in said blocks and said cross piece, said uprights having alinged notches for holding a bar of a barbell.

4,201,381
RACQUET FRAMES
Roger G. Gerbet, Etampes; Jean-Claude Leroux, Saclas; Daniel L. Morin, Evry, and Marius F. Leclercq, Lagny, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France
Filed Mar. 13, 1978, Ser. No. 885,623
Claims priority, application France, Mar. 18, 1977, 77 08234
Int. Cl.[2] A63B 49/10
U.S. Cl. 273—73 F **7 Claims**



1. Racquet frame consisting of four generally similar laminar strips, the transverse cross-section of each of said strips being bounded by a rectangle, said strips being bonded to one another, the length of each strip corresponding to a complete loop of the frame, the width of the strips corresponding to the thickness of the frame in the direction perpendicular to the plane of the frame, the thickness of each strip corresponding to a fraction of the thickness of the frame in the plane of the frame, each strip having a single longitudinal groove which reduces the thickness of the strip thereat, and which maintains on each face of the strip a surface sufficient to permit a given bonding with the adjoining strip, and which is such that, in each cross-section of the strip, the mass is distributed remotely from the center of gravity, and in each strip there are reinforcing fibres which are impregnated with a thermosetting resin and are oriented longitudinally relative to the strip, further characterized in that the two outer strips of the frame are each positioned that the concavity of the respective longitudinal groove faces outwardly, and that the two inner strips are positioned in such a manner that the transverse cross-section of the frame is symmetrical with respect to a central line perpendicular to the plane of the frame.

4,201,382
SKIP ROPE
Bradford W. Wilson, 1642-A Coriander, Costa Mesa, Calif. 92626
Filed Nov. 9, 1977, Ser. No. 849,874
Int. Cl.[2] A63B 5/20
U.S. Cl. 272—75 **2 Claims**



1. A skip rope comprising:

an elongated flexible element having first and second end portions;

first and second handles;

first means for attaching the first handle to the first end portion of the elongated flexible element;

second means for attaching the second handle to the second end portion of the elongated flexible element;

a first knot formed in said elongated flexible element intermediate said first handle and the mid-point of said elongated flexible element;

a second knot formed in said elongated flexible element intermediate said second handle and the mid-point of said elongated flexible element;

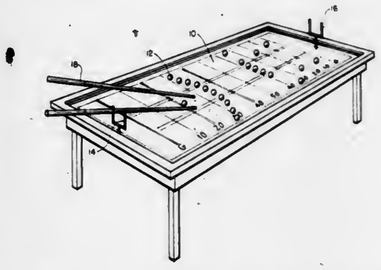
first and second enclosures housing said first and second knots, respectively;

each of said enclosures having a peripheral wall with openings at the opposite ends thereof to permit the passage of the elongated flexible element through said enclosure and means cooperating with the associated knot for retaining the enclosure at a predetermined location along the elongated flexible element;

said retaining means for said enclosures including an end wall removably attached to said peripheral wall whereby upon removal of said end wall, the enclosure can be moved along the elongated flexible element independently of said knot to permit the knot to be untied and retied at a new location with the enclosure being movable along the elongated flexible element to house the retied knot; and

said enclosures including an additional end wall attached to said peripheral wall of the enclosures, each of said end walls having an opening through which the elongated flexible element extends.

4,201,383
SIMULATED FOOTBALL GAME
Joseph P. Schaller, 1884 Bairsford Dr., Columbus, Ohio 43227
Filed Mar. 23, 1978, Ser. No. 889,389
Int. Cl.[2] A63F 7/06
U.S. Cl. 273—94 **4 Claims**



1. A game for playing simulated football games, said game comprising:

(a) a high friction playing field mat having football playing field indicia thereon;

(b) a plurality of balls on said mat for simulating players, said balls having a weight sufficient to substantially compress said mat for efficiently dissipating their kinetic energy;

(c) a plurality of sticks for manually striking and propelling said balls; and

(d) a synthetic resin foam, oblate spheroid for being propelled over said mat simulating a football.

4,201,384
SET OF GOLF BALLS
Jerry Barber, P.O. Box 550, La Canada, Calif. 91011
Filed May 25, 1977, Ser. No. 800,564
Int. Cl.[2] A63B 69/36
U.S. Cl. 273—199 R **6 Claims**

1. Apparatus for use in the teaching of the game of golf comprising

a set of golf balls of predetermined size and weight, said set

comprising at least three golf balls, said first ball having a diameter of 1.80 inches, said second ball having a diameter



of 1.74 inches, and said third ball having a diameter of 1.68 inches.

4,201,385

SOUND INSULATED TARGET APPARATUS WITH PROJECTILE BUTT CONTAINER

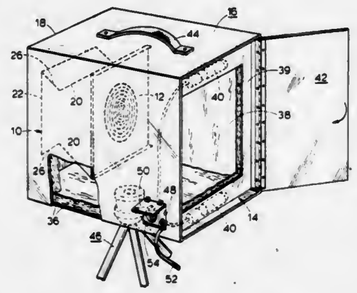
Andreas Szabados, Otto-Heilmann-Strasse 2, 8022 Grunwald b. Munich, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 845,380

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1976, 7633380[U]

Int. Cl.[2] F41J 1/14

U.S. Cl. 273—102.4 **1 Claim**



1. Portable target apparatus comprising: a transportable container having a top, bottom, side walls, a back and a front aperture; a butt container mounted within the transportable container for collecting spent projectiles, said butt container having upper and lower walls, a solid rear wall, a front aperture and means for mounting a target at said front aperture; connection means connecting said rear wall of the butt container to the back of the transportable container such that the front aperture of the butt container is spaced rearwardly from the front aperture of the transportable container, said connection means including a resilient layer on said rear wall of the butt container providing a connection between the inner butt container and the outer transportable container, said resilient layer also constituting an impact absorbing means and a sound deadening means for projectiles striking the rear wall of the butt container, said upper and lower walls of the butt container being V-shaped and having apices facing inwardly toward one another; sound insulation covering in entirety the outside of said walls of the butt container; and sound insulation covering in entirety the inside of the transportable container.

4,201,386

GENEALOGY APPARATUS

Glenn C. Seale, and George L. Frame, both of Albany, N.Y., assignors to Triad Associates, Albany, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,519

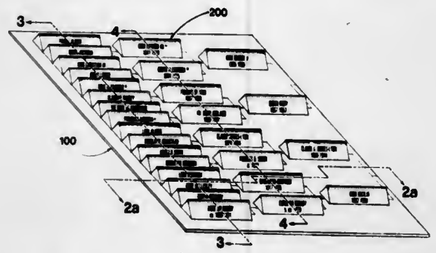
Int. Cl.[2] A63F 3/00

U.S. Cl. 273—236 **10 Claims**

1. A genealogy apparatus comprising:

a single panel, said panel including a substantially flat playing board with a unitary playing surface the playing surface consisting of a plurality of stations defined by rectangular recesses in the playing board wherein each rectangular recess has an area sufficiently large to accomodate word indicia; wherein some said stations have word indicia thereon, and wherein each station represents an individual, said stations being arranged in a plurality of columns wherein each column represents a generation and wherein each successive column has half the number of stations of the preceding column, the individual stations of each column being juxtaposed with a pair of stations in the preceding column so that the pairs of stations represent parents and the individual stations represent children and so that the stations converge in paternal and maternal stepped arrays to a principal station;

color coding associated with the stations wherein paternal stations have a different color from maternal stations and



wherein one station of each pair is coded with one shade of the color to represent a male and the other station of each pair is coded with another shade of the color to represent a female; and

three dimensional playing pieces which are triangular in cross-section and have three rectangular sides, wherein each of the sides has word indicia thereupon identifying the piece as representing an individual, the word indicia on some of the pieces corresponding to the word indicia on some of said stations; and one of the sides forms a bottom side corresponding in geometry and area to the geometry and area of the recesses, whereby the playing pieces are mounted on the surface and within the recesses and do not readily slide relative thereto.

4,201,387

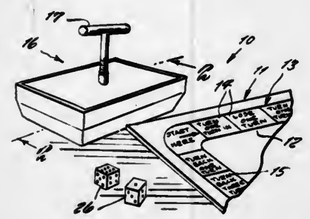
BALLOON BUSTER GAME

Mike Revermann, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007

Filed Aug. 18, 1978, Ser. No. 934,838

Int. Cl.[2] A63F 3/00, 9/00

U.S. Cl. 273—243 **4 Claims**



1. A game device, comprising in combination, a gameboard, a plurality of playing pieces movable upon said gameboard, and a balloon squeezing press for determining a travel distance of said playing pieces on said gameboard, said press including an enclosure having a central compartment, an inflated balloon inside said compartment, an opening in a side of said enclosure, a button placed in said opening, a sidewardly chute on an outer side of said enclosure for said button to slide thereupon and said chute being numerically calibrated.

4,201,388

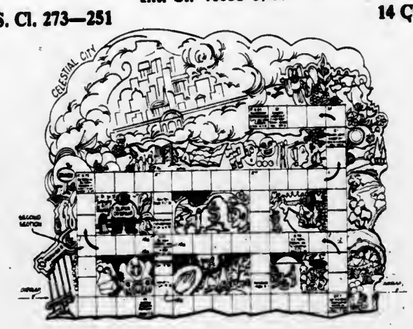
GAME APPARATUS

Ruth F. Cantelon, 2804 Vallette St., Bellingham, Wash. 98225

Filed Sep. 12, 1977, Ser. No. 832,116

Int. Cl.[2] A63F 3/00

U.S. Cl. 273—251 **14 Claims**



10. A game apparatus comprising:

a. a game board displaying a path separated into increments of travel along said path,

b. chance means presenting randomly determined numerical values determining a player's progress along the path,

c. a plurality of question cards containing quotations, with key words deleted therefrom, and a larger number of possible correct answer words associated therewith, with said answer words having identifying designations,

d. a plurality of answer cards identified to correspond to related question cards and having numerically identified answers thereon corresponding to at least one of said answer words to indicate the correct words to be inserted in said quotations,

e. means to indicate when game participants are to select a question card, and

f. display means having designations in the form of numerical designations of different value corresponding to numerical designations of each of the possible answer words, whereby game participants are able to display selections of answer words prior to determining the correct answers from the answer cards.

4,201,389

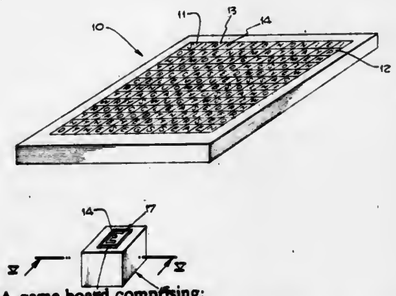
WORD GAME

David H. Vowell, 11427 Sunshine Ter., Studio City, Calif. 91604

Filed May 24, 1979, Ser. No. 42,023

Int. Cl.[2] A63F 3/00

U.S. Cl. 273—272 **8 Claims**



1. A game board comprising:

a plurality of sections;

letter means associated with each of said sections containing thereon a plurality of individual letters, said letter means being adapted to present only a single pre-selected letter viewable to a player, said letter means including a plurality of rotatable elements, each of said elements having a plurality of faces thereon, each of said faces having only a single letter displayed thereon, said letter means also including a block in each of said sections;

letter changing means on said game board for varying said letter means for changing the letter viewable to a player to another differing letter on said letter means viewable to said player, said letter changing means including said elements being rotatably mounted in said blocks to thereby present differing faces thereof viewable to a player; and

letter locking means on said game board for locking in a pre-selected letter viewable to said player thereby permitting a plurality of aligned juxtaposed letters to be locked into fixed position while the remaining letters are varied.

4,201,390

SEMI-AUTOMATIC RECORD PLAYER

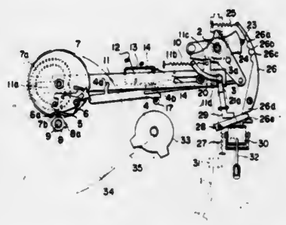
Hiroshi Koyahata, Yokohama, and Shunkichi Hioki, Tokyo, both of Japan, assignors to Kato Electric and Machinery Co. Ltd., Kanagawa, Japan

Filed May 24, 1978, Ser. No. 909,010

Claims priority, application Japan, Jun. 10, 1977, 52/76286[U]

Int. Cl.[2] G11B 17/06

U.S. Cl. 274—15 R **1 Claim**



1. In a semiautomatic record player having a turn-table (34) driven by a motor (33) wherein a record on said turn-table (34) is engaged by the outer end of an elongated tone-arm (1), the inner end of said tone arm (1) being fixed on a tone-arm shaft (2) pivotally mounted on a plate (16) so that said tone-arm (1) outer end can swing horizontally to and away from engagement with a record on said turn-table (34), said record player also having an arm rest where said tone arm outer end normally rests when not playing a record, in combination:

(a) a tone-arm returning apparatus including an actuating member (3) attached to said tone-arm shaft (2), an extended sliding lever (4), one end of which is pivotally mounted on said actuating member (3), said sliding lever (4) moving reciprocally in relation to the horizontal swing motion of said tone-arm (1), a turn-table spindle (9) coupled to said turn-table (34), a main driving gear (8) fixed to said turn-table spindle (9), a second driving gear (7), adjacent said main driving gear (8), said second driving gear (7) having lever means (5,6) pivotally mounted thereon, said lever means being adjacent said sliding lever's other end, said second driving gear (7) and said lever means (5,6) being so disposed that said second driving gear (7) will engage said main driving gear (8) when said lever means (5,6) are engaged by said sliding lever's other end when said sliding lever (4) is moved in one direction, a cam track (7a) on said second driving gear (7), and a return lever (11) one end of which is engaged with said cam track (7a) and the other end of which has a bent portion (11d);

(b) a tone-arm elevating means coupled to said tone-arm (1) located towards said tone-arm inner end and disposed for lifting said tone-arm, including an elevating arm (19) disposed for raising said tone-arm and lowering said tone-

arm with respect to said turn-table, and a lifting member (29) having one end which abuts against said elevating arm (19), said lifting member (29) being disposed for moving said elevating arm (19) in the direction to raise and lower said-tone arm with respect to said turn-table, said returning lever (11) being so adapted and designed as to be reciprocally moved by the turn of said second driving gear (7) and to lift said tone-arm (1) by means of said elevating arm (19) which comes into contact with said bent portion (11*d*), and to push said actuating member (3) such that said tone-arm (1) is lowered with respect to said turn-table and returned to its normal position on the arm rest (31);

(c) switch operating means comprising an actuating pin (11*b*) disposed on the returning lever (11), an actuating portion (4*b*) which protrudes on an intermediate portion of the sliding lever (4), a starting switch (14) which is pivotally mounted so as to be swingable between said actuating pin (11*b*) and said actuating portion (4*b*), and a stopping member (17) which is located at one side of said actuating portion (4*b*), so that said starting switch (14) can be turned to the OFF position only when said actuating portion (4*b*), said actuating pin (11) and said stopping member (17) occupy predetermined positions;

(d) a tone-arm detecting means for click-stopping said tone-arm (1) on a leading track of a record of any size, said tone-arm detecting means including a detecting pin (23) which turns together with said tone-arm (1), and a selector lever (26) which is pivotally mounted on said plate (16) while being urged to rotate, said selector lever (26) having concave portions (26*a*, 26*b*, 26*c*) disposed for slightly click-stopping said detecting pin (23) but capable of overriding said stop when said detecting pin (23) firmly presses against said concave portions (26*a*, 26*b*, 26*c*); and,

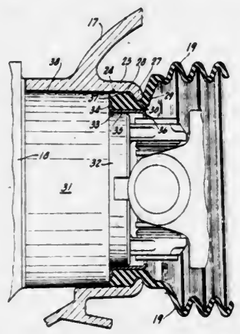
(e) an operational means composed of a cam member (30) rotatably supported by said plate (16) and having two protrusions (30*a*, 30*c*) which come into contact with the end portion of said lifting member (29) and said selector lever (26), and an operational lever (36) mounted on said cam (24), said operational means being so constructed that said detecting pin (23) and said selector lever (26) come into contact with each other only when said operational lever (36) raises said tone-arm (1) through said lifting member.

4,201,391

FLEXIBLE BELLOWS END CONNECTION IN A MARINE STERN DRIVE

Herbert A. Bankstahl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 6, 1978, Ser. No. 875,446
Int. Cl.² F16J *3/04*
U.S. Cl. 277—30 **3 Claims**



1. A marine stern drive comprising

(a) a transom mount having a drive coupling opening therethrough,

(b) a bell housing having a drive couping opening therethrough,

(c) pivotal attachment means between said transom mount and said bell housing,

(d) a drive unit housing having a projecting mounting member,

(e) a drive coupling extending through said openings in said transom mount and said bell housing,

(f) complementary surfaces on said drive unit housing and said bell housing at said drive coupling opening of said bell housing defining an annular chamber therebetween,

(g) a flexible bellows extending over said drive coupling and having a bead shaped end clamped within said annular chamber,

(h) a retaining member engaging at least the inner surface of said bead shaped end, and

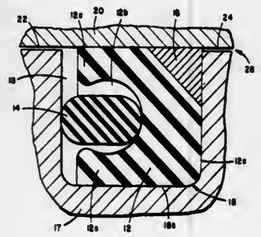
(i) wherein said complementary surface on said drive unit housing includes an outwardly extending radial wall to form a full end wall of said annular recess and said bell housing includes an inwardly extending radial wall to form a partial end wall of said annular recess.

4,201,392

HIGH AND LOW PRESSURE SEAL

James T. Watts, Fullerton, Calif., assignor to Grant Oil Tool Company, Los Angeles, Calif.

Filed Apr. 16, 1979, Ser. No. 30,285
Int. Cl.² F16J *15/32*
U.S. Cl. 277—165 **11 Claims**



1. A seal assembly for forming a high and low pressure seal between two surfaces between which pressurized fluid may enter, comprising:

a seal member having a lip member defining a channel;

a back-up member disposed adjacent one side of said seal member; and

a spacer member positioned in said channel in said seal member wherein said seal member, back-up member and spacer member are arranged and configured such that when fluid flows between said surfaces in one direction, it is prevented from flowing across said assembly, and when said fluid flows between said surfaces in the opposite direction, it is permitted to flow across said seal assembly.

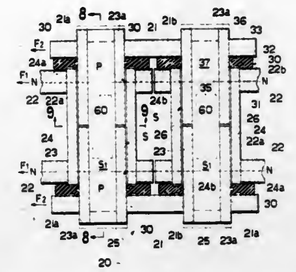
4,201,393

LINKED CHAIN WITH IMPROVED SEALING RINGS

Yoshinori Kawashima, Sakado; Masaki Watanabe, Niiza, and Katsuharu Kinoshita, Hanno, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,395
Claims priority, application Japan, Oct. 5, 1977, 52-133953[U]
Int. Cl.² F16J *15/34, 15/32*
U.S. Cl. 277—92 **14 Claims**

1. A chain comprising a number of link units each of which includes a pin connecting a pair of outer link plates and a bush connecting a pair of inner link plates, between which a lubricating substance is held and sealed with a sealing ring interposed between the outer link plate and inner link plate, characterized in that said sealing ring is provided with lips at either the inside end or the outside end thereof and with a thick body



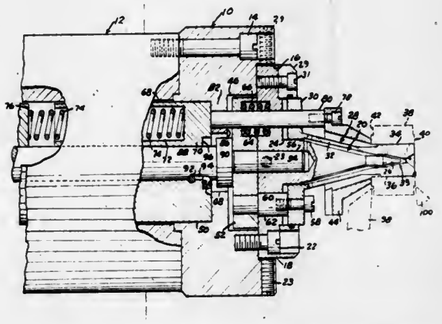
at the other end thereof, and at least one oil reservoir recess is provided on the outer peripheral surface of the pin spaced apart from a load point at which said pin and bush are substantially in contact with each other.

4,201,394

COLLET CHUCK

London T. Morawski, 15850 Common Rd., Roseville, Mich. 48066

Filed Dec. 1, 1978, Ser. No. 965,290
Int. Cl.² B23B *31/40*
U.S. Cl. 279—2 R **5 Claims**



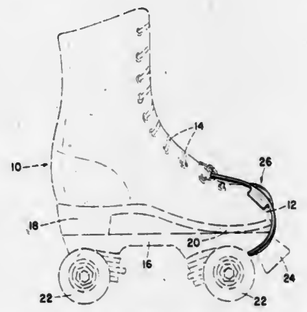
1. A collet chuck having a body at its rear end adapted to be fixedly mounted on the rotary spindle of a machine tool and having a collet expander at its forward end mounted on said body, the front end of said collet expander having a tapered nose formed integrally therewith which is accurately concentric with the central axis of the expander, means for adjusting the expander radially on said body so that the expander is concentric to a high degree of accuracy with the rotary axis of the spindle on which the body is fixedly mounted, said expander having adjacent its rear end a cylindrical shoulder thereon concentric with the axis of the expander, the axial length of said shoulder being less than the diameter of said shoulder, a collet sleeve having its rear end portion mounted on said shoulder for axial sliding movement on the expander, the forward end of said sleeve being resiliently circumferentially expandable and contractable to grip and release the bore of a workpiece, the forward end of said collet sleeve being engageable with said tapered nose to expand when shifted axially in one direction and to contract when shifted axially in the opposite direction, a collet puller plate in said body, a plurality of circumferentially spaced, axially extending and radially rigid pins rigidly connected to one end to the rear end of said collet sleeve and rigidly connected at their opposite ends to said puller plate, means operatively connected with said puller plate for shifting it axially within an oversize bore in said body, said expander having a central pilot bore therein accurately concentric with the central axis of the expander, and a pilot pin having a close sliding fit within said pilot bore, said pilot pin being rigidly mounted on said puller plate and extending axially forwardly thereof, the axial length of the portion of said pilot pin within said pilot bore and the axial length of said pilot bore being substantially greater than the diameter of said pilot pin and bore so that the pilot pin and bore prevent the collet sleeve from becoming cocked on said cylindrical shoulder whereby, in response to axial displacement of the puller plate, said pilot pin constrains movement of the puller plate and collet sleeve axially in a highly accurate path concentric with the axis of said tapered nose.

4,201,395

ROLLER SKATE SHOE TOE GUARD

John K. Matejec, Tulsa; Jerry D. Lowry, Broken Arrow, and Gene R. N. Fulbright, Tulsa, all of Okla., assignors to Vanguard Manufacturing, Inc., Tulsa, Okla.

Filed Oct. 10, 1978, Ser. No. 949,968
Int. Cl.² A63C *17/26*
U.S. Cl. 280—11.37 M **8 Claims**



1. A toe guard for use on a roller skate shoe having a lace and an extending toe stop adjacent the shoe toe, the toe guard comprising:

an elongated flexible member having a large diameter opening at one end of a dimension to snugly receive a toe stop of a roller skate shoe, and of length to extend from the toe stop over the shoe toe, and having adjacent the other end opposed small diameter openings for receiving the lace of a roller skate shoe.

4,201,396

ROLLER-SKATE BICYCLE FOR AMUSEMENT, MOVING BY THE SWINGING MOVEMENT OF THE DRIVER

Giovanni Gessi, Via Claudia, 1971, Savignano S. Panaro, Modena, Italy

Filed Jan. 18, 1978, Ser. No. 870,510
Claims priority, application Italy, Jan. 21, 1977, 3319 A/77
Int. Cl.² B62M *1/10*
U.S. Cl. 280—229 **10 Claims**

1. A rider powered vehicle, such as a roller-skate type bicycle for amusement and exercise, comprising:

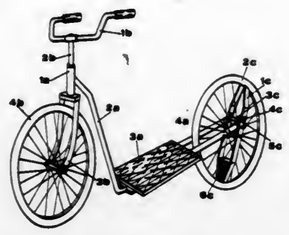
a frame;

a footboard mounted to said frame for oscillatory movement with respect to said frame, the rider normally standing on said footboard during operation of the vehicle;

a driven wheel having an off-center axle, said wheel being eccentrically rotatable about said axle;

a rigid linkage rotatably mounting said wheel to said frame and in operative engagement with said footboard to convert oscillatory movement of said footboard into rotary movement of said driven wheel, said oscillatory movement having upper and lower critical points at which

oscillatory movement transmitted to the off-center axle is free of non-radial components and is passed through by inertial forces generated in the system;



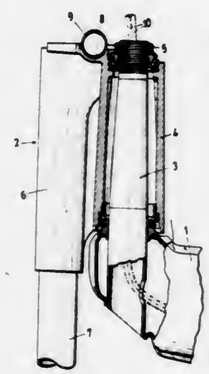
means mounted on said driven wheel and operable for generating counterweight forces therein opposite to said axle whereby to generate inertial forces to facilitate operation of the vehicle.

4,201,397

STEERING HEAD FOR BICYCLES

Jan H. Matthias, Gries, Fed. Rep. of Germany, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Feb. 13, 1978, Ser. No. 873,907
Claims priority, application Austria, Feb. 1, 1977, 598/77
Int. Cl.² B62K *21/06*
U.S. Cl. 280—280 **1 Claim**



1. A steering head for a bicycle comprising a main frame member having a forward end and extending downwardly and rearwardly from the forward end, and a front wheel fork having a fork head, which comprises

(a) a tubular mounting shaft open at both ends and having a lower end secured to the forward end of the main frame member,

(1) the mounting shaft projecting upwardly from the forward end of the main frame member and defining a passageway for cables, and

(2) the main frame member being hollow and the passageway being in communication with the interior of the hollow main frame member, and

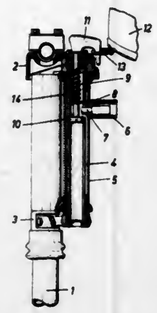
(b) a bearing sleeve rigid with the fork head and rotatably mounted on the mounting shaft.

4,201,398

DEVICE FOR KEEPING A CRASH HELMET ON A TWO-WHEELED MOTORCYCLE

Karl Meier, Lassnitzhöhe, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Jul. 27, 1978, Ser. No. 928,611
Claims priority, application Austria, Apr. 7, 1978, 2452/78
Int. Cl.² E05B *69/00*
U.S. Cl. 280—289 L **2 Claims**



1. In a two-wheeled vehicle comprising a tubular steering head, a tubular fork shaft rotatably mounted in said tubular steering head and having a shell aperture, two fork blades, upper and lower fork bridges firmly connecting said fork blades to said fork shaft, and a steering lock having a bolt and operable to move said bolt into said tubular fork shaft through said shell aperture to a locking position, and out of said aperture into a released position:

a device for keeping a crash helmet on the vehicle, which device comprises

a rod longitudinally slidably mounted in said tubular fork shaft and having a lower end portion enlarged in width, and an upper hook portion secured to said rod and movable therewith between a lower position, in which said hook portion cooperates with said upper fork bridge to form a closed latch therewith, and an upper position, in which said hook portion is spaced above said upper fork bridge, said enlarged lower end portion extending under said bolt when the latter is in the locking position consequently locking the closed latch, whereby the crash helmet is attached to the vehicle when the hook portion forms the closed latch and is released when the hook portion is in the upper position.

4,201,399

TOWING APPARATUS

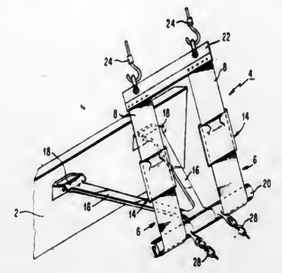
Harold F. Carr, Jr., Hixson, Tenn., and David F. Humphries, Roosville, Ga., assignors to Ernest Holmes Division Dover Corporation, Chattanooga, Tenn.

Filed Jun. 2, 1978, Ser. No. 911,887
Int. Cl.² B60P *3/06*
U.S. Cl. 280—402 **4 Claims**

1. A cushioning pad adapted for attachment to a sling belt of a towing sling and for positioning between the belt and the bumper of a towed vehicle comprising:

(A) an elongated sleeve for slidable attachment to the sling belt and held thereto by being deformed by engagement with the towed vehicle to grippingly engage the belt; and

(B) a projection attached to the sleeve along a portion of the width of the sleeve as a bumper retainer means for preventing the bumper of the towed vehicle from passing over the sleeve upon a forward lurch of the vehicle.

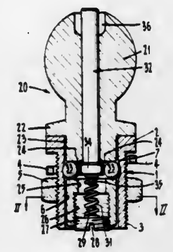


4,201,400

TOWING DEVICE

Thomas C. Hoogenbosch, Boronia, Australia, assignor to J. & A. Atlas Nominees Pty. Ltd, Victoria, Australia

Filed Jul. 14, 1978, Ser. No. 924,700
Int. Cl.² B60D *1/06*
U.S. Cl. 280—511 **6 Claims**



1. A towing device removably securable to a vehicular drawbar comprising:

a sleeve adapted for mounting in a hole in the drawbar, said sleeve having an annular groove on the inner surface thereof;

a tow ball element having a tow ball, a shank receivable in said sleeve, and a flange abuttable with the end of said sleeve when said shank is received in said sleeve for locating said shank with respect to said sleeve, said shank having opposed transverse bores aligned with the annular groove of said sleeve when said shank is located in said sleeve, said element having a central longitudinal bore;

a ball located in each of said transverse bores;

an actuator located in said longitudinal bore and movable therealong, said actuator having an enlarged portion for inserting said balls in said annular groove when said actuator is positioned in a preselected position; and

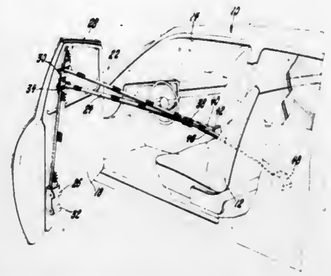
bias means secured in the portion of said longitudinal bore received in said sleeve and having means engaging said actuator for biasing said actuator into said preselected position, said longitudinal bore being formed to provide stop means coacting with said enlarged portion of said actuator for retaining said actuator in said preselected position when biased by said bias means.

4,201,401

PASSIVE LAP AND SHOULDER BELT SYSTEM

Gerald E. Brynn, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1979, Ser. No. 23,687
Int. Cl.² B60R *21/10*
U.S. Cl. 280—803 **4 Claims**



4. In combination with a vehicle body having an occupant compartment in which an occupant seat is accessible through a door opening selectively opened and closed by a movable door, a passive occupant restraining belt arrangement comprising:

a restraint belt having an outboard end mounted on the vehicle door and an inboard end fixedly mounted on the vehicle body substantially forwardly of the inboard occupant hip so that when the door is opened the belt is positioned substantially forwardly of the occupant by the swing geometry of the door to facilitate occupant ingress and egress;

a control belt connected to the restraint belt at a point thereon which is spaced from the inboard fixed end by a distance generally equal to the distance from the inboard occupant hip to the inboard fixed belt end;

and retractor means mounted on the vehicle body generally adjacent the inboard hip of the occupant, said inboard retractor means having means associated therewith to retract the control belt when the door is closed to draw the restraint belt rearwardly to substantially adjacent the occupant inboard hip and thereby dispose the restraint belt in a restraint position closely adjacent the occupant.

4,201,402

COMBINATION CHECKWRITING AND BOOKKEEPING ASSEMBLY AND METHOD OF USING SAME

Paul D. Aziz, West Hartford, and Robert W. Hincks, Farmington, both of Conn., assignors to Data Management, Incorporated, Farmington, Conn.

Continuation-in-part of Ser. No. 869,572, Jan. 16, 1978, abandoned. This application Nov. 7, 1978, Ser. No. 957,050
Int. Cl.² B41L *1/20, 1/36*
U.S. Cl. 282—9 A **18 Claims**

1. In a bookkeeping and check writing system, the combination comprising:

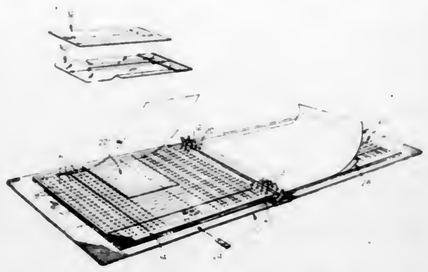
a. a disbursement sheet having length and width dimensions, the width dimension being divided into a multiplicity of columns and the length dimension providing a mulitplicity of lines, two columns being dimensioned cooperatively with commercial checks to record the name of the payee and the numerical amount entered on the checks; and

b. a transfer sheet of lesser width than said disbursement sheet and overlying said two columns of said disbursement sheet; and

c. means releasably securing said transfer sheet in said overlying position; and

d. a shield member having a check positioning portion disposed to one side of said transfer sheet and a shield portion extending therefrom above said disbursement sheet, said shield portion being of a length at least substantially equal

to the portion of a check containing blanks for completion and having an elongated aperture therein extending transversely of said transfer sheet and across said two columns of said disbursement sheet, said positioning portion having an alignment indicium thereon aligned with said aperture, said shield member being adapted to position a check on said transfer sheet with its payee and numerical disbursement portions aligned with said indicium and thereby said two columns of said disbursement sheet on one of the lines thereof, said shield member being movable vertically from line to line thereof, whereby when a check is placed thereon and written only the payee and numerical amount disbursed are entered on one line of said disbursement sheet.

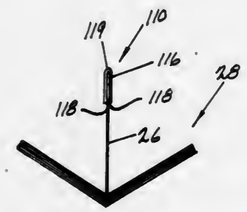


4,201,403

INDEX TAB DEVICE AND INDEX TAB THEREFOR

James F. Turner, 27639 Forestbrook Dr., Farmington Hills, Mich. 48018

Filed Oct. 31, 1977, Ser. No. 846,724
Int. Cl.² G09F *3/10*
U.S. Cl. 283—21 **10 Claims**



1. An index tab device for storing and dispensing at least one index tab comprising:

a thin planar tab forming body having a first planar surface coated portion with a pressure sensitive adhesive on no more than one-half of said first surface thereby leaving a remainder of said first surface uncoated such that when said first planar surface is mounted contiguous to a backer sheet only said coated portion adheres to said backer sheet while said uncoated portion allows unrestrained removal of said tab from said backer sheet without affecting the adhesive property of said coated portion by grasping said tab by said uncoated surface area;

an opposite planar surface suitable for printing conspicuous indexing information, whereby when said tab is removed from said backer sheet and applied along the edge of a multiple-part indexable item in a manner such that said no more than one half of said first surface coated with pressure sensitive adhesive is applied directly to a part of said multiple-part indexable item, said uncoated remainder of said first surface protruding from said multiple-part indexable item beyond the edge thereof, thereby exposing said opposite planar surface and appropriate indexing information printed thereon despite said multiple-part indexable item being closed or complied so as to conceal said no more than one-half of said first planar surface, thereby facilitating location of a part of said multiple-part indexable item according to correlation between said indexing information and the part attached thereto; and

a flexible index tab backer sheet having at least one surface with a low adhesive affinity to said pressure sensitive adhesive and having said first planar surface of said at least one index tab applied thereto for dispensing said at least one tab wherein said at least one index tab is disposed on said at least one surface of said backer sheet having said low adhesive affinity with said no more than one-half of said first planar surface of each of said at least one tab forming body in contact with said one surface of said backer sheet having said low adhesive affinity, thus, maintaining said at least one index tab in position on said backer sheet while allowing any of said at least one index tab to be selectively and easily detached from said backer sheet without affecting the adhesive property of said at least one index tab.

4,201,404

PRESSURE-SENSITIVE MARKING MATERIALS

Jack W. Charbonneau, Somerset Township, St. Croix County, Wis.; Richard S. Law, Newport, Minn.; Willis J. Ludwig, Hudson, Wis., and Wayne O. Otteson, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 17, 1978, Ser. No. 907,718
Int. Cl.² B41M *5/22*; B01J *13/02*; C09D *11/12*
U.S. Cl. 282—27.5 **12 Claims**

1. Substantially dry microcapsules comprising an organic liquid dye precursor fill enclosed by a strong impermeable shell of melamine-urea-formaldehyde condensation polymer which is substantially free of wetting agents, wherein said condensation polymer is the reaction product of a mixture comprising about 50% by weight formaldehyde, 42 to 50% by weight urea, and 2 to 8% by weight melamine, and wherein said capsules comprise a theoretical liquid fill content of between 50 and 60% by weight based on the total weight of shell and liquid fill.

4,201,405

PERPETUAL OR LONG LIFE CALENDAR

Katherine Rannenberg, Cedaridge Rd., Canton, Conn. 06022

Filed Apr. 18, 1978, Ser. No. 897,398
Int. Cl.² G09D *3/00*; B42D *5/04*
U.S. Cl. 283—4 **4 Claims**



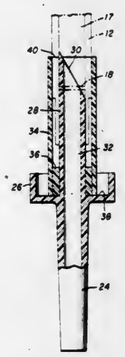
1. A calendar having two separate but adjacent stacks of pages, a structural member upon which each stack is bound, the pages of each stack bound together at the top of and to said structural member with a binding so that any page of either stack may be exposed independently of the other stack, and may be rotated 360 degrees about its binding to expose either side of the page independently of the other stack, the axis of rotation of the pages of each stack around its binding being concentric, the pages of one stack each containing the indicia corresponding to the names of one of the months, January, February, March, April, May, June, July, August, September, October, November, December, the pages of the other stack each containing one of the various month calendar combinations of the numerical days of the month arranged by days of the week.

4,201,406

SPIKE CONNECTOR FOR SOLUTION BAG

T. Michael Dennebey, Arlington Heights, and Ludwig Wolf, Jr., Crystal Lake, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 13, 1978, Ser. No. 960,157
Int. Cl.² A61M *5/00*; F16L *47/00*
U.S. Cl. 285—3 **5 Claims**



1. A touch-contamination protected spike connector for coupling a plastic fluid conduit to a port extending from a medical solution container, the port having a transverse diaphragm adapted for breakage by the spike to provide communication from the plastic fluid conduit to the medical solution container, the improvement comprising:

a rigid spike defining a longitudinal bore and having an angled tip;

a flange extending radially outwardly from said rigid spike;

a tube surrounding a major portion of said spike and extending in a generally parallel direction to said spike with the internal wall of said tube being spaced from the external wall of said spike;

a spacer immovably interposed between the spike and the tube, said spacer being formed of resilient material and being connected to said flange and filling a portion of the volume between said spike and said tube;

said angled tip having a distal end which extends a greater distance than said tube in the longitudinal direction.

4,201,407

TUBULAR ASSEMBLY

Robert J. Paterick, Concord, Tenn., assignor to Maremont Corporation, Chicago, Ill.

Filed Oct. 23, 1978, Ser. No. 953,954
Int. Cl.² F16L *37/00*
U.S. Cl. 285—304 **6 Claims**

1. A tubular assembly comprising:

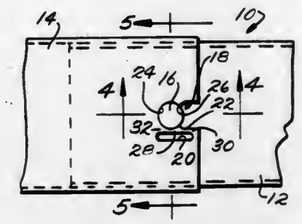
first and second thin wall tubular members having end portions disposed in telescopic relation with respect to one another,

said first tubular member having a pin extending generally radially from the telescopic end portion thereof,

said second tubular member having a slot through its wall extending from the edge of the telescopic end portion thereof axially inwardly into the latter and an opening extending through the wall of said second tubular member in closely spaced relation to said edge in a position generally alongside said slot,

said slot including an outer axially open pin entrance section of a width to receive said pin therethrough, an inner axially inwardly closed pin receiving section receiving said pin therein, and an intermediate locking section of a width smaller than the width of said pin engaged with said pin to retain the same in said inner section,

said second tubular member providing an axially elongated wall portion between said opening and said slot having a fixed integral outer end spaced axially outwardly of the intermediate locking section of said slot and a fixed integral inner end spaced axially inwardly of the intermediate locking section of said slot for enabling the elongated wall portion between said fixed ends to resiliently deflect laterally when said pin is moved axially inwardly through said slot to thereby permit the locking section of said slot to expand in its width dimension and permit yielding passage of said pin axially thereby into said received relation within the inner section of said slot.

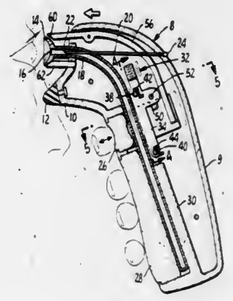


4,201,408

CONTACT LENS INSERTION AND REMOVAL DEVICE

Willard Tressel, 667 Cragmont Ave., Berkeley, Calif. 94708

Filed Feb. 16, 1978, Ser. No. 878,245
Int. Cl.² A61F *9/00*
U.S. Cl. 294—1 CA **2 Claims**



1. A contact lens insertion and/or removal device comprising in combination:

a. a soft lens cup of a size adapted to receive a contact lens,

b. an opening in the center of said cup, said opening leading to a tube,

c. a rod of an optically clear material within said tube having a first end terminating near said opening and a second end having means for collecting light and directing the light through said rod,

d. means for applying vacuum or pressure through said tube to said cup,

e. a pair of arms adjacent to said lens cup,

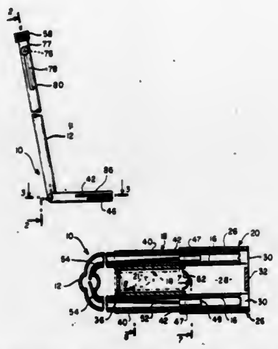
f. means for bringing said arms towards each other into contact with said lens cup to distort said cup,

g. a member adapted to partially collapse said tube when in

a first position and adapted to actuate one of said arms when in a second position, and

h. means for bringing said member from said first position to said second position.

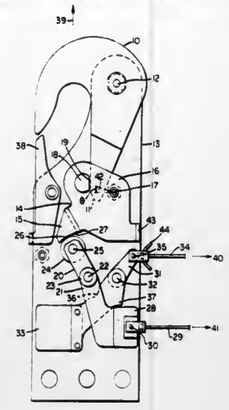
4,201,409
PORTABLE PICK-UP DEVICE
James J. O'Hara, 501 Hemlock La., Lakehurst, N.J. 08733
Filed Sep. 11, 1978, Ser. No. 940,971
Int. Cl.[2] A01K 29/00
U.S. Cl. 294—1 BA 13 Claims



1. Apparatus for picking up fecal matter on the ground including in combination a frame with an upper portion that serves as a handle, a container holder at the lower end of the handle, a container, the holder being in position to hold the container with a bottom of the container facing the matter to be picked up, means for loading the matter on the ground into the container, and manually-operated motion transmitting connections on said upper portion and secured at their lower end to means for operating the apparatus, characterized by the means for loading the matter into the container including a second container with a bottom that extends along the ground and an open end facing the first container, said bottom of the second container being in position to contact with the fecal matter when the motion-transmitting connections are operated on a pick-up stroke, the movement of the motion-transmitting connections being long enough to bring the containers into contact with one another and to telescope one container into the other.

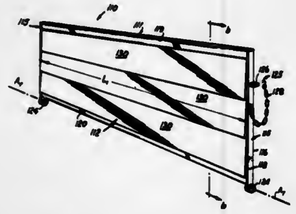
4,201,410
RELEASE HOOK ASSEMBLIES
Henry Crawford, East Kilbride, Scotland, and Alexander F. Jessiman, London, England, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Apr. 7, 1978, Ser. No. 894,296
Claims priority, application United Kingdom, Apr. 6, 1977, 14654/77
Int. Cl.[2] B66C 1/34
U.S. Cl. 294—83 R 7 Claims

1. A release hook assembly comprising a frame, a hook mounted on the frame for pivotal movement relative thereto, an escapement member pivotally mounted on the frame so as to be able to retain the hook for closure of the assembly, a release device pivotally mounted on the frame, said release device engaging the escapement member so as to maintain the assembly in the closed position, said escapement member and said release device being so formed and disposed that in operation the escapement member exerts substantially no turning moment on the release device, and a locking member pivotally mounted on the frame so as to engage the release device, whereby displacement of the locking member from engagement with the release device allows subsequent displacement



of the release device and consequent pivotal motion of the hook free from the escapement member.

4,201,411
TAILGATE CONSTRUCTION
Homer R. Morgan, 2765 Townley Cir., Doraville, Ga. 30340
Division of Ser. No. 843,804, Oct. 20, 1977, Pat. No. 4,136,905.
This application Nov. 17, 1978, Ser. No. 961,696
Int. Cl.[2] B62D 39/00, 35/00
U.S. Cl. 296—50 11 Claims



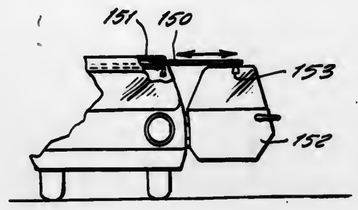
1. A low drag tailgate construction for attachment in the tailgate opening at the trailing end of an open top cargo compartment of a vehicle in replacement of the conventional tailgate normally associated therewith, said tailgate comprising:

an open frame defining an air opening therethrough having a peripheral configuration corresponding generally to the configuration of the tailgate opening to the open top cargo compartment of the vehicle, said open frame pivotally connected to the trailing end of the vehicle in lieu of the conventional tailgate for selectively extending over the tailgate opening at the trailing end of the open top cargo compartment while permitting air to freely flow from the cargo compartment through the air opening when the vehicle is in forward motion;

a screen member defining a plurality of air passages therethrough mounted on said open frame and extending over said air opening, the size of any individual one of said air passages sufficiently small to retain the cargo in the cargo compartment of the vehicle, yet a major portion of the area of said air opening is defined by said air passages to permit air to freely flow therethrough from the cargo compartment when the vehicle is in forward motion to reduce the air drag associated therewith; and

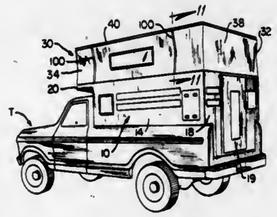
closure means for selectively closing said air passages through said screen member to permit cargo smaller than said air passages such as particulate material to be carried in the cargo compartment, said closure means including a cover plate having a size sufficient to cover all of said air passages through said screen member and locating means for removably locating said cover plate with respect to said screen member to substantially prevent the passage of air through said screen member.

4,201,412
CAMPING CAR
Smith J. Williams, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Aug. 18, 1978, Ser. No. 935,020
Int. Cl.[2] B60J 7/00
U.S. Cl. 296—163 2 Claims



1. In a camping car, the combination of an automobile having front and rear wheels and a body supported thereon sloped upwardly rearward with a pointed forward end, said automobile including windows and windshield each of which are pivotable about a pivot shaft supported on said body including an upwardly slidable roof top door and tailgate, additionally including a mechanism for adjusting the relative centers of gravity of said wheels and the vehicular load supported thereon whereby eccentricity of said centers of gravity may be reduced to minimum, and a rain protection canopy comprising a stiff panel slidably mounted in the vehicle roof adjacent a door of said vehicle, an extension on an underside of said panel being engagable with a door of said automobile, said panel being outwardly slidable over a doorway of said automobile when said door is open, and retractable inside said roof when said door is closed.

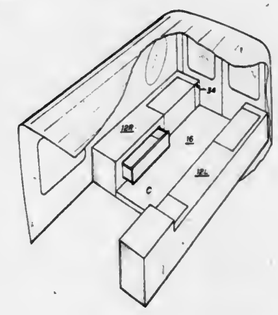
4,201,413
LIFT APPARATUS FOR CAMPER TOP
David E. Rowe, 9849 Yarrow Ct., Broomfield, Colo. 80020
Filed Jul. 7, 1978, Ser. No. 922,593
Int. Cl.[2] B60P 3/32
U.S. Cl. 296—165 2 Claims



2. In a camper body with an expandable top with a flexible, foldable wall portion extending between a solid wall portion and a roof of the camper body, the improvement comprising:

an elongated stiff and resilient member having an inherent crimp at its midsection for resisting total straightening of the member and adapted to bias the member to bend in the direction of the crimp when compression forces are applied to the opposite ends of said member tending to push said opposite ends together, said member being positioned to extend between said solid wall portion and said roof with said crimped midsection in contact with said flexible wall portion and oriented with the crimp and biased bend directed inwardly toward the interior of the camper body and adapted to fold said flexible wall portion inwardly when said roof portion is lowered toward said solid wall portion.

4,201,414
CONSTRUCTION FOR THE INTERIOR OF A VAN OR TRUCK
John R. Horton, III, 5947 Boca Raton, Fort Worth, Tex. 76112
Filed Dec. 30, 1977, Ser. No. 865,992
Int. Cl.[2] B60P 3/34
U.S. Cl. 296—169 1 Claim



1. A construction for the interior of a vehicle such as a truck or van, comprising:

(a) a pair of fixed side cabinets in the cargo area of the vehicle's interior, with one of said pair being on the right side and the other being on the left side of the vehicle, and said cabinets being anchored to the vehicle's chassis;

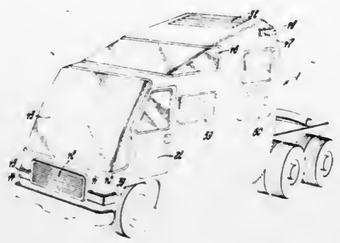
(b) a movable deck having a width such that it extends between the right and left cabinets with relatively small clearance, with said deck having a lower position in which it is adapted to rest directly on top of the vehicle's floor, and said deck having an elevated position in which it lies in a plane which is above and generally parallel to the vehicle's floor, with the elevated position of the movable deck being vertically above the lower position of the movable deck, whereby the longitudinal relationship between the movable deck and the vehicle is the same in both the elevated and lower modes; and

(c) means for selectively holding the deck in its elevated position above the floor, including a pair of spaced structural members at opposite sides of the deck for holding a first end of the deck at a position where the deck is fixed against both vertical and horizontal movement, and said means further including a pivotable member for selectively supporting the second end of the deck at the same height above the floor as the first end, and wherein said pair of structural members for holding a first end of the deck constitute a pair of bolts removably fixed to the respective sides of said deck, and there being a plurality of pairs of mating recesses in said side cabinets for receiving a protruding end of said bolts and holding said bolts against vertical movement when the deck is fully elevated, and said recesses also holding said protruding bolts against movement in a direction parallel to the longitudinal axis of the vehicle, and the recesses on a respective side cabinet being surrounded by a common groove for restricting longitudinal movement of said bolt as said bolt is being moved from one recess to another.

4,201,415
LONG-DISTANCE TRUCK TRACTOR WITH LIVING QUARTERS

Jaroslav Suchanek, 5140 Charles, Detroit, Mich. 48211

Filed Mar. 22, 1978, Ser. No. 889,044
Int. Cl.[2] B62D 27/00
U.S. Cl. 296—190 10 Claims



1. A vehicle provided with living quarters disposed therein, comprising a vehicle body; a first level including a first plurality of equipment and areas disposed within said vehicle body; a second level including a second plurality of equipment and areas disposed within said vehicle body; said second level being disposed above said first level; said first plurality of equipment and areas including a driver control area; said second plurality of equipment and areas including at least one sleeping compartment; an air-cooler operably and mechanically connected with said engine to convey fresh air to said engine and to convey air away from said engine, said air-cooler having an inlet and an outlet; and an engine disposed at the rear of said vehicle body at said first level, wherein the improvement comprises:

a first panoramic window defining a major portion of the front of said vehicle body and having curved wrap-around side edges extending around the front right and left edges of said vehicle body to define a streamlined contour of said first panoramic window;

said air-cooler being aerodynamically disposed in an upper rear roof portion of said vehicle body, and being streamlined;

a second panoramic window disposed between said first panoramic window and said air-cooler, said second panoramic window providing visibility and light for said second level, and defining a first roof portion of said vehicle body;

said second panoramic window being upwardly slanted from a front edge thereof disposed substantially adjacent the upper edge of said first panoramic window to a rear edge thereof, and having curved wrap-around side edges extending around the upper portions of the right and left sides of said vehicle body, to define a streamlined contour of said second panoramic window;

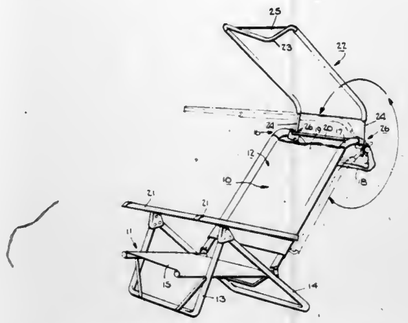
a second roof portion of said vehicle body extending substantially upwardly and continuously from said rear edge of said second panoramic window to a rear portion thereof having said air-cooler disposed therein; and

said first panoramic window, said second panoramic window, and said second roof portion of said vehicle body including said air-cooler disposed therein, together defining an aerodynamically-streamlined upper contour of said vehicle body.

4,201,416
CANOPY CONSTRUCTION FOR OUTDOOR FURNITURE

Robert D. Vanderminden, Granville, N.Y., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.

Filed May 5, 1978, Ser. No. 903,113
Int. Cl.[2] A47C 7/10
U.S. Cl. 297—184 12 Claims



1. The combination of

a collapsible furniture frame having a backrest portion including a frame having a pair of parallel members each having a bent end portion, a cross-bar connecting said bent end portions together and a rod secured between said bent end portions;

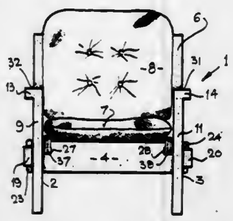
a canopy including a skeletal frame having a pair of legs; and

means pivotally mounting said canopy on said backrest portion, said means including a pair of clamps, each said clamp having a U-shaped portion astride a respective bent end portion, a slot in said U-shaped portion receiving said rod therein, a leg opposite said U-shaped portion and receiving a respective canopy leg therebetween, a bolt passing through said U-shaped portion, said clamp leg and a respective leg of said skeletal frame, and means threaded onto said bolt to tighten said clamp leg against said respective leg of said skeletal frame.

4,201,417
DEMOUNTABLE SEATING FURNITURE

Jeremy N. Griffith, Clothiers Creek Rd., Condong, N.S.W., 2484, Australia

Filed Dec. 18, 1978, Ser. No. 970,168
Int. Cl.[2] A47C 7/00
U.S. Cl. 297—442 3 Claims



1. A demountable article of seating furniture comprising a pair of wooden side frames, a wooden front beam, a wooden rear beam, a wooden backrest, a seat cushion and a backrest cushion; each said wooden side frame having two legs, an armrest connecting the upper ends of said legs and a side member between said legs and connected thereto at a position intermediate between said armrest and the lower ends of said legs, said side member having therethrough a pair of apertures located one adjacent each said leg; each of said wooden front and rear beams having at each end thereof a portion of reduced dimensions adapted to extend through a co-operating one of said side member apertures and to be secured therein by means of a wooden peg which extends through a vertically-oriented aperture in said reduced portion, and each said front and rear beams having therethrough at least two horizontally-oriented apertures adjacent the top edge thereof; said wooden backrest having a recess in each outer edge thereof, into which slot is receivable a said side frame armrest; said seat cushion having, on the lower surface thereof, a pair of sleeves, one sleeve adjacent the rear edge of said seat cushion and the other adjacent the front edge of said seat cushion, each said sleeve having a rigid slat extending therethrough, said rear slat being removably attachable to said rear beam and said front slat being removably attachable to said front beam by straps each of which extends through a said horizontally-oriented aperture and around an end of a said slat; said backrest cushion resting on said seat cushion and against said wooden backrest.

4,201,418
ANCHORING ARRANGEMENT OF AN END- OR DEFLECTION-POINT OF A SAFETY BELT, ESPECIALLY IN MOTOR VEHICLES

Willi Reidelbach, and Walter Schmid, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,137
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727123
Int. Cl.[2] A62B 35/00; A47C 31/00
U.S. Cl. 297—474 19 Claims



1. An anchoring arrangement of an end or deflection point of a safety belt, at a fixed structural part fixed relative to the vehicle under interconnection of a spring means, characterized in that the spring means is installed prestressed in the sense of a tightening of the belt band and is blocked in the prestressed position during normal driving operation, and in that the blocking is released by a force peak with occurs at the beginning of an accident at the belt band and exceeds the prestress force of the spring means, characterized in that an eye means cooperating with the belt band is displaceably guided in a fitting means fixed relative to the vehicle, the fitting means having a bent-off free end which in normal operation blockingly engages in a recess of the eye means, and in that the spring means is supported both at the fitting means as also at the eye means.

4,201,419
CONTROL OF AIRBLAST DURING EXPLOSIVE EXPANSION IN AN IN SITU OIL SHALE RETORT

Ned M. Hutchins, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

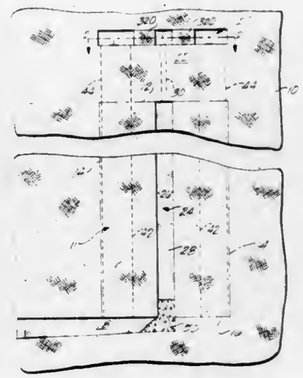
Filed Aug. 21, 1978, Ser. No. 935,506
Int. Cl.[2] E21C 41/10
U.S. Cl. 299—2 21 Claims

1. A method for attenuating airblast produced by detonating explosive in a subterranean formation containing oil shale for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort, the method comprising the steps of:

excavating underground workings for providing a means for access to a retort site in the formation containing oil shale;

excavating at least one void in formation within the retort site, leaving a remaining portion of unfragmented formation within the retort site adjacent such a void, and leaving a barrier of unfragmented formation between the underground workings and the retort site;

providing at least one gas flow passage extending through the barrier of unfragmented formation between the underground workings and the retort site, the gas flow passage having a cross-section for gas flow which is substantially smaller than the transverse cross-section of the underground workings;



placing explosive in the remaining portion of unfragmented formation within the retort site adjacent such a void;

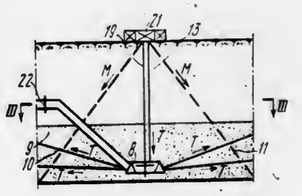
detonating the explosive for explosively expanding the portion of unfragmented formation toward such a void for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort; and

venting at least a portion of the gas from such explosive expansion from the retort site through the gas flow passage toward the underground workings for limiting the rate of flow of such gas to the underground workings by means of the substantially smaller cross-section of the flow passage so as to attenuate airblast in the underground workings.

4,201,420
METHOD OF OIL RECOVERY BY THERMAL MINING

Vasily K. Likholai, and Boris A. Tjunkin, both of Komi, U.S.S.R., assignors to Pechorsky Gosudarstvenny Naucnno-Issledovalelsley I Proerthy Institut "Pechornipineft", U.S.S.R.

Filed Aug. 31, 1978, Ser. No. 938,521
Int. Cl.[2] E21B 43/24; E21C 41/10
U.S. Cl. 299—2 7 Claims



1. A method of oil recovery by thermal mining from oil deposit sections into which a mine field is divided, wherein a plurality of underground workings are provided ensuring a successive recovery of oil from the mine field sections and including intake and development wells, and an overall mine ventilation system is set up ensuring the ventilation of the

underground workings, after which a flow of heating medium is throttled and force-fed via pipes into the development wells for heating the oil bed to a temperature at which oil assumes the required fluidity in the oil bed, whereupon a fluid medium is force-fed to the intake wells to drive oil from the oil bed into the development wells and pump it out up to the surface, the throttling of the heating medium before the force-feeding of the same automatically controlling the force-feeding of the heating medium to, extracting oil from and cleaning of the development wells.

4,201,421

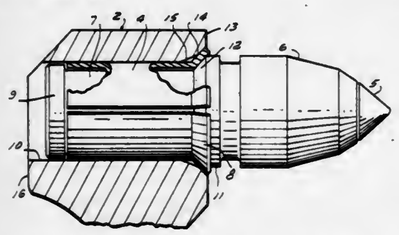
MINING MACHINE BIT AND MOUNTING THEREOF

Leroy E. Den Besten, P.O. Box 344, Valatie, N.Y. 12184, and James R. O'Connell, 9934 Aspen Ct., Mentor, Ohio 44060

Filed Sep. 20, 1978, Ser. No. 944,011

Int. Cl.² E21C *35/18*

U.S. Cl. 299—86 **22 Claims**



1. The combination in a mining wheel having an axis of rotation with said wheel having a peripheral rim, a series of bit holders in the form of tubular sockets mounted on the rim of the wheel for supporting mining bits, mining bits mounted in said bit holders, said sockets each having at its front end a substantially conical rim, mining bits each having a shank of generally cylindrical form and having conical heads and having cylindrical stems of a diameter smaller than the diameter of the bit heads, said bits supported in said sockets and extending radially and angularly forwardly with respect to the aforesaid sockets and incline forwardly in a direction of rotation of the wheel, said mining bits each having a split tubular spring sleeve having an unstressed diameter greater than the diameter of the sleeve when it is disposed in the socket with the latter diameter greater than that of the diameter of the shank adjacent the sleeve when said sleeve is disposed on the shank so as to allow rotation of the shank in the sleeve, each sleeve is adapted to expand radially relative to the shank of the associated bit and to abut endwise against a retaining means on the rear end of the shank of the bit, said tubular sockets receive the shank of the bit and the cylindrical portion of the spring sleeve for retaining the shank of the bit against longitudinal outward movement of the bit shank, a retaining means at the front end of the shank, said sleeves being mounted on substantially all of the shank of the bit intermediate the retaining means, said sleeves being non-rotational in said sockets and interposed between the shanks of their respective bits and the sockets so as to accept substantially all of the wear on the socket resulting from interaction as between the shanks and the sockets during operation of the wheel with the exception of the wear that might result from interaction of the retaining means with the socket.

4,201,422

FLUID OPERATED ROTARY VALVE

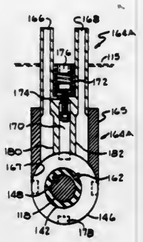
Laddie A. Depas, Sr., Crestwood, Ky., assignor to Maurice L. Miller and Harold W. Thomas, both of Louisville, Ky., part interest to each

Continuation-in-part of Ser. No. 640,865, Dec. 15, 1975, Pat. No. 4,088,375. This application Mar. 16, 1978, Ser. No. 887,122

The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.

Int. Cl.² B60T *13/16*

U.S. Cl. 303—10 **6 Claims**



1. A fluid operated rotary valve comprising

inlet means for introducing a fluid to said valve from an external fluid source,

storage means defining a chamber for temporarily storing a quantity of said fluid therein,

outlet means for discharging said quantity from said valve, said inlet, storage and outlet means each defining a fluid access opening spaced from and selectively aligned relative to one another, and

means for slidably engaging said inlet, storage and outlet means in a continuous and substantially fluid tight manner, said engaging means defining at least one slot therein disposed for slidable engagement with each said opening in sequence and in a repetitive, cyclical manner, for slidably interconnecting said inlet to said storage means and, thereafter, said storage to said outlet means during successive portions of each cycle of said slidable engagement.

4,201,423

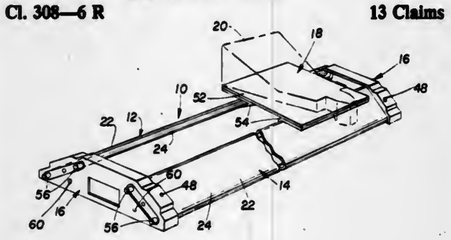
SYNCHRONIZED TRAVELING CARRIAGE ASSEMBLY

Magnus F. Hagen, Laguna Beach, and Donald Stanley, El Toro, both of Calif., assignors to Standard Precision, Inc., Santa Fe Springs, Calif.

Filed Feb. 2, 1978, Ser. No. 874,385

Int. Cl.² F16C *29/00*

U.S. Cl. 308—6 R **13 Claims**



1. A synchronized, traveling, carriage assembly for mounting in various chassis structures, said carriage assembly comprising:

slide means, said slide means including one substantially stationary member, an inner longitudinal slidable member, and an intermediate slidable member;

a carriage means mounted to said inner longitudinal slidable member, whereby said carriage means moves therewith;

a synchronizing means operably interconnecting said slidable members;

a pair of support end caps arranged to receive said slide means therein, each of said end caps comprising an elongated strut body having peripheral wall members defining a cavity therein to receive said stationary member therein;

securing means disposed in said end caps for securing engagement of said slide means, wherein said securing means comprises a plurality of dowel pins disposed in said cavity to be received in said stationary member.

4,201,424

ROLLING BEARING HAVING TWO-SIDED RACE RAILS

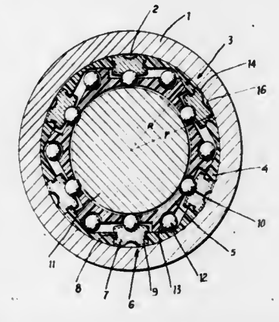
Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 948,089

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 7731603[U]

Int. Cl.² F16C *29/06*

U.S. Cl. 308—6 C **10 Claims**



1. In a rolling bearing for lengthwise movement between the rolling bearing and a shaft, wherein the rolling bearing has a housing with a boring, a plurality of endless rows of rolling elements each having a portion with rolling elements adapted to be radially loaded, a cage in said boring for guiding said rolling elements, and a plurality of race rails supported by said housing and positioned to radially outwardly support said rolling elements in said portion thereof, each race rail having a support surface and a race on its radially outer surface and its radially inner surface; the improvement wherein the radially inner surface and the radially outer surface of the race rails are identical in the longitudinal direction.

4,201,425

LOCKING DEVICE FOR ANTI-FRICTION BEARINGS WITH SPLIT INNER RING

Hans Freund, Schwebheim, and Werner Kotzab, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

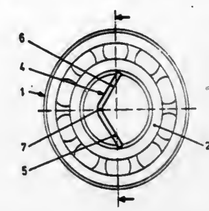
Filed Jul. 26, 1978, Ser. No. 928,248

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 7724545[U]

Int. Cl.² F16C *43/00*

U.S. Cl. 308—236 **10 Claims**

1. A locking device for use during shipment and handling of bearings having a split inner race ring with a central bore, comprising a plate member made of a resilient elastically deformable material having good spring characteristics, said plate member being of generally rectangular configuration and of a predetermined size relative to the bore of the inner race ring so that it is clamped in a radial direction by spring action when deformed and inserted in the bore of both portions of the split inner race ring of the bearing and engages the bore with



only line contact at selected circumferentially spaced locations for ease of assembly and disassembly.

4,201,426

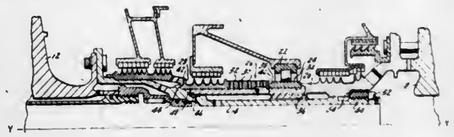
BEARING CLAMPING ASSEMBLY FOR A GAS TURBINE ENGINE

Herbert Garten, Marblehead, and Donald A. Brozenske, Wenham, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Apr. 27, 1978, Ser. No. 900,542

Int. Cl.² F16C *25/08*

U.S. Cl. 308—26 **5 Claims**



1. A bearing clamping assembly for a gas turbine engine comprising:

(a) a first shaft member;

(b) a second shaft member surrounding a portion of said first shaft member;

(c) a bearing assembly supporting one of said shaft members for rotation, said assembly including a race member affixed to said one of said shaft members;

(d) an axially resilient member disposed proximate said bearing assembly and adapted to apply an axial force to said race member; and

(e) clamping means for securing said first shaft member to said second shaft member, said clamping means further adapted to compress said resilient member, said resilient member applying said axial force in response to said compression.

4,201,427

SEWING MACHINE POSITIONER DEVICE

John L. Orr, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Rockford, Ill.

Filed Aug. 7, 1978, Ser. No. 931,486

Int. Cl.² A47B *81/00*

U.S. Cl. 312—21 **33 Claims**

19. A sewing machine head lifter mechanism comprising, in combination:

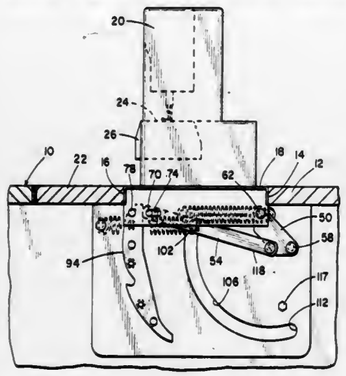
a cabinet having a generally planar working surface with a platform opening through the surface;

a separate platform for mounting a sewing machine head, said platform having a back side, side edges and sized for receipt in the opening and also including a back pivot axis and front support members projecting laterally in opposite directions from the platform, said platform being mounted to pivot about the back axis between a storage position and at least one use position with respect to the working surface;

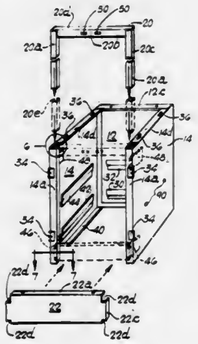
first and second cabinet bracket members positioned respectively on opposite sides of the platform laterally from the side edges of the platform and in a plane transverse to the back axis;

first and second rear pivot arms pivotally connected between a pivot point on the first and second bracket members respectively and the back axis of the platform;

first and second support member engaging means affixed to the cabinet and positioned respectively on opposite sides of the platform laterally from the side edges, each engaging means adapted to receive a support member in at least one support position when the support member is positioned at a predetermined radial distance the pivot point and the rear pivot arms are in a prescribed orientation, the rear pivot arms maintaining a constant radial distance between the back axis and the bracket member pivot points, said support members having a variable and adjustable radial distance between the front support members and the bracket member pivot points whereby said platform is adjusted in position relative to the working surface by altering the orientation of the rear pivot arms about the pivot point to simultaneously vary the radial distance of the front support members from the predetermined distance and cause disengagement thereof from the engaging means.

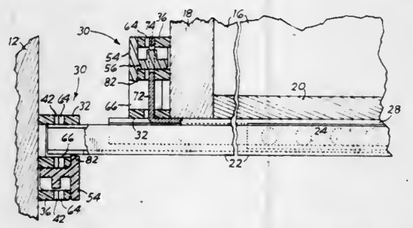


4,201,428
CABINET ASSEMBLY
Frank S. Johnson, Chicago, Ill., assignor to Marvel Metal Products Company, Chicago, Ill.
Filed Dec. 13, 1978, Ser. No. 968,758
Int. Cl.² A47B 43/00
U.S. Cl. 312—257 R **11 Claims**



1. A knockdown cabinet assembly comprising a back panel having inwardly extending top, bottom and side flanges, a pair of side panels having inwardly extending top, bottom, front and rear flanges, the front flange on each of the side panels being formed to provide an elongated open-ended channel, flange receiving means secured on each of the side panels forwardly of and substantially parallel to the rear flange therefor for slidably engaging the inwardly extending side flanges on the back panel, a bottom connecting member and a top connecting member adapted to engage the side panels and to maintain them in fixed spaced apart relation with respect to one another, said top connecting member having downwardly extending portions adapted to be slidably received in the open-ended channel provided by the front flange of the side panels, a top panel having fastening means for securing the top panel on the top flanges of the side panels, and a bottom panel adapted to be supported on the back and side panels is spaced relation to the inwardly extending bottom flanges thereof.

4,201,429
CABINET DRAWER GUIDE AND SLIDE CONNECTOR
David L. Collier, 255 NW. 95th Ave., Portland, Oreg. 97229
Filed Nov. 13, 1978, Ser. No. 959,789
Int. Cl.² A47B 88/00
U.S. Cl. 312—330 R **9 Claims**



4. In combination with a drawer and a cabinet frame,

(a) an elongated slide member arranged for attachment to the drawer for supporting the latter for movement relative to the frame,

(b) an elongated guide member coupled to the slide member and arranged for attachment to the frame,

(c) a connector for attaching at least one of the slide and guide members to the associated drawer and frame, respectively, the connector comprising

(1) a body member having a slot extending inwardly from one side thereof and a transverse opening extending inwardly from a perpendicular side thereof and intercepting said slot,

(2) the elongated member to be attached having a tab projecting laterally therefrom for reception in the slot, the tab having a transverse opening arranged to register with the transverse opening in the body member when the tab is received in the slot, and

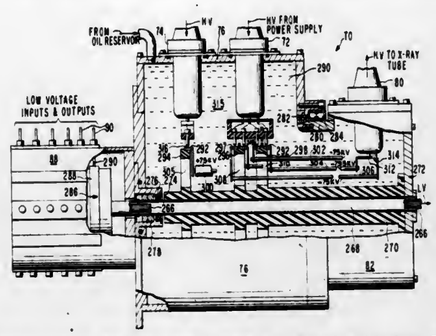
(3) a locking member extending retractably through the registering transverse openings in the body member and tab for securing the tab to the body member, and

(d) means for securing the body member to the drawer or cabinet frame to which the elongated member is to be attached.

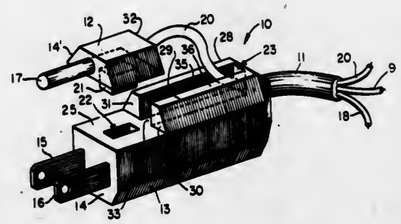
4,201,430
ROTARY FEED FOR TOMOGRAPHIC SCANNING APPARATUS
Kendall L. Dinwiddie, Palo Alto; Janos A. Racz, San Jose, and Edward J. Seppi, Menlo Park, all of Calif., assignors to General Electric Company, Milwaukee, Wis.
Continuation of Ser. No. 677,939, Apr. 19, 1977, abandoned. This application Dec. 23, 1977, Ser. No. 863,979
Int. Cl.² A61B 6/00, 6/02; H01R 39/00
U.S. Cl. 339—5 M **4 Claims**

1. Rotary electrical feed through apparatus comprising first and second end sections and a center section, said first end section being rotatably connected to said center section, three

electrically insulating discs positioned in said center section and supported from said first end section, one of said insulating discs having a first high voltage annular electrical contact mounted thereon, a second one of said insulating discs having mounted thereon second and third high voltage annular electrical contacts which are electrically separated from each other, a third one of said insulating discs having mounted thereon fourth and fifth high voltage annular electrical contacts which are electrically separated from each other, five high voltage electrical contact members each engaging a respective one of said high voltage annular electrical contacts and supported from said center section, said second end section having an outer shell non-rotatably connected to said center section, low voltage slip rings in said second end section and non-rotatably connected to said first end section, and said outer shell carrying contacts slideably engaging said low voltage slip rings.

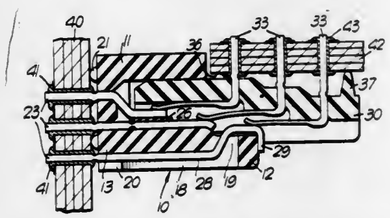


4,201,431
UNIVERSAL ADAPTABLE THREE-PRONG ELECTRICAL PLUG
Ronald T. McDonald, 102 Warren Ave., Marlboro, Mass. 02148
Filed Jun. 28, 1978, Ser. No. 919,864
Int. Cl.² H01R 3/06
U.S. Cl. 339—14 P **8 Claims**



1. A self grounding electric connector plug connected to an electrical device by a 3-wire electric conductor cord comprising two electric conducting wires and a ground wire, said electric connector plug comprising a first body member component and a second body member component for detachable assembly in combination with said first body member component, said first body member component having a vertical planar front face and a bottom mating surface for mating combination with said second body member component, said second body member component having a vertical planar front face and first and second top surfaces comprising front and back mating surfaces for detachable mating combination as desired with the mating surface of said first body member component, a ground prong fixedly mounted in said first body member component and extending outwardly from the said vertical planar front face of said first body member component, two electric contact blades fixedly mounted in said second body member component and extending outwardly from said vertical planar front face of said second body member component, said 3-wire electric conductor cord being located in said second body member component, the said two electric conducting wires of which are connected to said electric contact blades and the ground wire of which is connected to the ground prong in said first body member component, a portion of said ground wire between said first and second body member components being exposed and free to move as said first body member component is detachably connected to said front and back mating surfaces of said second body member component whereby when the mating surface of the first body member component is detachably connected to the front mating surface of said second body member component the said vertical planar front faces are in the same vertical plane and a 3-prong electric connector plug is provided, and when the mating surface of the first body member component is detachably connected to the back mating surface of the second body member component, a connector plug is provided capable of automatic grounding for use with a two wire electrical outlet, the ground prong in use of the electric plug making contact with the grounding screw in an electrical outlet plate.

4,201,432
ELECTRIC CONNECTORS
Walter M. Chalmers, Dundee, Scotland, assignor to Ferranti Limited, Hollinwood, England
Filed Oct. 17, 1978, Ser. No. 952,078
Claims priority, application United Kingdom, Oct. 28, 1977, 45252/77
Int. Cl.² H01R 3/04
U.S. Cl. 339—14 R **4 Claims**

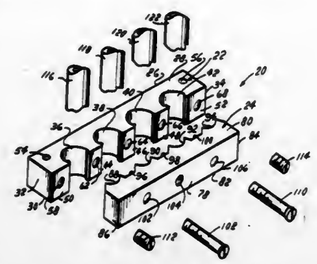


1. An electrical connector comprising a socket member, an insulating housing for the socket member in which are located a plurality of rigid conductive contact members arranged in a number of parallel rows separated from but overlapping one another, one row of contact members being provided by a single continuous contact member extending over the full length of the row, and a plug member comprising an insulating body member in which are located a plurality of resilient conductive contact members arranged in a number of parallel rows so as to cooperate with the rigid contact members carried by the socket members, the resilient contact members being so arranged that they all deflect in the same direction on insertion or removal of the plug member into or from the socket member.

4,201,433
GROUNDING CONNECTOR
Dan H. Caldwell, Red Bank, N.J., assignor to Fargo Manufacturing Company, Inc., Poughkeepsie, N.Y.
Filed Jul. 6, 1978, Ser. No. 922,286
Int. Cl.² H01R 3/06
U.S. Cl. 339—14 L **12 Claims**

1. A grounding connector comprising: a base plate having a plurality of grooves for metal clad telephone cables, a pressure pad adapted to be removably coupled with the base plate to facilitate retention of the metal clad telephone cables in the grooves, means on the connector for connecting to ground,

and each groove having a configuration including an inwardly extending interferring surface on the surfaces forming each



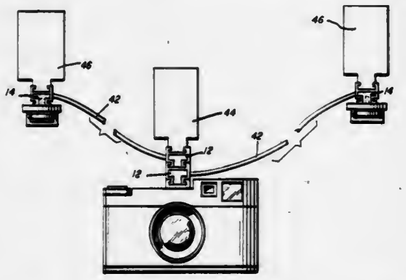
groove in position to engage and assist in retaining the metal clad telephone cables therein and grounding the cables.

4,201,434

PHOTOGRAPHIC EXTENSION FLASH CORD

Albert Tureck, 3728 W. Enfield, Skokie, Ill. 60076

Filed Jan. 18, 1978, Ser. No. 870,327
Int. Cl.² G03B *15/05, 15/07*
U.S. Cl. 339—28 **1 Claim**



1. A connector system for an electronic flash unit for use with a camera having a female hot shoe receptacle, which comprises:

a first connector member comprising a lower portion and upper portion, the lower portion including a male hot shoe plug for electrically and mechanically engaging the female hot shoe receptacle of a camera, the upper portion comprising a female hot shoe receptacle for enabling connection thereto of an electronic flash unit having a male hot shoe connector, with the electronic flash unit being connected directly to said upper portion instead of being connected directly to the camera's female hot shoe receptacle;

said first connector member upper portion comprising a pair of metal rods fixed to an insulative support and said first connector member lower portion comprising a pair of metal rods movable relative an insulative support and are coaxial with said fixed metal rods;

means electrically coupling said upper portion to said lower portion so as to provide an electrical connection from the camera female hot shoe receptacle to the upper portion's hot shoe receptacle when the first connector member is connected to the camera, said electrically coupling means comprising metal spring means coupling said metal rods, said metal spring means encircling said metal rods and biasing said movable metal rods downwardly;

electrically conductive extension lines in electrical contact with said first connector member, and means connecting said electrically conductive extension lines to said metal rods;

a second connector member comprising a lower portion and an upper portion, the upper portion of the second connector member comprising a female hot shoe receptacle and the lower portion of said second connector member defining a threaded aperture for receiving a tripod mount;

said second connector member upper portion comprising a pair of metal rods fixed to an insulative support; and

means connecting the electrically conductive extension lines to the fixed metal rods of said second connector member, whereby an electrical connection is provided, when the first connector member is connected to the camera, from the camera female hot shoe receptacle to the second connector member;

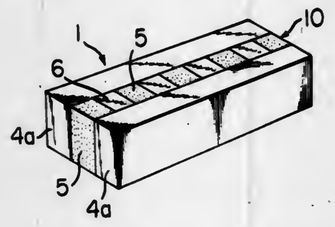
said fixed metal rods each defining an axial bore and a radial passage from said bore to the outside thereof; said electrically conductive extension lines being connected through said passages to the walls defining said bore.

4,201,435

INTERCONNECTORS

Akio Nakamura, and Ryoichi Sado, both of Saitama, Japan, assignors to Shin-Etsu Polymer Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 818,218, Jul. 22, 1977, abandoned. This application Dec. 12, 1978, Ser. No. 968,676
Claims priority, application Japan, Jul. 26, 1976, 51-99296[U]
Int. Cl.² B32B *25/20*; H01R *13/40*
U.S. Cl. 339—59 M **1 Claim**



1. An interconnector comprised of a rod-shaped stratified body with a rectangular cross section formed with strata of an electrically insulating rubbery material and strata of electrically conducting rubbery material in an alternate stratification along the longitudinal direction of the rod-shaped stratified body and two electrically insulating layers of a rubbery material each adhesively bonded to and covering an opposite lateral surface of the rod-shaped stratified body, the hardness of the electrically insulating rubbery material for the strata in the stratified body being smaller by at least 5 in the JIS scale than that of the electrically conductive rubbery material, the hardness of the rubbery material forming the insulating layers not exceeding 50 and smaller by at least 10 in the JIS scale than that of the electrically conductive rubbery material in the stratified body and the thickness of each of the insulating layers being larger than the width of the stratified body between the opposite surfaces to which the insulating layers are bonded.

4,201,436

MINIATURE MATRIX ASSEMBLY

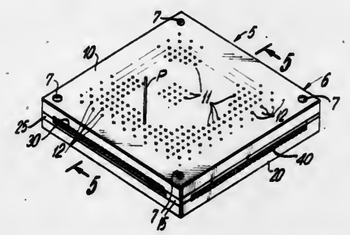
David L. Genovese, Spring Valley, and Miklos Madarasz, Bedford, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed Sep. 14, 1978, Ser. No. 942,347
Int. Cl.² H01R *9/08*
U.S. Cl. 339—96 **4 Claims**

1. A miniature matrix assembly comprising:

first and second substantially flat-conductor cables each including a plurality of parallel, elongated conductors embedded in a sheet of resilient electrically non-conductive insulation material such that each conductor is fully insulated from the conductor adjacent thereto, the conductors of each cable being spaced at 0.050 inch intervals, each conductor being a stranded wire of annular cross-section such that the sheet of insulation material conforms to the configuration of said conductors to define upper and lower corrugated surfaces of the flat cable having ridges and valleys when viewed in cross-section, the longitudinal axis of said second flat conductor cable being disposed perpendicular to the longitudinal axis of said first flat conductor cable, said first and second flat conductor cables being in abutting planar relationship along a surface thereof to define a matrix of cross-over points of the respective conductors;

first and second cover plates disposed on the respective opposed surface of said first and second flat conductor cables opposite to said abutting contact surfaces thereof, each said cover plate being made of an insulative material and including a plurality of elongated, parallel grooves formed on one surface thereof for cooperation with the respective corrugated surface configuration of the abutting cables, such that the ridges of said cables are seated within said grooves, each of said cover plates being



formed with a plurality of programming holes spaced at 0.050 inch intervals and positioned in alignment with the cross-over points of the respective conductors in the first and second flat conductor cables, each of said first and second cover plates further including a plurality of termination apertures spaced in staggered relationship at 0.100 inch intervals such that a plurality of termination apertures is provided at 0.050 intervals; and

fastening means for holding said first and second cover plates, and the first and second flat conductor cables sandwiched therebetween in fixed relationship for receiving conducting connecting pins inserted through the programming holes in the first cover plate and then through the insulation and stranded conductors of said first and second conductor cables, for electrically interconnecting selected intersecting conductors of said first and second flat conductor cables, the insulation material of said cables effecting an hermetic seal around said pin upon insertion thereof.

4,201,437

MOUNTING ARRANGEMENT FOR ELECTRICAL PLUG-IN COMPONENTS

John Lockyer, Smithtown, N.Y., assignor to Deutsch Relays, Inc., Long Island, N.Y.

Filed Jun. 2, 1978, Ser. No. 911,891
Int. Cl.² H01R *13/60*
U.S. Cl. 339—121 **25 Claims**

1. A device for releasably retaining a duality of plug-in components in a mated position comprising,

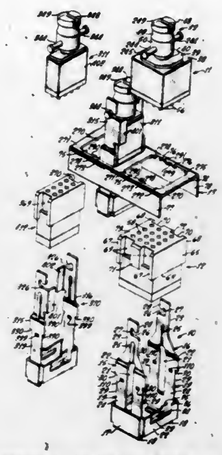
a first member having a component mounting opening therein, said first member including means defining holding finger means projecting into said opening,

a retainer assembly extending through said opening and having a first portion on one side of said opening, said assembly including

means on said first portion for mounting a first electrical component adjacent one side of said opening,

first and second retainer elements extending through said opening, at least one of said elements including means for defining a recess therein receiving said holding finger means and preventing movement of said assembly in at least one direction relative to said first member,

at least said one element being displaceable to shift said recess from said holding finger means to allow insertion and withdrawal of said retainer assembly into and from said opening,



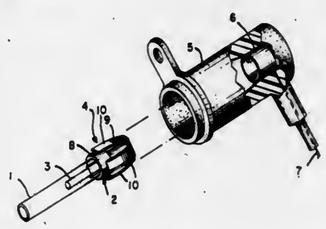
said retainer assembly including means on portions of said retainer elements remote from said first portion for securing a second electrical component thereto in mating relation to said first electrical component.

4,201,438

SPRING CONTACT FOR ARC DISCHARGE TUBE BASE

Richard J. Shea, Danvers, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 2, 1978, Ser. No. 947,668
Int. Cl.² H01J *5/50*
U.S. Cl. 339—144 R **1 Claim**



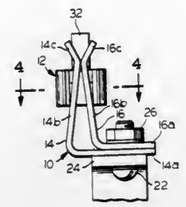
1. An arc discharge tube having a metal end cap at its end electrically connected to a discharge electrode in the arc tube, the end cap having a bowed spring contact fastened thereto, the spring contact being the support means and the electrical connection means for the arc tube when it is inserted into a socket, the end cap comprising a larger diameter shoulder and a smaller diameter terminal portion, said shoulder fitting over the end of the arc tube and being cemented thereto, the spring contact being fastened to the end of said terminal portion, said spring contact comprising arms extending from a center portion, the center portion being fastened to the end of said terminal portion, said arms forming a basket around the end cap and extending to the shoulder thereof but being spaced therefrom, the largest diameter of said basket being about midway between the shoulder and the terminal portion end, wherein said arms can be pressed into contact with said shoulder, and can be compressed further, when the end cap is inserted into a suitable socket.

4,201,439

METER JAW AND SPRING CLIP ASSEMBLY

Andre J. M'Sadoques, Southington, Conn., assignor to General Electric Company, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,427
Int. Cl.² H01R *11/22*
U.S. Cl. 339—259 R **5 Claims**



1. In combination:

A. a jaw including

(1) a pair of L-shaped conductive strips,

(2) each strip including a base segment and an upstanding contact segment,

(3) means forming an aperture in each said base segment;

B. a C-shaped spring clip having

(1) opposed arms engaging said contact segments to hold said contact segments in juxtaposed relation, whereby said base segments assume a lapped relationship with said apertures in substantial registry to accommodate a bolt clamping said jaw in electrical connection with a conductive member, and

(2) an upstanding guide tab on said spring clip integrally located intermediate said arms and arranged transversely of said contact segments to serve in directing the insertion of a stab connector into electrical engagement with said jaw between said contact segments; and

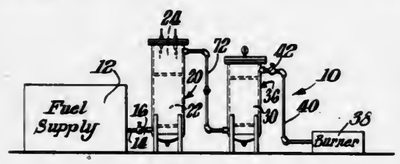
C. interengaging detent means formed in said contact segments and said clip arms to hold said contact strips and spring clip in assembly.

4,201,440

LENS SYSTEM FOR MICRO FILM

Koichi Yuta, Mitaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1978, Ser. No. 932,218
Claims priority, application Japan, Aug. 17, 1977, 52/98437
Int. Cl.² G02B *9/64, 13/14*
U.S. Cl. 350—1.2 **3 Claims**



1. A lens system for micro film comprising a first negative cemented doublet lens component, a second positive lens component, a third positive lens component, a fourth positive lens component, a fifth positive lens component, a sixth negative cemented doublet lens component, a seventh negative meniscus lens component, an eighth cemented doublet meniscus lens component and a ninth positive meniscus lens component, and said lens system satisfying the following conditions:

(1) $-14f<r_7<-11f$

(2) $0.31f<r_{14}<0.35f$

(3) $-1.2f<r_{15}<-0.8f$

(4) $-2.1f<r_{16}<-2.0f$

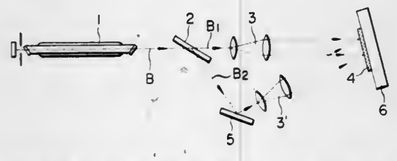
wherein the reference symbols r_7, r_{14}, r_{15} and r_{16} represent radii of curvature on the image side surface of the third lens component, the image side surface of the sixth lens component, the object side surface and the image side surface of the seventh lens component, and the reference symbol f designates focal length of the entire lens system as a whole.

4,201,441

HOLOGRAM AND METHOD OF PRODUCTION THEREOF

Masakazu Matsumoto, Yokohama; Koujiro Yokono, Kawasaki; Takashi Tanaka, Tokyo; Shigeo Toganou, Tokyo; Hiroyoshi Kishi, Tokyo, and Katsuhiko Nishide, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1979, Ser. No. 4,607
Claims priority, application Japan, Jan. 26, 1978, 53-8041; Jan. 27, 1978, 53-8137
Int. Cl.² G03H *1/00*; G02B *1/04*
U.S. Cl. 350—3.61 **20 Claims**



1. A process for producing holograms which comprises

(i) exposing to an interference pattern of laser a film-like sensitive member for recording holograms which is mainly composed of a polymer selected from the group consisting of polyvinylcarbazole, alkyl-substituted derivatives thereof and halogen-substituted derivatives thereof and is sensitized to a radiation by using an iodine compound,

(ii) swelling the sensitive member in a first solvent until a volume of the sensitive member becomes 120% or more based on the volume immediately after the exposure and simultaneously eluting most of the iodine compound, and

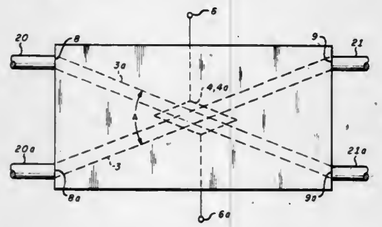
(iii) transferring the sensitive member into a second solvent to treat the sensitive member until the volume of the sensitive member becomes 110% or less based on the volume immediately after the exposure.

4,201,442

LIQUID CRYSTAL SWITCHING COUPLER MATRIX

Donald H. McMahon, Carlisle, and Richard A. Soref, Newton Centre, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,983
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.14 **12 Claims**



1. Electrooptical switch means comprising:

first dielectric plate means having first planar surface means,

first internal channel optical wave guide means having first boundary means at said first planar surface means,

second dielectric plate means having second planar surface means,

second internal channel optical wave guide means having second boundary means at said second planar surface means,

said first and second dielectric plate means being disposed with said first and second surface means in facing spaced parallel relation so that said first and second internal channel optical wave guide means cross one over the other for forming a cross-over region,

liquid crystal fluid means disposed between said first and second surface means, and

means for selectively applying an electric field in said liquid crystal fluid means substantially only at said crossover region, including first and second transparent electrode means respectively affixed in opposed facing relation to said first and second planar surface means and to said first and second boundary means,

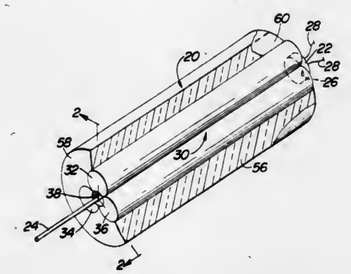
said first and second internal channel optical wave guide means being formed in situ by permanent induction of first and second regions of increased index of refraction at said first and second planar surface means.

4,201,443

OPTICAL FIBER COUPLER FOR INTERFACING WITH LIGHT SOURCES AND DETECTORS

Malcolm H. Hodge, Claymont, Del., assignor to TRW Inc., Elk Grove Village, Ill.

Filed Nov. 25, 1977, Ser. No. 854,925
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.20 **9 Claims**



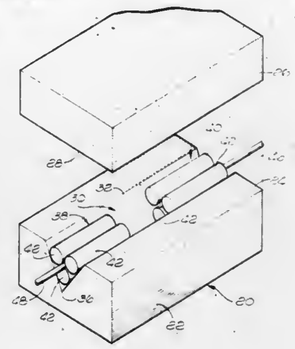
1. An optical fiber coupler for interfacing with a light active element, said coupler comprising a guide assembly having at least three glass elongated members having cylindrical surface portions, said members being disposed in a side-by-side array parallel to one another with longitudinal peripheral surface portions of adjacent members in contact and connected to each other to form a cusp-shaped interstitial channel therebetween; said assembly including a flat first end, an optical fiber having a first and second flat end disposed within said channel and secured in place therein, with said fiber second end being located at an intermediate portion along said channel, with said fiber first end being co-planar with the flat first end of said guide assembly, said light active element being mounted directly on and secured to the first end of the guide assembly and being aligned with the first end of said optical fiber to form a good light transmissive interface; said interstitial channel having an open end oppositely disposed to said light-active element for reception of optical fiber ends adapted to engage said optical fiber flat second end disposed in said channel intermediate portion for purposes of effecting good light transmissive connections therewith.

4,201,444

SINGLE OPTICAL FIBER CONNECTOR

Ronald L. McCartney, Orange; Bruce K. Arnold, El Toro, and Vaughn C. Hogan, Sun Valley, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 680,171, May 26, 1976, abandoned.
This application Feb. 13, 1978, Ser. No. 877,262
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.21 **46 Claims**



1. A fiber optic connector for coupling a pair of single optical fibers comprising:

a base plate having a groove in the upper surface thereof, said groove including a pair of planar sides that intersect below said surface at an angle of 60° and extend to said surface;

a pair of like-sets of equal diameter cylindrical rods lying lengthwise in said groove, each said set of rods having adjacent circumferential surfaces providing at least one interstitial space between said rods for receiving an optical fiber;

the region of said groove in which said sets of rods lie being continuous;

all the rods of each said set of rods having front ends lying in a common plane lying transverse to the longitudinal axes of said rods providing a mating end face;

said mating end faces of said sets of rods substantially abutting each other in said groove;

compression plate means mountable over said surface for arranging said rods of each set in said groove in indentical patterns wherein the centers of any three contiguous rods of each set are disposed at the vertices of an equilateral triangle, whereby fibers in corresponding interstitial spaces in said sets of rods will become precisely laterally aligned; and

said sets of rods being laterally removably mounted in said groove and being unattached to said compression plate means.

4,201,445

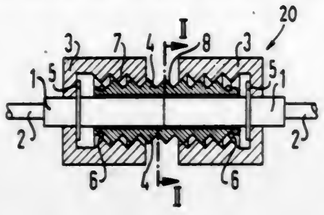
PLUG CONNECTION FOR LIGHT-WAVE CONDUCTORS

Dieter Kunze, Neuried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,000
Claims priority, application Fed. Rep. of Germany, May 24, 1977, 2723440
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.21 **12 Claims**

1. A releasable connecting device for light-wave conductors disposed in concentric plug components, the device comprising sleeve means for telescopically receiving the components, said sleeve means having external threads and being provided with means for forming at least one lengthwise extending slot,

said sleeve means having means for forming a bore for receiving the plug components containing the light-wave conductors and enabling axial movement of the components within the means for forming the bore, and locking nuts acting on the external threads of the sleeve means, each of said locking nuts having a surface for engaging the component and applying an axial force thereto, said threads of the sleeve means and the



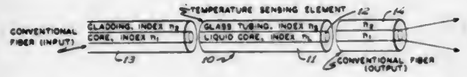
locking nuts being configured so that threading of the locking nuts on the external threads axially shifts the plug components into abutting relationship and then radially constricts the sleeve means to decrease the means for forming the bore to frictionally hold the plug components in an axially aligned position and pressed together to form a connection therebetween.

4,201,446

FIBER OPTIC TEMPERATURE SENSOR USING LIQUID COMPONENT FIBER

John J. Geddes, Minneapolis, and G. Benjamin Hocker, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 20, 1978, Ser. No. 953,154
Int. Cl.² G02B 5/16; G01K 11/12
U.S. Cl. 350—96.29 **6 Claims**



1. Remote optical type temperature sensor apparatus comprising:

a length of multi-mode optical fiber having a core and a cladding for transmitting light therethrough and having an input end adapted to be light excited and an output; and,

a temperature-sensing optical fiber section, positioned at a selected point in the length of optical fiber, the section having a transparent liquid component and a transparent solid component, one of said components comprising a core and the other component a cladding surrounding the core, the transparent solid component having a predetermined index of refraction, the transparent liquid component having a temperature dependent index of refraction so that the light transmitted by said temperature section is a function of sensed temperature.

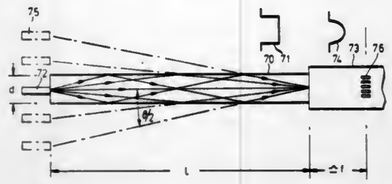
4,201,447

TERMINATION FOR GRADED INDEX FIBER

George H. B. Thompson, and Peter R. Selway, both of Sawbridgeworth, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 918,994
Claims priority, application United Kingdom, Jul. 21, 1977, 30647/77
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.31 **9 Claims**

1. A graded index optical fibre terminating in a coupling piece of step index fibre whose numerical aperture is matched with or greater than that wherein the cores of the abutting ends of said fibres have matching cross-sections, and wherein the length of the coupling piece of step index fibre is at least that



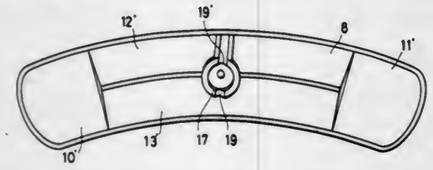
at which the calculated lateral spacing of the first images in the graded index fibre of the remote end of the step index fibre is matched with or smaller than the maximum detail observable in the highest propagating mode of the step index fibre.

4,201,448

REFLECTOR FOR SPOKEWISE WHEELS

Joe Kagayama, Osaka, Japan, assignor to Tsuyama Manufacturing Company, Ltd., Osaka, Japan

Filed Jul. 28, 1978, Ser. No. 928,851
Int. Cl.² G02B 5/12
U.S. Cl. 350—99 **3 Claims**



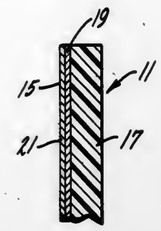
1. A reflector for a wheel including a plurality of spokes, said reflector including a plate-like reflector body having reflective surfaces each provided with reflective zones capable of reflecting incident light in generally parallel relation thereto, the improvements comprising a through hole in said reflector body, a nut portion which is coaxially movable in the through hole, a hook member formed integrally with one end face of said nut portion and extending therefrom in the axial direction, a bolt portion coacting with said nut portion and adapted to firmly press a spoke against the inside face of said hook member by virtue of the extremity of said bolt portion, a fixing means for retaining the bolt portion on its opposite side through said through hole in a state where the spoke is firmly pressed against the inside face of said hook member and the spoke is in abutting engagement with reflector, said fixing means including the bolt portion and a spring washer between the head of the bolt portion and the reflector body, and a rotation-restraining means for preventing rotation of said plate-like reflector body relative to the spokes, said rotation-restraining means comprising a groove in the reflector body, said spokes being inclined with respect to a plane through the wheel at a predetermined angle, and the axis of said through hole being perpendicular to said spoke to which the reflector body is secured.

4,201,449

SCREEN

John S. Campion, 667 W. Wrightwood, and Van E. Steed, 104 W. Natoma, both of Addision, Ill. 60101

Filed May 18, 1978, Ser. No. 907,137
Int. Cl.² G03B 21/56
U.S. Cl. 350—117 **6 Claims**



1. A photographic front projection screen including:

a base having a front surface to face a projection source, and

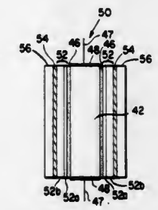
a coating of reflective aluminum ink applied to the front surface of said base.

4,201,450

RIGID ELECTRO-OPTIC DEVICE USING A TRANSPARENT FERROELECTRIC CERAMIC ELEMENT

Giorgio B. Trapani, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 3, 1978, Ser. No. 893,195
Int. Cl.² G02F 1/05; G02C 7/12
U.S. Cl. 350—150 **29 Claims**



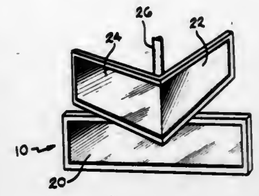
1. An electro-optic phase retardation device comprising an optically transparent lanthanum-modified lead zirconate titanate electro-optic ceramic element exhibiting substantially isotropic properties in a quiescent state and quadratic electro-optic properties in a field-induced state, said electro-optic ceramic element having substantially parallel optical quality surfaces, electrode means for applying an electric field to said electro-optic ceramic element in a plane normal to the direction of propagation of light through the electro-optic device; and isotropic sheet elements bonded to said electro-optic ceramic element in sandwich-like configuration with an adhesive effective to provide a rigid boundary between the interfaces of said ceramic electro-optic element and isotropic sheet elements.

4,201,451

WIDE ANGLED REAR VIEW MIRROR APPARATUS

Keith D. Jacob, Ann Arbor, Mich., assignor to Donald F. Hassinger, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 846,835, Oct. 31, 1977, abandoned, and a continuation-in-part of Ser. No. 720,150, Sep. 3, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 896,895
Int. Cl.² G02B 5/08; G02F 1/13
U.S. Cl. 350—278 **16 Claims**



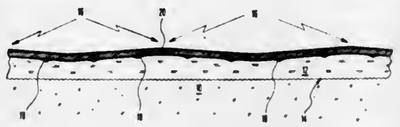
1. Rear view mirror apparatus for use in a motor vehicle comprising reflecting means, means for movably mounting said reflecting means to said vehicle, one portion of said reflecting means being positioned at an angle with respect to another portion of said reflecting means and being in a position to enlarge the area of vision to the right rear of the vehicle, said other portion of said reflecting means being in a position to enlarge the area of vision to the left rear of the vehicle, a voltage source, a single thickness of liquid crystal solution covering each of said portions, said solution being substantially opaque when a voltage is applied thereto and transparent in the absence of said voltage, circuit means connecting said voltage source to said solution covering each of said portions thereby providing for the nonreflectivity of said portions, and means operatively associated with said circuit means and operable to provide for the removal of the voltage from the solution covering a selected one of said portions to enable said selected portion to become reflective while the nonreflectivity of said other portion is maintained.

4,201,452

REFLECTOR FOR AUTOMOBILE HEADLIGHTS

Olivier Puyplat, Paris, France, assignor to Societe Industrielle de Mecanique, Lyons, France

Division of Ser. No. 833,123, Sep. 14, 1977, Pat. No. 4,147,565. This application Mar. 12, 1979, Ser. No. 19,373
Claims priority, application France, Sep. 30, 1976, 76 29355
Int. Cl.² G02B 5/08
U.S. Cl. 350—288 **11 Claims**



1. A reflector for automobile headlights, comprising a stamped unpolished sheet of metal;

a coating thereon including a layer of a thermally fixed pulverulent dressing;

a layer of varnish upon said coating;

and a film of aluminium adhered to the layer of varnish;

the reflecting surface of said reflector having large-amplitude and shallow-depth undulations.

4,201,453

LIQUID CRYSTAL CELL HAVING AN INSULATING LAYER OF A SILICON OXIDE BASE

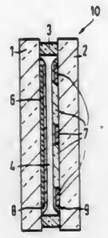
Manfred Kobale, Faistenhaar; Hans Pink, Starnberg, and Helwig Schaefer, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,004

Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722871

Int. Cl.[2] G02F *1/13*

U.S. Cl. 350—340 **16 Claims**



1. In a liquid crystal cell having a pair of spaced carrier plates with inner surfaces forming a cavity for receiving a layer of liquid crystal material, each of said inner surfaces being provided with conductive coatings, at least one of the carrier plates having its conductive coating provided with an insulating layer of a silicon oxide base with the improvement comprising wherein the insulating layer of silicon oxide contains an additive selected from a group consisting of boron oxide, tin oxide, titanium oxide and mixtures thereof so that the insulating layer causes homeotropic orientation of the molecules of the liquid crystal layer.

4,201,454

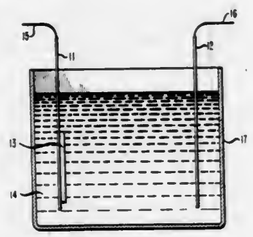
HEAT TREATED ELECTROCHROMIC DEVICES

Gerardo Beni, Westfield, and Joseph L. Shay, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 27, 1978, Ser. No. 919,418

Int. Cl.[2] G02F *1/17*

U.S. Cl. 350—357 **6 Claims**



1. An electrochromic device comprising a first electrode and a second electrode contacted with an electrolyte CHARACTERIZED IN THAT said first electrode contains anodic iridium oxide, which has been heat treated at a temperature in the range from 40 to 100 degrees C.

4,201,455

LASER-OPERATED APPARATUS FOR DATA AND SIGNAL RECORDING

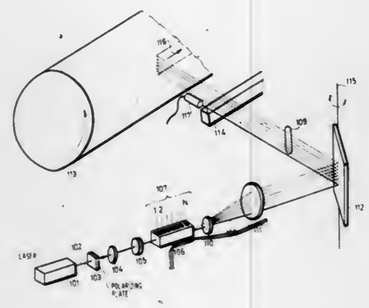
Peter Vadász; Szabolcs Tőkés; Attila L. Márkus; Károly Balazs; Endre Pólya, all of Budapest; András Tallér, Solymár, and András Podmaniczky, Budapest, all of Hungary, assignors to MTA Szamitastechnikai es Automatizalasi Kutato Intezet, Budapest, Hungary

Filed Dec. 2, 1977, Ser. No. 857,189

Claims priority, application Hungary, Dec. 15, 1976, MA 2841

Int. Cl.[2] H04N *5/84*

U.S. Cl. 350—358 **7 Claims**



1. A laser-operated apparatus for data and signal recording comprising:

a laser light source generating a collimated laser beam;

an acousto-optical light intensity modulator in the path of said collimated laser beam for producing a plurality of outgoing laser beams angularly separated in a first deflection plane, said modulator including a body transparent to the light of said beams, said outgoing beams being separately intensity modulatable for each to represent a respective information channel; transducer means coupled to said body of said acousto-optical light intensity modulator and comprising a plurality of separately controllable ultrasonic transducer segments arranged in a linear array in the direction of laser beam propagation within said body on a common plane of said body, said common plane making substantially a Bragg angle with said collimated laser beam propagating within said body;

beam deflecting means arranged in the path of said outgoing laser beams in a second deflection plane to provide line scanning in an image plane;

recording means with a light sensitive surface in said image plane for recording the light channel information of said intensity modulated and deflected outgoing laser beams impinging on said image plane; and

a control unit for controlling said acousto-optical light intensity modulator in accordance with data and signals to be recorded comprising a plurality of control stages, each being coupled to a respective one of said transducer segments for exciting segment with a signal composed of at least one amplitude modulated very high frequency carrier, each of said control stages comprising at least one very high frequency oscillator for producing a respective one of said carriers being associated with one of said information channels, and means for modulating the carrier signals of each of said oscillators to produce intensity modulation of the outgoing beams associated with the information channels corresponding to the carriers of said stage.

4,201,456

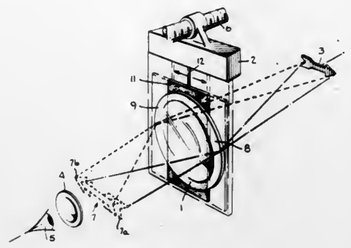
METHOD AND APPARATUS FOR DETECTING THE FOCUSING CONDITION OF AN OPTICAL SYSTEM

Mryon L. Wolbarsht, 1435 Acadia St., Durham, N.C. 27701

Filed Apr. 22, 1976, Ser. No. 679,318

Int. Cl.[2] G03B *3/10*

U.S. Cl. 353—101 **42 Claims**



1. Apparatus for enabling the visual perception by the eye of an observer of the focusing condition of an optical system at an image plane of an optical system when the optical system is forming an image at the image plane of the optical system from light from an object disposed at an object plane of the optical system, the apparatus comprising:

a movable mask of material capable of preventing the transmission of light with respect to any portion of the light within its periphery, the mask being adapted to alternately obstruct different portions of the light from the object to produce at least first and second images of the object from the portions of the light from the object which are not obstructed, each of the portions of the light being obstructed being a major portion of all of the light from the object, the first and second images of the object being produced at a predetermined plane extending substantially parallel to the image plane of the optical system, each of the first and second images resulting from light from the object passing adjacent a different opposite side of the mask in the direction of the movement of the mask, when the mask is alternately in at least first and second positions disposed along a predetermined line extending transversely to the optical axis of the optical system, the first and second images being substantially coincident when the optical system is in focus and being displaced with respect to one another substantially in the direction of the predetermined line when the optical system is out-of-focus, said mask provides a continuum of images of said object at said predetermined plane when moved through a continuum of states between said first and second positions, said continnum of images being coincident when said optical system is in focus and displaced when said optical system is out-of-focus;

means for moving said movable mask linearly in substantially the direction of the predetermined line and alternately between the first and second positions at a predetermined frequency determined by the persistence of vision of the human eye, sufficient to create an apparent moving image when the optical system is out-of-focus, said means for alternately moving said mask from said first position to said second position going through said continuum of positions, whereby a continuously moving image is provided when said optical system is out-of-focus; and

means for presenting said apparent moving image as a visual image to the eye of the observer to thereby enable the visual perception of said apparent moving image.

4,201,457

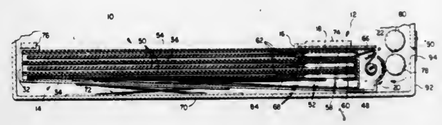
PHOTOGRAPHIC FILM ASSEMBLAGE HAVING INTERCONNECTED FILM UNITS

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1978, Ser. No. 974,360

Int. Cl.[2] G03B *17/52, 1/02*

U.S. Cl. 354—86 **5 Claims**



1. A photographic film assemblage for use with a camera of the self-developing type including a pair of elongate rollers, at least one of which includes a gear at one end thereof, and an exit opening through which a film unit may be moved to the exterior of the camera, said photographic film assemblage comprising:

a film cassette having an exposure opening through which a film unit is adapted to be exposed, an egress opening through which a film unit is adapted to be moved subsequent to exposure, and a slot through which a portion of a gear is adapted to extend;

a plurality of self-developing type film units oriented in a stack within said film cassette with an endmost film unit having its photosensitive layer located in alignment with said exposure opening and a leading end thereof carrying a rupturable container of processing liquid located in alignment with said egress opening;

means for resiliently biasing said film units toward said exposure opening;

an elongate tab secured to each of said film units, each of said tabs includes a first end secured to said leading end of each of said film units, and a second unattached end;

means for connecting said tab on one of said film units to the tab on the next adjacent film unit, said connecting means comprising a strip of flexible sheet material having one end thereof fixedly secured to a take-up reel and extending therefrom into detachable connection with each of said tabs;

a take-up reel including a shaft rotatably mounted within said film cassette for winding said strip thereupon as said film units are moved through said egress opening; and

a gear fixedly attached to said shaft such that a portion thereof extends through said slot in said film cassette where it is adapted to be meshed with the gear on the elongate roller of the camera, whereby rotation of said shaft by an exteriorly applied manual force is effective to rotate the elongate roller and to wind a portion of said strip upon said take-up reel while simultaneously moving said second end of said tab on said endmost film unit through said egress opening and into the bite of the elongate rollers which continue the advancement of said second end of said tab through the exit opening in the camera to a position whereat it may be manually grasped and pulled, subsequent to the exposure of said endmost film unit, to draw said endmost film unit through the elongate rollers while simultaneously moving said tab on the next adjacent film unit toward the bite of the rollers.

4,201,458

SINGLE LENS MIRROR REFLEX STUDIO CAMERA IN WHICH QUICK RETURN MIRROR CLOSES FLASH CONTACT

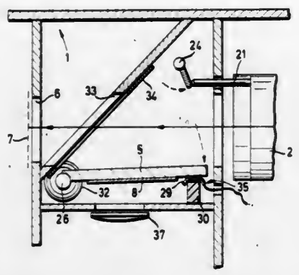
Rudolf Viering, Cologne, Fed. Rep. of Germany, assignor to Pixyfoto GmbH, Cologne, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 878,107

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706734

Int. Cl.[2] **G03B** *15/03, 19/12*

U.S. Cl. 354—136 **8 Claims**



1. In a single lens mirror reflex camera for studio use in which exposure of the film is synchronized with activation of a flashbulb and in which a mirror is movable from a focusing to a picture-taking position, wherein the improvement comprises the following features:

(a) the movable mirror is carried on a shutter cap;

(b) the movable mirror and shutter cap are mounted on a shaft driven by a rotary electromagnet;

(c) a return spring assists movement of said shaft from the picture-taking position to the focusing position in which the shutter is closed;

(d) the mirror carries a first contact which in the picture-taking position touches a second contact to activate the flashbulb;

(e) the second contact is mounted on an elastic support;

(f) the arrangement being such that the movable mirror, as soon as the first contact has touched the second contact and the flashbulb has been initiated, is immediately returned to its position of rest where the shutter is closed, this return movement being assisted by deformation of the elastic support and the return spring.

4,201,459

BRAKING DEVICE FOR FOCAL PLANE SHUTTER

Yoshiyuki Nakano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,083

Claims priority, application Japan, Mar. 30, 1978, 53/37302

Int. Cl.[2] **G03B** *9/40;* **G02B** *15/03*

U.S. Cl. 354—147 **6 Claims**

1. A focal plane shutter device for a photographic camera comprising:

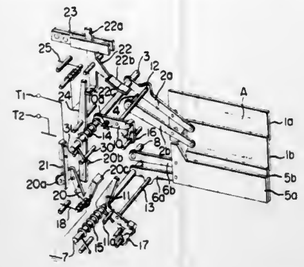
(a) an exposure aperture;

(b) a first shutter blade which is movable from a closed position to close said aperture to an open position to open said aperture;

(c) a second shutter blade which is movable from said open position to open said aperture to said closed position to close said aperture;

(d) operating means including a first driving member to drive said first shutter blade from said closed position to said open position, and a second driving member to drive said second shutter blade from said open position to said closed position subsequent to operation of said first shutter blade by said first driving member; and

(e) braking means including a reciprocating member disposed to be displaced in one direction in association with said first driving member immediately before termination of movement of said first driving member at the time of driving said first shutter blade, and to be displaced in another direction in association with said second driving member immediately before termination of movement of



said second driving member at the time of driving said second shutter blade, and a braking member provided to absorb energy of motion of said reciprocating member at the time of displacement of said reciprocating member.

4,201,460

MOTOR-DRIVEN STILL CAMERA

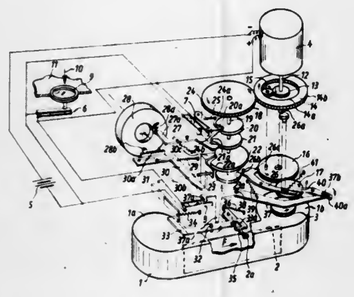
Otto Stemme, and Karl Wagner, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 902,095

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720138

Int. Cl.[2] **G03B** *1/18*

U.S. Cl. 354—171 **9 Claims**



1. In a motor-driven still camera having a camera release, a shutter and a mechanism for transporting film having a perforation for each film frame, a combination comprising an electric motor; an electric circuit for supplying energy to said motor; a first normally open switch interposed in said circuit and arranged to be operated and complete said circuit in response to actuation of the camera release; at least two additional normally open switches also interposed in said circuit and connected in parallel with the first-mentioned switch; and means for operating the shutter and the film transporting mechanism in response to operation of said first switch by the camera release, said means comprising at least three jointly rotatable cams and a gear train having an input member operatively connected with said motor, a first rotatable output member for driving said cams, a second rotatable output member which is drivingly coupled with said film transporting mechanism, first follower means cooperating with a first one of said cams for closing one of said additional switches in response to said rotation, second follower means cooperating with a second one of said cams for triggering the shutter in response to said rotation, and third follower means cooperating with a third one of said cams for closing the other of said additional switches and initiating operation of the film-transporting mechanism.

4,201,461

STOP-DOWN DEVICE IN A BELLOWS DEVICE

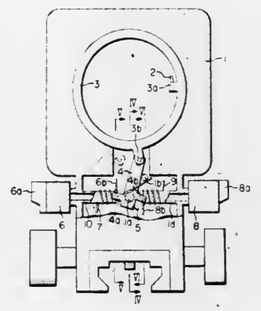
Kunihiro Fukino, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 23, 1979, Ser. No. 23,277

Claims priority, application Japan, Mar. 24, 1978, 53-37597[U]

Int. Cl.[2] **G03B** *9/06, 17/04*

U.S. Cl. 354—272 **3 Claims**



1. In a bellows device having a lens mount formed with a mount portion for mounting thereon a picture-taking lens and installable in normal direction in which the mount portion faces the object side during photography and in the opposite direction in which the mount portion faces the camera side, a stop-down device provided on said lens mount and operable so as to stop down a diaphragm blade by operating the aperture mechanism of said picture-taking lens, said stop-down device comprising:

a diaphragm interlocking member engageable with said aperture mechanism and displaceable between a first position to operate said aperture mechanism so as to open said diaphragm blade and a second position to operate said aperture mechanism so as to stop down said diaphragm blade; and

operating means including a first operating member having a first operating portion projecting from one side surface of said lens mount, said first operating member engaging said diaphragm interlocking member so as to displace said diaphragm interlocking member from said first position to said second position by displacement of said first operating portion in one direction, and a second operating member having a second operating portion projected from the other side surface of said lens mount, said second operating member engaging said diaphragm interlocking member so as to displace said diaphragm interlocking member from said first position to said second position discretely from said first operating member by displacement of said second operating portion in the direction opposite to the direction of displacement of said first operating portion.

4,201,462

LENS BARREL HAVING AN APERTURE INFORMATION TRANSMISSION SECTION

Naoyuki Uno, Urawa; Fumio Urano, Omiya; Eiichi Tano, Asaka, and Hiroshi Kurei, Kawagod, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,621

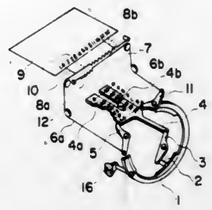
Claims priority, application Japan, Jun. 16, 1977, 52-71217

Int. Cl.[2] **G03B** *17/00, 9/02, 17/20*

U.S. Cl. 354—289 **7 Claims**

1. In a camera having an interchangeable lens barrel with full and minimum aperture values and means for transmitting said aperture values as aperture information to said camera body from said lens barrel, the improvement comprising:

a single transmitting member on said lens barrel for providing both full aperture and minimum aperture information; and



detecting means on said camera body for receiving said information when said lens barrel is mounted on said camera body.

4,201,463

PHOTOGRAPHIC CAMERA DEVICE

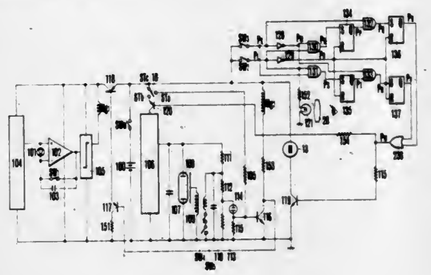
Isao Harigaya, Yokohama; Tetsuya Taguchi, Kawasaki; Fumio Ito, and Mutsunobu Yazaki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1978, Ser. No. 905,883

Claims priority, application Japan, May 17, 1977, 52-56942; Jun. 10, 1977, 52-68634; Jun. 14, 1977, 52-70076

Int. Cl.[2] **G03B** *15/05, 17/52*

U.S. Cl. 354—86 **13 Claims**



1. A photographic camera device comprising:

(a) a power supply;

(b) a camera housing having a film receiving chamber;

(c) a shutter means for exposing film loaded in the chamber;

(d) a film transport means for transporting the film after exposure, said means having an electric motor to be operated with the power from the power supply;

(e) a first switching means for controlling the current supply to the motor from the power supply, said first switching means being operatively engaged with the shutter means in such a manner that the power is supplied from the power supply to the motor in response to the completion of the exposure of the film by the shutter means;

(f) a rechargeable electronic flash unit to be operated with the power of the power supply;

(g) a second switching means for controlling the current supply from the power supply to the flash unit;

(h) a detecting means for detecting the voltage of the power supply;

(i) a control means for controlling the second switching means, said control means being operatively engaged with the first switching means and the detecting means; for

(1) allowing the closing of the second switching means along with the closing of the first switching means in response to a voltage of the power supply, detected by

means of the detecting means that is higher than a predetermined reference voltage; and for

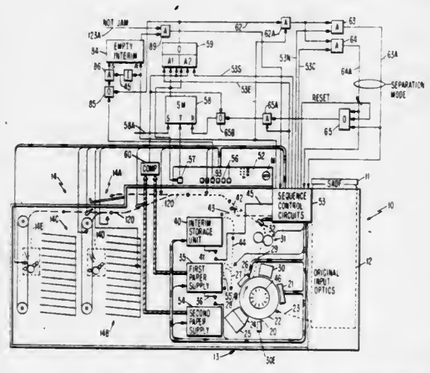
(2) controlling the second switching means so as to prohibit the closing of the second switching means while the first switching means is being closed, in response to a voltage of the power supply, detected by means of the detecting means lower than the predetermined reference voltage.

4,201,464

COPY PRODUCTION MACHINES HAVING JOB SEPARATION CAPABILITIES

Anthony J. Botte; James H. Hubbard, both of Boulder, and Paul R. Spivey, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1977, Ser. No. 841,623
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 R **66 Claims**



31. A copy production machine having a copy production portion, a control for said portion to operate same in a series of independent copy production runs,

the improvement including in combination,

an operator's control panel having a manually actuatable switch for indicating predetermined ones of said series of independent copy runs as having a predetermined copy job relationship,

means in said control for automatically adjusting its operation to reflect said predetermined copy job relationship, and

separation means in said control for actuating said copy production portion to transport at least one separator sheet for identifying said predetermined job relationship in said produced copies each time said switch is actuated.

4,201,465

DRUM CLEANING PROCESS AND APPARATUS FOR ELECTROPHOTOGRAPHY

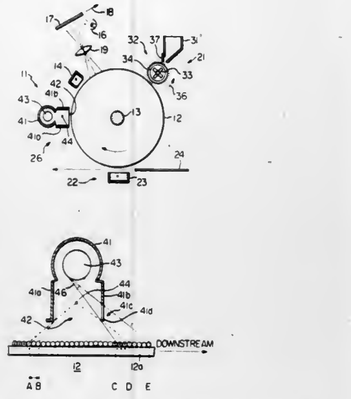
Hazime Oyama; Kohji Suzuki; Manabu Mochizuki, and Teruyuki Ohnuma, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 723,275, Sep. 15, 1976, abandoned. This application Jun. 27, 1978, Ser. No. 919,640
Claims priority, application Japan, Nov. 26, 1975, 50/141410
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **21 Claims**

1. In an electrophotographic process in which a photoconductive member is electrostatically charged, radiated with a light image to produce an electrostatic image, developed by application of a toner substance thereto to form a toner image and subjected to a transfer operation in which the toner image is transferred to a copy sheet, an improvement for removing residual toner substance from the photoconductive member after the transfer operation comprising the steps of:

(a) radiating light uniformly onto the photoconductive member to cause photoconduction;

(b) applying an electric field to the photoconductive member to substantially neutralize the electrostatic charge simultaneously with performing step (a);



(c) superimposing the electric field on the light in an area on the photoconductive member; and

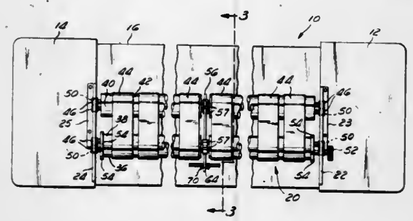
(d) subsequently removing the residual toner substance from the photoconductive member.

4,201,466

PHOTOPRINTER WITH SELF-LOCATING ROLL SPREADER

Terry G. Seelenbinder, Elk Grove Village, Ill., assignor to AM International, Inc., Los Angeles, Calif.

Filed Feb. 5, 1979, Ser. No. 9,417
Int. Cl.² G03B *27/22*
U.S. Cl. 355—104 **7 Claims**



1. In a photocopy machine having an elongate illumination cylinder nested among a plurality of elongate belt rolls, means supporting the ends of the belt rolls and endless elastic belts trained about the belt rolls and the illumination cylinder, the improvement which comprises:

The belt rolls being so constructed as to exhibit insufficient stiffness against transverse deflection for proper operation under the transverse loading of the elastic belts over the span between the end support means; and

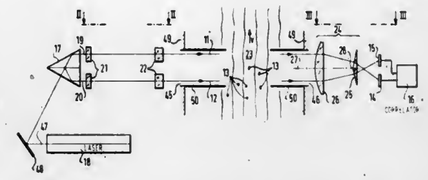
a spreader plate means between said end support means engaging said rolls at a position between said end support means, said spreader plate means including means defining roll positions equivalent to the relative roll positions at each end support location, and being configured to provide an access throat between two of the rolls such that sheets being fed for processing can move into contact with the illumination cylinder.

4,201,467

GAS VELOCITY METER

Klaus Hartmann, Münich, and Wolfgang Siersch, Taufkirchen, both of Fed. Rep. of Germany, assignors to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Aug. 31, 1977, Ser. No. 829,469
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 2643616
Int. Cl.² G01P *3/36*; G01F *1/00*
U.S. Cl. 356—28 **20 Claims**



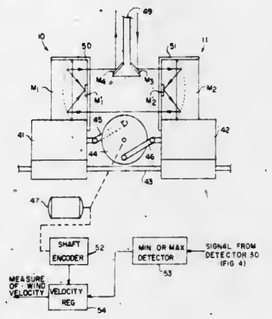
1. A flow velocity meter, suitable for measuring the mean flow velocity of a medium flowing along a duct and comprising means for generating first and second beams of light each having the form of a relatively shallow relatively wide band with a relatively regularly disbributed light flux and for directing said beams of light along respective first and second spaced apart planes lying tranversely of the duct and substantially at right angles to the mean flow direction, means for ensuring that each of said beams intercepts a cross section of the medium flowing through the duct representative of the mean flow velocity of same through the duct, first and second photodetectors disposed to receive said beams respectively, after said beams have traversed their respective transverse planes, and correlator means arranged to receive output signals from said first and second photodetectors representative of the instantaneous flows through said transverse planes for determining the transit time of said medium therebetween.

4,201,468

METHOD AND APPARATUS FOR DOPPLER FREQUENCY MODULATION OF RADIATION

Jack S. Margolis, Pasadena; Daniel J. McCleese, Los Angeles; Michael S. Shumate, Pasadena, and Clay H. Seaman, Glendale, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Nov. 3, 1978, Ser. No. 957,452
Int. Cl.² G01P *3/36*
U.S. Cl. 356—28.5 **12 Claims**



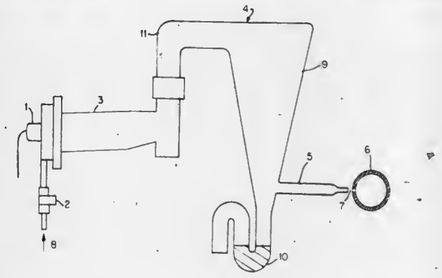
1. A method for Doppler frequency modulating radiation using two opposing retroreflectors and reciprocally moving both retroreflectors towards each other and away from each other, said retroreflectors having their optical axis parallel to each other, using a first reflector to direct radiation from outside a space between said retroreflectors into one of said retroreflectors, and using a second reflector to direct radiation from one of said retroreflectors to outside said space between said retroreflectors.

4,201,469

AEROSOL DEPOSITION IN FURNACE ATOMIZATION

Jaroslav P. Matousek, Forrestville, and Lloyd E. Smythe, Belbue Hill, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Aug. 2, 1977, Ser. No. 821,148
Claims priority, application Australia, Aug. 2, 1976, 6842/76
Int. Cl.² G01N *1/00*; G01J *3/30*
U.S. Cl. 356—36 **12 Claims**



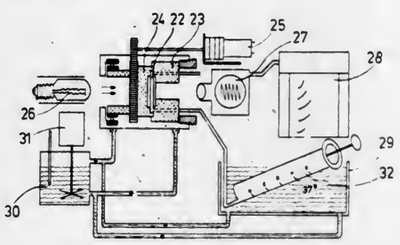
1. A method of atomizing an analyte sample including the steps of: heating a graphite tube furnace to an analyte drying temperature; converting said analyte sample to aerosol form; passing said aerosol through separator means to remove large droplets from said sample; conveying said aerosol from said separator means to delivery means through which said aerosol is deposited onto the internal surface of said furnace; ceasing said conversion of said analyte sample after a predetermined period of time to control the quantity of analyte sample deposited on said internal surface; and raising the temperature of said furnace to an atomizing temperature subsequent to completing said deposition of the analyte sample.

4,201,470

METHOD AND APPARATUS FOR MEASUREMENT AND REGISTRATION OF THE AGGREGATION RATE OF PARTICLES SUSPENDED IN A LIQUID

Albrecht Ehrly, Am Kellersbusch 10, 6072 Dreieich, and Hans J. Schmitt, Rimbacherstrasse 27, 6149 Grasellenbach, both of Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,630
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1977, 2707962; Jan. 18, 1978, 2802033
Int. Cl.² G01N *33/16*
U.S. Cl. 356—39 **32 Claims**



1. A method for measuring the rate of aggregation of particles suspended in a liquid and in particular for measuring the rate of aggregation of red blood corpuscles in the blood, comprising the steps of:

introducing a blood sample into the interior of a disc-shaped cuvette having opposed side walls, the latter being disposed in the path of a light beam of a light source;

subjecting the blood sample contained within said cuvette to a shear movement around an axis of shear movement to prevent substantial sedimentation of the formed aggregates, said shear movement axis being substantially parallel and substantially coincident to said light beam path; and

measuring the change in intensity of the light beam which impinges on the blood sample within said cuvette.

4,201,471

OIL CONCENTRATION DETECTOR

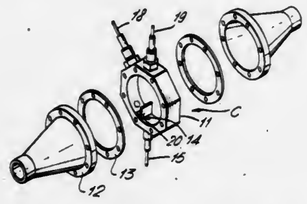
Gillies D. Pitt, and Stephen I. N. Gregorig, both of Harlow, England, assignors to ITT Industries, Incorporation, New York, N.Y.

Filed Aug. 11, 1978, Ser. No. 933,051

Claims priority, application United Kingdom, Aug. 26, 1977, 36060/77

Int. Cl.[2] G01N *33/28, 21/00, 21/26*

U.S. Cl. 356—70 **4 Claims**



1. A system for detecting oil in water, said system comprising: a scatter cell to receive a fluid mixture; source means to direct a beam of light through said scatter cell; a first photocell in alignment with said beam on the side of said scatter cell opposite the side on which said source means is located; a second photocell spaced from said first photocell to receive scattered light in a direction different from that in which said first photocell receives light; first means for producing a first electrical signal of a magnitude which is a logarithmic function of the output of said first photocell; second means for producing a second electrical output signal of a magnitude directly proportional to the output of said second photocell; and electrical switch means for producing an output proportional to the concentration of oil at a predetermined terminal by switching only said second electrical signal to said terminal until one of said first and second electrical signals passes through a predetermined threshold level, and then switching only said first electrical signal to said terminal so long as said one electrical signal does not pass through said level in the reverse direction.

4,201,472

APPARATUS FOR CONVERTING LIGHT SIGNALS INTO DIGITAL ELECTRICAL SIGNALS

Yoshio Maeda, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 21, 1978, Ser. No. 888,655

Claims priority, application Japan, Apr. 4, 1977, 52-37627; Nov. 9, 1977, 52-133507

Int. Cl.[2] G01J *1/46*

U.S. Cl. 356—226 **6 Claims**

1. An apparatus for converting a light signal into a digital electrical signal comprising:

(a) first means for converting object light to be measured into an electrical signal,

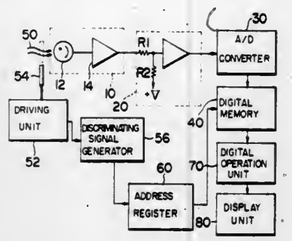
(b) second means for converting an electrical output signal of said first means into a digital signal,

(c) third means for selectively interrupting the incident light entering said first means,

(d) fourth means for increasing the electrical input signal to said second means by a predetermined amount,

(e) fifth means for storing a first digitial signal associated with the interruption by said third means of said object light on said first means and a second digital signal associated with the non-interruption by said third means of said object light on said first means, said first and second digital signals being produced from said second means, and

(f) sixth means for calculating the difference between said first and second digital signals stored in said fifth means.



4,201,473

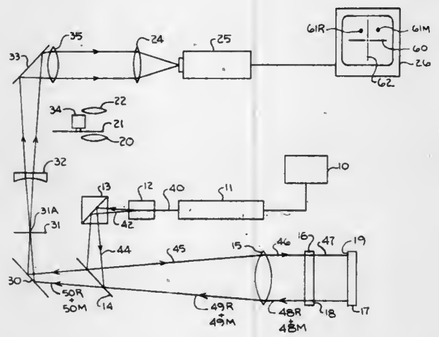
OPTICAL INTERFEROMETER SYSTEM WITH CCTV CAMERA FOR MEASURING A WIDE RANGE OF APERTURE SIZES

Peter L. Domenicali, Madison, and George C. Hunter, Middletown, both of Conn., assignors to Zygo Corporation, Middlefield, Conn.

Filed Apr. 21, 1978, Ser. No. 898,945

Int. Cl.[2] G01B *9/02*

U.S. Cl. 356—360 **6 Claims**



1. An interferometer system capable of measuring test articles over a broad range of aperture size comprising (1) a source of a beam of coherent energy, (2) means for splitting said beam into a reference wavefront and a measurement wavefront, (3) means for interacting said reference wavefront with a reference surface and said measurement wavefront with the article under test, (4) means for collecting said two wavefronts and focusing them as spots onto a diffuse screen containing an integral alignment reticle having a marked center, (5) means for viewing said diffuse screen and said spots focused thereon on a monitor of a closed circuit television system, (6) means for moving said spots relative to each other so they coincide on said monitor at said marked center, thereby properly aligning said reference and measurement wavefronts to form an interference pattern, (7) means for removing the image of said screen from said monitor, (8) means for imaging the limiting aperture in the measurement region onto (9) means which destroys the coherence length of the beam comprised of the recombined aligned reference and test wavefronts without producing any spurious patterns on said monitor, (10) means for providing variable magnification of the image on means (9), and (11) means for focusing said image of means (9) onto the vidicon of said closed circuit television system.

4,201,474

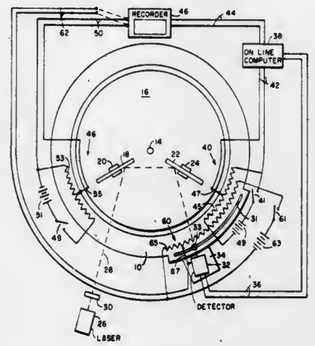
VARIABLE ANGLE OF INCIDENCE REFLECTOMETER WITH A CONTINUOUS READ OUT

Herbert B. Holl, and Thomas G. Roberts, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1978, Ser. No. 931,235

Int. Cl.[2] G01N *21/48*

U.S. Cl. 356—369 **6 Claims**



1. A reflectometer comprising a base, a platform rotatably mounted relative to said base, a motor mounted relative to said base and said platform for rotating said platform relative to said base, a sample and a mirror mounted on said platform at a dihedral angle relative to the axis of rotation of said platform, means for illuminating said sample, a light detector mounted on said base relative to said mirror for receiving reflected light therefrom, a first means mounted relative to said base and said platform and having output leads connected for indicating the angle of incidence of the light beam from said light means on said sample, said output leads of said first means being connected to a first axis of a recorder, a second means mounted relative to said base and said platform and having output leads connected for indicating the angle of incidence of the light beam from the mirror, said output leads of said second means being connected to a computer means, said light detector having output leads connected to said computer means, said computer means being preprogrammed to correct for imperfections of said mirror, said computer means correcting the signal from the light detector utilizing the angle of incidence of the mirror information received from said second means and the preprogrammed correction and providing the corrected signal to the other axis of the recorder for driving the other axis of the recorder.

4,201,475

DEVICE/PROCESS FOR CONTACT FREE DISTANCE AND THICKNESS MEASUREMENT

Viktor Bodlaj, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,202

Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722577

Int. Cl.[2] G01C *3/08;* G01S *9/62*

U.S. Cl. 356—381 **9 Claims**

1. A system for measuring the distance of a point on a surface of an object from a zero plane, comprising:

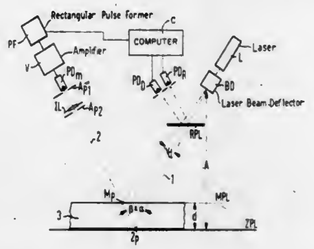
a sharply focused light beam;

beam deflector means for periodically deflecting the light beam in one direction and then a reverse direction over a measuring area in which the object is arranged, a point on the object being located on a predetermined line of sight during both directions of scan;

a measuring photo-detector means for receiving light only along said predetermined line of sight and for providing a measuring pulse at a measuring time when the point on the object surface is hit by the light beam;

means providing a reference pulse at a reference time when said beam deflector means deflects the light beam towards a zero plane point located on said predetermined line of sight;

pulse former means for converting measuring pulses of the measuring photo-detector means into rectangular pulses;



said measuring photo-detector means producing a first measuring pulse and said pulse former means producing a corresponding first rectangular pulse during deflection movement of the light beam by said deflector means in the one direction;

said measuring photo-detector means producing a second measuring pulse and said pulse former means producing a corresponding second rectangular pulse during deflection movement of the light beam by said deflector means in the reverse direction; and

means for determining a time difference representative of the distance from a comparison of corresponding same side edges of the first and second rectangular pulses with reference times produced during deflection of the light beam in the one and in the reverse directions.

4,201,476

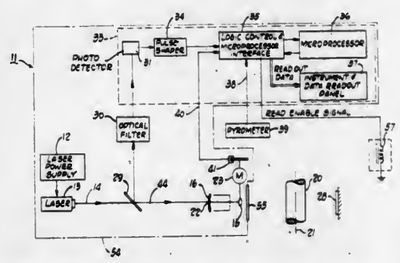
LASER DIMENSION GAUGE

Dominick J. Musto, Middlesex, and Harold Lerner, Ft. Lee, both of N.J., assignors to The Austin Company, Cleveland, Ohio

Filed Jan. 5, 1978, Ser. No. 867,290

Int. Cl.[2] G01B *11/04*

U.S. Cl. 356—386 **12 Claims**



1. A laser gauge for non-contact measuring of a dimension of a workpiece comprising, in combination,

a laser mounted to project a laser beam,

a parabolic mirror having a focal point along the axis of the mirror,

scannable means substantially at said focal point mounted to

scan said laser beam along said parabolic mirror and establishing first and second laser beam paths extending from said parabolic mirror parallel to said axis and immediately adjacent first and second opposite sides of the workpiece, respectively,

photodetector means mounted to receive the laser light beam from both said first and second laser beam paths,

output means connected to receive the output of said photodetector means,

means actuated in accordance with said scannable means to determine the position thereof and having an output to said output means, whereby a first signal is received at said output means when said scannable means is positioned at a first position to establish the laser beam in said first beam path, and a second signal is received at said output means when said scannable means is positioned at a second position to establish the laser beam in said second path,

means establishing a reference line relative to said first and second beam paths,

said output means including means to determine first and second partial dimensions of any said workpiece relative to said reference line, which partial dimensions are perpendicular to said axis,

and the total dimension of the workpiece being algebraically related to said first and second partial dimensions.

4,201,477

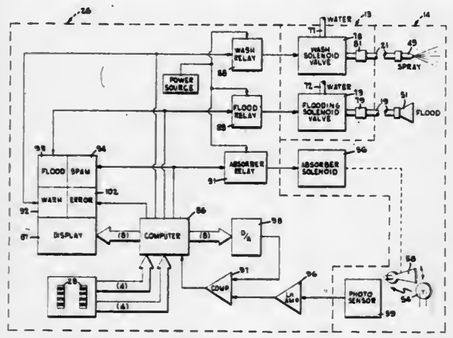
SUSPENDED SOLIDS METER

Warren G. Palmer, Saratoga, and John N. Pritchard, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 16, 1978, Ser. No. 869,882

Int. Cl.[2] Q01N *21/24*

U.S. Cl. 356—434 **19 Claims**



1. Apparatus for detecting the concentration of solids suspended in a solution, comprising

a sensor head adapted to be immersed in the solution and having a chamber disposed for communication with the solution,

means coupled to said sensor head for selectively introducing a clear liquid into said chamber,

windows mounted in said head adjacent said chamber defining a sample path through said chamber having a predetermined sample path length therewithin,

a light source mounted in said sensor head positioned to direct light energy along said sample path,

a light sensor mounted in said sensor head exposed to light which has traversed said sample path and providing an output signal indicative of received light intensity,

said means for introducing said clear liquid into said chamber being arranged to flood said sample path length with said clear liquid, whereby a low concentration of suspended solids is simulated,

a light absorbing member disposed for motion between a position intercepting said sample path and a position remote therefrom, said light absorbing member being formed of a material arranged to absorb a predetermined portion of the light energy directed along said sample path and arranged to transmit a predetermined portion of the light energy directed along said sample path corresponding to a measurable level of suspended solids concentration when said light absorbing member is disposed in said intercepting position, whereby a high concentration of suspended solids is simulated,

and means coupled to receive said output signal for controlling said means for introducing a clear liquid, and said light absorbing member to alternately flood and intercept said sample path, so that the output of said light sensor is calibrated by said means for controlling to provide correction for subsequent suspended solids concentration readings.

4,201,478

PHOTOMETER WITH AUTOMATIC TEST SAMPLE SELECTION, SCANNING AND ANALYSIS SYSTEM

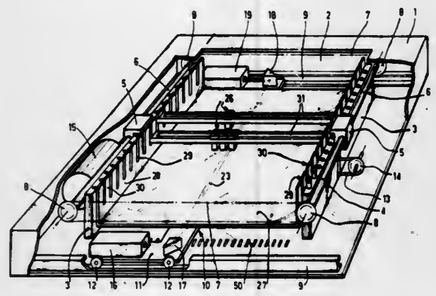
Jean-Pierre Gerlier, Saint-Maur-les-Fosses, and Jacques Augier, Paris, both of France, assignors to Institut Pasteur, Paris, France

Filed Oct. 18, 1977, Ser. No. 843,209

Claims priority, application France, Oct. 19, 1976, 76 31423

Int. Cl.[2] G01N *21/22*

U.S. Cl. 356—440 **34 Claims**



1. Photometer for the automatic analysis of samples comprising

(A) an optical bench emitting a measuring lightbeam,

(B) a series of transparent cells containing the samples for analysis and for successive presentation in the beam,

(C) result recording and processing means,

(D) a set of rectilinear presentation means each supporting a juxtaposed row of said cells,

(E) a magazine receiving said presentation means arranged in parallel side by side,

(F) means for selecting and extracting each of said presentation means successively from the set of the latter,

(G) a movable carriage supporting said optical bench, and

(H) means for moving said carriage at reading speed parallel to the row of cells selected such that the measuring beam of said bench successively traverses each cell of said selected row;

said magazine comprising a plate in the form of a tray and a cover undissociable from said tray during the measuring operations, said tray being provided laterally with two channelled opposite walls of which the channels define vertical guide tongues along which said presentation means can slide.

4,201,479

DEVICE FOR MEASURING THE REFLECTION OF A PLANE, SPECULARLY REFLECTING SURFACE

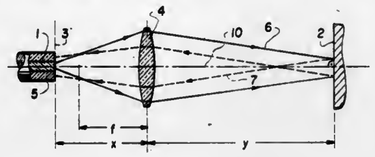
Marcel A. Lardon, Maienfeld, Switzerland, assignor to Balzers Aktiengesellschaft für Hochvakuumtechnik und Dünne Schichten, Liechtenstein, Liechtenstein

Filed May 26, 1978, Ser. No. 909,808

Claims priority, application Switzerland, Jun. 6, 1977, 6933/77

Int. Cl.[2] G01N *21/48*

U.S. Cl. 356—445 **11 Claims**



1. A device for measuring the reflection of a specularly reflecting surface comprising a radiation means and a radiation receiver, a converging lens having a focal length f interposed between said radiation means and a surface to be measured whereby a radiation beam from said radiation means is directed through said lens and onto the surface to be measured, said radiation means being located along the optical axis of said lens, and said radiation receiver including a receiving surface which circumscribes said radiation means for receiving the reflected beam from said surface whereby the distance between the principle plane of said lens and the surface to be measured is equal to:

$$(2X-f/X-f)\cdot(f/2)$$

where X is the distance between the principle plane of said lens and radiation means.

4,201,480

EXTRUSION APPARATUS FOR MANUFACTURING FOAMED THERMOPLASTIC MATERIAL

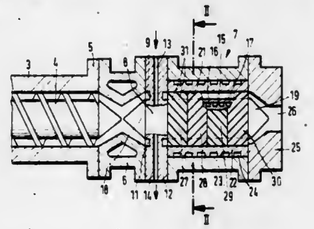
Wilhelm Brand, Hannover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

Filed Aug. 30, 1978, Ser. No. 937,923

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 2739998

Int. Cl.[2] B01F *3/04, 5/06, 15/00, 15/06*

U.S. Cl. 366—79 **7 Claims**



1. Extrusion apparatus for manufacturing foamed thermoplastics material, in particular for blow moulding sheets of expanded polystyrene, comprising an extruder for melting the plastics material and a static cooling and mixing member disposed downstream of the extruder, said static cooling and mixing member including means defining an outer cooling surface and means defining an inner cooling surface, said means defining said inner and outer cooling surfaces defining between them an annular passage through which the expansible plastics material flows in an axial direction, and at least one metal strip member positioned in said annular passage, said metal strip member being star-shaped in cross section having outer points which engage said means defining said outer cooling surface and inner points which engage said means defining said inner cooling surface, thereby defining inner and outer material passages, the edges of said metal strip member extending at an oblique angle relative to the longitudinal axis of said static cooling and mixing member, whereby said material is divided and evenly cooled.

4,201,481

SCROLLS FOR EXTRUDING MACHINES

Michael I. Iddon, Leyland, and Donald M. Turner, Bath, both of England, assignors to Iddon Brothers Limited, Lancaster, England

Filed Oct. 11, 1978, Ser. No. 950,443

Int. Cl.[2] B29B *1/06*

U.S. Cl. 366—79 **5 Claims**



5. A rotatable scroll for an extruding machine comprising a series of helical flights extending through four zones, a feed zone, a compaction zone, a blending zone and a delivery zone, channels between the flights, a series of angled vanes of less height than the flights in the base of the channels to provide a plurality of routes for the material through the channels and to ensure that any material occupying the centre of a channel is re-directed into a surface layer to provide a highly homogeneous material when reaching the delivery zone and ramps over which the material in the surface layer is forced to flow as it passes from zone to zone.

4,201,482

PERFORATED MIXING ELEMENTS FOR STATIC AND DYNAMIC MIXERS

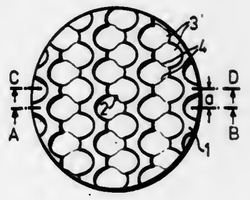
Günter Imhäuser, Cologne; Dieter Brauner, Solingen, and Edgar Muschelknautz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,816

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822096

Int. Cl.[2] B01F *5/00, 7/00*

U.S. Cl. 366—98 **16 Claims**



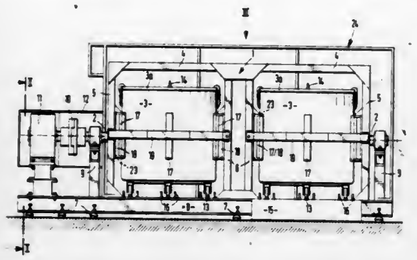
1. An insert for a mixer, the insert comprising at least one pair of intersecting channels, wherein the insert comprises a solid material in which the channels lie in parallel planes, each channel inclined at an angle α of from 20° to 70° to the longitudinal axis of the insert projected in the parallel planes, the angle α being alternately positive and negative in successive planes so that the channels of adjacent planes intersect to form a grid and the channels being such that channels on adjacent planes overlap by up to 40% of their cross-section at their point of intersection.

4,201,483

APPARATUS FOR TUMBLING FOODSTUFFS UNDER VACUUM

Jürgen Franzke, Bad Essen, Fed. Rep. of Germany, assignor to Röscherwerke GmbH, Osnabruck, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,646
Int. Cl.² B01F *9/02*
U.S. Cl. 366—139 **10 Claims**



1. A tumbling machine for agitating and massaging foodstuffs under vacuum, comprising:
a base;
upstanding bearing posts mounted on said base and equipped with journals;
a rotatable frame, provided with extending coaxial shafts residing in said journals to permit rotation of said frame around a normally horizontal axis, said frame defining at least one space in which may be placed at least one container for said foodstuffs;
means, coupled to said rotatable frame, for imparting rotary motion to said frame around said axis;
at least one container for said foodstuffs, said container having guide means for insuring the location and position thereof in said rotatable frame, said guide means being defined by a plurality of uniformly spaced protruding guides fixedly mounted on the outside wall of said container, said container being provided with means for evacuating air therefrom;
said rotatable frame is provided with stop means so located that, when said container is placed in the space defined in said rotatable frame, at least some of said protruding guides come into contact with said stop means to thereby prevent further motion of said container with respect to said frame in the direction of entry;
a locking bar member for locking said container in said frame to prevent motion thereof with respect to said frame at least in the direction opposite to entry, said locking bar being held pivotably at one end thereof on said frame, the other end of said locking bar being removably attachable to another part of said frame, thereby causing its central portion to bear against and immobilize said container;
wherein said locking bar is a tube of substantially rectangular cross section bent into a trapezoidal shape, one end of which pivots about a vertical axis on said rotatable frame while the other end is removably attachable to another part of said frame by a screw, the central portion of said locking bar bearing against one of said protruding guides when locked into place.

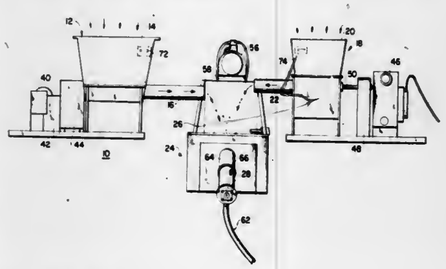
4,201,484

CONTINUOUS MIXING APPARATUS

Ronald J. Sasiela, Whitestone, N.Y., and Daniel T. Layne, Brea, Calif., assignors to Modern Maid Food Products, Inc., Garden City, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,493
Int. Cl.² B01F *7/08, 15/02, 5/12*
U.S. Cl. 366—153 **15 Claims**

1. Apparatus for continuously preparing a mixture of two or more constituents; said apparatus comprising:
a first container having
an input for the reception of a first one of said constituents,
an output, and
advancing means for advancing said first one of said constituents through said output;
a second container having
an input for the reception of a second one of said constituents,
an output, and
advancing means for advancing said second one of said constituents through the output of said second container;
a third container having
an input opening for receiving said first and second ones of said constituents from the respective outputs of said first and second containers,



an output, and
mixing means for blending said first and second ones of said constituents into a substantially air-free blended mixture and for advancing said blended mixture through the output and said third container;
further including first driving means for driving said advancing means of said first container; second driving means for driving said advancing means of said second container; and third driving means for driving said mixing means of said third container;
wherein said first, second and third driving means are each variable speed devices;
wherein said mixing means in said third container comprises first and second augers hellically oriented in the same direction.

4,201,485

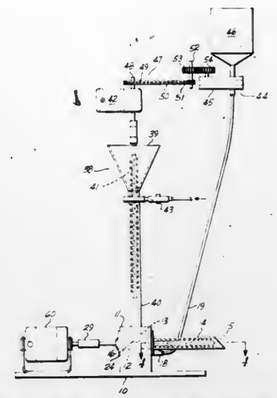
APPARATUS FOR PROPORTIONING AND MIXING POWDERED HARDENERS WITH LIQUID RESINS

Ronald E. Walker, Auburn, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Feb. 21, 1978, Ser. No. 879,667
Int. Cl.² B01F *7/02*
U.S. Cl. 366—156 **6 Claims**

1. In an apparatus for continuously mixing liquid and powder materials to a uniform composition, of the type wherein a mixing tube receives said materials through separate, axially spaced inlets and a mixing screw, extending longitudinally in said tube, upon rotation, transports said materials through the tube and causes them to be intimately mixed together, the improved mixing screw, comprising:
threads, having in cross section, a rectangular leading edge and a sloping trailing edge, said screw divided into
materials transporting elements, installed in the mixing tube with the leading edge of the thread facing the direction of material flow through said tube, and

shear mixing elements, said threads modified by spiral cuts into the threads with a greater lead than the lead of said



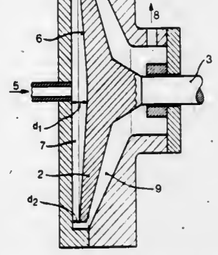
threads and installed with the thread sloping edge facing in the direction of material flow.

4,201,486

PROCESS FOR THE MANUFACTURE OF MAGNETIC RECORDING MEDIA

Werner Huebner, Frankenthal; Job-Werner Hartmann, Ludwigshafen; Friedrich Domas, Altlussheim; Peter Nagel, Willstaett; Paul Deigner, Weisenheim; Eberhard Koester, and Hans Hauser, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 905,040
Claims priority, application Fed. Rep. of Germany, May 16, 1977, 2722078
Int. Cl.² B01F *15/02, 7/10*
U.S. Cl. 366—196 **8 Claims**



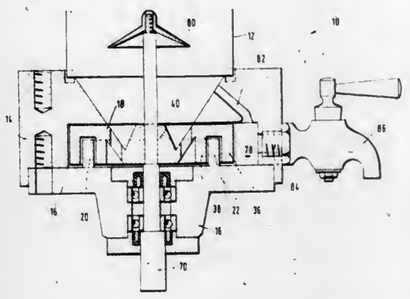
1. In the manufacture of magnetic recording media in which a magnetic dispersion including a magnetic pigment dispersed in a binder containing a solvent is applied to a non-magnetic base, followed by magnetic orientation of the applied coating, a process for subjecting the magnetic dispersion, prior to its application to said base, to shear, said process comprising:
providing, between the smooth face of a rotatable disc and an adjacent smooth surface confronting said face, a gap extending substantially in a plane normal to the axis of the disc and tapering steadily toward the periphery of the disc,
forcing the magnetic dispersion to flow, from a centrally disposed inlet of said gap, radially outwardly through said gap to said periphery and thence to an outlet port, and
rotating said disc relatively to said adjacent surface to set up a shear gradient in the magnetic dispersion flowing through said gap.

4,201,487

DEVICE FOR MAKING SAUCES

Franz J. Backhaus, Altstrasse 8, 6450 am Main, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 3,050
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801549
Int. Cl.² B01F *5/06, 7/16*
U.S. Cl. 366—304 **20 Claims**



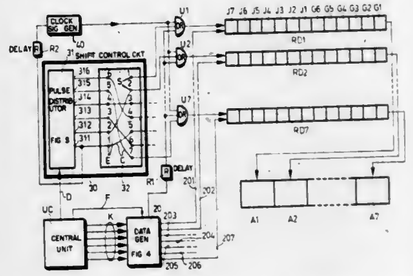
1. Apparatus for making and mixing sauces comprising a housing, an open-bottom mixing vessel having its open bottom seated on said housing, a stator assembly fixedly mounted in the lower part of said housing, a rotor assembly adapted for rotation within said housing and located centrally therein, and a funnel-shaped opening in the upper part of said housing and in axial alignment with said rotor assembly, said rotor assembly comprising a plurality of circumferentially spaced projections extending downwardly toward the lower part of said housing, the central portion of the rotor assembly being formed as an upstanding truncated cone extending into the funnel-shaped opening, said rotor projections extending from an annular disk member, and a conical wall connecting the base of the truncated cone to said disk.

4,201,488

RECORDING/CONTROL ARRANGEMENT FOR A DOT RECORDING MACHINE

Cyrille Gosset, Danjoutin, and Jean-Marc Thomas, Valdoie, both of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Filed Jun. 12, 1978, Ser. No. 914,988
Claims priority, application France, Jun. 21, 1977, 77 19000
Int. Cl.² B41J *3/10*
U.S. Cl. 400—121 **8 Claims**



1. A recording control apparatus for a dot recording machine including a recording medium and at least one character recording head having n electric pulse responsive recording

styli arranged in a matrix of n rows and m columns, at least one stylus being provided in each row, the medium and the head being relatively displaceable in the direction of the rows, the columns being numbered serially as 0, 1, 2, . . . , q, . . . , (m−1) in the direction in which the head moves relative to the recording medium, the control apparatus comprising:

at least one bank of n shift registers, each of the registers being associated with one of the recording styli, each register having p+m−1 stages, each of the stages storing a data bit required to cause one dot to be recorded, where p is a whole number at least equal to m,

a data bit generator for supplying data bits for the character to be recorded to the first p stages of said registers in the same way as if the recording styli were aligned in a single column, and

a shift control circuit for shifting the data bits stored in the first p stages in each register to the other m−1 stages in the register, the number of stages by which the bits are shifted being equal to the serial number q of the column in which the recording stylus associated with the register is located.

4,201,489

KEYBOARD ACTUATABLE WITH THE AID OF THE FINGERS OF AT LEAST ONE HAND

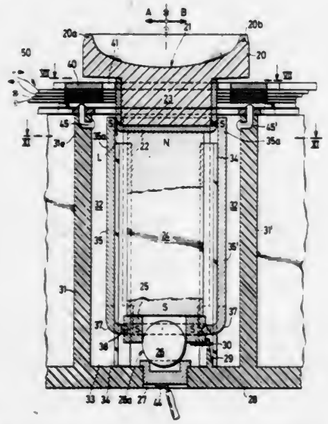
Walter Zapp, Oberegg, Switzerland, assignor to Creatcchnil Patent AG, Dietliko, Switzerland

Continuation-in-part of Ser. No. 729,075, Oct. 4, 1976, Pat. No. 4,081,068. This application Jan. 12, 1978, Ser. No. 868,930

Claims priority, application Switzerland, Aug. 4, 1976, 10048/76

Int. Cl.[2] B41J *5/28*

U.S. Cl. 400—485 **19 Claims**



1. In a keyboard, actuatable with the aid of the tips of fingers of at least one hand, which keyboard comprises a support frame, a first row of key units, each of which comprises a key being movable out of an initial inoperative position in which the tips of the index finger, middle finger, ring finger and little finger, respectively, rest on the keys of said first row, the keys of said first row for each hand to be used for operating the keyboard being arranged on a curve, which corresponds to the natural disposition of the finger-tips when the fingers are, without being tensioned, in a slightly curved and spread, but relaxed posture, the improvement of the key of each key unit of said first row having a key rod and a top face on one end of said key rod and destined for having the tip of a finger rest thereon, and, at the end of said key rod opposite said top face, non-depressable mounting means articulatedly lodged in said support frame and being adapted for preventing downward depression of said key while permitting lateral shifting of said key toward at least one determined operational position, thereby permitting random vertical pressure to be exercised by a finger tip on said top face of a key of said first row without causing operational displacement of the latter key, each key unit of said guide key row further comprising:

(a) attracting means adjacent one side of said key, near the end of said key rod bearing said top face and facing away from said operational position, and adapted for exercising a determined initial attraction on said top face-bearing key rod end opposing tilting movement of said key away from said attracting means, when such movement is initiated by a finger tip resting on the top face of said key; and

(b) stop means associated with said attracting means and preventing the latter from following said tilting movement of said key, thereby decreasing the attractive force of said attracting means as the distance of said key therefrom increases due to progress of said lateral tilting movement of said key, and thereby causing said finger tip to tilt said key further until the latter is fully shifted to said operational position.

4,201,490

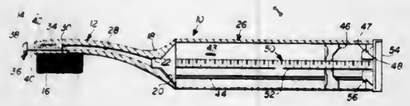
TOOTHBRUSH

Augustino D'Angelo, 24150 Deanhurst, St. Clair Shores, Mich. 48082

Filed Sep. 7, 1978, Ser. No. 940,165

Int. Cl.[2] A46B *11/02*

U.S. Cl. 401—175 **3 Claims**



1. A toothbrush having a toothpaste storage capacity, said toothbrush comprising:

a one piece shank having a head portion;

a plurality of bristles attached to the head portion, said shank and said head portion having a passageway extending therethrough, said passageway having a discharge orifice at one end proximal to said bristles, a rectangularly shaped guide bore extending between said orifice and an outer end thereof including an enlarged intermediate portion, the other end of said passageway opening at the end of said shank, said opening being threaded;

a handle having a flanged end portion slidingly engaging said threaded shank end, said handle being hollow and having a toothpaste storing cavity therein and adapted to communicate said toothpaste through said shank passageway to the discharge orifice at the head portion of said shank;

a one piece rectangular valve stem member in said head portion slidingly engageable with and complementary to said guide bore movable between a first position opening said discharge orifice, permitting communication of said toothpaste to said bristles, to a second position, closing said communication, a raised tab integral with the stem movable within the enlarged section, an enlarged member handle, the member handle abutting the head portion to define the second position and the tab abutting a wall of the enlarged portion to define the first position;

a threaded shaft, one end of said threaded shaft being mounted to an end of said handle so as to rotate said shaft about the longitudinal axis of said handle;

said knob including a pair of opposed snap members to lockingly engage an inside surface of said handle retaining said knob longitudinally;

a piston means having a central aperture engaging said threaded shaft; and

means on the interior of said handle for engaging said piston to prevent rotation of said piston relative to said housing, whereby rotation of said shaft causes axial movement of said piston within said toothpaste holding cavity so as to force said toothpaste therein to said passageway and through said discharge orifice.

4,201,491

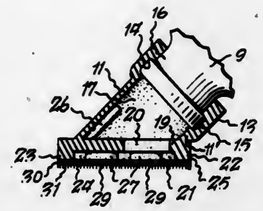
LIQUID APPLICATOR

Henry A. Kohler, Orchard Park, N.Y., assignor to Truly Magic Products, Inc., Buffalo, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,812

Int. Cl.[2] B43M *11/06*; B05C *1/00*

U.S. Cl. 401—264 **5 Claims**



1. An applicator for liquid from a container comprising a flexible resilient tubular inlet portion including an annular wall, an end on said tubular inlet portion, means on said end for mounting relative to said container for causing said inlet portion to receive liquid from said container, a control membrane spaced from said end and extending across said tubular inlet portion to define a chamber therewith, a normally closed slit in said control membrane deformable to a more open position upon flexing of said control membrane, means on the opposite side of said control membrane from said inlet portion for depositing liquid on a surface, and rib means integral with said annular wall and projecting from the internal surface thereof and extending along said annular wall for bearing against said control membrane upon distortion of said inlet portion to thereby deform said control membrane to open said slit, said rib means being so oriented relative to said control membrane when in engagement therewith to effect said deformation of said control membrane to open said slit without effectively blocking said slit.

4,201,492

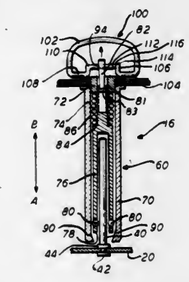
LOOSE LEAF BINDER LOCK AND OPERATING MEMBER THEREFORE

Robert Almgren, Chatham, N.J., assignor to American Loose Leaf Corp., Clifton, N.J.

Continuation of Ser. No. 758,068, Jan. 10, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,366

Int. Cl.[2] B42F *3/00*

U.S. Cl. 402—54 **9 Claims**



1. A locking mechanism for a binder having a pair of cover members formed with cover panels hinged to side flanges, and which coact one with the other to provide between inner surfaces thereof a binder, said cover members being selectively separable one from the other to facilitate disposition of leaves within the binder; comprising:

(a) a locking post carried by and extending from the inner surface of one of said cover members;

(b) a locking sleeve assembly carried by the other cover member disposed thereon to extend from the inner surface thereof towards and for coaction with said locking post;

(c) said locking sleeve assembly including a hollow outer sleeve connected at one of tis ends to a rib carried by the inner surface of said other cover member and with its other, or locking end, disposed for disposition about said locking pose, and formed with an inwardly tapered cam surface;

(d) said locking sleeve assembly further including an inner sleeve disposed for limited axial movement within said hollow of said outer sleeve, and being formed with a hollow locking end of a configuration to receive said locking post, disposed proximate said locking end of said outer sleeve, and carrying thereabout a plurality of locking balls disposed for coaction with said cam surface;

(e) a spring disposed about an operating end of said inner sleeve and urging same towards said locking end of said outer sleeve such that said locking balls are urged by said sam surface against an outer surface of said locking post, when said locking post is disposed within said hollow of said inner sleeve to secure said locking post and outer sleeve assembly together and thereby the cover members;

(f) said operating end of said inner sleeve extending through said rib and being formed with an aperture diametrically extending therethrough; and

(g) an operating member formed from a unitary length of material having a first end and a second end and being formed to a predetermined configuration so as to have an operating portion extending through and rotatably disposed in said aperture of said operating end of said inner sleeve wherein said operating member is in the form of a ring of wire with the operating portion extending radially outwardly away from said operating end, and the first and second ends of said wire meeting at the outward radial end of the operating portion so that neither said first end nor said second end is or can be disposed within said aperture of said operating end of said inner sleeve, said radially extending portion contacts said rib with rotation of the operating portion within the operating end as well as in sleeve rotations, and wherein the ring lies flat on said rib with the cover members closed.

4,201,493

VIBRATING ROLLER

Günther Braun, Haubahn 26, 56 Wuppertal 1, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 3,393

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803172

Int. Cl.[2] E01C *19/38*

U.S. Cl. 404—117 **18 Claims**

1. A vibrating roller, comprising:

a frame;

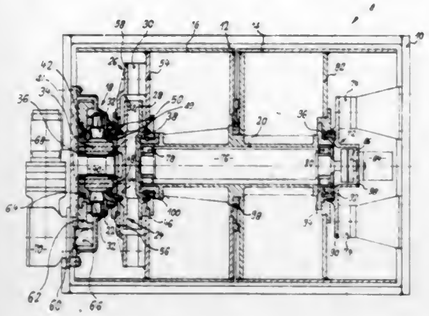
a roller barrel, mounted in said frame, said roller barrel including first and second partial roller barrels, said first partial roller barrel including a central shaft fixed thereto, and said second partial roller barrel being rotatingly mounted on said shaft;

means, connected to said roller barrel, for imparting vibratory motion to said partial roller barrels;

a prime mover, mounted upon said frame;

a differential, mounted upon said frame, said differential including a driving member and first and second driven members, said driving member being drivingly connected to said prime mover; and

first and second resilient force transmitting means, connecting said first and second driven members to said shaft of



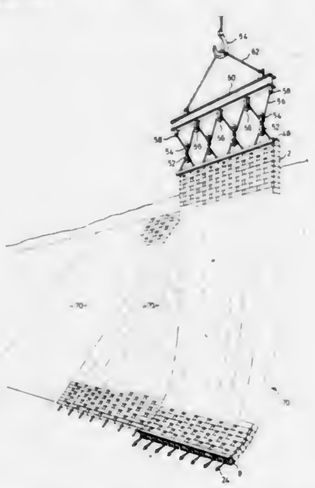
said first partial roller barrel and to said second partial roller barrel, respectively.

4,201,494

INSTALLING PANELS OF INTERLOCKING BLOCKS

Robert E. Crowe, 520 Nelson Ct., Milton, Ontario, Canada (L9T 3A6)

Filed Jan. 16, 1979, Ser. No. 3,877
Int. Cl.² E02B *3/12, 3/14*
U.S. Cl. 405—17 **8 Claims**



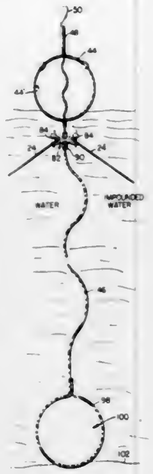
1. Apparatus for laying preassembled panels of interlocking blocks comprising a bottom support bar for supporting the weight of the blocks when suspended in a vertical plane, a plurality of parallel suspension cables passing vertically through passages in said blocks and through said bottom support bar, and an upper support bar from which said cables are suspended at their top ends, the cables having coupling means at their bottom ends for releasably connecting thereto further wires or cables, the bottom support bar and the cables having mutually engageable abutment means whereby the weight of the panel may be transferred from the support bar to the cables, the bar being laterally moveable into and out of the plane of the panel between a position in which said abutment means are engaged and a position in which the bar is free of the cables.

4,201,495

PROTECTED AQUATIC SPORTS AREA

Paul Preus, 21 Smith Rd., Toms River, N.J. 08753

Continuation of Ser. No. 805,981, Jun. 13, 1977, Pat. No. 4,100,746. This application Jun. 30, 1978, Ser. No. 920,716
Int. Cl.² E02B *3/00*
U.S. Cl. 405—63 **1 Claim**



1. An isolated and protected aquatic sports zone in a portion of a larger shore-bounded body of water comprising a pair of spaced pier bulkheads defining the length of the protected zone along the shore of the body of water, a plurality of water impervious boom sections, each of said boom sections including a generally tubular flotation element and an integral water impervious depending skirt, each tubular element having an upstanding fin and hand grips spaced along said fin, each depending skirt having balasting means along the lower edge thereof and means connecting each tubular element and depending skirt in end-to-end relation, means connecting the ends of the connected boom sections to said pair of spaced pier bulkheads, a second skirt member, means releasably connecting the top of the second skirt member to the top of the flotation elements, further means releasably connecting the lower end of the integral skirt to said second skirt, said second skirt having a length greater than the depth of the water at the point of deployment and ballasting means carried at the lower end of said second skirt, anchor means, means attaching the anchor means to the boom sections at spaced intervals to thereby define a fixed protected aquatic sports zone, a pair of draft members positioned on opposite sides of the upper end of th integral skirt, means cross-connecting the draft members together through the integral skirt, characterized in that the means cross-connecting the draft members together through the integral skirt, comprises a rigid double-ended clevis with each clevis of the double-ended clevis having removable pins between the furcations thereof whereby the draft members and the means connecting the anchor means to the boom sections may be removably inserted between the furcations of each double-ended clevis.

4,201,496

WAVE MAKING MACHINES

Per F. Andersen, 58 Kenmount Rd., P.O. Box 8246, St. John's, Newfoundland, Canada (A1B 3N4)

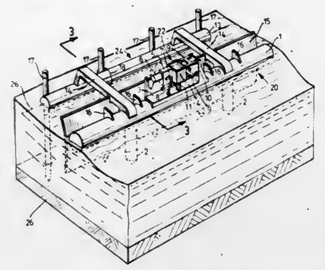
Filed Jan. 2, 1979, Ser. No. 643
Int. Cl.² E02B *15/02, 3/00*; E04H *3/20*
U.S. Cl. 405—79 **18 Claims**

1. A machine for making waves on the free surface of a body of liquid comprising:

(a) a member which is buoyant in the liquid,

(b) driving means mounted on and supported above the free surface of the water by the buoyant member to cause a periodic motion thereof relative to the surface of the liquid between a raised position and a lowered position, such relative motion causing substantial variations in the liquid displacement of the buoyant member,

(c) said buoyant member comprising:



(i) a longitudinally elongated wave making plunger,

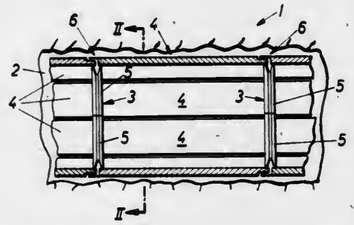
(ii) floatation means underlying said wave making plunger for supporting said wave making plunger with its longitudinal extent horizontally disposed at a level with respect to the free surface of the water when in use such that the plunger displacement is substantially zero when in said raised position.

4,201,497

APPARATUS FOR PRODUCING A WALL

Wolfgang Artweger, Windischgarsten, Austria, assignor to Artweger-Industrie-Gesellschaft m.b.H., Windischgarsten, Austria

Filed Sep. 25, 1978, Ser. No. 945,101
Claims priority, application Austria, Sep. 30, 1977, 6972/77
Int. Cl.² E01G *5/06*
U.S. Cl. 405—150 **10 Claims**



1. An apparatus for producing a wall, which comprises

(a) a plurality of support members spaced from each other and

(b) like casing elements supported at respective ends thereof on the support members, at least the surfaces of the casing elements being fire-retardant and each one of the casing elements including

(1) two casing plates spaced from each other and consisting of shape-retaining synthetic resin,

(2) end and side walls extending between the two casing plates,

(3) connecting flanges constituted by portions of the casing plates projecting beyond at least one of said walls,

(4) a set of substantially parallel plate elements comprised of glass fiber reinforced synthetic resin or polyurethane foam, the plate elements being substantially parallel to at least one of the walls, the plate elements connecting the casing plates to provide a shape-retaining support for the casing plates and to transmit between the plates stress and pressure forces to which the casing element is subjected, and

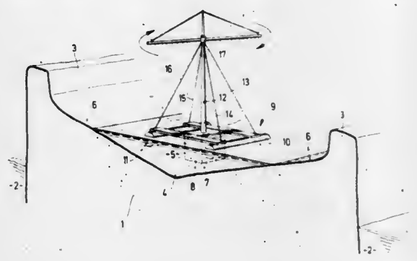
(5) the casing elements defining cavities defined by the casing plates and end walls, the cavities of adjacent ones of the casing elements being in communication for the formation of conduits.

4,201,498

METHOD FOR RAPIDLY MELTING AN ICEBERG

Georges L. Mougin, Paris, France, assignor to ITI Limited, Paris, France

Filed Mar. 8, 1978, Ser. No. 884,407
Claims priority, application France, Mar. 8, 1977, 77 06702
Int. Cl.² F25D *1/00*
U.S. Cl. 405—303 **9 Claims**



1. Method of melting an iceberg comprising the steps of:

(1) using melted water from the iceberg to artificially induce a rain of cold fresh water; and

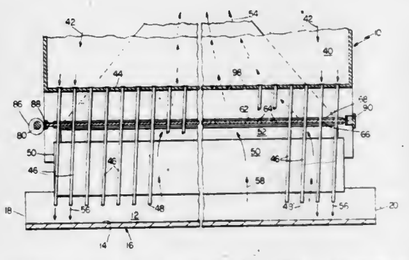
(2) allowing said rain of cold fresh water to fall upon said iceberg from the melting thereof.

4,201,499

MATERIAL TREATMENT SYSTEM

Walter E. Buske, Amesbury, and Charles W. Hoyt, Belmont, both of Mass., assignors to Wolverine Corporation, Methuen, Mass.

Filed Jul. 27, 1978, Ser. No. 928,530
Int. Cl.² B65G *53/16*
U.S. Cl. 406—75 **10 Claims**



1. Apparatus for the substantially horizontal conveyance of solid particulate material comprising

pan structure including a gas impervious base forming a transport surface having an inclination less than that which would cause gravity flow of the particulate material to be conveyed, and side walls extending along the edges of said base to form with said base an open ended trough that defines a particle treatment zone,

an array of spaced nozzles extending downwardly toward said pan structure and terminating in orifices disposed to direct gas passing through said nozzles in an array of gas jets downwardly towards said base,

means for changing the angle of inclination of said gas jets so

that said gas jets may be inclined at a small but effective angle to the normal to said base for affecting the rate of movement of particulate material through said treatment zone,

means for exhausting gases emanating from said nozzles upwardly away from said pan structure between said nozzles, and

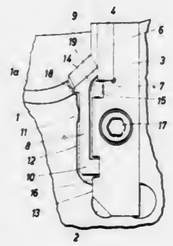
means for flowing gas through said nozzles at high velocity to fluidize particles on said pan structure, said particles advancing along said pan structure and out the end thereof under the influence of the resultant horizontal gas jet component imparted to the individual fluidized particles as a result of said inclined gas jets.

4,201,500

PROFILE MILLING CUTTER FOR A CIRCULAR MILLING OF CYLINDRICAL PORTIONS OF CRANKSHAFTS

Bruno Kralowetz, Steyr, and Peter Kirchberger, Haag, both of Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed Oct. 12, 1978, Ser. No. 951,053
Claims priority, application Austria, Oct. 19, 1977, 7470/77
Int. Cl.² B26D *1/12*
U.S. Cl. 407—43 **12 Claims**



1. A profile milling cutter for a circular milling of an outside surface of a workpiece, comprising

a disc-shaped cutter body having an end face, a peripheral surface and a plurality of recesses consisting of radial grooves formed in said end face and open at said peripheral surface, each of said recesses having a leading side face and having an adjacent chip guiding surface,

a plurality of tooth holders disposed in respective ones of said recesses, each of said tooth holders having at least one end-supporting surface, at least one lateral backing surface, and at least one rear backing surface facing said leading side face and peripherally spaced therefrom,

a plurality of tooth plates, at least one of which extends in each of said recesses and is peripherally spaced from said leading side face and in engagement with said end-supporting surface and said lateral and rear backing surfaces of one of said tooth holders, and

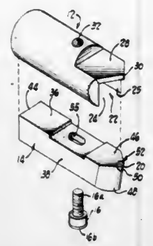
a plurality of elongated resilient holding-back members, each of which is disposed in one of said recesses and has a radially inner foot portion held between said leading side face of said one recess and one of said tooth holders, a radially outer head portion resiliently urging one of said tooth plates against said rear backing surface of one of said tooth holders, and an intermediate portion bearing on said leading side face of said one recess.

4,201,501

CUTTING TOOL

Flory M. Day, 4893 W. 210 St., Fairview Park, Ohio 44126

Continuation of Ser. No. 810,318, Jun. 27, 1977, abandoned.
This application Nov. 13, 1978, Ser. No. 960,008
Int. Cl.² B26D *1/00, 1/12*
U.S. Cl. 407—92 **3 Claims**



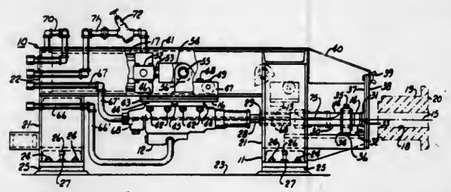
1. A cutting tool comprising, in combination, a holder, a separable insert securable to said holder and having a cutting edge, and means for securing said insert to said holder; said holder having a locating surface for locating the tool insert, and said tool insert having a planar positioning surface that seats against said locating surface, a cutting edge in the plane of said positioning surface, and a bit or tip integral with said insert, forming said cutting edge; said locating surface of the holder and said positioning surface of the insert being in mutual contact only at locations on opposite sides of said means for securing the insert to the holder and separated by an area across the insert free from mutual contact, said holder having a threaded aperture opening through said locating surface, and said insert having a through-aperture spaced from said cutting edge, opening through said positioning surface, and sufficiently larger than said securing means in a direction extending toward the cutting edge to permit adjustment of the insert in that direction; and said means for securing the insert to the holder being a threaded fastener constructed to extend through said insert aperture, engage said threaded aperture, and clamp said insert against said locating surface.

4,201,502

METHOD AND APPARATUS FOR TAP HOLE REAMING

Lawrence Skendrovic, West Mifflin, Pa., assignor to William M. Bailey Company, Washington, Pa.

Filed Nov. 3, 1978, Ser. No. 957,662
Int. Cl.² B23B *35/00, 51/06, 27/10, 41/02*
U.S. Cl. 408—1 R **12 Claims**



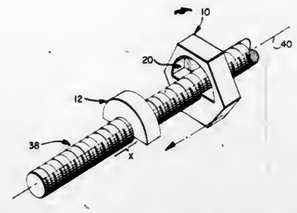
1. A tap hole reamer including a support frame with a drifter drill motor having the rearward end of an elongated hole reamer drivingly coupled thereto for reaming rotations on its longitudinal axis and said motor mounted to a carriage movable along said frame by air cylinder means to advance and retract said reamer, the improvement comprising, said hole reamer consisting of a hollow tubular body having a longitudinal relief slot penetrating the side thereof and an annularly shaped reaming head concentrically and removably secured to the forward end of said body, and means to feed air forward under pressure into the rearward hollow end of said body.

4,201,503

THREAD RECONDITIONING TOOL

William G. Nannen, Box 242, Smethport, Pa. 16479

Filed May 1, 1978, Ser. No. 901,619
Int. Cl.² B23G *5/04*
U.S. Cl. 408—215 **16 Claims**



1. A tool for reconditioning or rethreading the threads of an externally threaded member comprising:

a collet having an opening formed therethrough and adapted to be placed over and selectively positioned along the longitudinal axis of an externally threaded member, a smooth portion of the inner surface of said opening adapted to contact the tips of the threads of the threaded member to thereby function as a guide surface;

a threading element having thread cutting means on an inner surface thereof adapted to engage the threads of the externally threaded member and having a locating surface on another portion thereof; and

at least one locating surface associated with said collet adapted to abut said locating surface of said threading element to maintain said cutting means in a fixed, spaced relationship relative to said guide surface;

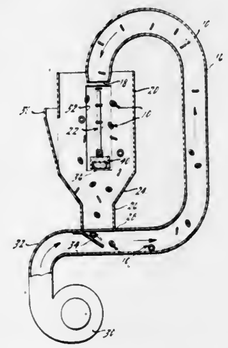
whereby said threading element is selectively positioned along an externally threaded element with said thread cutting means engaging the threads of the threaded member and said collet is positioned with said respective locating surfaces on said collet and threading element abutting one another and said guide surface contacting the tips of the threads of the external member.

4,201,504

O-RING STACKING DEVICE AND METHOD

Robert A. Arnold, and Raymond Warren, both of La Mirada, Calif., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Apr. 14, 1978, Ser. No. 896,320
Int. Cl.² B65G *57/03*
U.S. Cl. 414—27 **18 Claims**



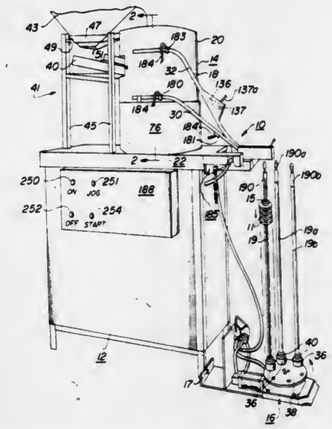
10. An apparatus for collecting and stacking a plurality of torroidal-shaped articles of substantially shape-retaining structure having a central opening therethrough comprising duct means, blower means for passing a substantially laminar flow gas stream through said duct means, injector means for introducing said articles into said gas stream for entrainment therein, a collector assembly including at least one collector member removably disposed in intercepting relationship in said duct means with the upstream end portion of said collector member disposed substantially parallel to the direction of flow of said gas stream for collecting and stacking intercepted articles, and recirculating means disposed downstream of said collector assembly for recirculating the non-intercepted articles to said injector means.

4,201,505

CORE-SPACER-CORE MANDREL LOADER

James P. Gerhart, deceased, late of Warminster, Pa., and Merle A. Gerhart, executrix, 1506 Pheasant Dr., Warminster, Pa. 18974

Division of Ser. No. 792,235, Apr. 29, 1977, which is a continuation of Ser. No. 629,416, Nov. 6, 1975, abandoned. This application Jun. 19, 1978, Ser. No. 916,769
Int. Cl.² B65G *57/06*
U.S. Cl. 414—27 **9 Claims**



1. A machine for alternately loading cores and spacers upon a mandrel comprising

a first hopper and a first chute assembly for cores,

a second hopper and a second chute assembly for spacers,

said chutes terminating with one chute overlying the other chute,

escapement means for receiving cores and spacers and through which said cores and spacers pass, and

a mandrel aligned with said escapement means to alternately receive said cores and spacers,

said escapement means permitting only one pair of cores and spacers to pass through the escapement means at any one time,

each pair of cores and spacers being placed upon said escapement means prior to being released therefrom.

4,201,506

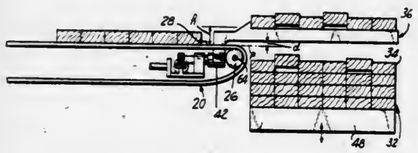
LUMBER-STACKING METHOD AND APPARATUS

Alpo Rysti, Frisansintie 22, 02240 Espoo 24, Finland

Filed May 10, 1978, Ser. No. 904,504
Int. Cl.² B65G *57/18*
U.S. Cl. 414—68 **7 Claims**

1. In a lumber stacking method, the steps of conveying a layer of lumber in a horizontal plane to a lifting location which is situated in advance of and adjacent to a stacking location where a stack of lumber is to be formed, that part of a stack which has already been formed at said stacking location having an upper layer which has an upper surface situated at least approximately in said horizontal plane, then lifting the layer of lumber which has arrived at said lifting location from beneath

with arms which have only smooth surfaces engaging the lifted layer at the underside thereof and which extend in the direction of travel of said layer toward said stacking location, while simultaneously situating behind the last piece of timber of said layer which is at the end thereof which trails in the direction of movement toward the stacking location a stop to prevent rearward movement of the layer with respect to said arms, the lifting of said layer at said lifting location by way of said arms elevating said layer to an elevation higher than said horizontal plane, and while said layer is thus situated at the latter elevation, advancing said arms to a location over the uppermost layer of that part of the stack which has already been formed, the travel of said arms over said uppermost layer of that part of the stack which has already been formed being continued until the lifted layer is carried by said arms is situated vertically in alignment above the uppermost layer of that part of the stack which has already been formed, then lowering said arms and the layer carried thereby toward said uppermost layer of the stack which has already been formed, retracting said arms back to said lifting location while said arms are at the elevation to



which they have been lowered when lowering the previously lifted layer toward the uppermost layer of that part of the stack which has already been formed, while the lifted layer which has been transported to the stacking location by said arms remains at the stacking location, so that the thustransported layer now forms the uppermost layer of the stack, lowering the stack by an increment equal to the thickness of a layer of lumber in preparation for receiving the next layer at said stack, and repeating the above cycle of operations for forming a stack of a given height at said stacking location, providing between the arms as they move over the uppermost layer of that part of the stack which has already been formed and the uppermost layer a space which is sufficient to prevent contact between said arms and any timber pieces of the uppermost layer of the stack which has already been formed which may be crooked and which may extend to an elevation higher than other parts of the uppermost layer of that part of the stack which has already been formed, and tilting said arms respectively about horizontal axes which extend parallel to those portions of the arms which engage a layer of lumber in order to raise and lower a layer of lumber carried by said arms.

4,201,507

APPARATUS FOR HANDLING ROD-LIKE ARTICLES

Dennis Hinchcliffe; Frank Heybourn, and Eric A. Luddington, all of London, England, assignors to Molins Limited, England

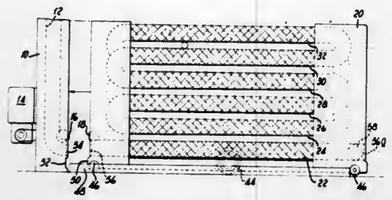
Continuation-in-part of Ser. No. 622,709, Oct. 15, 1975, Pat. No. 4,078,648. This application Apr. 11, 1977, Ser. No. 786,493

Claims priority, application United Kingdom, Apr. 15, 1976, 15750/76; Jul. 28, 1976, 31362/76

Int. Cl.² B65G *1/00*

U.S. Cl. 414—331 **31 Claims**

1. A conveyor system for rod-like articles, including a reservoir, the reservoir including means for receiving a multi-layer stream of rod-like articles delivered substantially horizontally from a supply in a direction transverse to the lengths of the articles; conveyor means forming a part of the reservoir for conveying the articles in a multi-layer formation within the reservoir; means for supporting the reservoir so that it is mobile; means for storing and retaining the articles in the reservoir so that it may be separated and moved away from said supply including means for confining a leading end of the stream delivered into the reservoir during conveyance by said conveyor means; and drive means for said conveyor means, said drive means including drive connecting means movable with said reservoir and adapted to be releasably connected to sta-



tionary output drive means associated with said supply, whereby said conveyor means is driven when said reservoir is in an operative position with respect to said supply.

4,201,508

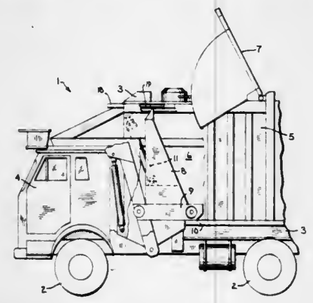
PLATEN SLIDE COVER FOR REFUSE HANDLING SYSTEMS

John R. Brisson, Kingsford, Mich., assignor to Lodal, Inc., Kingsford, Mich.

Filed May 12, 1978, Ser. No. 905,163

Int. Cl.² B65F *3/00*

U.S. Cl. 414—525 R **14 Claims**



1. In a refuse collection vehicle:

(a) a frame,

(b) a hopper on said vehicle,

(c) a refuse storage compartment disposed rearwardly of said hopper,

(d) a refuse handling platen normally disposed in said hopper and movable between a retracted, an intermediate and a fully extended position,

(e) motive means to selectively move said platen between said positions in either a forward or rearward direction,

(f) cover means for said hopper and with said cover means being disposed behind said platen,

(g) and means to cause said cover means to continuously engage said platen and follow the movement thereof in either a forward or rearward direction when said platen is disposed between its retracted and intermediate positions and to separate from said platen when said platen moves beyond said intermediate position.

4,201,509

BACKHOE SWING CYLINDER HYDRAULIC CIRCUIT

Charles A. Hansen, Troy, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1978, Ser. No. 948,597

Int. Cl.² E02F *3/32, 3/62*

U.S. Cl. 414—694 **10 Claims**

1. A hydraulic system for actuating a swing post mounted backhoe,

the swing post being mounted on a vehicle for swinging movement about a vertical axis,

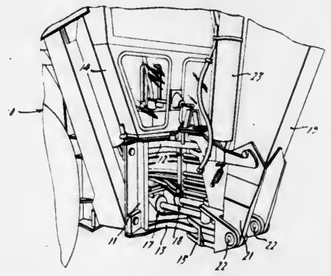
the hydraulic system including a pair of double acting hydraulic actuators each of which has a cylinder that is pivotally mounted on a support frame of the vehicle, double acting piston means within the cylinder, and a piston rod extending from the piston means through the rod end of the cylinder to the swing post,

the piston rods being pivotally coupled to the swing post on opposite sides of the vertical pivot axis about which the swing post is swingable,

a hydraulic circuit including a source of pressurized fluid connected to each actuator by a first conduit means communicating with the rod end of one actuator and the head end of the other actuator, and a second conduit means communicating with the head end of the one actuator and the rod end of the other actuator,

control valve means having an operating member movable from a neutral position to an actuator operating position in which fluid is directed through a predetermined one of the conduit means to the rod end of one of the actuator cylinders and to the head end of the other actuator cylinder to cause the swing post to swing in a predetermined direction,

the pressure of the fluid acting on the actuator cylinders causing the piston in the one actuator cylinder to move



from the rod end toward the head end and the piston of the other cylinder to move from the head end toward the rod end until the other cylinder piston rod crosses over the swing post pivot axis to the same side of the latter as the piston rod of the one actuator cylinder whereupon the direction of movement of the piston of the other cylinder reverses and both pistons move from the rod ends toward the head ends of their respective cylinders,

and cut-off means operative to prevent discharge of fluid from the head end of the one actuator cylinder as the swing post approaches a predetermined position relative to the end of its side swing movement,

wherein the improvement comprises:

relief means bypassing the cut-off means to permit controlled discharge of fluid trapped in the one actuator cylinder head end to cushion the deceleration of the swing post,

the fluid from the relief means being routed through the one conduit means to the head end of the other cylinder whereby the other cylinder provides additional deceleration torque as long as no voiding occurs therein in the event the control valve means operating member is returned to a neutral position before the swing post reaches the end of its side movement,

the fluid from the head end of the one actuator cylinder providing the necessary volume of fluid to the other cylinder to prevent voiding.

4,201,510

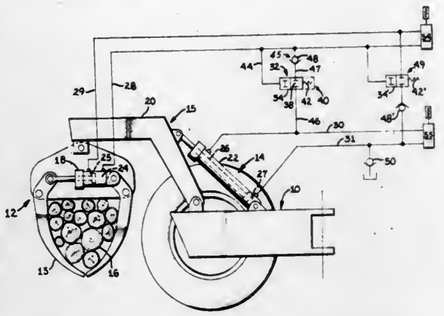
AUTOMATIC GRAPPLE CONTROL SYSTEM

John R. Muntjanoff, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 27, 1978, Ser. No. 900,632

Int. Cl.² B66C *3/16*

U.S. Cl. 414—730 **8 Claims**



1. In a grapple tong system having first and second hydraulic lines for closing and raising the grapple tongs, respectively, and third and fourth hydraulic lines for opening and lowering the grapple tongs, respectively, the improvement comprising:

first means for automatically, controllably passing fluid from the second to the first hydraulic line in response to a first preselected pressure in said first hydraulic line and a second pressure in said second hydraulic line, said second pressure being greater than said first pressure, said first means including a first controlling valve connected to the first and second hydraulic lines and third means for controlling the passage of fluid in a single direction from the second hydraulic line, through the first controlling valve and to the first hydraulic line, said first controlling valve being movable between a first position at which said first valve is open and a second position at which said first valve is closed and being continuously biased toward its second position and movable toward its first position in response to pressure in the first hydraulic line; and

second means for controllably communicating said third and fourth hydraulic lines, said second means including a second controlling valve connected to the third and fourth hydraulic lines and movable between a first position at which said second valve is open and a second position at which said second valve is closed, said second controlling valve being continuously biased toward its second position and movable toward its first position in response to pressure in said first hydraulic line.

4,201,511

DEVICE FOR HANDLING CONTAINERS

Georges M. Charles, Montceau les Mines, France, assignor to Potain Poclain Materiel (P.P.M.), Montceau les Mines, France

Filed May 24, 1978, Ser. No. 909,046

Claims priority, application France, Jun. 6, 1977, 77 17249

Int. Cl.² B66F *9/00*

U.S. Cl. 414—738 **2 Claims**

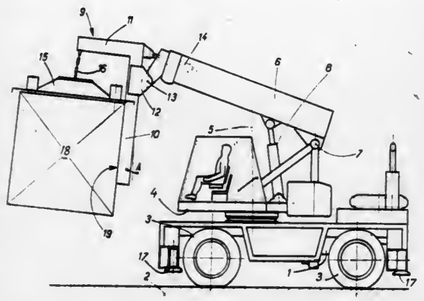
1. In apparatus for handling large containers wherein the apparatus has a platform mounted on a transporting device, the improvement comprising:

(a) a support arm pivotally carried by the platform adjacent one end of said support arm for rotation in a vertical plane;

(b) first power means operably connected between said support arm and the platform for selectively rotating said support arm;

(c) an L-shaped arm having a generally horizontal member and a generally downward-facing vertical member, said

L-shaped arm being pivotally carried by the other end of said support arm for rotation in a vertical plane, said generally downward-facing vertical member of said L-shaped arm being a telescoping arm and including second power means for selectively extending and retracting said generally downward-facing vertical member, said L-shaped arm being pivotally carried by said support arm at a point on said generally downward-facing vertical member such that said generally horizontal member of said L-shaped arm is raised and lowered as said generally downward-facing vertical member is extended and retracted respectively;



(d) third power means operably connected between said L-shaped arm and said support arm for selectively rotating said L-shaped arm; and,

(e) gripping means suspended from said generally horizontal member of said L-shaped arm for releasably gripping the top of large containers whereby large containers can be gripped by said gripping means and be selectively supported simultaneously along the side thereof by rotating said L-shaped arm to place said generally downward-facing vertical member into or out of engagement with the side of the container.

4,201,512

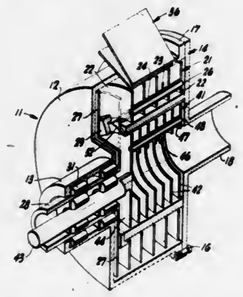
RADIALLY STAGED DRAG TURBINE

Chester W. Marynowski; F. Michael Lewis, both of Mountain View; Charles E. Lapple, Los Altos Hills; Robert G. Murray, Palo Alto, and Konrad T. Semrau, Menlo Park, all of Calif., assignors to Ceria N.V., Netherlands Antilles

Filed Aug. 23, 1977, Ser. No. 826,977

Int. Cl.[2] F01D *1/36*

U.S. Cl. 415—90 **4 Claims**



1. An improved multistage drag turbine comprising:

a cylindrical casing having nozzle means extending substantially tangentially therethrough for directing a driving fluid into the casing at a predetermined velocity and an axial opening for exhausting said fluid from said casing,

a first-stage rotor having a plurality of parallel closely-spaced annular discs closely fitting the interior circumference of said casing and having an end plate carrying said discs and including a first shaft extending axially from said casing,

a second-stage rotor communicating with said axial casing opening and having a plurality of parallel closely-spaced discs disposed radially inward of said first-stage rotor and mounted for rotation upon a second shaft extending from said casing concentrically with said first shaft of said first-stage rotor, and

an annular nozzle ring disposed between said first and second stage rotors and mounted on said first stage rotor for rotation therewith with at least one interstage nozzle extending therethrough for directing fluid from said first stage rotor in a direction substantially opposite to the direction of rotation of said first stage rotor and substantially tangentially onto discs of said second stage rotor adjacent the periphery thereof at a predetermined velocity,

whereby said first and second-stage rotors are separately driven in opposite directions of rotation at predetermined rotational velocities to utilize a maximum amount of fluid energy.

4,201,513

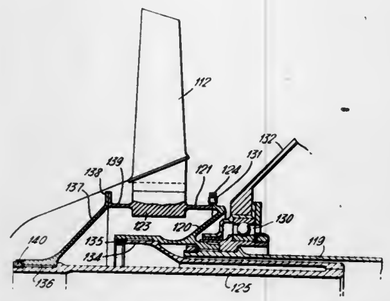
GAS TURBINE ENGINES

Stephen Sales, Bristol, England, assignor to Rolls-Royce (1971) Limited, London, England

Continuation of Ser. No. 748,371, Dec. 7, 1976, abandoned. This application Sep. 20, 1978, Ser. No. 944,029

Int. Cl.[2] F01D *5/02*

U.S. Cl. 416—2 **4 Claims**



1. A gas turbine engine comprising a rotor, a plurality of blades carried by the rotor, a main shaft, a mounting structure for supporting the rotor on the shaft and including a driving connection for transmitting drive between the rotor and the main shaft and which includes a portion dimensioned to fracture when out-of-balance loads on the rotor caused by loss of at least part of a blade from the rotor exceed a predetermined magnitude, and a separate torsionally stiff, drive means interconnecting the rotor and the shaft to support the rotor and to maintain a driving connection between the rotor and shaft when the driving connection of the mounting structure has broken, said separate drive means being transversely more flexible than said driving connection and sufficiently transversely flexible to support rotation of the rotor on the main shaft about an altered axis.

4,201,514

WIND TURBINE

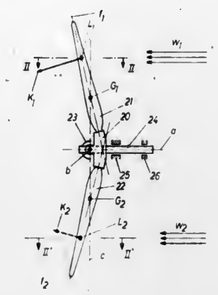
Ulrich Huetter, Schlierbacher Strasse 93, D-7312 Kirchheim, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,277

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655026

Int. Cl.[2] F03D *7/04*

U.S. Cl. 416—37 **36 Claims**



1. A wind turbine, including an axial flow through wing rotor; said rotor comprising a rotor hub and at least one wing blade having a pitch with respect to the wind flow so as to be adapted to rotate with said hub in the wind flow, said wing blade being supported by said hub and projecting therefrom; a rotor shaft; said hub being supported on said rotor shaft and being connected thereto such that rotation of said rotor rotates said rotor shaft;

a bearing seat for carrying said rotor shaft for rotation in said bearing seat; said seat being rotatable around an axis which extends substantially vertically for turning said rotor into the wind; each said wing blade being inclined relative to the general plane of rotation of said rotor;

means for enabling said rotor, which is comprised of said hub and said wing blade, to deflect under the effect of a transverse force acting on said rotor across the wind direction, which transverse force is the resultant of various wind velocities at various regions of the plane of revolution of said rotor, and said deflection of said rotor initiating a reduction of the transverse force acting on said rotor.

4,201,515

ROTOR WITHOUT FLAPPING HINGES AND WITHOUT LEAD-LAG HINGES

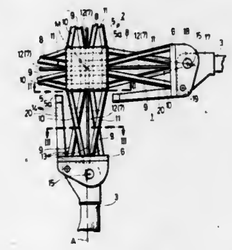
Hans Derschmidt, Putzbrunn, and Hermann Sahlstorfer, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,339

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733101

Int. Cl.[2] B64C *11/12, 11/48*; F16D *3/00*; B64C *27/48*

U.S. Cl. 416—134 A **9 Claims**



1. A rotor without flapping hinges and without lead-lag hinges, especially for rotary wing aircraft, comprising rigid rotor head center means having a center (M), a plurality of rotor blade means, flexible coupling means securing said rotor blade means to said rigid rotor head center means, said flexible coupling means comprising for each rotor blade means a plurality of rod means made of fiber reinforced composite material, said rod means being flexible relative to bending and torsion loads, each of said rod means having a central longitudinal axis, said rod means connecting each of said rotor blade means to said rotor head center means, first means securing said rod means to said blade means, and second means securing said rod means to said rotor head center means, said rod means forming first and second cones for each rotor blade means, said rod means being so arranged that their central longitudinal axes coincide with a generatrix of said first and second cones which have a common central cone axis, all of said first cones having their base in the respective rotor blade means, all of said second cones having their base in said rotor head center means all of said first cones having their tips substantially in said center (M) of said rotor head center means.

4,201,516

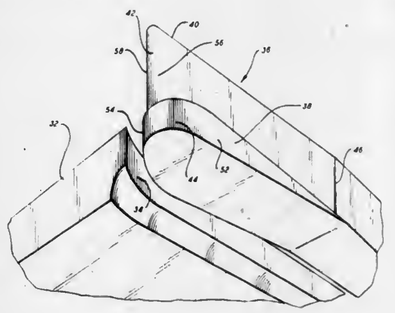
IMPELLER FOR A CENTRIFUGAL MACHINE

Michael R. Kolk, Export; Ralph E. Beck, Jeannette, and Roy E. Hoyle, Greensburg, all of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,622

Int. Cl.[2] F01D *5/30*; B21K *3/04*

U.S. Cl. 416—213 R **2 Claims**



1. A blade for a turbomachine comprising:

a leading edge formed of a relatively thin top section for contacting the fluid flowing through said machine, and a relatively thick bottom section, with said bottom section being tapered from the front of the leading edge of the blade to the end of the leading edge, with the widest portion of the bottom section being at the front of the leading edge.

4,201,517

AUTOMATIC CONTROL SELECTOR FOR A COMPRESSOR SYSTEM

John R. Ferguson, 6250 LBJ Freeway, Dallas, Tex. 75240

Filed Feb. 3, 1978, Ser. No. 875,112

Int. Cl.[2] F04B *49/00*

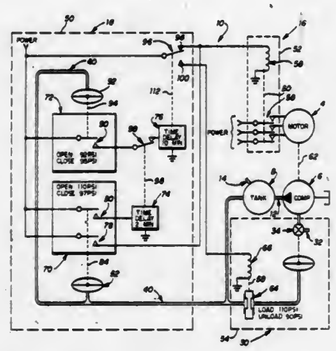
U.S. Cl. 417—12 **8 Claims**

1. An automatic control selector for a compressor system including a tank for containing pressurized gases, a compressor for pressurizing gases within the tank, an unloader for mechanically unloading the compressor to prevent the compressor from pressurizing gases, an unloader control device for selectively enabling and disabling the unloader, and a drive device for mechanically driving the compressor comprising:

first pressure sensitive means for enabling the drive device to operate in a drive control mode upon detection of a first

preselected pressure within the tank and for disabling the drive device upon detection of a second preselected pressure within the tank, said first pressure sensitive means for controlling the operation of the compressor during light load demand on the compressor system to maintain tank pressure, such that the unloader is disabled during the drive control mode to prevent the unloader from disabling the compressor;

first timing means actuated by said first pressure sensitive means for generating a first mode signal when said second preselected pressure within the tank is not reached within a preselected time period after enabling of the drive device;

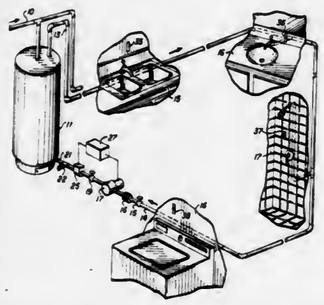


second pressure sensitive means responsive to detection of a third preselected pressure within the tank for generating a second mode signal;

second timing means actuated by said first and second mode signals for enabling the drive device and the unloader to operate in an unloader control mode during heavy load demand on the compressor system to maintain tank pressure; and

said second timing means further actuated by said first and second mode signals for disabling the unloader and for enabling the drive device to operate in said drive control mode when said first preselected pressure is maintained within the tank for a second preselected time period.

4,201,518
RECIRCULATING FLUID PUMP CONTROL SYSTEM
Alden Stevenson, 23448 N. Church Rd., Scottsdale, Ariz. 85255
Filed May 12, 1978, Ser. No. 905,359
Int. Cl.[2] F04B *49/06*
U.S. Cl. 417—12 **9 Claims**



1. A hot water circulating system including in combination: a source of hot water supply having an outlet and an inlet; a supply pipe and a return pipe interconnected in a loop between the outlet and the inlet, respectively, of said source of hot water supply;

a plurality of outlet taps connected to said supply pipe;

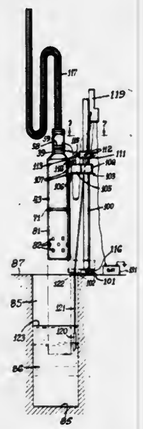
an electrically controlled pump means in said loop between the outlet and the inlet to said source of hot water supply;

switch means connected in electrical circuit with said pump means for operating said pump means under control of operation of said switch means; and

a plurality of manually operated control means, a different one of which is located adjacent each of said outlet taps for operating said switch means.

5. The combination according to claim 1 wherein said switch means comprises a time delay relay switch means energized to close an operating circuit to said pump means in response to operation of said manually operated control means, and a timing circuit means, whereby operation of said relay switch means closes a holding contact therefor to maintain said relay switch means operated through a normally closed switch operated by said timing circuit means, said normally closed switch being opened at the end of said pre-determined time interval by said timing means to de-energize said relay switch means and turn off said pump means.

4,201,519
THROUGH FLOW SUMP PUMP
Karl O. Niedermeyer, 17W068 North St., Bensenville, Ill. 60106
Division of Ser. No. 793,402, May 3, 1977. This application Apr. 4, 1979, Ser. No. 26,922
Int. Cl.[2] F04B *49/06*
U.S. Cl. 417—38 **3 Claims**



1. In a sump pump apparatus including a pump having a frame member, an electric motor, a pump intake opening and a pump discharge connection, and for use in conjunction with a sump in which liquid may accumulate, the improvement comprising:

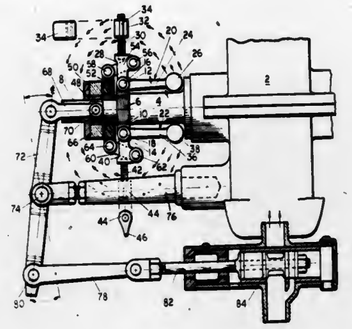
fixed means adjacent said sump and forming a substantially vertical way;

a carriage member mounted on said fixed means for movement along said way and including means connected to said pump for positioning said pump in a vertical position in relation to the vertical position of the carriage;

control means including sensor means having at least part thereof positioned in said sump for detecting when the liquid in the sump has risen at least to a given level and connected to said pump motor for energizing said motor;

latch means engaging one of said members to normally hold said carriage and pump in an elevated position and connected to said control means to release said carriage for gravity descent to a lower position at which the pump intake is below said given level when said pump is energized by said control means.

4,201,520
STEAM TURBINE GOVERNOR
Clyde F. Berry, R.F.D. 7 Box 169 C, Manchester, N.H. 03104
Filed Jul. 25, 1977, Ser. No. 818,512
Int. Cl.[2] F01B *25/06*
U.S. Cl. 417—36 **4 Claims**



1. A steam turbine governor located exteriorly of the turbine housing and comprising a plurality of bell cranks mounted on pivots fixed to and spaced about the turbine shaft, each said crank mounted so as to swing in a plane that extends generally parallel to said shaft,

a fixed weight on one arm of each bell crank remote from its said pivot,

said turbine shaft having a cylindrical extension beyond said pivots, a bushing slidably mounted on said extension,

means including linkages connecting the other arms of said bell cranks with said bushing whereby when said first arms are swung outward by centrifugal force induced by rotation of said shaft, said bushing will rotate with said turbine shaft and will be caused to move axially along said extension,

a collar rotatably mounted on said bushing but axially secured thereto,

a steam valve, axially movable means for controlling the position of said valve,

a pivoted lever located exteriorly of said turbine housing and mounted on means associated with said turbine housing, means connecting the ends of said lever to said axially movable means and to said collar whereby said collar is maintained against rotation on said bushing,

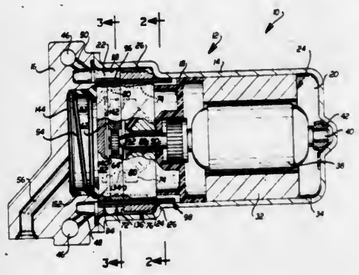
means connected to said lever for applying a constant maximum force for resisting the outward swinging of said first arms as said turbine shaft rotates,

and other means exterior of said housing and operable while said turbine is running for adjustably diminishing said constant maximum force whereby the position of said steam valve at any given rotational speed of said turbine shaft may be varied.

4,201,521
PUMP AND MOTOR ASSEMBLY
Robert E. Carlson, Livonia, Mich., assignor to TRW Inc., Cleveland, Ohio
Filed Mar. 20, 1978, Ser. No. 888,248
Int. Cl.[2] F04B *35/04*
U.S. Cl. 417—53 **42 Claims**

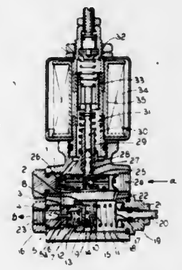
1. A pump and motor assembly comprising a housing having an inner surface which at least partially defines a chamber, a rotatable motor armature disposed in said chamber, a pump assembly disposed in said chamber, said pump assembly including a rotor connected with one end portion of said motor armature for rotation therewith, a stator ring circumscribing said rotor, a cheek plate cooperating with said stator ring and rotor to at least partially define a pumping chamber, bearing surface means disposed on said cheek plate for rotatably supporting said one end portion of said motor armature, and locating means extending between said cheek plate and the inner surface of said housing for positioning said cheek plate with said bearing surface means in a coaxial relationship with said motor armature and said stator ring, said locating means including a plurality of spaced apart members connected with said cheek plate and disposed in abutting engagement with the inner surface of said housing.

23. A method of assembling a pump and motor in a housing, said method comprising the steps of positioning the motor in the housing with an armature shaft of the motor free to move sideways relative to the housing, holding the armature shaft against sideways movement by positioning a support plate in



the housing with a bearing surface on the support plate in engagement with the armature shaft, said step of positioning the support plate in the housing including the steps of engaging the housing with a plurality of locating elements which project from the support plate to locate the support plate and bearing surface relative to the housing, positioning a rotor of the pump on the armature shaft, and positioning a stator ring of the pump in a coaxial relationship with the bearing surface, said step of positioning the stator ring of the pump including the step of engaging the stator ring with the locating elements to position the stator ring relative to the bearing surface in an orientation in which the stator ring will cooperate with the rotor to at least partially define a pumping chamber.

4,201,522
BOOST-RETARDING DEVICE FOR ELECTROMAGNETIC PLUNGER PUMP AND THE LIKE
Akira Toyota, Tokyo; Katsumi Nozawa, Yokohama, and Hideo Nomura, Fujisawa, all of Japan, assignors to Taisan Industrial Co., Ltd., Tokyo, Japan
Filed May 4, 1978, Ser. No. 902,940
Claims priority, application Japan, Jul. 8, 1977, 52-80998
Int. Cl.[2] F23N *1/00*; F04B *49/02*
U.S. Cl. 417—311 **32 Claims**



1. A boost-retarding device for a pump which comprises a main body containing a cylinder means having a suction side and a discharge side; plunger means slidably and reciprocatingly fitted into said cylinder means; leak passage communicat-

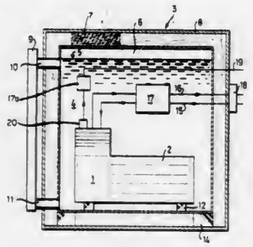
ing means extending from said suction side to said discharge side; said passage being divided by said plunger; adjustable spring means for biasing said plunger means toward said discharge side; and valve means for cutting off an outflow of fluid from said discharge side to said suction side responsive to movement of said plunger means toward said suction side.

4,201,523

DEVICE FOR COOLING AND SILENCING OF NOISE OF A COMPRESSOR OR VACUUM PUMP

Björn O. E. Olofsson, Åkervägen 6, S-190 40 Rosersberg, Sweden

Filed Jan. 23, 1978, Ser. No. 871,552
Int. Cl.² F04B *39/00, 39/06*
U.S. Cl. 417—312 **5 Claims**



1. Apparatus for cooling and silencing a pressure fluid device, such as a compressor or a pump, having inlet and outlet ports and which is driven by an electric motor, comprising

(a) a sealed container (3) containing a chamber in which said pressure fluid device and said motor are arranged, the bottom, side and top walls of said container each including a layer (7) of sound-absorbing material;

(b) a quantity of cooling and sound-absorbing liquid (4) filling the space in said chamber to a level above that of said device and said motor, whereby the device and motor and completely immersed in the liquid;

(c) inlet and outlet pipes (15, 16) extending through a wall of said container and connected at one end with the inlet and outlet ports of said device for supplying fluid to, and for removing fluid from, said device, respectively;

(d) heat exchanger means (9) arranged externally of said container; and

(e) input and outlet conduit means (10, 11) connecting said heat exchanger means with said chamber to permit the flow of liquid between said chamber and said heat exchanger means, thereby to modify the temperature of said liquid.

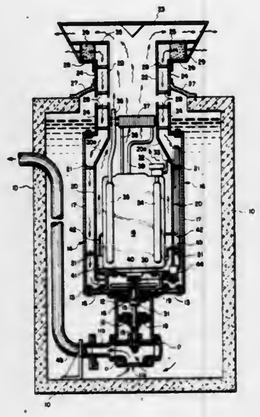
4,201,524

SUBMERSIBLE PUMP SYSTEM USING A SUBMERSIBLE INTERNAL COMBUSTION ENGINE

Richard S. Wilkins, 547 E. Center St., Provo, Utah 84601

Filed Sep. 5, 1978, Ser. No. 939,285
Int. Cl.² F04B *17/00, 35/00*
U.S. Cl. 417—364 **4 Claims**

1. A submersible pump system having a submersible internal combustion engine for driving the pump, said system comprising a water-tight, submersible enclosure; an internal combustion engine mounted within said enclosure; a shroud positioned between said engine and the sides of said enclosure so as to substantially surround the sides of said engine, with the lowermost end of said shroud being spaced from the bottom of said enclosure so that a flow channel is formed extending downwardly between the inside surface of said enclosure and the outside surface of said shroud, around the lower end of said shroud, and upwardly through the inside of said shroud around said engine; a submersible pump mounted on the exterior of said enclosure, said pump having a drive shaft extending into said enclosure through a water-tight seal between said pump and said enclosure; means for connecting the end of said drive shaft which extends into said enclosure to the output drive of said engine; a first conduit attached at one of its ends to the upper end of said shroud so that said first conduit is in flow communication with the inside of said shroud, said first conduit extending upwardly with its other end being open to the atmosphere; a second conduit attached at one of its ends to the upper end of said enclosure so that said second conduit is in flow communication with the first conduit through said flow channel, said second conduit extending upwardly with its other end being open to atmospheric air; fan means driven by



said engine which circulates atmospheric air downwardly through said second conduit, then through said flow channel so that the air flows downwardly through the space between the shroud and the walls of said enclosure, around the lower end of the shroud, and upwardly through the inside of the shroud around said engine, and then back up through said first conduit; means on said engine for drawing combustion air from the air which is circulated through the system by said fan means; and exhaust means on said engine which releases exhaust gases from said engine to the flow of air in said first conduit.

4,201,525

PERISTALTIC PUMP

Richard I. Brown, Northbrook, and Roger L. Leaf, Antioch, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 5, 1978, Ser. No. 921,896
Int. Cl.² F04B *43/12*
U.S. Cl. 417—477 **9 Claims**

1. A peristaltic liquid pump for external connection to plastic tubing carrying liquid to be pumped, which comprises:

a housing adapted for receiving a U-shaped portion of the plastic tubing, said housing including a main roller portion and a cover portion connected to said main roller portion;

a rotatable head located within said main roller portion;

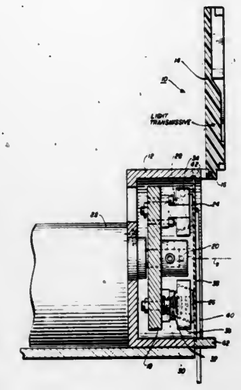
a pair of rollers connected to said rotatable head and located with their roller surfaces facing said cover portion when said cover portion is closed;

means rotatably connecting said rollers to said rotatable head;

means for coupling said rotatable head to an electric motor;

means defined by said housing for receiving the U-shaped portion of the plastic tubing so that the U-shaped portion will overlie the rollers during rotation of said rotatable head;

a membrane comprising a sheet overlaying said main roller portion of said housing between said rollers and the U-shaped portion of the plastic tubing, said membrane having a relatively stiff surface for contacting said rollers and a relatively sticky surface for contacting said plastic tubing; and



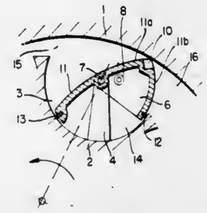
said cover portion being constructed to overlie said rollers, membrane and U-shaped portion of the plastic tubing and to urge the U-shaped portion of the tubing against the membrane and a roller when the cover portion is closed.

4,201,526

PIVOTED BLADE BETWEEN ROTOR AND STATOR HAVING ARCUATE SECTIONS

Shlomo Ostersetzer, and Eugenius Brochstein, both of P.O.B. 80, Gedera, Israel

Filed Dec. 2, 1977, Ser. No. 856,753
Claims priority, application Israel, Dec. 6, 1976, 51049
Int. Cl.² F01C *1/00, 19/00*
U.S. Cl. 418—136 **2 Claims**



1. An improved blade arrangement for sealing off in the radial direction a volume of fluid contained between a stator shell and a rotor rotating within said shell having an axis of rotation, said improved blade arrangement comprising:

said rotor including a recess having a cylindrical surface opening between said rotor and said shell;

a blade support mounted in said rotor recess and having a blade pivot end between said surface and said stator shell; and

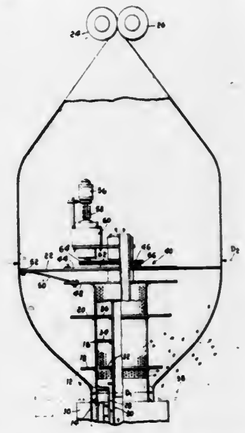
blade means pivotally mounted on said blade support pivot end around an axis substantially parallel to said rotor axis, said blade means having a center of gravity offset from said blade pivot axis, said blade means including a first and second arcuate section joined at a first end at a blade tip to form a composite profile, each arcuate section having a second free end, said blade tip contacting said stator shell and each said free end incuding a linear seal contacting said recess surface to form a sealed space between said blade profile and said recess surface wherein the resultant of all uniform forces acting normal to the surface of said blade profile at each point thereof, passes through said blade pivot axis.

4,201,527

APPARATUS FOR MANUFACTURING TUBULAR THERMOPLASTIC

David A. Verner, Bound Brook, and Henry A. Kipp, Bridgewater, both of N.J., assignors to Egan Machinery Company, Somerville, N.J.

Filed Jun. 30, 1978, Ser. No. 920,686
Int. Cl.² B29D *7/22*
U.S. Cl. 425—72 R **16 Claims**



1. Apparatus for forming tubular thermoplastic film comprising:

a die for extruding a tubular film of thermoplastic material of a first diameter,

a central conduit extending through said die and providing a source of gas for expanding said film to a second enlarged diameter and for cooling said film, said conduit including an inner passage with an opening for the return flow of said gas,

a pair of rollers spaced from said die for drawing and flattening said film, and

a variable outer diameter deflector disc positioned around said conduit between said die and rollers for controlling the flow of cooling gas at the internal surface of said film leaving said die, said disc being expandable from a diameter of reduced size to a diameter of increased size close to that of said enlarged diameter film; and

means for varying the outer diameter of said variable outer diameter deflector disc associated with said variable outer diameter deflector disc.

4,201,528

MECHANICAL MEANS FOR REDUCING CRACKING IN SOAP BARS

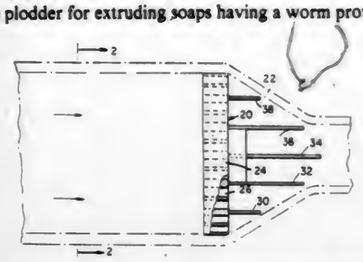
Charles F. Fischer, Park Ridge, and Cesare N. Marchesani, Maywood, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,929
Int. Cl.² B29F *3/06*
U.S. Cl. 425—209 **4 Claims**

1. A fitting for reducing surface cracks in soap bars produced by extrusion from soap plodder having a cone nozzle, said fitting adapted to be mounted within said cone nozzle comprising a base plate which engages the interior of said cone nozzle, said base plate having a plurlity of spaced linear parallel slots therein extending transversely of said base plate, and a

plurality of spaced parallel vanes secured to said base plate between said slots for inhibiting spiral movement of the soap mass after passing through said base plate, said vanes extending parallel to said slots.

4. In a plodder for extruding soaps having a worm provided



with an end flight, means for prevention of glazed soap generated by the smearing action of said end flight, said means comprising a plurality of spaced cylindrical studs fixed to said end flight of said worm and rotatable therewith for preventing the formation of a layer of glazed soap, said studs extending parallel to the axis of said worm.

4,201,529

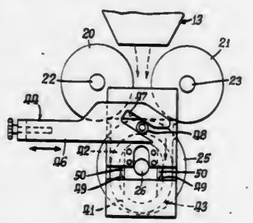
ADJUSTABLE CAM METERING FOR ROTATING TRAP TYPE DOUGH DIVIDER

Harold T. Atwood, 14151 Irving Ave., Dolton, Ill. 60419

Filed Oct. 30, 1978, Ser. No. 955,651

Int. Cl.² A21C *5/04*

U.S. Cl. 425—238 **3 Claims**



1. A metering device for dough comprising a hopper having an open bottom, a pair of co-acting rollers rotatably mounted in spaced relationship below said open bottom, means for driving said rollers in opposite directions to pull dough from said hopper through the space between said rollers, a third roller rotatably mounted below the space between said co-acting rollers, means for driving said third roller, said third roller having transversely extending grooves in its peripheral surface for receiving uniform amounts of dough pulled downwardly between said co-acting rollers, a rectangular block fitting snugly within each of said grooves, a pair of cam rollers projecting from the opposite ends of each of said blocks, a pair of cam tracks adjacent each end of said third roller for receiving and guiding each of said cam rollers in a closed path as said third roller is rotated, each of said cam tracks comprising a lower cam plate having a groove on its inner surface forming a lower cam track and an upper cam plate in vertical alignment with said lower cam plate and having a groove on its inner surface forming an upper cam track, a pin projecting outwardly from the back surface of each of said upper cam plates, and a pair of arms each having a diagonally extending slot engaging one of said pins, said arms being movable horizontally to move said upper cam plates vertically relative to said lower cam plates.

4,201,530

ARRANGEMENT FOR UNIFORM FILLING OF A MOLD CAVITY

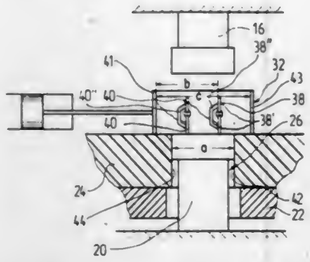
Willy Vogt, Zurich, Switzerland, assignor to Bucher-Guyer AG., Zurich, Switzerland

Filed Aug. 28, 1978, Ser. No. 937,057

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741800

Int. Cl.² B30B *11/02*; B29C *3/00*

U.S. Cl. 425—260 **10 Claims**



1. An arrangement for filling at least one upwardly open cavity of a mold with bulk material, the mold having a surface, comprising in combination:

a feeding receptacle having an open bottom bounded by a plurality of edges and mounted for relative sliding movement along a surface of said mold in a predetermined direction from a receiving position, in which bulk material is introducible into the feeding receptacle, toward a discharging position, in which said open bottom of said feeding receptacle is juxtaposed with an open upper end of said cavity for discharge of the bulk material into said cavity, said open upper end of said cavity being circumferentially surroundable by the edges of said feeding receptacle, said open bottom of said feeding receptacle having a prearranged dimension between a leading and a trailing edge as considered in said predetermined direction, which exceeds a corresponding predetermined dimension of the cavity taken in the same direction, said feeding receptacle having at least one partition extending transversely of said predetermined direction up to said surface, said partition being spaced from one of said edges by a distance at least equal to said corresponding predetermined dimension of said cavity.

4,201,531

REINFORCED BEARING APERTURE IN THERMOPLASTIC SHEET MATERIAL

Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.

Division of Ser. No. 000,025, Jan. 2, 1979. This application May 9, 1979, Ser. No. 37,366

Int. Cl.² B29C *23/00, 17/00*

U.S. Cl. 425—290 **5 Claims**

1. Apparatus for forming a bearing aperture in thermoplastic sheet material of given thickness, wherein the resulting aperture has an axial thickness greater than said given sheet thickness, which comprises:

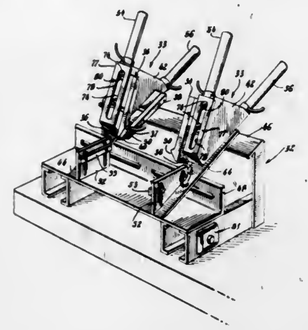
a fixture and dual punch means supported thereon, said fixture also having means for supporting said sheet material in position for the formation of the aperture therein by said punch means;

a first carrier comprising part of said dual punch means, means for advancing said first carrier in a longitudinal direction from a starting point to an advanced position and for retracting it again to said starting point;

a heated punch pin supported on said first carrier, said pin being sized approximately to the size of the aperture to be formed in said sheet material;

a first connection means joining said punch carrier to said advancing and retracting means, said connection incorporating means for shifting said punch pin transversely of said longitudinal direction of carrier movement to cause said heated punch pin to contact and penetrate said sheet material, thereby displacing thermoplastic material about the aperture, said connection also serving to laterally withdraw the heated punch pin from the aperture upon longitudinal return of the carrier;

a second punch carrier and an unheated punch pin mounted thereon, and means for advancing said second carrier from starting position in a longitudinal direction to align



said unheated punch pin with the previously formed aperture and for retracting said second carrier to starting position;

a second connection means joining said second punch carrier with its advancing and retracting means, said second connection also having means for shifting said second punch pin transversely of said longitudinal direction of movement to insert said unheated punch pin in said aperture for completing the formation of said displaced thermoplastic material into a collar-like hub surrounding the aperture, said second connection also serving to withdraw the unheated punch pin from the aperture upon completion of the formation of the aperture.

4,201,532

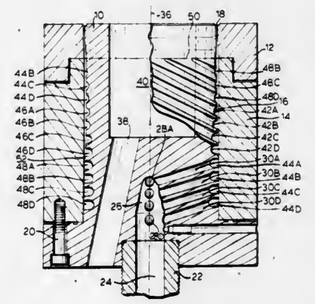
EXTRUSION DIES OF SPIRAL MANDREL TYPE

Robert J. Cole, 224 St. George St., Toronto, Ontario, Canada (M5R 2N9)

Filed Aug. 2, 1978, Ser. No. 930,209

Int. Cl.² B29D *23/04*

U.S. Cl. 425—380 **6 Claims**



1. An extrusion die of the spiral mandrel type comprising:

a central mandrel having a cylindrical outer surface, disposed about a longitudinal axis;

the mandrel having an inlet thereto and a plurality of outlets therefrom to the said outer surface, each outlet being connected to the inlet by a respective radially-extending cross-hole; and

a cylindrical die body surrounding the mandrel whereby there is formed between them an annular flow passage into which the said outlets discharge and which terminates in an annular die outlet orifice;

the said annular flow passage including a plurality of helical channels extending in the direction of flow of material in the annular passage, each helical channel being of progressively decreasing cross-sectional area in the said direction of flow, each outlet from the mandrel feeding into a respective helical channel and thence into the annular flow passage, so that all of the said outlets feed into the one said annular flow passage;

wherein the said cross-holes and the respective outlets therefor feeding into the one said annular flow passage are disposed in a plurality of sets, each set consisting of at least two cross holes and two respective outlets, the two cross holes and respective outlets of each set being disposed one above the other axially with respect to the said longitudinal axis.

4,201,533

MOLD CLOSING AND LOCKING DEVICE

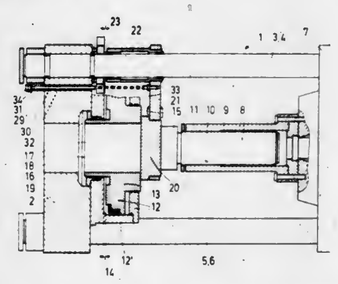
Johann Holzschuh, Meinerzhagen, Fed. Rep. of Germany, assignor to Battenfeld Maschinenfabriken, Meinerzhagen, Fed. Rep. of Germany

Filed Dec. 12, 1978, Ser. No. 968,690

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2756717

Int. Cl.² B29F *1/06*

U.S. Cl. 425—451.9 **6 Claims**



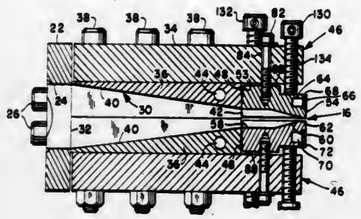
1. In combination with a mold closing and locking device including a fixed mold carrier plate, a stationary end plate, a movable mold carrier plate displaceable between the fixed mold carrier plate and the stationary end plate on support shafts through the action of a piston-cylinder unit, an adjustable distance-determining member extending between the piston-cylinder unit and the movable mold carrier plate, a pressure plate carried on a swivel arm for movement into and out of engagement between said piston-cylinder unit and said distance determining member, with the swivel arm being attached to a pivot bearing mounted on one of the aforesaid support shafts, with the pressure plate having a limited displacement range against spring tension means in a direction parallel to the movement of the movable mold carrier plate, and with the said swivel arm being movable by means of a pressurized pivot drive supported on another of the support shafts, the improvement comprising: said spring tension means being supported at said end plate and being connected to said swivel arm by means of a flexible tension member which acts proximate said pivot bearing, said pivot bearing being axially displaceable along its support shaft, said pressure plate being flat and rigidly attached to the free end of said swivel arm.

4,201,534

FOAM EXTRUSION DIE ASSEMBLY

Arthur L. Phipps, Los Osos, Calif., assignor to Condec Corporation, Old Greenwich, Conn.

Filed Jun. 14, 1978, Ser. No. 914,580
Int. Cl.² B29F *3/04, 3/08;* B29D *27/00*
U.S. Cl. 425—461 **27 Claims**



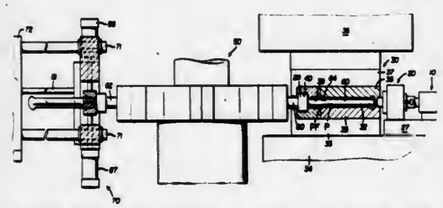
1. An extrusion die assembly comprising a body member, a pair of spaced lip members mounted on said body member each having a lip which together define an extrusion die orifice therebetween, and passage means for heating or cooling medium in at least one of said lip members extending along the lip to the lip in proximate relationship thereto, said passage means comprising in an outwardly opening channel in said one of said lip members and means to close said channel along the opening thereof thereby to define a passage.

4,201,535

APPARATUS FOR FORMING TUBULAR PLASTIC ARTICLES

Lawrence D. Ninneman, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 738,508, Nov. 3, 1976, Pat. No. 4,136,146. This application Jul. 10, 1978, Ser. No. 923,134
Int. Cl.² B29C *7/00;* B29D *23/02*
U.S. Cl. 425—548 **7 Claims**



1. An apparatus for forming an essentially tubular plastic parison for subsequent blowing into a container shape, comprising:

a turret rotationally mounted on a vertical axis and having a core pin radially extending therefrom;

a plurality of separate stations located around an arcuate path surrounding said turret, including an injection molding station and a parison ejection station;

means for intermittently rotating said turret to sequentially position said core pin at each said station;

a pair of horizontally positioned mold sections at the injection molding station, the mold sections being relatively movable in the vertical direction and selectively closeable around the core pin to form an essentially tubular injection molding cavity, the end of said molding cavity adjacent said turret defining the finished neck portions of the desired container shape, including an annular end surface;

the outer radial portion of said annular parison end surface being defined by an internal shoulder of said molding cavity when said mold sections are closed and being exposed when said mold stations are opened;

a horizontally movable carriage at the ejection station including a gripping mechanism defined by at least two arcuate sections which are radially displaceable to selectively engage and disengage at least a peripheral portion of the exposed neck portion of the molded parison carried by each said core pin, said arcuate sections defining when closed, an annular surface abuttable with said radially outer annular portion of the parison end surface;

said carriage being reciprocable between (a) a first principal position where said gripping mechanism annular surface is aligned with said radial outer portion of the parison end face and (b) a second principal position where the gripping mechanism is axially displaced relative to the core pin to strip said parison from the core pin primarily by the application of a compressive force to said outer annular portion of the parison end face;

displacement means on the carriage for selectively closing the gripping mechanism around the parison at said first principal position and for selectively opening the gripping mechanism at said second principal position to disengage the parison held therebetween;

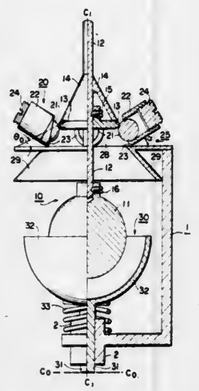
and transport means for moving the carriage between said first and second principal positions.

4,201,536

VIBRATION RESPONSIVE MECHANISM

Eiji Suzuki, 681-5, Oiso, Oiso-machi, Naka-gun, Kanagawa Pref., Japan

Filed Jan. 31, 1978, Ser. No. 873,973
Claims priority, application Japan, Feb. 19, 1977, 52-16689
Int. Cl.² F16K *17/36*
U.S. Cl. 431—88 **13 Claims**



1. A vibration responsive mechanism having a weight suspension rod pendulum which falls in response to the vibration of a base body to which said mechanism is mounted, said mechanism comprising:

a responsive disc secured to said rod normally and coaxially therewith,

an eccentricity variable thrust ball bearing forming a releasable suspension fulcrum for said pendulum,

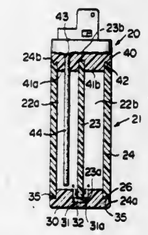
said thrust ball including at least 3 support balls which contact with and bear the periphery of said responsive disc in an upward and centripetal direction upon the stationary condition of said base body at equal space and at an equal initial inclination angle θ_o with respect to the horizontal plane, and a set of radial guide races secured to said body for moving said supporting balls in an only radial direction at an equal inclination angle α ($\geqq 0$) with respect to the horizontal plane individually, said guide races comprising a biasing means for constantly and individually biasing said supporting ball in a centripetal direction, a circular opening through which said responsive disc can pass in a vertical direction, and a guide skirt being flared from the inner periphery of a circular opening, whereby respective supporting balls individually move along respective radial guide races by the fact that said biasing mechanism generated component forces on respective supporting balls counter-act the changes in the component forces applied upon said contact points when the base body is subject to vibration.

4,201,537

FUEL TANK OF A DISPOSABLE CIGARETTE GAS LIGHTER

Tomio Nitta, Yokohama, Japan, assignor to Tokai Seiki Co., Ltd., Yokohama, Japan

Filed Feb. 9, 1978, Ser. No. 876,484
Int. Cl.² F23D *13/04*
U.S. Cl. 431—344 **13 Claims**



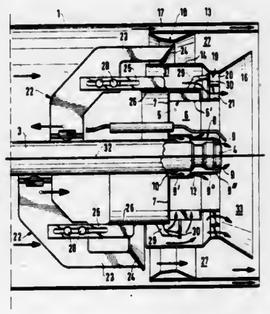
1. A cigarette gas lighter comprising an extruded, one-piece tubular tank body of uniform cross section at least in the longitudinal direction thereof having upper and lower ends and a plurality of borings partitioned by at least one partition wall and extruding in parallel from and to and between the ends in said longitudinal direction of the tank body, a holder including a lighting means attached to the upper end of the tank body, a bottom cap attached to the lower end of the tank body in a liquid tight fashion where said tank body, said holder and said bottom cap comprise three separate members, and means for providing a communicating path between said borings, said tank body being produced by cutting a continuous tubular member of uniform cross section having said plurality of borings obtained by extrusion molding of plastics, and said borings being partitioned by said partition wall and surrounded by a peripheral wall.

4,201,538

LARGE BURNERS, PARTICULARLY FOR LIQUID FUELS

Hermann Kopp, Schwendi, Fed. Rep. of Germany, assignor to Max Welshaupt GmbH, Schwendi, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,180
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1976, 2659089
Int. Cl.² F23D *15/00*
U.S. Cl. 431—351 **8 Claims**



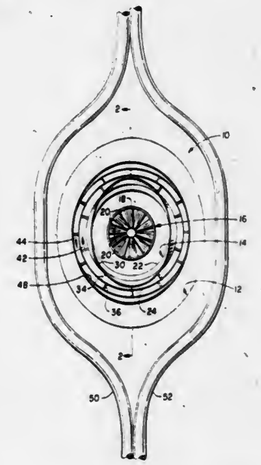
1. A burner for liquid fuels such as light, medium and heavy oil, comprising: an air supply pipe; a sleeve carrying air; a fuel supply pipe concentrically located in said air supply pipe and partially enclosed by said sleeve carrying air; spray diffuser means and a twist-producing member enclosing said fuel supply pipe upstream of said spray diffuser means; said twist-producing member comprising a fixed blower wheel and receiving combustion air from the periphery thereof, the combustion air quantity being regulatable upstream of the burner head as a function of the prevailing fuel flow; two auxiliary air supply pipes in a space between said twist-producing member and said air supply pipe; said auxiliary air supply pipes having an innermost pipe with an end cone directed towards the outside; two auxiliary twist-producing members with opposite twist direction enclosing each other and located coaxialy downstream from said first-mentioned twist-producing member enclosing the fuel supply pipe; one of said auxiliary twist-producing members being an inner member with twist direction corresponding to the twist direction of said first-mentioned twist-producing member enclosing the fuel supply pipe; said inner twist-producing member having a smallest diameter connected to an axial discharge opening of said first-mentioned twist-producing member enclosing the fuel supply pipe; the other one of said auxiliary twist-producing members being an outer member with largest diameter located between a cylindrical part of the inside air supply pipe and its outward directed end cone; and a sliding link for closing at partial load of the burner the intake to said first-mentioned outer twist-producing member enclosing the fuel supply pipe, space between said two auxiliary air supply pipes, and the intake to the outer one of said auxiliary twist-producing members; said sliding link opening at other load regions of the burner, said intake to said first mentioned twist-producing member, space between said two auxiliary air supply pipes and intake to the outer one of said auxiliary twist-producing members.

4,201,539

FLAME FORMING BURNER

Temple S. Voorheis, Atherton, Calif., assignor to Coen Company, Inc., Burlingame, Calif.

Filed Jan. 3, 1978, Ser. No. 866,314
Int. Cl.² F23D *13/40*
U.S. Cl. 431—354 **6 Claims**



1. Apparatus for burning fuel comprising:

means operative to supply a controlled amount of fuel along a central axis to an ignition site;

primary register means concentrically disposed about said fuel supply means, said primary register means being constrained to supply a parallel flow of oxidizing gas to said ignition site in sub-stoichiometric quantity; and

secondary register means concentrically disposed about said primary register means and having an outlet at a second-

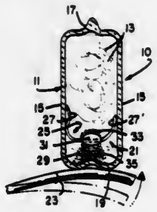
ary zone surrounding said ignition site, said secondary register means comprising an annular chamber having a first annular array of blades pitched to impart slight rotational flow in one circumferential direction and a second annular array of blades pitched to impart rotational flow in the opposite circumferential direction, said second array being disposed concentrically about and substantially in a common plane with said first array, the outlet areas of said first array and said second array being of substantially equal cross-sectional area so that counter-rotating streams of oxidizing gas can be introduced through each one of said arrays of said secondary register means at approximately equal mass and velocity from a common source providing a mix-inducing substantially uniform peripheral secondary flow while canceling out circumferential flow components for supplying a secondary flow of oxidizing gas not substantially downstream and surrounding said ignition site, said secondary flow being constrained to be in the minimum quantity to achieve complete combustion with low excess air.

4,201,540

PERCUSSIVELY IGNITED PHOTOFLASH LAMP AND METHOD OF MAKING SAME

John F. Waymouth, Marblehead; Andre C. Bouchard, Peabody; Richard A. Fowler, Ipswich, and Harold H. Hall, Jr., Marblehead, all of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 4, 1978, Ser. No. 893,223
Int. Cl.² F21K *5/02*
U.S. Cl. 431—361 **12 Claims**



1. A percussively-ignited photoflash lamp comprising:
an hermetically-sealed, light-transmitting envelope;
a combustion-supporting atmosphere within said envelope;
a quantity of filamentary combustible material within said envelope; and
percussively-actuated ignition means disposed within said envelope for igniting said filamentary combustible material in response to the application of a percussive force to the external surface of said envelope; said ignition means including a resilient member located between opposed walls of said envelope for engagement therewith, and a quantity of primer material located on said resilient member in contact with an internal surface of the wall of said envelope to receive said precussive force.

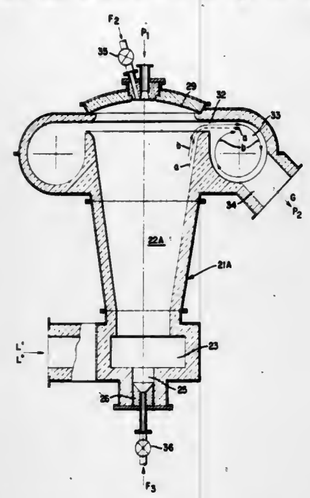
4,201,541

PROCESS AND INSTALLATION FOR THE PRODUCTION OF CALCINED MATERIAL

Fritz Schoppe, 8026 Ebenhausen, Isartal Max-Ruttger-Str. 24, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 475,874, Jun. 3, 1974, Pat. No. 4,098,871. This application Dec. 13, 1977, Ser. No. 860,186
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657135
Int. Cl.² F27B *15/00*
U.S. Cl. 432—58 **19 Claims**

1. Calcining apparatus which comprises:
a. a reactor;
b. means for introducing a particular raw material to be calcined into said reactor;
c. means for introducing a heated gas into the reactor and for effecting a flow of said gas through said reactor to convey the raw material through the reactor and to calcine said material;
d. an outlet for the calcined material and the gas by which the calcined material is conveyed through the reactor;



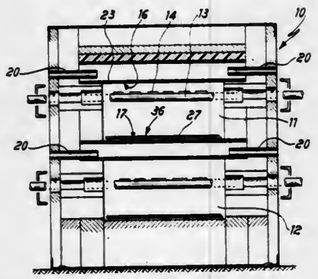
e. means for separating from the calcined particles the gas removed from the reactor therewith and for replacing said gas with one which is essentially chemically inert with respect to the calcined particles;
f. an unfired preheater for the raw material; and
g. means for circulating the gas from which the particles were removed through said preheater in heat transfer relationship with said raw material.

4,201,542

OVEN FOR FIRING CERAMIC MATERIAL OR THE LIKE

Renato Bossetti, Novara, Italy, assignor to S.I.T.I. Societa Impianti Termoelettrici Industriali (s.a.s.), Marano Ticino, Italy

Filed Jun. 21, 1978, Ser. No. 917,648
Claims priority, application Italy, Jun. 30, 1977, 25229 A/77
Int. Cl.² F27B *9/02*
U.S. Cl. 432—128 **11 Claims**



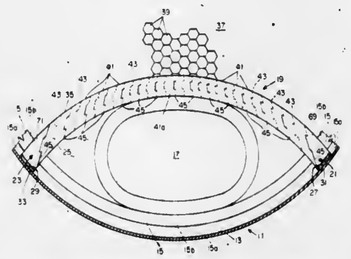
1. An improved oven for firing ceramic material or the like, said oven comprising:
at least one longitudinally extending firing chamber having a ceiling and a floor;
a plurality of rollers disposed transversely of said firing chamber and actuated for rotation to advance material to be fired longitudinally along said chamber;
a horizontal auxiliary surface disposed within a lower part of said chamber at a position spaced from the material being fired; and
means for displacing said auxiliary surface longitudinally along said chamber in a direction opposite to the direction of travel of the material being fired.

4,201,543

HOT BLAST STOVE BREAST WALL

Jack Hyde, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 26, 1978, Ser. No. 928,244
Int. Cl.² C21B *9/00*
U.S. Cl. 432—217 **10 Claims**



1. In a side combustion chamber hot blast stove, used in conjunction with a blast furnace in steel manufacturing operation, a breast wall comprising a masonary refractory construction of multiple vertical courses of refractory shapes arranged in a vertical arch, said refractory shapes having means for interlocking and being interlocked, along adjoining sides, in a complementary manner such as to prevent individual movement in relation to each other, each of said refractory shapes having a characteristic reverse key form, said refractory shapes being arranged in said breast wall, said reverse key form tending to converge toward that side of the said breast wall which forms the larger arc radius of said horizontal arch, said breast wall adjoining the shell wall of said hot blast stove at the points of intersection of the arc of said shell wall with the arc of said vertical arch.

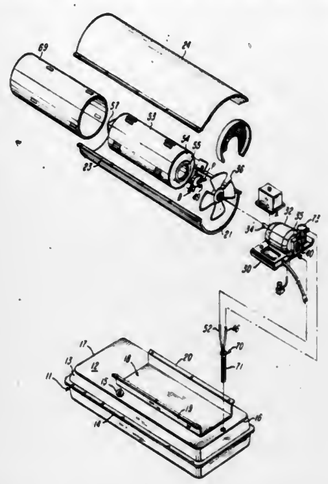
4,201,544

HIGH PRESSURE HEATER

Eugene C. Briggs, and William E. Gustafson, both of Bowling Green, Ky., assignors to Keohring Company, Milwaukee, Wis.

Filed Nov. 10, 1977, Ser. No. 850,088
Int. Cl.² F24H *3/04*; B01D *33/34*
U.S. Cl. 432—222 **14 Claims**

1. A portable space heater comprising a combustion chamber the peripheral wall of which is defined by a tubular shell having a front end and a rear end, having regard for its orientation in use, the rear end of which is adapted to pass a fuel-air mixture for combustion in said chamber and the front end of which is capped by means forming an afterburner section for said chamber which projects generally axially of and outwardly from said shell and forms therewith an outlet from said chamber, a tubular heat shield having a generally uniform cross section mounted about and in a generally concentric closely spaced relation to said shell to have one end, constituting its rear end, positioned between the ends of said shell, relatively adjacent but spaced forwardly of said rear end thereof, and its opposite end, constituting its front end, positioned beyond but relatively adjacent the projected extremity of the means defining said afterburner section of said chamber, means for directing air under pressure to said combustion chamber and to move air the length of the passage which is defined between said shell and said shield and beyond said front end of said shell along an axial length of the inner surface of said shield projected beyond the means defining the afterburner section of said combustion chamber, the construction and arrangement being such to produce beyond said front end of said shell and about the outwardly projected portion of said means defining said afterburner section and said chamber outlet a toroidal flow of air in heat exchanging relation to products of combustion adjacent said means defining said afterburner section moving in a pattern to moderate the temperature of said means defining said afterburner section to a level eliminating a potentially dangerous hot spot and balancing the temperature of exposed portions of the heater.

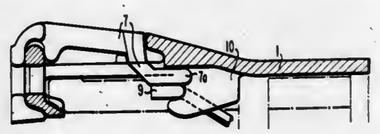


4,201,545

GRATE WITH REPLACEABLE WEAR ELEMENTS

Dieter Riechert, Lohhorn 5, Hamburg 54, Fed. Rep. of Germany (2000)

Continuation-in-part of Ser. No. 887,823, Mar. 17, 1978, abandoned. This application Jun. 1, 1978, Ser. No. 911,486
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 7710129[U]; Oct. 21, 1977, 7732560[U]
Int. Cl.² F27D *1/12*; F26B *9/00*
U.S. Cl. 432—239 **9 Claims**



1. A grate for cooling or combustion of granular materials, comprising:
a grate support;
a one-piece base plate carried by said support in generally a horizontal position and having a forward edge area and a rearward edge area with an air passage opening through the forward edge area;
said opening being bounded along its forward and rearward edges by longitudinally spaced, transversely extending, parallel guideways integral with said plate, there being a recess in said rear guideway, centrally thereof;
a plurality of elongate rod-like first wear elements each having forward and rearward ends and opposite side edges, the forward and rearward ends each formed with guideways complementally fitting the guideways of said plate, for guided transverse translation thereby;
each said first element being insertable through said central

recess, then translatable laterally, right and left, on and along the guideways of said plate, and said guideways restraining said wear elements against upward or downward displacement relative to said base plate;

a second elongate rod-like wear element having forward and rearward ends and opposite side edges, said second wear element insertable throught said central recess and into the space remaining after said first elements have been emplaced, said second wear element having a finger fixed therewith and projecting in the emplaced position, rearwardly below the lower surface of said plate; and means below the base plate releaseably engaging the distal end of said finger to hold the second element against vertical displacement relatively to said base plate.

4,201,546

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF ALKALI-CONTAINING PULVERIZED RAW MATERIAL TO BE USED IN THE MANUFACTURE OF CEMENT

Horst Herchenbach, Troisdorf; Hubert Ramesohl, Bergisch Gladbach; Rudolf Kuhs, Lohmar, and Kurt Schneider, Cologne, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 814,735, Jul. 11, 1977, Pat. No. 4,126,471. This application Sep. 14, 1978, Ser. No. 942,277

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630907

Int. Cl.[2] F27B *15/00, 7/02*

U.S. Cl. 432—106 **6 Claims**

1. An apparatus for the thermal treatment of alkali-containing raw material used in the manufacture of cement comprising:

a sintering furnace,

an exhaust gas conduit for hot gases leaving said sintering furnace,

a pair of vertically disposed multi-stage preheaters,

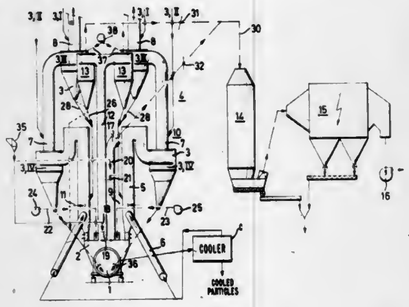
a feed pipe for introducing material into the lowermost of said multi-stage preheaters,

means for introducing a portion of the raw material into said feed pipe,

a cooler,

means for delivering substantially alkali-free exhaust gas from said cooler into said feed pipe,

a pair of heat exchangers connected to said exhaust gas conduit and receiving alkali-laden gases from said sintering furnace,



means for introducing another portion of the raw material into said exhaust gas conduit for delivery to said heat exchangers,

a dust collector,

means for delivering gases from said heat exchanger into said dust collector,

a by-pass means connecting said sintering furnace directly with said dust collector,

means for injecting still another portion of untreated raw material into said bypass means, and

means for injecting a coolant into said bypass means.

4,201,547

PROCESS FOR THE PREPARATION OF AZO DYESTUFFS ON FIBER MATERIALS CONSISTING OF, OR CONTAINING, CELLULOSE FIBERS

Erich Feess, Hofheim am Taunus; Hartmut Springer, Königstein; Paul Karacsonyi, Frankfurt am Main; Willy Gronen, Schöllkrippen, and Horst Curtius, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

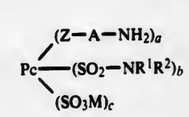
Filed Mar. 20, 1978, Ser. No. 888,030

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712367

Int. Cl.[2] D06P *1/12*

U.S. Cl. 8—543 **15 Claims**

1. A process for preparing a developing dyestuff on a fiber material consisting of, or containing, cellulose fibers, which comprises contacting the fiber material with an aqueous dispersion or an alkaline solution of an amine of the formula



wherein

Pc is metal-containing or metal-free phthalocyanine,

Z is a bridge member,

A is phenylene or naphthylene which is unsubstituted or substituted by halogen, lower alkyl, lower hydroxyalkyl, lower chloroalkyl, lower alkoxy, phenoxy, carbamoyl, N-(lower alkyl)-carbamoyl, N,N-di-(lower alkyl)-carbamoyl, sulfamoyl, N-(lower alkyl)-sulfamoyl, N,N-di(lower alkyl)-sulfamoyl, lower carboalkoxy, lower alkylsulfonyl, phenyl sulfonyl, trifluoromethyl, nitro, lower alkanoylamino, benzoylamino, sulfo, carboxy, cyano or a group of the formula

$$R^3—SO_2—NR^4—$$

in which R^3 is lower alkyl, phenyl or tolyl and R^4 is hydrogen or lower alkyl,

with the proviso that the diazotizable amino group must not be linked in ortho-position to a carboxylic or sulfonic amide group containing at least one hydrogen atom on the amide nitrogen,

R^1 and R^2, which are the same or different, are hydrogen, lower alkyl, lower hydroxyalkyl, (lower alkoxy)-lower alkyl, phenyl or naphthyl, which aromatic groups are unsubstituted or substituted by methyl, methoxy, carboxy, or lower alkylsulfonyl,

or R^1 and R^2 together with the nitrogen to which they are linked are piperidyl or morpholyl,

M is a cation,

a is a number of from 1 to 4, and

b and c are numbers of from zero to 3, with the proviso that the sum of a and b and c is at most 4,

and diazotizing the amine on the fiber material and coupling the diazotized amine with an azoic coupling component capable of producing a developing dyestuff.

4,201,548

METHOD FOR DETERMINING VOLATILE SUBSTANCES IN AN AQUEOUS SOLUTION AND APPARATUS THEREFOR

Katsuki Tamaoku; Keishi Nakahara; Hideo Sumiyoshi, and Masahiro Tachibana, all of Kumamoto, Japan, assignors to Dojindo Laboratory & Co., Ltd., Kamamoto, Japan

Filed Jan. 23, 1978, Ser. No. 871,580

Claims priority, application Japan, Jan. 25, 1977, 52-6389

Int. Cl.[2] G01N *33/00, 33/16*

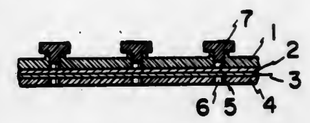
U.S. Cl. 23—230 R **10 Claims**

1. A rapid method for detecting and determining a volatile or a volatizable substance in a sample aqueous solution or liquid comprising the steps of:

coating or impregnating a transparent film carrier with a chromogenic reagent to form a transparent color developing film-like element;

contacting said color developing film-like element with a gas permeable membrane which is hydrophobic;

placing a sample within a sample hole in which a part of the sample hole is defined by a part of said gas permeable membrane;



closing the sample hole from the surrounding atmosphere;

separating the volatile component of the sample by passing the volatile component through the gas permeable membrane;

contacting said separated volatile component with said color developing film-like element; and

detecting and determining the volatile or volatizable substance by the degree of color change of the chromogenic reagent.

4,201,549

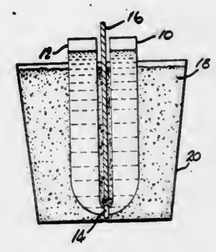
SOIL TESTING APPARATUS AND METHOD

Walter Tepe, Geisenheim, Fed. Rep. of Germany, and Adam J. J. Van Niewenhuizen, Pretoria North, South Africa, assignors to Dialytic Electrolysis Laboratorium (Proprietary) Limited, Johannesburg, South Africa

Filed Jun. 8, 1978, Ser. No. 913,640

Int. Cl.[2] G01N *33/24*

U.S. Cl. 23—230 R **8 Claims**



7. A method of testing a soil sample, which comprises

(i) taking at least two samples of the soil to be tested,

(ii) placing the samples in spearate containers,

(iii) adding a nutrient medium of known content to one of the samples,

(iv) inserting two dialytic tubes in each container, the said tubes being closed at their lower ends to permit the tubes to contain liquid and open at their upper ends, the lower ends of the tubes being positioned beneath the surface of the soil, one of said tubes containing a dialysable solution containing hydrogen ions and the other of the said tubes containing a dialysable solution containing carbonate ions,

(v) leaving the containers for a predetermined time for dialysis to take place, and

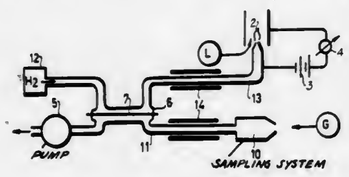
(vi) thereafter analysing the solutions according to established chemical methods to establish the presence and amount of nutrient ions in the soil after removing the solutions through the open ends of the tubes for analysis.

4,201,550

PROCESS AND APPARATUS FOR THE DETERMINATION OF THE TOTAL ORGANIC SUBSTANCE CONTENT OF GASES BY A FLAME IONIZATION DETECTOR

Zoltán Noszticzius, Karinthy Frigyes ut 18/b, 1111 Budapest; Gábor Patonay, Váli utca 4, 1117 Budapest; György Pálmai, Birö utca 17/b, 1122 Budapest; Károly Oláh, Vörösvári ut 39, 1035 Budapest; Gyula Gáspár, Gábor Áron utca 29, 1026 Budapest; György Székely, György Aladár utca 8, 1125 Budapest; Zsófia Vajta, Fenyö utca 8, 1016 Budapest; Károly Langer, Móricz Zsigmond utca 25, 2000 Szentendre, and Ferenc Szommer, Böszörmenyi ut 34/b, 1126 Budapest, all of Hungary

Filed Dec. 19, 1977, Ser. No. 861,968
Claims priority, application Hungary, Dec. 23, 1976, CE 1114
Int. Cl.[2] G01N *27/62*; B01D *13/00*
U.S. Cl. 23—232 E **6 Claims**



1. A process for the determination of the total content of organic substances in a gas to be analyzed by the flame ionization method, comprising the steps of: allowing the components of the gas to diffuse through a pore-free polymeric membrane having a permeability coefficient that exceeds 10^{-7} $Ncm^3.cm/sec.cm^2.Hgcm$. related to the total organic substance contained in the gas; igniting another gas that contains hydrogen; leading components of the gas being analyzed into the flame of the other gas; passing the other gas along one side of the membrane at a flow rate of maximum 25 $cm^3/min.$; simultaneously pumping the gas being analyzed on the other side of the membrane at a volumetric flow of at least tenfold of that of the other gas; wherein the partial pressures of the gas being analyzed and of the other gas are nearly the same; diffusing the organic substances to be determined through the membrane; subsequently leading the organic substances that have diffused through the membrane, in admixture with the other gas, into an ionization detector that incorporates the flame; and determining the total organic substances therein.

4,201,551

EMBRITTLEMENT ADDITIVE FOR TREATING ORGANIC MATERIALS

Norman A. Lyshkow, Brooklyn, N.Y., and David F. Lewis, Monroe, Conn., assignors to Combustion Equipment Associates, Inc., New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,030
Int. Cl.[2] C10L *9/02, 5/00*
U.S. Cl. 44—1 D **29 Claims**

1. A process for the treatment of the organic fraction of solid waste and cellulosic material to form a powdery material comprising treating the material with acid in the presence of an effective amount of quaternary ammonium compound to form an embrittled material which is readily reducible to finely divided form.

2. The process of claim 1, wherein the treated material is municipal solid waste.

23. A process for the treatment of the organic fraction of solid waste and cellulosic material to form a powdery material comprising treating the material with an embrittlement reagent comprising sulfuric acid and a dialkyldimethylammonium chloride, the acid present in the range between about 0.1 and 5 percent by weight and the dialkyldimethylammonium chloride present in an active concentration range is between about 0.000075 and 0.2 weight percent, the weight percent based on the dry weight of the material to be treated.

4,201,552

COAL-OIL SLURRY COMPOSITIONS

Robert L. Rowell, Amherst, and Stephen R. Vasconcellos, North Amherst, both of Mass., assignors to New England Power Service Company, Westborough, Mass.

Filed Jul. 20, 1978, Ser. No. 926,552
Int. Cl.[2] C10L *1/32*
U.S. Cl. 44—51 **8 Claims**

1. A coal-oil slurry which contains a cationic stabilizer having the group, $>N—CH_2—CH_2—O—$ in an amount effective to form a stable slurry containing up to about 50 weight percent coal; said stabilizer being selected from the group consisting of a tertiary amine and a quaternary ammonium salt.

4,201,553

METHOD OF IMPROVING COMBUSTION OF FUELS AND NOVEL FUEL COMPOSITIONS

Hans Osborg, 80 Longview Rd., Port Washington, N.Y. 11050

Continuation-in-part of Ser. No. 696,530, Jun. 16, 1976, Pat. No. 4,081,252. This application Mar. 8, 1978, Ser. No. 884,619
Int. Cl.[2] C10L *1/12, 7/02*
U.S. Cl. 44—52 **8 Claims**

1. A method of improving the combustion of ammonia, which comprises; mixing in said ammonia from 0.5 to 15 percent by weight of a hydrogen carrier; and combusting the resulting mixture; said hydrogen carrier being a compound selected from the group consisting of a boron hydride, a borohydride, a hydrazine and mixtures thereof, said compound having a molecular weight of from 8 to about 125 and a heat of formation of from about 10 kcal, to about 100 kcal. per mole; provided that the compound selected is non-reactive with the ammonia it is mixed in at ambient temperatures, does not lower the shelf like of the mixture, does not deteriorate below the ignition temperature of said mixture to release energy and at the point of ignition, releases energy and hydrogen, said mixture being non-hypergolic.

5. A method of improving the combustion of an organic amine having a molecular weight of from about 31 to about 110, which comprises; mixing in said amine from 0.5 to 15 percent by weight of a hydrogen carrier; and combusting the resulting mixture; said hydrogen carrier being a compound of hydrogen and at least one element selected from the group consisting of sodium, potassium, magnesium and boron, said compound having a molecular weight of from 8 to about 125, a heat of formation of from about 10 kcal. to about 100 kcal. per mole; provided that the compound selected is non-reactive with the amine it is mixed in at ambient temperatures, does not lower the shelf life of the mixture, does not deteriorate below the ignition temperature of said mixture to release energy and at the point of ignition, releases energy and hydrogen, said mixture being non-hypergolic.

4,201,554

FUEL ADDITIVE CONTAINING INNER QUATERNARY AMMONIUM SALT

Paul F. Vartanian, Wappingers Falls, and Joseph B. Biasotti, Lagrangeville, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,544
Int. Cl.[2] C10L *1/22*
U.S. Cl. 44—62 **4 Claims**

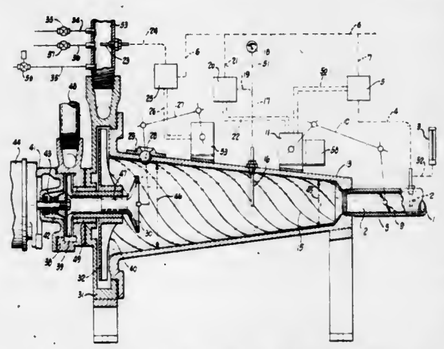
1. A motor fuel composition comprising a gasoline base fuel and from 0.005 to 1 weight percent of a carburetor detergent reaction product, said carburetor detergent reaction product being obtained by preparing an initial mixture consisting of from 5 to 30 weight percent of butyl methacrylate, 50 to 81 weight percent of a higher ester of methacrylic acid consisting of between 10 and 25% by weight of C_{16}–C_{20} esters of methacrylic acid and 40 to 60 weight percent of a C_{12}–C_{15} aliphatic ester of methacrylic acid, and from 4 to 20 weight percent of a nitrogen containing compound selected from the group consisting of 4-vinylpyridine and dimethylaminoethyl methacrylate and reacting said mixture in the presence of a polymerization catalyst and polymerization initiator to produce a first polymerization reaction product, mixing said first polymerization reaction product with an unsaturated acid selected from the group consisting of maleic acid and acrylic acid to form a second reaction mixture, and reacting said second reaction mixture at a temperature ranging from 150° to 200° C. to form said carburetor detergent reaction product.

4,201,555

METHOD AND APPARATUS FOR DEGASIFICATION OF LIQUID BY INDUCED VORTEXING

Joseph Tkach, 6481 Glenwillow Dr., North Royalton, Ohio 44133

Continuation of Ser. No. 755,460, Dec. 30, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,184
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—20 **25 Claims**



1. In a method of degasifying liquid, the degasification proceeding to a desired level, by inducing an imbalance of saturation in favor of the vapor state of the liquid, the steps comprising:
(a) defining a body of liquid to be degasified, said body being generally circular in cross sectional shape,
(b) mechanically imparting a dynamic force to the body of liquid causing it to be transported between desired points,
(c) applying the dynamic force by a rotary driven impeller in such manner that imparts acceleration and a rotary motion to the liquid in transport, the rotary motion and acceleration extending over the entire length of the body of liquid,
(d) withdrawing the liquid in transport and replacing it with additional quantities of the liquid at rates that maintain a substantially constant flow of liquid to be degasified,
(e) variably restricting the flow of replacement liquid to an extent that the total dynamic force applied to cause the transport of the liquid exceeds the force required to transport the liquid,
(f) limiting the dynamic force so as not to overcome the inherent cohesive property of the liquid in process, and
(g) applying the excess of the total dynamic force in a manner that creates an unoccupied space within the body of liquid in transport.

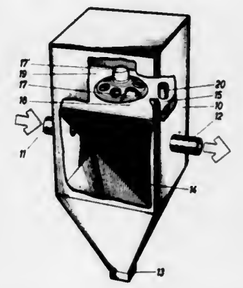
24. Apparatus for degasifying liquid through an induced imbalance of saturation in favor of the vapor state of the liquid, comprising:
(a) means including a tubular passage with an inlet end and an outlet end to define a body of liquid to be degasified,
(b) means including an impeller to impart a dynamic force to the body of liquid sufficient to accelerate the liquid in its flow between the inlet end and the outlet end and transport it between desired points and to impart a rotary motion to the liquid in transport, while avoiding overcoming the inherent cohesive property of the liquid in process,
(c) means to withdraw the liquid in transport,
(d) means to replace the liquid with additional quantities at rates that maintain a substantially constant flow of liquid to be degasified, and
(e) means variably restricting the flow of liquid to the body of liquid to an extent that the total dynamic force available from the impeller means to transport the liquid exceeds the force required for transport.

4,201,556

DEVICE FOR CLEANING FABRIC FILTERS

Mats A. Olsson, Björkrisvägen 15, S-161 39 Bromma, Sweden

Filed Apr. 7, 1978, Ser. No. 894,392
Int. Cl.[2] B01D *46/10*
U.S. Cl. 55—292 **5 Claims**



1. A device for cleaning a filter by vibrations caused by sound waves generated at a predetermined frequency, comprising:
(a) a first chamber within which said filter is disposed;
(b) a closed second chamber having at least one portion forming a resonator tuned to said predetermined frequency;
(c) a partition wall, one side of which forms a boundary of said at least one portion;
(d) sound wave generating means disposed in said partition wall for generating sound waves at said predetermined frequency on opposite sides of said partition wall; and
(e) means communicating said at least one portion with said first chamber.

4,201,557

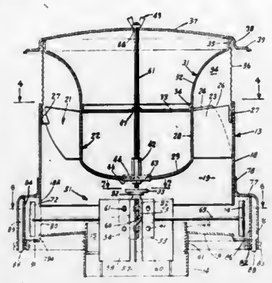
PRECLEANER

Ross K. Petersen, 4701 Humboldt Ave. North, Minneapolis, Minn. 55430

Continuation of Ser. No. 749,731, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 648,531, Jan. 12, 1976, abandoned. This application Oct. 24, 1978, Ser. No. 954,226
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—327 **47 Claims**

38. An apparatus for separating particles from gas carrying the particles comprising: a housing having a separation chamber, said housing having an inside wall surface surrounding said chamber and an adjacent gas and particle inlet opening, vane means mounted on said wall surface at the inlet opening and having a plurality of vanes, said vanes being generally similarly inclined so as to induce swirling motion of gas and particles carried thereby in a circular direction into said separation chamber whereby the particles move outwardly by centrifugal force, means attached to said housing adjacent said separation chamber and having portions spaced outwardly therefrom to define an annular discharge chamber in communication with said separation chamber, said discharge chamber having discharge openings for gas and particles, means defin-

ing a clean gas outlet passage disposed centrally of said means attached to said housing and extending therethrough communicating with said separation chamber, spinner means, means mounting said spinner means in association with the housing for free rotation in said separation chamber, said spinner means including means adjacent said gas outlet passage whereby



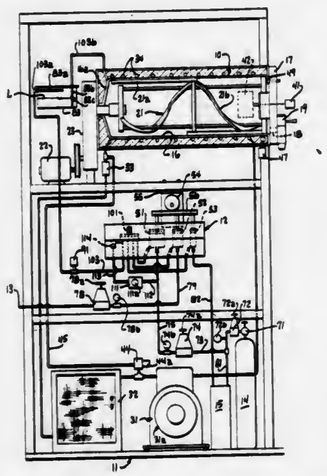
swirling air in said separation chamber and gas outlet passage solely effects rotation thereof, said spinner means further including members terminating in paddles located in said discharge chamber whereby rotation of said spinner means causes said paddles to rotate in said discharge chamber and force particles and gas therefrom and outwardly through said discharge openings.

4,201,558

METHOD AND APPARATUS FOR PREPARING AND DISPENSING A SEMI-FROZEN PRODUCT

Stephen W. Schwitters, Rockford, and Preston L. Aylesworth, Rockton, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Dec. 1, 1978, Ser. No. 965,607
Int. Cl.[2] F25C *1/18*
U.S. Cl. 62—70 **25 Claims**



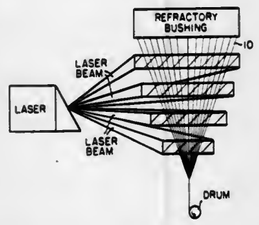
1. In an apparatus for preparing and dispensing a semi-frozen food product containing liquid and gaseous product ingredients comprising, an enclosed freezing chamber adapted to contain liquid and gaseous product ingredients under super-atmospheric pressure and having a dispensing outlet, means in the freezing chamber for stirring the liquid and gaseous product ingredients, and refrigerating means for refrigerating the freezing chamber sufficient to freeze a quantity of the mixed gaseous and liquid product ingredients in the freezing chamber, a volumetric gas pump means including a gas pump chamber having an inlet and an outlet and a displacement means operable when driven to pump gas at a preselected rate from the inlet to the outlet, volumetric liquid pump means including at least one liquid pump chamber having an inlet and an outlet and a displacement means operable when driven to pump liquid at a preselected rate from the inlet to the outlet, gas supply means for connecting the inlet of the gas pump chamber to a source of pressurized gas product ingredient, liquid product ingredient supply means for connecting the inlet of said one liquid pump chamber to a source of liquid product ingredient, delivery means for connecting the outlets of said gas and liquid pump chambers to said freezing chamber, motor operated drive means operative when driven to drive the displacement means in the gas and liquid pump means to pump gaseous product ingredient and liquid product ingredient in predetermined proportions to the freezing chamber in opposition to the pressure in said freezing chamber, control means for controlling operation of the motor operated drive means to start the same when the pressure in the freezing chamber is below a predetermined super-atmospheric pressure range and to stop the same when the pressure in the freezing chamber is above said predetermined super-atmospheric pressure range, the improvement comprising said gas supply means including means for regulating the pressure on the gaseous product ingredient supplied to the inlet of the gas pump chamber to a pressure above atmospheric pressure and below said predetermined super-atmospheric pressure range, said liquid supply means including means for maintaining the pressure on the liquid product ingredient supplied to the inlet of said one liquid pump chamber at a pressure below said predetermined super-atmospheric pressure range, and hold-back valve means in the delivery means for controlling flow from the outlet of gas pump chamber to the freezing chamber and operative to inhibit flow from gas pump chamber until the pressure at the outlet of the gas pump chamber exceeds a preselected minimum delivery pressure which is higher than the pressure at the inlet to the gas pump chamber and below said predetermined super-atmospheric pressure range.

4,201,559

METHOD OF PRODUCING A GLASS-CERAMIC

Hermann L. Rittler, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,506
Int. Cl.[2] C03B *37/00, 32/00;* C08L *91/00*
U.S. Cl. 65—2 **7 Claims**



1. In a method for converting a glass body having at least one dimension less than about 250 microns to a glass-ceramic body having a fine-grained polycrystalline phase generally consisting in the steps of:
(a) melting a glass-forming batch of a desired composition;
(b) simultaneously cooling said melt to a temperature at least within the transformation range thereof and shaping a glass body therefrom; and then
(c) heat treating said glass body within a range of temperatures for a time sufficient to cause crystallization in situ of a fine-grained polycrystalline phase therein;
the improvement which consists in said heat treatment of step (c) consisting of a plurality of heating and cooling cycles wherein each cycle consists of heating said body to a temperature within said glass crystallization range and thereafter cooling said body to a temperature below that range.

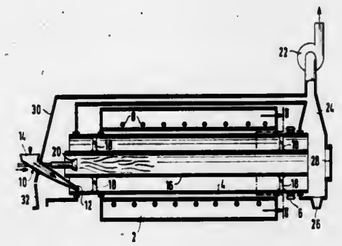
5. A method for producing a glass-ceramic body having at least one dimension less than about 250 microns and containing a fine-grained polycrystalline phase which consists in the steps of:
(a) melting a glass-forming batch of a desired composition;
(b) simultaneously cooling said melt to a temperature at least within the transformation range thereof and shaping a glass body therefrom; and thereafter
(c) intermittently heating and cooling said glass body by subjecting said glass body to a plurality of heating and cooling cycles, each cycle consisting of heating said body to a temperature within a range wherein crystallization in situ takes place and then cooling said body to a temperature below that range, for a time sufficient to cause crystallization in situ of fine-grained polycrystalline phase therein.

4,201,560

MANUFACTURE OF SPHERICAL BALLS

Jean Dewitte, Boulogne, and Pierre Aymard, Paris, both of France, assignors to Truth Incorporated, Owatonna, Minn.

Filed Mar. 26, 1979, Ser. No. 24,090
Claims priority, application France, Mar. 31, 1978, 78 09544
Int. Cl.[2] C03B *19/10*
U.S. Cl. 65—21 **11 Claims**



1. Process of making balls from particulate vitreous material comprising:
(a) mixing carbon in a free state and a substantial portion of a carbonated salt, said carbonated salt capable of decomposing under heat in the presence of carbon at a temperature, for said particulate vitreous material, corresponding to a viscosity of from about 10^6 to about $10^{3.5}$ poises, and
(b) both mixing and agitating both said particulate vitreous material and mixture of (a) at said temperature whereby said particulate vitreous material takes a spherical shape by action of surface tension.

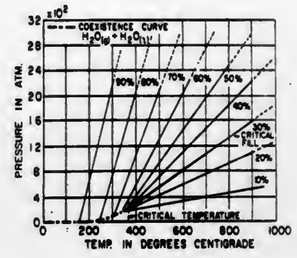
4,201,561

METHOD FOR HYDRATING SILICATE GLASSES

Joseph E. Pierson, and Walter H. Tarcza, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 445,454, Feb. 25, 1974, abandoned. This application Aug. 8, 1977, Ser. No. 822,877
Int. Cl.[2] C03C *23/00*
U.S. Cl. 65—30 R **4 Claims**

1. A single step method for making a glass body exhibiting thermoplastic properties which comprises subjecting an anhydrous glass body having a thickness dimension no greater than 15 mm. consisting essentially, in mole percent on the oxide basis, of about 3–25% Na_2O and/or K_2O and 50–95% SiO_2, the sum of those components constituting at least 55% of the total composition, to a H_2O-containing gaseous environment having a relative humidity of at least 5%, but less than 50%, at a temperature in excess of 225° C. for a period of time sufficient to develop at least a surface portion having about 1–12% by weight of water absorbed therein effective to impart thermoplastic properties and good chemical properties thereto which does not give rise to foaming and cracking.

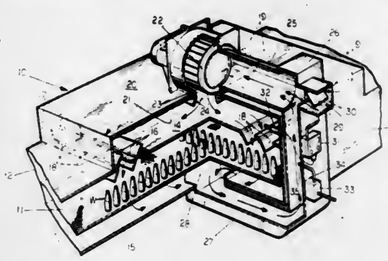


4,201,562

METHOD FOR COATING GLASSWARE

William E. Hofmann, and Alton W. Long, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 763,768, Jan. 31, 1977, Pat. No. 4,150,964. This application Aug. 23, 1978, Ser. No. 936,287
Int. Cl.[2] C03C *17/28*
U.S. Cl. 65—60 B **6 Claims**



1. The method of applying a lubricious coating to glass containers in the equalizing cooling section of an annealing lehr comprising the steps of:
drawing ambient air from outside the lehr;
circulating said air in a direction that is generally normal to the horizontal plane of the lehr mat, so that the air impinges on the containers on the lehr mat;
generating a mist of an organic, non-metallic coating material selected from the group consisting of polyolefins, fatty acids and their derivatives; and
introducing said mist into the circulating air in advance of its impingement on said containers.

4,201,563

POSITION SELECTABLE GLASS SURFACE TEMPERATURE SCANNER

Jack A. Bricker, Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 5, 1978, Ser. No. 912,666
Int. Cl.[2] C03B *29/04*
U.S. Cl. 65—162 **6 Claims**

1. Apparatus for heating a series of glass sheets moving along a longitudinal path and monitoring and regulating the temperature thereof at a plurality of positions spaced from one another and aligned in a direction transverse to the direction of movement of said sheets so as to regulate the temperature at each of said positions to provide an average temperature at each of said positions substantially the same and produce a

substantially zero temperature profile across said sheets, said apparatus comprising:

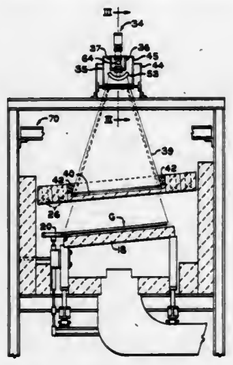
a furnace enclosure formed by refractory walls,

means for conveying a series of glass sheets along a longitudinal path through the furnace with the glass sheets supported in a generally horizontal orientation,

radiant heating means for supplying heat to said sheets,

means for regulating the heat applied to said sheets by said radiant heating means and quenching means designed to temper the heated glass sheets leaving the furnace, said heat regulating means comprising;

a narrow chamber positioned in said furnace above said moving glass sheets, said chamber having an opening in the lower-most edge thereof extending transversely with respect to the path of movement of said glass sheets, said chamber being formed by closely-space sidewalls and converging end walls which extend through the top of the furnace to a location thereabove and terminate in an opening in the uppermost end of said chamber;



a closed housing mounted over said opening in the upper end of said chamber,

a scanning radiation pyrometer pivotally mounted in said closed housing,

means for oscillating said pivotally mounted pyrometer in a direction transverse to the direction of movement of said sheets,

means to record the pyrometer temperature readings at a plurality of spaced positions as said pyrometer oscilates in a direction transverse to the direction of movement of said sheets,

means to regulate said heating means to maintain the temperature at each of the points scanned substantially the same so as to produce substantially a zero temperature profile across said sheets, and

means for introducing air at a positive pressure into said housing and said chamber sufficient to prevent the flow of furnace gas from said furnace enclosure into said chamber and said housing.

4,201,564

ORGANIC FERTILIZER

Gabriel P. Kauzal, P.O. Box 1, Potts Point, Sydney, Australia (2011)

Filed Nov. 15, 1977, Ser. No. 851,742
Int. Cl.² C05B 17/00; C05F 3/00
U.S. Cl. 71—20 **7 Claims**

1. A method for preparing organic fertilizer containing sufficient amounts of potassium, nitrogen and phosphorous to stimulate and promote the growth of plant life consisting essentially of the steps of substantially completely digesting organic material of animal origin with an acidic aqueous solution of an enzyme, substantially neutralizing the digested product with alkaline material, admixing the neutralized, digested product with a preservative against decomposition thereof and adding thereto sufficient quantities of a member selected from the group consisting of phosphates, sulfates, potassium, and mixtures thereof to provide the requisite amounts of plant growth stimulants.

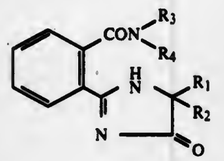
4,201,565

IMIDAZOLINYL BENZAMIDES AS PLANT GROWTH REGULANTS

Thomas D. O'Neal, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 9, 1978, Ser. No. 868,090
Int. Cl.² A01N 5/00
U.S. Cl. 71—76 **10 Claims**

1. A method for reducing the relative stem growth of plants comprising: applying to said plants a plant growth regulating amount of a compound having the formula:



wherein R_1 is alkyl C_1–C_4; R_2 is alkyl C_1–C_6, cycloalkyl C_3–C_6, alkenyl C_2–C_4, phenyl, halophenyl or benzyl; and when R_1 and R_2 are taken together with the carbon to which they are attached they may form cycloalkyl C_3–C_6 optionally substituted with methyl; R_3 and R_4 each individually represent hydrogen, alkyl C_1–C_4, alkenyl C_3–C_5, alkynyl C_3–C_5, or benzyl; and when R_1 and R_2 represent different substituents, the optical isomers thereof.

4,201,566

METHOD OF INCREASING EXTRACTABLE OLEORESINOUS AND TALL OIL MATERIAL FROM PINE WOOD

Claud L. Brown, Rte. 2, 98 Hodges Mill Rd., Watkinsville, Ga. 30677

Filed Aug. 4, 1978, Ser. No. 931,169
Int. Cl.² A01N 5/00
U.S. Cl. 71—92 **12 Claims**

1. Method of chemically increasing the amount of extractable oleoresinous material, lipids and tall oils from living portions of pine trees comprising the steps of:

treating severed portions of living pine wood with a dilute solution of a substituted bipyridylium salt such that said solution penetrates said severed portions to reach living cells of said severed portions; and

aerobically storing said treated wood for a period sufficient to permit the amount of oleoresinous material, lipids and tall oils to increase therein.

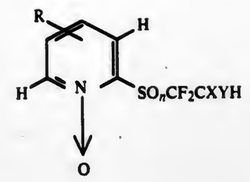
4,201,567

HERBICIDAL PYRIDINE, 1-OXIDES

Kyu T. Lee, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 19, 1979, Ser. No. 4,918
Int. Cl.² C07D 213/26; A01N 9/22
U.S. Cl. 71—94 **18 Claims**

1. A compound of the formula



wherein

R is hydrogen, fluorine, bromine, chlorine, alkyl of 1 to 4 carbon atoms, CF_3, OCH_3 or OCF_2CXYH;

X is fluorine, bromine or chlorine;

Y is fluorine, bromine or chlorine; and n is 0, 1 or 2, provided that when n is 0 or 2, then R is hydrogen or methyl, X is fluorine or chlorine and Y is fluorine.

13. A method for controlling weeds which comprises applying to said weeds a herbicidally effective amount of a compound of claim 1.

4,201,568

2-(1-ETHYLPROPYLAMINO)-3-CYANO-4-METHOXYMETHYL-5-NITRO-6-METHYLPYRIDINE

Benjamin A. Belkind, Skokie, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 24,925
Int. Cl.² A01N 9/22; C07D 213/57
U.S. Cl. 71—94 **3 Claims**

1. The compound 2-(1-ethylpropylamino)-3-cyano-4-methoxymethyl-5-nitro-6-methylpyridine.

3. A method of controlling weeds which comprises contacting the weed with a herbicidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to weeds, the compound of claim 1.

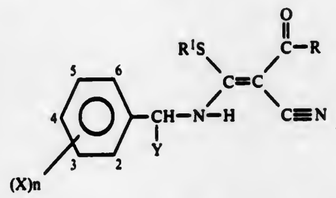
4,201,569

2,3-DISUBSTITUTED ARALKYLAMINOACRYLONITRILES AND USE AS HERBICIDES

Loren W. Hedrich, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 838,523, Oct. 3, 1977, Pat. No. 4,154,599. This application Feb. 21, 1979, Ser. No. 13,779
Int. Cl.² A01N 9/20; C07C 121/78
U.S. Cl. 71—98 **29 Claims**

1. A compound of the formula



in which R is C_1 to C_4 straight chain saturated or unsaturated alkoxy, amino, dimethylamino or straight chain C_1 to C_3 monoalkylamino, R^1 is methyl or ethyl, X is nitro, methoxy, methyl, ethyl, Br, Cl, or F in which n is an integer from 0 to 2, at least one of the 2 and 6 positions is unsubstituted and Y is H or a C_1 to C_5 branched or unbranched, saturated or unsaturated alkyl or cycloalkyl substitutent group.

4,201,570

PROCESS FOR QUENCHING OF FINE PARTICULATES

Steven J. Fitch, Baltimore, and Charles A. Tanner, Severna Park, both of Md., assignors to SCM Corporation, Cleveland, Ohio

Filed Dec. 10, 1976, Ser. No. 749,235
Int. Cl.² C22B 1/14
U.S. Cl. 75—1 T **8 Claims**

1. A process for quenching and agglomerating a mass of fine particulate material containing hydrolyzable metal halides which comprises:

hydrating said mass sufficiently for suppressing dusting and fuming at ambient transport conditions without leaving appreciable aqueous liquid in the resulting hydrated mass;

subjecting the hydrating mass to agglomeration as it generates heat and evolves vapor;

withdrawing said vapor; and

collecting as product the residual agglomerates.

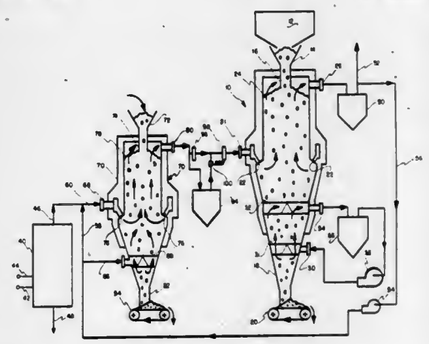
2. The process of claim 1 wherein the mass of fine particulates is obtained from chlorination of titaniferous materials in the presence of carbon.

4,201,571

METHOD FOR THE DIRECT REDUCTION OF IRON AND PRODUCTION OF FUEL GAS USING GAS FROM COAL

John C. Scarlett, Toledo, Ohio, and Donald Beggs, Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 933,690, Aug. 15, 1978. This application Dec. 7, 1978, Ser. No. 967,348
Int. Cl.² C21B 13/02
U.S. Cl. 75—35 **6 Claims**



1. A method for producing fuel gas and a metallized iron product comprising:

a. gasifying solid fossil fuel to produce a hot gasifier gas;

b. tempering said hot gasifier gas with cool cleaned spent top gas from a direct reduction furnace to form a hot gas mixture including oxidants CO_2 and H_2O;

c. reacting said hot gas mixture with carbon to upgrade the quality of the mixture by converting a portion of the oxidants CO_2 and H_2O to reductants CO and H_2, reacting said mixture with a sulfur acceptor to desulfurize the mixture, and forming a hot reducing gas;

d. cooling a portion of said hot reducing gas;

e. mixing said cooled portion with the hot portion of said reducing gas to form a tempered hot reducing gas in response to a temperature measurement taken at the reducing gas inlet of a direct reduction furnace;

f. introducing the tempered hot reducing gas into a direct reduction furnace, reducing the iron oxide therein to a highly metallized product, and forming a carbon dioxide containing top gas;

g. removing said top gas from the direct reduction furnace and cooling and scrubbing said top gas;

h. removing the major portion of said cooled, scrubbed top gas for use as a fuel gas;

i. and utilizing a minor portion of said cooled, scrubbed top gas as a tempering gas.

4,201,572

METHOD FOR INCREASING THE SCRAP MELTING CAPABILITY OF BOTTOM BLOWN PROCESSES

Frank Slamar, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1978, Ser. No. 930,441

Int. Cl.² C21C 5/34

U.S. Cl. 75—60 **10 Claims**

1. A non-rotary furnace process for the manufacture of refined molten metals from a charge comprising carbon-containing molten metal and solid metal scrap, wherein at least one primary stream of free-oxygen containing refining gas is injected into the vessel below the surface of a molten metal bath to be refined therein, and at least one secondary stream of a free-oxygen containing gas is injected into the vessel above the bath surface so as to combust within the vessel at least a portion of the carbon monoxide evolved from the bath during the refining thereof and to impart to the bath thermal energy released by such combustion,

the improvement for enhancing the scrap-melting capability of the process within the operating temperature tolerance range of the refractory lining which comprises conducting the refining and scrap melting in a bath having a surface area, A, greater than that defined by the equation:

$$A=9+0.11T$$

where A is the top surface area, in square meters, of the quiescent molten metal bath, and T is the mass, in metric tons, of the bath.

4,201,573

RECOVERY OF METAL VALUES FROM A SOLUTION BY MEANS OF CEMENTATION

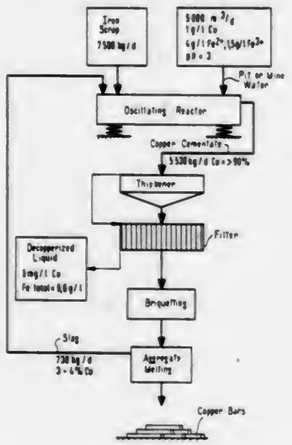
Reinhard Nissen, Cologne, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,187

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809702

Int. Cl.² C22B 15/12

U.S. Cl. 75—109 **5 Claims**



1. In a method for the recovery of metal values by cementation wherein the metal to be recovered is precipitated by means of a cementation medium in an oscillating reactor, the resulting cementate is converted by pyrometallurgical methods into molten metal and slag, the improvement which comprises:

conveying a portion of the slag in particulate form back into said oscillation reactor to serve as an agitation medium.

4,201,574

LOW CARBON NI-CR AUSTENITIC STEEL HAVING AN IMPROVED RESISTANCE TO STRESS CORROSION CRACKING

Masamichi Kowaka, and Hisao Fujikawa, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 21, 1978, Ser. No. 879,388

Claims priority, application Japan, Mar. 2, 1977, 52-23180

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.² C22C 38/02, 38/42, 38/46

U.S. Cl. 75—122 **8 Claims**

1. A low carbon Ni—Cr austenitic steel having an improved resistance to stress corrosion cracking, which consists essentially of less than 0.029% by weight of carbon, 1.5 to 4.0% by weight of silicon, 0.1 to 3.0% by weight of manganese, 23 to 45% by weight of nickel, 20 to 35% by weight of chromium, 0.5 to 4.0% by weight of vanadium, and at least one element selected from the group consisting of titanium in an amount of at least 5 times the carbon content and up to 1% by weight of the total composition, niobium in an amount of at least 7 times the carbon content and up to 1% by weight of the total composition, zirconium in an amount of at least 7 times the carbon content and up to 1% by weight of the total composition, tantalum in an amount of at least 7 times the carbon content and up to 2% by weight of the total composition and tungsten in an amount of at least 5 times the carbon content and up to 2% by weight of the total composition, the total amount of any combination of the group consisting of titanium, niobium, zirconium, tantalum and tungsten being in the range of at least 5 times the carbon content and up to 2% by weight of the total composition, with the balance being essentially iron.

4,201,575

AUSTENITIC STAINLESS CORROSION-RESISTANT ALLOY

Michael Henthorne, Los Altos, Calif., and Terry DeBold, Reading, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed May 18, 1979, Ser. No. 40,179

Int. Cl.² C22C 30/00

U.S. Cl. 75—122 **19 Claims**

1. An austenitic stainless corrosion resistant alloy having good resistance to pitting and crevice corrosion in chloride bearing media combined with resistance to corrosion in oxidizing media consisting essentially in weight percent of about

C	0.06 Max.
Mn	1.00 Max.
Si	0.50 Max.
P	0.03 Max.
S	0.03 Max.
Cr	22–26
Ni	32.5–37
Mo	5–6.7
Cu	1.0–4
B	0.005 Max.
Nb	1 Max.
N	0.4 Max.
Ce + La	0.4 Max.

the amount of nitrogen being not greater than that which can be retained in solution, the amount of cerium plus lanthanum being the amount added as misch metal, and the balance essentially iron.

4,201,576

METHOD FOR REFINING FERROPHOSPHORUS FOR USE IN THE PRODUCTION OF PHOSPHORUS-CONTAINING STEEL

George D. Haley, 12 Imperial Dr., Greenville, Pa. 16125

Filed Aug. 17, 1978, Ser. No. 934,665

Int. Cl.² C22C 33/00, 39/54

U.S. Cl. 75—132 **6 Claims**

1. A method for producing phosphorus-containing steels from high silicon ferrophosphorus which comprises pulverizing ferrophosphorus having an elemental silicon content in excess of 1 percent by weight to enable said pulverized ferrophosphorus to pass a ¼ inch sieve, mixing a liquid oxidizing agent with said pulverized ferrophosphorus whereby substantially all of said elemental silicon will be oxidized to silica, drying the resulting product, and adding said resulting product with the silicon oxidized to silica to molten steel to phosphorize the same.

4,201,577

CERAMIC SUBSTRATE ALLOY

Clyde E. Ingersoll, Tonawanda, and Dwarika P. Agarwall, Williamsville, both of N.Y., assignors to Williams Gold Refining Company Incorporated, Buffalo, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,563

Int. Cl.² C22C 5/02

U.S. Cl. 75—134 N **7 Claims**

1. An alloy suitable to have porcelain fired thereon consisting essentially of the following constituents in the indicated percentages by weight: silver 0–11.0%, aluminum 0–1.0%, gold 31.8–63.16%, boron 0–0.13%, calcium 0–0.12%, copper 0–5.0%, iron 0–0.75%, gallium 0–5.0%, indium 0.5–10.55%, lithium 0–0.04%, nickel 0–2.0%, palladium 28.96–57.97%, rhenium 0.025–0.25%, ruthenium 0.025–1.8%, silicon 0–0.0125%, tin 0–7.5%, titanium 0–0.06%, vanadium 0–0.12% and zinc 0–1.98%, with the proviso that both said rhenium and said ruthenium are present in the alloy composition, and the total of said rhenium and said ruthenium is at least 0.05% and the total of said gallium, indium and tin is at least 3.5%.

4,201,578

BLOCKED COMPETING DEVELOPERS FOR COLOR TRANSFER

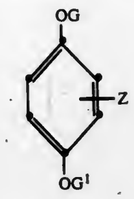
Thomas I. Abbott, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 848,061, Nov. 3, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,831

Int. Cl.² G03C 5/54, 1/40, 7/00, 17/06

U.S. Cl. 430—222 **25 Claims**

17. In a process for producing a photographic transfer image in color from an imagewise-exposed photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material, said process comprising treating said element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of said exposed silver halide emulsion layer, said processing composition contacting said emulsion layer prior to contacting a neutralizing layer; whereby an imagewise distribution of dye image-providing material is formed as a function of development and at least a portion of it diffuses to a dye image-receiving layer to provide said transfer image, whereby a timing layer associated with said neutralizing layer is permeated by said alkaline processing composition after a predetermined time, said timing layer being disposed between said neutralizing layer and said photosensitive silver halide emulsion layer so that said processing composition must first permeate said timing layer before contacting said neutralizing layer, said neutralizing layer being located on the side of said timing layer which is farthest from said dye image-receiving layer; whereby said alkaline processing composition is neutralized by means of said neutralizing layer associated with said photographic element after said predetermined time; the improvement wherein a hydroquinone ester is employed either in said timing layer or in a layer adjacent thereto, said adjacent layer being so located with respect to said timing layer that said processing composition must first permeate said timing layer before contacting said adjacent layer, said hydroquinone ester having the following formula:



wherein:

G is hydrogen, COR or SO_2R;

G^1 is COR or SO_2R;

R is an alkyl group having from 1 to about 20 carbon atoms or an aryl group having from 6 to about 12 carbon atoms; and

Z is hydrogen, an alkyl group having from 1 to about 6 carbon atoms, an alkoxy group having from 1 to about 6 carbon atoms, or an aryl group having from about 6 to about 8 carbon atoms;

and wherein said timing layer has an activation energy of penetration of the layer by an aqueous alkaline solution of greater than 18 kcal/mole.

4,201,579

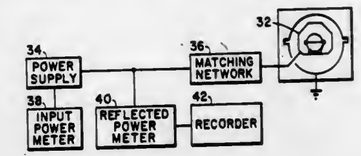
METHOD FOR REMOVING PHOTORESIST BY HYDROGEN PLASMA

Frederick J. Robinson, Scottsdale, and Clarence J. Tracy, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 5, 1978, Ser. No. 912,615

Int. Cl.² G03C 5/00; C23F 1/02

U.S. Cl. 430—323 **7 Claims**



1. A method for removing a photoresist coating from a substrate which comprises the steps of: placing said substrate coated with said photoresist in a metal holder; placing said metal holder and said substrate in a plasma reactor, said metal holder in electrical contact with an electrode of said plasma reactor; heating said substrate; injecting a hydrogen bearing gas into said plasma reactor; applying power to said plasma reactor to create a plasma therein, a portion of said power being reflected from said reactor, said plasma reacting with and removing said photoresist from said substrate, and monitoring said reflected power from said reactor to detect the removing of the photoresist.

4,201,580

LITHOGRAPHIC FABRICATION WITH TREATMENT OF "LIVING POLYMER"

Eugene D. Feit, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 24, 1978, Ser. No. 926,877

Int. Cl.² G03C 5/00, 1/68

U.S. Cl. 430—319 **11 Claims**

1. Process for fabrication of an article comprising an opera-

tion during which the article undergoing fabrication comprises an article surface and an overlying actinic processing layer, said processing layer consisting essentially of polymeric material including the steps of:

(1) selectively exposing portions of the said processing layer to actinic radiation to define a pattern whereby ease of removal of the said portions of the processing layer by a developing agent is changed;

(2) treating the said processing layer with said developing agent to selectively remove material to produce a patterned processing layer;

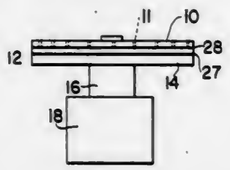
(3) treating the article undergoing fabrication with an altering agent which preferentially alters regions of the said article surface corresponding with removed portions of the patterened processing layer, CHARACTERIZED IN THAT the said polymeric material is produced by treatment of a precursor polymeric material having a molecular weight distribution M_w/M_n (said weight average molecular weight/number average molecular weight) of a maximum numerical value of 1.8, said precursor polymeric material having been produced by an anionic "living" polymerization, said treatment being the addition of functional groups to the said precursor polymeric material which imparts actinic properties which results in the said polymeric material, wherein the said polymeric material also has a molecular weight distribution M_w/M_n of a maximum numerical value of 1.8.

4,201,581

METHOD OF PROVIDING CLOSE CONTACT FOR CONTACT PRINTING

Harold T. Thomas, Rochester; Dennis G. Howe, Fairport, and James K. Lee, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,922
Int. Cl.² G03C 5/06, 5/04
U.S. Cl. 430—396 **18 Claims**



1. A method of obtaining close contact between a master device and a replicate device, said method comprising the steps of:

forming a master-replicate combination by superposing the master and replicate devices with a liquid therebetween; and

spinning the master-replicate combination to obtain a layer of liquid between substantially the entire adjacent surfaces of the master and replicate devices, said liquid layer having a thickness less than about 1 micron.

4,201,582

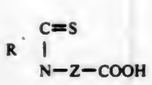
PHOTOTHERMOGRAPHIC AND THERMOGRAPHIC ELEMENT, COMPOSITION AND PROCESS

Richard L. White, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 466,331, May 2, 1974, abandoned. This application Dec. 22, 1975, Ser. No. 643,462
Int. Cl.² G03C 5/24, 1/02
U.S. Cl. 430—351 **23 Claims**

18. In a thermographic element comprising a support having thereon

(a) a silver salt of a heterocyclic thione, said heterocyclic thione being represented by the formula:



wherein R represents atoms completing a 5-member heterocyclic nucleus, Z is alkylene containing 1 to 30 carbon atoms in association with

(b) an organic reducing agent for said silver salt, and

(c) a toner

the improvement wherein said toner is selected from the group consisting of 3-mercapto-1H-1,2,4-triazole, 3-imino-5-thiourazole, 4-methyl-3,5-dithiourazole, 4-phenyl-3,5-dithiourazole, 4-(p-methoxyphenyl)-3,5-dithiourazole, 2,4-dimercaptopyrimidine, 8-mercaptopurine and 2,6-dimercaptopurine toners.

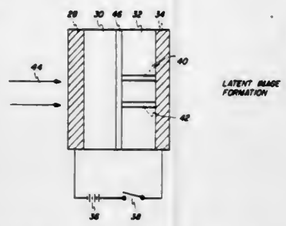
23. A process of developing an image in a thermographic element as defined in claim 18 comprising imagewise heating said thermographic element to a temperature of about 100° C. to about 180° C.

4,201,583

ELECTRICALLY ACTIVATED RECORDING MATERIAL AND PROCESS

Raymond F. Reithel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 858,780, Dec. 8, 1977. This application Nov. 17, 1978, Ser. No. 961,819
Int. Cl.² G03C 5/00
U.S. Cl. 430—97 **16 Claims**



1. A dry electrically activated recording process for producing a developed, silver image in a charge-sensitive recording element having an ohmic resistivity of at least about 1×10^{10} ohm-cm and containing at least one electrically activated recording, image-forming combination comprising

(i) an organic, silver salt oxidizing agent with

(ii) an organic reducing agent, and

(iii) a photographic speed-increasing concentration of an organic photographic speed-increasing electron acceptor which is a compound selected from the group consisting of

(I) anthraquinone, and substituted anthraquinone electron acceptors,

(II) phthalaldehyde,

(III) tetrachlorophthalonitrile,

(IV) tetrachlorophthalic anhydride,

(V) p-chloranil,

(VI) α,α,α,α',α',α'-hexachloro-p-xylene,

(VII) cobaltihexamine trifluoroacetate, and combinations thereof,

and a binder; said process comprising the steps of

(A) imagewise applying an electric potential across said recording layer of a magnitude and for a sufficient time to produce a developable latent image in said layer corresponding to said image (I); and

(B) heating said recording layer substantially uniformly at a temperature and for a time sufficient to develop said latent image.

4,201,584

SILVER HALIDE ELEMENTS CONTAINING YELLOW FORMING COLOR COUPLERS FOR SILVER HALIDE PHOTOGRAPHY

Marcel J. Monbaliu, Mortsel, and Raphael K. Van Poucke, Berchem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Sep. 19, 1978, Ser. No. 943,863
Claims priority, application United Kingdom, Oct. 7, 1977, 41834/77
Int. Cl.² G03C 7/00, 1/40
U.S. Cl. 430—389 **8 Claims**

1. A method of producing a yellow coloured photographic image in a photographic light-sensitive silver halide material by image-wise exposure of the material and development thereof by means of an aromatic primary amino colour developing agent in the presence of an acylacetanilide compound suitable for use as yellow-forming colour coupler in silver halide colour photography characterized in that the acylacetanilide is one whereof the phenyl nucleus of the anilide group of the molecule carries oxyhydrocarbon groups in the 2-, 4- and 5-positions with respect to the amido group.

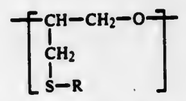
4,201,585

PHOTOGRAPHIC BLEACH COMPOSITIONS CONTAINING BLEACH-ACCELERATING COMPOUNDS

Robert J. Pollet, Vremde; Camille A. Vandeputte, Mortsel; Francis J. Sels, Kontich, and George F. van Veelen, Mortsel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 17, 1978, Ser. No. 952,144
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748430
Int. Cl.² G03C 5/32, 7/00
U.S. Cl. 430—376 **10 Claims**

1. A method of processing an image-wise exposed light-sensitive photographic material with at least one silver halide emulsion layer comprising the steps of treating the material with a developing solution, and treating the thus developed material with a photographic bleach containing a silver-oxidizing agent wherein the said photographic bleach and/or an acidic stop bath used between the said developing solution and the said bleach comprise(s) a polyoxyethylene compound, which comprises at least 20 mol % recurring oxyethylene units carrying side-chains with at least one thioether group corresponding to the formula:



wherein R represents a member of the group consisting of an aliphatic, aromatic and a heterocyclic group, which may carry one or more subsituents.

4,201,586

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kiyotaka Hori, and Shigeru Nagatomo, both of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation of Ser. No. 587,590, Jun. 16, 1975, abandoned. This application Nov. 4, 1977, Ser. No. 848,630
Claims priority, application Japan, Jun. 17, 1974, 49/68945
Int. Cl.² G03C 1/76
U.S. Cl. 430—621 **9 Claims**

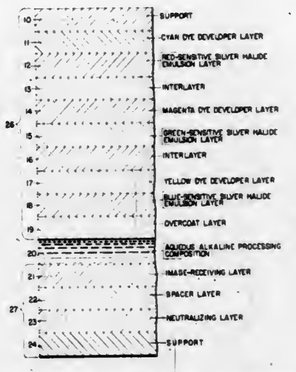
1. A photographic light-sensitive material containing an uppermost layer consisting essentially of acid-processed gelatin and a surface active organic fluoro-compound, wherein said organic fluoro-compound contains in the molecule thereof at least three fluorine atoms and a group in which at least three carbon atoms combine to form carbon-carbon bonds.

4,201,587

GRAFT COPOLYMERS AS DIFFUSION CONTROL LAYERS IN PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCTS

Stanley F. Bedell, Andover; Charles I. Sullivan, Melrose, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 15, 1978, Ser. No. 942,489
Int. Cl.² G03C 1/76, 1/40, 1/48, 5/54
U.S. Cl. 430—224 **59 Claims**

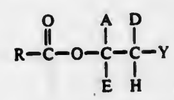


17. A photosensitive element for use in diffusion transfer photographic processes comprising:

a support layer;

at least two selectively sensitized silver halide emulsion layers coated upon said support, each emulsion layer having associated therewith a processing composition soluble and diffusible image-forming material; and

an interlayer positioned between at least two of said silver halide emulsion layers, which interlayer comprises a graft copolymer comprising an organic polymeric backbone having grafted thereon recurring units from a hydrophobic monomer and recurring units from a monomer capable of undergoing β-elimination in an alkaline environment and having the formula



wherein R is an ethylenically unsaturated alkyl radical of from 2 to 5 carbon atoms; A, E and D are each selected from the group consisting of hydrogen, methyl and phenyl, provided that no more than one of A, E and D is methyl or phenyl; and Y is an activating group.

4,201,588

RADIATION SENSITIVE CO(III)COMPLEX PHOTOREDUCTION ELEMENT WITH IMAGE RECORDING LAYER

Anthony Adin, Rochester, and James C. Fleming, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 618,186, Sep. 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 461,057, Apr. 15, 1974, abandoned. This application Sep. 7, 1976, Ser. No. 720,873
Int. Cl.² G03C 1/48, 1/49, 1/52, 1/72
U.S. Cl. 430—167 **6 Claims**

1. In an integral imaging element comprising a support, a radiation-sensitive layer capable of generating amines and an image-recording layer distinct from said radiation-sensitive layer and responsive to said amines to form an image corre-

sponding to imagewise exposure of said radiation-sensitive layer, said layers being disposed on said support;

the improvement wherein said radiation-sensitive layer comprises, in chemical association, (a) a reducible, inert cobalt(III) complex free of a sensitizable anion and containing amine ligands, (b) a photoreductant capable of forming in the absence of a cobalt(III) complex, upon exposure to activating radiation longer than 300 nanometers in wavelength, a reducing agent that reduces said complex and releases amines, said photoreductants being selected from the group consisting of disulfides, diazoanthrones, diazophenanthrones, aromatic azides, and carbazides; and (c) an external source of labile hydrogen atoms.

6. In an integral imaging element comprising a support, a radiation-sensitive layer capable of generating amines and an image-recording layer distinct from said radiation-sensitive layer and responsive to said amines to form an image corresponding to imagewise exposure to said radiation-sensitive layer, said layers being disposed on said support;

the improvement wherein said radiation-sensitive layer comprises, in chemical association, (a) a reducible, inert cobalt(III) complex free of a sensitizable anion and containing amine ligands, (b) a photoreductant capable of forming in the absence of a cobalt(III) complex, upon exposure to activating radiation longer than 300 nanometers in wavelength, a reducing agent that reduces said complex and releases amines, said photoreductant being selected from the group consisting of

(1) 2,5-dimethyl-1,4-benzoquinone
(2) 2,6-dimethyl-1,4-benzoquinone
(3) duroquinone
(4) 2-(1-formyl-1-methylethyl)-5-methyl-1,4-benzoquinone
(5) 2-methyl-1,4-benzoquinone
(6) 2-phenyl-1,4-benzoquinone
(7) 2,5-dimethyl-6-(1-formylethyl)-1,4-benzoquinone
(8) 2-(2-cyclohexanonyl)-3,6-dimethyl-1,4-benzoquinone
(9) 1,4-naphthoquinone
(10) 2-methyl-1,4-naphthoquinone
(11) 2,3-dimethyl-1,4-naphthoquinone
(12) 2,3-dichloro-1,4-naphthoquinone
(13) 2-thiomethyl-1,4-naphthoquinone
(14) 2-(1-formyl-2-propyl)-1,4-naphthoquinone
(15) 2-(2-benzoylethyl)-1,4-naphthoquinone
(16) 9,10-phenanthrenequinone (17) 2-ethylamino-3-piperidino-1,4-naphthoquinone
(18) 2-ethoxymethyl-1,4-naphthoquinone
(19) 2-phenoxymethyl-1,4-naphthoquinone
(20) 5,8-dihydro-1,4-naphthoquinone
(21) 5,8-dihydro-2,5,8-trimethyl-1,4-naphthoquinone
(22) 2,5-bis(dimethylamino)-1,4-benzoquinone
(23) 2,5-dimethyl-3,6-bis(dimethylamino)-1,4-benzoquinone
(24) 2,5-dimethyl-3,6-bispyrrolidino-1,4-benzoquinone
(25) 2-ethoxy-5-methyl-1,4-benzoquinone
(26) 2,6-dimethoxy-1,4-benzoquinone
(27) 2,5-dimethoxy-1,4-benzoquinone
(28) 2,6-diethoxy-1,4-benzoquinone
(29) 2,5-diethoxy-1,4-benzoquinone
(30) 2,5-bis(2-methoxyethoxy)-1,4-benzoquinone
(31) 2,5-bis(β-phenoxyethoxy)-1,4-benzoquinone
(32) 2,5-diphenethoxy-1,4-benzoquinone
(33) 2,5-di-n-propoxy-1,4-benzoquinone
(34) 2,5-di-isopropoxy-1,4-benzoquinone
(35) 2,5-di-n-butoxy-1,4-benzoquinone
(36) 2,6-di-sec-butoxy-1,4-benzoquinone
(37) 1,1'-bis(5-methyl-1,4-benzoquinone-2-yl)-diethyl ether
(38) 2-methyl-5-morpholinomethyl-1,4-benzoquinone
(39) 2,3,5-trimethyl-6-morpholinomethyl-1,4-benzoquinone
(40) 2,5-bis(morpholinomethyl)-1,4-benzoquinone
(41) 2-hydroxymethyl-3,5,6-trimethyl-1,4-benzoquinone
(42) 2-(1-hydroxyethyl)-5-methyl-1,4-benzoquinone
(43) 2-(1-hydroxy-n-propyl)-5-methyl-1,4-benzoquinone
(44) 2-(1-hydroxy-2-methyl-n-propyl)-5-methyl-1,4-benzoquinone
(45) 2-(1,1-dimethyl-2-hydroxyethyl)-5-methyl-1,4-benzoquinone
(46) 2-(1-acetoxyethyl)-5-methyl-1,4-benzoquinone
(47) 2-(1-methoxyethyl)-5-methyl-1,4-benzoquinone
(48) 2-(2-hydroxyethyl)-3,5,6-trimethyl-1,4-benzoquinone
(49) 2-ethoxy-5-phenyl-1,4-benzoquinone
(50) 2-i-propoxy-5-phenyl-1,4-benzoquinone
(51) 1,4-dihydro-1,4-dimethyl-9,10-anthraquinone
(52) 2-dimethylamino-1,4-naphthoquinone
(53) 2-methoxy-1,4-naphthoquinone
(54) 2-benzyloxy-1,4-naphthoquinone
(55) 2-methoxy-3-chloro-1,4-naphthoquinone
(56) 2,3-dimethoxy-1,4-naphthoquinone
(57) 2,3-diethoxy-1,4-naphthoquinone
(58) 2-ethoxy-1,4-naphthoquinone
(59) 2-phenethoxy-1,4-naphthoquinone
(60) 2-(2-methoxyethoxy)-1,4-naphthoquinone
(61) 2-(2-ethoxyethoxy)-1,4-naphthoquinone
(62) 2-(2-phenoxy)ethoxy-1,4-naphthoquinone
(63) 2-ethoxy-5-methoxy-1,4-naphthoquinone
(64) 2-ethoxy-6-methoxy-1,4-naphthoquinone
(65) 2-ethoxy-7-methoxy-1,4-naphthoquinone
(66) 2-n-propoxy-1,4-naphthoquinone
(67) 2-(3-hydroxypropoxy)-1,4-naphthoquinone
(68) 2-isopropoxy-1,4-naphthoquinone
(69) 7-methoxy-2-isopropoxy-1,4-naphthoquinone
(70) 2-n-butoxy-1,4-naphthoquinone
(71) 2-sec-butoxy-1,4-naphthoquinone
(72) 2-n-pentoxy-1,4-naphthoquinone
(73) 2-n-hexoxy-1,4-naphthoquinone
(74) 2-n-heptoxy-1,4-naphthoquinone
(75) 2-acetoxymethyl-3-methyl-1,4-naphthoquinone
(76) 2-methoxymethyl-3-methyl-1,4-naphthoquinone
(77) 2-(β-acetoxyethyl)-1,4-naphthoquinone
(78) 2-N,N-bis(cyanomethyl)ainomethyl-3-methyl-1,4-naphthoquinone
(79) 2-methyl-3-morpholinomethyl-1,4-naphthoquinone
(80) 2-hydroxymethyl-1,4-naphthoquinone
(81) 2-hydroxymethyl-3-methyl-1,4-naphthoquinone
(82) 2-(1-hydroxyethyl)-1,4-naphthoquinone
(83) 2-(2-hydroxyethyl)-1,4-naphthoquinone
(84) 2-(1,1-dimethyl-2-hydroxyethyl)-1,4-naphthoquinone
(85) 2-bromo-3-isopropoxy-1,4-naphthoquinone
(86) 2-ethoxy-3-methyl-1,4-naphthoquinone
(87) 2-chloro-3-piperidino-1,4-naphthoquinone
(88) 2-morpholino-1,4-naphthoquinone
(89) 2,3-dipiperidino-1,4-naphthoquinone
(90) 2-dibenzylamino-3-chloro-1,4-naphthoquinone
(91) 2-methyloxycarbonylmethyl-1,4-naphthoquinone
(92) 2-(N-ethyl-N-benzylamino)-3-chloro-1,4-naphthoquinone
(93) 2-morpholino-3-chloro-1,4-naphthoquinone
(94) 2-pyrrolidino-3-chloro-1,4-naphthoquinone
(95) 2-diethylamino-3-chloro-1,4-naphthoquinone
(96) 2-diethylamino-1,4-naphthoquinone
(97) 2-piperidino-1,4-naphthoquinone
(98) 2-pyrrolidino-1,4-naphthoquinone
(99) 2-(2-hexyloxy)-1,4-naphthoquinone
(100) 2-neo-pentyloxy-1,4-naphthoquinone
(101) 2-(2-n-pentyloxy)-1,4-naphthoquinone
(102) 2-(3-methyl-n-butoxy)-1,4-naphthoquinone
(103) 2-(6-hydroxy-n-hexoxy)-1,4-naphthoquinone
(104) 2-ethoxy-3-chloro-1,4-naphthoquinone
(105) 2-di(phenyl)methoxy-1,4-naphthoquinone
(106) 2-(2-hydroxyethyl)-3-chloro-1,4-naphthoquinone
(107) 2-methyl-3-(1-hydroxymethyl)ethyl-1,4-naphthoquinone
(108) 2-azetidino-3-chloro-1,4-naphthoquinone
(109) 2-(2-hydroxyethyl)-3-bromo-1,4-naphthoquinone and
(110) 2,3-dimorpholino-1,4-naphthoquinone;

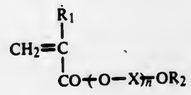
and (c) an internal or an external source of labile hydrogen atoms.

4,201,589
SILVER HALIDE PHOTO-SENSITIVE MATERIAL PREPARED WITH SOLVENT AND SOLVENT SOLUBLE POLYMER

Shinji Sakaguchi; Seiiti Kubodera; Jun Arakawa; Keisuke Shiba, and Nobuo Tsuji, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan and National Patent Development Corporation, New York, N.Y.

Continuation of Ser. No. 605,390, Aug. 6, 1975, abandoned. This application Apr. 20, 1979, Ser. No. 31,850
Claims priority, application Japan, Aug. 26, 1974, 49-96998
Int. Cl.² G03C 1/92, 1/06, 1/22, 1/34
U.S. Cl. 430—139 22 Claims

1. A method of incorporating a hydrophobic photographic substance which is a hydrophobic photographic coupler, an antioxidant, an antifogging agent or a fluorescent whitening agent into a hydrophilic colloid of a silver halide photo-sensitive material which comprising mixing said hydrophobic photographic substance with a solution in an organic solvent of an organic solvent soluble polymer containing 5 to 100 mol % of recurring units represented by the following general formula (I)



where, in the formula R_1 represents a hydrogen atom or methyl group; R_2 represents a hydrogen atom or an alkyl group containing 1 to 12 carbon atoms, X is a bivalent hydrocarbon radical containing 2 to 8 carbon atoms selected from the group consisting of a alkylene group, a haloalkylene group and a hydroxy alkylene group, and n is an integer of 1 to 50, the remaining part of the polymer being made of recurring units of an addition polymerizable unsaturated compound, the organic solvent soluble polymer being present in a weight ratio to said hydrophobic photographic substance of from 20 to 0.01:1 to form a substantially water-immiscible mixture, and finely dispersing said substantially water-immiscible mixture in an aqueous solution of said hydrophilic colloid.

4,201,590
HEAT SENSITIVE REACTIVE PRODUCTS OF HEXAARYLBIIMIDAZOLE AND ANTIHALATION DYES

Steven R. Levinson, and Anthony Adin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 834,587, Sep. 19, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 954,011
Int. Cl.² G03C 1/02
U.S. Cl. 430—617 19 Claims

1. A colored, heat bleachable antihalation composition consisting essentially of, in reactive association, (i) at least one hexaarylbiimidazole with (ii) at least one antihalation dye that is reactive with the product formed upon heating said hexaarylbiimidazole to a temperature of at least about 90° C., and wherein said composition becomes essentially colorless within about 20 minutes upon heating to a temperature of at least about 90° C.

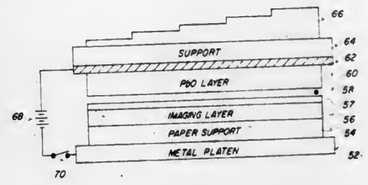
4,201,591
ELECTRICALLY ACTIVATED RECORDING MATERIAL AND PROCESS

Raymond F. Reithel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 858,780, Dec. 8, 1977, abandoned. This application Nov. 17, 1978, Ser. No. 961,822
Int. Cl.² G03C 1/10
U.S. Cl. 430—619 5 Claims

1. A charge-sensitive, electrically activated recording composition comprising

(A) an oxidation-reduction image-forming combination comprising
(i) an organic silver salt oxidizing agent, with
(ii) a reducing agent selected from the group consisting of 3-pyrazolidone, phenolic, reductone, and sulfonamidophenol reducing agents, and
(B) a photographic speed-increasing concentration of an organic photographic speed-increasing electron acceptor which consists essentially of a compound selected from the group consisting of



(I) anthraquinone and substituted anthraquinone electron acceptors,
(II) phthalaldehyde,
(III) tetrachlorophthalonitrile,
(IV) tetrachlorophthalic anhydride,
(V) p-chloranil,
(VI) α,α,α,α',α',α'-hexachloro-p-xylene,
(VII) cobaltihexamine trifluoroacetate, and combinations thereof, and a synthetic polymeric binder.

4,201,592
PLATING-INHIBITOR FOR PARTIALLY PLATING STEEL PLATE WITH MOLTEN METAL

Koichi Doi, Toyonaka; Hisao Kato, Hirakata, and Takeo Kurauchi, Neyagawa, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo and Nippon Paint Co., Ltd., Osaka, both of, Japan

Filed Sep. 22, 1977, Ser. No. 835,814
Claims priority, application Japan, Oct. 14, 1976, 51-122324
Int. Cl.² C23C 1/02
U.S. Cl. 106—2 18 Claims

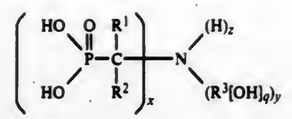
1. A plating-inhibitor capable of use in partially plating a steel plate with a molten metal, comprising (a) at least one water-soluble phosphate type base selected from the group consisting of (i) metal phosphates, (ii) metal condensed phosphates and (iii) their modified metal phosphates, said water-soluble phosphate type base having a xM_2O_x/P_2O_5 mole ratio of 0.3-3.0, wherein M is a metal atom having a valence of 1 to 4 and x is the valence of the metal atom, and (b) at least one inorganic inert powdery material having a particle size of 1-100μ which is heat-resistant and substantially non-reactive with the molten metal, the non-volatile content volume ratio of said ingredient (a) to said ingredient (b) being 5-70:95-30.

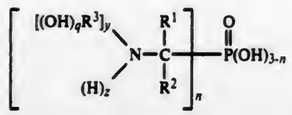
4,201,593
NOVEL INTUMESCENT COMPOSITION

Kenneth J. Sienkowski; Richard R. Nicholson; Ray E. Smith, and Jayendra G. Shukla, all of Ann Arbor, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

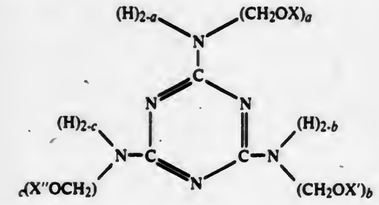
Filed Dec. 6, 1978, Ser. No. 966,930
Int. Cl.² C09D 5/18
U.S. Cl. 106—18.14 9 Claims

1. An intumescent composition comprising a hydroxyalkyl amino alkyl phosphonic acid, a cyclic nitrogen compound, and water, wherein said phosphonic acid is selected from the group consisting of





wherein x, y, and n are integers independently selected from the group consisting of 1 and 2, q is an integer selected from the group consisting of 1, 2, and 3, z is an integer selected from the group consisting of 0 and 1, R^1 and R^2 are independently selected from the group consisting of hydrogen, alkyl radicals containing from about 1 to about 6 carbon atoms, and haloalkyl radicals containing from about 1 to about 6 carbon atoms, and R^3 is selected from the group consisting of alkyl radicals containing from about 1 to about 6 carbon atoms and haloalkyl radicals containing from about 3 to about 6 carbon atoms, provided that the total number of carbon atoms in the R^1, R^2, and R^3 groups does not exceed about 14; and wherein said cyclic nitrogen compound is



wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and $-CH_3$.

4,201,594

METHOD FOR MAKING REFRACTORY ARTICLES

Ian R. Walters, Huddersfield, and Harold G. Emblem, Mirfield, both of England, assignors to Zirconal Processes Limited, Bromley, England

Continuation-in-part of Ser. No. 748,702, Dec. 8, 1976, abandoned, which is a division of Ser. No. 561,347, Mar. 24, 1975, Pat. No. 4,025,350. This application Feb. 6, 1978, Ser. No. 875,411

The portion of the term of this patent subsequent to Apr. 17, 1994, has been disclaimed.

Int. Cl.[2] B25B *7/28*

U.S. Cl. 106—38.35 **2 Claims**

1. A method of making a refractory article comprising:

(a) preparing a liquid, flowable slurry by combining a refractory powder, an aqueous solution of a zirconium salt which when dissolved in water yields an aqueous solution that is alkaline, a gellation-inducing agent, and a gellation-delaying agent; said gellation-inducing agent being selected from the group consisting of dead burned magnesium powder and powdered magnesia-containing spinel, and said gellation-delaying agent being selected from the group consisting of magnesium acetate, magnesium lactate, ammonium lactate, glycine, betaine, fructose, a polyhydric alcohol selected from the group glycerol, sorbitol and mannitol and the aminoalcohols; the amounts of refractory powder, solution of zirconium, salt, gellation-inducing agent and gellation-delaying agent being such that the slurry will set to a coherent state upon standing;

(b) pouring the slurry while liquid into a mould;

(c) allowing the slurry in the mould to set to form a coherent green shape; and,

(d) removing the green shape from the mould, drying the green shape and firing the dried green shape to form a sintered refractory article.

4,201,595

PROCESS FOR PREPARING CALCINED GYPSUM AND GYPSUM BOARD

Eugene E. O'Neill, Okeene, Okla., assignor to United States Gypsum Company, Chicago, Ill.

Continuation-in-part of Ser. No. 777,213, Mar. 14, 1977, Pat. No. 4,117,070. This application Sep. 5, 1978, Ser. No. 939,624

Int. Cl.[2] C04B *11/00*

U.S. Cl. 106—109 **21 Claims**

12. An improved process for preparing calcined gypsum characterized by providing the calcined gypsum with a reduced water demand while maintaining its ability to develop full compressive strength in a cast gypsum product which comprises:

(1) supplying calcined gypsum feed to be conveyed to a blender;

(2) conveying the calcined gypsum feed to the blender;

(3) blending a small amount of water with said calcined gypsum, said water ranging from about 1% to about 10% by weight of the calcined gypsum feed;

(4) allowing the water treated calcined gypsum to heal;

(5) drying the healed calcined gypsum by subjecting it to elevated temperatures;

(6) grinding the dried, healed calcined gypsum to increase the surface area of the healed gypsum particles, whereby the surface is reactivated to improve the rate of strength development and the ultimate strength in a gypsum product; and

(7) recovering a dried, healed calcined gypsum which is storage stable, has reduced water demand and is capable of developing substantially full compressive strength in a gypsum product.

4,201,596

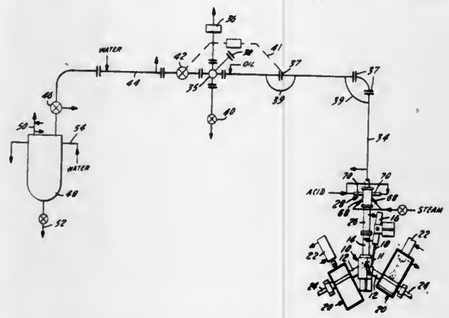
CONTINUOUS PROCESS FOR CELLULOSE SACCHARIFICATION

John A. Church; Derek Wooldridge, both of Princeton; Reginald L. Burroughs, Trenton, all of N.J.; Adolph A. Strzepek, Easton, Pa., and William J. Thompson, Lambertville, N.J., assignors to American Can Company, Greenwich, Conn.

Filed Jan. 12, 1979, Ser. No. 2,885

Int. Cl.[2] C13K *1/02*

U.S. Cl. 127—37 **17 Claims**



1. A continuous process for the saccharification of cellulosic materials, comprising the steps of:

(a) substantially continuously introducing into one end of a tubular reactor an aqueous mixture of cellulosic material containing from about 15 to about 45 weight percent solids, and constricting the other end of said reactor so as to develop a back pressure therein;

(b) admixing a strong mineral acid with said material in a concentration appropriate to catalyze the hydrolysis thereof;

(c) substantially continuously injecting steam into said mixture, at a location downstream from said one end of said reactor, to produce a reaction mass containing about 10 to about 25 weight percent solids, said steam being injected in an amount sufficient to maintain the temperature of said reaction mass at about 160° Centigrade to about 250° Centigrade, and to thereby effect hydrolysis of said material in the presence of said acid, the solids content of said reaction mass being about 50 to 85 percent of that of said mixture;

(d) thereafter, substantially continuously passing said reaction mass into and through a reaction zone of said reactor located downstream from the steam injection location, the length of said reaction zone and the rate of mixture introduction being so selected as to afford an average residence time of about one to ten minutes for each increment of said mass in said zone, and said back pressure therewithin being about 90 to 400 pounds per square inch, gauge; and

(e) substantially continuously discharging said mass from said reactor, and recovering products of saccharification therefrom.

4,201,597

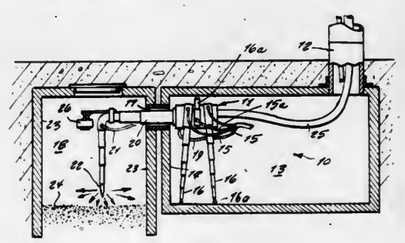
NO DIG SEEPAGE PIT CLEANER

James A. Armstrong, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Building, 233 Broadway, both of New York, N.Y. 10007

Filed Jun. 21, 1976, Ser. No. 698,075

Int. Cl.[2] B08B *3/02, 9/08*

U.S. Cl. 134—167 R **1 Claim**



1. A seepage pit cleaner comprising a fluid conduit and a cleaning assembly, said entire assembly being insertable into a septic tank having a floor, ceiling and walls via a sewer drain line, said assembly including a first means to support itself movably and structurally independent relative the septic tank walls and ceiling including a horizontally telescopically extendable hollow boom in communication with said conduit said boom including a nozzle at a forward end thereof, said boom and nozzle being adapted for insertion and extension through a seepage pit drainage hole, including remote control means for extending said boom, wherein said assembly comprises a head hinged to the conduit and being pivotable from a folded vertical to an open horizontal position, said head being telescopically horizontally extendable and including a forward tip housing a vertically extendable fluid line provided with a nozzle.

4,201,598

ELECTRON IRRADIATION PROCESS OF GLASS PASSIVATED SEMICONDUCTOR DEVICES FOR IMPROVED REVERSE CHARACTERISTICS

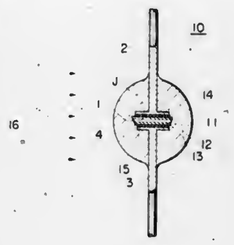
Tomoyuki Tanaka; Toshikatsu Shirasawa, and Masahiro Okamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

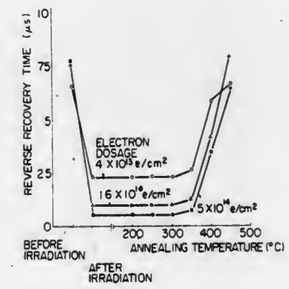
Filed Aug. 1, 1977, Ser. No. 820,698

Claims priority, application Japan, Aug. 11, 1976, 51-95855

Int. Cl.[2] H01L *7/54, 21/263*

U.S. Cl. 148—1.5 **9 Claims**





1. A process for manufacturing a semiconductor device having improved reverse characteristics comprising the steps of:

(a) preparing a semiconductor assembly comprising a semiconductor body which has at least one p-n junction therein and first and second main surfaces at the both ends thereof, an edge face of the p-n junction being exposed to the body, and first and second electrodes each being in ohmic contact with the corresponding main surfaces,

(b) forming a passivating coating of an alkali-free glass layer on the edge face to protect the body from mechanical damage thereto,

(c) irradiating the semiconductor body through the coating to radiation rays sufficient to cause lattice defects in the body so as to shorten the life time of the minority carriers down to a predetermined value and to increase the reverse leak current at the p-n junction, and

(d) annealing the semiconductor assembly after the irradiation, said annealing being carried out at an elevated temperature for a period of time sufficient to recover the electric characteristics damaged in the step of the irradiation, the annealing being carried out under such a condition that the increased reverse leak current is decreased to a predetermined value smaller than the increased value, while the degree of the shortened life time is substantially maintained during the annealing.

4,201,599

RESTORATION AND PROTECTION OF CUTTING SURFACES

Trevor Morgans, c/o Kaplan & Stratton Advocates, P.O. Box 40111, Queensway House, Kaunda St., Nairobi, Kenya

Filed Jul. 6, 1978, Ser. No. 922,312

Int. Cl.[2] C23F *9/02*

U.S. Cl. 148—6.14 R **37 Claims**

1. A method of protecting a metal cutting surface as ground which comprises applying to the cutting surface an amount sufficient to protect said metal cutting surface of a chlorhexidine compound dispersed or dissolved in a carrier therefor and for a predetermined time sufficient for said chlorhexidine compound to interact with said metal cutting surface to protect said metal cutting surface, whereby the effective life of the ground cutting surface is prolonged.

4,201,600

METHOD FOR THE GAS CARBURIZATION OF WORKPIECES MADE OF STEEL

Cornelis H. Luiten, Nijmegen, Netherlands, and Werner Göhring, Kleve, Fed. Rep. of Germany, assignors to Ipsen Industries International GmbH, Kleve, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 942,978

Claims priority, application Switzerland, Sep. 22, 1977, 11608/77

Int. Cl.[2] C21D *1/48*

U.S. Cl. 148—16.5 **12 Claims**

1. A method of gas carburization of workpieces made of steel in a furnace chamber, comprising the steps of

flowing a carburizing gas in the furnace chamber and dissolving in workpiece surfaces in an initial phase of treatment excess carbon than is ultimately desired at carburization temperatures from about 800 to 1000 degrees C., said excess carbon exceeding the dissolving power of the workpiece surfaces for carbon and at least corresponding to the absorption capacity for carbon of workpiece surfaces disposed in the shade (indirect contact places) of the flow of the decarburizing gas, and

decarburizing the workpieces in a final phase of the treatment to a desired certain edge carbon content by changing of the quantity flow of a decarburizing gas,

the decarburizing process being performed by exclusively introducing a substantially hydrogen-free oxygen-containing decarburization gas in the furnace chamber,

the initial phase constituting a supercarburization operation is performed with soot deposit on said workpiece surfaces by an oversupply of carbon in the carburization gas, the oversupply exceeding the dissolving power of the surface of the workpieces, and in the initial phase, exclusively a hydrocarbon is fed into the furnace chamber for supercarburization,

a nitrogen-oxygen mixture constituting air exclusively is used as said decarburization gas,

controlling the soot deposit on said workpiece by varying a supplied quantity of the hydrocarbon,

controlling the decarburizing by the oxygen potential in the air and varying the flow of the air into the furnace chamber dependent thereon.

4,201,601

COPPER BRAZING ALLOY FOILS CONTAINING GERMANIUM

Thomas L. D'Silva, Beaverton, Oreg., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 925,908, Jul. 19, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,560

Int. Cl.[2] C22C *9/00*

U.S. Cl. 148—32 **3 Claims**

1. A brazing alloy material consisting essentially of a composition having the formula Cu_xGe_y wherein x is from about 60 to about 95 atomic percent, y is from about 5 to about 40 atomic percent and containing a sufficient amount of an amorphous phase and a metastable, microcrystalline solid solution phase to render the material ductile; said material being in the form of a sheet having a thickness of from about 0.0005 to about 0.005 inches.

4,201,602

RAIL HARDENING MACHINE AND METHOD

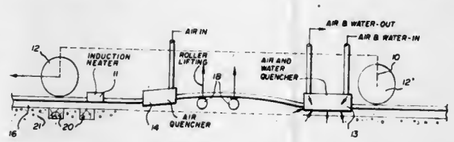
Charles A. Shupe, Beaconsfield, Canada, assignor to Canron Corporation, West Columbia, S.C.

Filed Jun. 21, 1978, Ser. No. 917,652

Claims priority, application United Kingdom, Jul. 7, 1977, 28570/77

Int. Cl.[2] C21D *1/78*

U.S. Cl. 148—146 **12 Claims**



1. A method of heat treating at least the upper surface of the head of at least one railroad rail forming part of an in situ railroad, which comprises moving along the in situ railroad a carriage runnning on the in situ railroad and having thereon heating, quenching and bending means, and operating said heating and quenching means for causing progressive heating and quenching along an upper surface portion of the head of said at least one rail, and simultaneously operating said bending means for mechanically bending the rail progressively along its length in a sense tending to produce a downwardly concave curve for at least partly counteracting the tendency of the rail to bend upwardly concave due to the heat treatment.

6. Apparatus for heat treating at least the upper surface portion of the head of a railroad rail forming part of an in situ railroad, comprising carriage means movable along the track and provided with heating means and trailing quenching means disposed in alignment for progressive heating and cooling of the upper surface portion of the rail head, and mechanical lifting means also provided on the carriage means for applying upward mechanical forces to the rail in a sense tending to produce concave downward curvature of the rail.

4,201,603

METHOD OF FABRICATING IMPROVED SHORT CHANNEL MOS DEVICES UTILIZING SELECTIVE ETCHING AND COUNTERDOPING OF POLYCRYSTALLINE SILICON

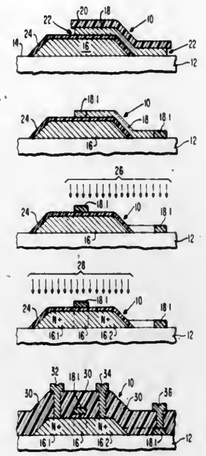
Joseph H. Scott, Jr., Plainsboro, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,510

Int. Cl.[2] H01L *21/225, 21/308*

U.S. Cl. 148—174 **8 Claims**

1. In a method of making a semiconductor device which includes the steps of forming a uniform layer of polycrystalline silicon having an exposed edge over the silicon body, forming a masking layer on the polycrystalline silicon layer, the masking layer extending at least to the exposed edge of the polycrystalline silicon layer, embedding a dopant into the exposed edge of the polycrystalline silicon layer for a desired distance laterally along the polycrystalline silicon layer in order to transform the uniform layer to a selectively etchable layer, removing the masking layer, and selectively etching the polycrystalline silicon layer to remove the undoped portion thereof, the improvement comprising:



counterdoping the doped portions of the polycrystalline silicon layer to raise the conductivity thereof.

4,201,604

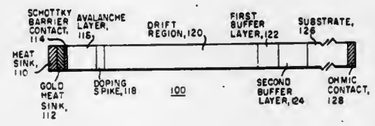
PROCESS FOR MAKING A NEGATIVE RESISTANCE DIODE UTILIZING SPIKE DOPING

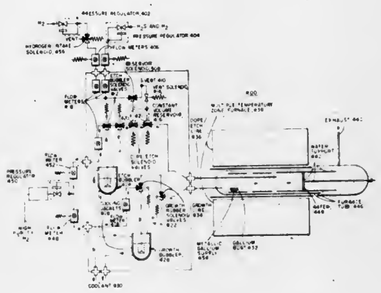
Robert W. Bierig, and S. Robert Steele, both of Sudbury, Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 604,378, Aug. 13, 1975, abandoned. This application Sep. 8, 1976, Ser. No. 721,253

Int. Cl.[2] H01L *21/205, 29/90*

U.S. Cl. 148—175 **14 Claims**





1. A method for producing a doping spike for terminating an avalanche region in a diode device comprising the steps of:

vapor depositing a drift region layer of semiconductor material upon a substrate; and

injecting a predetermined quantity of a pre-selected dopant material toward said substrate, said predetermined quantity of dopant material being vapor deposited upon said drift region and forming said doping spike.

4,201,605

GAS GENERATOR PROPELLANT FOR AIRBREATHING MISSILES

Russell Reed, Jr., Ridgecrest; George F. Sieg, China Lake; Elmer J. Rhyn, Ridgecrest, and Billy E. Waldon, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 31, 1978, Ser. No. 929,597

Int. Cl.[2] C06B *45/10*

U.S. Cl. 149—19.1 **3 Claims**

1. A propellant formulation for a gas generator consisting essentially of from about 40 to 48 weight percent of a polysulfide binder having the formula: $+SCH_2CH_2OCH_2OCH_2CH_2S+_n$ wherein n is a positive integer of sufficient magnitude to render the polysulfide an elastomeric solid, from about 20 to about 34 weight percent ammonium perchlorate, from about 8 to about 31 weight percent ammonium oxalate and from about 1 to about 4 weight percent iron oxide.

4,201,606

REFRACTORY EXOTHERMIC HEATING INSULATING ARTICLES

Frank Neat, Elora, Canada, assignor to Foseco Trading AG., Chur, Switzerland

Filed Jul. 14, 1978, Ser. No. 924,564

Claims priority, application United Kingdom, Jul. 19, 1977, 30271/77

Int. Cl.[2] C22C *38/40*

U.S. Cl. 149—37 **13 Claims**

1. A refractory exothermic heat insulating article of use in the metallurgical industry which has a density of less than 0.75 g/cc, has both exothermic and heat insulating properties and which is formed by removing liquid from a slurry, the solids content of the slurry including a binder and including by weight of the total solids 8 to 20% of a particulate oxidisable metal, 5 to 25% of a fibrous refractory material, 5 to 20% of an expanded perlite having in its dry powder state a bulk density (untamped) of less than 0.15 g/cc and a proportion of an oxidising agent for the oxidisable metal in particulate form.

4,201,607

MANUFACTURE OF OPTICAL FIBER CABLES

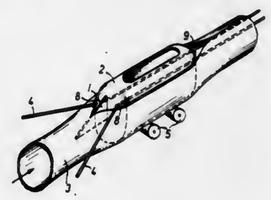
Peter Rautenberg, Düsseldorf; Hartmut Hildenbrand, and Daljit-Singh Parmar, both of Essen, all of Fed. Rep. of Germany, assignors to AEG - Telefunken Kabelwerke AG, Rheydt, Monchen-Gladbach, Fed. Rep. of Germany

Filed Nov. 10, 1977, Ser. No. 850,832

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651725

Int. Cl.[2] B65B *11/00*; G02B *5/14*

U.S. Cl. 156—70 **5 Claims**



1. A method for producing an optical cable core composed of a plurality of optical cable elements, each element including a stable tube and at least one optical fiber lying loosely in the tube, said method comprising: slitting each tube open longitudinally and simultaneously inserting the at least one optical fiber into each tube through the slit formed therein; causing the slit in each tube to close behind the inserted fiber; and stranding the tubes containing the fibers together to form the core;

wherein said step of stranding is performed in a stranding machine directly after said step of causing the slit in each tube to close without winding the tubes on drums, and said step of slitting is performed in the stranding machine.

3. Apparatus for producing an optical cable core composed of a plurality of optical elements, each element including a stable tube and at least one optical fiber lying loosely in the tube, comprising a plurality of cutting devices, one for each said optical element and each cutting device being disposed downstream of a respective tube supply and being composed of a spacer member and a cutting blade fixed to the spacer member and presenting a cutting edge projecting from one end of the spacer member, each said cutting device being disposed in the path of longitudinal advance of such a tube for causing the cutting edge of said blade to traverse the tube wall and slit the tube while said spacer member engages in the resulting slit and separates the edges of the slit to give the tube the form of a trough, said spacer member being provided with guide means for guiding at least one optical fiber into the tube in the region where it has the form of a trough, and means for advancing said tubes with said at least one optical fiber therein past said cutting devices to allow said slit tubes to close and for advancing said elements to a stranding nipple to strand said elements into a cable core.

4,201,608

METHODS OF AND APPARATUS FOR MANUFACTURING PILE FABRICS

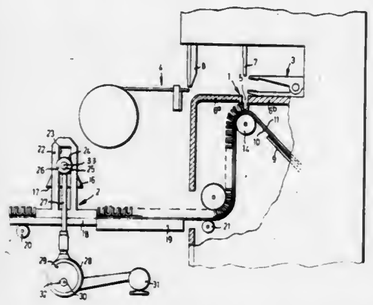
Herbert H. Currell, "Hillcrest", 32, Lickhill Rd. North,, Stourport on Severn, Worcestershire, England

Filed Apr. 11, 1978, Ser. No. 895,530

Claims priority, application United Kingdom, Apr. 15, 1977, 15766/77

Int. Cl.[2] D04H *11/00*; B32B *5/08*

U.S. Cl. 156—72 **10 Claims**



1. In a method of producing a pile fabric comprising the step of implanting tufts of pile yarn in a layer of adhesive at a first temperature while carried on a base fabric and the subsequent step of temporarily reducing the viscosity of the adhesive by heating the adhesive to a second temperature after such implantation, the improvement wherein

outer ends of the tufts are subjected to a tamping operation while the viscosity of the adhesive in which the tufts are implanted is reduced during said subsequent step.

8. Apparatus for forming pile fabric, comprising:

(a) means for implanting pile tufts in a tacky adhesive layer on a pre-formed base fabric at an attaching station and downstream of said means for implanting pile tufts while the adhesive is at a first temperature,

(b) means for moving the base fabric with the tufts projecting thereon along a path to a tamping station,

(c) means for heating the adhesive of the fabric to a second temperature at a position upstream of the tamping station for temporarily reducing the viscosity of the adhesive which permeates said yarn,

(d) backing means located at the tamping station for supporting the base fabric at the face thereof remote from the pile tufts,

(e) a tamping member mounted for movement toward and away from the backing means and effective to engage the outer ends of the pile tufts to tamp same into the adhesive, and

(f) drive means for moving the tamping member.

4,201,609

METHOD FOR T OR BUTT SEALING OF LAMINATED ALL-PLASTIC MATERIAL

Jan-Erik Ölsén, Malmo, Sweden, assignor to AB Ziristor, Lund, Sweden

Continuation of Ser. No. 747,096, Dec. 3, 1976, abandoned. This application May 10, 1978, Ser. No. 904,537

Claims priority, application Sweden, Dec. 19, 1975, 75144436

Int. Cl.[2] B32B *31/26, 3/04*; B29C *27/02*

U.S. Cl. 156—85 **10 Claims**



1. A method for joining a first laminated sheet with another surface, said laminated sheet having a carrier layer of foamed thermoplastic material and outer layers of a compact thermoplastic material on opposed sides thereof, said method comprising directing a jet of hot air toward and substantially at right angles to the edge surface of the laminated sheet, directly contacting said edge surface with said hot air, the jet of hot air having such force and temperature as to cause the carrier layer of the laminated sheet to shrink and retract from the edge thereof and cause the outer layers of compact thermoplastic material to soften and bend inwardly toward the retracted carrier layer and meet substantially at the center plane of the laminated sheet thereby forming an integral layer of softened, compact thermoplastic material along the edge surface of the laminated sheet pressing said layer of softened, compact thermoplastic material against said another surface and allowing said layer of softened, compact thermoplastic material to harden thereby forming a strong, tight seal.

4,201,610

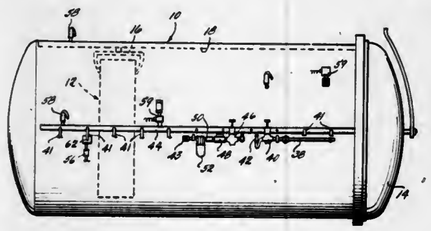
TIRE RETREADING METHOD USING PRESSURE VESSEL

Edwin T. Brodie, and Donaldee Brewer, both of Muscatine, Iowa, assignors to Bandag Incorporated, Muscatine, Iowa

Division of Ser. No. 622,419, Oct. 14, 1975, Pat. No. 4,025,047. This application Jan. 6, 1978, Ser. No. 867,612

Int. Cl.[2] B29H *17/36*

U.S. Cl. 156—96 **6 Claims**



1. In the method of bonding a precured tread strip to a tire by means of a vulcanizable bonding material interposed between the tire and the tread strip, placing the assembly of tire and tread strip in a vessel and pressurizing the interior of the tire to inflate the same and pressurizing the interior of the vessel in a manner to press the tread strip and the tire together, the improvement comprising: supplying a pressure fluid through a first pressure regulator to a conduit into a manifold, passing a portion of the pressure fluid in the manifold to the interior of the tire, and simultaneously passing another portion of the pressure fluid in the manifold through a pressure differential check valve and a second pressure regulator to the interior of the vessel at a predetermined lower pressure than the pressure being supplied to the interior of the tire.

4,201,611

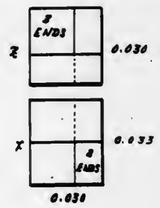
CARBON/CARBON COMPOSITE FOR RE-ENTRY VEHICLE APPLICATIONS

Edward R. Stover, Wayne, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 17, 1978, Ser. No. 896,861

Int. Cl.[2] B32B *5/12, 31/26, 33/00*; B64G *1/30*

U.S. Cl. 156—155 **1 Claim**



1. A method for fabricating a re-entry vehicle nose-tip material which comprises the steps of

(a) forming a billet of a three directional carbon-carbon material having a plurality of graphite bundles oriented in an axial "Z" direction and in a lateral "X" or "Y" direction, said axially oriented bundles each having three ends of graphite yarn with 0.030 in spacing between axial bundles and said laterally oriented bundles each having two ends of graphite yarn with 0.030 to 0.035 inches along the length;

(b) heating said billet within a vacuum to a temperature of about 1500° C. to clean the surfaces of the fibers;

(c) infiltrating said heated billet with carbon by passing said billet through an r.f. coil while heating at 0.001–0.003 atm. pressure in an atmosphere containing methane gas;

(d) impregnating said infiltrated billet with coal tar pitch at a temperature of 250° C. and a pressure of 15,000 psi;

(e) baking said impregnated billet at pressure and a temperature of approximately 650° C.;

(f) graphitizing said baked billet at one atmospheric pressure to 2700° C.; and

(g) repeating in sequence the cycle of steps (b) through (f) for from three to four times, thus forming a high density carbon-carbon composite.

4,201,612

BONDING PLASTIC LAYERS

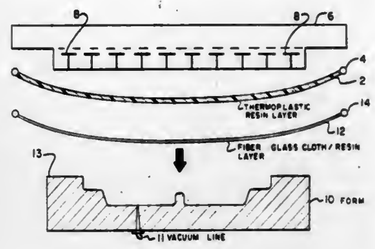
Irving E. Figge, Newport, and Edward H. Dean, Newport News, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 15, 1978, Ser. No. 906,187

Int. Cl.[2] C09J *5/00*; B32B *31/16, 1/10*; B29C *17/03*

U.S. Cl. 156—224 **1 Claim**

1. A process for forming laminated articles in which an acrylic copolymer thermoplastic resin layer is bonded to a fiber reinforced epoxide resin thermoset layer which comprises strengthening the bond between the epoxy resin and acrylic resin layers by vacuum forming wherein a sheet of uncured fiber reinforced epoxy resin is placed over a vacuum forming mold, a thermoplastic acrylic copolymer sheet is heated to a vacuum forming temperature, and at said temperature the heated acrylic copolymer sheet and the epoxy resin sheet are vacuum formed while concomitantly the cross-linking of the



epoxy resin takes place, ultimately effecting a complete cure, creating a strong bond between the thermoplastic and thermoset layers in the resulting laminated article.

4,201,613

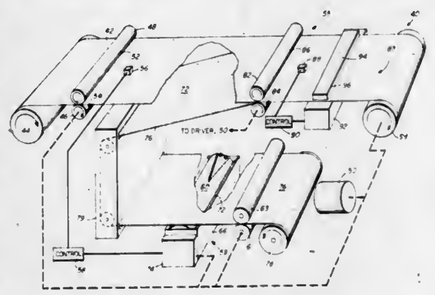
METHOD AND APPARATUS INVOLVING ADHESIVE BACKED PHOTOGRAPHS

Anthony Olivieri, 23 Quaker La., Dedham, Mass. 02026, and Anthony J. Macrina, 47 Henry Ave., Melrose, Mass. 02176

Filed Jan. 24, 1978, Ser. No. 871,784

Int. Cl.[2] B32B *31/00, 7/14*; B65C *11/04*

U.S. Cl. 156—270 **13 Claims**



1. An apparatus for producing an adherent backed photograph, said apparatus comprising:

(a) an endless release web;

(b) drive means engaging said release web and advancing said release web along a travel path;

(c) an adhesive applying station disposed in said travel path;

(d) applicator means at said adhesive applying station, said applicator means including an adhesive carrying surface and an adhesive free surface, said applicator means positioned in said travel path for applying adhesive to certain areas of one face of said release web, other areas of said one face of said release web being adhesive free areas;

(e) an endless web of photographic prints having finished and unfinished surfaces on opposite faces;

(f) means for superposing said unfinished surface of said photographic print on said one face of said release web, said photographic prints superposed on said adhesive areas and said adhesive free areas; and

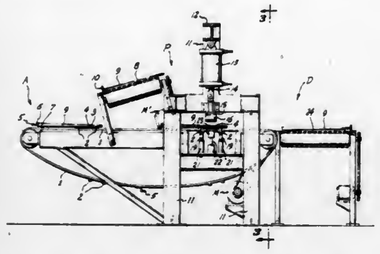
(g) slitting means disposed in said travel path for slitting said release web, portions of said release web covering said adhesive free areas and adjacent said slit forming a tab for removing said release web and exposing said adhesive.

4,201,614

SHAKE PANEL ASSEMBLING MACHINE

Craig S. Barker, Deerfield Beach, Fla., and Joe L. Bockwinkel, Winlock, Wash., assignors to Shakertown Corporation, Winlock, Wash.

Filed Nov. 4, 1977, Ser. No. 848,606
Int. Cl.[2] B29C *19/04*; B32B *19/02*; B30B *5/02*
U.S. Cl. 156—273 **11 Claims**



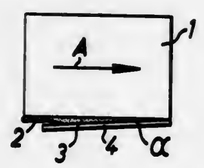
1. The method of assembling a shake panel which comprises applying thermosetting adhesive on one face of a backing strip, laying a plurality of resawn split shakes in a row on the backing strip with the sawn surfaces of the shakes in engagement with the backing strip and with the split, irregular surfaces exposed, holding the backing strip and shakes laid thereon stationary, pressing a solid readily deformable elastomer pad, of a hardness between 20 durometer and 40 durometer, against the irregular split surfaces of the shakes for applying pressure distributed substantially uniformly and equally over the irregular exposed surface of the shakes, and while the shakes are thus held against the backing, dielectrically setting the adhesive to bond all the shakes to the backing simultaneously.

4,201,615

APPARATUS FOR APPLYING AN ADHESIVE TO A BOOK

Lionel J. B. R. French, London, England, assignor to The Sulby Engineering Development Company Limited, London, England

Continuation of Ser. No. 828,103, Aug. 26, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,380
Claims priority, application United Kingdom, Sep. 10, 1976, 37663/76
Int. Cl.[2] B29C *19/00*; B42C *19/00*; B05C *11/02*
U.S. Cl. 156—304 **3 Claims**



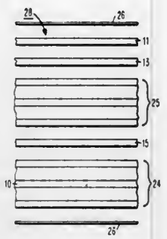
1. Apparatus so constructed and arranged as to be capable of preparing a book for adhesive securement, said apparatus comprising an element providing a flat compressing surface, means for moving a book over the said surface with the back thereof spaced from the surface by a gap, the said surface being so inclined that the gap diminishes in the direction of movement, means for introducing adhesive into the said gap, and wall members to enhance compression of adhesive at each side of the gap to confine the book and prevent escape of adhesive thereby.

4,201,616

DIMENSIONALLY STABLE LAMINATED PRINTED CIRCUIT CORES OR BOARDS AND METHOD OF FABRICATING SAME

Leroy N. Chellis, Endwell, and Theron L. Ellis, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,222
Int. Cl.[2] C09J *5/00*
U.S. Cl. 156—307.1 **6 Claims**



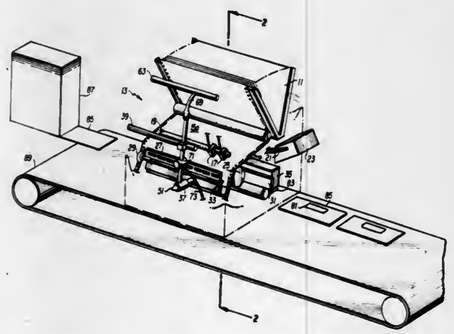
1. A method of forming a multi-layered printed circuit board comprising the steps of:
(a) forming a first section of the board of at least one layer of a first heat curable material having a first transition temperature;
(b) fully curing said first section by subjecting it to a temperature in excess of said first transition temperature for a period sufficient to effect a complete curing thereof;
(c) forming a second section of the board by placing one or more layers of a second heat curable material having a second transition temperature below that of said first transition temperature in contact with said first section, said second transition temperature being one which will not thermally affect the prior full cure of said first section; and
(d) fully curing said second section by subjecting it to a temperature in excess of said second transition temperature, but below said first transition temperature, for a period sufficient to effect a complete curing thereof.

4,201,617

UV LABEL SPRAYER FOR SEGREGATING MAIL

Winston A. Orsinger, Nazareth, and Warren D. Reinert, Easton, both of Pa., assignors to Bell & Howell Company, Phillipsburg, N.J.

Filed Apr. 3, 1979, Ser. No. 26,709
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—351 **12 Claims**



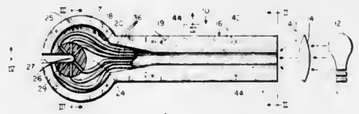
1. A method of zip-sorting mail comprising the steps of:
providing sheets of address labels in rows and columns and placing indicia thereon to indicate when at least the first of a group of labels changes from a first to a second selected zip arrangement;
moving said labels relative to an indicia sensing means;
sensing said indicia and providing a zip change signal to indicate a zip arrangement change;
spraying at least said first of said group of labels with a sensible dye in response to said zip-change signal;
separating said labels and thereafter applying said labels to envelopes in the same order as said labels are moved relative to said indicia sensing means; and,
subsequently sensing said sensible dye to identify envelopes having labels indicating a change in zip arrangement.

4,201,618

APPARATUS FOR CURING ADHESIVELY JOINED FIBER OPTIC ELEMENTS

Adolph L. Lewis, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1978, Ser. No. 926,978
Int. Cl.[2] B65H *69/02, 69/06*
U.S. Cl. 156—380 **7 Claims**



1. Apparatus for connecting light transmitting fiber optic elements comprising:
a clear adhesive sensitive to ultraviolet light for positioning between the ends of said elements to be connected;
a source of ultraviolet light capable of curing said adhesive; and
means for distributing said light substantially around the perimeter of said ends with said adhesive thereon to cure all areas of the adhesive simultaneously to provide a uniformly stressed fiber optic connection;
said means comprising a plurality of fiber optic conductors having their ends circumferentially disposed around the ends of the fiber optic elements to be connected, the opposite ends of said conductors being bundled and disposed in the light path from said light source.

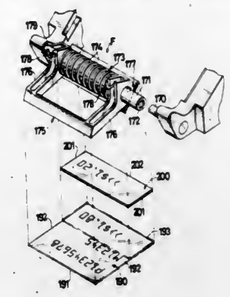
4,201,619

PORTABLE LABEL PRINTING AND APPLYING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Division of Ser. No. 750,845, Dec. 15, 1976, Pat. No. 4,113,544. This application May 15, 1978, Ser. No. 905,751
Claims priority, application Japan, Dec. 20, 1975, 50-151235; Dec. 31, 1975, 50-158620
Int. Cl.[2] B65C *11/02*
U.S. Cl. 156—384 **7 Claims**

1. A portable label printing and applying machine, comprising a machine frame; a platen supported by said machine frame; label moving means for moving a label onto said platen to be imprinted; said label moving means being adapted to move an imprinted label to a label applicator;
a printing head;
an operating lever supported by and movable with respect to said machine frame for operating said label moving means and also for moving said platen and said printing head together for imprinting a label on said platen;
a label positioning and applying device comprising:
an applicator for receiving labels from said label moving means and being adapted to apply a label to a surface;
a label positioning frame beneath which a label is received from said label moving means; said applicator being adjacent said positioning frame, whereby a label to be applied by said applicator is also positioned beneath said positioning frame; a shaft for rotatably supporting said positioning frame and carried by said machine frame; biasing means for biasing said positioning frame around said shaft and toward a surface on which a label is to be applied; said



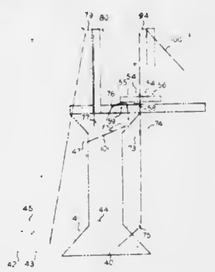
label moving means delivering labels to be applied beneath the side of said positioning frame toward which said positioning frame is biased; said positioning frame having borders defining its external shape, which said borders are selected and dimensioned to approximate the shape and dimension of the periphery of a label on which said positioning frame operates.

4,201,620

WEB ROLLING APPARATUS

Louis Platt, and Thomas S. Poteet, both of Seneca, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1978, Ser. No. 964,328
Int. Cl.[2] B65H *19/26*
U.S. Cl. 156—494 **8 Claims**



1. An apparatus for handling length of thermoplastic web which allows shifting from rolling said web upon one roll to rolling said web upon another roll comprising,
a pair of spaced-apart clamping means each having a clamping face and a web guiding surface,
a primary roll means for receiving thermoplastic web from a source of supply and forming a primary roll of said thermoplastic web, said primary roll means being positioned relative to said spaced-apart clamping means such that when thermoplastic web is directed thereto from said source of supply said thermoplastic web will lie outside said spaced-apart clamping means,
a secondary roll means for receiving a thermoplastic web from a source of supply and forming a secondary roll of said thermoplastic web, said secondary roll means being positioned relative to said spaced-apart clamping means such than when thermoplastic web is directed thereto from said source of supply said thermoplastic web will lie outside said spaced-apart clamping means in a position

opposite that in which said web will lie when supplied to said primary roll means from a source of supply,

a web securement means for securing one end of a thermoplastic web having its other end connected to either a primary roll or said secondary roll on said respective primary or secondary roll means, said web securement means being positioned such that a thermoplastic web attached to either said primary or said secondary roll and to said web securement means will pass between said spaced apart clamping means and over a respective one of the said clamping means on a side opposite the side on which the web securement means is positioned,

web shifting means for shifting a portion of a first thermoplastic web, which is positioned outside said spaced-apart clamping means as a result of being directed from said source of supply to either said primary or secondary roll means, to a position between said spaced-apart clamping means so as to overlap a second thermoplastic web passing between said spaced-apart clamping means as a result of being directed from said web securement means to the other of said primary and secondary roll means,

activator means for shifting at least one of said clamping means so as to clamp overlapped first and second thermoplastic web portions between a clamping means and said web shifting means, and

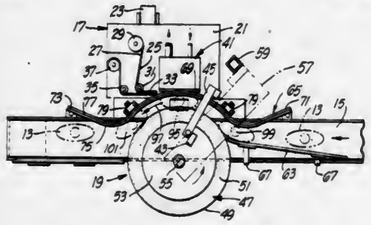
melting means which is capable of being passed through the overlapped portion of first and second thermoplastic web clamped between a respective clamping means and said web shifting means so as to sever each web and bond the severed ends of said first thermoplastic web to the severed ends of the second thermoplastic web to provide first and second seams.

4,201,621

LABEL APPLICATOR FOR IRREGULARLY SHAPED ARTICLES

Michael Crankshaw, Santa Fe Springs, and Leo Kucheck, Irvine, both of Calif., assignors to Label-Aire Inc., Fullerton, Calif.

Filed Aug. 3, 1978, Ser. No. 930,720
Int. Cl.[2] B65C 9/02, 9/06, 9/42
U.S. Cl. 156—567 **16 Claims**



1. A label applicator for labeling articles which are moved along a path by a conveyor, said label applicator comprising:

a wheel having a peripheral surface, at least a portion of said peripheral surface being resiliently deformable;

means for mounting said wheel for rotation about a rotational axis which extends generally transverse to the direction of movement of the conveyor adjacent said wheel, said wheel lying at least partially in the path of the articles conveyed to the wheel by the conveyor;

motor means for rotating said wheel about said rotational axis;

guide means adjacent said peripheral surface of said wheel for urging articles conveyed to the peripheral surface of said wheel against the peripheral surface to resiliently deform the peripheral surface sufficiently to capture the article and hold the article in a predetermined orientation whereby the articles are captured between the guide means and the wheel and held in a predetermined orientation; and

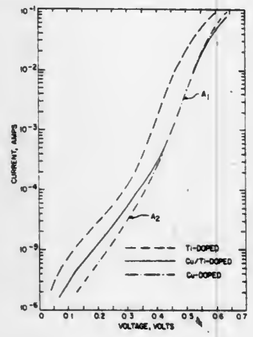
labeling means for applying a label to each of the articles when each of said articles is held in said predetermined orientation.

4,201,622

METHOD OF MITIGATING TITANIUM IMPURITIES EFFECTS IN P-TYPE SILICON MATERIAL FOR SOLAR CELLS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Amal M. Salama, Los Angeles, Calif.

Filed Jan. 31, 1979, Ser. No. 8,212
Int. Cl.[2] B01J 17/34
U.S. Cl. 156—605 **2 Claims**



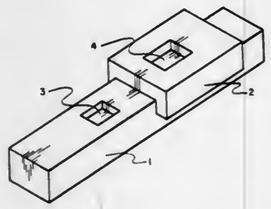
1. In the Czochralski single crystal growth process of silicon to be used for solar cells, wherein a known concentration of titanium impurities is present, the technique of adding to the silicon melt copper of at least the same concentration but not greater than 10^{16} atoms/cm^3, for mitigating the deleterious effects of the titanium impurities when the silicon crystal grown is used for solar cells.

4,201,623

METHOD FOR MAKING EPITAXIAL SILICON CRYSTALS WITH UNIFORM DOPING LEVELS

Barbara E. Sumner, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 23, 1978, Ser. No. 900,206
Int. Cl.[2] B01J 17/20, 17/24; H01L 21/62
U.S. Cl. 156—622 **3 Claims**



1. A method of making, in a refractory boat, an epitaxial silicon crystal layer on a silicon substrate, wherein said boat includes a base portion with a substrate cavity therein and a cover portion atop said base portion with a perforation therethrough, including the steps of:

loading said cavity with a first material consisting of said substrate;

loading said perforation with a second material consisting of a metal solvent;

placing said boat in a non-oxidizing atmosphere;

heating said boat to a first temperature;

relatively moving said base and said cover portions with respect to each other to place said cavity under said perforation whereby said solvent contacts said substrate;

raising said temperature at a controlled rate to a second temperature and holding for a first time whereby said substrate and said solvent diffuse into each other to form a saturated solution;

reducing said temperature at a controlled rate to a third temperature and holding for a second time whereby said solvent first reaches an equilibrium solution, then supersaturation, then precipitation;

relatively moving said base and said cover portions with respect to each other to remove said cavity from beneath said perforation.

cooling said boat to ambient; and

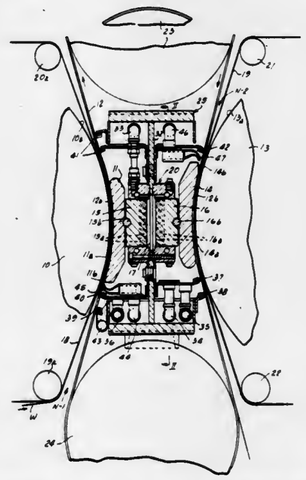
removing said boat from said non-oxidizing atmosphere, removing the substrate from said boat, and cleaning said substrate to remove any metal solvent on the surface thereof.

4,201,624

EXTENDED NIP PRESS

William C. Mohr, Rockford; Leroy H. Busker, Rockton; Carl J. Francik, Roscoe, all of Ill., and Jan I. Bergstrom, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Sep. 5, 1978, Ser. No. 939,449
Int. Cl.[2] D21F 3/04, 3/06
U.S. Cl. 162—205 **17 Claims**



13. The method of removing liquid from a traveling fibrous web by applying pressing forces to the web comprising the steps:

passing a relatively wet web on a carrier felt through a first press nip formed between a pair of rolls;

immediately passing the web following the first nip through a second, elongate extended nip;

immediately after the second nip passing the web around a roller and through a third, elongate extended nip spaced from said second nip; and

simultaneously applying opposed pressures in said second and third nips from a force between the nips to different portions of said web respectively received in said second and third elongate nips with the pressure remaining substantially constant throughout each nip and releasing the pressure at the end of said nips,

whereby the force is such that any reaction forces are opposed.

4,201,625

PROCESS FOR PRODUCING ^{52}MANGANESE

Gerhard Erdtmann, Jülich; Chaturvedula Sastri, Berlin; Gottfried Kuppers, Heinsbert-Oberbruch, and Hermann Petri, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,139
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752165; Oct. 19, 1978, 2845457
Int. Cl.[2] G21G 1/10
U.S. Cl. 176—11 **6 Claims**

1. A process for producing ^{52}Mn by nuclear reaction, comprising the steps of:

bombarding a vanadium-containing target with accelerated ^{3}helium ions, and

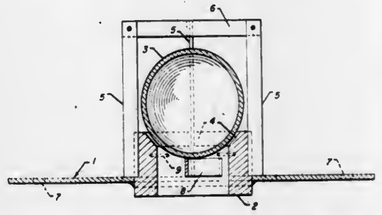
isolating the ^{52}manganese thereby produced from the other target constituents after the bombardment by means of a chemical separation procedure.

4,201,626

LIQUID-LIQUID CONTACTING APPARATUS

George Asdigian, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 24, 1978, Ser. No. 936,429
Int. Cl.[2] B01D 11/04; C10G 21/00
U.S. Cl. 196—14.52 **5 Claims**



1. A tray for use in a liquid-liquid contacting apparatus which comprises:

(a) a horizontal plate having a circular perforation;

(b) a cylindrical vertical collar mounted in said circular perforation by attachment to the horizontal plate and extending through said circular perforation, with an inwardly slanting circular valve seat contoured into an upper open end of the collar and with a vertical passageway extending through the collar from said circular valve seat to a lower open end of the collar;

(c) a plurality of spaced horizontal ducts extending radially through the wall of said collar and located at a point below said circular valve seat and exiting said collar at a point above said horizontal plate to provide high velocity streams of rising liquid which will agitate denser liquid retained upon the upper surface of said horizontal plate;

(d) a hollow imperforate sphere having a specific gravity greater than 1.0 and a diameter which provides a contacting surface matching the circular vlave seat of the collar, the sphere being positioned above the valve seat; and

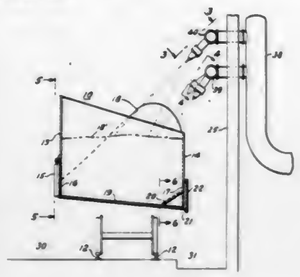
(e) a retention cage which encloses the sphere, the retention cage being connected to the collar and having an upper surface located a preset distance above the sphere when the sphere rests in the valve seat, with several openings being present in the retention cage, there being no opening in the retention cage large enough for the sphere to pass through.

4,201,627

COKE QUENCHING PRACTICE FOR ONE-SPOT CARS

David M. Chuss, and James W. Scheirer, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 15, 1979, Ser. No. 20,682
Int. Cl.[2] C10B 39/12, 39/04, 33/00
U.S. Cl. 201—39 12 Claims



1. A process for quenching coke in which coke is pushed from a coke oven into a one-spot quench car to form a peak portion and the quench car is provided with openings adjacent the quench car bottom, comprising the steps of:

(a) providing a plurality of sets of full cone spray nozzles with each nozzle having a spray angle in the range of about 15° to about 25° to dispense a quench liquid in a full coverage spray pattern to quench the coke,

(b) applying the quench liquid from a first set of spray nozzles in a first pattern to initially impact upon the peak portion of the coke in the car to cause the peak portion to subside and provide a substantially level, exposed surface of coke in the quench car and to thereafter impact upon areas of the substantially level, exposed surface of coke,

(c) substantially simultaneously with step (b) applying the quench liquid from a second set of spray nozzles in a second pattern to impact upon areas of the coke surface not covered by the first set of spray nozzles, so that the sum of the areas contacted by the first pattern and the areas contacted by the second pattern equals about 50% to about 70% of the substantially level, exposed surface area of coke in the quench car, and

(d) providing sufficient openings to drain the quench liquid from the quench car and to prevent the buildup of quench liquid in the bottom of the quench car.

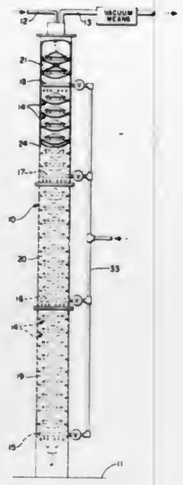
4,201,628

SEPARATION APPARATUS

Shirley L. Church, E. Amherst, and Loren M. Hilts, Niagara Falls, both of N.Y., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 7, 1977, Ser. No. 840,343
Int. Cl.[2] B01D 3/14, 3/24
U.S. Cl. 202—158 3 Claims

1. An elongated closed column including a top section, a midsection and a bottom section, the top section including a vacuum means to remove gases from said section and a means to charge a feed onto the apex area of the top plate of the top plate assembly, said bottom section including a means for removing the treated feed from said column, the midsection containing a series of plate assemblies positioned in a one-above-another relationship to control the distribution and rate of flow of the feed from the top section to the bottom section of the column, each of said plate assemblies comprising a support means positioned between a top cone plate and a lower conical plate to support said plates a predetermined distance apart, said top cone plate being positioned a predetermined distance from the sidewalls of said column and sloping upward from its outer periphery to position the apex of said plate in the center line of said column, said lower conical plate being attached in a supported relationship to the sidewall of said column and sloping downward continuously from the sidewall to terminate in an opening in the center of said column, a gasket



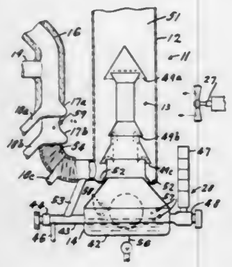
means to form a liquid tight seal between the sidewalls and the outer edge of said conical plate.

4,201,629

FLUID REFINING APPARATUS

Alvin E. Buggele, 7 Milan Manor Dr., Milan, Ohio 44846

Continuation of Ser. No. 619,807, Oct. 6, 1975, abandoned, which is a division of Ser. No. 522,708, Nov. 11, 1974, Pat. No. 3,923,424. This application Feb. 27, 1978, Ser. No. 881,659
Int. Cl.[2] B01D 3/14; F04F 9/00
U.S. Cl. 202—158 9 Claims



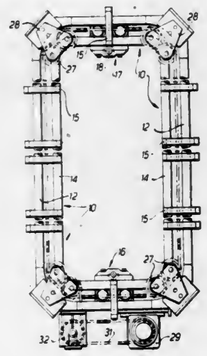
1. In a fluid refining system including a series of evaporation vessels adapted to contain a body of liquid defining an evaporative surface, a first of such evaporative vessels comprising, a boiler for initially heating an incoming feed liquid and the remaining evaporative vessels comprising a series of distillation plates within a fractionating column in communication with the effluent end of the boiler, at least one of said distillation plates having collecting means to collect a body of liquid, the improvement comprising at least one first conduit means for providing communication between said collecting means at the level of the evaporative surface thereof and the exterior of the fractionating column, means for maintaining said first conduit means at a pressure lower than that of said evaporative vessel, a valve in said first conduit means, and second conduit means providing communication between said collecting means at a vertically discrete location below said first conduit means and the exterior of the fractionating column for withdrawing collected liquid fractions from said one of said distillation plates whereby areas of the evaporative surface which impede evaporation of the liquid may be removed from the evaporative surface by the periodic opening of said valve and liquid fractions may be removed from the fractionating column through said second conduit means.

4,201,630

CLEANING COKE OVEN DOORS OR DOOR JAMBS

Eric A. Hyde, Bromley, England, assignor to British Steel Corporation, London, England

Filed Jul. 28, 1978, Ser. No. 928,920
Claims priority, application United Kingdom, Aug. 5, 1977, 32913/77
Int. Cl.[2] C10B 43/08
U.S. Cl. 202—241 7 Claims



1. A cleaning machine for a vertical coke oven door or door jamb having a peripheral sealing surface, said machine including means for directing a high pressure water jet on to the peripheral sealing surface to remove tarry deposits from the exposed sealing surface, a multi-wheeled movable carriage to which the jet directing means is attached, and a closed track which includes four longitudinally extending members held in fixed quadrilateral spatial relationship with one another by support members, the wheels of said carriage comprising at least two longitudinally spaced sets of four wheels, the wheels of each set bearing against separate longitudinally extending members so as to positively orient the carriage in relation to said members whereby said carriage is free to move only along said closed track and lateral and tilting movement of the carriage with respect to the track is prevented.

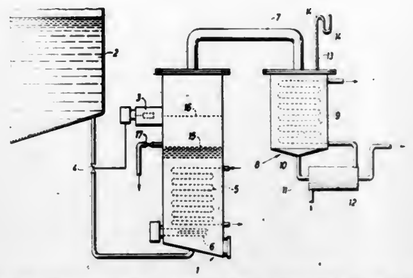
4,201,631

METHOD FOR CONTROLLING THE FLOW THROUGH A DISTILLATION APPARATUS AND A DEVICE FOR CARRYING OUT THE METHOD

Berth U. Gustafsson, Österskär, Sweden, assignor to Projectus Industriprodukter Aktiebolag, Bromma, Sweden

Filed Jun. 6, 1978, Ser. No. 913,218
Int. Cl.[2] B01D 3/42
U.S. Cl. 203—1 7 Claims

1. A method for controlling the flow through a distillation system including a boiling vessel containing a liquid mixture, a condensing vessel and a refrigeration circuit provided with a compressor means and containing a refrigeration medium, said refrigeration circuit being operatively associated with said boiling vessel and said condensing vessel, wherein a substance is separated from said liquid mixture which has a boiling point and density dependent upon the contents of said substance in said liquid mixture, which comprises introducing fresh liquid mixture into the boiling vessel in response to the liquid level in the boiling vessel, and removing a liquid enriched in said substance in a controlled manner from the boiling vessel in response to the pressure of the refrigeration medium, which increases in accordance with an increase in the distillation temperature, wherein the heat emitted upon the condensation of the distillate in the condenser vessel is transferred to the refrigeration medium in the refrigeration circuit and the refrigeration medium is returned by additional compressor work of said compressor to the boiling vessel where said heat is transferred to the liquid mixture.



4,201,632

SEPARATION OF PHENOL-, CYCLOHEXANONE-, AND CYCLOHEXYLBENZENE-CONTAINING MIXTURES EMPLOYING A NITRILE AS EXTRACTION DISTILLATION SOLVENT

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 20, 1978, Ser. No. 971,169
Int. Cl.[2] B01D 3/40; C07C 37/22, 45/24
U.S. Cl. 203—51 7 Claims

1. An extractive distillation of a mixture containing phenol and cyclohexanone, which mixture may also contain cyclohexylbenzene, which comprises distilling said mixture in the presence of a solvent comprising at least one nitrile which contains up to about 30 carbon atoms and which can be represented by the following general formula:

$$R(CN)_m$$

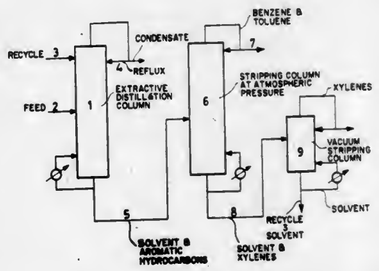
wherein m is an integer from 1 to 4 and wherein R is selected from a group consisting of hydrocarbyl and substituted hydrocarbyl radicals.

4,201,633

SEPARATING AROMATIC HYDROCARBONS FROM MIXTURES CONTAINING THEM

Giancarlo Paret; Alessandro Vetere, both of Milan, and Giuseppe Iori, San Donato Milanese, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed May 9, 1978, Ser. No. 904,270
Claims priority, application Italy, May 12, 1977, 23474 A/77
Int. Cl.[2] B01D 3/40; C07C 7/08
U.S. Cl. 203—58 2 Claims



1. A method for the separation of aromatic hydrocarbons from mixtures containing them, comprising the steps of:

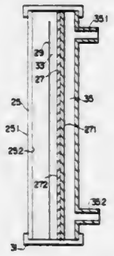
(a) feeding the charge, which contains aromatic hydrocarbons, including benzene, toluene and xylenes to be separated, into the half-way section of an extractive distillation column, and a solvent compound of N,N[1]-dimethyl ethylene urea into the upper area of the column,
(b) discharging from the head of the extractive distillation column a stream which is composed of non-aromatics and refluxing a portion of such a stream into the column, after having condensed said stream portion,
(c) discharging through the bottom of the extractive distillation column a stream which is composed of the solvent and the aromatic hydrocarbons,
(d) feeding said solvent and the aromatic hydrocarbons to a stripping column, under substantially atmospheric pressures, thus obtaining at the column head substantially all the benzene and toluene and a portion of the xylenes and, at the column bottom the solvent with the remaining portion of the xylenes, and
(e) feeding said solvent with the xylenes to a vacuum stripping column under a pressure of from 0.10 to 0.050 atm. the xylenes being separated at the head and the solvent at the bottom, such solvent being recycled to the extractive distillation column.

4,201,634

METHOD FOR THE DETECTION OF HYDRAZINE

Joseph R. Stetter, Peekskill, N.Y., assignor to Energetics Science, Inc., Elmsford, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,296
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—1 T **4 Claims**



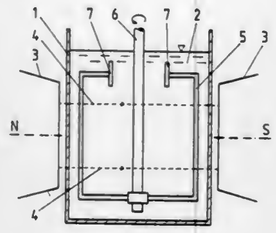
1. A method for electrochemically detecting a hydrazine gas which comprises the steps of (1) feeding a gaseous sample containing said gas from an intake means to a sensing electrochemical cell through means communicating said intake means with said cell, at least the internal surfaces of said intake means, said communicating means and said cell being of a material inert to hydrazine, said electrochemical cell comprising a sensing electrode, a counter electrode, and a reference electrode at which substantially no current flows, an aqueous alkaline electrolyte in contact with said sensing electrode, counter electrode and reference electrode, said sensing electrode comprising a noble metal catalyst bonded to a hydrophobic material to provide a diffusion electrode; (2) maintaining said sensing electrode at a fixed potential of about 0.70 volt to 1.4 volts with respect to the potential of the reversible hydrogen couple in the electrolyte of said cell; and (3) measuring the current flowing between said sensing electrode and counter electrode of said cell to quantitatively determine the amount of said hydrazine gas in said gaseous sample.

4,201,635

METHOD AND APPARATUS FOR CARRYING OUT AN ELECTROLYSIS PROCESS

Klaus Muller, Baden, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 5, 1978, Ser. No. 966,659
Claims priority, application Switzerland, Dec. 21, 1977, 15757/77
Int. Cl.[2] C25B *15/00*; C25C *7/00*; C25D *21/00*; C25F *7/00*
U.S. Cl. 204—1 R **31 Claims**



1. A method of carrying out an electrolysis process in an electrolytic cell containing an electrolytic medium by the use of electromotive induced cell voltage as the only source of the cell voltage which is necessary to be applied between an anode and a cathode of the cell to create electrolysis, said method including the steps of:
placing a solid electron conductor in the form of a conducting body and having electrodes into said cell;
passing a magnetic field transversely through said cell;
and varying the part of said magnetic field which is acting upon said electron conductor;
whereby a voltage is induced in said electrodes.

17. An apparatus for carrying out an electrolytic process, said apparatus comprising:
an electrolysis receptacle adapted to contain an electrolytic medium;
at least one electron conductor in said receptacle, each said conductor comprising a conducting body and including at least one anode and at least one cathode;
at least one magnet body adapted to produce a magnetic field within said receptacle; and
means for varying said magnetic field with respect to said electron conductor.

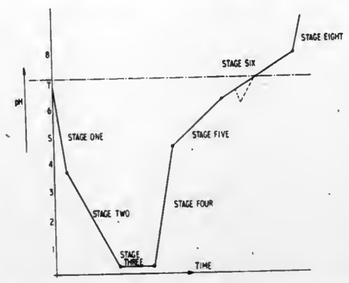
4,201,636

ELECTROCHEMICAL DESTRUCTION OF STABLE COMPLEXES

John J. MacGregor, Reading, England, assignor to Matthey Rustenburg Refiners (Pty) Limited, Johannesburg, South Africa

Continuation-in-part of Ser. No. 942,814, Sep. 15, 1978, which is a continuation of Ser. No. 815,005, Sep. 12, 1977, Pat. No. 4,127,458. This application Apr. 19, 1979, Ser. No. 31,605
Claims priority, application United Kingdom, Jul. 13, 1976, 29093/76; Oct. 12, 1978, 42108/78
Int. Cl.[2] C25C *1/20*
U.S. Cl. 204—109 **8 Claims**

1. A process for recovering platinum group metal present as a stable complex in an aqueous effluent, the process comprising the steps of:
(a) adjusting the pH of the effluent as necessary to a pH of 6±0.5;
(b) removing by filtration a substantial quantity of the base and amphoteric metals from the so-treated effluent of step (a);
(c) heating the filtrate from step (b) to a temperature in the region of 70° C.;
(d) electrolysing the heated filtrate of step (c) at a substantially constant temperature maintained at least at 70° C. so as to destroy the stable complexes and thereby precipitate



the platinum group metals in the form of hydrated oxides or hydroxides, and
(e) filtering-off the said precipitate.

4,201,637

SACRIFICIAL ANODE APPARATUS

Marvin L. Peterson, and Orwin G. Maxson, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 15, 1978, Ser. No. 960,904
Int. Cl.[2] C23F *13/00*
U.S. Cl. 204—148 **9 Claims**



1. A sacrificial anode apparatus for use on a steel offshore platform, said apparatus comprising:
(a) a perforated container for anode material, at least a portion of said container being of electrically conductive material, said container being electrically connected to the steel structure of said offshore platform and being under the surface of the water,
(b) particulate anode material in said container, and
(c) tubing connected to said container and extending to a source of supply for conveying said anode material to said container.

4,201,638

TRIPLE IONS OF 1,2- AND 1,4-DICARBONYL COMPOUNDS AND ANALOGS THEREOF CONTAINING NITROGEN AND CONTAINING TWO STRATEGIC OXYGEN OR NITROGEN GROUPS AND PROCESS FOR PRODUCING SAME

Jeffrey K. S. Wan, Kingston, and Kuang S. Chen, Amherstview, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Sep. 25, 1978, Ser. No. 945,627
Int. Cl.[2] B01J *1/10, 1/12*; C07G *13/00*; C07C *107/02*
U.S. Cl. 204—158 R **6 Claims**

1. A stable, paramagnetic alkali radical triple cationic ion of a compound selected from the group consisting of furil, pyridil, di-tert-butylazodicarboxylate, anthraquinone, quinizarin, duroquinone, pyrazine, tetramethyl pyrazine, tetracyanoquinodimethane, and tetracyanoethylene.

3. A process for producing stable paramagnetic alkali radical cationic triple ions of a compound selected from the group consisting of furil, pyridil, di-tert-butylazodicarboxylate, anthraquinone, quinizarin, duroquinone, pyrazine, tetramethyl pyrazine, tetracyanoquinodimethane, and tetracyanoethylene comprising mixing said compound with an alkali tetraphenylborate in an organic solvent therefor and irradiating the resultant mixture with radiations in the range between about 300 and 500 Nm.

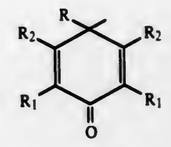
4,201,639

PROCESSES FOR PREPARING CYCLOHEXADIENE DERIVATIVES

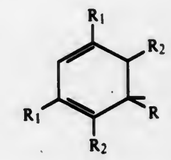
Kenneth K. Light, Long Branch; Bette M. Spencer, Ocean Grove; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Manfred H. Vock, Locust, N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 860,121, Dec. 13, 1977, Pat. No. 4,154,763, which is a division of Ser. No. 774,058, Mar. 3, 1977, Pat. No. 4,076,854. This application Feb. 2, 1979, Ser. No. 8,886
Int. Cl.[2] B01J *1/10*; C07C *45/00*
U.S. Cl. 204—158 R **2 Claims**

1. The process for preparing the compound having the structure:



wherein R is one of C_1-C_5 alkyl, R_1 is methyl when R_2 is hydrogen, and R_1 is hydrogen when R_2 is methyl, comprising the step of insufflating a composition consisting essentially of a compound having the structure:



with oxygen in the presence of ultraviolet light, a basic catalyst and a rose bengal sensitizer.

4,201,640

METHOD FOR PRODUCING BIS-[4-(DIPHENYLSULFONIO)PHENYL] SULFIDE BIS-M.X_6 INITIATOR AND METHOD FOR CATIONIC POLYMERIZATION OF MONOMER FORMULATIONS USING SAME

William R. Watt, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 14, 1979, Ser. No. 20,340
Int. Cl.[2] C08F *2/46, 4/00*
U.S. Cl. 204—159.11 **8 Claims**

1. In a method of polymerization of a cationically polymerizable monomer, the steps comprising:
A. making a photoinitiator by:
(1) providing a first reactant comprising bis-[4-(diphenylsulfonio)phenyl] sulfide bis-halide wherein halide is chloride or bromide;
(2) admixing said first reactant in an aqueous solution with a second reactant having the formula T.MF_6 wherein M is one of phosphorus, antimony or arsenic, T is hydrogen or a metal whose halide salt is water soluble, said reactants reacting to produce a precipitate including bis-[4-(diphenylsulfonio) phenyl] sulfide bis-MF_6;
(3) recovering said precipitate; and

(4) drying said precipitate at a temperature below about 50° C. for at least an initial period to dewater said precipitate and recover a frangible product containing at least 50 percent by weight bis-[4-(diphenylsulfonio) phenyl] sulfide bis-MF_6 based upon solids, said product comprising a photoinitiator;

B. admixing said photoinitiator with a cationically polymerizable monomer formulation in an amount equal to 0.5–6.0 percent by weight of the monomer therein; and

C. exposing said admixture to a source of electromagnetic radiation to decompose said photoinitiator and produce a Lewis acid to initiate polymerization of said polymerizable monomer.

4,201,641

RADIATION GRAFTING PROCESS FOR PREPARING A MEMBRANE FOR BATTERY SEPARATOR

Masao Gotoda, Takasaki; Toshio Okada, Kadoma; Kazuo Murata, Takatsuki, and Kusuhiko Takahashi, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute; Toshiba Ray-O-Vak K.K., both of Tokyo and Yuasa Battery Co., Ltd., Osaka, all of, Japan

Filed Jul. 21, 1978, Ser. No. 926,923

Claims priority, application Japan, Jul. 26, 1977, 52/89653

Int. Cl.² C08F *8/00*

U.S. Cl. 204—159.17 **10 Claims**

1. A process for preparing a separator membrane for battery comprising contacting polyethylene with an aqueous solution of 30–80% by volume acrylic acid, said aqueous solution further containing at least 3 parts by volume of ethylene dichloride per 100 parts of aqueous solution and 0.001 to 0.1 mole of ferrous salt or cupric salt per liter of the total solution; and then irradiating with ionizing radiation of 0.01 to 2 Mrad.

4,201,642

RADIATION-CURABLE COATING COMPOSITION HAVING UTILITY AS A MOISTURE BARRIER FILM

Michael T. Nowak, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 19, 1978, Ser. No. 944,034

Int. Cl.² C08F *8/00*

U.S. Cl. 204—159.17 **10 Claims**

1. A radiation-curable resin composition having utility as a moisture barrier film which comprises a blend of (1) between about 10 and 30 weight percent of chlorinated rubber; (2) between about 2 and 25 weight percent of chlorinated paraffin; (3) between about 15 and 45 weight percent of vinyl alkanoate; (4) between about 10 and 40 weight percent of crosslinking monomer containing at least two polymerizable olefinically unsaturated groups; (5) between about 0.5 and 15 weight percent of photoinitiator; and (6) between about 0.5 and 5 weight percent of stabilizer, based on the total composition weight.

4,201,643

ANALYTICAL APPARATUS

David J. Holman, Blandford Forum, and Howard James, Dorchester, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 707,078, Jul. 20, 1976, abandoned, which is a division of Ser. No. 583,900, Jun. 5, 1975, Pat. No. 4,025,308. This application Mar. 29, 1978, Ser. No. 891,454

Claims priority, application United Kingdom, Jun. 7, 1974, 25458/74

Int. Cl.² B01D *13/02*

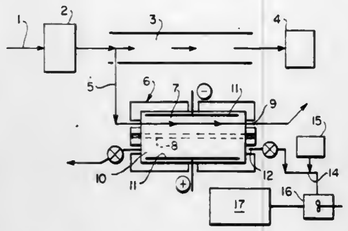
U.S. Cl. 204—180 R **5 Claims**

1. A method of reducing the amount of residual chloride ions in water after said water has previously been treated to remove the bulk of said ions, the method comprising,

(a) passing said treated water through a compartment of an electrolytic cell;

(b) presenting said treated water within the cell to one face of a porous non-ion selective membrane comprising a cellulose ester having pores of about 0.45 micrometers diameter and a thickness of about 150 micrometers to inhibit retention of said chloride ions in said pores so that to a substantial extent chloride ions can pass through said pores;

(c) exposing the other face of the porous membrane to water substantially devoid of said residual chloride ions, and



(d) simultaneously polarising the elctrolytic cell with a direct current supply of about 100 volts in a manner to attract anions and thereby the chloride ions from the treated water through the pores of the membrane and into the water substantially devoid of said chloride ions.

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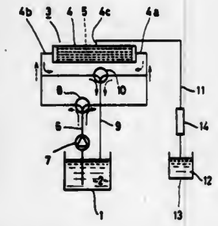
REPLENISHMENT OF ELECTRODEPOSITION COATING BATH

Nobuaki Todoroki, Warabi; Junichi Yasukawa, Chigasaki; Norio Kawamura, Kawagoe; Akio Kasai, Sayama; Satoru Kamiyama, and Toshihiro Kawasaki, both of Tokyo, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki; Honda Motor Co., Ltd. and Taikisha Ltd., both of Tokyo, all of, Japan

Filed Sep. 29, 1978, Ser. No. 946,956

Int. Cl.² C25D *13/24*

U.S. Cl. 204—181 C **2 Claims**



1. A method for replenishing an electrodeposition coating liquid bath which comprises subjecting to ultrafiltration, in an ultrafiltration apparatus, an electrodeposition bath liquid which has been decomposed with time, said bath containing, as essential components, a water thinnable cationic binder resin which is a nitrogen atom containing a basic resin neutralized at least partially with an acid compound and at least one non-ionic resin in the form of a powder which is solid at room temperature, but which can melt when heated to form a film, said ultrafiltration being carried out under a pressure of 0.2–3.0 kg/cm^2; changing the direction of the bath liquid during the ultrafiltration step so as to cause the liquid to flow in opposite directions in the ultrafiltration apparatus for the purpose of preventing the clogging of the apparatus; recycling the concentrates obtained from the ultrafiltration to the electrodeposition coating bath to adjust the liquid characteristics of the bath and using filtrates obtained from the ultrafiltration step as a diluent for preparing a replenishing supply liquid and adding the thus-prepared replenishing supply liquid to the electrodeposition coating bath.

4,201,645

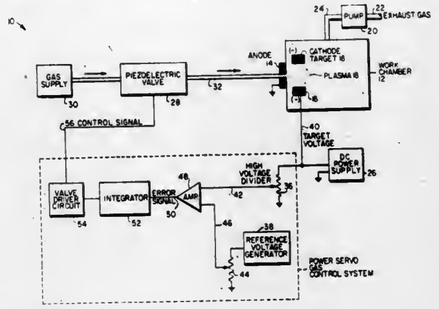
CLOSED-LOOP SPUTTERING SYSTEM AND METHOD OF OPERATING SAME

Richard P. Riegert, Santa Barbara, Calif., assignor to Robert J. Ferran, Framingham, Mass.

Filed Jun. 26, 1978, Ser. No. 919,435

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 R **16 Claims**



1. A closed-loop sputtering system for the deposition of a thin film of material from a target cathode onto a substrate, which system comprises in combination:

(a) a D.C. power source to apply a constant current or voltage;

(b) a sputtering work chamber containing therein a target cathode, a substrate and an anode, the electrodes spaced apart and adapted to form in operation a plasma of an ionized gas therebetween;

(c) a means to maintain the work chamber under a vacuum and to discharge exhaust gas from the work chamber in operation;

(d) a source of gas for use in forming the plasma;

(e) gas conduit means to conduct the gas from said source to the work chamber to form the plasma;

(f) electrically controlled gas-flow valve means in the conduit means, the valve means to control the flow of gas therethrough in proportion to the application of an electrical error signal to the valve means;

(g) first electrical-communication means to provide for electrical communication between the D.C. power source and the cathode, so as to provide a constant current or voltage to the target cathode; and

(h) control means in direct nonbiased electrical communication with the target cathode and with the gas-flow valve means, said control means comparing the target voltage or current signal which varies with the ionization level of the plasma in the work chamber with a reference voltage or current signal and generating a differential electrical-error-control signal to control and drive the valve means, whereby the ionization level of the plasma is controlled by variations in the flow of gas without the necessity of a pressure-sensing device in the work chamber.

4,201,646

APPARATUS FOR STRIPPING VOLTAMMETRY

Wayne R. Matson, Ayer, Mass., assignor to Environmental Sciences Associates, Inc., Bedford, Mass.

Continuation of Ser. No. 643,295, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 447,376, Mar. 1, 1974, abandoned. This application Nov. 30, 1977, Ser. No. 856,086

Int. Cl.² G01N *27/48*

U.S. Cl. 204—195 H **18 Claims**

1. An electrode assembly for stripping voltammetry analysis of a sample solution, and comprising in combination:

an enclosure for holding a volume of said sample solution,

a counter electrode located in said enclosure for contacting said sample solution;

a working electrode located in said enclosure for contacting said sample solution, said working electrode being in the form of an axially hollow electrode body having a metal active electrode surface formed on the interior surface thereof;

and rotatable stirring means (i) extending into the hollow of said electrode body, closely spaced (a) from the interior surface of said hollow and (b) from said counter electrode, and (ii) adapted to produce flow of said sample solution across said active electrode surface, said electrode assembly being dimensioned so that the ratio of surface area of said active electrode surface to sample volume is at least 3 cm^2/ml.



2. An electrode combination according to claim 1, wherein said working electrode comprises a hollow graphite body.

3. An electrode combination according to claim 2, wherein said hollow graphite body has an active electrode surface in the form of a multiplicity of islands of mercury formed on the interior surface of said hollow graphite body.

4,201,647

MEASURING ELECTRODES AND PROCESS

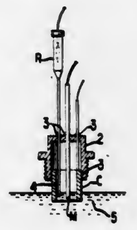
Placido M. Spaziante, Lugano, Switzerland; Luigi Giuffre, and Giovanni Modica, both of Milan, Italy, assignors to Panclor S.A., Taverne, Switzerland

Filed May 22, 1978, Ser. No. 908,262

Claims priority, application Switzerland, Jun. 8, 1977, 7089/77

Int. Cl.² G01N *27/30, 27/46*

U.S. Cl. 204—195 F **13 Claims**



1. A measuring electrode comprised of a body provided with an outer surface comprised of graphite or carbon black dispersed in a chemically inert matrix, said electrode being preactivated by anodic polarization in an aqueous acidic or basic solution.

4,201,648

NICKEL RECOVERY FROM SULFUR-DEFICIENT MATTES

Kojur N. Subramanian, East Hanover, N.J.; Norman C. Nissen, Oakville, and John A. Thomas, Norval, both of Canada, assignors to The International Nickel Co., Inc., New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,448
Claims priority, application Canada, Apr. 12, 1978, 301006
Int. Cl.[2] C25C *1/08*
U.S. Cl. 204—112 **8 Claims**

1. A process for recovering nickel from a nickel matte which contains up to 15% cobalt, up to 5% copper, and sulfur in an amount such that the atomic ratio S:[Ni+Co+Cu] is less that about 0.7, comprising the steps of:

(i) fragmenting the matte to particles smaller than about 75 microns (μm) diameter;

(ii) forming a slurry of the fragmented matte in a medium which in the case of a matte wherein the atomic ratio S:[Ni+Co+Cu] is at least about 0.4 comprises water, and in the case of a matte wherein the atomic ratio S:[Ni+Co+Cu] is less than about 0.4 comprises a nickel sulfate aqueous solution of such concentration that the atomic ratio S:[Ni+Co+Cu] for the combination of matte and dissolved nickel sulfate is at least about 0.4;

(iii) heating the slurry in an autoclave at a temperature of at least about 140° C. under an oxygen partial pressure of at least about 0.1 megapascals (MPa), and withdrawing from the autoclave reacted slurry wherein the solids consist essentially of basic nickel sulfate and leach residue of unreacted matte;

(iv) treating the reacted slurry at a temperature of at least about 60° C. with lime to raise the pH to at least about 9.0 while agitating midly to convert nickel in the slurry to fine particles of nickel hydroxide and precipitate large crystals of calcium sulfate;

(v) subjecting the lime-treated slurry to a physical separation effective to separate therefrom the slurry liquor and a coarse solids fraction, thereby isolating a fine solids fraction which comprises essentially the nickel hydroxide and matte residue;

(vi) treating the fine fraction isolated in step (v) with spent sulfate electrolyte from a nickel electrowinning operation to dissolve the nickel hydroxide;

(vii) separating the matte residue from th solution obtained in step (vi); and

(viii) subjecting the nickel sulfate solution separated in step (vii) to purification and thereafter to electrowinning to recover pure nickel therefrom.

4,201,649

LOW RESISTANCE INDIUM OXIDE COATINGS

F. Howard Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 29, 1978, Ser. No. 964,765
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 P **4 Claims**

1. In a method for depositing a transparent electroconductive coating consisting essentially of the oxide of at least one metal having an atomic number between 48 and 51 comprising the steps of supporting a substate in an atmosphere comprising an inert gas and sufficient oxygen to effect oxide formation at a pressure of less than about 10^{-1} Torr, heating the substrate, and cathode sputtering a metallic target to deposit said oxide onto said substrate until a coating of desired thickness is formed, the improvement which comprises carrying out the cathode sputtering in at least two steps at substantially different temperatures whereby

a. a thin layer of oxide constituting the minor portion of the final oxide layer is deposited at a temperature of T_1;

b. the deposition is interrupted while the substrate is heated; and

c. subsequently, the major portion of the final oxide layer is deposited at a temperature T_2

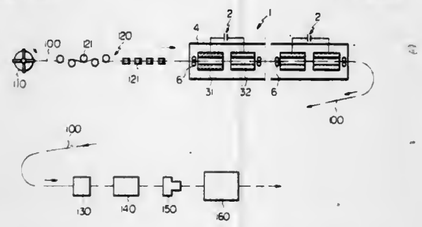
wherein T_1 which is less than about 200° F. (about 94° C.) is substantially lower than T_2 which is at least about 400° F. (about 204° C.).

4,201,650

APPARATUS FOR CONTINUOUS ELECTROLYTIC DESCALING OF STEEL WIRE WITH MILL SCALES

Hiroo Nagano; Takashi Fukuda, both of Kobe; Hiroshi Nagai, and Yasuyuki Nakamura, both of Amagaski, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 14, 1978, Ser. No. 886,572
Claims priority, application Japan, Mar. 22, 1977, 52/31901; Mar. 22, 1977, 52/31902
Int. Cl.[2] C25F *7/00, 1/00*
U.S. Cl. 204—209 **3 Claims**



1. An apparatus for continuous electrolytic descaling of mill scales from a steel wire by induced current flow, said apparatus comprising:

roller bender means having a plurality of rolls for reversely bending a wire for at least two cycles of bending for cracking scales on the wire and for drawing the wire for elongating it from 1-20%;

an electrolytic cell adjacent said roller bender means for receiving wire from said roller bender means, said electrolytic cell having a wire inlet therein adjacent said roller bender means and a wire outlet spaced from said wire inlet;

an electrolytic descaling solution in said electrolytic cell;

guide rollers of electrically insulating material within said electrolytic cell for guiding the wire along a line within said cell;

auxiliary cells at said wire inlet and said wire outlet of said electrolytic cell for receiving electrolytic solution leaking through said wire inlet and outlet;

a source of direct electric current;

a plurality of pairs of electrodes in said cell aligned along said line, said electrodes surrounding and being spaced from the wire being guided along said line, one electrode of each pair of electrodes being connected to the anode of said direct current source and the other electrode of each pair being connected to the cathode of said direct current source; and

means connected to said electrolytic cell for circulating the electrolytic solution into each of said electrodes at a predetermined rate.

4,201,651

ELECTROLYSIS CELL

Constantinos D. Themy, 4984 S. 360 West, Murray, Utah 84106

Filed Dec. 15, 1978, Ser. No. 969,845
Int. Cl.[2] C25B *9/00, 11/02, 15/08*
U.S. Cl. 204—217 **7 Claims**

1. An electrolysis cell, comprising:

an outer electrode having an in-facing surface which falls generally on a first cylindrical surface;

an inner generally coaxial electrode having an out-facing surface which falls generally on a second cylindrical surface, said second cylindrical surface falling inward radially of said first cylindrical surface, said outer and inner electrodes being longitudinally co-extensive for at least a substantial portion thereof;

means for relatively rotating said inner and outer electrodes;

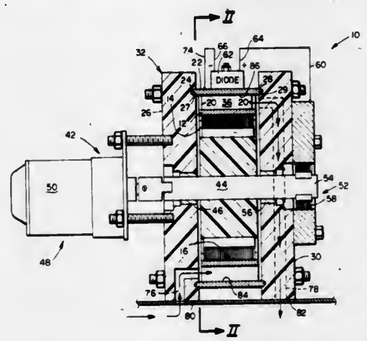
an abrading structure having an abrasive portion;

means for mounting said abrading structure to a respective one of said electrodes and with said abrasive portion thereof in abrasive contact with a respective other of said electrodes;

means for electrically insulating said abrasive portion from at least one of said electrodes;

means, independent of said abrading structure and carried by either said respective one or said respective other of said electrodes, for mechanically motivating fluid in said cavity to flow axially relative to said electrodes in the space therebetween; and

means for supporting said electrodes in electrically insulating relation relative to one another and for defining a cell cavity about said electrodes.

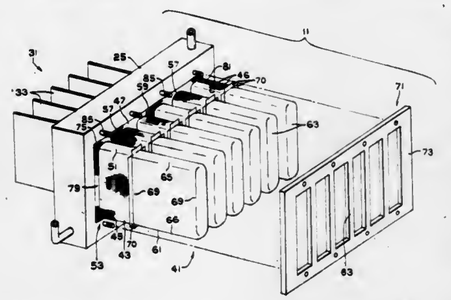


4,201,652

ELECTROLYTIC CELL MEMBRANE SEALING MEANS

Dallas D. Dupre, III, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 22, 1978, Ser. No. 963,246
Int. Cl.[2] C25B *9/00, 11/02, 11/04, 13/08*
U.S. Cl. 204—258 **9 Claims**



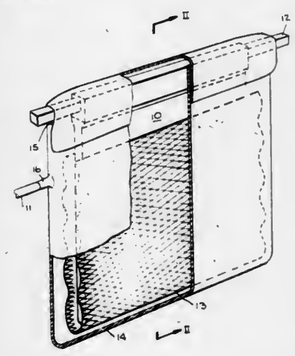
1. In an electrolytic cell having an electrode assembly comprising a base plate; fingered electrodes electrically connected to, spaced from, and extending perpendicularly outwardly from said base plate and defining valleys between a pair of adjacent fingered electrodes; a back screen spaced from and substantially parallel to said back plate, and interposed between said fingered electrodes and said backplate, said fingered electrodes having a top edge and a bottom edge extending from said backscreen, a leading edge remote from said backscreen, and a trailing edge adjacent said backscreen; said fingered electrodes bearing synthetic separators thereon; said synthetic separator being closed at the edges corresponding to the top, bottom, and leading edge of the fingered electrodes and open at the edge corresponding to the trailing edge thereof, with laps of synthetic separator material extending therefrom along said backscreen; and compressive means for sealing the laps of said synthetic separators, joined to the electrode assembly and bearing upon said electrode assembly and the laps of said synthetic separator material at the base of the electrode fingers between a pair of adjacent electrode fingers; the improvement wherein said compressive means comprises a frame bearing upon said backscreen and corresponding to the top and bottom of said electrode fingers and bearing means depending from said frame at the top of the electrode fingers to the frame at the bottom of the electrode fingers, and bearing upon said laps of synthetic separator material and said backscreen in the valleys between individual adjacent electrodes.

4,201,653

ELECTROWINNING CELL WITH BAGGED ANODE

Charles E. O'Neill; Victor A. Ettel, both of Mississauga; Alfredo Villazor, Fonthill, and Peter G. Garritsen, Welland, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Jul. 27, 1978, Ser. No. 928,687
Claims priority, application Canada, Oct. 11, 1977, 288455
Int. Cl.[2] C25C *7/04, 7/00*
U.S. Cl. 204—263 **1 Claim**



1. A cell for electrowinning a metal from a sulfate electrolyte comprising a housing within which are located a plurality of anodes insoluble in the electrolyte and a plurality of cathodes insoluble in the electrolyte and interleaved between the anodes, wherein the improvement comprises; a plurality of flaccid sheaths each of which comprises a sleeve-shaped porous membrane which is positioned relative to a respective one of the anodes to envelop at least the portion thereof which in operation is immersed in the electrolyte; spacing means interposed between each sheath and the surfaces of its respective anode to maintain a spacing therebetween, thereby defining an anolyte compartment; means for feeding electrolyte into the cell volume between the anolyte compartments and withdrawing electrolyte from within the anolyte compartments, whereby in operation an electrolyte flow is maintained through the sheaths into the anolyte compartments, and a plurality of hood means each of which envelops the portion of a respective anode which is unsubmerged in operation; each hood means being sealed at the lower edge thereof to a respective sheath and having an aperture located slightly below the level at which electrolyte is maintained in operation whereby electrolyte and oxygen can be extracted from the anolyte compartment through said aperture.

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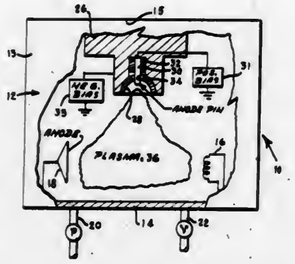
ANODE ASSISTED SPUTTER ETCH AND DEPOSITION APPARATUS

B. Wayne Castleman, Kenneth City, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 6, 1978, Ser. No. 949,167
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—298 **9 Claims**

1. An anode assisted sputter etch apparatus comprising a

housing, said housing forming a chamber therein, means located within said chamber for holding an article to be sputter etched, said holding means having a concave spherical configuration, said concave spherical configuration matingly engaging said article, means for introducing an ionizable gas into said chamber, means located within said chamber on one side of said holding means for producing electrons, a first anode located within said chamber on the other side of said holding means, means for providing a negative potential to said article,



and a second anode located within said chamber being centrally located within said concave spherical configuration of said holding means adjacent said article and intermediate said first anode and said electron producing means whereby a plasma is formed between said electron producing means and said first and second anodes, said plasma adjacent said second anode being capable of desorbing gases and other absorbed vapors from the surface of said article while positive ions from said plasma bombard said article surface with sufficient energy to eject material therefrom.

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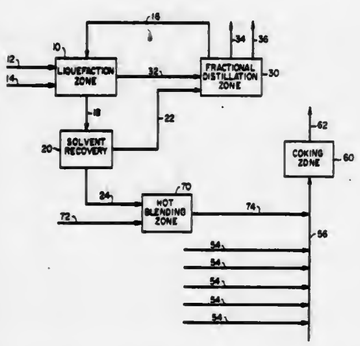
PROCESS FOR MAKING METALLURGICAL COKE

Frank W. Theodore, Pittsburgh; George E. Wasson, Eighty-Four; William A. Jasulaitis, Wayne, all of Pa., and Everett Gorin, San Rafael, Calif., assignors to Continental Oil Company, Stamford, Conn.

Continuation-in-part of Ser. No. 857,155, Dec. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 751,621, Dec. 17, 1976, abandoned. This application Dec. 18, 1978, Ser. No. 970,845

Int. Cl.² C10B *53/00*; C10G *1/06*

U.S. Cl. 208—8 LE **5 Claims**



1. In a process for producing coke from coal, said process consisting essentially of:

(a) subjecting said coal to solvent extraction in a coal liquefaction zone to yield an effluent slurry consisting essentially of coal extract, solvent and undissolved coal;

(b) subjecting said effluent slurry to distillation in a solvent recovery zone to remove said solvent and produce a bottoms product consisting essentially of non-distillable coal extract, undissolved coal and residual solvent, said bottoms product being flowable at temperatures between 175° C. and below its carbonizing temperature and solidifiable at lower temperatures; and

(c) adding said bottoms product to coaly solids said coaly solids being selected from the group consisting of coals, char, semi-coke and coke to produce a blend of said coaly solids with said bottoms product for use as a feedstock to a slot-type coke oven coking zone to produce coke suitable for use in a blast furnace,

the improvement comprising: mixing said bottoms product with at least one of said coaly solids at an elevated temperature above the softening temperature of said bottoms product and below the carbonization temperature of said bottoms product, said elevated temperature being between about 200° to about 350° C., and cooling the resulting blend to produce a particulate blend of said bottoms product and said coaly solids for use as a feedstock to a coke oven thereby producing coke of an improved quality upon coking said blend.

4,201,656

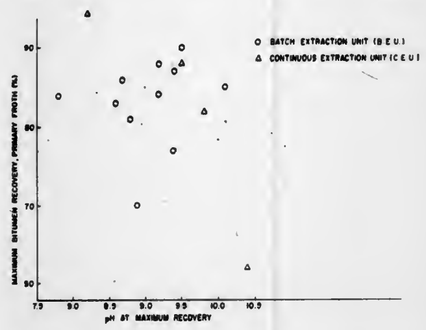
PROCESS AID ADDITION IN HOT WATER PROCESS BASED ON FEED FINES CONTENT

Emerson Sanford, Edmonton, Canada, assignor to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; Ontario Energy Corporation; Imperial Oil Limited, both of Toronto; Canada-Cities Service, Ltd., Calgary and Gulf Oil Canada Limited, Toronto, all of, Canada

Filed Feb. 21, 1979, Ser. No. 13,004

Int. Cl.² C10G *1/04*

U.S. Cl. 208—11 LE **2 Claims**



1. In the hot water process for recovering bitumen from tar sands feed of varying composition containing varying contents of fines wherein said feed is conditioned with hot water and a process aid, the improvement comprising:

establishing measurements indicative of the varying fines content of the tar sands feed; and

adding the process aid to the conditioning step in quantities responsive to the quantities of fines present in the feed so as to substantially maximize bitumen recovery from the process while substantially minimizing process aid consumption.

4,201,657

COAL SPRAY COMPOSITION

Ardis L. Anderson, Ponca City, Okla., and Marvin E. Huyser, Houston, Tex., assignors to Conoco, Inc., Ponca City, Okla.

Filed Oct. 23, 1978, Ser. No. 953,392

Int. Cl.² C08L *95/00*

U.S. Cl. 208—23 **6 Claims**

1. A hydrocarbon composition comprising:

(a) 50 to 75 volume percent decant oil from a fluidized bed catalytic cracking operation, said decant oil having a K factor of not more than 10.5; and

(b) 50 to 25 volume percent asphalt; said composition having an initial boiling point above 500° F., a viscosity of at least 700 centistokes at 100° F., and a flash point of at least 230° F.

4,201,658

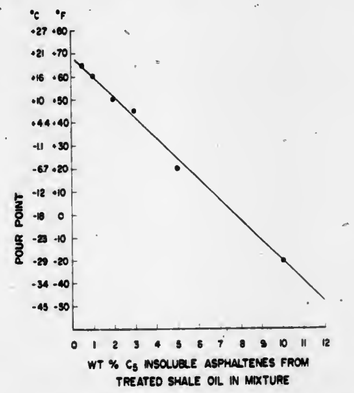
POUR POINT DEPRESSANT MADE FROM THE ASPHALTENE COMPONENT OF THERMALLY TREATED SHALE OIL

Harbo P. Jensen, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 29, 1978, Ser. No. 891,566

Int. Cl.² C10G *21/00*

U.S. Cl. 208—39 **2 Claims**



1. A process for making a product useful as a pour point depressant which comprises

(a) thermally treating a raw whole shale oil in substantially liquid phase at a temperature from 600° F. (316° C.) to below the point of significant thermal decomposition for a period of 0.02 to 3 hours, thereby forming a thermally treated shale oil,

(b) forming a mixture of said thermally treated shale oil and a deasphalting solvent under deasphalting conditions, and

(c) separating from said mixture an insoluble asphaltene component, usable as a pour point depressant, and a deasphalted shale oil having a pour point substantially that of said raw shale oil.

4,201,659

PROCESS FOR THE PREPARATION OF GAS OIL

Pieter B. Kwant, Amsterdam; Dirk Kanbier, The Hague; Petrus W. H. L. Tjan, Amsterdam, and Mohammed Akbar, The Hague, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 29, 1979, Ser. No. 43,187

Claims priority, application Netherlands, Jul. 7, 1978, 7807357

Int. Cl.² C10G *37/04*

U.S. Cl. 208—73 **13 Claims**

1. A process for the preparation of gas oil from an asphaltenes-containing residual hydrocarbon oil which comprises

(a) thermally cracking said asphaltenes-containing oil in a first thermal cracking zone at a temperature from about 400° to 500° C. and a pressure from about 1 to about 30 bar to obtain a first cracked product comprising 5 to 30% w on said asphaltenes-containing oil of thermally cracked material boiling at a temperature lower than the boiling range of said asphaltenes-containing oil,

(b) separating said first cracked product by flashing in a phase separation zone into

(i) a light fraction boiling substantially below 500° C. which contains in addition to components boiling below 350° C., additional components boiling between 350° and 500° C., and

(ii) a heavy fraction boiling substantially above 350° C. which contains in addition to components boiling above 500° C., additional components boiling between 350° and 500° C.,

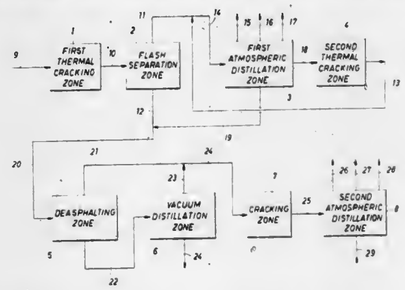
(c) separating the light fraction from step (b) by fractionation distillation in a first atmospheric distillation zone into

(i) at least one light distillate fraction,

(ii) a heavy distillate fraction, and

(iii) a residual fraction,

(d) separating said residual fraction from step (b) by vacuum



distillation in a vacuum distillation zone into a vacuum distillate and a vacuum residue,

(e) thermally cracking the heavy distillate fraction from step (c) in a second thermal cracking zone at a temperature from about 400° to 550° C. and a pressure from about 1 to 30 bar to obtain a second thermally cracked product comprising from about 20 to 75% w of components boiling below the boiling range of said asphaltenes-containing oil free to step (a),

(f) recycling said product from step (e) as feed to step (c) along with the light fraction,

(g) cracking the vacuum distillate from step (d) in a cracking zone which is either a catalytic cracking zone or a hydrocracking zone to obtain a cracked product, and

(h) separating said cracked product by fractionation distillation in a second atmospheric distillation zone to obtain at least one distillate gas oil fraction and an atmospheric residue.

4,201,660

PROCESS FOR THE SEPARATION OF MIXTURES OF VARIOUS HYDROCARBON COMPOUNDS

Kurt Zosel, Oberhausen, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Muhlmann, Fed. Rep. of Germany

Continuation of Ser. No. 808,946, Jun. 22, 1977, abandoned, which is a continuation of Ser. No. 734,562, Oct. 21, 1976, abandoned, which is a continuation of Ser. No. 658,657, Feb. 17, 1976, abandoned, which is a continuation of Ser. No. 492,100, Jul. 26, 1974, abandoned, which is a continuation of Ser. No. 113,025, Feb. 5, 1971, abandoned, which is a continuation of Ser. No. 718,959, Apr. 4, 1968, abandoned, which is a continuation of Ser. No. 476,106, Jul. 30, 1965, abandoned. This application Feb. 3, 1978, Ser. No. 875,034

Claims priority, application Austria, Aug. 5, 1964, 6739/64

The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.

Int. Cl.² B01D *17/00*; C10G *21/14*

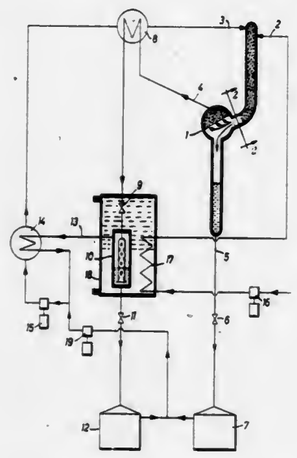
U.S. Cl. 208—86 **42 Claims**

1. A process for the separation of petroleum distillation residues containing lower boiling fraction and higher boiling fraction, which comprises the steps:

(a) contacting said residue in liquid state with a process gas

under super-critical conditions of temperature and pressure of the gas such that the gas will take up at least a portion of said mixture in a quantity varying inversely with said temperature, and effecting said contacting in a manner so that this occurs, said gas having a critical temperature of 90°-250° C. and being inert to the distillation residue, so that a portion of the lower boiling fraction is taken up by the process gas, whereby there is formed a gas phase containing process gas and lower boiling fraction taken up by the process gas, and a liquid hase containing higher boiling fraction of said distillation residue, said contacting being at a temperature up to 100° C. above the critical temperature,

(b) separating the gas phase from the liquid phase, while still maintaining super-critical conditions as aforesaid, thereafter



(c) condensing at least part of the lower boiling fraction from the gas phase by reducing the pressure,

(d) separating condensed lower boiling fraction from the two phase mixture resulting from the condensation,

(e) after separating the lower boiling fraction, cooling the process gas resulting from the separation to liquefy the process gas,

(f) pressurizing the liquefied process gas to the super-critical pressure employed in step (a),

(g) heating the pressurized liquefied process gas to the super-critical temperature employed in step (a) to convert it to process gas at the super-critical temperature and pressure used in step (a), in said heating supplying only energy to raise the temperature,

(h) employing the process gas produced in step (g) in the contacting of step (a).

4,201,661

PROCESS FOR PRODUCING AROMATICS OF HIGH PURITY FROM OIL CUTS

Bernard Juguin; Jean-Francois Le Page, both of Rueil Malmaison, and Jean Miquel, Paris, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Mar. 26, 1974, Ser. No. 454,942

Claims priority, application France, Mar. 26, 1973, 73 10854

Int. Cl.² C10G *35/08*

U.S. Cl. 208—139 **1 Claim**

1. A process for producing aromatic hydrocarbons from saturated or unsaturated gasolines, in the presence of hydrogen and a catalyst, in at least one reaction zone, each reaction zone being divided into successive steps (α) and (β) wherein step (α) is conducted at 400°-600° C. under a pressure of 1 to 60 kg/cm^2, with a substantially neutral γ-alumina catalyst having a specific surface less than 100 m^2/g, and step (β) is conducted at 500°-600° C. under a pressure of 1 to 60 kg/cm^2, with an acidic catalyst, of cubic γ-alumina or chlorinated or fluorinated alumina each step being conducted at an hourly feed rate by volume of the liquid charge of about 0.1-10 times the volume of the catalyst, in the presence of a catalyst containing (a) alumina, (b) 0.01-5% by weight of platinum with respect to alumina, (c) 0.001-1% by weight with respect to alumina of at least one metal selected from the group consisting of rhodium and palladium, and (d) 0.0001-0.05% by weight with respect to alumina of at least one metal selected from the group consisting of copper, silver and gold.

4,201,662

PROCESS FOR CONVERTING SULFUR IN HYDROCARBON TO WATER SOLUBLE FORM

Robert L. Horton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 3, 1979, Ser. No. 26,502

Int. Cl.² C10G *29/20, 27/00, 19/02*

U.S. Cl. 208—228 **13 Claims**

1. A method for desulfurizing a sulfur-containing hydrocarbon material by converting the sulfur to a form readily soluble in water which comprises:

contacting said sulfur-containing hydrocarbon material with a sulfur oxide oxidant selected from the group consisting of sulfur dioxide and sulfur trioxide and an amine promoter selected from the group consisting of an amine, a salt of an amine, and mixtures thereof, for a period of time and under conditions sufficient for a reaction to occur between the sulfur and the sulfur oxide oxidant.

4,201,663

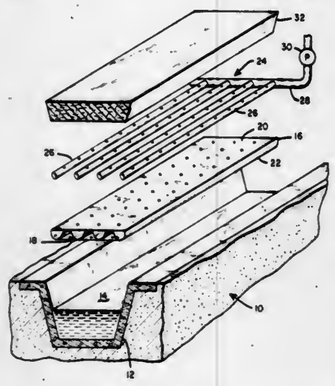
METHOD AND APPARATUS FOR THE ENHANCED TREATMENT OF FOOD PROCESSING WASTE WATERS USING AEROBIC MICROORGANISMS

Dwayne A. Rollag, 320 Lincoln La.; James N. Dornbush, 324 Elm Ave., both of Brookings, S. Dak. 57006, and Robert C. Renner, 124 S. Bryan #4, Fort Collins, Colo. 80521

Filed Sep. 7, 1978, Ser. No. 940,328

Int. Cl.² C02C *1/17*

U.S. Cl. 210—16 **14 Claims**



1. A method of reducing odors eminating from an anaerobic lagoon comprising the steps of:

(a) providing a floatation layer pervious to gases produced by the lagoon on the surface of the liquid contained in said anaerobic lagoon of sufficient size so that it substantially covers the lagoon surface;

(b) covering said floatation layer with a gas pervious medium containing microorganisms that eliminate odors from anaerobic lagoon gas; and

(c) aerating said medium to enhance the growth of said microorganisms.

4,201,664

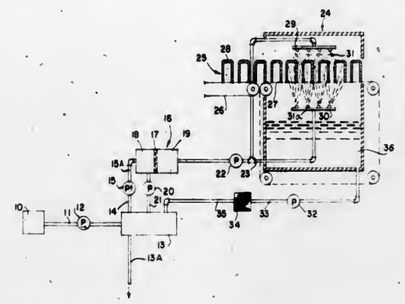
ULTRAFILTRATION OR REVERSE OSMOSIS TREATMENT OF EMULSIFIED OIL METAL WORKING COOLANTS

Ihab M. Hekal, Downers Grove, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Sep. 29, 1975, Ser. No. 617,348

Int. Cl.² B01D *13/00*

U.S. Cl. 210—23 H **7 Claims**



1. A method for recovering oil residues adhered to metal articles subjected to metal working operations which comprises sequentially

providing a quantity of an oil-in-water emulsion used as a coolant in the metal working operation,

circulating the oil-in-water emulsion to a reservoir,

diverting a minor portion of the oil-in-water emulsion circulated to the reservoir and conveying the diverted portion under pressure to the feed zone of a filtration unit equipped with a semipermeable membrane which is impermeable to the oil and permeable to the water portions of the oil-in-water emulsion,

collecting a concentrated suspension of oil solids in the feed zone and circulating the suspension to the reservoir,

collecting the water permeate passed through the membrane and circulating the permeate to a rinse station,

rinsing the metal article with the permeate at the rinse station,

collecting an effluent from the permeate rinsing of the article the effluent containing oil solids rinsed from the article and circulating the effluent to the reservoir whereby the oil residue from the article is intermixed with the coolant and is available for use in the metal working operation.

4,201,665

USE OF NONSTOICHIOMETRIC CARBON-SULFUR COMPOUNDS TO REMOVE COMPONENTS FROM LIQUIDS

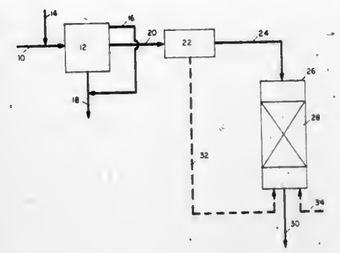
David W. Savage, Summit; Chin H. Chang, Edison, and John M. Longo, New Providence, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 3, 1978, Ser. No. 866,267

Int. Cl.² B01D *15/06*

U.S. Cl. 210—32 **45 Claims**

1. A process for removing dissolved organic materials, dissolved inorganic materials or mixtures thereof from a liquid which comprises contacting said liquid with a nonstoichiometric carbon-sulfur compound of the formula C_xS, where x ranges from 4 to about 50, said compound having a surface area of at least 300 square meters per gram, for a period of time



sufficient to adsorb at least a portion of said dissolved materials from said liquid.

4,201,666

TREATING PULP-AND-PAPER MILL STREAMS

Joel A. Newton, Greensboro, N.C., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 23, 1979, Ser. No. 32,052

Int. Cl.² C02B *1/20; D21F 1/82*

U.S. Cl. 210—47 **3 Claims**

1. A process for treating aqueous pulp-and-paper mill streams to remove solids comprising contacting said streams with a liquid stream derived in the nitric acid etching of aluminum consisting essentially of aqueous acidic aluminum nitrate, said liquid stream containing added high-molecular weight, highly cationic polyelectrolyte, thoroughly mixing these streams, allowing suspended solids to settle, and recovering a supernatant liquid of reduced solids content.

4,201,667

PROCESS FOR REMOVING ARSENIC FROM AQUEOUS MEDIUMS

Hsiang P. Liao, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 9, 1979, Ser. No. 10,434

Int. Cl.² C02C *5/04*

U.S. Cl. 210—50 **7 Claims**

1. A process for treating an aqueous, arsenic-containing medium to effect removal of arsenic therefrom which comprises incorporating in said aqueous medium, in the presence of phosphorus, sufficient $Ca(OH)_2$ to adjust said aqueous medium to a pH of from about 7.0 to 11.5 to thereby precipitate both arsenic and phosphorus from said aqueous medium, and thereafter separating the precipitate from said aqueous medium.

4,201,668

TREATMENT OF SLUDGE COMPRISING BIOLOGICAL AGGREGATE

Isao Miyanohara; Hiroshi Miyazaki, and Hideo Kawamura, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co. Ltd., Yamaguchi, Japan

Continuation of Ser. No. 798,171, May 18, 1977, Pat. No. 4,125,466. This application Jun. 20, 1978, Ser. No. 917,287

Claims priority, application Japan, May 18, 1976, 51-56114; May 18, 1976, 51-56115

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.² C02C *3/00*

U.S. Cl. 210—51 **1 Claim**

1. A method of treating sludge comprising biological aggregate which comprises: adding to said sludge from 2 to 15 weight percent of a magnesium compound selected from the group consisting of magnesium hydroxide magnesium chloride, magnesium sulfate and magnesium carbonate and from 2 to 20 weight percent of an iron salt selected from the group

consisting of ferrous chloride, ferric chloride, ferrous sulfate and ferric sulfate based on the solid component in said sludge; adding a base to maintain the pH of the sludge at greater than 10.5; and subsequently filtering said sludge.

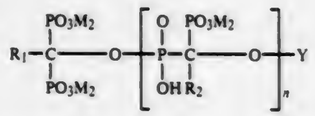
4,201,669

DEPOSIT CONTROL THROUGH THE USE OF OLIGOMERIC PHOSPHONIC ACID DERIVATIVES

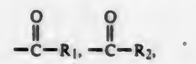
Larry W. Becker, Wilmington, Del.; Philip S. Davis, Furlong, Pa., and Ian D. Morrison, Webster, N.Y., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sep. 11, 1978, Ser. No. 941,536
Int. Cl.² C02B 5/06
U.S. Cl. 210—58 **20 Claims**

1. A method of controlling the formation and subsequent deposition of scale-forming salts on the structural parts of a system having an aqueous medium, which medium contains scale-imparting cations and anions, which comprises adding to said medium a sufficient threshold amount for the purpose of a water soluble, chlorine-resistant phosphonate of high calcium tolerance having the structural formula

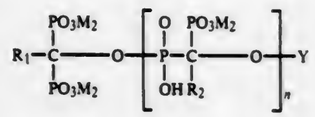


where R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; x is from 1 to and including 4; Y is hydrogen,

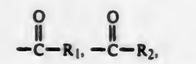


or mixtures thereof; M is a water soluble cation; and n is 1 or greater.

12. A method of controlling the formation and subsequent deposition of calcium phosphate on the structural parts of a system having an aqueous medium, which medium contains calcium and phosphate ions, which comprises adding to said medium a sufficient threshold amount for the purpose of a water soluble, chlorine-resistant phosphonate having the structural formula



where R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; x is from 1 to 13; Y is hydrogen,



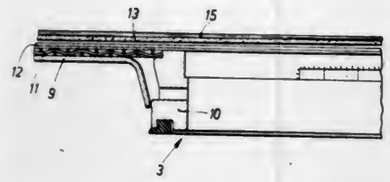
or mixtures thereof; M is a water soluble cation; and n is 1 or greater.

4,201,670

METHOD OF AND DEVICE FOR FILTERING LIQUIDS

Rolf Baur, Lautern, Fed. Rep. of Germany, assignor to Schenk-Filterbau Gesellschaft mit beschränkter Haftung, Waldstetten, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,297
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705046
Int. Cl.² B01D 33/26
U.S. Cl. 210—75 **11 Claims**



1. A method of filtering liquids in a filter tank with filter elements arranged in spaced superimposed relationship to each other and connected to a rotatable filtrate discharging shaft, which includes in combination the steps of: rotating radial, plane filter elements having uninterrupted, porous filtering surfaces and fixed to a hollow shaft with openings below said filtering surfaces to the interior of said shaft, each filter element including an impervious, flat metal plate with passages leading to said openings, introducing the liquid to be filtered together with an auxiliary filter substance so as to cause said auxiliary filter substance to settle in a sedimentation flow with substantially equal thickness on the filtering surfaces of said filter elements and form filtering layers deposited uniformly thereon for the liquid to be filtered, and during the sedimentation flow superimposing upon the liquid to be filtered including the auxiliary filer substance an additional component of movement extending transverse to the sedimentation flow and in radial direction with regard to the filter shaft, caused by rotation of said elements, and conducting the filtered liquid passing through said filter substance on said filtering surfaces through said passages and said openings to the interior of said shaft.

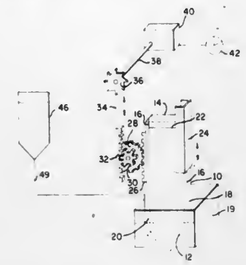
10. A device for filtering liquids with an auxiliary filter substance settled with substantially equal thickness on filtering elements having filtering layers deposited uniformly andd formed thereon for the liquid to be filtered with an additional component of movement superimposed thereon transverse to sedimentation flow, which includes in combination: a tank having bearing means associated therewith and also having a fluid inlet for the liquid to be filtrated, a hollow shaft arranged in said tank and extending in substantially vertical direction while being rotatably journaled in said bearing means, a plurality of radial, plane filter elements, each element being formed with a hub connected to said shaft, an impervious metal plate fixed to said hub and extending radially from said shaft, and a porous filtering web on said plate having a thin fabric web with a plane, uninterrupted filtering surface deposited uniformly thereon, said element being connected to said hollow shaft for rotation therewith and for receiving liquid to be filtrated from said fluid inlet, conduit means between said filtering web and said plate of each filtering element connecting the filtering surface with the interior of said hollow shaft, including openings through said hub and passages between said plate and hub leading to said passages, said filtering surface of said filtering plate extending substantially perpendicular to the axis of said hollow shaft, said filter plates being arranged in spaced superimposed relationship to each other, and variable drive means drivingly connected to said hollow shaft for rotating the latter and controlling the speed of rotation of said hollow shaft. so as to cause a substantially even layer of auxiliary filtering substance to be deposited on said filter elements.

4,201,671

CHROMATOGRAPHY METHOD AND APPARATUS

Yoshisuke Ozaki, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 28, 1978, Ser. No. 929,059
Int. Cl.² B01D 15/08
U.S. Cl. 210—138 **3 Claims**



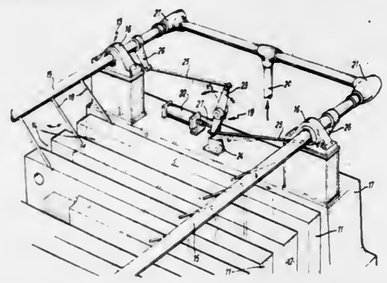
1. Apparatus for effecting thin-layer chromatographic separation of mixtures of organic material in a solvent solution which comprises means for alternately and repeatedly introducing and removing a chromatographic plate from a reservoir of the solution in a container, means for maintaining said reservoir within said container at a constant vertical level, and means to control the time the plate is in contact with the reservoir to permit the solvent to move upwardly on the plate past a spot previously deposited on the plate and to control the time the plate is removed from the reservoir to permit substantially all the solvent on the plate to evaporate.

4,201,672

CAKE DISPLACEMENT MEANS FOR FILTER PRESSES

Jack Kenyon, Goostrey, England, assignor to The Moseley Rubber Co. Ltd., Manchester, England

Filed Jul. 10, 1978, Ser. No. 923,120
Claims priority, application United Kingdom, Sep. 14, 1977, 38415/77
Int. Cl.² B01D 25/32, 35/16
U.S. Cl. 210—225 **9 Claims**



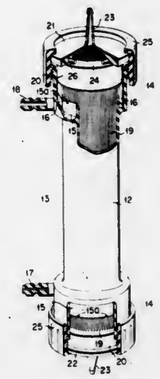
1. A cake displacement means for a filter press including a plurality of generally rectalinearly shaped press plates arranged in successive face-to-face disposition, and movable between a closed condition wherein adjacent press plates are loaded into pressure abutment, and an open condition, wherein adjacent plates are in spaced apart relationship, a press chamber defined by and between successive such press plates, and a filter cloth at each side of the said press chamber, the displacement means comprising at least one axially fixed nozzle mounted generally adjacent an upper edge and entirely outside the periphery of a filter plate in the open condition of the press each nozzle being oriented to direct a respective jet of pressure fluid fed thereto towards the edge of and in a plane generally parallel to a cake formed in a respective chamber and adhering to a filter cloth extending across the face of the plate, means to move said nozzle in said plane so as to direct said jet over the full area of said plate, and a fluid feed means adapted to supply fluid under pressure to each nozzle.

4,201,673

APPARATUS FOR DIALYSIS OF SOLUTION

Michio Kanno, Hino, and Akira Igari, Tokyo, both of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 920,717
Claims priority, application Japan, Jul. 4, 1977, 52-79709; Aug. 4, 1977, 52-104564[U]
Int. Cl.² B01D 31/00
U.S. Cl. 210—321 B **13 Claims**



1. An artificial kidney comprising:
a cylindrical housing with both ends open,
a plurality of spaced apart elongated hollow fibers arranged within the housing substantially parallel to the longitudinal axis of the housing, each of said hollow fibers defining a liquid passage inside the respective hollow fibers and said hollow fibers being arranged to define a liquid passage outside said hollow fibers and between said hollow fibers, said hollow fibers forming a fiber bundle,
a pair of seal members, one at each end portion of the housing, for securing the end portions of the hollow fibers to the housing in a liquid-tight fashion and for separating said liquid passages inside the hollow fibers from said liquid passage outside the hollow fibers,
a dialysate inlet port provided at one end of the housing near one of the seal members and communicating with one end of said liquid passage outside the hollow fibers,
a dialysate outlet port provided at the other end of the housing near the other seal member and communicating with the other end of said liquid passage outside the hollow fibers,
a solution inlet port and a solution outlet port provided at the ends of the housing, respectively and communicating with the liquid passages inside the hollow fibers,
means for sealing said solution inlet and outlet ports to the housing and out of liquid communication with the dialysate inlet and outlet ports, and
a dialysate deflection or dispersion member disposed at each end of the housing at least within the portion of the housing opposite to and spaced from the respective dialysate inlet and outlet ports for dispersing a flow of dialysate by said dialysate impinging thereagainst,
said solution being blood, said dialysate inlet port having a diameter of 1.5 to 3.5 mm and said dialysate outlet port having a diameter of 6 to 10 mm to prevent "channeling" among the hollow fibers in the housing.

4,201,674

APPARATUS FOR CLEANING PLATE-TYPE FILTER ELEMENTS LOCATED IN A TANK FILTER

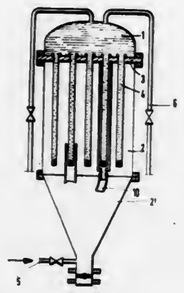
Günther Schwinghammer, Dortmund, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,752

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752906

Int. Cl.² B01D 35/16, 41/04

U.S. Cl. 210—333 R 7 Claims



1. Device for cleaning plate-type filter elements made up of a plurality of discs stacked one on top of the other and forming the microfine slots when the discs are pressed together, comprising a tank forming an enclosed open space, a sheet extending generally horizontally across said tank and dividing the open space therein into an upper filtrate chamber and a lower unfiltered liquid chamber, a plurality of laterally spaced generally vertically extending plate-type filter elements extending downwardly from and through said sheet into said lower chamber with the lower ends of said filter elements spaced downwardly from said sheet, wherein the improvement comprises a cleaning tube insertable over one said filter element from the lower end thereof and positionable relative to the one said filter element for laterally enclosing a vertically extending portion thereof from the lower end of said element, said tube spaced radially outwardly from the surface of said element forming a vertically extending annular open space therebetween with the radially outer surface of the annular open space being formed by said cleaning tube and the radially inner surface of the annular open space being formed by said filter element, a connection to the lower end of said cleaning tube for supplying a pressurized cleaning fluid thereto for flow upwardly through said cleaning tube directly into the annular open space radially outwardly of said element so that the pressure of the cleaning fluid acts over the entire surface of said filter element laterally enclosed by said cleaning tube, and means circumferentially disposed at the upper portion of said cleaning tube for providing a fluid-tight seal between said cleaning tube adjacent the upper end thereof and said filter element enclosed by said cleaning tube.

4,201,675

LIQUID FILTER WITH NOVEL SEAL MEANS

Herbert R. Damerau, 25321 Wykeshire, Farmington Hills, Mich. 48018

Filed Dec. 14, 1978, Ser. No. 969,461

Int. Cl.² B01D 33/12

U.S. Cl. 210—387 2 Claims

1. A liquid filter comprising, in combination:

a conveyor;

means cooperating with the conveyor to allow formation of a pool of a liquid to be filtered above the conveyor;

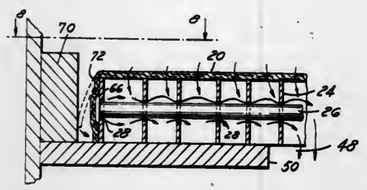
a sheet of filter medium supported by the conveyor when passing through the pool;

a compartment for collecting the filtrate obtained when the liquid passes through the filter medium;

means for inducing a partial vacuum in the compartment;

means for communicating the partial vacuum throughout the conveyor under the filter medium;

the filter medium when passing through the pool mechanically unrestrained with respect to movement away from the conveyor and responsive to the partial vacuum in the conveyor so as to be pulled against the conveyor in a sealing relation; and



a filter medium guide with lead-in means positioned for directing and folding a portion of the sheet sufficiently proximate with a side of the conveyor having holes communicating with the filtrate compartment so to enable the portion to seal the holes in response to the partial vacuum within the compartment.

4,201,676

METHOD OF HEAT TREATING A MATERIAL

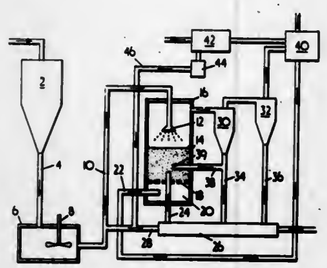
Arthur A. Randell, Tewkesbury, and Norman Hodgkinson, Cheltenham, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Apr. 19, 1978, Ser. No. 897,854

Claims priority, application United Kingdom, May 6, 1977, 19056/77

Int. Cl.² F27B 15/00; C09K 3/00

U.S. Cl. 252—1 12 Claims



1. A method for the combustion of colliery tailings having a water content, and combustible and incombustible components, the method including the steps of introducing colliery tailings in slurry form having a solids content between 45% and 65% by weight into a fluidized bed, burning the combustible components at least in part whereby the water content is volatilized substantially instantaneously, and maintaining the fluidized bed at a temperature below that at which the solids components sinter.

4,201,677

INTUMESCENT COMPOSITION COMPRISING CYCLIC NITROGEN COMPOUND AND PHOSPHORUS COMPOUNDS

Jayendra G. Shukla; Ray E. Smith, and Richard R. Nicholson, all of Ann Arbor, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

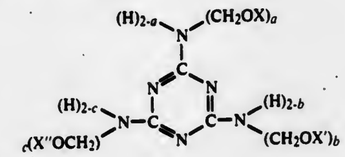
Filed Sep. 5, 1978, Ser. No. 939,625

Int. Cl.² C09K 3/28

U.S. Cl. 252—8.1 10 Claims

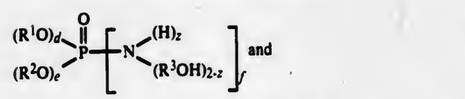
1. An intumescent composition comprising a cyclic nitrogen compound, an acid selected from the group consisting of phosphorous acid, phosphoric acid, and mixtures thereof, water, and an hydroxy-containing organo-phsophorus compound, wherein:

(a) said cyclic nitrogen compound is



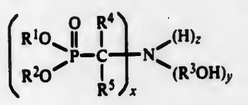
wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and $-CH_3$;

(b) said hydroxy-containing organo-phosphorus compound is selected from the group consisting of



I

and



II

and mixtures thereof, wherein d is an integer of from 0 to 2, e is an integer of from 0 to 2, f is an integer of from 1 to 3, and d plus e plus f equal 3; z is an integer of 0 to 1; x is an integer of 1 to 2, y is an integer of 1 to 2, and x plus y plus z equal 3; R^1, R^2, and R^3 are selected from the group consisting of alkyl radicals containing from about 1 to about 6 carbon atoms and haloalkyl radicals containing from about 2 to about 6 carbon atoms, provided that when R^3 is haloalkyl it contains at least 3 carbon atoms; R^4 and R^5 are selected from the group consisting of hydrogen, alkyl radicals, and haloalkyl radicals, wherein said radicals contain from about 1 to about 6 carbon atoms; and the total number of carbon atoms in the R^1, R^2, R^3, R^4, and R^5 groups does not exceed about 14.

4,201,678

FOAM DRILLING AND WORKOVER IN HIGH TEMPERATURE WELLS

David S. Pye, Brea, and Paul W. Fischer, Whittier, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Mar. 17, 1978, Ser. No. 887,596

Int. Cl.² C09K 7/02

U.S. Cl. 252—8.5 A 19 Claims

1. In the method for conducting foam drilling and workover operations in a bore hole penetrating a subterranean reservoir having a temperature of about 400° to 700° F., wherein foam is generated by contacting an aqueous solution of a foaming agent with a gas, and said foam is caused to flow upwardly through the bore hole to carry solid and liquid materials out of the bore hole, the improvement which comprises using as the foaming agent a mixture comprising: about 0.15 to 0.6 percent by weight of a first foaming agent comprising a high alkyl amphoteric betaine selected from the group consisting of cocodimethyl carboxymethyl betaine, lauryl dimethyl carboxymethyl betaine, lauryl dimethyl alpha-carboxyethyl betaine, cetyl dimethyl carboxymethyl betaine, lauryl bis-(2 hydroxyethyl) carboxymethyl betaine, oleyl dimethyl gamma-carboxypropyl betaine, lauryl bis-(2 hydroxypropyl) alpha-carboxyethyl betaine, and the ammonium salts of the foregoing; and about 0.06 to 0.25 percent by weight of a second foaming agent comprising a sodium olefin sulfonate having from 10–18 carbon atoms.

4,201,679

DRILLING FLUID ADDITIVE

Larry D. Barker, and James K. Bannerman, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 825,314, Aug. 17, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,622

Int. Cl.² C09K 7/02

U.S. Cl. 252—8.5 A 3 Claims

1. A drilling fluid viscosifier consisting essentially of sepiolite and a 20% to 80% hydrolyzed polyacrylamide polymer extender therefor, having the general formula $(CH_2CHCONH_2)_x$, where x ranges between about 5600 and 14,900, said extender being present in an amount between about 0.01 and 0.25 pounds per 15 pounds of sepiolite.

4,201,680

SMOOTHING AGENTS FOR TREATING TEXTILE FIBER MATERIAL

Peter Waltenberger, Hilden; Günter Uphues, and Manfred Petzold, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 917,986

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1977, 2733493

The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.

Int. Cl.² D06M 13/34

U.S. Cl. 252—8.6 15 Claims

1. A smoothing agent for the treatment of textile fiber material consisting essentially of:

(Ia) from 0 to 50% by weight of a fatty acid ester from 1 mole of a fatty acid having from 8 to 18 carbon atoms and 1 mole of an alkanol having from 9 to 22 carbon atoms,

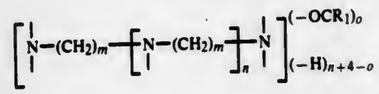
(Ib) from 0 to 50% by weight of a fatty acid ester substantially free from unreacted fatty acid, said ester being prepared from up to 6 moles of a fatty acid having from 8 to 18 carbon atoms and 1 mole of an alkanepolyol having from 2 to 10 carbon atoms and 2 to 6 hydroxyl groups, wherein said moles of fatty acid is in excess of said mole of alkanepolyol,

(IIa) from 10 to 50% by weight of paraffin having a melting range of from 40° C. to 60° C.,

(IIb) from 0 to 25% by weight of a liquid paraffin,

wherein the total of components (Ia), (Ib), (IIa) and (IIb) is from 10% to 50% by weight,

(III) from 1% to 10% by weight of at least one fatty acid amidopolyamine having the formula

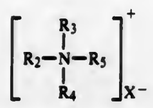


wherein $-OCR_1$ is the acyl of a fatty acid having from 14 to 22 carbon atoms, m is an integer from 2 to 6, and n and o are numbers from 1 to 3,

(IV) from 0 to 5% by weight of a fatty acid monoalkanola-

mide, -dialkanolamide, or -polydialkanolamide from 1 mole of a fatty acid having from 12 to 18 carbon atoms and an alkanolamine selected from the group consisting of 1 mole of a monoalkanolamine having from 2 to 3 carbon atoms and 1 to 2 moles of a dialkanolamine having from 4 to 6 carbon atoms,

(V) from 0 to 5% by weight of at least one quaternary ammonium salt having the formula



wherein R_2 is an aliphatic hydrocarbon having from 12 to 18 carbon atoms, R_3 is a member selected from the group consisting of aliphatic hydrocarbon having from 1 to 18 carbon atoms, phenylalkyl having from 7 to 18 carbon atoms and alkylphenylalkyl having from 8 to 18 carbon atoms, R_4 and R_5 are alkyl having 1 to 2 carbon atoms, and X^- is a salt-forming anion,

(VI) from 0 to 5% by weight of an ethylene oxide adduct to a compound having a replaceable hydrogen selected from the group consisting of aliphatic hydrocarbon alcohols having 9 to 22 carbon atoms, alkylphenols having from 12 to 20 carbon atoms, fatty acids having from 12 to 22 carbon atoms, higher fatty acid amides with alkylene diamines and dialkylene triamines having a total of from 12 to 22 carbon atoms, and alkylamines having from 12 to 22 carbon atoms, having from 35% to 85% by weight of ethylene oxide,

wherein the total of components (III), (IV), (V) and (VI) is from 1% to 12% by weight,

(VII) from 0 to 1% by weight of a protective colloid,

(VIII) from 0 to 10% by weight of a water-immiscible organic solvent,

(IX) from 1% to 10% by weight of an acid selected from the group consisting of alkanoic acids having from 1 to 4 carbon atoms and hydroxyalkanoic acids having from 2 to 4 carbon atoms, and

(X) the remainder to 100% by weight, water.

4,201,681

METALWORKING CORROSION INHIBITION/DRAWING LUBRICANT

Henry F. Lipinski, Glenshaw, Pa., and Steven J. Wantling, Miami, Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 838,854, Oct. 3, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 23,629

Int. Cl.[2] C01M *1/40*; C10M *3/34, 5/22*; B21B *45/02*

U.S. Cl. 252—33.2 **16 Claims**

1. A metalworking corrosion inhibitor/drawing lubricant composition comprising a major amount of mineral oil and an effective amount of an additive combination of barium lanolate soap and barium sulfonate wherein said barium lanolate soap is formed in situ by reacting barium hydroxide with wool grease fatty acids.

4,201,682

METHOD OF PREPARING OVERBASED MAGNESIUM SULFONATES

Albert R. Sabol, Munster, Ind.; Dennis G. Petrille, Naperville, and Edward W. Heffern, Schaumburg, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 316,843, Dec. 20, 1972, abandoned. This application Oct. 24, 1975, Ser. No. 625,302

Int. Cl.[2] C10M *1/40*

U.S. Cl. 252—33.4 **8 Claims**

1. The method of preparing over-based oil-soluble magnesium sulfonate compositions consisting of the steps of: (I) heating a reactant mixture consisting of (a) an amount of an oil-soluble sulfonate anion-affording material sufficient to provide about 10–14 weight percent oil-soluble magnesium sulfonate in said composition, said material containing molar proportions of about 0.1–1.0 mol oil-soluble ammonium sulfonate, 0 to about 0.9 mol neutral oil-soluble magnesium sulfonate, and 0 to about 0.9 mol oil-soluble sulfonic acid, said reactant (a) further characterized as containing at least 0.1 mol of said ammonium sulfonate per mol of magnesium oxide in said mixture, (b) magnesium oxide in excess of the stoichiometric amount required for neutral magnesium sulfonate formation, (c) about 0.2 to about 1.0 mol of methanol per mol of magnesium oxide, (d) about 0.5 to about 2.25 mols water per mol of magnesium oxide, and (e) an inert hydrocarbon diluent; at a temperature in the range of about 175° F. to 200° F. under refluxing conditions at atmospheric pressure for a period of time sufficient to convert said magnesium oxide to magnesium hydroxide in said mixture; (II) then treating the mixture of step I at a temperature in the range of from about 100° F. to about 160° F. with carbon dioxide until reaction with said magnesium hydroxide ceases; and (III) thereafter removing volatile and unreacted materials from the carbonated mixture.

4,201,683

ALKANOL SOLUTIONS OF ORGANO MOLYBDENUM COMPLEXES AS FRICTION REDUCING ANTIWEAR ADDITIVES

Philip W. Brewster, Camlachie, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 21, 1978, Ser. No. 898,839

Int. Cl.[2] C10M *1/38, 1/48, 1/54*

U.S. Cl. 252—32.7 E **12 Claims**

1. In a concentrate consisting essentially of one part by weight of an organo molybdenum complex obtained from a solution reaction of 1–2 moles of a C_1 to C_{50} hydrocarbyl substituted thio-bis-phenol, 1–2 moles of an amine containing from 1 to 5 nitrogens and from 2 to 20 carbons and 1 molar equivalent of a source of molybdenum of the class consisting of molybdic trioxide, ammonium thiomolybdate, ammonium bismolybdate, molybdenum halides and ammonium tetrahydrate, the improvement of using from 0.25 to 5 parts by weight of an alkanol which contains from 5 to 50 carbons for the reaction solvent which is carried out at a temperature of from 135° C. to 225° C. whereby a more readily filterable reaction product is obtained.

4,201,684

LUBRICANT COMPOSITION OF IMPROVED FRICTION REDUCING PROPERTIES

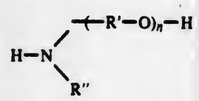
Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 13, 1978, Ser. No. 959,934

Int. Cl.[2] C10M *1/38*

U.S. Cl. 252—47.5 **5 Claims**

1. A lubricating oil composition comprising a major amount of lubricating oil and a minor friction-reducing amount of an additive selected from sulfurized fatty acid esters, sulfurized fatty acid amides and sulfurized fatty acid ester-amides of an alkanol amine, said amine having the formula



wherein R' is a divalent aliphatic hydrocarbon radical containing 2–4 carbon atoms, n is an integer from 1 to 10, and R" is selected from hydrogen and the group $—R'O)_n—H$.

4,201,685

LIQUID DEVELOPERS FOR ELECTROSTATIC IMAGES COMPRISING AN ALIPHATIC HYDROCARBON, BINDER, POLYMERIC CARBAMATE AND A CRESOL

Luigi Amariti, Niles, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 11, 1978, Ser. No. 968,013

Int. Cl.[2] G03G *9/12*

U.S. Cl. 430—114 **14 Claims**

1. A liquid developer for developing electrostatic images comprising a dispersion in aliphatic hydrocarbon solvent of particles of imaging material, binder and polymeric carbamate having a linear carbon backbone and carbamate side chains in which the carbamate groups contain at least one alkyl group having at least 5 carbon atoms carried by the nitrogen atom thereof, said binder and said polymeric carbamate being soluble in said hydrocarbon solvent when hot and insoluble in said hydrocarbon solvent at room temperature so as to be present in coprecipitated form in said developer.

4,201,686

AQUEOUS LIQUID DETERGENT COMPOSITIONS CONTAINING MIXTURES OF NONIONIC SURFACTANTS

Govert J. P. Augustijn, Zeist, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,817

Claims priority, application United Kingdom, Jan. 9, 1978, 656/78

Int. Cl.[2] C11D *1/835, 1/72*

U.S. Cl. 252—174.22 **2 Claims**

1. An aqueous liquid unbuilt detergent composition containing 25–45% by weight of a nonionic detergent surfactant mixture, said mixture consisting essentially of:

(a) 50–80% by weight of a primary C_{16}–C_{19} saturated fatty alcohol, condensed with 15–19 moles of ethylene oxide;

(b) 5–25% by weight of a primary C_8–C_{12} saturated fatty alcohol, condensed with 6–10 moles of ethylene oxide;

(c) 5–25% by weight of a primary C_{10}–C_{14} saturated fatty alcohol, condensed with 1–4 moles of ethylene oxide.

4,201,687

CHLOROIMIDE FABRIC BLEACHES

Marvin M. Crutchfield, Creve Coeur; Robert P. Langguth, Overland, and James M. Mayer, Maryland Heights, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 838,279, Sep. 30, 1977, Pat. No. 4,148,742. This application Oct. 25, 1978, Ser. No. 954,494

The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.

Int. Cl.[2] C11D *7/54*; 424 *149*

U.S. Cl. 252—102 **11 Claims**

1. A fabric bleaching composition comprising: water; a stain bleaching amount of a bleach selected from the group consisting of disodium chloroimidodisulfonate, dipotassium chloroimidodisulfonate, and mixtures thereof; and a sufficient amount of a buffering agent to maintain the pH between about pH 9 and pH 11.

4,201,688

SCALE INHIBITORS

Bronislav H. May, Overijse, Belgium, assignor to Monsanto Europe S.A., Brussels, Belgium

Filed Dec. 16, 1977, Ser. No. 861,395

Claims priority, application United Kingdom, Jan. 10, 1977, 739/77

Int. Cl.[2] C02B *5/06*

U.S. Cl. 252—180 **6 Claims**

1. A composition useful in scale inhibition consisting essentially of (a) diethylenetriaminopenta(methylenephosphonic acid) or an alkali metal salt thereof and (b) aminotri(methylenephosphonic acid) or an alkali metal salt thereof wherein the amount of (b) is from 15 to 30 percent of the total weight of (a) and (b).

4,201,689

PROCESS FOR THE PRODUCTION OF TENSIDE-CONTAINING CATION EXCHANGER ALUMINOSILICATES

Heinz G. Smolka, Langenfeld, and Klaus Schumann, Erkrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,587

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727475

Int. Cl.[2] C01B *33/26, 33/28*

U.S. Cl. 252—184 **17 Claims**

1. A process for the production of a cation-exchanging water-insoluble, x-ray amorphous alkali metal aluminosilicate free of excess alkali, containing at least 3 mols of bound water for every mol of Al_2O_3 and from 0.01% to 50% by weight, based on the anhydrous weight, of a surface-active compound active in the presence of water hardness formers selected from the group consisting of anionic surface-active compounds, cationic surface-active compounds, nonionic surface-active compounds, and zwitterionic surface-active compounds, and having for every mol of Al_2O_3, a mols of Me_2O, where Me is an alkali metal, and b mols of SiO_2, wherein a represents a value of from 0.7 to 1.5 and b represents a value of from 0.8 to 6, said aluminosilicates having a calcium sequestering power of from 50 to 200 mg CaO/gm of anhydrous active substance when measured at 50° C. by the Calcium Binding Power Test Method set out in the specification and a particle size of less than 30μ, which comprises the steps of mixing an aqueous alkali metal silicate solution and an aqueous alkali metal aluminate solution in the presence of the desired amount of said surface-active compound active in the presence of water hardness formers, wherein the amount of said alkali metal aluminate solution provided for the precipitation reaction with said alkali metal silicate solution is partially replaced to such an extent by the solution of an acid aluminum salt selected from the group consisting of aluminum sulfate, aluminum nitrate and aluminum chloride, added as a separate solution, that the total amount of alkali metal present in the precipitation reaction mixture over and above the amount of a mols of Me_2O is converted into a water-soluble neutral salt by the acidity of said aluminum salt, by using x mols of Al^{3+} ions in aqueous solution in order to obtain the precipitation product containing a mols of Me_2O and b mols of SiO_2, per 1 mol of Al_2O_3, when using an alkali metal silicate solution containing c mols of Me_2O per b mols of SiO_2 and an alkali metal aluminate solution containing d mols of Me_2O per 1 mol of Al_2O_3, and reducing the given quantity of alkali metal aluminate by (x/2) mols, the value for x being other than 0 and obtained from the equation

$$= \frac{2\,(c + d - a)}{3 + d},$$

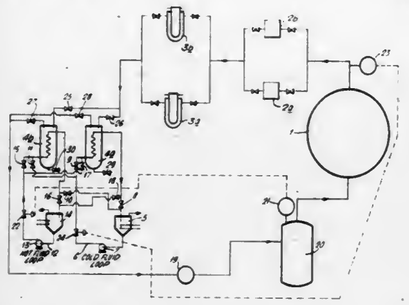
wherein said surface-active compound is present before the formation of the amorphous precipitation product, converting the reaction gel to an amorphous precipitation product by stirring, separating the mother liquor and recovering said cation-exchanging, water-insoluble, x-ray amorphous, alkali metal silicate free of excess alkali.

4,201,690

PROCESSING OF IRRADIATED NUCLEAR FUEL

Alfred L. Mills, Thurso, Scotland, and John A. Williams, Warrington, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 3, 1978, Ser. No. 892,967
Int. Cl.² G21C *19/46*; G21F *9/28*
U.S. Cl. 252—301.1 W **3 Claims**



1. A process for the dissolution of irradiated nuclear fuel in nitric acid comprising the steps of
(a) contacting the irradiated nuclear fuel material with nitric acid in a dissolver vessel,
(b) providing an atmosphere of carbon dioxide over the dissolver vessel,
(c) directing a portion of the atmosphere to the first of a pair of heat exchangers,
(d) passing a refrigerant through the first of the heat exchangers to cause condensation of said portion of the atmosphere in the first of the heat exchangers,
(e) simultaneously with step (d) passing a liquid at a temperature above the evaporation temperature of carbon dioxide through the second of the pair of heat exchangers to cause evaporation of a portion of the atmosphere which has been condensed in the second of the pair of heat exchangers,
(f) after steps (c) (d) and (e) directing a further portion of the atmosphere to the second of the pair of heat exchangers,
(g) passing a liquid at a temperature above the evaporation temperature of carbon dioxide through the first of the pair of heat exchangers to cause evaporation of the portion of the atmosphere which had condensed therein,
(h) simultaneously with step (g) passing a refrigerant through the second of the pair of heat exchangers to cause condensation of said further portion of the atmosphere therein,
(i) repeating steps (c) to (h) to provide a driving force for circulating the atmosphere round the plant by the alternate condensation and evaporation of portions of the atmosphere.

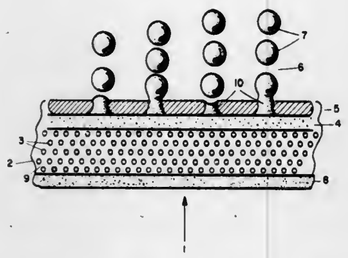
4,201,691

LIQUID MEMBRANE GENERATOR

William J. Asher, Fanwood, and Hsue C. Tsien, Chatham, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 16, 1978, Ser. No. 869,837
Int. Cl.² A61K *35/14*; B01F *3/00*; B01J *13/02*
U.S. Cl. 252—314 **26 Claims**

SCHEMATIC FLOW DIAGRAM OF LIQUID MEMBRANE GENERATOR



8. A process for the generation and distribution of a multiple phase dispersion as globules in a suspension phase, said process comprising passing a first fluid through a porous fluid dispersing layer, having a pore size ranging between about 100μ and 0.1μ, into a second fluid, said second fluid being substantially immiscible with said first fluid so that a multiple phase dispersion is formed comprising microdroplets of the first fluid dispersed in the second fluid; passing said multiple phase dispersion through an outlet zone comprising a perforated, substantially nonporous layer having an outer and inner surface, each of said perforations forming an orifice at the outer and inner surfaces of said nonporous layer, which orifices have a diameter ranging between about 3000 and 10 microns, said inner surface being in substantial contact with a porous flow distribution layer, the pores of which flow distribution layer are smaller than the diameter of the orifices at the surface of the nonporous layer, the outer surface of the nonporous layer forming an interface with the suspension phase, said suspension phase being substantially immiscible with said second fluid, wherein the pressure differential of said flow distribution is greater than or equal to 0.25 times the static pressure differential of an orifice of average size and shape formed at the outer surface of the nonporous layer, whereby said multiple phase dispersion passes through said porous flow distribution layer then through said perforated nonporous layer and into said suspension phase as globules.

4,201,692

GAS MIXTURES FOR GAS-FILLED PARTICLE DETECTORS

Loucas G. Christophorou, Oak Ridge; Dennis L. McCorkle; David V. Maxey, both of Knoxville, and James G. Carter, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 22, 1979, Ser. No. 5,263
Int. Cl.² C09K *3/00*; H01J *39/28, 39/30*
U.S. Cl. 252—372 **5 Claims**

1. An improved tertiary gas mixture for use in gas-filled particle detectors comprising CF_4, C_2H_2 and argon with the concentration of said CF_4 in said mixture being a selected amount in the range from 3–10% and with the concentration of said C_2H_2 in said mixture being a selected amount in the range from 10–15%.

4,201,693

STABLE SCHIFF REAGENT

Wesley D. Hurt, Philadelphia, Pa., and John P. Koski, Woodbury, N.J., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed May 2, 1978, Ser. No. 902,029
Int. Cl.² C09K *3/00*; G01N *31/22, 33/16*
U.S. Cl. 252—408 **5 Claims**

1. A sensitive reagent for detection of aldehydes in biological specimens, which reagent is stable at room temperature for a substantial period of time, comprising potassium metabisulfite, pararosanilin acetate and hydrochloric acid, and having a pH of from about 1.2 to about 2.7.

4,201,694

METHOD FOR INCREASING SHELF-LIFE OF A SERUM BILIRUBIN REFERENCE COMPOSITION AND COMPOSITION PRODUCED THEREBY

Allan L. Louderback, Temple City, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 17, 1978, Ser. No. 925,484
Int. Cl.² G01N *33/16*
U.S. Cl. 252—408 **19 Claims**

1. An improved blood serum reference composition of the type comprising blood serum having a bilirubin constituent of known value, characterized in that said composition possesses a pH of from about 8.3 to about 9.5 and further comprising a sulfhydryl compound in an amount sufficient to further enhance the stability of bilirubin.

4,201,695

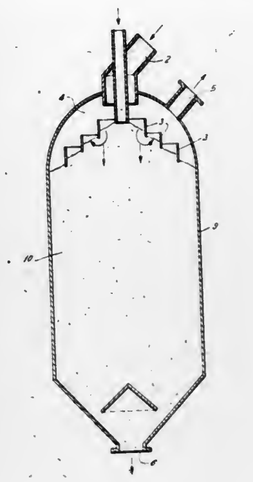
ARRANGEMENT FOR REGENERATING PARTICULATE ADSORBENTS

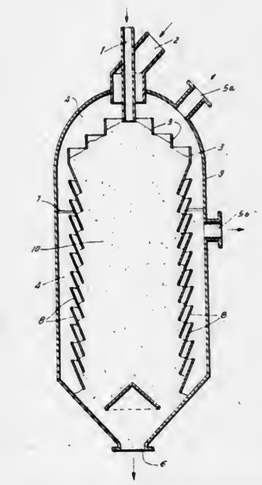
Harald Jüntgen; Karl Knoblauch, both of Essen; Horst Grochowski, Oberhausen, and Jürgen Schwarte, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 720,081, Sep. 2, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 854,528
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1975, 2539266
Int. Cl.² B01J *21/20, 37/00*; B01D *15/06*
U.S. Cl. 252—411 R **2 Claims**

1. A method for regenerating particulate adsorbents, comprising confining a bed of a mixture of an adsorbent to be regenerated with a particulate regenerating material; withdrawing the mixture from the bed at a lower withdrawal region thereof, thereby inducing a downward flow of the mixture through the confined bed toward the withdrawal region; replenishing said bed with additional adsorbent to be regenerated and with fresh regenerating material from above, so that an upper region of the bed assumes a conical shape; and retarding the flow of the adsorbent and the regenerating material radially along the conical upper region of the bed, using at least two substantially concentric axially staggered tubular baffles radially outward of the location at which replenishing adsorbent is furnished and penetrating to different depths into the conical upper region of the bed, whereby an intimate mixture of the particles of the adsorbent and of the regenerating material is obtained during their flow underneath the baffles.

2. A method for regenerating particulate adsorbents, comprising confining a bed of a mixture of an adsorbent to be regenerated with a particulate heat-exchange regenerating material; withdrawing the mixture from the bed at a lower withdrawal region thereof, thereby inducing a downward flow of the mixture through the confined bed toward the withdrawl region; replenishing said bed with additional adsorbent to be regenerated and with fresh heat-exchange regenerating material from above so that an upper region of the bed assumes a conical shape; and retarding the flow of the adsorbent and the heat-exchange regenerating material radially along the conical upper region of the bed, using at least two substantially concentric axially staggered tubular baffles radially outward of the location at which replenishing adsorbent is furnished and penetrating to different depths into the conical upper region of the bed, whereby an intimate mixture of the particles of the adsorbent and of the heat-exchange regenerating material is obtained during their flow underneath the baffles.





4,201,696

HYDROCARBON ISOMERIZATION CATALYSTS AND PROCEDURES FOR THE PREPARATION THEREOF

Michel Legendre, and Philippe Engelhard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Continuation of Ser. No. 713,238, Aug. 10, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,686
Claims priority, application France, Aug. 13, 1975, 75 25224
Int. Cl.² B01J *27/10*
U.S. Cl. 252—442 **33 Claims**

1. A catalyst for the isomerization of hydrocarbons consisting essentially of a carrier which is comprised of at least one refractory metal oxide, including a halogen element present in combined form, and deposited on said carrier:
at least one metal from the platinum group metals;
at least one second element from the group consisting of titanium, zirconium, tungsten and molybdenum;
at least one metal halide selected from the group consisting

of aluminum trichloride, aluminum tribromide, ferric chloride, ferric bromide, beryllium dichloride, zirconium chloride and mixtures thereof; and

wherein said at least one of said platinum group metal and said at least one second element are introduced onto the carrier by impregnation and thereafter said at least one metal halide is introduced onto the carrier by sublimation.

4,201,697

PERFUMERY USES OF OXYHYDROCARBYLNORBORNANE DERIVATIVES

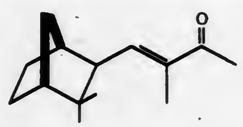
Kenneth K. Light, Highlands; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 860,124, Dec. 13, 1977, which is a continuation-in-part of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Apr. 24, 1979, Ser. No. 32,772

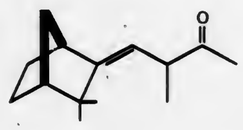
Int. Cl.[2] A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **3 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base a perfuming quantity of a composition of matter which is a mixture of oxyhydrocarbylnorbornane derivatives having the structures:



and



4,201,698

RUBBER COMPOSITIONS

Kunio Itoh, Annaka, and Toshimichi Oshima, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Aug. 28, 1978, Ser. No. 937,273

Claims priority, application Japan, Aug. 30, 1977, 52/103830; Jun. 2, 1978, 53/66344

Int. Cl.[2] C08L *7/00, 9/00, 19/00, 83/06*

U.S. Cl. 260—3 **6 Claims**

1. A rubber composition curable by heating into a rubbery elastomer comprising:

(a) 100 parts by weight of a rubber blend composed of

(a-1) from 50 to 95% by weight of an organic rubber which is one of natural rubber and an organic synthetic rubber, chosen from the group consisting of styrene-butadiene rubbers, butadiene rubbers, ethylene-propylene rubbers, ethylene-propylenediene terpolymer rubbers, butadiene-acrylonitrile rubbers, ethylene-vinyl acetate copolymer rubbers, and isobutylene-isoprene rubbers, and

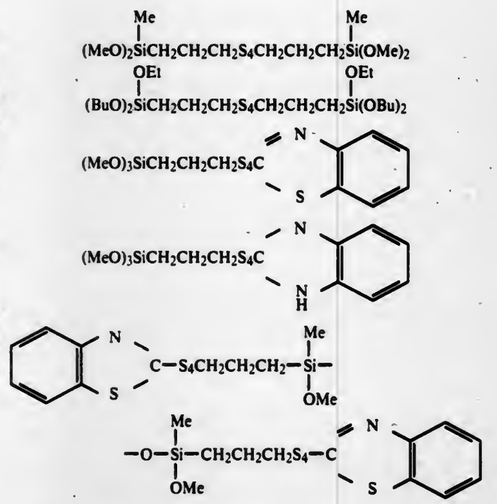
(a-2) from 50 to 5% by weight of an organopolysiloxane expressed by the average unit formula

$$R_aSiO_{(4-a/2)}$$

where R is a substituted or unsubstituted monovalent hydrocarbon group and a is a number from 1.98 to 2.05 both inclusive, and having at least two functional units selected from the class consisting of mercapto groups and aliphatically unsaturated linkages in the molecule,

(b) from 0.1 to 20 parts by weight of an organosilicon compound chosen from the group consisting of bis (trimethoxysilylpropyl) tetrasulfide, bis (methyldiethoxysilypropyl) tetrasulfide,

$$(EtO)_3SiCH_2CH_2CH_2S_4CH_2CH_2CH_2Si(OEt)_3$$



wherein Me, Et and Bu denote methyl, ethyl, and butyl groups, respectively,

(c) from 50 to 200 parts by weight of a reinforcing siliceous filler having a specific surface area of at least 50 m^2g, and

(d) from 0.1 to 10 parts by weight of a curing agent chosen from the group consisting of sulfur, sulfur-containing organic compounds, organic peroxides, a combination of an organic peroxide and sulfur, and a combination of an organic peroxide and a sulfur-containing organic compound.

4,201,699

PHENOL-ALDEHYDE RESIN COMPOSITION CONTAINING PECAN PITH EXTRACT AND AN ALDEHYDE

Chia-Ming Chen, 205 Dove Valley Dr., Athens, Ga. 30606

Filed Jul. 12, 1977, Ser. No. 814,920

Int. Cl.[2] C08G *83/00;* **C08L** *61/06, 61/10, 61/14*

U.S. Cl. 260—7 **20 Claims**

1. A phenol-aldehyde resin consisting essentially of the reaction product of up to 4.0 parts by weight of a conventional thermosetting phenol-aldehyde resin precondensate having a viscosity of from 20 to 800 cps at 25° C., and 1.0 part by weight of an alkali organic extract of pecan piths, said extract containing phenolic compounds and at least 2% by weight of crude protein, based on weight of said extract, wherein the mixture is polymerized in an aqueous alkaline system at a temperature of from 30° C. to reflux, until a viscosity of from 20 to 3,000 cps at 25° C. is reached.

4,201,700

PHENOL-ALDEHYDE RESIN COMPOSITION CONTAINING PEANUT HULL EXTRACT AND AN ALDEHYDE

Chia-Ming Chen, 205 Dove Valley Dr., Athens, Ga. 30606

Continuation-in-part of Ser. No. 814,920, Jul. 12, 1977. This application Jul. 5, 1978, Ser. No. 922,101

Int. Cl.[2] C08G *83/00;* **C08L** *61/06, 61/10, 61/14*

U.S. Cl. 260—7 **35 Claims**

1. A phenol-aldehyde resin consisting essentially of the reaction product of up to 4.0 parts by weight of a conventional thermosetting phenol-aldehyde resin precondensate having a viscosity of from 20 to 800 cps at 25° C., and 1.0 part by weight of an alkali organic extract of peanut hulls, said extract containing phenolic compounds and at least 2% by weight of crude protein, based on weight of said extract, wherein the mixture is polymerized in an aqueous alkaline system at a temperature of from 30° C. to reflux, until a viscosity of from 20 to 3,000 cps at 25° C. is reached.

4,201,701

DIELECTRIC COATING COMPOSITIONS FROM POLYESTERS AND ROSIN ESTERS

Charles H. Coney, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 850,161, Nov. 10, 1977, Pat. No. 4,153,782. This application Feb. 15, 1979, Ser. No. 12,414

Int. Cl.[2] C08L *93/04*

U.S. Cl. 260—22 CQ **2 Claims**

1. Composition comprising

(a) a polyester derived from, based on 100 mol percent dicarboxylic acid and 100 mol percent glycol, at least 70 mol percent terephthalic acid or an ester forming derivative thereof, and at least 70 mol percent 1,2-propanediol, said polyester having an inherent viscosity of between about 0.2 and about 0.5, and

(b) a rosin ester derived from rosin acid and a polyhydric alcohol having from 1 to about 8 carbon atoms, said rosin ester being present in an amount of from about 0.1% to about 70%, based on the combined weight of polyester and rosin ester.

4,201,702

PROCESS TO PRODUCE ALLYL HALIDES COPOLYMERS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 849,853, Nov. 9, 1977, which is a continuation-in-part of Ser. No. 757,239, Jan. 6, 1977, Pat. No. 4,069,391, which is a continuation-in-part of Ser. No. 622,525, Oct. 15, 1975, Pat. No. 4,020,259. This application Jan. 19, 1978, Ser. No. 870,747

Int. Cl.[2] C08L *91/00;* **C08G** *63/76;* **C08C** *19/00;* **C08F** *12/18*

U.S. Cl. 260—28.5 AS **29 Claims**

1. The process for the production of copolymer of allyl monohalide and organic polymerizable unsaturated compounds by the following steps:

(a) mixing a material consisting of a fine granular oxidated silicon compound wherein the oxidated silicon compound is selected from the group consisting of hydrated silica, silica, silicoformic acid, polysilicoformic acid, naturally occurring silicates with free silicic acid groups and mixtures thereof, with 1 to 3 parts by weight of an allyl monohalide;

(b) adding 0.10 to 5 parts by weight of an organic polymerizable unsaturated compound to each part by weight of the allylmono-halide compound;

(c) agitating the mixture at a temperature between the temperature at which the polymerizable organic compound is in the liquid state and the lowest boiling temperature of the reactants, and at ambient to 60 psig, for 1 to 12 hours, thereby

(d) producing a copolymer.

4,201,703

POLYPIVALOLACTONE-POLYCARBONATE BLENDS

Paul A. Zorzi; Jesse D. Jones, and Michael E. Kucsma, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 8, 1978, Ser. No. 913,877

Int. Cl.[2] C08L *67/00*

U.S. Cl. 260—37 PC **7 Claims**

1. A moldable thermoplastic resin composition having low warpage properties when molded comprising an intimate blend of from about 60 to about 90 weight percent of a polypivalolactone resin and from about 40 to about 10 weight percent of a thermoplastic aromatic polycarbonate resin.

4,201,704

FLAME-RETARDED THERMOPLASTIC POLYESTER COMPOSITIONS HAVING IMPROVED ARC RESISTANCE AND PROCESS FOR PREPARING SAME

Stuart C. Cohen, and Niles R. Rosenquist, both of Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 29, 1977, Ser. No. 865,391

Int. Cl.[2] C08K *3/36, 9/04, 9/06*

U.S. Cl. 260—40 R **16 Claims**

1. A process for improving the electrical arc resistance of a thermoplastic composition, said process comprising admixing novaculite with a high molecular weight linear polyester resin and a flame-retarding amount of a flame-retardant, thereby increasing the arc resistance of the composition.

4,201,705

INTUMESCENT FLAME RETARDANT POLYOLEFIN COMPOSITIONS

Yuval Halpern, Skokie, Ill., and Clifton T. Fleenor, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 28, 1978, Ser. No. 937,343

The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.[2] C08J *9/00*

U.S. Cl. 260—45.8 NT **7 Claims**

1. Polyolefin compositions comprising a polyolefin and a flame retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, the mixtures thereof.

4,201,706

TREATMENT OF CORNEAL EDEMA

Seymour F. Trager, Plainview, N.Y., and Keith Green, Augusta, Ga., assignors to Burton, Parsons & Company, Inc., Washington, D.C.

Filed Sep. 22, 1978, Ser. No. 944,735

Int. Cl.[2] A61K *31/74, 31/79, 31/045*

U.S. Cl. 424—78 **9 Claims**

1. A method for reducing corneal edema comprising topically applying to the cornea an aqueous ophthalmic solution comprising a therapeutically effective amount of a compound selected from the group consisting of sorbitol, inositol, xylitol, and mixtures thereof.

4,201,707

METHINE DYESTUFFS CONTAINING A PHENYL AZO GROUP

Hubertus Psaar, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

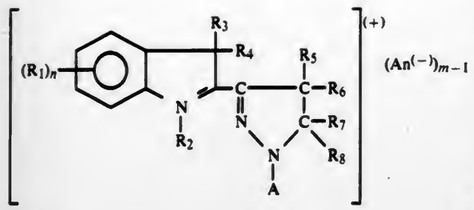
Division of Ser. No. 683,622, May 5, 1976, Pat. No. 4,138,570. This application Jun. 26, 1978, Ser. No. 919,311

Claims priority, application Fed. Rep. of Germany, May 9, 1975, 2520816

Int. Cl.[2] C09B *29/34, 29/36, 29/38;* **D06P** *3/24*

U.S. Cl. 260—162 **5 Claims**

1. Methine dyestuff of the formula



wherein

R_1 is halogen, C_1–C_6 alkyl; C_1–C_6-alkyl substituted with carboxyl, hydroxyl, halogen, C_1–C_4 alkoxy, cyano, C_1–C_4-alkoxy-carbonyl, or carboxylic acid amide; cyclopentyl or cyclohexyl unsubstituted or substituted with halogen or C_1–C_6-alkyl; benzyl, 2-phenylethyl or 2-phenylpropyl-(2) unsubstituted or substituted in the phenyl nucleus with halogen, cyano, nitro, C_1–C_4-alkoxy or C_1–C_6-alkyl; nitro; cyano; C_1–C_3-alkylcarbonyl; C_1–C_3-alkyl-sulphonyl; benzoyl; C_1–C_3-alkylcarbonylamino; C_1–C_3-alkylsulphonylamino, benzoylamino; amino; aminocarbonyl; aminosulphonyl; phenylsulphonyl; naphthylsulphonyl; C_1–C_4-alkoxy; phenoxy; naphthoxy; benzyloxy; 2-phenylethoxy; 2-phenylpropoxy; carboxyl; C_1–C_4-alkoxycarbonyl; phenoxycarbonyl; naphthoxycarbonyl; benzyloxycarbonyl; 2-phenylethoxycarbonyl; 2-phenylpropoxycarbonyl; phenylazo or phenylazo substituted with carboxyl, halogen, cyano, nitro, C_1–C_6-alkyl or C_1–C_4-alkoxy;

R_2 is C_1–C_6-alkyl unsubstituted or substituted with carboxyl, halogen, hydroxyl, C_1–C_4-alkoxy, cyano, C_1–C_4-alkoxycarbonyl, or carboxylic acid amide; C_2–C_6-alkenyl unsubstituted or substituted with halogen; cyclopentyl or cyclohexyl unsubstituted or substituted with halogen or C_1–C_4-alkyl; phenyl or naphthyl unsubstituted or substituted with halogen, carboxyl, cyano, nitro, C_1–C_6-alkyl or C_1–C_4-alkoxy; or benzyl, 2-phenylethyl or 2-phenylpropyl-(2) unsubstituted or substituted in the phenyl nucleus with halogen, cyano, nitro, C_1–C_4-alkoxy, or C_1–C_6-alkyl;

R_3 and R_4 are C_1–C_6-alkyl unsubstituted or substitued with carboxyl, halogen, hydroxyl, C_1–C_4-alkoxy, cyano, C_1–C_4-alkoxycarbonyl, or carboxylic acid amide; cyclopentyl or cyclohexyl unsubstituted or substituted with halogen or C_1–C_6-alkyl; or benzyl, 2-phenylethyl or 2-phenylpropyl-(2) unsubstituted or substituted in the phenyl nucleus with halogen, cyano, nitro, C_1–C_4-alkoxy or C_1–C_6-alkyl;

R_5, R_6, R_7 and R_8 are R_3 or R_4; or hydrogen; or phenyl or naphthyl unsubstituted or substituted with carboxyl, halogen, cyano, nitro, C_1–C_6-alkyl, or C_1–C_4-alkoxy; or R_6 and R_7 form a cyclohexane ring;

A is phenyl or naphthyl unsubstituted or substituted with halogen, cyano, nitro, C_1–C_6-alkyl, trifluoromethyl, phenyl, benzyl, C_1–C_4-alkoxy, phenoxy, benzyloxy, C_1–C_4-alkoxy, mono- or di-C_1–C_4-alkylamino, phenylamino, benzylamino, C_1–C_3-alkylcarbonylamino, formyl, C_1–C_3-alkylcarbonyl, benzoyl, carboxyl, C_1–C_4-alkoxycarbonyl, phenyloxycarbonyl, C_1–C_4-alkoxycarbonylmethyl or -ethyl, aminocarbonyl, mono- or di-C_1–C_4-alkylaminocarbonyl, C_1–C_4-alkylsulphonyl, phenylsulphonyl, C_1–C_4-alkyl- or phenyloxysulphonyl, aminosulphonyl, mono- or di-C_1–C_4-alkylaminosulphonyl, C_1–C_4-alkoxycarbonylamino, C_1–C_4-alkylaminocarbonylamino, sulpho, phenylazo or phenylazo substituted with carboxyl, halogen, cyano, nitro, C_1–C_6-alkyl or C_1–C_4-alkoxy; and wherein R_1 is phenylazo or substituted phenylazo or A is phenyl or naphthyl substituted with phenylazo or substituted phenylazo;

n is 0, 1 or 2; and

m is 1 or 2, but is 1 only if A is substituted with sulpho.

4,201,708

METHOD FOR FRACTIONATING THE WHOLE WHEAT KERNEL BY SEQUENTIAL MILLING

Ganta V. Rao, and Floyd K. Shoup, both of Hutchinson, Kans., assignors to Far-Mar-Co., Inc., Hutchinson, Kans.

Continuation of Ser. No. 831,905, Sep. 9, 1977, abandoned. This application May 30, 1978, Ser. No. 910,633

Int. Cl.[2] A23J *1/12*

U.S. Cl. 260—112 G **22 Claims**

1. A process for fractionating the whole wheat kernel into its gluten and non-gluten endosperm components comprising the steps of:

a. tempering whole wheat kernels in water to a moisture content, by weight, in the range from 14% to saturation;

b. flaking the whole wheat kernels to a flake thickness in the range from 0.0005 to 0.025 inches;

c. milling the flakes into primarily bran-germ and endosperm particles, said bran-germ particles being larger than said endosperm particles, and said bran-germ and endosperm particles having a size distribution which is conducive to rapid and complete hydration and to effective and substantially complete component separation and recovery;

d. hydrating said particles in an additional quantity of water ranging from 65 to 85% by weight of said particles to be hydrated and in an amount just sufficient to achieve a saturation moisture content and agitating the particles and water to form a thick, dough-like mass;

e. water washing a major proportion of said nongluten endosperm components from said dough-like mass to leave a primarily gluten-containing agglomerate; and

f. separating and recovering vital wheat gluten from said agglomerate.

4,201,709

PROCESS FOR PRODUCING A LOW GOSSYPOL PROTEIN PRODUCT FROM GLANDED COTTONSEED

Ranjit S. Kadan; Donald W. Freeman; James J. Spadaro, all of New Orleans, and George M. Ziegler, Jr., Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 26, 1978, Ser. No. 910,153

Int. Cl.[2] A23J *1/14*

U.S. Cl. 260—123.5 **5 Claims**

1. In a process for producing protein flour having reduced free gossypol content from glanded cottonseed wherein the process comprises the following steps:

(a) flaking dehulled, glanded cottonseed with a moisture content of about from 5% to 12% by weight,

(b) solvent extracting the cottonseed flakes to reduce fat content,

(c) desolventizing the solvent extracted flakes, and

(d) milling the desolventized flakes into a flour, the improvement wherein the moisture content of the cottonseed flakes is reduced to about from 1% to 2% by weight prior to solvent extraction, the fat content of the cottonseed flakes is reduced to about from 1% to 3% by weight, and air-classifying the flour to obtain a coarse fraction and a fines fraction, thereafter repeatedly air-classifying the fines fractions until a food grade flour with a free gossypol content of less than 0.045% is achieved.

4,201,710

AZO DYES OF THE PYRIDONE SERIES USEFUL FOR FLOWABLE PRINTING INKS

Walter Kurtz, Bad Durkheim; Dieter Horn, and Walter Ditter, both of Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

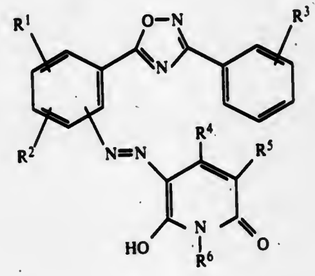
Filed Apr. 21, 1978, Ser. No. 898,672

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721955

Int. Cl.[2] C09B *29/36*

U.S. Cl. 260—156 **10 Claims**

1. A compound useful for improving the flowability of pigment-containing printing inks which in the form of the free base corresponds to the formula



where

R^1 is hydrogen, chlorine, bromine, methyl, trifluoromethyl, methoxy, nitro or X,

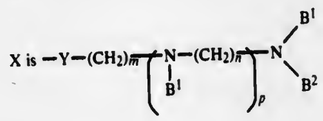
R^2 is hydrogen, chlorine or nitro,

R^3 is hydrogen, chlorine, bromine, methyl, methoxy, nitro or X,

R^4 is hydrogen or alkyl of 1 to 3 carbon atoms,

R^5 is cyano, carbamoyl or acetyl,

R^6 is hydrogen, C_1 to C_{16} alkyl, C_2 to C_8 alkyl substituted by hydroxy or C_1 to C_8 alkoxy, cyclohexyl, benzyl, phenylethyl and



m is 1, 2, 3 or 4

n is 2, 3, or 4

p is 0, 1, 2 or 3

Y is a direct bond, —CONH— or —SO_2NH—,

B^1 is hydrogen, C_1 to C_{13} alkyl or C_2 or C_3 alkyl substituted by hydroxy or C_1 to C_8 alkoxy,

B^2 is hydrogen, C_1 to C_8 alkyl; C_2 or C_3 alkyl substituted by hydroxy or C_1 to C_8 alkoxy; or cyclohexyl and

B^1 and B^2 together with the nitrogen are pyrrolidino, piperidino, methylpiperidino, morpholino, piperazino, N-methylpiperazino or N-β-hydroxyethylpiperazino with the proviso that the molecule contains at least one group X.

4,201,711

METHOD OF MANUFACTURING PRESTRESSED CONSTRUCTION ELEMENTS IN A LONG MOULD BED

Ove Thomsen, and Per-Erik Bondpers, both of Växjö, Sweden, assignors to A-Betong AB, Växjö, Sweden

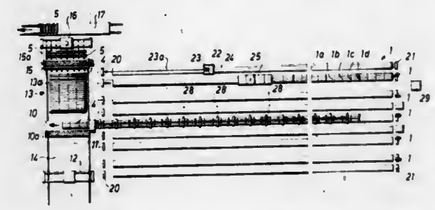
Filed Apr. 27, 1978, Ser. No. 900,624

Claims priority, application Sweden, Apr. 29, 1977, 7705021

Int. Cl.[2] B28B *23/04*

U.S. Cl. 264—157 **7 Claims**

1. A method of manufacturing consecutive, pre-tensioned, concrete sleepers in a long mould bed, in which reinforcement ropes are tensioned and closure members are placed between different sleepers before the sleepers are cast, characterized by the ordered steps of: placing closure members in the mould bed at predetermined intervals prior to casting such that longitudinally successive cast sleepers are joined together by at least two spaced bridges of concrete projecting outwardly from the sleepers and surrounding the reinforcement ropes thereby



forming a string of joined sleepers which may be handled as a unit while decreasing the cross-sectional area of the concrete between adjacent sleepers to be subsequently cut, removing the cast sleepers from the mould bed in a longitudinal string of joined sleepers; longitudinally advancing the string of sleepers to a separating station at one end of the bed on conveying means movable along the bed axis, and cutting the string at the bridges to separate the string into individual sleepers.

4,201,712

PROCESS FOR PREPARATION OF 6-ARYL-4H-S-TRIAZOLO-[3,4-C]-THIENO-[2,3-E]-1,4-DIAZEPINES

Karl-Heinz Weber, Gau-Algesheim; Adolf Bauer, and Adolf Langbein, both of Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

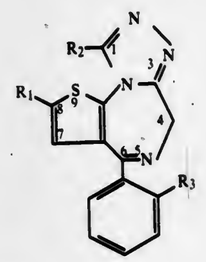
Continuation-in-part of Ser. No. 704,845, Jul. 13, 1976, abandoned. This application Mar. 31, 1977, Ser. No. 783,143

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1975, 2531677; Jul. 16, 1975, 2531678; Jul. 16, 1975, 2531679; Jul. 30, 1975, 2533924

Int. Cl.[2] C07D *495/14, 495/04, 409/04, 333/36*

U.S. Cl. 260—244.4 **6 Claims**

1. A process for the preparation of a 6-aryl-4 H-s-triazolo-[3,4-c]-thieno-[2,3-e]-1,4-diazepine of the formula



wherein

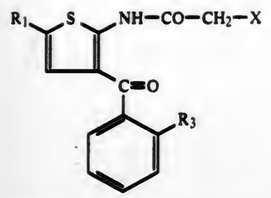
R_1 is hydrogen, halogen or alkyl of 1 to 2 carbon atoms;

R_2 is hydrogen, chlorine, bromine, straight or branched alkyl of 1 to 3 carbon atoms, ω-hydroxyalkyl of 1 to 3 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, tetrahydrofuranyl, tetrahydropyranyl, N-methyl-piperidyl or thienyl; and

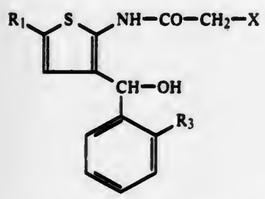
R_3 is hydrogen, fluorine, chlorine or bromine;

which comprises the steps of

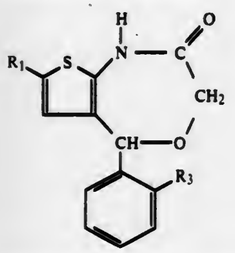
(a) reducing a compound of the formula



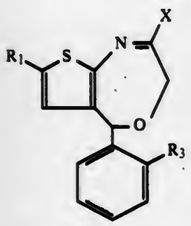
wherein
R_1 and R_3 have the meanings defined above, and
X is halogen, amino or carboxylic acyloxy,
with sodium borohydride in dimethylformamide or dimethylacetamide at temperatures between 0° and +10° C. to form a corresponding carbinol of the formula



wherein R_1, R_3 and X have the meanings defined above;
(b) treating the carbinol, optionally after conversion of the amino group into a halogen atom or after splitting off the acyl group, with a cyclization agent to form a carbonyl compound of the formula



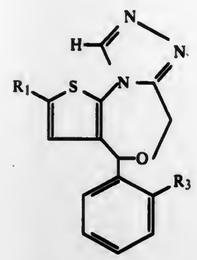
wherein R_1 and R_3 have the meanings defined above;
(c) converting the carbonyl group into the mercapto, a lower alkoxy or an alkylmercapto group or into a halogen atom by conventional methods to form a compound of the formula



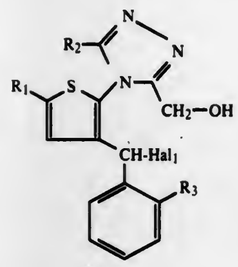
wherein
R_1 and R_3 have the meanings defined above, and
X is Sh—, lower alkoxy, alkylmercapto or halogen;
(d) reacting the compound thus obtained with a compound of the formula

R_2—CO—NH—NH_2

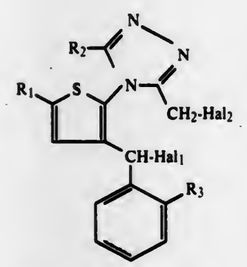
wherein R_2 has the meanings previously defined except chlorine and bromine;
(e) optionally chlorinating or brominating a compound of the formula



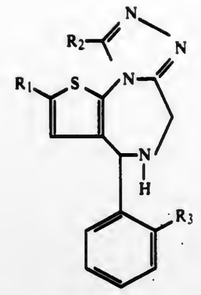
thus obtained, wherein R_1 and R_3 have the meanings defined above, with a chlorinating or brominating agent;
(f) cleaving the oxazepine ring of the compound at the oxygen atom by treating it with a strong hydrohalic acid;
(g) extracting the resulting hydrohalide of a compound of the formula



wherein
R_1 through R_3 have the meanings defined above and Hal_1 is halogen, with a water-immiscible solvent;
(h) admixing the residue with a phosphorus halide or sulfur halide;
(i) reacting the resulting dihalo compound of the formula



wherein
R_1 through R_3 have the meanings defined above, and
Hal_1 and Hal_2 are halogen,
with ammonia or an ammonia-releasing substance to form a compound of the formula



wherein R_1 through R_3 have the meanings defined above; and
(j) dehydrogenating the resulting compound with a halogen or a compound of the higher oxidation stage of chromium or manganese.

4,201,713

NAPHTHOSTYRIL DYESTUFFS

Horst Harnisch, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

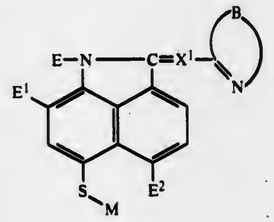
Filed Feb. 25, 1977, Ser. No. 772,324

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608020

Int. Cl.² C07D *277/12, 285/08, 285/12*

U.S. Cl. 546—41 **1 Claim**

1. Dyestuff of the formula



wherein
E represents hydrogen, methyl, ethyl, β-cyanoethyl, β-chloroethyl, β-acetoxyethyl, β-methoxyethyl, β-ethoxyethyl, β-hydroxyethyl, β-carbomethoxyethyl, β-carboethoxyethyl, n-propyl, isopropyl, n-butyl, n-pentyl, benzyl, β-phenylethyl or phenyl or conjointly with E^1 represents —CH_2—CH_2—CH_2—;
M represents a phenyl radical which is optionally substituted by 1–5 chlorine atoms substituted by 1 or 2 bromine atoms, substituted by 1 or 2 C_1–C_2-alkyl groups, or monosubstituted by phenyl, methoxy, ethoxy, phenoxy, carboxylic acid C_1–C_2-alkyl ester, amino, acetylamino, or naphthyl, or conjointly with E^2 represents o-phenylene which is optionally monosubstituted by methyl, chlorine, bromine, methoxy or ethoxy;
X^1 represents =N-;
B represents the remaining members of 5-nitro-thiazole-(2)-, 3-phenyl-1,2,4-thiadiazole-(5), or 5-nitro-1,3,4-thiadiazole-(2)-;
E^1 represents hydrogen, ethyl, chlorine, bromine, phenylmercapto, tolylmercapto, or chlorophenylmercapto; and
E^2 represents hydrogen, chlorine, bromine, methoxy, ethoxy, phenylmercapto, tolylmercapto, or chlorophenylmercapto.

4,201,714

STABILIZED CATALYST COMPLEX OF RHODIUM METAL, BIDENTATE LIGAND AND MONODENTATE LIGAND

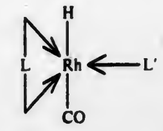
O. Richard Hughes, Chatham, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 825,896, Aug. 19, 1977. This application Jun. 20, 1978, Ser. No. 917,245

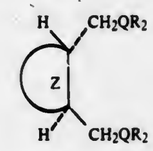
Int. Cl.² C07D *317/00, 323/02*

U.S. Cl. 260—340.9 R **5 Claims**

1. A stabilized catalyst complex of rhodium metal, bidentate ligand and monodentate ligand, said catalyst complex corresponding to the structural formula:



wherein L is a bidentate ligand having the formula:



where Z is an alicyclic structure; Q is a group VA element selected from nitrogen, phosphorus and arsenic; and R is an organic radical selected from aliphatic, alicyclic and aromatic groups containing between one and about 20 carbon atoms; and wherein L' is a monodentate ligand having the formula:

$Q'R'_3$

where Q' is a group VA element selected from nitrogen, phosphorus and arsenic; R' is an organic radical selected from aliphatic, alicyclic and aromatic groups containing between one and about 20 carbon atoms; and the steric parameter θ of $Q'R'_3$ in the catalyst complex is an apex angle between about 135 and 150 degrees.

4,201,715

PROCESS FOR THE ANILIDIZATION OF CARBOXYLIC ACID ESTERS

Wolfgang Deinhammer, and Hellmuth Spes, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,352

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800506

Int. Cl.² C07D *309/32*

U.S. Cl. 260—345.7 R **6 Claims**

1. A process for the anilidization of carboxylic acid esters of the general formula R_1COOR_2, which comprises reacting in fluid phase such esters in which R_1 is selected from the group consisting of cycloaliphatic radicals and substituted cycloaliphatic radicals having from 3–8 C-atoms, aromatic and substituted aromatic radicals, heterocyclic and substituted heterocyclic radicals, and
R_2 is a hydrocarbon radical with up to 4-atoms, in the presence of aniline with equimolar amounts of magnesium dianilide, aluminum trianilide, or a mixture of the two anilides.

4,201,716
PREPARATION OF 22-STEROID ACETALS

Leroy O. Krbechek, Golden Valley, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Mar. 27, 1978, Ser. No. 890,102
Int. Cl.² C07J 7/00, 9/00
U.S. Cl. 260—397.4 25 Claims

1. A process for separating 3-keto-4-pregnene-20-carboxaldehyde from a reaction mixture containing progesterone and said 20 steroid carboxaldehyde by the transformation of the aldehyde to the corresponding acetal followed by solvent extraction of the acetal and progesterone into separate fractions.

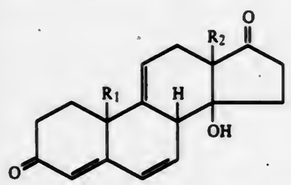
22. The 22-acetal of the corresponding 3-keto-4-pregnene-20-carboxaldehyde.

4,201,717
14β-HYDROXYANDROSTANES

Zdenek Valenta, Fredericton, Canada, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 811,393, Jun. 29, 1977, Pat. No. 4,134,920. This application Oct. 12, 1978, Ser. No. 950,914
Int. Cl.² C07J 5/00
U.S. Cl. 260—397.45 22 Claims

1. A compound of the formula



wherein R_1 and R_2 are each independently lower alkyl and the optical antipodes and geometrical isomers thereof.

4,201,718
PRODUCTION OF HARDBUTTER

Jack T. Marsch, 373 Lyons Rd., Basking Ridge, N.J. 07920

Continuation of Ser. No. 643,139, Dec. 22, 1975, abandoned. This application Nov. 1, 1978, Ser. No. 956,483
Int. Cl.² C11C 3/12; B01J 23/40
U.S. Cl. 260—409 9 Claims

1. A process for preparing a hard butter, which is suitable for use as a cocoa butter substitute in the manufacture of confectioneries without tempering, comprising hydrogenating a fat or oil having an iodine value within the range of 60 to 85 with a nickel catalyst containing 0.6 to 21 parts by weight sulfur per 100 parts of nickel until the absorption of hydrogen has substantially ceased.

4,201,719
PRECIOUS METAL NITROGENOUS ORGANO REACTION PRODUCTS

Anthony Liang, Half Moon Bay, Calif., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 21, 1977, Ser. No. 844,380
Int. Cl.² C07F 1/12, 15/00
U.S. Cl. 260—429 R 19 Claims

1. A composition consisting essentially of the reaction product of an ammonium salt of a monocarboxylic acid having an alkyl chain containing from about 6 to about 12 carbon atoms and a precious metal complex of a nitrogenous organic compound selected from primary, secondary and tertiary alkyl amines, imidazoles and amides wherein said precious metal is selected from gold and platinum.

4,201,720
ALIPHATIC POLYCARBONATE-TRIOLS AND MODIFIED AMINOPLAST RESINS DERIVED THEREFROM

Claude G. Passagne, Champigny sur Marne; Remy R. Lippler, Bergerac; Jean-Pierre G. Senet, Melun, and Jacques Plazanet, Bergerac, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Nov. 22, 1977, Ser. No. 853,843
Claims priority, application France, Dec. 10, 1976, 76 37196
Int. Cl.² C07C 69/96; C08L 61/00
U.S. Cl. 260—463 7 Claims

1. A liquid aliphatic or cycloaliphatic polycarbonate-triol containing hydrophobic segments and having a molecular weight which is not more than 3,000, and which is obtained by a transesterification reaction between an aryl carbonate and a primary aliphatic triol and a mixture of two diols HOAOH and HOBOH, A and B being different, at least one of the radicals A and B being a hydrophobic radical, said diols being aliphatic or cycloaliphatic, said triol having a boiling point of at least 220° C.,

the proportion of said primary aliphatic triol used being such that there is statistically one molecule of the said triol per polymer chain the product, and

the ratio of said diols being such that the polycarbonate-triol obtained is equivalent to a mixture of a% by weight of a polycarbonate derived from the triol and the diol HOAOH alone, and of b% by weight of a polycarbonate derived from the triol and the diol HOBOH alone, the percentages a and b corresponding to the following two conditions:

$$30\% \leqq a\% \leqq 70\%$$

$$a\% + b\% = 100\%.$$

4,201,721
CATALYTIC AROMATIC CARBONATE PROCESS

John E. Hallgren, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 731,494, Oct. 12, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,509
Int. Cl.² C07C 68/00
U.S. Cl. 260—463 56 Claims

1. An aromatic carbonate process which comprises contacting under substantially anhydrous reaction conditions, a phenol, carbon monoxide, a base, a Group VIIIB element selected from ruthenium, rhodium, palladium, osmium, iridium or platinum, and an oxidant having an oxidation potential greater than that of the said selected Group VIIIB element.

4,201,722
PROCESS FOR SEPARATING 4,4'-DIAMINODIPHENYLMETHANE

Kwok K. Sun, Hamden, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 4, 1976, Ser. No. 693,081
Int. Cl.² C07C 85/26
U.S. Cl. 260—570 D 5 Claims

1. A process for separating 4,4'-diaminodiphenylmethane in substantially pure form from admixtures thereof with the corresponding 2,4'-isomer which process comprises:

heating in the presence of an inert organic solvent a mixture consisting essentially of (a) the dihydrochloride of said mixture of isomers, and

(b) a mixture of 2,4'- and 4,4'-isomers of the corresponding free amines, the proportion of components (a) and (b) being such that the amount by weight of 4,4'-isomer of the free amine in component (b) is at least equal to the amount by weight of 2,4'-isomer in the dihydrochloride component (a); and

separating the insoluble, substantially pure, dihydrochloride

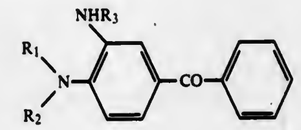
of 4,4'-diaminodiphenylmethane from the reaction product.

4,201,723
DIAMINE-BENZOPHENONES AND A PROCESS FOR THE PREPARATION THEREOF

Edit Toth; Jozsef Torley; Eva Palosi; Szaboles Szeberenyi; Laszlo Szporny; Sandor Gorog, and Csilla Meszaros, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation of Ser. No. 658,997, Feb. 18, 1976, abandoned, which is a division of Ser. No. 485,744, Jul. 3, 1974, Pat. No. 3,989,701. This application Jun. 22, 1977, Ser. No. 808,952
Claims priority, application Hungary, Jul. 26, 1973, RI 518
Int. Cl.² C07C 97/10
U.S. Cl. 260—570 AB 8 Claims

1. A compound of the formula



wherein

R_1 and R_2 each is a C_1 to C_{18} saturated or unsaturated, straight-chain or branched alkyl group, an aralkyl group with C_1–C_4 alkyl, a saturated or unsaturated C_3–C_8 cycloalkyl group or an aryl group, and

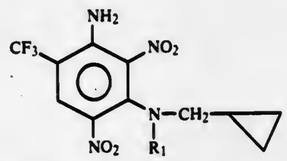
R_3 is hydrogen, or a pharmaceutically effective salt thereof.

4,201,724
N^3-(CYCLOALKYL)ALKYL-2,4-DINITRO-6-TRIFLUOROMETHYL-1,3-PHENYLENEDIAMINE COMPOUNDS

Don L. Hunter, Anaheim, and William G. Woods, Fullerton, both of Calif., assignors to United States Borax & Chemical Corp., Los Angeles, Calif.

Continuation of Ser. No. 551,480, Feb. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 383,004, Jul. 26, 1973, abandoned. This application Aug. 20, 1976, Ser. No. 716,487
Int. Cl.² C07C 87/62
U.S. Cl. 260—577 3 Claims

1. A compound of the formula



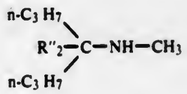
wherein R_1 is alkyl of 1 to 4 carbon atoms.

4,201,725
SECONDARY AMINES

Charles Pigerol, Saint-Ouen; Pierre Eymard, Fontaine; Jean-Claude Vernieres, Domene; Jean-Pierre Werbenec, Eysines, and Madeleine C. Epse Broli, Le Fontanil, all of France, assignors to Labaz, Paris, France

Continuation-in-part of Ser. No. 876,200, Feb. 9, 1978, abandoned, which is a continuation of Ser. No. 707,898, Jul. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 577,732, May 15, 1975, Pat. No. 4,026,925. This application Mar. 20, 1978, Ser. No. 888,187
Claims priority, application Belgium, May 20, 1974, 144519
Int. Cl.² C07C 87/08; A61K 31/13
U.S. Cl. 260—583 H 6 Claims

1. A methylamine derivative corresponding to the formula:



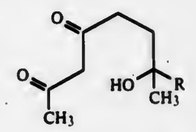
or a pharmaceutically acceptable acid addition salt thereof, wherein R''_2 represents n-propyl, isopropyl, isobutyl or allyl.

4,201,726
SYNTHESIS OF VITAMIN E

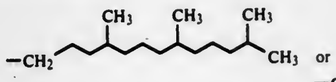
Gary L. Olson, Union County, and Gabriel Saucy, Essex County, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 797,713, May 17, 1977, Pat. No. 4,127,608. This application Sep. 11, 1978, Ser. No. 941,512
Int. Cl.² C07C 49/12; C07D 311/72
U.S. Cl. 568—413 2 Claims

1. A compound of the formula:



wherein R is



or



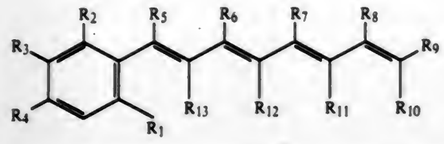
n is an integer from 0 to 1; and R_1 is tetrahydropyranyl, benzyl, ethoxyethyl, methoxymethyl, t-butyl, formyl acetyl, benzoyl, p-toluenesulfonyl and methanesulfonyl.

4,201,727
FLUORINATED AROMATIC POLYENES

Ka-Kong Chan, Hopatcong, and Beverly A. Pawson, Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 952,416, Oct. 18, 1978, which is a division of Ser. No. 809,738, Jun. 24, 1977, Pat. No. 4,137,246, which is a continuation-in-part of Ser. No. 722,939, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,028, Nov. 14, 1976, abandoned. This application May 10, 1979, Ser. No. 37,798
Int. Cl.² C07C 47/56, 49/44
U.S. Cl. 568—442 4 Claims

1. A compound represented by the formula



wherein R_1, R_2 and R_3 are lower alkyl, R_4 is lower alkoxy, R_6 and R_8 are methyl or trifluoro methyl, R_9 is formyl, hydroxymethyl or alkoxymethyl, R_5, R_7, R_{10}, R_{11}, R_{12} and R_{13} are hydrogen or fluorine with the proviso that at least one of R_5, R_7, R_{10}, R_{11}, R_{12} or R_{13} is fluorine or at least one of R_6 or R_8 is trifluoro methyl.

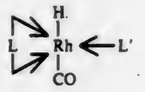
4,201,728

HYDROFORMYLATION CATALYST AND PROCESS

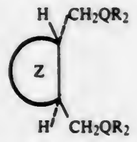
O. Richard Hughes, Chatham, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 19, 1977, Ser. No. 825,896
Int. Cl.[2] C07C *45/10*
U.S. Cl. 568—454 **29 Claims**

1. In a process for the production of an alkanal-1 by hydroformylation of an alpha-olefin, the improvement which comprises contacting an alpha-olefin containing between about 3–30 carbon atoms with hydrogen and carbon monoxide at a temperature between about 25° C. and 150° C. and a pressure between about 15 and 3000 psi in the presence of a catalyst consisting essentially of a stabilized complex of rhodium metal, bidentate ligand and monodentate ligand, which catalyst components are provided in a molar ratio of 1 mole of bidentate ligand and between about 1.2–800 moles of monodentate ligand per gram atom of rhodium metal in the hydroformylation medium, and said catalyst complex corresponding to the structural formula:



wherein L is a bidentate ligand having the formula:



wherein Z is an alicyclic structure; Q is a group VA element selected from nitrogen, phosphorus and arsenic; and R is an organic radical selected from aliphatic, alicyclic and aromatic groups containing between one and about 20 carbon atoms; and wherein L' is a monodentate ligand having the formula:

$Q'R'_3$

where Q' is a group VA element selected from nitrogen, phosphorus and arsenic; R' is an organic radical selected from aliphatic, alicyclic and aromatic groups containing between one and about 20 carbon atoms; and the steric parameter θ of $Q'R'_3$ in the catalyst complex is an apex angle between about 135 and 150 degrees.

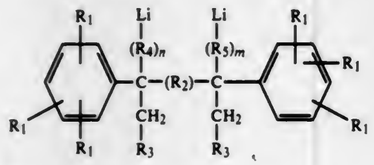
4,201,729

MULTIFUNCTIONAL LITHIUM CONTAINING INITIATOR

Lu H. Tung; Grace Y-S. Lo; Joseph W. Rakshys, and Douglas E. Beyer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 859,356, Dec. 12, 1977, which is a continuation-in-part of Ser. No. 601,577, Aug. 1, 1975. This application Aug. 7, 1978, Ser. No. 931,797
Int. Cl.[2] C08F *4/48*
U.S. Cl. 260—665 R **20 Claims**

1. A solution particularly suited for the initiation of polymerizing of vinyl group containing compounds which are polymerizable in the presence of a lithium containing catalyst, particularly vinyl hydrocarbon compounds, the solution comprising a major portion of a solvent selected from the group consisting of liquid aliphatic, cycloaliphatic and aromatic hydrocarbons and mixtures thereof and a minor proportion of a multifunctional lithium containing polymerization initiating compound of the Formula:



wherein

R_1 is individually selected from the group consisting of hydrogen, an alkyl hydrocarbon radical, a cycloalkyl hydrocarbon radical, alkoxy radical, and an aromatic radical with the further limitation that R_1 contains from 0 to 16 carbon atoms;

R_2 is a divalent organic radical having at least 6 carbon atoms, R_2 having at least one aromatic ring, the aromatic ring being directly attached to the carbon which is attached to the aromatic ring in the above formula, with the further limitation R_2 contains carbon and hydrocarbon, and optionally oxygen or sulfur, oxygen and sulfur when present are present only in the configuration of a diphenyl oxide or diphenyl sulfide,

R_3 is selected from the group consisting of alkyl, cycloalkyl, and aromatic radicals containing from 1 to 20 carbon atoms; and

R_4 and R_5 are individually selected from the group consisting of chemically combined units of 1,3-butadiene, isoprene and mixtures thereof where n+m is at least 20.

4,201,730

HYDROCARBON CONVERSIONS USING SOLID SUPERACID CATALYSTS BASED ON FLUORINATED GRAPHITE

George A. Olah, Shaker Heights, Ohio, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Division of Ser. No. 807,014, Jun. 16, 1977, Pat. No. 4,116,880. This application Feb. 16, 1978, Ser. No. 878,336
Int. Cl.[2] C07C *2/58*
U.S. Cl. 585—730 **9 Claims**

1. A process for effecting hydrocarbon conversion reactions which comprises contacting under hydrocarbon conversion conditions a hydrocarbon charge with a catalyst composition comprising a fluorinated graphite having a fluorine to carbon atomic ratios of from about 0..1 to 1 having bonded thereto from between about 5 to about 50 percent by weight of the total catalyst composition of at least one Lewis acid selected from halides of the elements of Group II-A, III-A, IV-B, V or VI-B of the periodic Table.

4,201,731

CATALYTIC CODIMERIZATION OF NORBORNADIENE WITH PENTADIENE

James E. Lyons, Wallingford; Abraham Schneider, Overbrook Hills, and Harry K. Myers, Jr., Aston, all of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 819,444, Jul. 27, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,229
Int. Cl.[2] C07C *13/32*
U.S. Cl. 585—361 **10 Claims**

1. Process for the catalytic codimerization of norbornadiene with 1,3-pentadiene comprising:

(a) contacting norbornadiene and 1,3-pentadiene in the presence of a catalytic amount of a three-component homogeneous catalytic system consisting of cobaltic or cobaltous acetylacetonate, triphenylphosphine and one of the following alkyl aluminum chorides: diethylaluminum chloride, ethyl-aluminum dichloride and ethyl aluminum sesquichloride;

(b) having the contacting occurring at a temperature within the range from between about 20° C. to about 100° C.; and

(c) continuing the contacting until the norbornadiene-pentadiene codimer is prepared.

4,201,732

CHEMICAL MILLING OF NEOPRENE RUBBER

Leon E. Wolinski, Cheektowaga; Richard G. Riebling, Hamburg, and John H. Edholm, Tonawanda, all of N.Y., assignors to Pratt & Lambert, Inc., Buffalo, N.Y.

Division of Ser. No. 703,796, Jul. 9, 1976, Pat. No. 4,074,033. This application Sep. 26, 1977, Ser. No. 836,530
Int. Cl.[2] C08F *8/06*
U.S. Cl. 525—363 **3 Claims**

1. A process for improving the processability of a high molecular weight neoprene polymer which comprises treating a solution of said polymer in an organic solvent with an organic peroxide at room temperature in the presence of oxygen to reduce the molecular weight of said neoprene and lower the viscosity of said solution, wherein said organic solvent solution of neoprene further contains the components of an organic adhesive composition, said components being selected from the group consisting of additional resins, fillers, antioxidants or mixtures thereof.

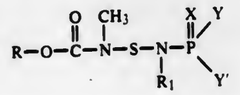
4,201,733

PROCESS FOR PREPARING N-[(PHOSPHINYL)AMINO]THIO- AND N-[(PHOSPHINYL)AMINO]THIOMETHYLCARBAMATES

Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

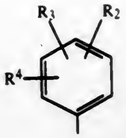
Continuation-in-part of Ser. No. 765,807, Feb. 4, 1977, Pat. No. 4,081,536. This application Feb. 3, 1978, Ser. No. 874,960
Int. Cl.[2] C07F *9/22, 9/24*
U.S. Cl. 260—968 **10 Claims**

1. A process for preparing compounds having the formula



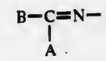
wherein R is selected from the group consisting of

a.

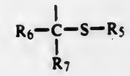


wherein R_2, R_3, and R_4 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl of one to five carbon atoms, inclusive, halogen, lower-alkoxy of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, dialkylamino with each alkyl the same or different and having one to three carbon atoms, inclusive, and $N{=}CHN(CH_3)_2$;

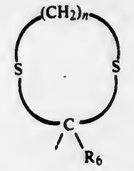
b.



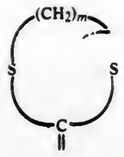
wherein A and B are the same or different and are selected from the group consisting of lower-alkyl of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, phenylthio wherein phenyl is unsubstituted or substituted with one to three substituents, same or different, selected from the group consisting of halogen and lower-alkyl of one to four carbon atoms, inclusive, monocyano substituted alkylthio of one to five carbon atoms, inclusive, cyano alkoxy having one to five carbon atoms, inclusive, phenyl, hydrogen, with the proviso that when A is hydrogen, B is of the formula



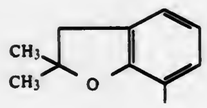
wherein R_5 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and phenyl; R_6 is alkyl of one to three carbon atoms, inclusive; R_7 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and SR_8, wherein R_8 is alkyl and is the same alkyl group as R_5, and taking R_5 and R_8 together with the atoms to which they are attached form a dithio heterocyclic of the formula



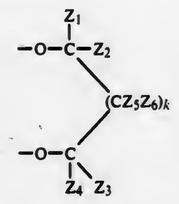
wherein n is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one or two methyl groups; A and B taken together with the carbon atom to which they are attached form a dithio heterocyclic of the formula



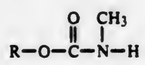
wherein m is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one to two methyl groups; and



R_1 is selected from the group consisting of lower-alkyl, phenyl, substituted phenyl, phenyl lower-alkyl, and cycloalkyl; X is oxygen or sulfur; Y and Y' are the same or different and are selected from the group consisting of lower-alkyl, lower-alkoxy, lower-alkylthio, cycloalkyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, thiophenoxy, and substituted thiophenoxy; and Y and Y' when taken together form the radical

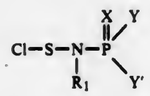


wherein Z_1 through Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and k is 0 or 1; which comprises reacting a compound having the formula



III

with a compound having the formula



II

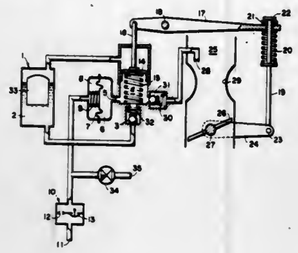
wherein R, R_1, X, Y, and Y' are the same as above, in the presence of a catalyst selected from the group consisting of cuprous chloride and aluminum chloride, and a suitable acid acceptor and a suitable polar solvent.

4,201,734

CARBURETOR

Takanori Ohnishi; Ken Shiozawa, both of Toyota, and Nobuo Shimizu, Ohbu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisan Kogyo Kabushiki Kaisha, both of Aichi, Japan

Filed Jun. 23, 1978, Ser. No. 918,571
Claims priority, application Japan, Oct. 28, 1977, 52-129963
Int. Cl.[2] F02M *7/08*
U.S. Cl. 261—34 B **4 Claims**



1. A carburetor for an internal combustion engine, said carburetor having an accelerator pump for pushing fuel contained in a first pump chamber of said pump into an air intake of said carburetor when said accelerator pump is operated during acceleration, the improvement comprising:

a second pump chamber whose one wall is formed by a diaphragm, said second pump chamber communicating with said first pump chamber via a throttle; and

a pressure control means for applying a controlled variable pressure to said pump chamber in a contracting direction, comprising:

an atmospheric chamber disposed in opposed relation to said second pump chamber and having said diaphragm as one wall thereof;

a spring provided in said atmospheric chamber biasing said diaphragm in a direction of contraction of said second pump chamber; and

a negative pressure delaying valve means coupled to said atmospheric chamber and to the atmosphere, said negative pressure delaying valve means having a check valve and a throttle provided in parallel thereby allowing air from said atmospheric chamber to flow unimpededly through said check valve to the atmosphere and delaying air from flowing from the atmosphere through said throttle into said atmospheric chamber, wherein said atmospheric chamber further communicates with the atmosphere via a control valve, said control valve being arranged and configured to open when the temperature of said engine is lower than a predetermined value and is closed when the temperature of said engine is greater than a predetermined value.

4,201,735

METHOD OF MANUFACTURING A CHOKE CONTROL DEVICE

Peter M. Byam, Shelby, N.C., assignor to Fasco Industries, Inc., Shelby, N.C.

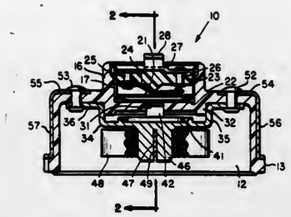
Filed Sep. 8, 1978, Ser. No. 940,707
Int. Cl.[2] F02M *1/12*
U.S. Cl. 261—39 E **4 Claims**

1. The method of manufacturing a choke control device of the type in which a bimetallic coil is mounted in a recess in a housing normally to have its free, outer end positioned a predetermined angular distance from a reference mark formed on the exterior of the housing, and disposed to have said free end rotate about its fixed inner end at a predetermined angular rate, when a predetermined voltage is applied across an electric heater that is mounted in the housing adjacent the coil, comprising

providing a housing having a circumferential recess in one end for receiving a bimetallic coil, and having on the exterior thereof a reference mark extending parallel to the axis of said recess,

providing a coil supporting member having a central, cylindrical stud portion, and a lateral flange portion projecting radially outwardly from said stud portion adjacent one end thereof,

securing the inner end of a bimetallic coil to said stud portion so that the free end of said coil is rotatable angularly about the axis of said stud portion upon predetermined changes in the ambient temperature of said coil,



temporarily fixturing the free end of said coil and forming a plurality of fastening holes in said flange portion of the supporting member, with the axis of at least one of said holes being angularly spaced said predetermined angular distance from said free end of the coil, and

securing said flange portion of said supporting member to the bottom of said recess with the axis of said one hole lying in a plane containing said reference mark and the axis of said recess, whereby said free end of said coil will be positioned said predetermined angular distance from said reference mark.

4,201,736

FLUID DISTRIBUTION AND CONTACTING ELEMENTS

Stephen R. Ellis, 63 Shelly Wick Rd., Birmingham, England (B29 7JE); Theodore R. Bott, 17 Springavon Croft, Harborne, Birmingham, England (B17 9BJ); Howard E. Kay, Sherwood Rd., Hall Green, Birmingham, England (B28 9HB), and Noel Hughes, The Spinney, Tyddesley Wood, Pershore, England

Filed Mar. 13, 1978, Ser. No. 885,800
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—98 **11 Claims**



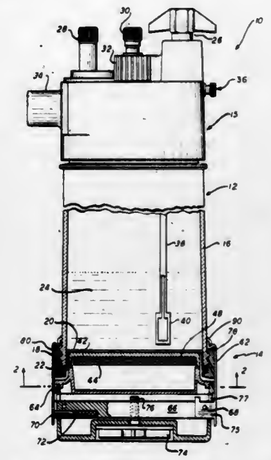
1. An article for use as a packing element or turbulator, said article comprising at least two elongate core members twisted together to form a central core with gaps between the core members, and a plurality of convolutions comprising a plurality of filaments and having portions thereof trapped within the gaps between the core members and held thereby in a configuration such that the convolutions collectively extend in helical fashion about the central core.

4,201,737

NEBULIZING APPARATUS

Douglas D. Carden, Barneveld, Wis., assignor to Airco, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 816,110, Jul. 15, 1977, abandoned. This application Aug. 30, 1978, Ser. No. 938,284
Int. Cl.[2] A61M *15/00*
U.S. Cl. 261—142 **3 Claims**



1. Nebulizer apparatus for generating a heated liquid-in-gas mist for administration to a patient in the course of aerosol therapy; said apparatus comprising in combination:

reservoir means for containing liquid to be dispersed in said gas; gas inlet means for providing an input of gas to said apparatus; means for mixing said liquid with said gas to form said mist;

mist outlet means for providing said mist toward said patient;

a normally downwardly concave thermally conductive heat transfer plate forming the bottom of said reservoir means; heating means underlying said reservoir means for heating said liquid, said heating means being separable from said reservoir and having a substantially flat surface;

fastening means for positively retaining said heating means in operative association with said reservoir in heat transmissive relationship with said heat transfer plate, said fastening means comprising draw clips secured to and extending upwardly from said heating means and being engaged with said reservoir means, and adjusting means adapted to move said draw clips to draw said heat transfer plate tightly against said substantially flat surface of said heating means to cause said heat transfer plate to lose its downward concavity and assume a substantially flat configuration against said heating means to establish and maintain good thermal contact therebetween.

4,201,738

PREPARATION OF U_3O_8

David R. Johnson, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 24, 1978, Ser. No. 936,460
Int. Cl.[2] G21C *21/00*
U.S. Cl. 264—0.5 **7 Claims**

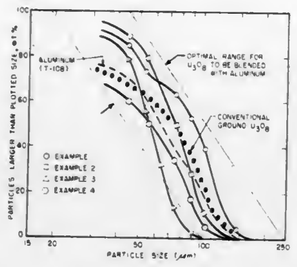
1. The method of directly preparing U_3O_8 nuclear fuel material having a controlled particle size distribution from an aqueous solution of uranyl nitrate which comprises

(a) contacting said uranyl nitrate solution with sufficient formic acid to effect a denitration of said solution and to form an unsaturated solution of uranyl formate;

(b) further contacting said unsaturated uranyl formate solu-

tion with additional formic acid in sufficient stoichiometric excess of formic acid to precipitate uranyl formate monohydrate from said solution;

(c) removing and drying said precipitate to provide a crystalline uranyl formate monohydrate; and



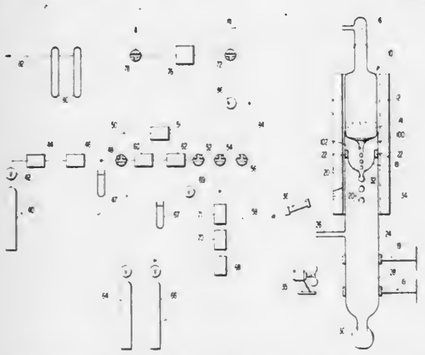
(d) calcining said crystalline uranyl formate monohydrate to produce U_3O_8 nuclear fuel material having a controlled particle size distribution.

4,201,739

MANUFACTURE OF METAL HALIDE PARTICLES

Scott Anderson, P.O. Box 2680, Champaign, Ill. 61820

Filed Mar. 17, 1976, Ser. No. 667,581
Int. Cl.² B01J *2/04*
U.S. Cl. 264—13 **19 Claims**



1. In a process in which a purified lanthanide metal halide salt is melted and passed through a discharge conduit into an inert, quenching atmosphere of sufficient length and temperature to at least partially solidify particles containing purified lanthanide metal halide, the improvement which comprises promoting wetting of the lanthanide metal halide salt on the conduit without the addition of water to the quenching atmosphere, said promoting of wetting being effected by adding to said molten lanthanide metal halide a controlled amount of hydrogen halide effective to promote wetting of the lanthanide metal halide salt on the conduit during the discharge into the inert quenching atmosphere, the halide radical of the lanthanide metal salt and the halide radical of the hydrogen halide being of the same halogen species.

4,201,740

PROCESS FOR PURIFYING AND ACTIVATING AQUEOUS INORGANIC SALT SOLUTIONS EMPLOYED IN THE WET SPINNING OF FILAMENTARY VINYL POLYMERS

Rupert B. Hurley, Williamsburg, Va., assignor to Badische Corporation, Williamsburg, Va.

Filed Jun. 8, 1978, Ser. No. 913,638
Int. Cl.² D01F *13/00, 6/18*
U.S. Cl. 264—38 **4 Claims**

1. In the continuous process for producing a filamentary vinyl polymer including the procedural steps of

(a) polymerizing a vinyl monomer in a concentrated aqueous inorganic salt solution to produce a vinyl polymer solution;

(b) spinning the resulting vinyl polymer solution through a spinnerette into a coagulating bath containing an aqueous solution of the same inorganic salt as that employed in the polymerization step, the concentration of inorganic salt in the coagulating bath being maintained at a level which affords precipitation of the vinyl polymer to form a coherent filamentary gel;

(c) washing the vinyl polymer filamentary gel so produced;

(d) recovering the concentrated aqueous inorganic salt solution from the washing and coagulation steps by concentrating the combined effluents thereof, and

(e) recycling the recovered concentrated aqueous inorganic salt solution into the polymerizing step; in which process copper ion impurities accumulate in the recovered concentrated aqueous inorganic salt solution; the improvement in such process for removing copper ion impurities from the recovered aqueous inorganic salt solution and activating such recovered aqueous inorganic salt solution prior to the re-utilization thereof in the polymerization step, the improvement comprising:

(1) introducing a source of sulfide ion into the recovered aqueous inorganic salt solution in an amount sufficient to provide a concentration of about 2 to about 200 ppm of sulfide ion, based upon the concentrated aqueous inorganic salt solution; and

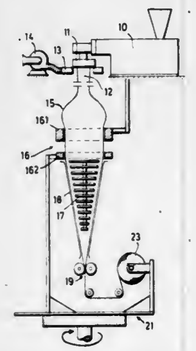
(2) removing precipitate resulting from said sulfide ion introduction.

4,201,741

BLOWN FILM PROCESS

Heinrich Pannenbecker, Siebengebirgstr. 53, 5300 Bonn-Holzlar, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,773
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740629
Int. Cl.² B29D *23/04*
U.S. Cl. 264—40.1 **18 Claims**



1. In a blown film process for making plastic film bags and the like by extruding a film tubing and expanding the tubing by the application of internal excess pressure so as to obtain a film bag which increases in diameter from a smallest diameter via a turning or transition point to a maximum diameter, and which is subsequently flattened, the improvement comprising:

controlling the diameter of the film tubing at a first measuring station located between the turning point site and the site of maximum diameter.

7. A blown film apparatus for making plastic film bags and the like by extruding a film tubing and expanding the tubing by the application of internal excess pressure so as to obtain a film bag which increases in diameter from a smallest diameter via a turning or transition point to a maximum diameter, said apparatus including means for controlling the diameter of the film tubing at a first measuring station located between the turning point site and the site of maximum diameter, comprising:

an annular extrusion die having an inside air inlet therethrough,

at least one guide ring arranged at a distance from the extrusion die for fixing the diameter of the film bag,

a flattening and take-off device situated on the other side of said guide ring from said extrusion die,

a scanning device situated at said first measuring station for monitoring the diameter of the film bag at said first measuring station, and

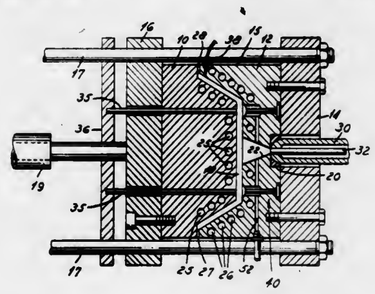
means for blowing air into the interior of said film tubing through said inside air inlet so as to apply said internal excess pressure, said means for blowing being controlled in response to the output of said scanning device so as to maintain the diameter of said film tubing at said first measuring station at a substantially constant predetermined value.

4,201,742

METHOD AND APPARATUS FOR INJECTION MOLDING FOAMED RESIN PRODUCTS HAVING A SMOOTH FINISH ON THEIR SURFACE

James W. Hendry, Howell, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 704,007, Jul. 9, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,048
Int. Cl.² B29D *27/00*; B29F *1/08*
U.S. Cl. 264—45.5 **15 Claims**



1. A process for injection molding a foamable thermo-plastic resin composition in a foam injection molding means having a cavity means therein comprising the steps of:

(a) closing said mold means;

(b) selectively flowing a condensable vapor heated above the heat distortion temperature of said resin into said mold cavity means;

(c) selectively exhausting said vapor and condensate from said mold cavity means;

(d) selectively venting said mold cavity means and injecting foamable thermoplastic resin into the preheated mold cavity means;

(e) reducing temperature of said mold cavity means; and

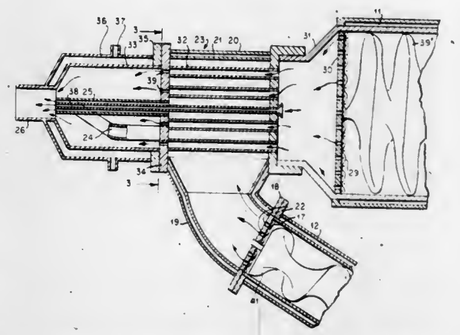
(f) opening said mold upon solidification of said resin and removing the solidified part.

4,201,743

METHOD OF MAKING SOAP BARS

Guilio Perla, and Alessandro D'Arcangell, both of Rome, Italy, assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 461,915, Apr. 18, 1974, abandoned, which is a continuation of Ser. No. 252,837, May 12, 1972, abandoned. This application Aug. 4, 1977, Ser. No. 821,852
Claims priority, application Italy, May 27, 1971, 50528 A/71
Int. Cl.² B29C *17/00*
U.S. Cl. 264—148 **6 Claims**



1. A method of producing soap bars having indicia incorporated therein comprising; supplying a first flow of base soap material through the barrel of a plodder and towards a plodder nozzle; discharging a second flow of an insert soap material thru an indicia forming die within said barrel; said insert soap material having substantially the same physical. characteristics including beta phase content as said base soap material mechanically working said base soap material through a plurality of tubular members having a predetermined inside diameter and a plurality of orifices having a diameter substantially smaller than said predetermined diameter to resuit in a beta phase content in said base soap material greater than 50% by weight, mechanically working said insert soap material through a plodder and said indicia forming die to result in a beta phase content of greater than 50% by weight, said insert soap material being discharged into the body of said base soap material as said base soap material enters said plodder nozzle, said second flow being in the same direction and at substantially the same rate as said first flow; extruding said base soap material through said plodder nozzle to form a continuous log of soap, said extruding step imparting an extrusion grain to said log of soap, and cutting said continuous log of soap into segments equal to the desired thickness of said soap bars.

4,201,744

METHOD OF MAKING TIRES

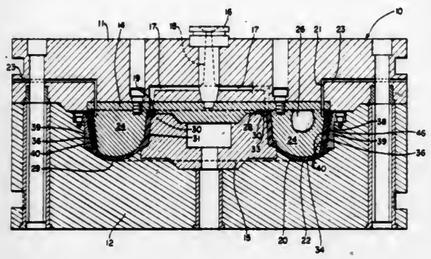
Charles L. Makinson, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 3, 1978, Ser. No. 921,925
Int. Cl.² B29H *5/02, 17/38*
U.S. Cl. 264—250 **10 Claims**

1. A method of making a tire comprising:

A. molding two annular tire body parts, each in a first-stage mold having a core, said tire body parts each including a crown portion having a tread-receiving surface, a base portion, and a sidewall joining said crown portion and said base portion, said tire body parts each having integrally formed therewith a load-bearing structure intermediate its crown and its base, said structure having a plurality of webs formed by lobes of said core, said webs being spaced apart from one another in the circumferential direction of said tire, said webs extending in a direction generally parallel to the axis of rotation of said tire so that said lobes may be retracted from the molded part as a unit;

B. arranging said two annular tire body parts in a second-stage mold in the position they will have in the completed tire, forming a tire body having a tread-receiving surface, thereby defining a tread-shaped cavity between said tread-



receiving surface of said tire body and said second-stage mold; and

C. filling said tread-shaped cavity with an elastomer composition to join said parts and form an annular tread thereon.

4,201,745

AUTOCLAVE FOR CARRYING OUT OF MATERIAL CONVERSIONS UNDER HIGH TEMPERATURES AND HIGH PRESSURES

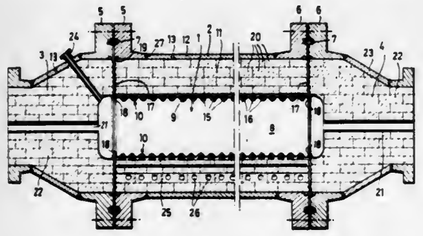
Karl Zickgraf, Erftstadt, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,966

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709699

Int. Cl.² B01J *3/04*

U.S. Cl. 422—199 **6 Claims**



1. A digester vessel for containing material subjected to a high temperature pulsating high pressure process comprising:

an inner enclosing metal wall of corrugated sheet material defining a high temperature high pressure chamber within;

an outer containing wall enclosing the inner wall and withstanding outwardly directed forces transmitted thereto from the inner wall due to pressure within the chamber;

means defining a vent opening through the outer wall for the free passage of expanding and contracting gas from between said walls to the atmosphere outwardly of the outer wall;

an intermediate layer between said inner and outer walls;

and an annular radial flange of corrosion and temperature resistant meterial extending between said inner and said outer walls and connected to each of said walls.

4,201,746

APPARATUS FOR ZONE REFINING

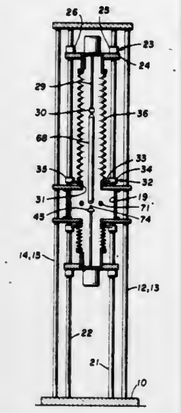
John W. Burd, Chesterfield; Bobbie D. Stone, Ballwin; William F. Tucker, Chesterfield, and Kedar P. Gupta, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 754,155, Dec. 27, 1976, Pat. No. 4,045,181. This application Jun. 13, 1977, Ser. No. 806,139

The portion of the term of this patent subsequent to Aug. 30, 1994, has been disclaimed.

Int. Cl.² B01J *17/10*

U.S. Cl. 422—250 **7 Claims**



1. In an apparatus for zone refining polycrystalline semiconductor rods to produce monocrystalline semiconductor rods, said apparatus having an RF induction heating coil, a rod holder and a seed holder aligned vertically above and below said heating coil, said rod holder being adapted to hold one end of a polycrystalline semiconductor rod to be refined and said seed holder being adapted to hold a seed crystal of said semiconductor, means for moving said rod holder relative to said RF induction heating coil to bring the free end of the polycrystalline semiconductor rod into proximity with said RF induction heating coil to melt said free end, and means for moving said seed holder relative to said RF induction heating coil so that the seed crystal contacts and fuses with the molten free end of the polycrystalline rod, said rod holder and said seed holder thereafter being moved in the same direction relative to said RF induction heating coil so that the zone of the melt is moved along the length of the semiconductor rod, the improvement comprising:

an induction heating chamber having said RF inductive heating coil fixed therein, said induction heating chamber having a longitudinal dimension independent of the length of the polycrystalline semiconductor rod to be processed;

a first gas tight bellows surrounding said rod holder, one end of said bellows being attached to said induction heating chamber and the other end of said bellows being attached to the base of said rod holder, the base of said rod holder having a gas tight magnetic fluid seal means for the rod between the chamber and rod rotation drive means, said bellows expanding and collapsing with the relative movement of said rod holder and said RF induction heating coil;

a second gas tight bellows surrounding said seed holder, one end of said bellows being attached to said induction heating chamber and the other end of said bellows being attached to the base of said seed holder, the base of said seed holder having a gas tight magnetic fluid seal means for the seed holder between the chamber and seed holder rotation means, said bellows expanding and collapsing with the relative movement of said seed holder and said RF induction heating coil; and

a plurality of telescoping metallic cylinders surrounding said seed holder, within said corresponding second gas tight bellows, the largest of the telescoping metallic cylinders being attached in common with said second bellows to said induction heating chamber and the smallest of the telescoping steel cylinders being attached to the base of said seed holder, said plurality of telescoping metallic cylinders serving to protect said second bellows from molten semiconductor at all times when zone refining is taking place.

4,201,747

METHOD OF SEPARATING YTTRIUM IONS

Yukinori Minagawa, Ebina; Tsugio Kaneko, Tokyo, and Kunihiko Yamaguchi, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Oct. 6, 1978, Ser. No. 949,010

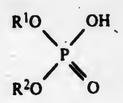
Claims priority, application Japan, Oct. 11, 1977, 52-121740; Apr. 19, 1978, 53-46094

Int. Cl.² C01F *17/00*

U.S. Cl. 423—21.5 **5 Claims**

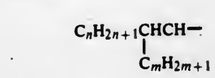
1. A method of selectively separating yttrium ions from the lanthanide ions without an additional seperation of the light rare earth ions, which comprises:

extracting the yttrium ions by contacting an aqueous solution of pH ranging from 2.0 to 5.0 containing yttrium ions and lanthanide (atomic number 57–71) ions in a combined concentration of 0.005 to 2 g atom/liter, and hydroxethyl ethylenediaminetriacetic acid, the ratio of said hydroxyethyl ethylenediaminetriacetic acid to yttrium ions and lanthanide ions ranging from 0.1 to 4 equivalents per equivalent of yttrium ions and lanthanide ions, with an extracting solvent containing tributyl phosphate and an acid phosphoric ester having the formula:



(1)

wherein R^1 and R^2 can be hydrogen and/or an alkyl group having the formula:



wherein n is an integer of 6 to 15 and m is n−1 or n−2 with the proviso that R^1 and R^2 cannot both be hydrogen, said acid phosphoric ester and tributyl phosphate ranging in concentration from 0.001 to 0.5 mole/liter and 20 to 80 volume percent respectively in said extracting solvent, wherein the volume ratio of said aqueous solution to said extracting solvent ranges from 0.2 to 5.0 whereby the yttrium component is concentrated in the extracting solvent and the lanthanide ions are concentrated in the aqueous solution phase.

4,201,748

PROCESS FOR THERMAL-ACTIVATION OF CHALCOPYRITE-PYRITE CONCENTRATES

Godefridus M. Swinkels, Rossland, and Dennis G. Maschmeyer, Fort Saskatchewan, both of Canada, assignors to Cominco Ltd., Trail and Sherritt Gordon Mines Limited, Toronto, both of, Canada

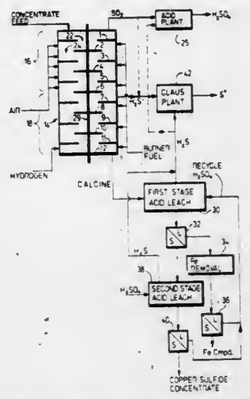
Filed Aug. 14, 1978, Ser. No. 933,401

Claims priority, application Canada, Aug. 19, 1977, 285111

Int. Cl.² C01G *3/12, 49/14*

U.S. Cl. 423—27 **10 Claims**

1. A process for treating metal sulfide concentrates containing chalcopyrite and pyrite for converting sulfidic iron to an acid leachable form and for rendering copper and other nonferrous metal values amenable for separate recovery, which comprises the steps of: heating said metal sulfide concentrates in an oxidizing zone to an elevated temperature in an oxidizing atmosphere for removal of labile sulfur and for formation of metal oxides by evolution and combustion of up to about 90% of total sulfur to be removed for converting said sulfidic iron and chalcopyrite to selectively acid leachable forms, contacting said delabilized metal sulfide concentrates containing metal oxides in a reducing zone with a reducing gas containing hydrogen in a concentration in the range of about 18 to 24% by volume capable of accepting sulfur whereby conversion of sulfidic iron in said sulfides to an acid leachable form is completed by evolution of H_2S gas concurrent with reduction of said metal oxides to sulfides, at least in part through reaction between metal oxides and H_2S, whereby said metal oxides are



a scavenger of said H_2S gas resulting in the formation of metal sulfides and water, maintaining a ratio of $H_2S/(H_2+H_2S)$ equal to or less than 0.1:1.0 in said reducing zone, and contacting said metal sulfide concentrates containing metal oxides in the oxidizing zone with a portion of said reducing gas and H_2S from said reducing zone and with an excess of oxygen for substantial combustion of said reducing gas and H_2S and labile sulfur to provide heat for said oxidizing zone to convert sulfur values to SO_2 for discharge from said oxidizing zone and to provide said oxidizing atmosphere to partially oxidize the metal sulfides to metal oxides whereby about 10 to 15% of iron in said metal sulfide concentrates in the oxidizing zone is oxidized to ferromagnetic oxides and off-gases from said oxidizing zone contains 1 to 6% by volume oxygen.

4,201,749

METHOD FOR THE SEPARATION OF PRECIPITATED ALUMINUM HYDROXIDE FROM SODIUM ALUMINATE SOLUTION

Koichi Yamada; Takuo Harato, and Hisakatsu Kato, all of Niihama, Japan, assignors to Sumitomo Aluminium Smelting Company, Ltd., Osaka, Japan

Filed May 8, 1979, Ser. No. 37,145

Claims priority, application Japan, May 8, 1978, 53-54803

Int. Cl.² C01F *7/14*

U.S. Cl. 423—127 **6 Claims**

1. In a process for separating precipitated aluminum hydroxide from a sodium aluminate solution by adding aluminum hydroxide as seed to a clarified aqueous solution of sodium aluminate to precipitate aluminum hydroxide, recycling a portion of the precipitated aluminum hydroxide, as seed, to the precipitation step for aluminum hydroxide, and washing the remaining portion of precipitated aluminum hydroxide, thereby withdrawing said aluminum hydroxide as product, an improvement for effectively and economically recovering caustic components and removing sodium oxalate contaminant from the seed aluminum hydroxide which comprises washing the seed aluminum hydroxide with a washing liquor having a substantially saturated concentration of sodium oxalate and little content of caustic to recover accompanying sodium alu-

minate therein, and secondly washing the seed with hot water, then recycling as seed for the precipitation step of aluminum hydroxide.

4,201,750

PROCESSING OF BREUNNERITE TO RECOVER MAGNESIUM COMPOUNDS

Frank Pitts, Magalas, France, assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Apr. 24, 1978, Ser. No. 899,168
Int. Cl.² C01F *5/30, 5/38, 5/40*
U.S. Cl. 423—162 **9 Claims**

1. A process for the preparation of magnesium compounds from breunnerite or from materials containing breunnerite which comprises the steps of drying and calcining the breunnerite to expel the greater part of the carbon dioxide contained in it, causing the calcined product to react in presence of water with an acid selected from the group consisting of sulphuric acid, hydrochloric acid and nitric acid, the calcined material and the acid being used in such proportions that the pH of the reaction mass on completion of reaction has a value between 6 and 7, separating the insoluble material from the solution of the magnesium salt of the aforesaid acid and recovering said magnesium salt.

4,201,751

GAS PURIFICATION

Heinz Holter, Beinstr. 39-41, 439 Gladbeck; Heinz Gresch, Dornestr. 89, 46 Dormund-Derne, and Heinrich Igelbuscher, Marcq-en-Baroeul-Str. 60, 439 Gladbeck, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 683,205, May 4, 1976, Pat. No. 4,061,476. This application Oct. 21, 1977, Ser. No. 844,185
Claims priority, application Fed. Rep. of Germany, May 6, 1975, 2520045; Dec. 9, 1975, 25552209; Mar. 4, 1976, 2608935; Apr. 10, 1976, 2615828; Oct. 21, 1976, 2647520
Int. Cl.² B01D *53/34*
U.S. Cl. 423—210 **14 Claims**

11. A process for removing contaminants from contaminated gas which comprises:

(a) introducing into and thus contacting a current of the contaminated gas with a combination of

(1) a solid-form absorption agent comprising dust developed during iron or steel production and containing Fe_2O_3 in combination with a member selected from the group consisting of an alkali-metal oxide and an alkaline-earth-metal oxide and

(2) expanded-perlite carrier,

(b) intimately admixing the absorption agent with the gas, and then

(c) separating the absorption agent from the gas.

4,201,752

PROCESS FOR THE SELECTIVE REMOVAL OF SULFUR DIOXIDE FROM EFFLUENT GASES

Alexander J. M. Kosseim, Rye; Gilbert R. Atwood, Briarcliff Manor, and Joseph E. Sokolik, Jr., Carmel, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,400
Int. Cl.² B01D *53/34*
U.S. Cl. 423—235 **6 Claims**

1. The process for the selective removal of sulfur oxides from gas mixtures containing at least such sulfur oxides and carbon dioxide which comprises:

(a) passing the gas mixture at a temperature below 80° C. through an absorber in countercurrent contact with an absorbent solvent composition consisting essentially of

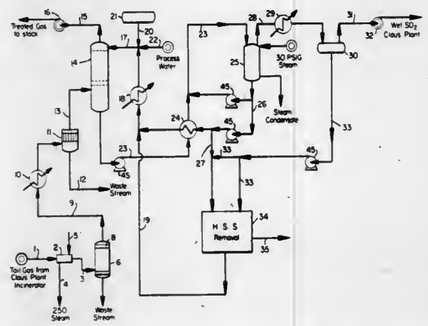
(1) from about 20 to about 60% by weight of monoethanolamine;

(2) from about 10 to about 40% by weight of sulfur dioxide such that the molar ratio of sulfur dioxide to available monoethanolamine is always greater than or equal to 0.5/1; and

(3) at least about 4% by weight water at a solvent composition flow to gas flow ratio such that the molar concentration of sulfur oxides to be absorbed therein does not exceed the molar concentration of water present;

(b) absorbing said sulfur oxides in said solvent composition;

(c) passing the aborbent solvent composition containing absorbed sulfur oxides at a maximum temperature of about 120° C., to at least one stripper tower and stripping the absorber sulfur dioxide from the absorbent solvent composition while maintaining the temperature in the stripper below 120° C.;



(d) removing from the stripper a stripped lean solvent bottom composition containing a maximum of about 40% by weight of sulfur dioxide and at least about one mole of water for each mole of sulfur oxides remaining in said lead solvent;

(e) recycling the stripped lean solvent bottoms from step (d) to the absorber together with sufficient water to provide a solvent absorbent composition having the same composition as defined in step (a); and

(f) removing from the stripper a vapor consisting essentially of sulfur dioxide and water.

4,201,753

FLUE GAS DESULFURIZATION PROCESS

William R. Dayen, Reading, Pa., assignor to Gilbert Associates, Inc., Reading, Pa.

Filed Jan. 26, 1978, Ser. No. 872,601
Int. Cl.² C01B *17/00;* C01C *1/24*
U.S. Cl. 423—242 **10 Claims**

1. The method of desulfurizing the flue gas products of combustion of carbonaceous fuel, comprising effecting the essentially complete combustion of said fuel in a combustion zone, spraying an impure solution containing mostly K_2CO_3 and KOH into the flue gas stream at low pressure immediately downstream of the combustion zone in a zone where the temperature is sufficiently high to vaporize, volatilize or decompose the potassium compounds present to form an ionic form of potassium, thereafter reacting the SO_2 present in the flue gas stream with the potassium ions in the presence of O_2 in excess of the stochiometeric requirement to form K_2SO_4, thereafter cooling the flue gas stream to temperatures below the melting points of the potassium compounds present condensing the K_2SO_4 to form K_2SO_4 particulates and depositing K_2SO_4 on the surfaces of other particulates present in the flue gas stream, subsequently removing essentially all of the particulates from the flue gas stream prior to the flue gas stream exiting to the atmosphere through a chimney stack, and finally water quenching all the removed particulates permitting hydraulic conveyance of the particulates to regeneration facilities.

4,201,754

METHOD FOR THE CONVERSION OF CALCIUM SULFOXY COMPOUNDS INTO CALCIUM CARBONATE COMPOUNDS IN SULFUR OXIDE TREATMENT PROCESSES

William E. Clark, Bethel Park, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Dec. 5, 1978, Ser. No. 966,545
Int. Cl.² C01B *17/00;* C01C *1/02;* C01F *5/24;* C01B *17/16*
U.S. Cl. 423—242 **8 Claims**

6. A method for removing sulfur oxides from gaseous mixtures containing said sulfur oxides, said method consisting essentially of:

(a) contacting said gaseous mixtures with aqueous $CaCO_3$, to produce at least one calcium sulfoxy compound selected from the group consisting of $CaSO_x$ and $Ca(HSO_x)_2$ and their hydrates wherein x is 3 or 4 thereby removing said sulfur oxides from said mixtures;

(b) converting said $Ca(HSO_x)_2$ compounds into said $CaSO_x$ compounds by reacting said $Ca(HSO_x)_2$ compounds with $CaCO_3$ in the presence of water;

(c) reacting said $CaSO_x$ compounds with NH_3 and CO_2 in the presence of water to produce $NH_4(HSO_x)$ wherein x is 3 or 4 and $CaCO_3$;

(d) separating said $NH_3(HSO_x)$ and $CaCO_3$; and

(e) reacting said $NH_4(HSO_x)$ with carbon at a temperature from about 1200° to about 1600° F. and a pressure from about 0 to about 250 p.s.i.g. to produce NH_3, H_2S, and carbon oxides.

4,201,755

SULPHUR OXIDE REMOVAL FROM GAS

Abb A. Nofal, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 761,092, Jan. 21, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,707
Int. Cl.² C01B *17/00*
U.S. Cl. 423—242 **3 Claims**

1. A method of removing SO_2 from other gases comprising the steps of:

contacting the SO_2 and other gases with a basic alkali metal aqueous solution in a first zone at a pH not greater than 6, which maintains a high ratio of bisulfite to sulfurous acid to increase the bisulfite concentration,

continually discharging solution from the first zone with a high concentration of bisulfite ions,

contacting the gases and remaining SO_2 from the first zone in a second zone with a basic alkali metal aqueous solution in which there is a high ratio of sulfite to bisulfite maintained by a relatively high pH not less than 6 wherein SO_2 from the first zone now forms ionized sulfurous acid to maintain a high ratio of sulfite ions to bisulfite ions,

Flowing the solution formed in the second zone as the contact solution in the first zone,

and discharging the gases from the second zone with the SO_2 reduced to a desired level.

4,201,756

GRANULAR CALCIUM HYPOCHLORITE COATED WITH AN INORGANIC SALT

Walter C. Saeman, Hamden, Conn.; Noel N. Coe, West Lake, La., and John P. Faust, Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 548,653, Feb. 10, 1975, which is a continuation-in-part of Ser. No. 521,417, Nov. 6, 1974, which is a continuation-in-part of Ser. No. 276,615, Jul. 31, 1972, abandoned. This application Oct. 31, 1978, Ser. No. 956,311
Int. Cl.² A61K *33/20;* C01B *11/06*
U.S. Cl. 423—266 **16 Claims**

1. Coated rounded, solid granular calcium hypochlorite particles comprised of a core of calcium hypochlorite encapsulated with a plurality of layers of an inorganic salt other than calcium hypochlorite, wherein:

(a) said inorganic salt is an alkali metal salt selected from the group consisting of the chloride, chlorate, nitrate, bromide, bromate and sulfate of an alkali metal,

(b) said inorganic salt being admixed with sufficient alkaline material to form a coating which has a pH in dilute aqueous solution at ambient temperature of at least about nine or higher,

(c) the portion of said inorganic salt on said core ranges from about 4 to about 45 percent by weight of said particles, and

(d) said core ranges in diameter from about 200 to about 2000 microns and the outside diameter of said particles ranges from about 400 to about 5000 microns.

4,201,757

LARGE BORON NITRIDE ABRASIVE PARTICLES

Francis R. Corrigan, Westerville, Ohio, assignor to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 825,493, Aug. 18, 1977, abandoned, which is a division of Ser. No. 760, 853, Jan. 21, 1977, which is a continuation of Ser. No. 394,632, Sep. 6, 1973, abandoned. This application Sep. 15, 1978, Ser. No. 942,661
Int. Cl.² C01B *35/08*
U.S. Cl. 423—290 **8 Claims**

1. Wurtzite boron nitride particles having a particle size of at least 50 microns, said particles being obtained by compression of recrystallized pyrolytic boron nitride along the C-axis.

4,201,758

BORON REMOVAL FROM ETHYLENE GLYCOL-MAGNESIUM CHLORIDE SOLUTIONS

Ronald J. Allain, Richmond, Tex.; David G. Braithwaite, Village of Golf, Fla., and Ansell L. Reid, Sugar Land, Tex., assignors to Nalco Chemical Co., Oak Brook, Ill.

Filed Mar. 22, 1979, Ser. No. 22,666
Int. Cl.² C01F *5/30*
U.S. Cl. 423—497 **1 Claim**

1. A method for removing boric acid and salts thereof from ethylene glycol-magnesium chloride solutions which contain at least 100 ppm of boron which comprises reducing the pH of such solutions below 7 and then adding thereto at least 3 moles of methanol based on the amount of boric acid or salt thereof present in said solution and then subjecting the thus-treated ethylene glycol-magnesium chloride solution to distillation at a temperature sufficient to remove trimethyl borate-methanol therefrom, thereby reducing the level of boron in the starting solution to not more than 35 ppm.

4,201,759

METHOD FOR REGENERATING CALCIUM SULFOXY COMPOUNDS PRODUCED IN THE COMBUSTION OF CARBONACEOUS FUELS IN FLUIDIZED BEDS

William E. Clark, Bethel Park, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Dec. 5, 1978, Ser. No. 966,544
Int. Cl.² C01B *17/02*
U.S. Cl. 423—567 A **5 Claims**

1. In a method for combusting carbonaceous sulfur-containing fuels in a fluidized bed wherein said fluidized bed contains at least one calcium compound selected from the group consisting of CaO, $Ca(OH)_2$, $CaCO_3$ and $Ca(HCO_3)_2$ to absorb sulfur oxides formed during combustion of said carbonaceous fuel to produce calcium sulfoxy compounds having the general formula $CaSO_x$ wherein x is 3 or 4 the improvement comprising:

(a) withdrawing a stream of fluidized bed solids containing said $CaSO_x$ and mixing said fluidized bed solids with water to produce a slurry;

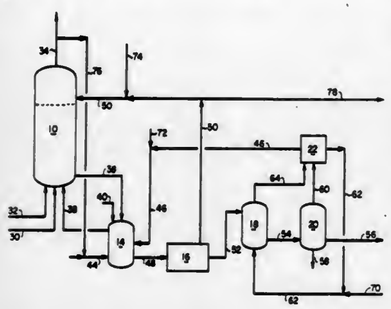
(b) reacting said $CaSO_x$ in said slurry with NH_3, H_2O and

CO_2 to produce watersoluble ammonium sulfoxy compounds and $CaCO_3$;

(c) separating said water-soluble ammonium sulfoxy compounds from said fluidized bed solids and said $CaCO_3$;

(d) recycling at least a portion of said $CaCO_3$ to said fluidized bed.

(e) reacting said water-soluble ammonium sulfoxy compounds with H_2S at a temperature from about 300° to about 600° F. and a pressure from about 150 to about 2000 psig to produce ammonium polysulfide;



(f) thermally decomposing said ammonium polysulfide at a temperature from about 200° to about 300° F. to produce NH_3, H_2S and sulfur;

(g) recycling said NH_3 to step (b) to the reaction of said $CaSO_x$ with NH_3, H_2O and CO_2;

(h) recycling said H_2S to step (e) to the reaction of said water-soluble ammonium sulfoxy compounds with H_2S; and,

(i) recovering at least a portion of said sulfur.

4,201,760

MOLTEN SALT SYNTHESIS OF LITHIUM META-ALUMINATE POWDER

Ronald H. Arendt, and Matthew J. Curran, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,734
Int. Cl.² C01F 7/04
U.S. Cl. 423—600 **7 Claims**

1. A process for producing lithium meta-aluminate powder which consists essentially of forming a mixture of a particulate lithium salt reactant selected from the group consisting of lithium hydorxide, lithium nitrate, lithium carbonate and mixtures thereof in at least stoichiometric amount of particulate precursors for said lithium salt reactant, a particulate aluminum salt reactant selected from the group consisting of aluminum hydroxide, alpha-alumina, gamma-alumina and mixtures thereof in at least stoichiometric amount of particulate precursors for said aluminum salt reactant, and an alkali chloride salt selected from the group consisting of sodium chloride, potassium chloride, lithium chloride and mixtures thereof, said alkali chloride salt being used in an amount of at least about 20% by weight of the total amount of said reactants and said chloride salt, heating said mixture to a reaction temperature at least sufficient to melt said chloride salt, said precursors decomposing completely at or below said reaction temperature to form said reactant and by-product gas, said salt in molten form being a solvent for said reactants, maintaining said reaction temperature dissolving and reacting said reactants in said molten salt and precipitating said lithium meta-aluminate, and recovering said precipitated lithium meta-aluminate by dissolving said chloride salt and separating said precipitated lithium meta-aluminate from the resulting salt solution.

4,201,761

PROCESS FOR MAKING IRON OXIDE OF CONTROLLED PARTICLE SIZE

Walter H. Seitzer, West Chester, Pa., assignor to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 802,597, Jun. 2, 1977, abandoned. This application Jun. 23, 1978, Ser. No. 918,215
Int. Cl.² C01G 49/02
U.S. Cl. 423—633 **3 Claims**

1. A process for preparing a hydrated ferric oxide of large particle size useful for conversion to magnetic iron oxide which comprises continuously adding an oxygen-containing gas to a vigorously agitated suspension of ferric oxide at a temperature between room temperature and about 75° C. and at a pH of from about 5.0 to about 8.5 while continuously adding an aqueous solution of a ferrous salt at a rate which maintains the concentration of iron ions in the solution below about 200 mgm per liter so that no new crystals of ferric oxide form and maintaining said suspension of ferric oxide while said aqueous ferrous salt solution is added for a time sufficient to form large crystals having a particle size greater than about 2.0×0.1 microns and separating said large size hydrated ferric oxide crystals from the aqueous suspension.

4,201,762

TRANSPARENT RED IRON OXIDE PIGMENTS AND PROCESS FOR PRODUCING SAME

James E. Daly, Hudson Falls, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,078
Int. Cl.² C01G 49/06; C09C 1/24
U.S. Cl. 423—633 **6 Claims**

1. A process for producing transparent red iron oxide pigments having improved optical qualities comprising forming a dry mixture of particulate alpha-ferric oxide hydrate and at least 0.2 part per part of hydrate of at least one salt selected from the group consisting of alkali metal nitrates and nitrites, heating the mixture to a temperature above the melting point but below the decomposition temperature of said salt until the desired red shade of ferric oxide is obtained, separating the ferric oxide from the salt in water whereby the salt is dissolved, and recovering the separated oxide as a pigment.

4,201,763

SOLID PHASE IMMUNOFLUORESCENT ASSAY METHOD

James F. Monthony, Albany; Michael W. Burgett, Half Moon Bay, and Robert V. Dahlstrom, San Rafael, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Continuation of Ser. No. 621,197, Oct. 9, 1975, abandoned. This application Feb. 6, 1978, Ser. No. 875,475
Int. Cl.² G01N 21/00, 21/38, 31/22, 33/16
U.S. Cl. 424—8 **25 Claims**

1. An immunofluorescent assay comprising:

providing a plurality of water insoluble hydrophilic polymeric particles of about 0.1–10 microns in size which form a substantially homogeneous aqueous suspension and having covalently bonded thereto an immune reactant immunologically related to an unknown immune reactant to be determined, providing a sample of unknown immune reactant to be determined, providing an appropriate amount of fluorescently labeled immune reactant immunologically related to said unknown, reacting said particles, sample, and labeled immune reactant to immunologically bind said particles in aqueous solution with a quantity of said labeled immune reactant proportional to the concentration of said unknown, physically separating all of said particles from said aqueous solution thereby separating the particles from unbound labeled immune reactant remaining in the aqueous solution, and measuring the fluorescence of an aqueous suspension of said separated particles by fluorometry, the fluorescence of labeled immune reactant bound to said particles being quantitatively related to the concentration of said unknown immune reactant.

24. An immunofluorescence assay comprising:

providing a plurality of water insoluble hydrophilic polymeric particles of about 0.1–10 microns in size which form a substantially homogeneous aqueous suspension and having covalently bonded thereto antigen and hapten corresponding to unknown antigen or hapten to be determined immunologically, competitively binding said particles and unknown antigen or hapten to be determined in aqueous solution with a preselected limited amount of fluorescently labeled homologous antibody to bind a portion of said labeled antibody with said particles, physically separating all of said particles from said aqueous solution thereby separating the particles from unbound labeled immune reactant remaining in the aqueous solution, and measuring the fluorescence of a fluid suspension of said separated particles in a fluorometer, the fluorescence of labeled immune reactant bound to said particles being quantitatively related to the concentration of unknown antigen or hapten.

25. An immunofluorescence assay comprising:

providing an aqueous solution containing unknown antigen or hapten to be determined, providing fluorescently labeled corresponding antigen or hapten, competitively immunologically binding said labeled antigen or hapten and unknown antigen or hapten with a limited quantity of a homologous first antibody, adding a plurality of water insoluble hydrophilic particles of about 0.1–10 microns in size which form a substantially homogeneous aqueous suspension and having covalently bonded thereto a second antibody immunologically reactive with the reaction product of labeled antigen or hapten and unknown antigen or hapten with said first antibody for reaction therewith, physically separating all of the particles from unbound fluorescently labeled antigen or hapten remaining in the aqueous solution, and measuring the fluorescence of a fluid suspension of said separated particles in a fluorometer, the fluorescence of labeled immune reactant bound to said particles being quantitatively related to the concentration of unknown antigen or hapten.

4,201,764

SPRAY DISINFECTANT AEROSOL

Floyd R. French, and Janet N. Paige, both of Midland, Mich., assignors to Calvin N. Goeders, Midland, Mich.

Continuation-in-part of Ser. No. 351,210, Apr. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 323,754, Jan. 15, 1973, abandoned. This application Feb. 25, 1976, Ser. No. 661,090
Int. Cl.² A61L 9/04
U.S. Cl. 424—45 **11 Claims**

1. A pressurized single phase disinfectant composition consisting essentially of from 7 to 45 weight percent water and from 53 to 91 weight percent ethanol the balance being propane all compositions restricted to those falling within the area MKLO of the accompanying graph.

4,201,765

PREPARATION FOR TREATING DERMATITIS IN THE NATURE OF TINEA PEDIS

Stephen Sichak, Dolton, Ill., assignor to Scholl, Inc., Chicago, Ill.

Division of Ser. No. 754,694, Dec. 27, 1976, Pat. No. 4,147,770. This application Sep. 20, 1978, Ser. No. 944,154
Int. Cl.² A61L 9/04; A01N 9/24; A61K 31/11
U.S. Cl. 424—45 **4 Claims**

1. The method of treating athlete's foot which comprises exposing the tinea pedis infected area of the skin to the antifungal and antibacterial action of vanillin.

4,201,766

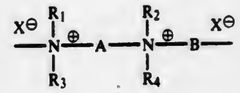
HAIR CONDITIONING COMPOSITION AND METHOD OF USING THE SAME

Jean-François Grollier, and Chantal Fourcadier, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Feb. 27, 1978, Ser. No. 881,512
Claims priority, application France, Mar. 2, 1977, 77 06044
Int. Cl.² A61K 7/06
U.S. Cl. 424—70 **19 Claims**

1. A cosmetic composition in lotion, cream, gel or emulsion form for conditioning the hair comprising

(1) in combination at least one crosslinked polyaminoamide and at least one cationic polymer having recurring units of the formula



wherein

R_3 and R_4 each independently represent alkyl having 1–3 carbon atoms,

R_1 and R_2 each independently represent alkyl having 1–3 carbon atoms or hydroxyalkyl having 1–3 carbon atoms, or when $R_2=R_4=CH_3$ and $R_1=R_3$, R_1 and R_3 can represent alkyl having 4–8 carbon atoms, or when $R_2=R_4=R_1=CH_3$, R_3 can represent benzyl, cyclohexyl or alkyl having 4–12 carbon atoms,

A and B, each independently, represent linear or branched alkylene having 2–20 carbon atoms in the chain, $-(CH_2)_n-(CH_2)_n-$, $-CH_2-C_6H_4-CH_2-$ or $-CH_2-CH(OH)-CH_2-$, n being a whole number equal to 2 or 3,

$X^\ominus$ is an anion and

Z represents either —O— or —NH—CO—NH—, wherein said crosslinked polyamino-amide is present in an amount of 0.1 to 5 weight percent and said quaternized polymer is present in an amount of 0.1 to 10 weight percent, based on the total weight of said composition, and

(2) an effective amount of at least one of (i)-(iv), defined below, to provide said lotion, cream, gel or emulsion:

(i) water, alcohol or mixtures thereof;

(ii) soap or C_{12}–C_{18} natural or synthetic alcohols with emulsifiers;

(iii) thickening agent; or

(iv) mixtures of oils, waxes, or both with fatty alcohols and polyethoxylated fatty alcohols.

4,201,767

VIRAL LIPOSOME PARTICLE

Wardle Fullerton, King of Prussia, and Bohdan Wolanski, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 8, 1978, Ser. No. 958,778
Int. Cl.² A61K 39/18
U.S. Cl. 424—89 **4 Claims**

1. A spikoliposome particle comprising a liposome having attached to its outer surface the intact outer membrane layer of influenza virus having intact spikes attached by having been reacted with both a positively-charged fatty acid amine of from 12 to 20 carbon atoms and a phospholipid.

4,201,768

PROCESS FOR OBTAINING AGENTS HAVING MITOGENIC AND/OR ADJUVANT PROPERTIES FROM NOCARDIA CELLS AND COMPOSITIONS CONTAINING SUCH AGENTS

Rita Ciorbaru nee Sfartz, Fontenay-aux-Roses; Constantin Bona; Louis Chedid, both of Paris; Edgar Lederer, Sceaux, and Jean-Francois Petit, Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Sein, France

Filed Mar. 28, 1977, Ser. No. 782,193

Claims priority, application France, Mar. 26, 1976, 76 08972

Int. Cl.[2] A61K *39/02, 35/74*

U.S. Cl. 424—92 **36 Claims**

1. A method for obtaining a water-soluble agent having mitogenic and/or adjuvant properties in-vivo and in-vitro comprising the steps of:

rupturing by physical pressure non-delipidated whole cells of Nocardia within an aqueous medium,

forming an aqueous phase and a solid phase comprising cells including ruptured cells, and

separating the solid phase and recovering the aqueous phase, which phase is virtually free of cell wall constituents also of the peptidoglycan constituents, but having constituents of the cell cytoplasm, the aqueous phase having adjuvant and/or mitogenic properties.

4,201,769

ANTIBIOTIC SUBSTANCES NO. 17927A$_1$ AND NO. 17927A$_2$ AND PROCESS FOR PRODUCING THE SAME

Yasuhiro Itoh; Masaki Nakahara; Yo Takiguchi; Mamoru Arai; Tatsuo Haneishi; Masatoshi Inukai, and Mutsuo Nakajima, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Feb. 28, 1978, Ser. No. 882,187

Claims priority, application Japan, Mar. 4, 1977, 52-23663

Int. Cl.[2] A61K *35/74; C12P 1/06*

U.S. Cl. 424—117 **7 Claims**

5. A process for the production of antibiotic substances, substance No. 17927A$_1$ and substance No. 17927A$_2$, which comprises cultivating a substances No. 17927A$_1$ and No. 17927A$_2$-producing microorganism belonging to the genus Streptomyces, isolating said substances No. 17927A$_1$ and No. 17927A$_2$ from a cultured broth and separating said substance No. 17927A$_1$ from said substance No. 17927A$_2$; sodium salt of said substance No. 17927A$_1$ having the following properties;

(1) Color and shape of the substance: Pale yellow powder when freeze-dried

(2) Analysis (Found): 1st analysis; C, 44.89%; H, 5.66%; N, 9.02%; S, 7.00%; Ash, 14.27%; 2nd analysis; C, 42.86%; H, 5.35%; N, 8.21%; S, 6.70%; Ash, 17.54%.

(3) Molecular weight: 250–600 upon an elution pattern of gel filtration

(4) U.V. spectrum (as shown in FIG. 4): Absorption maximum in an aqueous solution at 298 nm ($E_{1cm}^{1\%}=192$) shifted to 282 nm ($E_{1cm}^{1\%}=160$) in 0.01 N HCl

(5) IR spectrum in KBr disc: as shown in FIG. 5

(6) NMR spectrum: 100 MHz NMR spectrum measured in D_2O by the use of TMS (tetramethylsilane) as an external standard as shown in FIG. 6

(7) Solubility: Easily soluble in water, soluble in methanol and insoluble in ethyl acetate, chloroform, benzene

(8) Color reaction: Positive in iodine, potassium permanganate, slow bleaching in iodoplatinate, but negative in ninhydrin reaction

(9) Antibacterial activity: Broad antibacterial activity against gram-positive and gram-negative bacteria including *Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiella pneumonie, Proteus vulgaris, Proteus mirabilis, Proteus rettgeri, Enterobacter cloacae* and *Serratia marcescens*

(10) Synergistic effect: Inhibitory action of β-lactamase and synergistic effect by the combined use of penicillin-type or cephalosporin-type antibiotic substances ineffective against resistant strains producing β-lactamase and sodium salt of said substance No. 17927A$_2$ having the following properties;

(1) Color and shape of the substance: Pale yellow powder when freeze-dried

(2) Analysis (Found): C, 46.52%; H, 5.20%; N, 8.48%; S, 8.23%; Ash, 9.62%

(3) Molecular weight: 250–600 upon an elution pattern of gel filtration

(4) U.V. spectrum (as shown in FIG. 1): Absorption maximum in an aqueous solution at 306 nm ($E_{1cm}^{1\%}=490$) shifted to 260 nm ($E_{1cm}^{1\%}=512$) in 0.01 N HCl

(5) IR spectrum in KBr disc: as shown in FIG. 2

(6) NMR spectrum: 100 MHz NMR spectrum measured in D_2O by the use of DSS (sodium 2,2-dimethyl-2-silapentane-5-sulfonate) as an internal standard as shown in FIG. 3

(7) Solubility: Easily soluble in water, soluble in methanol and insoluble in ethyl acetate, chloroform, benzene

(8) Color reaction: Positive in iodine, potassium permanganate, slow bleaching in iodoplatinate, but negative in ninhydrin reaction

(9) Antibacterial activity: Broad antibacterial activity against gram-positive and gram-negative bacteria including *Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiella pneumonie, Proteus vulgaris, Proteus mirabilis, Proteus rettgeri, Enterobacter cloacae* and *Serratia marcescens*

(10) Synergistic effect: Inhibitory action of β-lactamase and synergistic effect by the combined use of penicillin-type or cephalosporin-type antibiotic substances ineffective against resistant strains producing β-lactamase.

4,201,770

ANTIGENIC MODIFICATION OF POLYPEPTIDES

Vernon C. Stevens, Dublin, Ohio, assignor to The Ohio State University, Columbus, Ohio

Continuation-in-part of Ser. No. 622,031, Oct. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,955, Apr. 22, 1974, which is a continuation-in-part of Ser. No. 406,821, Oct. 16, 1973, which is a continuation-in-part of Ser. No. 357,892, May 7, 1973, abandoned. This application Aug. 25, 1978, Ser. No. 936,876

Int. Cl.[2] A61K *37/00; C07C 103/52;* A61K *39/00*

U.S. Cl. 424—177 **24 Claims**

Baboon No.	Mating 1			Mating 2			Mating 3		
	PRE-MATING TITER (ng/ml)	OVULATED	PREGNANT	PRE-MATING TITER (ng/ml)	OVULATED	PREGNANT	PRE-MATING TITER (ng/ml)	OVULATED	PREGNANT
1374	108	+	–	110	+	–	97	+	–
1422	123	+	–	101	+	–	100	+	–
976	345	+	–	331	+	–	305	+	–
1068	95	+	–	89	+	–	91	+	+

1. A method for controlling fertility in primate animals having naturally occurring endogenous Chroionic Gonadotropin hormone by neutralizing the biological action of the endogenous hormone, comprising the steps of:

administering to said primate animal an immunologically effective amount of the hormone, a subunit thereof, a peptide fragment of the subunit or a synthetically derived peptide having a sequence analogous to at least a portion of said subunit;

said hormone, subunit, fragment or synthetically derived peptide being modified by the coupling thereof with a non-endogenous material to effect the formation, following said administration, of antibodies having a specificity to endogenous Chorionic Gonadotropin;

thereby inhibiting the fertility of said primate animal by preventing one or more normal biological functions of the endogenous Chorionic Gonadotropin hormone.

4,201,771

ANTIBIOTIC A43F

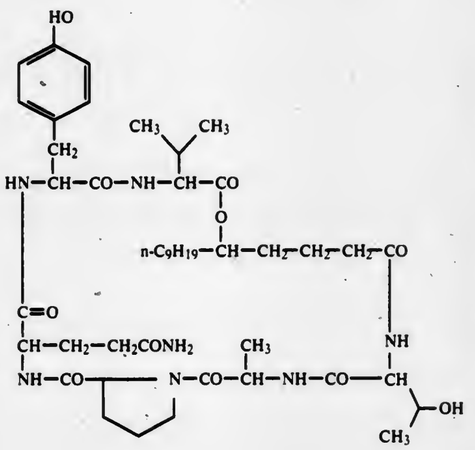
Janet C. Onishi, Mountainside; Gerald L. Rowin, Kendall Park, and John E. Miller, Jr., Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 12, 1979, Ser. No. 19,679

Int. Cl.[2] A61K *37/00; C07C 103/52*

U.S. Cl. 424—177 **5 Claims**

1. The antibiotic A43F having the following structural formula:



4,201,772

STERILE AQUEOUS SOLUTION OF A MIXTURE OF ISOMALTO-OLIGOSACCHARIDES AND ITS USE FOR PARENTERAL ADMINISTRATION TO MAMMALS

Björn G. Ingelman; Ary W. Richter, and Kirsti A. Granath, all of Upsala, Sweden, assignors to Pharmacia Aktiebolag, Upsala, Sweden

Filed Mar. 28, 1978, Ser. No. 891,106

Claims priority, application United Kingdom, Apr. 19, 1977, 16162/77

Int. Cl.[2] A61K *31/70, 31/715*

U.S. Cl. 424—180 **26 Claims**

1. In the known method of parenterally administering to mammals, including man, clinical dextran having a weight average molecular weight (M_w) within the range 30,000 to 80,000, the improvement which comprises administering parenterally to the mammal, closely prior to or contemporaneously with the administration of said clinical dextran, an effective amount of a sterile aqueous solution for parenteral administration containing 0.02 to 30 g per 100 ml solution of a mixture of isomalto-oligosaccharides comprising

(a) 0–15 percent by weight of isomaltose,

(b) 20–65 percent by weight of isomaltotriose, isomaltotetraose and isomaltopentaose, each of these oligosaccharides being present in an amount of at least 5 percent by weight and at most 25 percent by weight,

(c) 20–65 percent by weight of isomaltohexaose, isomaltoheptaose, isomaltooctaose and isomaltononaose, each of isomaltohexaose and isomaltoheptaose being present in an amount of at least 5 percent by weight and at most 25 percent by weight and the total amount of isomaltooctaose and isomaltononaose being at least 5 percent by weight and at most 25 percent by weight,

0–30 percent by weight of said mixture being isomalto-oligosaccharides of 10 to 20 glucose units and 0–10 percent by weight of said mixture being isomalto-oligosaccharides of 15 to 20 glucose units,

the percentages being calculated on the total weight of the mixture of isomalto-oligosaccharides.

8. A method of improving clinical dextran having a weight average molecular weight (M_w) within the range 30,000 to 80,000 with respect to side effects on parenteral administration, characterized in that said clinical dextran is admixed with a mixture of isomalto-oligosaccharides comprising

(a) 0–15 percent by weight of isomaltose,

(b) 20–65 percent by weight of isomaltotriose, isomaltotetraose and isomaltopentaose, each of these oligosaccharides being present in an amount of at least 5 percent by weight and at most 25 percent by weight,

(c) 20–65 percent by weight of isomaltohexaose, isomaltohexaose, isomaltoheptaose, isomaltooctaose and isomaltononaose, each of isomaltohexaose and isomaltoheptaose being present in an amount of at least 5 percent by weight and at most 25 percent by weight and the total amount of isomaltooctaose and isomaltononaose being at least 5 percent by weight and at most 25 percent by weight,

0–30 percent by weight of said mixture being isomalto-oligosaccharides of 10 to 20 glucose units and 0–10 percent by weight of said mixture being isomalto-oligosaccharides of 15 to 20 glucose units,

the percentages being calculated on the total weight of the mixture of isomalto-oligosaccharides,

the proportions between said mixture of isomalto-oligosaccharides and said clinical dextran being 1 part by weight of said mixture of 0.5 to 500 parts by weight of said clinical dextran.

4,201,773

7-O-(2,6-DIDEOXY-α-L-LYXO-HEXOPYRANOSYL)-DAUNOMYCINONE, DESMETHOXY DAUNOMYCINONE, ADRIAMYCINONE, AND CARMINOMYCINONE

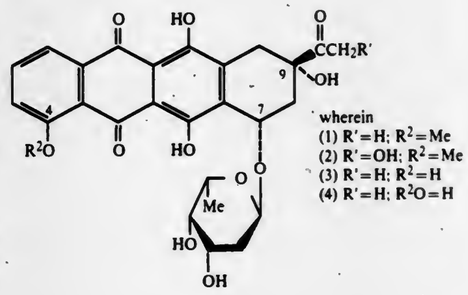
Derek Horton, Columbus, Ohio; Wolfgang Weckerle, Messel; Ernst F. Fuchs, Freiburg, both of Fed. Rep. of Germany; Tak M. Cheung, Sydney, Australia; Beat Winter, Berkeley, Calif., and Roderick J. Sorenson, Ann Arbor, Mich., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jul. 26, 1978, Ser. No. 928,252

Int. Cl.[2] A61K *31/71; C07H 15/24*

U.S. Cl. 424—180 **11 Claims**

6. A method of treating murine leukemia in mice which comprises injecting a mouse infected with P388 leukemia with a biologically palliative amount and in a dosage regimen of up to 22 days of a compound selected from



wherein

(1) R′=H; R^2=Me

(2) R′=OH; R^2=Me

(3) R′=H; R^2=H

(4) R′=H; R^{2}O=H

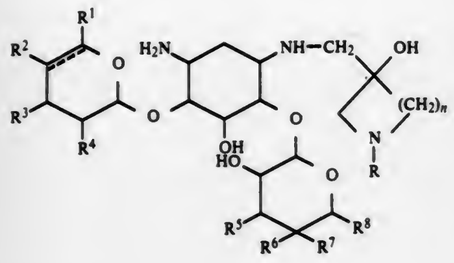
4,201,774

NOVEL AMINOGLYCOSIDE DERIVATIVES

Kikuo Igarashi, Itami, and Tamio Sugawara, Mino, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Nov. 14, 1978, Ser. No. 960,559
Claims priority, application Japan, Dec. 29, 1977, 52-158496
Int. Cl.[2] A61K *31/71*; C07H *15/24*
U.S. Cl. 424—180 9 Claims

1. An aminoglycoside derivative represented by the formula:



wherein R is hydrogen, lower alkyl, benzyl, phenethyl or phenylpropyl;
R^1 is aminomethyl, hydroxymethyl, 1-aminoethyl or 1-methylaminoethyl;
R^2, R^3, and R^6 each is hydrogen or hydroxy;
R^4 is hydroxy or amino;
R^5 is amino or methylamino;
R^7 is hydroxy or methyl;
R^8 is hydrogen or hydroxymethyl;
n is an integer of 1 to 3; and
the dotted line represents the presence or absence of a double bond
and the pharmaceutically acceptable acid addition salts thereof.

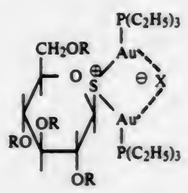
4,201,775

BIS[TRIETHYLPHOSPHINE)AURIO]SULFONIUM SUGARS

John J. Filan, Philadelphia, Pa.; Walter W. Holl, Cinnaminson, N.J., and George R. Wellman, Warminster, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 23, 1979, Ser. No. 23,364
Int. Cl.[2] A61K *31/70*; C07H *23/00*
U.S. Cl. 424—180 5 Claims

1. A chemical compound of the formula:



in which:
X is iodide, bromide or chloride; and
R is acetyl, methylsulfonyl, lower alkyl of 1–3 carbon atoms or N,N-dimethylcarbamyl.

4,201,776

FOOD ADDITIVE FOR REINFORCING FOODS DEFICIENT IN FIBER CONTENT

Ryoichi Naito, Ibaraki; Satoru Shiino, Uji, and Hirohisa Inahara, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 764,464, Jan. 31, 1977, abandoned. This application Sep. 22, 1978, Ser. No. 946,062
Int. Cl.[2] A61K *35/78*
U.S. Cl. 424—195 4 Claims

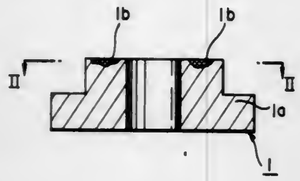
1. A method of reducing the symptoms of intestinal diverticulum in a person comprising orally administering to a person in need thereof a food additive consisting essentially of a powdered water-swellable fiber bundle of bamboo shoots belonging to the genus Phyllostachys for supplementing fibrous material in food deficient in vegetable fiber content, said food additive having been prepared by a process comprising heating bamboo shoots with steam at a pressure of 3 to 8 kg/cm^2 gauge at a temperature of 130° to 180° C., releasing the pressure at once, drying and pulverizing the material thus obtained and collecting the fine powder obtained, said bamboo shoots subsequent to the release of pressure and being free from bonded water having been washed with water sufficiently to lose its taste and odor in an amount effective to reduce such symptoms.

4,201,777

CARBONACEOUS BODIES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Aug. 8, 1978, Ser. No. 931,909
Claims priority, application Japan, Aug. 11, 1977, 52/95527
Int. Cl.[2] C10M *7/04*; C01B *31/04*
U.S. Cl. 428—212 8 Claims



1. A carbonaceous body formed unitarily of carbon, and having at least one selected superficial portion graphitized in situ and a p value not greater than 0.6 determined by X-ray diffraction and defined in an expression: $d=3.440-0.086(1-P^2)$ where d is the mean stratic spacing of turbostratic carbon structure obtained from an X-ray diffraction diagram, said portion only constituting part of the body, the part of said body other than said selected superficial portion being composed of substantially nongraphitized or turbostratic carbon.

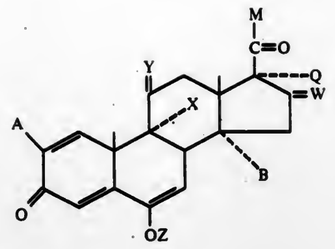
4,201,778

6-ACYLOXY-1,4,6-PREGNATRIENES, THEIR USE AS ANTI-INFLAMMATORY AGENTS, METHODS FOR THEIR MANUFACTURE, AND 6-OXO-1,4-PREGNADIENE INTERMEDIATES

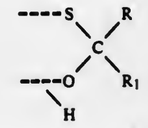
Richard W. Draper, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Nov. 8, 1977, Ser. No. 849,563
Int. Cl.[2] C07J *71/00*; A61K *31/58*
U.S. Cl. 424—241 30 Claims

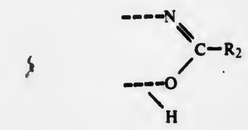
1. A 6-acyloxy-3,20-dioxo-1,4,6-pregnatriene of the following formula I:



wherein
A is hydrogen or, provided Y is (H,βOH), A is chlorine, fluorine or methyl;
B is hydrogen or, together with Q, is a 14α,17α-alkylidenedioxy derivative;
X is hydrogen, fluorine or chlorine;
Y is oxygen, (H,βOH), (H,βOCOH); or (H,β-chlorine) or (H,β-fluorine) provided X is chlorine;
Z is hydrocarboncarbonyl, alkoxycarbonyl, thioalkoxycarbonyl, or thioalkoxythiocarbonyl wherein Z has up to 12 carbon atoms;
Q is hydrogen provided W is (H, lower alkyl); or OV wherein V is hydrogen or an acyl radical of a hydrocarboncarboxylic acid having up to 12 carbon atoms or an acyl radical of benzoic acid substituted by a halogen or methoxy group or an acyl radical of retinoic acid provided W is other than (H,α-retinoyloxy);
W is (H, lower alkyl); (H,α-OV$_1$) wherein V$_1$ is hydrogen or an acyl radical of an acid selected from the group consisting of a hydrocarboncarboxylic acid having up to 12 carbon atoms, benzoic acid substituted by a halogen or methoxy group, retinoic acid, and isonicotinic acid; =CHT wherein T is hydrogen, lower alkyl, fluorine or chlorine, and
W and Q taken together is a 16α,17α-lower alkylidenedioxy; a 16α,17α-cycloalkylidenedioxy; the grouping



wherein R and R$_1$ are lower alkyl; or the grouping



wherein R$_2$ is lower alkyl or phenyl;
M is —OR$_3$ when Q is O-acyl, R$_3$ being lower alkyl or halogeno lower alkyl; —CHO, acetals, hemiacetals and acylals thereof; —COOR$_4$ wherein R$_4$ is alkyl having up to 12 carbon atoms; —CH$_2$G wherein G is halogen having an atomic weight of less than 100 provided Q is not hydrogen, or G is OV$_2$ wherein V$_2$ is hydrogen, an acyl radical of an acid selected from the group consisting of a hydrocarboncarboxylic acid having up to 12 carbon atoms, benzoic acid substituted by a halogen or methoxy group, retinoic acid, isonicotinic acid, or phosphoric acid and mono- and dialkali and alkaline earth metal salts thereof; and G together with Q is an alkylidenedioxy or an alkylorthoalkanoate;
and the 1,2-dihydro analogs of the foregoing.

12. The method of treating an inflammatory condition in a warm-blooded animal which comprises administering to said animal a non-toxic, anti-inflammatory effective amount of a 6-acyloxy-3,20-dioxo-1,4,6-pregnatriene of formula I, claim 1, or of a 1,2-dihydro analog thereof;
together with a non-toxic, pharmaceutically acceptable carrier.

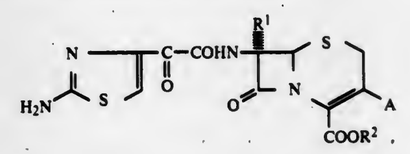
4,201,779

7[(2-AMINO-THIAZOL-4-yl)GLYOXYLAMIDO]-CEPHEM DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Dieter Bormann; Bernd Knabe, both of Kelkheim; Elmar Schrinner, and Manfred Worm, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,813
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710902
Int. Cl.[2] C07D *501/46, 501/22, 501/36*; A61K *31/545*
U.S. Cl. 424—246 5 Claims

1. A cephem compound of the formula



wherein
R^1 is hydrogen or low-molecular alkoxy;
R^2 is hydrogen, phthalide, a physiologically acceptable cation, low-molecular alkyl, or methyl substituted by trichloromethyl, by alkanoyloxy, by phenyl, by nitrophenyl, or by low-molecular alkoxyphenyl; and
A is hydrogen, alkoxy, halogen, or —CH$_2$Y wherein Y is hydrogen, alkanoyloxy, alkoxy, carbamoyloxy, or —SR^3 wherein R^3 is low-molecular alkanoyl, alkyl, a 5-membered ring having 1 to 4 nitrogen atoms, a 5 membered ring having 1 or 2 nitrogen atoms and an oxygen atom or a sulfur atom, a 6-membered ring having 1 or 2 nitrogen atoms, a 6-membered ring having 1 or 2 nitrogen atoms and a sulfur atom, or R^3 is such a 5-membered or 6-membered ring substituted by straight-chain or branched alkyl having 1 to 8 carbon atoms, by phenyl, or by phenyl which in turn is substituted by low-molecular alkyl, by low-molecular alkoxy, by nitro, or by halogen.

5. The method for treating a bacterial infection in a patient suffering therefrom which comprises administering to said patient an anti-bacterially effective amount of a compound as in claim 1.

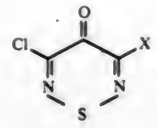
4,201,780

MONO-5-SUBSTITUTED-3-CHLORO-4H-1,2,6-THIADIAZIN-4-ONE ANTIFUNGAL AGENTS

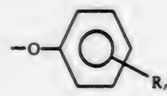
Clinton J. Peake; Wayne N. Harnish, both of Medina, and Bruce L. Davidson, Middleport, all of N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 782,860, Mar. 30, 1977, Pat. No. 4,097,594. This application Apr. 10, 1978, Ser. No. 894,980
The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.
Int. Cl.[2] C07D *285/16*; A01N *9/12*
U.S. Cl. 424—246 3 Claims

1. A compound of the formula



in which X is phenoxybenzyloxy, α-cyano-phenoxybenzyloxy, methylenedioxyphenoxy optionally substituted on the methylene with 1 or 2 lower alkyl groups, 2,3-dihydrobenzofuranyloxy optionally substituted at the 2 or 3 position of the furanyl ring with 1 or 2 lower alkyl groups, phenylseleno in which the phenyl ring is optionally substituted with 1 to 3 groups independently selected from lower alkyl and halogen, or substituted phenoxy having the formula



wherein n has a value of 1 to 3 inclusive, wherein at least one R group is halo(lower)alkyl, hydroxy(lower)alkyl, carboxyethenyl, lower alkoxycarbonylethenyl, dimethylamino, lower alkylamino (C_{1-2})alkyl, lower alkylaminocarbonyloxy (C_{1-2}) alkyl, or phenylaminocarbonyloxy(C_{1-2})alkyl, and wherein the remaining R groups are independently selected from lower alkyl, halo, lower alkoxy, hydroxy, nitro, cyano, amino, carboxyl, lower acyl, lower acylamino, lower alkoxycarbonyl, carboxy(lower)alkyl, lower alkylureido, phenylureido, trihalomethyl, cyano(lower)alkyl, phenyl(lower)alkoxycarbonyloxy, lower alkylaminocarbonyloxy, phenylaminocarbonyloxy, lower alkylthio, lower alkylsulfinyl and lower alkylsulfonyl.

3. A method for controlling fungal disease in plants which comprises applying to the locus where control is desired an effective fungistatic or fungicidal amount of the compound of claim 1.

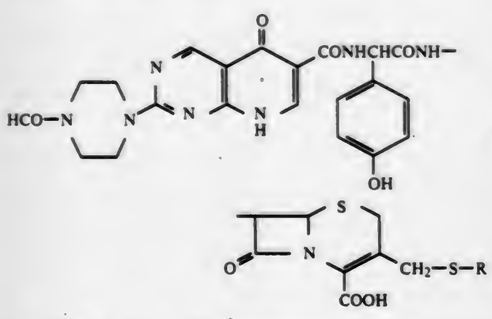
4,201,781

SUBSTITUTED 7[S-OXOPYRIDO[2,3-D]PYRIMIDINE CARBOXAMIDO ACETAMIDO]CEPHALOSPORINS

Masatsugu Tomita, Nagaokakyo; Yoshiyuki Takase, Amagasaki, and Toshio Komiya, Izumi-ohtsu, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 26, 1978, Ser. No. 973,169
Claims priority, application Japan, Dec. 28, 1977, 52-158398
Int. Cl.[2] A61K *31/545*; C07D *501/36*
U.S. Cl. 424—246 **10 Claims**

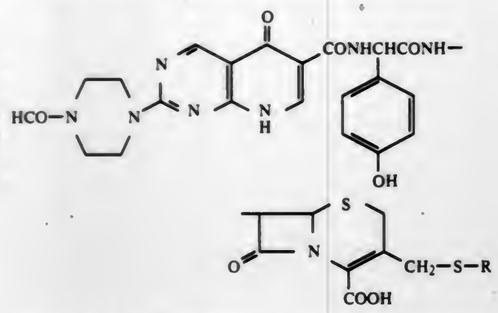
1. A member selected from the group consisting of cephalosporin compounds of the formula



wherein R is 1-carboxymethyl-1,2,3,4-tetrazol-5-yl or 5-carboxymethyl-1,3,4-thiadiazol-2-yl,
and non-toxic pharmaceutically acceptable salts thereof.

9. A method for treating bacterial infections which comprises parenterally administering an antibacterially effective dose of the compound defined in claim 1 to a warm-blooded animal.

10. An injectable composition which comprises an antibacterially effective amount of a member selected from the group consisting of a cephalosporin compound of the formula



wherein R is 1-carboxymethyl-1,2,3,4-tetrazol-5-yl or 5-carboxymethyl-1,3,4-thiadiazol-2-yl,
and a non-toxic pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

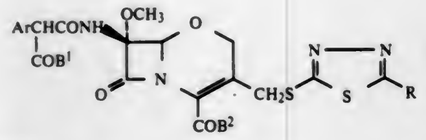
4,201,782

THIADIAZOLYL CEPHALOSPORIN ANALOGS

Masayuki Narisada, Ibaraki, and Wataru Nagata, Nishinomiya, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 24, 1978, Ser. No. 936,506
Claims priority, application Japan, Aug. 25, 1977, 52/102261
Int. Cl.[2] A61K *31/41*; C07D *413/02, 413/14*
U.S. Cl. 424—248.51 **62 Claims**

1. A compound of the formula:



wherein
Ar is phenyl, p-hydroxyphenyl, p-1-5C alkanoyloxyphenyl, p-benzyloxyphenyl, p-dimethylbenzyloxyphenyl, p-methoxybenzyloxyphenyl, p-nitrobenzyloxyphenyl, p-tetrahydropyranyloxyphenyl, p-3-8C trialkylsilyloxyphenyl, 3-thienyl or 2-thienyl;
R is hydrogen or 1-3C alkyl; and
COB^1 and COB^2 each is carboxy, protected carboxy or a carboxylate salt group.

51. A pharmaceutical or veterinary formulation which comprises a bactericidally effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable or veterinarily acceptable, respectively, diluent, carrier or excipient.

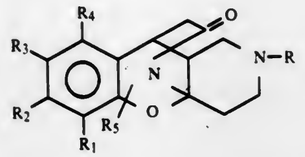
4,201,783

ANTIDEPRESSANT SUBSTITUTED HEXAHYDRO BENZOPYRANO [3,2-C] PYRIDINES

Philippe Briet; Jean-Jacques Berthelon, and Jean-Claude Depin, all of Lyons, France, assignors to Lipha Lyonnaise Industrielle Pharmaceutique, Lyons, France

Filed Jun. 23, 1978, Ser. No. 918,597
Claims priority, application France, Jun. 24, 1977, 77 19360; Jun. 1, 1978, 78 16376
Int. Cl.[2] A61K *31/445*; C07D *491/18*
U.S. Cl. 424—256 **21 Claims**

1. Substituted hexahydrobenzopyrano[3,2-c]pyridine, of the formula



where R is hydrogen or a saturated or unsaturated, linear or branched, lower alkyl, lower phenylalkyl, phenylcarbonyl, cinnamoyl, benzyloxycarbonyl, diloweralkylaminoloweralkyl, lower alkyl carbonyl, loweralkoxycarbonyl, haloethoxycarbonyl, cyclololoweralkyloxycarbonyl or phenyl; R_1 is hydrogen, halogen, or lower alkoxy; R_2 is hydrogen or halogen; R_3 is hydrogen, halogen, lower alkyl, lower alkoxy, nitro or amino, or forms naphthalene with R_4 and the benzene ring; R_4 is hydrogen, halogen, or forms naphthalene with R_3 and the benzene ring; R_5 is hydrogen, lower alkyl, or benzyl; or a salt thereof with a mineral or organic acid, acceptable for treating human beings.

21. A pharmaceutical composition useful as an antidepressant, comprising as the active principal, an amount sufficient for antidepressant activity of a hexahydrobenzopyrano [3,2-c]pyridine according to claim 1, and a pharmaceutically acceptable diluent or carrier.

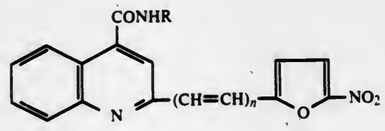
4,201,784

SUBSTITUTED 2-[2'-(5''-NITROFURYL-2'')VINYL-AND 4'-(5''-NITROFURYL-2'-1,3-BUTADIERYL]QUINOLINE-4-CARBOXYLIC ACID AMIDES AND SALTS THEREOF

Nina M. Sukhova; Marger J. Lidaka; Valentina A. Voronova; Aina A. Zidermane; Iya M. Kravchenko; Anda Z. Dauvarte; Ieva E. Preisa, and Dainuvite V. Meirena, all of Riga, U.S.S.R., assignors to Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR, Riga, U.S.S.R.

Filed Sep. 7, 1978, Ser. No. 940,798
Claims priority, application U.S.S.R., Sep. 9, 1977, 2524871
Int. Cl.[2] C07D *405/06*
U.S. Cl. 424—258 **3 Claims**

1. Substituted 2-[2'-(5''-nitrofuryl-2'')vinyl- and 4'-(5''-nitrofuryl-2'')-1,3-butadienyl]quinoline-4-carboxylic acid amides of the formula



wherein
R=—$CH_2CH_2CH_2OH$; —$CH(CH_3)(CH_2)_3N(C_2H_5)_2$
h=1, 2
and salts thereof.

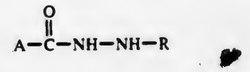
4,201,785

CYCLOPROPANYL-BEARING HYDRAZIDES

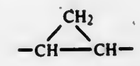
Faizulla G. Kathawala, Mountain Lakes, N.J., assignor to Sandoz Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 881,781, Feb. 27, 1978, abandoned. This application Apr. 4, 1979, Ser. No. 27,019
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856856
Int. Cl.[2] A01N *9/22*; A61K *31/40*; C09F *5/00*; C07D *209/12*
U.S. Cl. 424—274 **27 Claims**

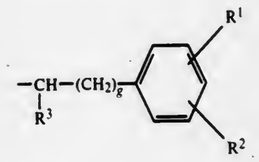
1. A compound of the formula:



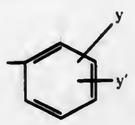
wherein
A is a saturated hydrocarbon chain interrupted by from 1 to 4 cyclopropanyl groups of the formula



said A being of from 7 to 23 carbon atoms plus one additional carbon atom for each cyclopropanyl group; and
R is:
(a) an aralkyl radical of the structure

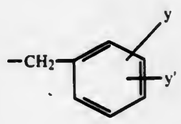


wherein g is 0 or 1;
wherein
R^1 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms; or alkyl having from 1 to 3 carbon atoms;
R^2 is a hydrogen atom, alkyl having from 1 to 3 carbon atoms, alkoxy having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; and
R^3 is (i) a hydrogen atom, a phenyl radical of the structure (ii)



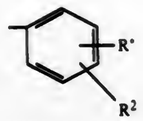
(ii)

wherein
y is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms; and
y' is a hydrogen atom, alkoxy having from 1 to 3 carbon atoms, alkyl having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; or
a benzyl radical of the formula (iii)

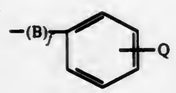


(iii)

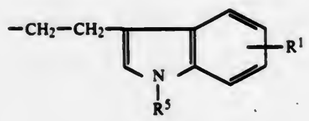
wherein y and y' are as defined above; or (iv) alkyl having from 1 to 8 carbon atoms;
or R is:
(b) a phenyl radical of the structure



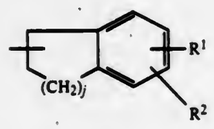
wherein R^2 is as defined above, and
R^* is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms; alkoxy having from 1 to 3 carbon atoms; or a radical of the structure R/:



in which
B is $-CH_2-$ or $-O-$;
f is 0 or 1; and
Q is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms;
or R is:
(c) an indolyl radical of the structure:



wherein
R^1 is as defined above, and
R^5 is a hydrogen atom, alkyl having from 1 to 8 carbon atoms or benzyl (unsubstituted);
or R is
(d) a benzocycloalkyl nucleus of the structure:

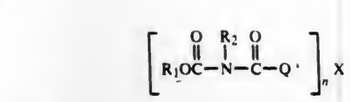


wherein
R^1 and R^2 are as defined above; and
j is a whole integer of from 1 to 4.

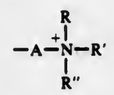
19. A method of reducing the cholesterol ester content of an arterial wall, in a mammal in need of such treatment, comprising administering a cholesterol ester-reducing amount of a compound of claim 1 to said mammal.

4,201,786
WATER SOLUBLE PESTICIDAL QUATERNARY AMMONIUM SALT COMPOUNDS
Barbara W. Kaplan, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed May 27, 1977, Ser. No. 801,333
Int. Cl.[2] A61K *31/36, 31/34;* **C07D** *317/44, 307/78*
U.S. Cl. 424—282 **48 Claims**

1. A compound of the formula:

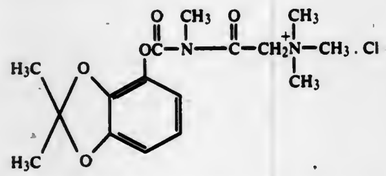


wherein:
n is 1, 2 or 3;
R_1 is benzofuranyl, benzodioxanyl benzothienyl, dihydrobenzothienyl, benzodioxolanyl or dihydrobenzofuranyl all of which may be either unsubstituted or substituted with one or more alkyl groups having from 1 to 8 carbon atoms;
R_2 is alkyl having from 1 to 8 carbon atoms;
X is a quaternising anion selected from the group consisting of mono-valent, divalent or trivalent inorganic or organic anions whose charge equals n;
Q^+ is an organic radical of the formula:



wherein:
A is a divalent aliphatic hydrocarbon radical having from 1 to 25 carbon atoms;
R, R' and R" are
(a) individually, either substituted or unsubstituted alkyl, alkoxyalkyl, alkenyl or alkynyl; or
(b) when R and R' are the same or different and are methyl or ethyl, R" is either a substituted or unsubstituted phenyl, naphthyl, cycloalkyl, cycloalkenyl or a 5 or 6 membered heterocyclic ring structure which includes carbon and one or two heteroatoms of oxygen or nitrogen or a combination of oxygen and nitrogen; or
(c) when R is alkyl of from 1 to 4 carbon atoms, R' and R" together may form either a substituted or unsubstituted alkenylene or alkylene chain having from 2 to 20 carbon atoms which completes a 3, 4, 5, 6, 7, 8 or 9 membered monocyclic ring structure; said chain may include one or two heteroatoms of oxygen or nitrogen or a combination of oxygen and nitrogen; or
(d) R, R' and R" together may form a substituted or an unsubstituted alkylene or alkenylene chain having from 2 to 20 carbon atoms which completes a 3, 4, 5, 6, 7, 8, or 9 membered monocyclic or bicyclic ring structure, and said chain may include one or two heteroatoms of oxygen or nitrogen or a combination of oxygen and nitrogen;
wherein the permissible substituents that may be substituted on R, R' and R" are one or more alkoxy, alkyl alkanoyloxy, alkoxycarbonyl, cyano, halo, nitro, dialkylamino or alkanoyl groups; with the proviso that the sum of aliphatic carbon atoms included in R, R' and R" may not be more than thirty-five.

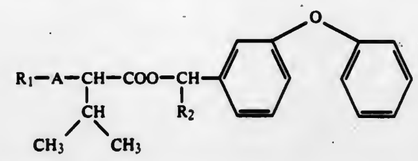
14. A compound of the formula:



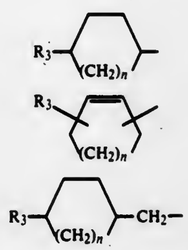
29. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound according to claim 1.

4,201,787
ISOVALERIC ACID ESTER DERIVATIVES, AND INSECTICIDES CONTAINING SAID DERIVATIVES
Yoshio Katsuda, Nishinomiya, and Yoshihiro Minamite, Osaka, both of Japan, assignors to Dainippon Jochugiku Kabushiki Kaisha, Osaka, Japan
Filed Nov. 30, 1977, Ser. No. 856,136
Claims priority, application Japan, Dec. 1, 1976, 51-144992; Dec. 11, 1976, 51-149079; Feb. 26, 1977, 52-20733; Mar. 25, 1977, 52-33479; Apr. 2, 1977, 52-37828
Int. Cl.[2] A01N *9/20, 9/24;* **C07C** *69/67, 121/75*
U.S. Cl. 424—304 **17 Claims**

1. Isovaleric acid ester derivatives and optical and geometrical isomers thereof expressed by the general formula:



wherein
A represents O, NH, or CH_2,
R_1 represents, if A is O or NH, an alkyl, an alkenyl, a haloalkyl and a haloalkenyl radical with 2-6 carbon atoms, and a radical selected from those of the general formula:



in which n is an integer of 1-3, and R_3 represents hydrogen, a methyl group of a chlorine atom, and
if A is CH_2, R_1 represents a haloalkyl or haloalkenyl radical with 1-5 carbon atoms, and R_2 represents hydrogen or a cyano group.

15. An insecticide composition comprising a carrier and as its essential ingredient an insecticidally effective amount of a compound as set forth in claim 1.

4,201,788
PROCESS FOR ALLEVIATING PROLIFERATIVE SKIN DISEASES
John J. Voorhees, Ann Arbor, Mich., and Diane H. Russell, Tucson, Ariz., assignors to University Patents, Inc., Stamford, Conn. and The Regents of the University of Michigan, Ann Arbor, Mich.
Continuation-in-part of Ser. No. 734,152, Oct. 20, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,878
Int. Cl.[2] A61K *31/275, 31/15*
U.S. Cl. 424—304 **7 Claims**

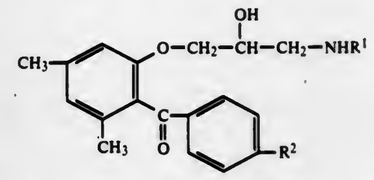
1. A process for treating non-malignant proliferative skin diseases which comprises administering to the afflicted human or animal, a composition containing as an active component at least one compound selected from the group consisting of methyl glyoxal bis-(guanyl hydrazone) and 1,1'-methylethanediylidinedinitrilo)-bis-(3-aminoguanidine), said compound being in association with a pharmaceutical carrier wherein the concentration of said active component is effective to alleviate a proliferative skin disease.

4,201,789
CYCLOPROPANECARBOXYLIC ACID NAPHTHYLMETHYL ESTER
Milos Suchy, Pfaffhausen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Dec. 13, 1978, Ser. No. 968,893
Claims priority, application Luxembourg, Dec. 21, 1977, 78736
Int. Cl.[2] C07C *69/74;* **A01N** *9/24*
U.S. Cl. 424—305 **5 Claims**

1. Cyclopropanecarboxylic acid 2-naphthylmethyl ester.
2. An insecticidal and acaricidal composition which comprises inert carrier material and, as the active ingredient, an amount of cyclopropanecarboxylic acid 2-naphthylmethyl ester which is effective as an insecticide and acaricide.

4,201,790
BENZOPHENONE DERIVATIVES
Berkeley Basil, Highwood, Nr. Chelmsford, and Kenneth R. H. Wooldridge, Brentwood, both of England, assignors to May & Baker Limited, Essex, England
Continuation of Ser. No. 695,445, Jun. 14, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,303
Claims priority, application United Kingdom, Jun. 20, 1975, 26407/75
Int. Cl.[2] A01N *9/20, 9/24;* **C07C** *93/06*
U.S. Cl. 424—330 **10 Claims**

1. A benzophenone derivative of the formula:



wherein R^1 is isopropyl, t-butyl, or 2-phenylethyl, and R^2 is hydrogen, methyl, or chlorine, and non-toxic acid addition salts thereof.

8. A method for the treatment of migraine which comprises administering orally to a person with migraine between 0.1 and 10 mg./kg. body weight of a benzophenone derivative as claimed in claim 1 or a non-toxic salt thereof.

4,201,791
PESTICIDE POWDERS, THEIR USE AND PREPARATION
Frank B. Livaudais, Jr., 103 Magnolia Dr., Metairie, La. 70005, and Joseph W. Spiselman, Brooklyn, N.Y., assignors to Frank B. Livaudais, Jr, Metairie, La.
Continuation of Ser. No. 722,309, Sep. 10, 1976, abandoned, which is a continuation of Ser. No. 607,347, Aug. 25, 1975, abandoned, which is a division of Ser. No. 376,467, Jul. 5, 1973, abandoned. This application Sep. 29, 1977, Ser. No. 837,526
Int. Cl.[2] A01N *9/00*
U.S. Cl. 424—358 **8 Claims**

1. A method for producing a pesticidal composition of matter which comprises:
(a) passing a first stream comprising aluminum sulfate in aqueous solution, a metallic chloride or silicon tetrachloride to a first conduit;
(b) passing a second stream comprising ammonia, an amine, or an ammonium compound in water in substantially stoichiometric amount to said first conduit;
(c) admixing a compound or compounds selected from the group consisting of an insecticide, a larvicide and a fungicide with one of said first or second streams;
(d) passing a third stream comprising air through said conduit to contact said first stream and said second stream;

(e) passing the resultant mixture to a reaction chamber maintained near ambient temperature;
(f) passing the resultant reaction mixture to a separation chamber; and
(g) removing said pesticidal composition from said separation chamber.

4,201,792
PRODUCTION OF SHERRY WINE
Richard Fricker, Derby, and Robin W. Goswell, Bristol, both of England, assignors to A.G. (Patents) Limited, London, England
Filed Oct. 27, 1977, Ser. No. 845,848
Claims priority, application United Kingdom, Oct. 28, 1976, 44904/76
Int. Cl.² C12G *1/00*
U.S. Cl. 426—15 **8 Claims**

1. A process for maturing sherry wine comprising
(a) establishing a solera scale and one or more progressively younger criadera scales, each scale comprising an individual container filled to a predetermined level with process wine, the containers being separated by partitions having weirs therein set at progressively lower levels from the youngest to the oldest scale to enable forward gravitational flow of process wine between the scales from the youngest to the oldest over the weirs, with each weir being baffled against access thereto by the flor in each scale on opposite sides of the respective weir;
(b) periodically transferring a quantity of process wine from a criadera scale to an older scale while directly and simultaneously transferring to each successive older criadera scale, if there be one, but at least to the solera scale, a similar quantity of process wine from the next youngest scale by overflow over the weirs, by causing the wine in each scale involved in the transfer to flow over the weir from a liquid level beneath the flor in the upstream scale and to flow into the downstream scale beneath the flor in the latter.

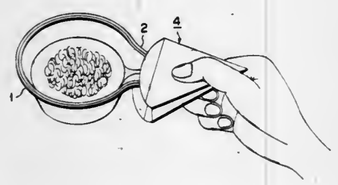
4,201,793
OIL COOKED FOODS CONTAINING METAL PROTEINATES
Harvey H. Ashmead, 719 E. Center St., Kaysville, Utah 84037
Filed Nov. 19, 1976, Ser. No. 743,456
Int. Cl.² A23L *3/34*
U.S. Cl. 426—92 **18 Claims**

6. A method of inhibiting rancidity in a cooking oil which comprises adding an inhibiting amount of an essential metal in the form of a metal proteinate to the cooking oil wherein said metal proteinate is the chelate of a metal with at least two ligands which ligands are proteinate hydrolysates consisting of polypeptides, peptides, and naturally occurring amino acids.

4,201,794
POWDER COMPOSITION FOR SOFT DRINK
Kenji Sumitani, Ikuno, Japan, assignor to Kawakami Kagaku Kogyo Company Ltd., Osaka, Japan
Filed Sep. 6, 1978, Ser. No. 940,142
Claims priority, application Japan, Jul. 21, 1978, 53-89703
Int. Cl.² A23L *2/00*
U.S. Cl. 426—96 **2 Claims**

1. An edible powder composition for making soft drinks which comprises a powdery water-soluble color chosen from the group (I) of anthraquinonoids; PH regulators consisting of one or more powdery organic acids chosen from the group (II) and one or more powdery alkaline salt(s) chosen from the group (III), wherein either of the PH regulators, but not the anthraquinonoid, is coated with one or more water-soluble coating materials of group (IV) to change suddenly the shade of soft drink through a sudden change of PH value below 7 at a predetermined time after the powder composition is placed in water:
Group (I);
carminic acid, laccaic acid,
Group (II);
citric acid, dl-malic acid,
Group (III);
sodium trimetaphosphorate, sodium bicarbonate, and
Group (IV);
saccharides, dextrin, xanthan gum, pullulan, carboxymethyl cellulose, sodium alginate.

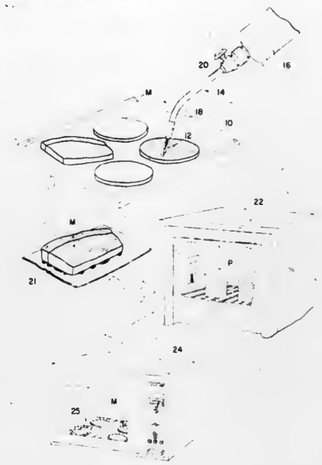
4,201,795
HANDY CONTAINER-PAN FOR INSTANTLY FRIZZLABLE DRY FOODS
Kenji Yamanaka, Komae, Japan, assignor to Toyo Suisan Kaisha, Ltd., Tokyo, Japan
Filed Jun. 28, 1978, Ser. No. 919,807
Int. Cl.² B65D *81/34*
U.S. Cl. 426—110 **5 Claims**



1. In a handy container-pan assembly including therein an instantly frizzlable dry food, comprising a pan made of aluminum foil and having a scoop-type grip made of aluminum foil and integrally formed with an upper part of the pan, the pan having a wallstep formed at least on the whole inner and upper periphery of the pan; a cardboard lid mountable on said wallstep for closing the pan; and a shrink-packaging polymer film surrounding said pan and lid for attaching said lid to the pan;
The improvement wherein said lid has a pair of crossed lines press-marked thereon for inflection of the lid on said crossed lines to form a doubly inflected lid which is slideably mounted over the scoop-type grip of the pan for protecting the user when the pan, and consequently the grip, is heated during heating of the dry food in the pan.

4,201,796
METHOD OF COOKING MEAT
James L. Harkins, Box 725, 3 Wellington Ave., Ross, Calif. 94967
Filed Feb. 15, 1979, Ser. No. 12,353
Int. Cl.² A23L *1/01*
U.S. Cl. 426—238 **3 Claims**

1. The method of cooking meat portions comprising the steps of:
searing just the surface of the meat briefly with a well-defined pencil flame of high velocity burning gas while leaving the center uncooked;
removing the heat; and



thereafter cooking the meat to a greater depth in a microwave oven.

4,201,797
PROCESS FOR APPLYING A LIGHT-ABSORBING, ELECTRON PERMEABLE LAYER WITHIN AN IMAGE INTENSIFIER TUBE
Johannes J. Houtkamp, Delft, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands
Filed Oct. 11, 1977, Ser. No. 841,067
Claims priority, application Netherlands, Oct. 20, 1976, 7611593
Int. Cl.² H01J *31/26, 9/22*
U.S. Cl. 427—66 **4 Claims**

1. A process for forming an anode for an image intensifier tube of the proximity-focus type which employs the anode closely spaced with a photocathode which releases photoelectrons, the process comprising the steps of
applying a layer of luminescent material on a light-transparent substrate,
applying a layer of aluminum on the luminescent material, and
applying a low atomic weight element selected from the group consisting of boron and silicon to the layer of aluminum by evaporation under conditions of a high vacuum to form a layer thereon wherein the applying of boron or silicon is continued until the thickness of the layer theref is approximately one-fourth the average wavelength of light which impinges upon a photocathode of the image intensifier tube.

4,201,798
METHOD OF APPLYING AN ANTIREFLECTIVE COATING TO A SOLAR CELL
Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.
Division of Ser. No. 740,670, Nov. 10, 1976. This application Sep. 30, 1977, Ser. No. 838,093
Int. Cl.² B05D *5/12*
U.S. Cl. 427—74 **8 Claims**

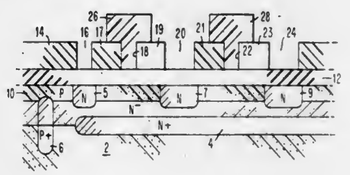
1. A method of applying an antireflective coating to a surface of a solar energy cell, said surface being adapted to absorb light impinging thereon, comprising forming a nonstoichiometric mix of tantalum and oxygen in solid form in such proportion that, on subsequent deposition the increasing thickness of the layer of suboxide deposited will be visually apparent by changes in color from gold to purple or blue, and depositing a layer of a suboxide of tantalum of desired thickness on the light-absorbing surface of the cell.

4,201,799
REFINISH PAINTING APPARATUS
Charles E. Stephens, 10037 Dixie Hwy., Anchorville, Mich. 48004
Continuation of Ser. No. 754,229, Dec. 27, 1976, abandoned. This application Oct. 26, 1978, Ser. No. 954,907
The portion of the term of this patent subsequent to Dec. 30, 1992, has been disclaimed.
Int. Cl.² C09J *7/04*
U.S. Cl. 427—142 **1 Claim**



1. A method of refinish painting a panel having a demarcation line between angularly related panel portions, one of which is to be refinish painted, comprising:
creasing a strip of tape completely along the length thereof, the tape comprised of a securing means to attach the tape to the panel surface yet to allow for later removal and a flexible elongated strip to provide angularly related longitudinally extending tape portions with the crease maintaining the portions in their angular relationship,
applying said tape to the panel with the crease line disposed at the demarcation line of the panel and with one strip portion adhered by the securing means to one side of the line on the panel portion not to be refinish painted and the other tape portion extending over and angularly upwardly away from the panel portion to be refinish painted, to form an included angle within the range of approximately 15° to approximately 45°, and
spraying a layer of paint on the panel to be refinish painted and beneath the upwardly angled tape portion.

4,201,800
HARDENED PHOTORESIST MASTER IMAGE MASK PROCESS
George E. Alcorn, Reston, Va.; David L. Bergeron, Winooski, Vt., and Geoffrey B. Stephens, Cary, N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Apr. 28, 1978, Ser. No. 900,844
Int. Cl.² C03C *15/00, 27/06*
U.S. Cl. 430—5 **1 Claim**



1. A process for forming an improved mask on a semiconductor substrate, comprising the steps of:
depositing a first resist layer on the surface of said substrate;

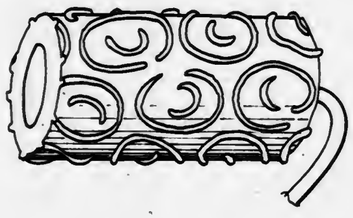
forming a plurality of windows in said first resist layer;
hardening said first resist layer by immersing it in a solution of sodium, 2 diazo, 1 oxynaphthalene, 4 sulfonate;
depositing a second resist layer over the surface and windows in said first resist layer;
selectively forming a subplurality of windows in said second resist layer over selected ones of said plurality of windows in said first resist layer;
whereby said second resist layer selectively blocks a portion of said plurality of windows in said first layer.

4,201,801

METHOD OF FORMING A DECORATIVE RELIEF PATTERN

Kiyoshi Hori, Suita, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 802,197, May 31, 1977, abandoned, which is a continuation of Ser. No. 686,218, May 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 472,460, May 22, 1974, abandoned. This application Jun. 27, 1978, Ser. No. 919,694
Int. Cl.[2] B05D *5/00*
U.S. Cl. 427—274 **16 Claims**



1. In a method of forming a decorative relief pattern comprising providing a layer of highly viscous material on the surface of an article or substrate to be patterned, and imparting a decorative relief pattern to said layer by rolling the surface of a roller over said layer a plurality of times necessary to cover the desired area of said surface of said article or substrate to be patterned, the improvement comprising performing said step of rolling while preventing the formation on said layer of directional traces indicative of the direction of rolling movement of said roller due to the formation of boundary lines in said layer at the ends of said roller, said improvement of preventing said directional traces comprising performing said rolling with the use of a roller consisting essentially of:
a roller surface having thereon a roller design arrangement consisting essentially of a single design unit occupying the entire said roller surface, said single design unit being formed of a plurality of design elements arranged around a common center of said single design unit, each said design element comprising a projection extending outwardly from said roller surface, each said projection extending in an elongated curved manner and having a flat outer top surface, and the spacings between any adjacent two of said design elements, taken along a straight line extending through said common center of said single design unit, being substantially equal.

4,201,802

PROCESS FOR MANUFACTURING PREFINISHED HARDBOARD

Joseph A. Vande Kieft, Progress, Oreg., assignor to SCM Corporation, New York, N.Y.

Filed Apr. 21, 1978, Ser. No. 898,967
Int. Cl.[2] B32B *31/00*
U.S. Cl. 427—370 **1 Claim**

1. In a process for molding prefinished fiberboard products under heat and pressure comprising:
providing a plurality of layers of fiberboard stock material in the form of a non-consolidated preformed fiberboard product;
coating the surface of said preformed fiberboard with an aqueous pre-press sealer being resinous material dispersed in water and comprising by weight on a film-forming solids basis between about 30% and 50% of a copolymer containing by weight at least 95% copolymerized vinyl alcohol, 10% and 25% emulsified fatty acid and/or fatty acid ester, 1% and 5% volatile amine emulsifier and 5% and 10 % aluminate stearate, and at least about 15% water;
hot pressing said preformed fiberboard containing surface sealer at temperatures of at least about 100° C. within a press for time sufficient to consolidate said preformed fiberboard into a solid fiberboard product having a sealed top surface; and
releasing said sealed fiberboard product from the press surface without sticking of the fiberboard product surface to the press surface.

4,201,803

METHOD FOR SIZING AND COLORING TEXTILE MATERIALS

George R. DePaolo, Readington Township, Hunterdon County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 13, 1978, Ser. No. 877,138
Int. Cl.[2] B05D *3/02*
U.S. Cl. 427—381 **19 Claims**

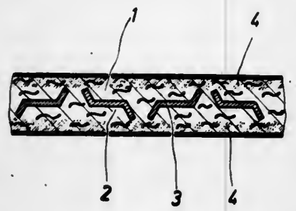
1. A method for durably sizing a textile substrate material by applying thereto an aqueous dispersion or emulsion of a chain-extended polyurethane having pendant carboxyl groups, a tertiary amine, a thermosetting aminoplast resin, a catalyst for curing said aminoplast resin, and an anionic or nonionic surfactant, drying, and curing the treated material at an elevated temperature.

4,201,804

GASKET IMPREGNATED WITH A POLYMERIZABLE LIQUID AND METHOD FOR ITS MANUFACTURE

Friedhelm Stecher, Burscheid; Josef Fazekas, Wermelskirchen; Paul Jöhren, Dortmund-Hörde, and Martin Morsbach, Hilgen, all of Fed. Rep. of Germany, assignors to Goetzewerke Friedrich Goetze AG, Burscheid, Fed. Rep. of Germany

Division of Ser. No. 438,357, Jan. 31, 1974, abandoned. This application Jun. 26, 1978, Ser. No. 918,820
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1973, 2304558
Int. Cl.[2] B05D *3/02, 1/18*
U.S. Cl. 427—393.6 **8 Claims**



1. A method of forming a gasket comprising impregnating a fibrous and/or porous material with a liquid saturating agent consisting essentially of an organic, synthetic and completely polymerizable liquid that does not contain agents which will evaporate during polymerization of the liquid, and polymerizing the liquid.

4,201,805

ZIRCONIUM FLAME-RESIST, LOW SMOKE EMISSION TREATMENT

Ladislav Benisek, Ilkley, England, assignor to International Wool Secretariat, London, England

Continuation-in-part of Ser. No. 703,912, Jul. 9, 1976, Pat. No. 4,160,051, which is a continuation of Ser. No. 235,866, Mar. 17, 1972, abandoned. This application Nov. 21, 1977, Ser. No. 853,460
Claims priority, application United Kingdom, Mar. 18, 1971, 7214/71; Apr. 1, 1971, 8412/71
Int. Cl.[2] D06M *3/02*; C09K *3/28*
U.S. Cl. 427—389 **6 Claims**

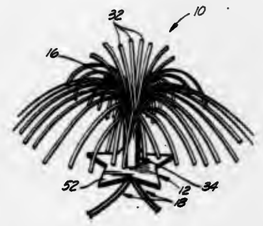
1. A process for improving the flame-resist properties of natural polyamide fibers comprising applying to said fibers an aqueous solution consisting of water, an anionic complex of zirconium, Citric acid, fluoride and sufficient formic acid such that said solution has a pH in the range of 0.5 to 4.0, whereby to impregnate the substance of said fibers with said anionic complex and thereafter drying the fibers, the proportion of said zirconium complex in relation to said fibers being sufficient to satisfy at least the minimum requirements of the Vertical Flame Test - A.A.T.C. Test Method 34-1969, Fire Resistance of Textile Fabrics, and the molar ratio of fluoride to zirconium being less than about 4 such that the smoke emission ($Ds_{1\text{-}4\ min}$) of said fibers, after drying, is not more than about 100.

4,201,806

SPRAY DECORATION

Bernard M. Cole, 7 Park Dr. East, Old Westbury, N.Y. 11568

Filed Jan. 16, 1978, Ser. No. 869,715
Int. Cl.[2] D04D *7/10*
U.S. Cl. 428—4 **12 Claims**



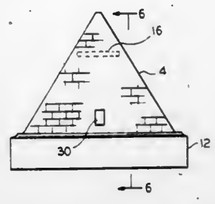
1. A spray-like decorative ornament for use in gift-wrapping a package comprising:
A. a rigidifying core having a substantially cylindrical sidewall and top and bottom edges;
B. a strip of metal foil wound about said core, a section of said strip being of greater height than said core, the top portion of said strip being substantially smoothly tapered from a minimum height at one end thereof to a maximum height at the other end and being vertically slit to define a plurality of fingers, the bottom portion of said strip not being vertically slit and the bottom edge thereof being continuous and in substantially a single horizontal plane, said core and strip bottom edges forming an exposed planar abutment surface adapted to abut said package, said core top edge being disposed above the bottoms of said fingers; and
C. an elasticized cord passing transversely through said core between said core top edge and the bottoms of said fingers and extending out beyond said ornament.

4,201,807

ACCESSORY ITEM

Anthony A. Rocca, 612 N. Michigan Ave., Chicago, Ill. 60611

Filed Jul. 11, 1978, Ser. No. 923,590
Int. Cl.[2] A45C *1/12*
U.S. Cl. 428—35 **1 Claim**



1. An accessory item comprising: a base; a hollow pyramidal shaped superstructure removably mounted on said base having an elongated area of reduced cross-sectional thickness formed in one interior planar wall surface of said pyramidal superstructure and defining an elongated recess in said interior planar wall surface, whereby said area of reduced cross-sectional thickness can be easily removed to form an elongated slot-like opening in one wall of said pyramidal superstructure; at least two tabs extending downwardly from the bottom edge of said pyramidal superstructure with at least one of said tabs being formed on and extending from the bottom edge of each of two opposed planar walls of said pyramidal superstructure with said tabs lying in the planes of said planar walls so as to be disposed at an angle with the vertical plane; and at least two slots disposed in said base shaped to receive said tabs, said slots being positioned at an angle with said vertical plane slightly greater than the angle of said tabs, whereby said tabs are urged against the interior of said slots in said base when inserted to provide a secure connection between said superstructure and said base, and whereby said bottom edge of at least one of said two opposed planar walls of said pyramidal superstructure is free to be pressed inwardly relative to the plane thereof so as relieve the pressure exerted by said tab on said inwardly pressed wall against said interior surface of one of said slots so as to permit removal of said pyramidal superstructure from said base.

4,201,808

RÁDIATION CURABLE SILICONE RELEASE COMPOSITIONS

Maryann Cully, Croton-on-Hudson; Arthur N. Pines, Katonah; Richard B. Metzler, Ossining, and Gunther W. Babian, Peekskill, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,889
Int. Cl.[2] A61F *13/02*; C08F *30/08*
U.S. Cl. 428—40 **31 Claims**



1. A silicone release coating composition, curable by exposure to ionizing radiation or actinic nonionizing radiation, comprising:
(A) from 10 to 90 weight percent, based on the total weight of the composition, of an organopolysiloxane of the formula

$$\left[R_nSiO_{\frac{4-n}{2}}\right]_m$$

wherein m has an average value greater than about 25; each R, individually, is acryloxy, methacryloxy, an unsubstituted monovalent hydrocarbon radical having from 1 to 20 carbon atoms or a substituted monovalent hydrocarbon radical wherein the substituents are selected from the class consisting of chloro, fluoro, cyano, amido, nitro, ureido, isocyanato, carbalkoxy, hydroxy, acryloxy and methacryloxy; and n has an average value of from about 1.8 to 2.2; said organopolysiloxane containing an average of at least one acryloxy or methacryloxy group;

(B) from 90 to 10 weight percent, based on the weight of the composition of a low molecular weight acrylyl crosslinker chosen from the group consisting of

(i) di-, tri-, and tetrafunctional acrylate or methacrylate esters of organic polyfunctional alcohols, having a molecular weight up to about 1,200, and (ii) low molecular weight siloxane polyacrylates having from 1 to about 25 siloxy groups and from 2 to about 6 organic groups which contain an acryloxy or methacryloxy radical, each of said organic groups being bonded to a silicon atom through a carbon-silicon or carbon-oxygen-silicon bond; and

(C) from 0 to about 10 weight percent, based on the weight of the composition, of a photosensitizer.

30. A laminate comprising:

(a) a first substrate;

(b) a second substrate;

(c) a release layer consisting of a composition as claimed in claim 1 which has been cured by exposure to radiation; and

(d) a layer consisting of a pressure sensitive adhesive composition;

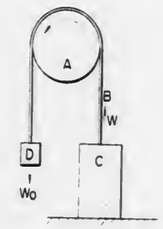
said release layer being interposed between said first substrate and layer of pressure sensitive adhesive and being preferentially adherent to said first substrate; and said pressure sensitive adhesive layer being interposed between said release layer and second substrate and being preferentially adherent to said second substrate.

4,201,809

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa, and Yasuo Tamai, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 18, 1978, Ser. No. 925,694
Claims priority, application Japan, Jul. 20, 1977, 52-86132
Int. Cl.² H01F *10/02*
U.S. Cl. 428—65 **14 Claims**



1. A magnetic recording medium having on a non-magnetic support a magnetic layer comprising a ferromagnetic powder dispersed in a binder, in which the magnetic layer contains a compound represented by the following general formula (I),

$$R\left(O-\overset{\overset{O}{\|}}{C}-R'\right)_n \quad (I)$$

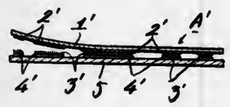
wherein R represents a residual radical of trimethylolethane, trimethylolpropane or pentaerythritol, R' represents a residual radical of a fatty acid having at least 5 carbon atoms and n represents an integer of 2 to 4 said compound (I) being present in a proportion of 0.1 to 5 parts by weight to 100 parts by weight of ferromagnetic powder.

4,201,810

TRANSFERABLE FLOCKED FIBER DESIGN MATERIAL

Shigehiko Higashiguchi, 4-2 Honjo 3-chome, Sumida-Ku Tokyo, Japan

Filed Feb. 10, 1978, Ser. No. 876,573
Claims priority, application Japan, Aug. 24, 1977, 52-101417
Int. Cl.² B44C *3/02*
U.S. Cl. 428—90 **12 Claims**



1. A transferable flocked fiber design material for transfer to an article to be decorated with said design material in a desired design comprising:

a release support sheet;

a number of fibers releasably flocked at one end to one surface of said support sheet in erect and closely adjacent relationship to each other through a water soluble and water dispersible adhesive; and

a thermoplastic and pressure sensitive synthetic resin adhesive layer applied to the ends of said fibers opposite to said support sheet;

characterized in that a thermoplastic resin adhesive powder is applied to said thermoplastic and pressure sensitive synthetic resin adhesive layer so as to cooperate with the latter in transferring said flocked fibers to an article to be decorated, whereby when said transferable flocked fiber design material is applied to the article and pressed thereagainst under heating, said thermoplastic resin adhesive powder melts and penetrates into the texture of the article while the flocked fibers are being held in erect position by said thermoplastic and pressure sensitive synthetic resin adhesive and when allowed to cool or solidify, the adhesive mixture firmly holds the transferred fibers on the article; and at least said thermoplastic and pressure sensitive synthetic resin adhesive layer is in the form of a desired design.

4,201,811

RUG AND METHOD OF MAKING THE SAME

Joseph J. Montell, Laguna Beach, Calif., assignor to Rug Crafters, Santa Ana, Calif.

Filed Jun. 27, 1977, Ser. No. 810,038
Int. Cl.² D03D *27/00*
U.S. Cl. 428—92 **1 Claim**

1. A rug comprising:

a rug backing having a forward face and a back face, said rug backing having indicia thereon;

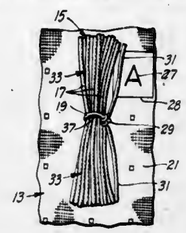
a plurality of bundles of strands;

a plurality of elongated flexible tying elements, each of said tying elements being attached to said rug backing, at least some of said tying elements being attached to said rug backing at locations adjacent said indicia;

each of said tying elements being wrapped at least part way around a central region of one of said bundles and tied into a knot to attach the associated bundles to said forward face of said rug backing whereby each of the bundles forms two clumps of pile of the rug;

the end portions of at least some of said tying elements extending beyond the knot formed in such tying element to form additional strands of the associated bundle;

said additional strands terminating at about the ends of the other strands of the associated bundle;



an adhesive joining at least some of the tying elements and the associated bundles to prevent the strands of such bundles from being pulled out of the rug;

at least some of said knots engaging said forward face of said rug backing whereby such knots are protected and not readily visible when the rug is in use; and

at least some of said tying elements being wrapped only one time around a central region of the associated bundles.

4,201,812

BITUMINOUS CARPET BACKING

Thomas C. Blanken, and Joannes C. A. Schellekens, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 18, 1979, Ser. No. 49,380
Claims priority, application Netherlands, Jul. 4, 1978, 7807224
Int. Cl.² C08H *13/08*; C08F *43/00*
U.S. Cl. 428—95 **11 Claims**

1. A fibrous floor covering comprising a layer of a fibrous fabric having an integral backing layer, said backing layer comprising the blend of:

(a) from about 50 to about 95 percent of a bituminous component having a penetration of below about 30 (0.1 mm) at 25° C., and

(b) from about 5 to about 50% by weight of a block copolymer having at least two monoalkenyl arene polymer end blocks A and at least one elastomeric conjugated diene mid block B.

4,201,813

CELLULAR LINEAR FILAMENTS WITH TRANSVERSE PARTITIONS

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Continuation-in-part of Ser. No. 839,082, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 649,162, Jan. 14, 1976, abandoned, which is a division of Ser. No. 262,837, Jun. 14, 1972, abandoned. This application Sep. 13, 1978, Ser. No. 942,097
Int. Cl.² D03D *27/00*; D02G *3/00*
U.S. Cl. 428—97 **15 Claims**



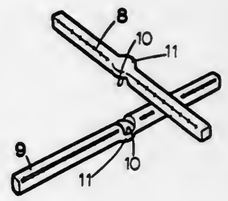
1. Cellular filament comprising a substantially continuous integral plastic hollow member having internal transverse partitions which divide the said member into individual cells at intervals, at least some of the said individual cells being closed with respect to the adjacent cells and at least some of the said cells being open to the outside of the said filament.

4,201,814

MESH STRUCTURES

John F. Gilbert, Gipsy Lane, Aston Down, Stroud, Gloucestershire, and Nicholas L. Lyons, Bristol, both of England, assignors to John Francis Gilbert and Margaret Gilbert, both of Gloucestershire, England

Filed Jun. 30, 1978, Ser. No. 921,044
Claims priority, application United Kingdom, Jul. 2, 1977, 27799/77
Int. Cl.² B32B *5/12*
U.S. Cl. 428—107 **10 Claims**



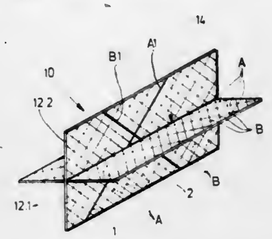
1. Mesh structure comprising a plurality of longitudinal members, a plurality of transverse members, and joins interconnecting said members at the junctures where said members cross each other at least some of said transverse members comprising single elongate components of synthetic plastics material of which the molecular structure has been orientated in a direction corresponding to the longitudinal axis of said member, each of said elongate components being provided at each of said joins with at lease one local pre-formed permanent deformation, and masses of plastic material moulded around the junctures of said members to form said joins.

4,201,815

SHEAR TRANSFER ELEMENT

Emil Weiland, Hohenbrunn; Rudolf Schindler, Ottobrunn, and Klaus Brunsch, Weidach, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,223
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757965
Int. Cl.² B32B *5/12*
U.S. Cl. 428—113 **7 Claims**



1. Shear transfer element comprising at least two intersecting shear resistant planar webs each arranged in a plane spaced angularly relative to the other and said webs joined to one another along an intersecting junction line extending across each of said webs, each said web comprising a compound fiber material with the fibers arranged in a crossing arrangement and with the fibers obliquely inclined to the intersecting junction line, wherein the improvement comprises that each of said

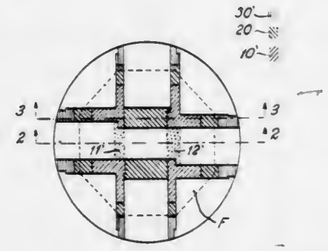
webs extends laterally outwardly from opposite sides of the intersection junction line having a first part on one side of the intersecting junction line and a second part on the opposite side thereof, and said fibers in each said web extend continuously through the intersecting junction line from said first part to said second part thereof.

4,201,816

BASIS FOR A TABLETOP FOR AN EXTENSION TABLE

Henry F. Bertelsen, DK-6933, Kibaek, Denmark

Filed Dec. 12, 1978, Ser. No. 968,868
Claims priority, application Denmark, Dec. 15, 1977, 5588/77
Int. Cl.[2] B32B *3/10*; A47B *1/10*
U.S. Cl. 428—137 2 Claims



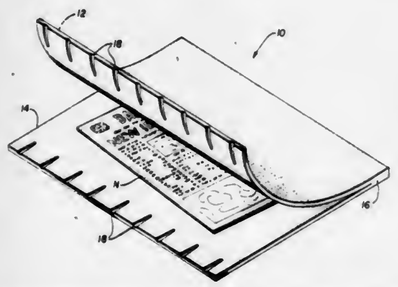
1. A tabletop basis of laminated construction comprising
an upper lamina having two symmetrically placed cut-out areas of pi-form to define four pairs of parallel slots, and pairs of cut-out zones extending from each pair of parallel slots, each said cut-out zone having a bottom slanting inwardly of said lamina;
a lower lamina having two symmetrically arranged pi-formed cut-out areas turned 90° relative to said cut-out areas of said upper lamina; and
an intermediate lamina having a cut-out area corresponding to said cut-out areas of said upper and lower lamina whereby with said laminae in superposed relation said cut-out areas of said laminae define cavities for slidably receiving extension bars of extension leaves.

4,201,817

DOOR MAT

Thomas P. Duncan, Jr., 601 Riverside Dr., Newport News, Va., assignor to Thomas P. Duncan, Jr. and Frank Belvin, both of Newport News, Va.

Filed Jan. 6, 1976, Ser. No. 646,911
Int. Cl.[2] B32B *3/02, 7/08*
U.S. Cl. 428—141 1 Claim



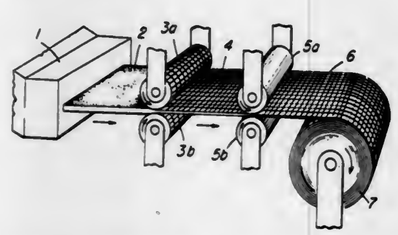
1. A door mat formed of a flexible and waterproof material, comprising a lower substantially flat section and an upper substantially flat section hingedly connected adjacent one end thereof to said lower section, said upper and lower sections being of sufficient thickness and weight to resist separation when exposed to wind, said upper section being movable upwardly away from said lower section for the purpose of receiving and retaining an article therebetween, the inner surfaces of said upper and lower sections having drain openings at their front ends for the purpose of removing water or moisture accumulating between said sections.

4,201,818

FLEXIBLE PLASTIC FOAM

Charles L. Rohn, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 732,236, Oct. 14, 1976, Pat. No. 4,105,738. This application May 30, 1978, Ser. No. 910,932
Int. Cl.[2] B32B *3/12, 3/26*
U.S. Cl. 428—159 6 Claims



1. A flexible, dead-foldable foamed plastic sheet having a compressed cellular structure, said sheet being further characterized by having in close proximity to at least one of its two major surfaces a substantial number of fractured compressed cells such that said sheet is rendered dead-foldable.

5. The flexible, dead-foldable foamed plastic sheet of claim 1 wherein said compressed cellular structure and said fractured compressed cells are substantially restricted to the portion of said foamed plastic sheet to be folded and the cellular structure of substantially all of said sheet not in the vicinity of said foldable portion is in its original uncompressed state.

4,201,819

LAMINATED CHIPBOARD

Manfred Schenz, Gittelde, Fed. Rep. of Germany, assignor to Wilhelm Mende & Company, Harz, Fed. Rep. of Germany

Filed Feb. 10, 1977, Ser. No. 767,345
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656713
Int. Cl.[2] B32B *3/00, 3/28*
U.S. Cl. 428—172 7 Claims



1. A laminated chipboard comprising:
a chipboard sheet having a generally planar surface;
a metal sheet; and
a thermoplastic binder interposing the chipboard sheet and the aluminum sheet, the thermoplastic binder binding the aluminum sheet to the surface of the chipboard sheets;
the aluminum sheet having a substantially uniform thickness within a first range of about 0.2 mm to 0.8 mm and the chipboard sheet having a substantially uniform thickness within a second range of about 2.5 mm to 6.0 mm, the aluminum sheet having a thickness within the first range so that the aluminum sheet is not influenced by the surface structure of the chipboard sheet, and the aluminum sheet and the chipboard sheet having thicknesses within the first range and the second range, respectively, so that the relative thickness of the aluminum sheet and the chipboard sheet are such that tensile stresses occuring between the aluminum sheet and the chipboard sheet due to relative length variations caused by bending, thermal expansion and shrinkage from moisture variations do not exceed the shearing forces which can be accepted by the thermoplastic binder and therefor do not cause the aluminum sheet to become detached from the chipboard sheet.

4,201,820

MICROCELLULAR HETEROCYCLIC POLYMER STRUCTURES

Burnett H. Johnson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 643,062, Dec. 22, 1975, abandoned, which is a division of Ser. No. 356,924, May 3, 1973, abandoned. This application Jan. 3, 1978, Ser. No. 866,442
Int. Cl.[2] B32B *3/14, 15/08*
U.S. Cl. 428—195 7 Claims

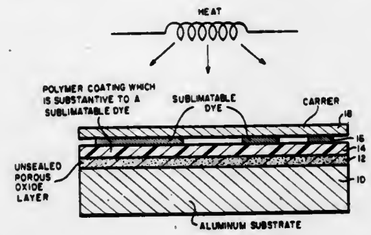
1. A flexible circuit article comprising:
(a) a closed cell, nonporous, non-foam microcellular polymeric article having a density of about 0.3 g/cc to about 1.5 g/cc in the shape of a film having a thickness of from about 1 mil to 20 mils, the polymeric article comprising a polymer selected from the group consisting of aromatic polyparabanic acids, aromatic polyhydantoins, aromatic polyamides, aromatic polyimides, aromatic polysulfones, aromatic polyimides-amides and combinations thereof; and
(b) a conductive circuit adhered to said film in a prearranged configuration.

4,201,821

DECORATED ANODIZED ALUMINUM ARTICLE

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06066, and Robert F. Gracia, Scituate, Mass., assignors to Howard A. Fromson, Weston, Conn.

Filed Dec. 22, 1978, Ser. No. 972,585
Int. Cl.[2] B32B *3/00, 15/04, 27/08*; D06P *1/16*
U.S. Cl. 428—203 6 Claims



1. Aluminum article decorated with a design comprising:
(a) an aluminum substrate having a porous, unsealed anodic oxide layer thereon;
(b) a polymeric coating over the oxide layer which is substantive to a sublimatable dye; and
(c) a sublimated dye forming said design in the oxide layer and the overlying polymeric coating.

4,201,822

NOVEL FABRIC CONTAINING MICROCAPSULES OF CHEMICAL DECONTAMINANTS ENCAPSULATED WITHIN SEMIPERMEABLE POLYMERS

Donald R. Cowsar, Birmingham, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 13, 1979, Ser. No. 48,285
Int. Cl.[2] B32B *5/16*
U.S. Cl. 428—240 10 Claims

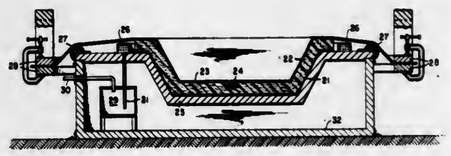
1. A novel protective garment fabric comprising a (woven) clothing fabric containing microcapsules of decontamination agents for toxic chemical agents encapsulated with a semipermeable polymer wall material which is selectively permeable to toxic chemical agents but impermeable to said decontamination agent, thereby allowing toxic chemicals to diffuse with the microcapsules and undergo an irreversible neutralization reaction with said decontamination agents.

4,201,823

METHOD FOR MAKING FIBER REINFORCED ARTICLES

Larry M. Russell, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 865,567, Dec. 29, 1977. This application Oct. 16, 1978, Ser. No. 951,694
Int. Cl.[2] B32B *7/00*
U.S. Cl. 428—246 27 Claims



1. An improved method for making a fiber-reinforced article comprising the steps of:
(a) applying a preformed plastic shell having the configuration of the desired article to a holding fixture therefore having sealing means at the peripheral edges thereof;
(b) applying to the surface of said shell fibrous reinforcement material;
(c) introducing to said reinforcement material a liquid plastic resin mixture;
(d) applying to the surface of said resin mixture-containing reinforcement material a preformed plastic membrane having the configuration of the desired article;
(e) sealing the peripheral edges of said membrane to the peripheral edges of said holding fixture to provide a molding system;
(f) applying a vacuum to said molding system to compact said molding system and to draw said resin mixture throughout said reinforcement material;
(g) hardening said resin mixture; and
(h) separating the resulting article from said plastic membrane and said holding fixture.

4,201,824

HYDROPHILIC POLYURETHANES AND THEIR APPLICATION AS SOIL-RELEASE, ANTI-SOIL REDEPOSITION, AND ANTI-STATIC AGENTS FOR TEXTILE SUBSTRATES

Robert Viollland, Lyons, and Alain Lagasse, Villeurbanne, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 748,296, Dec. 7, 1976, abandoned. This application Jun. 7, 1977, Ser. No. 804,391
Int. Cl.[2] B32B *27/04*; C08G *18/42*; D06M *15/12*; C08L *75/06*
U.S. Cl. 428—262 90 Claims

1. A linear, hydrophilic polyurethane having a relative viscosity of at least about 2, said polyurethane comprising the reaction product of:
(a) from 10 to 70 weight percent of a polyester having a hydroxyl number of less than 120 mg KOH/g and an acid number of not more than 3 mg KOH/g, said polyester being the condensation product of an aromatic dicarboxylic acid or ester-forming derivative thereof with a diol having a molecular weight not in excess of about 300; and
(b) from 30 to 90 weight percent of an isocyanato prepolymer having NCO terminal groups, said prepolymer being the reaction product of a nonionic hydrophilic macrodiol

having a molecular weight of from about 300 to about 6,000 with a diisocyanate; and

(c) wherein the overall ratio of NCO/OH groups ranges from between about 0.8 and 1.

24. A detergent composition comprising (i) a surfactant and (ii) from about 0.1 to 5 weight percent of a linear, hydrophilic polyurethane having a relative viscosity of at least about 2, said polyurethane comprising the reaction product of:

(a) from 10 to 20 weight percent of a polyester having a hydroxyl number of less than 120 mg KOH/g and an acid number of not more than 3 mg KOH/g, said polyester being the condensation product of a dicarboxylic acid or ester-forming derivative thereof with a diol;

(b) from 30 to 90 weight percent of an isocyanato prepolymer having NCO terminal groups, said prepolymer being the reaction product of a nonionic hydrophilic macrodiol with a diisocyanate; and

(c) wherein the overall ratio of NCO/OH groups ranges from between about 0.8 and 1.

76. A fibrous textile substrate comprising a plurality of individual fibers, each of said fibers having sorbed thereon a soil-releasing amount of the linear, hydrophilic polyurethane as defined by claim 1.

79. A method of treating fiber-containing materials to impart soil-resistance, anti-soil redeposition and anti-static characteristics thereto, which comprises washing said materials with water in the presence of an amount sufficient to impart said characteristics of the linear, hydrophilic polyurethane as defined by claim 1.

85. A composition of matter which comprises a powder, said powder comprising from 10 to 90 weight percent of a mineral filler, and 90 to 10 weight percent of the linear, hydrophilic polyurethane as defined by claim 1.

4,201,825

METALLIZED TEXTILE MATERIAL

Harold Ebneth, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,430

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743768

Int. Cl.[2] **B32B** *15/14, 15/20*

U.S. Cl. 428—263 **8 Claims**

1. A metallised (metal coated) textile material having a surface resistance, as measured at 23° C./50% relative humidity in accordance with DIN No. 54345, of at most 1×10^3 ohm.

4,201,826

POLYMERIZABLE UNSATURATED POLYESTER COMPOSITIONS USEFUL IN THE MANUFACTURE OF MULTILAYER LAMINATES AND LAMINATES PREPARED THEREFROM

Perry Nylander, Gothenburg, Sweden, assignor to AB Syntes, Nol, Sweden

Filed Jan. 2, 1979, Ser. No. 51

Claims priority, application Sweden, Jan. 5, 1978, 7800148

Int. Cl.[2] **C08L** *91/06, 67/06, 67/08;* **B32B** *17/04*

U.S. Cl. 428—268 **17 Claims**

1. A polymerizable unsaturated polyester composition useful in the manufacture of multilayer laminates, consisting essentially of:

(1) a polyester of a polyhydric alcohol and a polycarboxylic acid, at least one of which is ethylenically unsaturated;

(2) a monomer copolymerizable with the unsaturated polyester and having a boiling point below 150° C;

(3) an additive forming a surface film that inhibits volatilization of monomer from the polyester composition; and

(4) a hydrophobic compound soluble at least in part both in the unsaturated polyester and in the film-forming additive that either

(a) has an isoprene unit structure, or

(b) is acyclic and has at least one ester and/or ether bond; and at least two terminal hydrocarbon groups each with at least one ethylenically unsaturated group.

15. A multilayer laminate comprising a plurality of adjacent layers of a polymerizable unsaturated polyester resin composition in accordance with claim 1, polymerized in situ and having good adhesion between adjacent layers.

4,201,827

MAGNETICALLY SUPPORTED PARTICLE MATRIX FOR ACCUMULATING OR AFFECTING SUBSTANCES DISSOLVED OR FINELY DISPERSED IN A LIQUID OR GAS

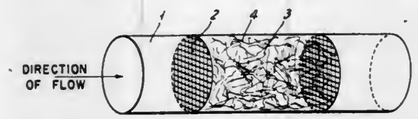
Dieter Heitkamp, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,095

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653551

Int. Cl.[2] **B01D** *35/06;* **B03C** *1/00;* **B32B** *5/16*

U.S. Cl. 428—283 **7 Claims**



1. A matrix of particles for surface-interaction with a substance dissolved or dispersed in a liquid or gas comprising:

a supporting porous web of a composite material consisting of chemically inert fibrous material bearing, embedded therein, powder of a permanently magnetic material, and

a porous mass of magnetic particles clinging to said supporting web by magnetic attraction forces.

4,201,828

IMPACT RESISTANT SAFETY GLASS PANEL

Wolfgang Triebel, Hanau; Siegfried Hari, Klein-Welzheim; Hubert Koert, Hanau, all of Fed. Rep. of Germany, and Fritz Evers, Mauritz-Lindenweg 33, 44 Munster, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main and Fritz Evers, Münster, both of, Fed. Rep. of Germany

Continuation of Ser. No. 677,640, Apr. 16, 1976, abandoned. This application Jun. 5, 1978, Ser. No. 912,280

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1975, 2516629

Int. Cl.[2] **B32B** *27/38, 17/10*

U.S. Cl. 428—332 **10 Claims**

1. Impact resistant glass laminate comprising a silicate panel and a polycarbonate panel, said silicate glass panel being of at least 6 mm in thickness and disposed on the side of the laminate subject to a potential impact and wherein the glass panel is bonded to said polycarbonate panel of at least 1.5 mm in thickness by means of a methacrylate resin cured in situ between said panels, and said resin being formed from at least 50% by weight, based on the total weight of the resin, of 2-ethylhexyl methacrylate.

4,201,829

METAL PLATED THERMOPLASTIC ARTICLES

William C. Mast, Stow, and Richard G. Bauer, Kent, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 837,079, Sep. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 656,471, Feb. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 528,387, Nov. 29, 1974, abandoned. This application Aug. 14, 1978, Ser. No. 933,245

Int. Cl.[2] **B32B** *15/08*

U.S. Cl. 428—332 **6 Claims**

1. A metal plated, non-burning highly light transmittant and impact resistant molded thermoplastic article consisting of:

A. a molded substrate of metal platable, non-burning, high light transmittant and impact resistant thermoplastic material comprising a blend of

(1) an admixture of

(a) 100 parts by weight of a rubbery copolymer resulting from the copolymerization of a mixture of a diolefin monomer and a styrene monomer having grafted thereto from 30 to 50 parts by weight, based on 100 parts by weight of the grafted rubbery copolymer, of a terpolymer resulting from the copolymerization of a mixture of a methacrylic acid ester monomer, a styrene monomer and acrylonitrile monomer in the presence of said rubbery copolymer, and

(b) from 100 to 200 parts by weight of a resinous terpolymer resulting from the copolymerization of a mixture of a methacrylic acid ester monomer, a styrene monomer and an acrylonitrile monomer,

and wherein the total amount of the diolefin in the admixture of (1) ranges from about 10 to 30 parts by weight, the total amount of the styrene in the admixture of (1) ranges from about 30 to 40 parts by weight, the total amount of the methacrylic acid ester in the admixture of (1) ranges from about 20 to 25 parts by weight all based on 100 parts by weight of the total admixture of (1) and the total amount of the acrylonitrile in the admixture of (1) ranges from about 20 to 25 parts by weight based on 100 parts by weight of the total admixture of (1) and

(2) a vinyl chloride polymer selected from the group consisting of vinyl chloride homopolymer and vinyl chloride copolymers containing up to about 15 parts by weight based on the weight of the copolymer of a copolymerizable comonomer

and wherein the admixture of (1) ranges from about 40 to 60 parts by weight based on 100 parts by weight of the total blend and the vinyl chloride polymer of (2) ranges from about 60 to about 40 parts by weight based on 100 parts by weight of the total blend, and

B. a metal coating deposited on and bonded to the surface of said molded substrate, said metal coating being selected from the group of metals consisting of copper, nickel chromium and alloys containing copper, nickel and chromium

and wherein the peel adhesion strength between the metal coating and the thermoplastic substrate ranges from about 5.0 to about 10.0 pounds as measured by the ASTM D-429 Method B test procedure.

4,201,830

IMPACT ABSORBANT ARTICLE COMPRISING FRANGIBLE CORE HAVING A TOUGH-SKINNED COVERING AND METHOD OF MAKING SAME

Carl H. Wollen, Comstock Park, Mich., assignor to U.S. Industries, Grand Rapids, Mich.

Filed Sep. 11, 1978, Ser. No. 941,025

Int. Cl.[2] **B62D** *1/04, 1/06;* **E04F** *11/08, 11/18*

U.S. Cl. 428—375 **60 Claims**

1. A method for minimizing injury to an individual impacting a structure having a rod-like lateral cross section such as a handrail, steering wheel or the like, said method comprising:

providing said structure with an inner member having a rod-like lateral cross section and being made of a structural plastic material which is capable when hardened of providing rigid, structural strength, but which is frangible upon sharp impact of the type encountered in vehicle accidents so as to absorb energy from the impact;

providing an exterior covering surrounding said inner member made of a second plastic material which is somewhat stretchable, flexible, tough-skinned and non-abrasive and of sufficient strength and sufficient thickness that in the event said inner member breaks, said exterior covering prevents sharp ends or edges of the broken inner member from protruding and impaling an individual impacting said structure.

21. An energy absorbing structure having a rod-like lateral cross section such as a hand rail, steering wheel or the like, comprising: an inner member of rod-like lateral cross section made of a rigid, structural plastic material capable of providing structural strength but being frangible upon sharp impact of the type encountered in vehicle accidents so as to absorb energy from the impact; an exterior covering generally surrounding said inner member and being made of a somewhat stretchable, flexible, tough skinned and nonabrasive plastic material of sufficient thickness and strength that in the event said inner member breaks, said covering prevents sharp ends or edges of the broken inner member from protruding and impaling an individual impacting said structure.

41. A method for manufacturing an energy absorbing structure having a rod-like lateral cross section such as a hand rail, steering wheel or the like, said method comprising of: molding an inner member into a configuration having a rod like lateral cross section of a structural plastic material which is capable when hardened of providing rigid, structural strength, but which is frangible upon sharp impact of the type encountered in vehicle accidents so as to absorb energy from the impact; placing said inner member into a second mold having a cavity which is larger in lateral cross section than the lateral cross section of said inner member and molding a second plastic material generally around said inner member within said mold to define an exterior covering on said inner member, said second plastic material being, when cooled and hardened, somewhat stretchable, flexible, tough skinned and nonabrasive and of sufficient strength, and molded to sufficient thickness, that in the event said inner member breaks, said exterior covering prevents sharp ends or edges of the broken inner member from protruding and impaling an individual impacting said structure.

4,201,831

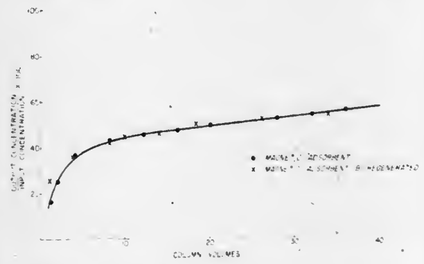
MAGNETIC ADSORBENT COMPOSITE

George M. J. Slusarczuk, Schenectady, and Ronald E. Brooks, Guilderland, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 27, 1976, Ser. No. 726,960

Int. Cl.[2] **B22F** *1/02*

U.S. Cl. 428—403 **6 Claims**



6. A magnetic adsorbent composite ranging in diameter from about one micron to about 10 millimeters consisting essentially of a magnetic substrate particle ranging in diameter from about

100 Angstroms to about 4 millimeters, said substrate particle being at least substantially encapsulated with elemental active carbon in a thickness ranging from about 100 Angstroms to about 10 millimeters, with a plurality of said substrate particles in a matrix of said active carbon.

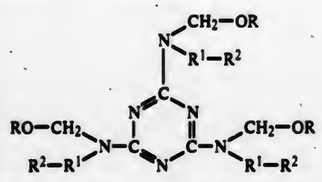
4,201,832

NON MELT-DRIP FLAME RETARDANT POLYCARBONATE COMPOSITION

Walter L. Hall, Mt. Vernon, and William J. J. O'Connell, Evansville, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 23, 1978, Ser. No. 918,485
Int. Cl.² B32B *27/36*
U.S. Cl. 428—412 **12 Claims**

1. A coated non melt-drip flame retardant polycarbonate article consisting essentially of an admixture of an aromatic carbonate polymer and a flame retardant amount of a compound selected from the group consisting of the alkali metal and alkaline earth metal salts of unsubstituted and substituted monomeric or polymeric aliphatic, aromatic or heterocyclic sulfonic acids and mixtures thereof, said polycarbonate article having deposited on the surface thereof an adherent, non melt-drip, abrasion, scratch and chemical solvent resistant coating consisting essentially of the reaction products of: (i) a melamine represented by the general formula



wherein each R is independently selected from hydrogen or a lower alkyl group, each R^1 is independently selected from an alkylene group, and each R^2 is independently selected from a hydroxy group, a lower alkoxy group, or a lower alkyl group; (ii) a lower alkyl diol; (iii) a polyester or polyether polyol; and (iv) an adhesion promoter and leveling agent consisting essentially of the reaction products of a melamine and a hydroxy functional acrylate.

4,201,833

BUILDING MATERIAL ELEMENTS, PARTICULARLY BUILDING BOARDS, AND A PROCESS FOR THEIR PRODUCTION

Kurt Kirsch, Vienna; Volkmar Hilzensauer, Amstetten; Günther Pflug, Vienna; Felix Wehrmann, Vienna, and Gerald Maresch, Vienna, all of Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Winer Neudorf, Austria

Division of Ser. No. 657,273, Feb. 11, 1976, Pat. No. 4,093,488, which is a division of Ser. No. 450,847, Mar. 13, 1974, abandoned. This application Mar. 22, 1978, Ser. No. 888,953
Claims priority, application Austria, Mar. 16, 1973, 2385/73; Dec. 12, 1973, 10381/73; Feb. 21, 1974, 1400/74
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.
Int. Cl.² B32B *5/02, 27/42;* C08J *9/00*
U.S. Cl. 428—404 **7 Claims**

1. An incombustible building material element having good thermal insulation properties produced by

(a) spraying the surface of vermiculite granules, while agitating the granules, with a liquid containing an organic binder comprised of a resin mixture or mixed resin having at least one combustible resin component and at least one incombustible nitrogen-containing resin component, wherein the amount of resin, calculated as solid substance, coated on the granules is 2 to 30% by weight, based on the weight of the granules,

(b) placing the coated granules in a first press and pressing the coated granules without heating to bond them to form a transportable molded product,

(c) placing the transportable molded product in a second press provided with a heating means, and

(d) pressing and heating the transportable molded product at an elevated temperature to further bond the granules and organic binder in the molded product to form an incombustible building material element with good thermal insulation properties.

4,201,834

POWDER COMPOSITION AND METHOD OF PREPARATION

Martin J. Hannon, Martinsville, and Richard K. Greene, Summit, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 844,812, Oct. 25, 1977, abandoned. This application Dec. 5, 1978, Ser. No. 966,694
Int. Cl.² B32B *5/16*
U.S. Cl. 428—407 **37 Claims**

1. A non-tacky powder composition useful for coating applications which comprises

(A) tacky powder particles comprising a melt blend mixture of

(1) a block copolymer which is either unhydrogenated or selectively hydrogenated to at least some degree and having at least two kinds of polymer blocks wherein one polymer block is designated by A and a second polymer block is designated by B such that prior to hydrogenation,

(a) each A is a polymer end block of a monovinyl or alpha alkyl monovinyl arene having a number average molecular weight in the range of from about 5,000 to about 75,000, said blocks A comprising from about 5 to about 50% by weight of the total block copolymer, and

(b) each B is a polymer mid block having a number average molecular weight of from about 30,000 to about 300,000, and formed from a conjugated diene selected from homopolymers of at least one conjugated diene having 4 to 10 carbon atoms per molecule, said blocks B comprising from about 50 to about 95% by weight of the total block copolymer, and

(2) at least one melt flow modifier selected from the group consisting of

(a) monovinyl arene homopolymers,

(b) alpha alkyl monovinyl arene homopolymers, and

(c) copolymers of monovinyl arenes and alpha alkyl monovinyl arenes wherein the aromatic portions of the polymers described in (2) (a), (b) and (c) are at least partially hydrogenated to remove the aromatic character thereof, and

adhering to the tacky surface of these tacky particles in a non-continuous layer,

(B) smaller solid particles which are hard and non-tacky and which comprise at least one melt flow modifier of the group described in (A) (2) with the provision that the melt flow modifier have a glass transition temperature of at least about 20° C.

4,201,835

BOILING WATER AND WEATHER RESISTANT CELLULOSE FIBER REINFORCED BOARD MATERIAL

Karl Jellinek, Iserlohn-Letmathe, Austria, and Rolf Müller, Duisburg, Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 890,894
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716971
Int. Cl.² B32B *27/40*
U.S. Cl. 428—288 **4 Claims**

1. Boiling water and weather resistant cellulose fiber reinforced board material comprising cellulose containing reinforcing material and a binder comprising a mixture of:

(a) a weakly alkaline phenol formaldehyde condensate resin in aqueous solution with a phenolic compound to formaldehyde mol ratio of from 1:1.5 to 1:3.0, and with an alkali content of ≦ 15% by weight NaOH or KOH, related to the solids content of the resin;

(b) a difunctional isocyanate, poly-functional isocyanate or mixture thereof in a quantity of from 5% to 25% by weight, related to the resin (a); and

(c) a tertiary alkyl amine, aralkyl amine, alkylenpolyamine or mixture thereof in a quantity of from 0.1% to 5% by weight, related to the resin (a).

4,201,836

ALUMINUM SUBSTRATES GRAINED WITH A SATURATED SOLUTION OF ALUMINUM SALTS OF MINERAL ACIDS

Jen-Chi Huang, Yonkers, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,222
Int. Cl.² G03C *1/94;* B41N *3/02, 3/04;* C25F *3/04*
U.S. Cl. 428—457 **18 Claims**

1. A process for the treatment of an aluminum sheet to provide thereon a substantially consistent and uniformly roughened surface suitable for lithographic uses, which comprises immersing said aluminum in a saturated aqueous solution of an aluminum salt of a mineral acid.

10. A lithographic printing plate which comprises the aluminum sheet produced by the method of claim 1 and a lithographically suitable photosensitizer coated on said sheet.

4,201,837

BONDED AMORPHOUS METAL ELECTROMAGNETIC COMPONENTS

John H. Lupinski, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,261
Int. Cl.² G11B *5/16;* H01F *3/04;* B32B *15/08*
U.S. Cl. 428—457 **5 Claims**

1. A method for preparing a laminate composite for a magnetic core useful in a transformer or stator comprising the steps of

assembling a plurality of thin polymer-coated metal ribbons of a magnetic metal in an applied magnetic field, said magnetic metal being at least 50 percent amorphous and having the composition represented by the formula,

$$A_xZ_y$$

wherein A is one or more of Fe, Co, Ni, Mo, W, Cr, and V, Z is one or more of Si, C, B, P, Al, Sn, Sb, Ge, In, and Be, x is an atomic percentage of from 70–90, and y is an atomic percentage of from 30–10,

said polymer-coated ribbons being disposed in a plurality of layers, each of said layers being composed of a plurality of said polymer-coated ribbons arranged with at least one edge of each polymer-coated ribbon contiguous with an edge of another polymer-coated ribbon and said layers being disposed relative to each other so that abutting edges in contiguous layers are covered by solid magnetic metal,

simultaneously subjecting the polymer-coated ribbons so assembled to pressurization in excess of about 1000 psi and to heating to a temperature in excess of the annealing temperature and below the recrystallization temperature of said magnetic metal, and

converting the annealed assembly of ribbons as required to convert said assembly into a shaped laminate suitable for construction of said magnetic core.

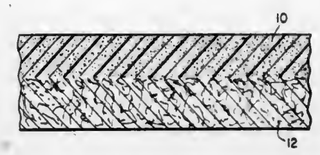
5. The laminate composite produced by the method of claim 1.

4,201,838

LAMINATED MICROPOROUS ARTICLE

Bruce S. Goldberg, Clifton, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 915,916
Int. Cl.² H01M *2/16*
U.S. Cl. 429—145 **9 Claims**



1. As an article of manufacture, a laminated microporous article combination comprising a first layer of microporous material, wherein the micropores are substantially all of a size less than 2 microns and a layer thickness of 2 mils and greater and a second layer of porous backing material laminated to said first layer, said second layer comprising a heat-bonded fibrous polyester non-woven web of a thickness of about 8 mils and greater and an electrical resistance, in a battery acid electrolyte, of about 0.25 mΩ in^2/mil, said laminate having a total thickness of about 10 to 40 mils for a backweb of a microporous layer and said backing material.

4,201,839

CELL CONTAINING AN ALKALI METAL ANODE, A SOLID CATHODE, AND A CLOSOBORANE AND/OR CLOSOCARBORANE ELECTROLYTE

Jack W. Johnson, and M. Stanley Whittingham, both of Fanwood, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 1, 1978, Ser. No. 956,746
Int. Cl.² H01M *6/14, 10/36*
U.S. Cl. 429—194 **44 Claims**

1. An electrochemical cell, comprising:

(a) an alkali metal-containing anode;

(b) a solid cathode; and,

(c) an electrolyte containing one or more compounds selected from the group consisting of:

(i) closoborane compounds of the formula:

$$Z_2B_nX_n$$

wherein Z is an alkali metal, B is boron, X is one or more substituents selected from the group consisting of hydrogen and the halogens, and n is an integer from 6 to 12; and,

(ii) closocarborane compounds of the formula:

$$ZCRB_mX_m$$

wherein Z, B and X are as defined above, C is carbon, and R is selected from the group consisting of inertly substituted and unsubstituted alkyls, aryls, alkaryls and aralkyls, hydrogen, and the halogens, said compounds being dissolved in aprotic organic solvent in the presence of a chelating agent sufficient to enable the migration of ions between said anode and said cathode.

4,201,840

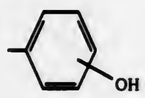
PHOTOGRAPHIC FILM UNITS CONTAINING A POLYMERIC MORDANT WHICH COVALENTLY BONDS WITH CERTAIN DYES

Gerald A. Campbell, Webster; Hyman Cohen, Hilton; Lewis R. Hamilton, and George Villard, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

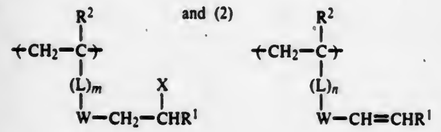
Division of Ser. No. 906,289, May 15, 1978, which is a continuation-in-part of Ser. No. 839,879, Oct. 6, 1977, abandoned. This application Feb. 22, 1979, Ser. No. 13,858
Int. Cl.² G03C *1/40, 1/48, 1/06, 1/10*
U.S. Cl. 430—17 **7 Claims**

1. A photographic element comprising a support; a layer comprising silver halide emulsion; and a layer containing non-uniformly and imagewise the reaction product of

(a) a photographically useful and/or active fragment having appended thereto a moiety selected from the group consisting of ZNHR, $-SO_2NHR$ and



wherein R is H or alkyl and Z is selected from the group consisting of alkylene, arylenealkylene, cycloalkylene and with R can be taken together with the NH to complete an N containing heterocyclic group and (b) a polymeric mordant, wherein said polymer contains recurring units having the formula selected from the group consisting of

(1)  and (2)

wherein

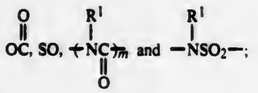
R^2 is H or alkyl;

R^1 is H, alkyl or aryl;

L is a bivalent linking group providing a linkage between the vinyl group and W selected from the group consisting of alkylene, arylene, arylenealkylene, $COOR^3$ and $CONHR^3$;

R^3 is selected from the group consisting of alkylene, arylene and arylenealkylene;

W is an electron withdrawing group selected from the group consisting of SO_2, CO,



m is 1 or 2;

n is 0 or 1;

with the proviso that when n is O, W is SO_2 or



and

X is a leaving group which can be displaced by nucleophiles or eliminated in the form of HX by treatment with base;

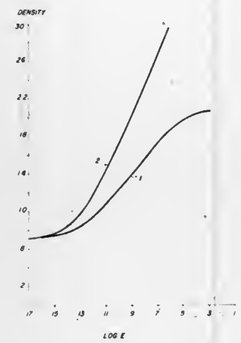
wherein said reaction product is formed (a) by displacement of X by said moiety in recurring unit (1), or (b) by addition of said moiety to the double bond of recurring unit (2).

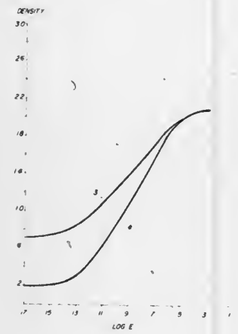
4,201,841

PROCESS FOR PREPARING PHOTOGRAPHIC ELEMENTS EXHIBITING DIFFERENTIAL MICRO- AND MACRO-AREA RECORDING CHARACTERISTICS

Nicholas H. Groet, and Jacque K. Lindsay, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,773
Int. Cl.² G03C *1/36*
U.S. Cl. 430—567 **9 Claims**





1. In a process of forming a photographic element capable of forming a micro-image of relatively high contrast and a macro-image of relatively low contrast comprising

coating onto a support one or more silver halide emulsion layers, each of the silver halide emulsion layers present in the photographic element being primarily responsive to an identical portion of the visible spectrum upon imagewise exposure of the photographic element, and

at least one of the emulsion layers containing silver haloiodide grains capable of forming a latent image upon imagewise exposure and a hydrophilic colloid suspending the grains,

the improvement comprising

in preparing at least one of the emulsion layers containing silver haloiodide grains, forming a blended silver halide emulsion by interspersing with the hydrophilic colloid suspended latent image-forming silver haloiodide grains additional silver halide grains which are surface fogged as though exposed to imaging radiation of maximum intensity to render them spontaneously developable independent of imagewise exposure of the photographic element, said additional, surface fogged silver halide grains being interspersed in a concentration of 0.1 to 20 percent, based on the total weight of silver halide.

4,201,842

RADIATION CURABLE SOLVENT-FREE COMPOSITIONS

Louis J. Lombardi, Roselle, and Roy J. Coyne, Hometown, both of Ill., assignors to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 405,407, Oct. 11, 1973, abandoned. This application Nov. 5, 1976, Ser. No. 739,183
Int. Cl.² G03C *1/68*
U.S. Cl. 430—281 **13 Claims**

1. A photosensitive solvent-free resin system curable by exposure to radiation comprising:

(a) from about 25 to about 75 weight percent of an ester of an ethylenically unsaturated organic acid and an aliphatic polyhydric alcohol;

(b) from about 1 to about 35 weight percent of a photoinitiator; and

(c) from about 5 to about 35 weight percent of a copolymer of styrene and an unsaturated alcohol having 3 carbon atoms, the relative amounts of said styrene and unsaturated alcohol in said copolymer being sufficient to provide improved web rub resistance, gloss and toughness to the cured resin system.

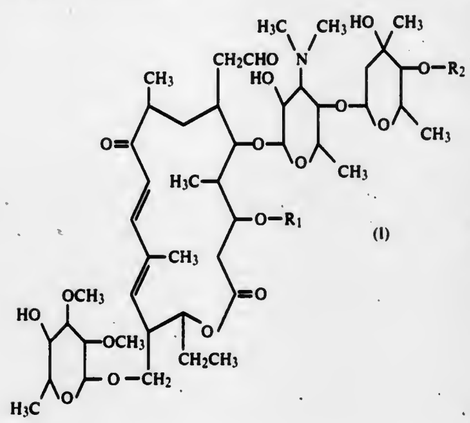
4,201,843

PROCESS FOR MANUFACTURING TYLOSIN DERIVATIVES

Rokuro Okamoto, Fujisawa; Tsumoru Fukumoto, Sagamihara; Akira Takamatsu, Yokohama, and Tomio Takeuchi, Tokyo, all of Japan, assignors to Sanraku Ocean Co., Ltd., Tokyo, Japan

Division of Ser. No. 708,151, Jul. 23, 1976, Pat. No. 4,092,473. This application Feb. 27, 1978, Ser. No. 881,279
Claims priority, application Japan, Aug. 1, 1975, 50/93053; Sep. 12, 1975, 50/110010; Dec. 27, 1975, 50/158388; May 15, 1976, 51/55626
Int. Cl.² C12P *19/62;* C12R *1/55*
U.S. Cl. 435—76 **25 Claims**

1. A process for producing acyl derivatives of tylosin having the general formula I,

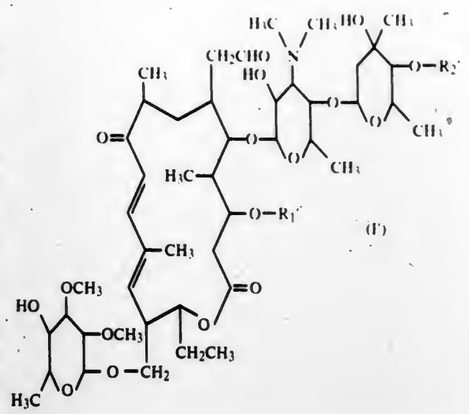


(I)

wherein

R_1 is H, acetyl or propionyl group and R_2 is H, n-butyryl or isovaleryl group, the case where both R_1 and R_2 are H being excluded, and

the acid addition salts thereof, from a tylosin substrate having the general formula I',



(I')

wherein

both R_1' and R_2' are H, or one of them is H and the other is C_2-C_5 acyl group,

which comprises incubating said tylosin substrate with a microbial agent obtained from a microorganism belonging to the genus Streptomyces and capable of acylating at least one hydroxyl group at the 3- and 4''-positions of said substrate in the presence of C_2-C_5 acyl donor, said microbial agent being selected from a growing cell in a culture medium, a resting cell, a dried cell, a cell homogenate of said microorganism, a supernatant solution and an enzymatic preparation obtained therefrom.

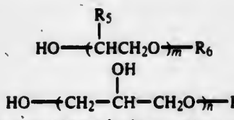
4,201,844

PROCESS FOR PRODUCING A HYDROXYFATTY ACID ESTER

Shigeo Inoue, Saitama, and Norioki Miyamoto, Yokkaido, both of Japan, assignors to Kao Soap Company, Limited, Tokyo, Japan

Filed Jul. 28, 1978, Ser. No. 928,867
Claims priority, application Japan, Aug. 1, 1977, 52/92427
Int. Cl.² C12P *7/62*
U.S. Cl. 435—135 **7 Claims**

1. A process for producing an hydroxyfatty acid polyhydric alcohol ester, which comprises; adding at least one polyhydric alcohol represented by the formula (III) or (IV),



(III)

(IV)

wherein R_5 represents a hydrogen atom or a methyl group, R_6 represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, and m and n represent integers from 1 to 6, to hydrated Sophorolipid which is a fermentation product of *Torulopsis bombicola;* removing water by distillation under reduced pressure whereby a mother liquor is generated; and subjecting the resulting mixture to an alcoholysis reaction by adding an acid catalyst to the mother liquor.

4,201,845

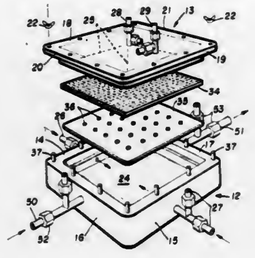
CELL CULTURE REACTOR

Joseph Feder, University City, Mo.; Katharine Ku, San Francisco, Calif., and Mau-Jung Ku, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 676,100, Apr. 12, 1976, Pat. No. 4,087,327. This application Feb. 6, 1978, Ser. No. 875,464

Int. Cl.[2] C12K 9/00; C12B 1/10

U.S. Cl. 435—285 10 Claims



1. A cell culture reactor comprising: a housing, a reaction chamber within said housing, external culture medium inlet and outlet means disposed in walls in said housing and in fluid communication with said chamber, a plurality of elongate, selectively permeable, open ended hollow fibers arranged in a shallow layer within said chamber whereby the open ends of said fibers lead to external inlet and outlet gas means disposed in walls in said housing and in gaseous communication with the interior of said hollow fibers, and microporous distributor plate means adapted to provide a substantially uniform culture medium flow path substantially transverse to the plane of the elongate axes of said fibers, said hollow fibers being permeable to air and oxygen and said microporous distributor plate means being positioned substantially parallel to said fiber layer and between said fiber layer and said medium inlet means.

10. A cell culture reactor module comprising, a hollow receptacle for incubation containing parallel shelves capable of supporting cell culture reactors in a spaced-apart manner, a plurality of vertically stacked and spaced-apart cell culture reactors disposed on said shelves within said hollow receptacle for incubation, each said reactor comprising: a housing, a reaction chamber within said housing, external culture medium inlet and outlet means disposed in walls in said housing and in fluid communication with said chamber, a plurality of elongate, selectively permeable, open ended hollow fibers arranged in a shallow layer within said chamber whereby the open ends of said fibers lead to external inlet and outlet gas means disposed in walls in said housing and in gaseous communication with the interior of said hollow fibers, and microporous distributor plate means adapted to provide a substantially uniform culture medium flow path substantially transverse to the plane of the elongate axes of said fibers, said hollow fibers being permeable to air and oxygen and said microporous distributor plate means being positioned substantially parallel to said fiber layer and between said fiber layer and said medium inlet means, common culture medium inlet and outlet means contained in a wall of said hollow receptical which provide fluid communication with each respective common culture medium inlet and outlet means in each of said cell culture reactors and a common gas inlet and outlet means contained in a wall of said hollow recepticle which provide gaseous communication with each respective common gas inlet and outlet means in each of said cell culture reactors.

4,201,846

DIMENSIONALLY STABLE POLYURETHANE FOAM

Clifton L. Kehr, Silver Spring; Louis L. Wood, Rockville; Nelson S. Marans, Silver Spring, and Glenn E. Fulmer, Clarksville, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 854,600, Nov. 25, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,600

Int. Cl.[2] C08G 18/14

U.S. Cl. 521—137 19 Claims

1. A reinforced, hydrophilic polyurethane foam comprising a poly(urea-urethane) foam matrix having an oxyalkylene backbone containing at least 40 mole percent oxyethylene, said foam matrix having uniformly distributed therein 1.0 to 15% by weight of the foam matrix of substantially hydrophilic, reinforcing fibers selected from the group consisting of polyvinyl alcohol homopolymer and copolymers of polyvinyl alcohol, and polyvinyl chloride.

4,201,847

PROCESS OF PREPARING FOAMS WITH INTERNAL MOLD-RELEASE AGENTS

Helmut Kleimann; Wulf von Bonin, both of Leverkusen, and Heinz-Georg Schneider, Gummersbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 438,071, Jan. 30, 1974, abandoned. This application Jul. 13, 1978, Ser. No. 924,260

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1973, 2307589

Int. Cl.[2] C08G 18/14, 18/36

U.S. Cl. 521—172 12 Claims

1. In a process for the production of molded articles of polyurethane foam by foaming a reaction mixture in a closed mold, said reaction mixture comprising a polyisocyanate, an organic compound containing at least two hydrogen atoms reactive with isocyanates, and a blowing agent, the improvement wherein said polyisocyanate consists of the reaction product of

(a) an organic polyisocyanate, and

(b) from 0.5 to 25% by weight based on the quantity of said organic polyisocyanate, of an active hydrogen-containing fatty acid ester prepared by reacting an alcohol with an aliphatic, saturated or unsaturated fatty acid, said ester being characterized in that at least one aliphatic acid which contains more than 8 carbon atoms is built into the molecule, said ester further characterized as having an acid number of 0 to 100 and a hydroxyl number of 0 to 150 with at least one of said numbers being greater than 0 and said ester having an average molecular weight of from 500 to 5000.

4,201,848

PROCESS FOR PREPARING POLYMERS HAVING HIGH MOLECULAR WEIGHT

Teizo Kotani; Takashi Inoue, and Kozo Arai, all of Yokohama, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 752,925, Dec. 21, 1976, abandoned. This application Feb. 28, 1978, Ser. No. 881,914

Claims priority, application Japan, Jan. 1, 1976, 51-297; Jan. 1, 1976, 51-298; Jan. 1, 1976, 51-299

Int. Cl.[2] C08F 297/04

U.S. Cl. 525—314 2 Claims

1. A block copolymer of an aromatic alkenyl compound and a conjugated diolefin having extremely high molecular weight comprising

(A) at least one poly (aromatic alkenyl) block having atactic structure with molecular weight (Mw) of 1,000,000 to 30,000,000, and

(B) at least one poly (conjugated diolefin) block having microstructure of 15–30% by weight of cis-1,4, 60–75% by weight of trans-1,4 and 10–25% by weight of vinyl

structure with molecular weight (Mw) of 50,000 to 10,000,000,

the proportion of said poly (aromatic alkenyl) block in the block copolymer being 10 to 95% by weight.

4,201,849

ACETAL RESIN COMPOSITION

Masaharu Kimura, Tokyo; Yoshiharu Otuki, Urawa; Akitoshi Sugio, Ohmiya, and Tomotaka Furusawa, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 891,121, Mar. 28, 1978, abandoned. This application Nov. 28, 1978, Ser. No. 964,445

Claims priority, application Japan, Apr. 1, 1977, 52-36207

Int. Cl.[2] C08G 63/68

U.S. Cl. 525—401 5 Claims

1. An acetal resin composition comprising an admixture of 100 parts by weight of an acetal resin and 0.01 to 15 parts by weight of a petroleum resin, said petroleum resin being prepared by polymerizing a cracked petroleum fraction boiling between −15° C. and 200° C. and containing unsaturated hydrocarbons, and having a molecular weight in the range of 400 to 2500 and a second order transition temperature in the range of 35° to 90° C.

4,201,850

STEREOREGULATED COPOLYMERS OF BUTADIENE AND PIPERYLENE

Erik G. M. Tornqvist, Scotch Plains, and Albert M. Gessler, Cranford, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 767,146, Feb. 9, 1977, abandoned, which is a division of Ser. No. 665,318, Mar. 9, 1976, abandoned, which is a division of Ser. No. 490,284, Jul. 22, 1974, Pat. No. 3,972,862. This application Aug. 7, 1978, Ser. No. 931,472

Int. Cl.[2] C08F 4/64

U.S. Cl. 526—337 1 Claim

1. Copolymer of 1,3-butadiene and piperylene containing at least 50 mol percent 1,3-butadiene characterized by: (a) A random distribution of monomer units in the polymer chain; (b) Vinyl unsaturation pendant to the main polymer chain at a level from about 1.0 percent to less than 10 percent of the total unsaturation present in the polymer; (c) Enchainment of at least 95 percent of piperylene monomer units in a 1,2-trans and 1,4-trans stereoisomeric configuration; and (d) Selective enchainment of between about 50 and 95 percent of the butadiene monomer units in the 1,4-trans-stereoisomeric configuration.

4,201,851

ORGANIC PHENOL EXTRACT COMPOSITIONS OF PECAN PITH AGRICULTURAL RESIDUES AND METHOD

Chia-Ming Chen, 205 Dove Valley Dr., Athens, Ga. 30606

Division of Ser. No. 814,920, Jul. 12, 1977. This application Mar. 30, 1978, Ser. No. 891,596

Int. Cl.[2] C08G 83/00

U.S. Cl. 528—1 16 Claims

1. Phenolic compounds and protein containing extract composition consisting essentially of that portion of pecan piths that has been reacted with an aqueous alkaline solution to form a water-soluble or water-suspendible composition containing phenolic compounds and at least 2% by weight of crude protein based upon 100% by weight of total extracted organic substances.

4,201,852

POLYURETHANES BASED ON MODIFIED POLYISOCYANATES CONTAINING SULPHONIC ACID ESTER GROUPS AND PROCESS FOR THE PRODUCTION THEREOF

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 3, 1977, Ser. No. 848,068

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1976, 2651065

Int. Cl.[2] C07C 143/68; C08G 18/77, 18/79

U.S. Cl. 528—67 10 Claims

1. A process for the preparation of modified polyisocyanates containing sulphonic acid alkyl ester groups, which may contain the isocyanate groups at least partly in dimerized form, characterized in that isocyanatoaryl sulphonic acids which contain at least two isocyanate groups and in which the isocyanate groups may be at least partly in dimerized form, are reacted with oxiranes and/or oxetanes at temperatures of from 0° to 190° C., the nature and proportions of the reactants being chosen so that the equivalent ratio of the total quantity of isocyanate groups, including the isocyanate groups which may be present in dimerized form, to the quantity of sulphonic acid groups is greater than 1 and the equivalent ratio of oxirane and/or oxetane groups to sulphonic acid groups is from 0.1:1 to 10:1.

10. In the production of oligomeric or polymeric polyaddition products comprising reacting organic polyisocyanates with active hydrogen containing materials, the improvement wherein said polyisocyanate comprises

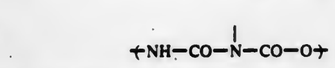
(a) from about 4 to about 48%, by weight, of isocyanate groups, which may be partly in dimerized form;

(b) from about 0.3 to about 38%, by weight, of groups of the formula $-SO_2-O-$ forming part of an aryl sulphonic acid alkyl ester group;

(c) from 0 to about 36%, by weight, of SO_3H groups;

(d) from 0 to about 25%, by weight, of urethane groups —NH—CO—O—; and

(e) from 0 to about 28%, by weight, of allophanate groups



the groups mentioned under (d) and (e) together amounting to from at least 0.4%, by weight, to not more than 28%, by weight, and the groups mentioned under (b) and (c) together amounting to not more than 38%, by weight.

4,201,853

POLYMERIC BINDERS OF NITRATED PHENOLS AND POLYISOCYANATES WHICH REVERSIBLY DISSOCIATE AT ELEVATED TEMPERATURES

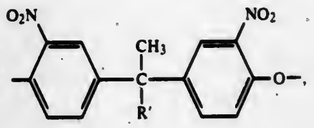
Ronald A. Henry, China Lake, and Eugene C. Martin, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1978, Ser. No. 907,067

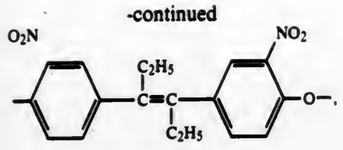
Int. Cl.[2] C08G 18/06, 18/28

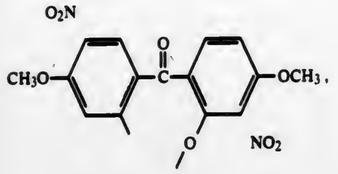
U.S. Cl. 528—85 6 Claims

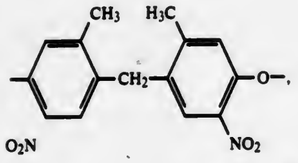
1. The polymers having the structure: $(A\text{-}B)_y$ wherein y is a positive integer, wherein the linkages between A and B are formed by the reaction of hydroxy groups and isocyanate groups, wherein A is selected from the group consisting of:

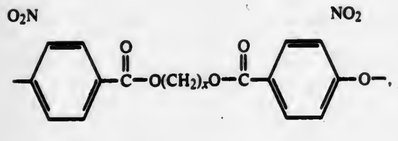


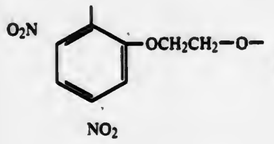
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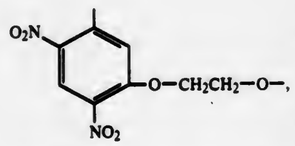




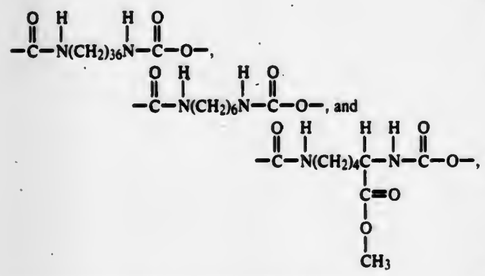




and



with R' being selected from the group consisting of CH_3, C_2H_5, n-C_4H_9, n-C_5H_{11}, n-C_6H_{13}, and n-C_7H_{15}, and x being a positive integer selected from 6 and 10 and wherein B is selected from the group consisting of:



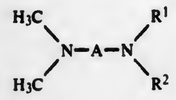
said polymers being reversibly dissociable.

4,201,854
CURABLE EPOXIDE RESIN MIXTURES

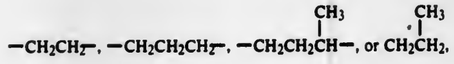
Helmut Zondler, Bottmingen, and Hans Lehmann, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,488
Claims priority, application Switzerland, Oct. 20, 1977, 12792/77
Int. Cl.[2] C08G *59/50, 59/54*
U.S. Cl. 528—121 14 Claims

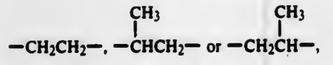
1. A curable mixture comprising:
(a) a polyepoxide compound having an average of more than one epoxide group per molecule; and
(b) a curing agent of the formula



wherein A is



R^1 is hydrogen, acyl or a group of the formula A'CN or $A'CH_2NH_2$ where A' is



or together with R^2 is alkylidene, alkenylidene, cycloalkylidene or cycloalkenylidene,

R^2 is a saturated or olefinically unsaturated aliphatic radical, a saturated or olefinically unsaturated cycloaliphatic radical or said aliphatic or cycloaliphatic radical substituted with an aryl group, or a group of the formula A'CN or $A'CH_2CN$.

4,201,855
NOVEL POLYESTERS AND PREPARATION THEREOF BY INTERFACIAL CONDENSATION OF BIFUNCTIONAL ACID HALIDES OR ANHYDRIDES WITH BISPHENOLS

Leon Segal, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 17, 1977, Ser. No. 807,755
Int. Cl.[2] C08G *63/18*
U.S. Cl. 528—125 24 Claims

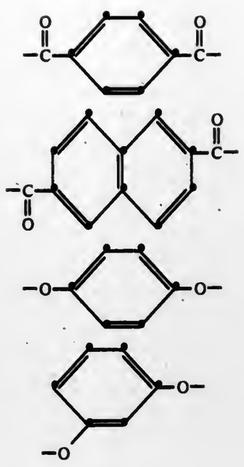
1. A process for preparing polyesters comprising condensing a halide or anhydride of an aromatic dicarboxylic acid dissolved in an alkyl halide and/or aromatic hydrocarbon with a bisphenol dissolved in a mixture of an alkaline hydroxide and a polyhydroxy derivative of a liquid aliphatic hydrocarbon, ether or amine.

4,201,856
LIQUID CRYSTAL COPOLYESTERS CONTAINING TEREPHTHALIC ACID, 2,6-NAPHTHALENEDICARBOXYLIC ACID, HYDROQUINONE AND RESORCINOL

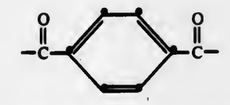
Winston J. Jackson, Jr., and John C. Morris, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1978, Ser. No. 903,437
Int. Cl.[2] C08G *63/18*
U.S. Cl. 528—190 2 Claims

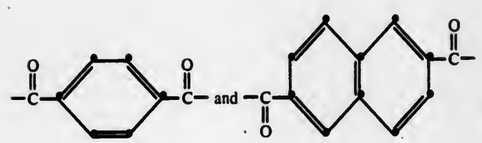
1. A copolyester having a fiber-forming molecular weight consisting essentially of the following divalent radicals:



wherein the range of

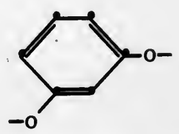


is from 20 to 50 mole percent, based on the total moles of

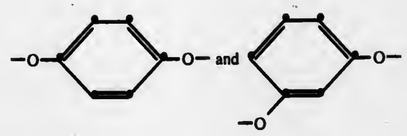


and

combined, and the range of



is from 20 to 50 mole percent, based on the total moles of



combined.

4,201,857
NOVEL CONDENSATION PRODUCTS HAVING HIGH ACTIVITY TO INSOLUBILIZE PROTEINS AND PROTEIN-INSOLUBILIZED PRODUCTS

Victor Krasnobajew, Zollikerberg, and Regula Boeniger, Greifensee, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Continuation-in-part of Ser. No. 440,438, Feb. 7, 1974, abandoned, and a continuation-in-part of Ser. No. 571,187, Apr. 24, 1975, abandoned, which is a division of Ser. No. 440,438,.
This application Aug. 19, 1975, Ser. No. 605,965
Claims priority, application Switzerland, Feb. 22, 1973, 2603/73
Int. Cl.[2] C08G *12/08*
U.S. Cl. 525—398 2 Claims

1. A process for the preparation of a condensation product, which process comprises reacting 1,3-phenylene-diamine with glutardialdehyde to form a product insoluble in water and inert, water-immiscible organic solvents, and diazotizing said product.

4,201,858
METHOD OF PREPARING POLYACETAL CARBOXYLATES

Marvin M. Crutchfield, St. Louis, and Charles J. Upton, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 926,683, Jul. 21, 1978, which is a continuation of Ser. No. 844,566, Nov. 21, 1977, abandoned.
This application Dec. 11, 1978, Ser. No. 967,922
Int. Cl.[2] C08G *2/14, 2/36*
U.S. Cl. 528—232 15 Claims

1. A method which comprises bringing together under polymerization conditions, an ester of glyoxylic acid and a polymerization initiator that will stabilize one end of up to 100 percent of the chains in the resulting polymer against rapid depolymerization in alkaline solution.

4,201,859
RANDOM COPOLYESTER ADHESIVE RESINS

Maya Agarwal, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 26, 1979, Ser. No. 23,871
Int. Cl.[2] C08L *63/18*
U.S. Cl. 528—302 6 Claims

1. As a composition of matter a linear random copolyester having an intrinsic viscosity ranging from 0.5 to 1.0 deciliters per gram as determined in a 60/40 by volume mixed solvent system of phenol and tetrachloroethane at 30° C. and suitable for use as a solution adhesive, said copolyester being the polymeric reaction product of a mixture of reactants consisting of
(a) ethylene glycol
(b) terephthalic acid or a lower C_1–C_4 dialkyl ester thereof
(c) phthalic acid or phthalic anhydride
(d) an aliphatic dicarboxylic acid selected from the group consisting of unsubstituted and lower alkyl substituted aliphatic dicarboxylic acids containing from 5 to 12 carbon atoms in the linear chain or lower C_1–C_4 dialkyl ester thereof
in which mixture the amount of terephthalic acid or lower C_1–C_4 dialkyl ester thereof ranges from 5 to 55 mol percent, the amount of phthalic acid or phthalic anhydride ranges from 5 to 40 mol percent and the amount of aliphatic dicarboxylic acid or lower C_1–C_4 dialkyl ester thereof ranges from 5 to 65 mol percent, all percentages being based on the total mols of the acid constituents or reactive equivalents thereof in said mixture.

4,201,860

PURINE DERIVATIVES

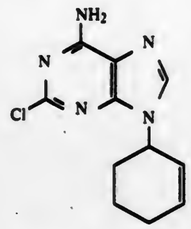
Takayuki Naito, Kawasaki; Susumu Nakagawa, Tokyo; Tetsuro Yamasaki; Taka-aki Okita, both of Ichikawa, and Haruhiro Yamashita, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 904,146, May 9, 1978. This application Jan. 4, 1979, Ser. No. 859

Int. Cl.[2] C07D *473/32*

U.S. Cl. 544—277 **2 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof.

4,201,861

ACYL DERIVATIVES OF C-076 COMPOUNDS

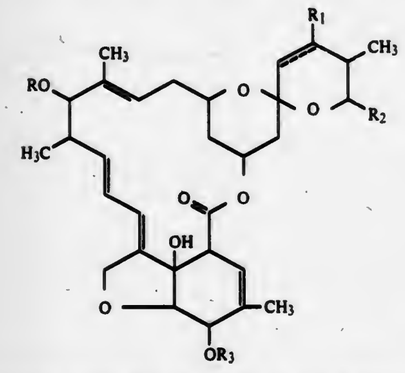
Helmut H. Mrozik, Matawan; Michael H. Fisher, Bridgewater, and Peter Kulsa, Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 839,099, Oct. 3, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 896,947

Int. Cl.[2] C07H *17/08*; C07D *493/22, 491/22*

U.S. Cl. 536—17 A **16 Claims**

1. A compound having the formula:



wherein the broken line indicates a single or a double bond;

R_1 is hydroxy or acyloxy and is present only when the broken line indicates a single bond;

R_2 is iso-propyl or sec-butyl;

R_3 is hydrogen, methyl or acyl; and

R is hydrogen, acyl, α-L-oleandrosyl, 4'-acyl-α-L-oleandrosyl, 4'-(α-L-oleandrosyl)-α-L-oleandrosyl, 4''-acyl-4'-(α-L-oleandrosyl)-α-L-oleandrosyl;

provided that at least one of the R, R_1 or R_3 groups contains an acyl group, and further that said acyl and the acyl portion of said acyloxy group is selected from loweralkanoyl; substituted loweralkanoyl wherein the substituents are halogen, carboxy, loweralkoxycarbonyl, amino, mono- or di-loweralkylamino, or loweralkanoylamino; unsaturated loweralkanoyl, loweralkoxycarbonyl, halogenated loweralkoxycarbonyl, benzoyl, or substituted benzoyl in which the substituents are halogen, nitro, alkyl, amino, hydroxy or alkoxy; carbamoyl, and N-substituted and N,N-disubstituted carbamoyl wherein the substitution is loweralkyl, benzyl, hydroxyloweralkyl or the carbamoyl nitrogen may be incorporated into a morpholine heterocycle.

4,201,862

2-AZAERGOLINES AND 2-AZA-8(OR 9)-ERGOLENES

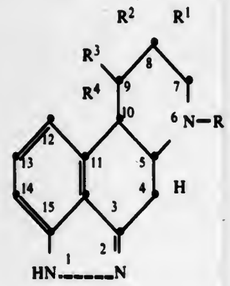
Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 16, 1979, Ser. No. 21,055

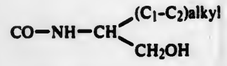
Int. Cl.[2] C07D *471/06*

U.S. Cl. 546—67 **5 Claims**

1. A compound of the formula



wherein R is H, methyl, ethyl and n-propyl, R^1 is $COO(C_1$-$C_3)$alkyl,



or CH_2X wherein X is SCH_3, SO_2CH_3, OCH_3, Cl, Br, OH, CN, $OSO_2(C_1$-$C_3)$-alkyl, O-tosyl or OSO_2phenyl;

R^2, R^3 and R^4 when taken singly are H, and when taken together as adjacent pairs with the carbon atoms to which they are attached, a double bond, and acid addition salts thereof.

4,201,863

N^2-ARYLSULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shosuke Okamoto, 15-18, Asahigaoka 3-chome, Tarumi-ku, Kobe-shi, Hyogo, Japan; Akiko Hijikata, Kobe, Japan; Ryoji Kikumoto, Machida, Japan; Yoshikuni Tamao, Yokohama, Japan; Kazuo Ohkubo, Machida, Japan; Tohru Tezuka, Yokohama, Japan, and Shinji Tonomura, Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo and Shosuke Okamoto, Hyogo, both of, Japan

Continuation-in-part of Ser. No. 844,188, Oct. 21, 1977, Pat. No. 4,117,127, which is a division of Ser. No. 760,745, Jan. 19, 1977, Pat. No. 4,066,773, which is a continuation-in-part of Ser. No. 653,217, Jan. 28, 1976, Pat. No. 4,055,651, Ser. No. 713,486, Aug. 11, 1976, Pat. No. 4,073,914, Ser. No. 671,436, Mar. 29, 1976, Pat. No. 4,066,758, Ser. No. 703,704, Jul. 8, 1976, Pat. No. 4,069,323, said Ser. No. 671,436, is a division of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Aug. 31, 1978, Ser. No. 938,711

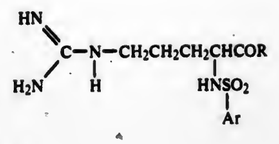
Claims priority, application Canada, Dec. 16, 1977, 293199

The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.

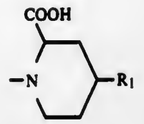
Int. Cl.[2] C07D *215/36*; A61K *31/47*

U.S. Cl. 546—166 **8 Claims**

1. An N^2-arylsulfonyl-L-argininamide of the formula (I):



wherein R is



wherein R_1 is hydrogen or C_1-C_5 alkyl; and Ar is 1,2,3,4-tetrahydro-8-quinolyl optionally substituted with at least one C_1-C_3 alkyl.

4,201,864

OXY-ALKYLAMINO ACIDS AND ESTERS

Frederick Cassidy, Harlow, and Gordon Wootton, Sawbridgeworth, both of England, assignors to Beecham Group Limited, Great Britain

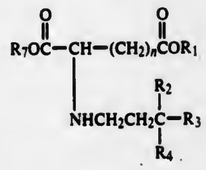
Division of Ser. No. 732,726, Oct. 15, 1976, Pat. No. 4,138,407. This application Nov. 22, 1978, Ser. No. 962,875

Claims priority, application United Kingdom, Oct. 25, 1975, 43990/75; May 22, 1976, 21278/76

Int. Cl.[2] C07C *101/20*

U.S. Cl. 560—39 **12 Claims**

1. A compound of the formula:



wherein n has a value of 4 to 8;

each of R_1 and R_7 is hydrogen or the residue of an alcohol R_1OH or R_7OH containing 1 to 12 carbon atoms;

R_2 when taken independently of R_4 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 is hydroxy, acyloxy of 1 to 4 carbon atoms or benzyloxy;

R_4 when taken independently of R_2 is alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 5 to 8 carbon atoms, phenyl or naphthyl; cycloalkyl of 5 to 8 carbon atoms; phenyl; or naphthyl; any of said phenyl or naphthyl groups being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or nitro; or

R_2 and R_4 together with the carbon atom to which they are attached are cycloalkylidene of 5 to 8 carbon atoms.

4,201,865

NOVEL PROSTAGLANDIN ANALOGUES

Umberto Guzzi, and Romeo Ciabatti, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

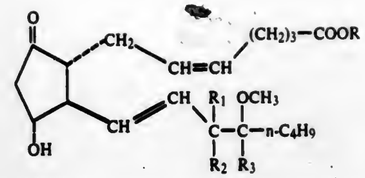
Continuation-in-part of Ser. No. 649,176, Jan. 15, 1976, abandoned. This application Feb. 10, 1978, Ser. No. 876,607

Int. Cl.[2] C07C *177/10*

U.S. Cl. 560—121 **3 Claims**

1. Compounds of formula

(I)



wherein R is an alkyl group having from 1 to 4 carbon atoms, R_1 is hydrogen, R_2 is hydroxy or R_1 and R_2 taken together represent a group oxo, R_3 is hydrogen or methyl.

4,201,866

O-HEMI-SUCCINATE OF PROPRANOLOL

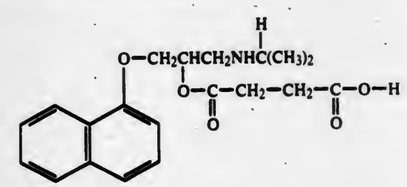
Jun Hasegawa, Clinton, N.Y., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 759,947, Jan. 17, 1977, abandoned. This application Dec. 12, 1977, Ser. No. 859,628

Int. Cl.[2] C07C *69/40*

U.S. Cl. 560—194 **1 Claim**

1. A compound of the formula



and its pharmaceutically acceptable salts.

4,201,867

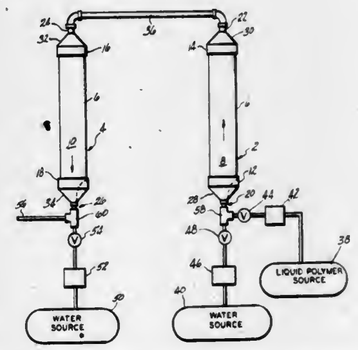
LIQUID POLYMER HYDRATION

Kenneth E. Gasper, Overland Park, Kans., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 16, 1978, Ser. No. 961,310

Int. Cl.[2] C07C *69/54, 103/133*

U.S. Cl. 560—205 **3 Claims**



1. A method of hydrating liquid polymers comprising:

(a) feeding a liquid polymer to the inlet of a first packed mixing column via a first metering means and a first check valve;

(b) feeding water simultaneously to said inlet via a second metering means and a second check valve, the weight ratio of water to liquid polymer being fed being greater than about 100:1;

(c) passing said mixture through said first packed mixing column at a velocity of less than about 1 foot per second;

(d) then passing said mixture through a reducing passageway at a velocity of less than about 7 feet per second;
(e) then passing said mixture through a second packed mixing column at a velocity of less than 1 foot per second, said overall passage time of steps (c), (d) and (e) being sufficient to effect a homogeneous hydrated mixture free of insoluble masses; and
(f) withdrawing said homogeneous hydrated mixture from said second mixing column.

2. The method of claim 1 wherein said homogeneous hydrated mixture is further diluted from about 1 to about 10 times with additional water after step (f).

3. The method of claim 1 wherein said liquid polymer is selected from the group consisting of polyacrylamides, polyquaternaryamides, cationic-modified polyacrylamides, anionic-modified polyacrylamides and polyacrylates.

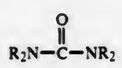
4,201,868

REACTION OF METHANOL WITH SYNTHESIS GAS

William E. Slinkard, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 611,117, Sep. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 555,646, Mar. 5, 1975, abandoned. This application Feb. 25, 1977, Ser. No. 772,368
Int. Cl.² C07C *67/36, 69/14*
U.S. Cl. 560—232 **6 Claims**

1. In a process for reacting methanol in the liquid phase at elevated temperature and superatmospheric pressure with a gas comprising carbon monoxide and hydrogen to form a product comprising methyl acetate, acetaldehyde, and dimethylacetal, the improvement which comprises utilizing a catalytic amount of a halide-free catalyst consisting essentially of a cobalt carbonyl in complex combination with an organic nitrogen ligand of from one to 25 carbon atoms having no ethylenic or acetylenic unsaturation and no elements other than carbon, nitrogen, oxygen, and hydrogen, said ligand containing in its molecule from 1 to 5 Lewis base nitrogen atoms which are present as urea, tertiary amino or nitrilo nitrogen atoms, said ligand being, when said nitrogen atoms are urea nitrogens, a urea of the formula



wherein R is hydrogen or a C_1 to C_9 hydrocarbon group and wherein each R group may be alike or different.

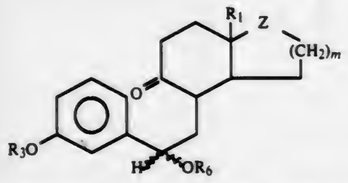
4,201,869

INTERMEDIATES FOR STEROID TOTAL SYNTHESIS PROCESS UTILIZING ASYMMETRIC INDUCTION

Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 616,222, Sep. 24, 1975, Pat. No. 4,092,483, which is a division of Ser. No. 406,980, Oct. 16, 1973, Pat. No. 3,932,519, which is a division of Ser. No. 100,372, Dec. 21, 1970, abandoned. This application Feb. 21, 1978, Ser. No. 879,328
Int. Cl.² C07C *49/84, 69/16*
U.S. Cl. 560—255 **3 Claims**

1. A compound of the formula:



where R_3 is a cycloalkyl group or a primary alkyl group of from 1 to 8 carbon atoms; R_6 is hydrogen or lower acyl derived from a lower aliphatic hydrocarbyl monocarboxylic acid; R_1 is a primary alkyl group of from 1 to 5 carbon atoms; Z is carbonyl and m is 1 or 2.

4,201,870

PROCESS FOR THE PREPARATION OF 2-(3-BENZOYLPHENYL)-PROPIONIC ACID

Boris Zupancic, Ljubljana, Yugoslavia, assignor to LEK Tovarna Farmacevtskih in Kemicnih Izdelkov, n.sol.o., Ljubljana, Yugoslavia

Filed Oct. 17, 1977, Ser. No. 842,824
Claims priority, application Yugoslavia, Oct. 18, 1976, 2548/76
Int. Cl.² C07C *69/76, 65/20*
U.S. Cl. 562—460 **10 Claims**

1. A process for the preparation of 2-(3-benzoylphenyl)-propionic acid or salt thereof, characterized in that 3-benzoylphenyl acetonitrile or an alkoxide thereof comprising 1 to 4 carbon atoms in the alkoxy moiety is reacted with a methylating agent in a two-phase system, at a gradually increasing temperature within the range of −5° to +30° C. and in the presence of a quaternary ammonium compound, whereupon the mixture is hydrolized to thereby provide said acid.

4,201,871

PROCESS FOR RECOVERING TEREPHTHALIC ACID

Masatoshi Tanouchi; Hiroshi Takeuchi; Kazuki Ban, and Yoshiyuki Asahina, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1979, Ser. No. 14,216
Claims priority, application Japan, Feb. 23, 1978, 53-20225; May 27, 1978, 53-63474; Dec. 26, 1978, 53-159274
Int. Cl.² C07C *51/42*
U.S. Cl. 562—486 **23 Claims**

1. In a process for recovering highly pure terephthalic acid from a reaction mixture containing terephthalic acid crystals suspended in mother liquor obtained by liquid-phase oxidation of a para-substituted aromatic compound in an acetic acid with a gas containing molecular oxygen in the presence of oxidizing catalyst under such condition that the reaction temperature is 100° to 250° C. and the water content of the reaction system is 2 to 15% by weight based on said acetic acid, the improvement which comprises, without cooling and without subjecting to solid-liquid separation, feeding said hot reaction mixture suspension to a single tower, wherein the suspension is brought into continuous countercurrent contact with acetic acid containing water ascending at a linear velocity of 0.005 to 5 cm/second at a temperature not lower than the oxidation temperature by more than 10° C., the average residence time of terephthalic acid crystals in the tower being 30 seconds or more, thereby to replace the mother liquor of the suspension with said acetic acid containing water recovering said mother liquor as the overflow effluent from the tower, while discharging as the underflow effluent the resulting suspension of terephthalic acid crystals in substantially pure acetic acid and separating highly pure terephthalic acid crystals from the suspension.

4,201,872

PROCESS FOR PREPARING PURIFIED TEREPHTHALIC ACID

Tsuneo Kimura, and Hiroshi Hashizume, both of Kita-Kyushu, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Aug. 12, 1976, Ser. No. 713,825
Claims priority, application Japan, Aug. 26, 1975, 50/103230
Int. Cl.² C07C *51/42*
U.S. Cl. 562—487 **10 Claims**

1. A process for purifying terephthalic acid which is obtained by liquid phase oxidation of p-dialkylbenzene in water at

high temperature under high pressure, which consists essentially of:

contacting an aqueous solution of crude terephthalic acid obtained from the oxidation step with a catalyst of palladium supported on active carbon to effect decarbonylation of the 4-carboxybenzaldehyde impurity in the crude terephthalic acid under the pressure of an ambient atmosphere comprising steam and carbon monoxide in the range of $Po \leqq P \leqq Po+5$, said carbon monoxide present being only derived by the decarbonylation of said 4-carboxybenzaldehyde, wherein Po represents the vapor pressure (kg/cm^2) of the aqueous solution at the reaction temperature of 200° C. to 320° C.; and

cooling the solution to effect separation by crystallization of pure terephthalic acid from solution thereby leaving water soluble impurities comprising benzoic acid formed by said decarbonylation in said solution.

4,201,873

9-DEOXY-9,10-DIDEHYDRO-PGD$_2$ ANALOGS

David C. Peterson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 17, 1975, Ser. No. 614,244
Int. Cl.² C07C *177/00*
U.S. Cl. 562—503 **1 Claim**

1. 9-Deoxy-9,10-didehydro-PGD$_2$.

4,201,874

3-ISOPROPENYL-6-HEPTENOIC ACID

Richard J. Anderson, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 886,324, Mar. 13, 1978. This application Nov. 24, 1978, Ser. No. 963,548
Int. Cl.² C07C *57/02*
U.S. Cl. 562—598 **2 Claims**

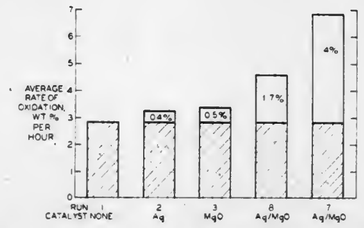
1. The compound, 3-isopropenyl-6-heptenoic acid.

4,201,875

CATALYST AND PROCESS FOR PRODUCING HYDROPEROXIDES

Yulin Wu; Marvin M. Johnson, and Gerhard P. Nowack, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 1, 1978, Ser. No. 930,077
Int. Cl.² C07C *179/02*
U.S. Cl. 568—575 **26 Claims**



1. A process for producing an organic hydroperoxide comprising reacting an organic compound having at least one carbon-hydrogen bond capable of being oxidized to a hydroperoxide-carbon bond with oxygen in the presence of a catalyst comprising metallic silver or silver-gold alloy supported on an inorganic support selected from the group consisting of at least one of the oxides and carbonates of metals of Groups IIa, IIb, IIIb, and IVb wherein said organic compound is selected from the group consisting of (1) hydrogenated polymers of conjugated diolefins and (2) organic compounds having 3 to 50 carbon atoms and the general formula



wherein R is hydrogen, an alkyl radical, or an aromatic radical, each R′ is individually selected from hydrogen or an alkyl radical, or the two R′ groups are joined to form a saturated hydrocarbyl ring, and wherein said reaction is carried out at a temperature in the range of about 25° C. to about 200° C.

15. A process for the production of cyclohexylbenzene hydroperoxide comprising contacting cyclohexylbenzene in the liquid phase with a gas containing free oxygen in the presence of a catalyzing amount of a catalyst comprising metallic silver or silver-gold alloy supported on an inorganic support selected from the group consisting of at least one of the oxides and carbonates of metals of Groups IIa, IIb, IIIb, and IVb, wherein said contacting is carried out under reaction conditions such that cyclohexylbenzene hydroperoxide is produced, said reaction conditions including a temperature in the range of about 25° C. to about 200° C. and a pressure of about 0 to about 1000 psig.

4,201,876

FLUORINE CONTAINING POLYETHERS

Warren R. Griffin, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 8, 1976, Ser. No. 748,582
Int. Cl.² C07C *43/02*
U.S. Cl. 568—677 **3 Claims**

1. A process for preparing a fluorine-containing polyether which comprises the steps of:

a. reacting perfluoroglutaryl chloride with 1,5-hexafluoropentane diol in the presence of a catalytic amount of dimethylformamide so as to obtain a fluorinated polyester; and

b. reacting the fluorinated polyester with sulfur tetrafluoride in the presence of hydrogen fluoride, thereby obtaining a fluorine-containing polyether product.

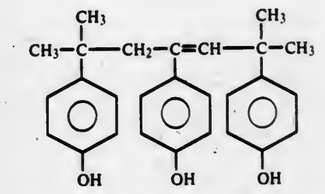
4,201,877

PROCESS FOR PRODUCING A LINEAR TRIMER OF PARAISOPROPENYL PHENOL

Noboru Yamazaki; Teruo Yuasa, both of Nagoya; Yoshio Morimoto, Tokai; Kunio Aoi, Ichinomiya, and Tsutomu Takase, Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,451
Claims priority, application Japan, Nov. 26, 1977, 52/141126
Int. Cl.² C07C *37/00*
U.S. Cl. 568—720 **10 Claims**

1. A process for preparing a linear trimer of p-isopropenyl phenol of the formula



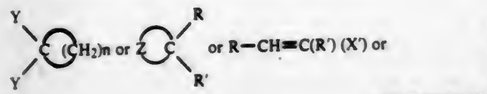
which comprises reacting at least one compound selected from the group consisting of p-isopropenyl phenol and linear polymers of p-isopropenyl phenol in the presence of an acid catalyst in an organic solvent.

4,201,878
PROCESS FOR PRODUCING BISPHENOLS

Victor Mark, Evansville; Lawrence C. Mitchell, and Charles V. Hedges, both of Mt. Vernon, all of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 10, 1978, Ser. No. 876,703
Int. Cl.[2] C07C *37/00, 39/16*
U.S. Cl. 568—723 7 Claims

1. A process for the production of bisphenols which comprises reacting a phenol having a reactive hydrogen para to the phenolic hydroxyl and a compound of the formula



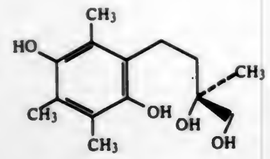
wherein R and R' are hydrogen, lower alkyl or aryl; X is lower alkoxy or the same as X'; Y is chlorine or the same as X; X' is aryloxy; n is integer from three to nine; m is (n-1), or a mixture of such compounds, in the presence of an acidic condensing agent.

4,201,879
HYDROQUINONES

Richard Barner, Witterswil, and Max Schmid, Brugg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,361, May 12, 1978. This application Dec. 15, 1978, Ser. No. 970,043
Claims priority, application Luxembourg, May 16, 1977, 77344
Int. Cl.[2] C07C *39/08*
U.S. Cl. 568—766 1 Claim

1. A compound of the formula:

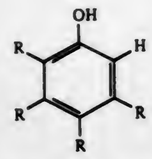


4,201,880
PREPARATION OF ORTHO-ALKYLATED PHENOLS

Bernardus J. van Sorge, Selkirk, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 651,251, Jan. 22, 1976, Pat. No. 4,097,411.
This application Feb. 21, 1978, Ser. No. 879,768
Int. Cl.[2] C07C *37/12, 39/06*
U.S. Cl. 568—804 10 Claims

1. In a process for alkylating a phenol in the ortho position which comprises the vapor phase reaction in the presence of an alkylation catalyst of an alkyl alcohol and a phenol having the general formula



where R is a monovalent substituent selected from the group consisting of hydrogen, lower alkyl, phenyl, and lower alkyl substituted phenyl; the improvement comprising performing the reaction at a temperature of about about 460° C. in the presence of a molded to shape catalyst comprising a mixture of a magnesium oxide bonded with a minor amount of silica, the catalyst having a surface area of at least 20 square meters per gram and containing from about 1 to about 15% by weight of silica.

4,201,881
24,24-DIFLUORO-1α,25-DIHYDROXYCHOLECALCIFEROL

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, Wis.; Nobuo Ikekawa, Tokyo, Japan; Yoko Tanaka, Madison, Wis., and Yoshiro Kobayashi, Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

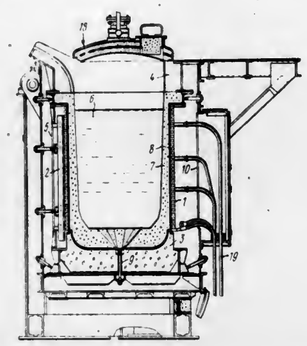
Filed Mar. 28, 1979, Ser. No. 24,848
Int. Cl.[2] C07C *35/32*
U.S. Cl. 568—819 4 Claims

1. 24,24-difluoro-1α,25-dihydroxycholecalciferol.

4,201,882
INDUCTION MELTING FURNACE

Daniil M. Kolotilo, ulitsa Akademika Dobrokhotova, 10, kv. 12, Kiev; Viktor V. Fursov, prospekt Pobedy, 39, kv. 19, Sevastopol; Anatoly A. Cherevaty, ulitsa Nadezhdintsev, 20, kv. 32, Sevastopol; Nikolai D. Mazovsky, prospekt Pobedy, 23, kv. 236, Sevastopol; Leonid M. Goncharov, ulitsa Letchikov, 87, kv. 44, Sevastopol, and Larisa D. Apatova, ulitsa Akademika Dobrokhotova, 4, kv. 25, Kiev, all of U.S.S.R.

Filed May 5, 1978, Ser. No. 903,779
Int. Cl.[2] H05B *5/00*
U.S. Cl. 13—27 6 Claims

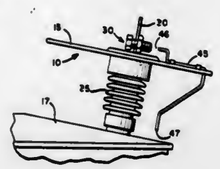


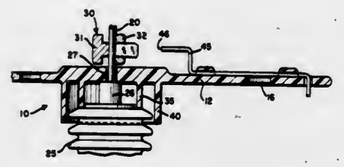
1. An induction melting furnace comprising: a crucible for a molten metal; an inductor disposed around said crucible and inducing alternating magnetic field required to melt said metal; a heat-resistant current-conducting screen interposed between said inductor and crucible and enveloping the entire exterior surface of said crucible, said screen being formed by a substantially solid wall from a carbon material with a thickness thereof of not more than 1.5 mm, said screen preventing molten metal from reaching said inductor upon any destruction of the crucible lining; and circuit means connected to said screen for signalling predetermined wear of the crucible lining.

4,201,883
GUARD FOR A HIGH VOLTAGE ELECTRICAL TERMINAL BUSHING

William E. Shepherd, 309 Drake Ave., New Carlisle, Ohio 45344

Filed Nov. 3, 1977, Ser. No. 848,265
Int. Cl.[2] H01B *17/00, 17/46*
U.S. Cl. 174—139 10 Claims





1. A guard for an electrical bushing of the type which is mounted so as to extend outwardly from a member at ground potential and which has a terminal at its upper end for connecting a high voltage cable, said guard being adapted for installation on the upper surface of the bushing and being of a size and shape sufficient to prevent small animals from simultaneously contacting the high voltage cable and the grounded member when installed on the upper surface of the bushing, said guard comprising:

an isolating member of electrically insulating material having means forming an opening in the center thereof for coaxial alignment with the bushing,

said isolating member having a generally planar portion having upper and lower surfaces and having a minimum radial dimension large enough to prevent small animals from simultaneously contacting the high voltage cable and the member at ground potential when the isolating member is installed on the upper surface of the bushing,

means for securng said isolating member onto the bushing, and

means extending from the lower surface of said planar portion having a diameter sufficient to surround the bushing for providing shielding for the high voltage cable and its connection to said bushing from beneath said isolating member when the isolating member is installed on the upper surface of the bushing,

said generally planar portion of said isolating member being substantially larger in diameter than the diameter of said means extending from the lower surface thereof.

6. A guard for an electrical bushing of the type which is mounted so as to extend outwardly from a member at ground potential and which has a terminal at its upper end for connecting a high voltage cable, said guard being adapted for installation on the upper surface of the bushing and being of a size and shape sufficient to prevent small animals from simultaneously contacting the high voltage cable and the grounded member when installed on the upper surface of the bushing, said guard comprising:

an isolating member of electrically insulating material having means forming an opening in the center thereof for coaxial alignment with the bushing,

said isolating member having a generally planar portion having upper and lower surfaces and having a minimum radial dimension large enough to prevent small animals from simultaneously contacting the high voltage cable and the member at ground potential when the isolating member is installed on the upper surface of the bushing,

means for securing said isolating member onto the bushing, and

lightning arrestor means including an electrically conductive wire attached to said isolating member having one end positioned in spaced relationship to the upper surface of said planar portion for placement in close proximity to but spaced from said high voltage cable, and the other end positioned below the lower surface of said planar portion for placement in close proximity to but spaced from the member at ground potential.

4,201,884
DIGITAL DATA TRANSMISSION SYSTEM

Philip R. Couch, Roanoke, Va., and David A. Philpott, Leeds, England, assignors to International Standard Electric Corporation, New York, N.Y.

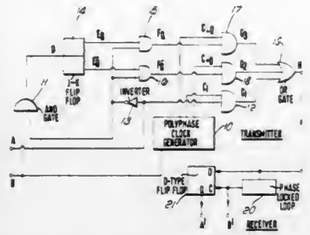
Filed Nov. 7, 1977, Ser. No. 848,964
Claims priority, application United Kingdom, Nov. 16, 1976, 47673/76
Int. Cl.[2] H04L *27/18*
U.S. Cl. 375—53 6 Claims

3. A digital data transmitter comprising:

means for producing a polyphase clock, and

logic gating means coupled to said means for producing for gating digital data input signals with said polyphase clock to provide a transmission signal, one data state of said input signals being gated with one clock phase of said polyphase clock, said one clock phase being time coinci-

dent with a reference time, and the other data state of said input signals being alternately gated with other clock



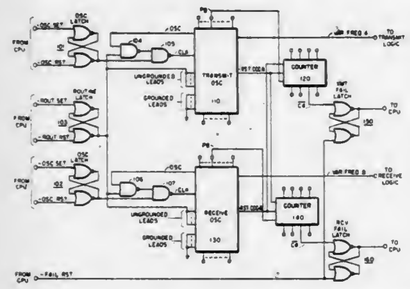
phases of said polyphase clock, said other clock phases being equally distributed in time about said reference time.

4,201,885

ROUTINABLE CLOCK CIRCUIT

James J. Vrba, Berwyn, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 26, 1978, Ser. No. 955,280
Int. Cl.[2] H04L 7/00; G06F 15/16
U.S. Cl. 375—106 **6 Claims**



1. A routinable clock circuit for use in an automatic number identification system connecting a private automatic branch exchange to a switching center including a central processing unit, said routinable clock circuit including a transmit portion and a receive portion, each of said portions of said routinable clock circuit comprising:

gating means connected to said central processing unit of said switching center;

oscillator means connected to said gating means and operated in response to said gating means to produce periodic pulses of a predetermined frequency;

counting means, said counting means of said transmit portion connected to said oscillator means of said transmit portion and to said oscillator means of said receive portion and said counting means of said receive portion connected to said oscillator means of said receive portion and to said oscillator means of said transmit portion, said counting means of said transmit portion operated in response to a predetermined number of said periodic pulses received from said oscillator means of said transmit portion, to produce an output pulse and said counting means of said receive portion operated in response to a predetermined number of said periodic pulses received from said oscillator means of said receive portion, to produce an output pulse;

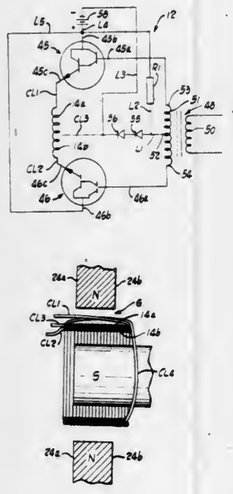
output latching means connected between said counter means and said central processing unit, said output latching means of said receive portion operated in response to said output pulse produced by said counter means of said receive portion to generate a continuous output signal corresponding to said receive portion output pulse, whereby said output signal is detected by said central processing unit to indicate a fault condition present in said receive portion of said routinable clock circuit, and said output latching means of said transmit portion operated in response to said output pulse produced by said counter means of said transmit portion to generate a continuous output signal corresponding to said transmit portion output pulse, whereby said output signal is detected by said central processing unit to indicate a fault condition present in said transmit portion of said routinable clock circuit.

4,201,886

PLURAL CONCENTRIC MOVING COIL SPEAKER WITH PUSH-PULL VOLTAGE FOLLOWER DIRECT COUPLING

Martin J. Nagel, Russell Township, Geauga County, Ohio, assignor to Tenna Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 746,796, Dec. 2, 1976, Pat. No. 4,130,725. This application Jul. 14, 1978, Ser. No. 924,638
Int. Cl.[2] H04R 3/00
U.S. Cl. 179—1 A **5 Claims**



1. In a power amplifier and transducer unit comprising a transducer, a magnet assembly defining a gap across which a magnetic flux extends to form a magnetic field, two wire coils secured to said transducer and movable axially in said gap, means biasing said coils to a location within the extent of the useful magnetic field and an amplifier circuit directly coupled to said coils for alternately electrically energizing said coils to move each when energized, the improvement wherein the amplifier circuit includes two voltage follower amplifiers directly coupled to two substantially identical helical coils concentrically wound to enhance high frequency transformer coupling which substantially reduces coil impedance by one-half and substantially doubles drive coil volume when one or the other of said coils is energized.

4,201,887

DATA TELECOMMUNICATIONS TERMINAL

Chester A. Burns, Palo Alto, Calif., assignor to Cordura Marketing, Inc., Chicago, Ill.

Filed May 11, 1978, Ser. No. 904,983
Int. Cl.[2] H04M 11/00
U.S. Cl. 179—2 DP **42 Claims**

1. A data telecommunications terminal for use with a telephone system comprising:

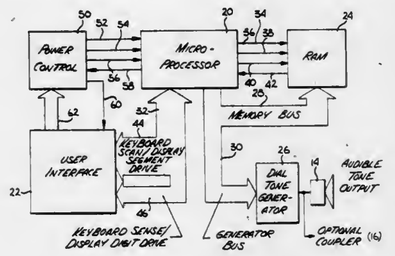
(i) memory means for semi-permanently storing data;

(ii) signal generator means for generating signals corresponding to said data;

(iii) signal coupling means coupled to said signal generator for coupling said signals to said telephone system;

(iv) a keyboard having a first group of switches for inputting data, a second group of switches for directing the storage of said data, and at least one switch for directing the generation of signals corresponding to said data;

(v) a microprocessor coupled to said memory means, said signal generator means and said keyboard for controlling, under the direction of said keyboard, the receipt of said data from said keyboard, the storage of said data by said



memory means, the generation of said signals by said generator means, and the supply of voltage within said terminal, whereby said data is entered into said memory means from said keyboard and said data is coupled to said telephone system from said memory means, and;

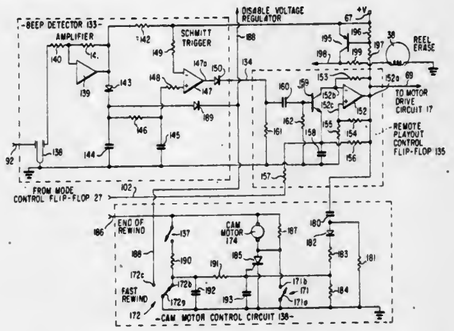
(vi) self-contained power control means coupled to said memory means, said keyboard and said microprocessor for providing voltage substantially only during actuation of said switches, said power control means activated upon actuation of any one of said switches and automatically deactivated by a command from said microprocessor upon completion of processing by said terminal.

4,201,888

REMOTE PLAYOUT TELEPHONE ANSWERING DEVICE

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Division of Ser. No. 879,279, Feb. 21, 1978. This application Sep. 11, 1978, Ser. No. 941,282
Int. Cl.[2] H04N 1/65
U.S. Cl. 179—6 E **6 Claims**



6. In a telephone answering device of the type wherein a prerecorded outgoing announcement is transmitted to the telephone line during an announcement transmit portion of the answering cycle and a message incoming from the telephone line is recorded on a tape during a subsequent incoming message record portion of the answering cycle, and wherein recorded incoming messages are played out over the telephone line under remote control in response to receipt of a beep tone from said telephone line, the improvement comprising:

a flip-flop set to a first state at the beginning of a telephone answering cycle, said first state enabling normal telephone answering operation by said device,

a beep detector connected to set said flip-flop to a second state in response to detection of a first beep tone received from said telephone line and to reset said flip-flop back to said first state in response to detection of a second beep tone from said telephone line,

a loop motor to drive a magnetic tape loop containing said announcement and a reel motor to drive said incoming message record tape,

a motor drive circuit to provide power only to said reel motor and not to said loop motor when said flip-flop is in said second state,

a cam mechanism including a cam and a cam drive motor for driving said cam, said reel motor being positionable by said cam alternatively to a forward position in which said reel motor drives said message record tape in a forward direction and to a rewind position in which said reel motor rewinds said tape,

a cam motor control circuit connected to said flip-flop so as to be activated when said flip-flop is set to said second state, said control circuit when actuated first causing said cam drive motor to drive said cam so as to position said reel motor to said rewind position, said control circuit thereafter, when rewind is completed, causing said cam drive motor to drive said cam so as to position said reel motor to said forward position so that recorded incoming messages will be played out to said telephone line,

first inhibit means for preventing said flip-flop from being set to said second state in response to detection of a first beep tone received during said incoming message record portion of the answering cycle, and

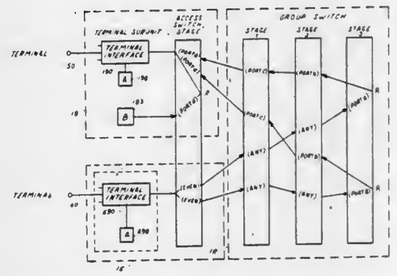
second inhibit means, connected to said cam motor control circuit, for preventing said flip-flop from being reset to said first state upon receipt of a second beep tone while said reel motor is positioned to said rewind position.

4,201,889

DISTRIBUTED CONTROL DIGITAL SWITCHING SYSTEM

Alan J. Lawrence, Stamford; John M. Cotton, East Norwalk; Kenneth J. Hamer-Hodges, Newtown, and Jeffrey N. Denenberg, Stamford, all of Conn., assignors to International Telephone and Telegraph, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 888,251
Int. Cl.[2] H04Q 11/04
U.S. Cl. 320—68 **22 Claims**



1. A distributed control digital communication system for selectively interconnecting a plurality of groups of terminals thru a digital switching network having an access switching stage and one or more other switching stages, comprising:

a first group of data processing means for providing a first set of pooled processing functions for said groups of terminals, each of said processing means being associated with one of said groups of terminals;

a second group of data processing means for providing a second set of pooled processing functions for one or more of said groups of terminals such that said second processing functions are provided independently of the processing functions provided by said first group of processing means; and

digital switching network means coupled to said first and second groups of processing means by one or more multiplexed transmission paths over which data and at least path selection control signals are transmitted in frames containing a plurality of channels of said data, such that said path selection control signals establish communication over said multiplexed transmission paths thru said digital switching network means between said first and second groups of data processing means with said path selection control signals preceding said data on said multiplexed transmission paths in the same channels and selectively interconnect said terminals over transmission paths thru said switching network in channels designated by said path selection control signals.

15. A distributed control digital communication system comprising a plurality of terminal units for interfacing a plurality of PCM communication terminals carrying digitized speech in frames containing a plurality of channels of said digitized speech to a common communications path upon which said frames and in-channel path selection control signals are multiplexed, and comprising:

means for deriving at least digital path selection control signals for each PCM terminal interfaced thereto;

a digital switching network coupled to said communications path for bit asynchronously interconnecting said PCM terminals through paths established thru said switching network in response to said in-channel path selection control signals, and;

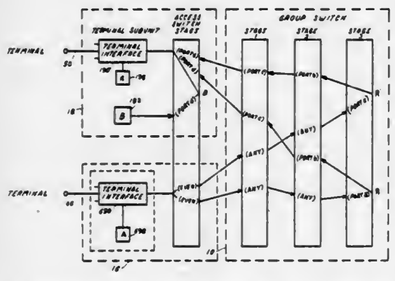
means at each of said terminal units for selectively multiplexing said digitized speech and said in-channel path selection control signals on said common communications path such that said digital path selection control signals precede said digitized speech in channels designated by said path selection control signals on said common communications path.

4,201,890

MULTIPORT DIGITAL SWITCHING ELEMENT

Alan J. Lawrence; Jeffrey N. Denenberg, both of Stamford; Murray Rubinstein, Trumbull, and Daniel C. Upp, Easton, all of Conn., assignors to International Telephone and Telegraph, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 888,582
Int. Cl.² H04J *3/06*; H04Q *11/04*
U.S. Cl. 370—68 **18 Claims**



1. A multiport switching element for providing and maintaining time and space switching for digitally encoded data received phase asynchronously in frames containing a plurality of channels of said data, said element coupling any of said channels at the input of the port receiving said channel to any channel at the output of any port in said element in response to digital command signals received by said port for said channel and in said channel, comprising:

time division multiplexed common transmission bus means interconnecting said ports for providing a plurality of time slots, each time slot being dedicated to a particular channel of said frames coupled to the input of each port;

means at each port responsive to said digital command signals for coupling said command signals and subsequent frames of data received in the channel in which said digital command signals are received to said common transmission bus means in the time slot dedicated to said channel; and

means at each port selectively responsive to said digital command signals coupled to said common transmission bus means for extracting said frames of data from said common transmission bus means in the time slot dedicated to said input channel of said frames and for inserting said frames of data into the output channel designated by said digital command signals.

7. A multiport switching element for providing space and time switching between any ports thereof in response to digital command signals for frames of digitally encoded data in a plurality of channels received bit asynchronously by said switching element, comprising:

time division multiplexed common transmission bus means interconnecting said ports;

means at each port responsive to said command signals in said channels for coupling said data in said channels bit-synchronously from any of said ports to said common transmission bus; and

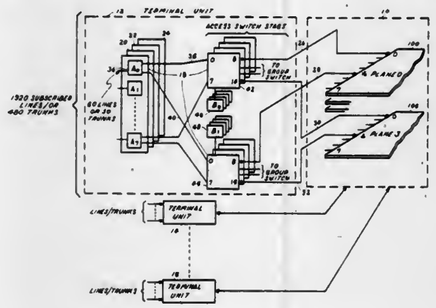
means at each port selectively responsive to said command signals for extracting said data from said transmission bus in the bus cycle for said channel and for serially transmitting said extracted data bit-synchronously in the output channel designated by said digital command signals from said port.

4,201,891

EXPANDABLE DIGITAL SWITCHING NETWORK

Alan J. Lawrence, Stamford; John M. Cotton, East Norwalk, and Jeffrey N. Denenberg, Stamford, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 888,607
Int. Cl.² H04Q *11/04*
U.S. Cl. 370—58 **16 Claims**



15. An expandable switching network comprising:

a plurality of stages of multiport switching elements operable within said network as single sided or multisided, each port of each switching element including means for adapting said port for operation as an inlet or as an outlet and each of said switching elements including means to selectively reflect phase asynchronously received frames of digitally encoded traffic in a plurality of channels entering any inlet of any port of said switching element back to any inlet of any port of said switching element and to phase synchronously interconnect any outlet port of said switching element to any outlet port of said switching element; and

means for selecting the inlets and outlets of each port of each of said switching elements for single sided or multisided operation within said network such that said inlet and outlet ports either selectively couple traffic through said switching element to a switching element in a higher numbered stage of said network or fold said traffic into the network by reflecting from a higher numbered stage to a lower numbered stage of said network.

4,201,892

MULTI-RATE TDMA COMMUNICATION SYSTEM

William G. Schmidt, Gaithersburg, Md., assignor to Satellite Business Systems, Mclean, Va.

Filed Jun. 27, 1978, Ser. No. 919,518
Int. Cl.² H04J *3/06*
U.S. Cl. 370—104 **12 Claims**



1. A communication system comprising plural, geographically separate stations communicating with each other in a TDMA mode through a quasi-stationary repeater in earth orbit, comprising:

means at one of said stations for periodically transmitting to said repeater a frame reference burst modulated at a first predetermined bit rate for defining a baseline frame, means at each of a first group of said stations for receiving said frame reference burst from said repeater, means at each of said first group of stations for transmitting to said repeater at said first predetermined bit rate in first mutually exclusive time periods referenced to said frame reference burst at said repeater,

means for periodically transmitting a sub-frame reference burst at a second predetermined bit rate, different from said first predetermined bit rate to said repeater, means at each of a second group of said stations for receiving said sub-frame reference burst from said repeater, and means at each of said second group of stations for transmitting in second mutually exclusive time periods referenced to said sub-frame reference burst at said repeater, each of said second time periods exclusive of said first time periods.

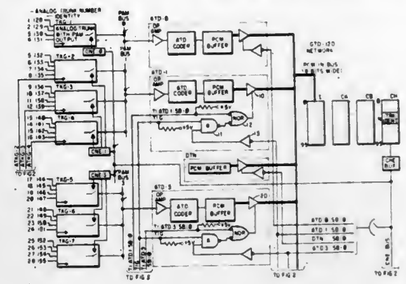
4,201,893

PRIVATE AUTOMATIC BRANCH EXCHANGE TELEPHONE SYSTEM WITH TWO DATA SOURCES SHARING A MULTIPLEXED DATA BUS

Donald W. McLaughlin, Naperville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 28, 1978, Ser. No. 946,699
Int. Cl.² H04Q *11/04*
U.S. Cl. 370—58 **5 Claims**

1. In a pulse code modulated time division communication system having: a plurality of analog terminals, a plurality of analog to digital convertors, a central control and timing means for controlling the assignment of said plurality of analog terminals to said analog to digital convertors and a common bus, each of said convertors including a buffer store having an output to said common bus for connection to an information memory for subsequent switching to an outgoing time channel; a plurality of digital channels and an arrangement for connecting said digital channels in place of certain of said analog terminals, each said digital channel also includes a buffer store having an output connection to said common bus, and comprising a plurality of first gating means each connected between said output of each said convertors buffer store and said common bus, a plurality of second gating means connected between said outputs of each said digital channels buffer store and said common bus, and a digital trunk control connected to each said gating means operated to block said first gating means during the time assigned said particular replaced analog terminal and enabling said second gating means of said corresponding digital channel.

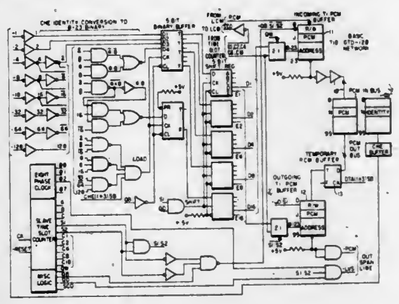


4,201,894

ARRANGEMENT FOR CONVERSION OF RANDOM TO FIXED DATA CHANNEL FORMAT

Donald W. McLaughlin, Naperville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 28, 1978, Ser. No. 946,891
Int. Cl.² H04Q *11/04*
U.S. Cl. 370—58 **5 Claims**



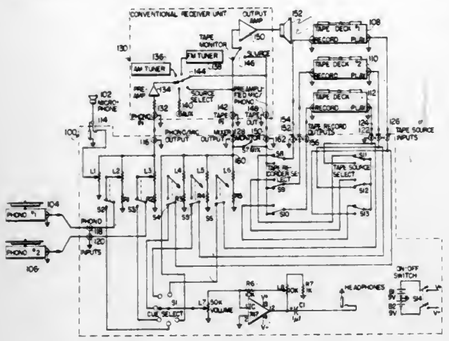
1. In a pulse code modulated time division communications switching system, wherein the number of terminations exceeds the number of available channel links and the channel links are allocated to the terminations on a random per call basis by generating a digital address of a particular termination during an allotted channel link time slot and having a central control and timing means for controlling the operations thereof; an arrangement for directly interfacing a T1 PCM carrier span comprising: a receiver means operative for generating at the output thereof a sequential stream of 24 channels of digital data in response to receipt of data from said carrier span; first buffer means for temporarily storing said digital data for each of said 24 channels; decoder means operated in response to said central control means to receive said digital address and producing at the output thereof a second address corresponding to one of said 24 channels of said first buffer means; and read out means responsive to said decoder means output for causing the reading out of said buffer of the corresponding channel data.

4,201,895

PASSIVE AUDIO SIGNAL MIXING APPARATUS

Harold W. Hill, Jr., 512 Portland Ave., Pleasantville, N.J. 08232

Filed Jul. 15, 1977, Ser. No. 816,079
Int. Cl.[2] G11B *27/00, 31/00*
U.S. Cl. 179—100.1 R **17 Claims**



1. Separately-packaged audio signal mixing apparatus for use with a plurality of separately-packaged audio signal sources, at least one said source providing a low level audio signal and at least one source providing a high level audio signal, and for use with a separately-packaged conventional audio amplifier unit having an input coupled to a preamplifier for low level signal, an input for high level signals, an audio output amplifier, a tape monitor signal output, and means for selectively coupling said preamplifier output signal to said tape monitor signal output and for selectively coupling said high level signal input to said output amplifier, the apparatus comprising:

a separate input for receiving each said low level audio signal;

passive, manually operable means coupled to each said low level signal input for selectively controllig the respective input signal level;

a first output;

a first junction for passively mixing and supplying as a single signal the mixed, level-controlled low level signals through said first output to the low level signal input of said separately-packaged amplifier unit;

a separate input for receiving each said high level audio signal;

passive, manually operable means coupled to each high level signal input for selectively controlling the respective input signal level;

a second output;

a second junction for passively mixing and supplying as a single signal the mixed, level-controlled high level signals through said second output to the high level signal input of said separately-packaged amplifier unit;

an input for receiving said mixed, level-controlled, low-level signals in pre-amplified form from said tape monitor output of said separately-packaged amplifier unit; and

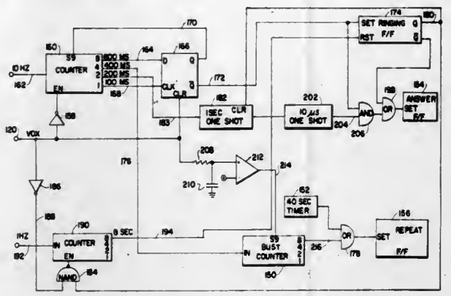
manually operable means for selectively coupling one or both of said pre-amplified signal and said mixed, level-controlled high level signal to said second output, whereby said low level audio source signals may be selectively level controlled and mixed in said separately-packaged mixing apparatus and preamplified in said separately-packaged amplifier unit to a level suitable for passive mixing with said high level audio source signals, said high level audio source signals may be selectively level controlled and mixed in said separately-packaged mixing apparatus, and the preamplified mixture of low level audio source signals may be selectively mixed with the mixture of high level audio source signals in said separately-packaged mixing apparatus and supplied to said audio output amplifier.

4,201,896

TELEPHONE POLLING APPARATUS USING A PLURALITY OF TIMERS TO DETECT THE LINE CONDITIONS

David S. Bower, Sunrise, and Fred J. Smith, Plantation, both of Fla., assignors to Digital Products Corporation, Fort Lauderdale, Fla.

Division of Ser. No. 799,141, May 23, 1977, Pat. No. 4,160,125. This application Jul. 3, 1978, Ser. No. 921,742
Int. Cl.[2] H04M *3/46*
U.S. Cl. 179—18 B **2 Claims**



1. A method for discriminating between different conditions on a telephone line after a telephone number is dialed said conditions including the presence of a recorded message on said line, said method comprising the steps of:

detecting the presence of energy on the telephone line;

timing the detection of the energy;

discriminating an answer condition by determining that the energy detection lasts more than a first predetermined interval but less than a second predetermined interval;

descriminating a busy condition by counting the number of times the presence of energy is greater than a third predetermined time which is more than said first predetermined time but less than said second predetermined time, when the count reaches a predetermined value;

discriminating said answer condition when there is no detected energy for a fourth predetermined interval;

discriminating said recorded message condition on the telephone line when there is energy detected for more than a fixed percentage of the time during a fifth predetermined interval; and

discriminating a no answer condition on the telephone line after the passage of a sixth predetermined interval greater than the first, second, third, fourth, and fifth predetermined intervals without the discrimination of any other conditions.

4,201,897

RINGING VOLTAGE TRANSFER CIRCUIT

John P. Dorth, Downers Grove; Robert V. Burns, Tinely Park, and Lloyd A. Tarr, Elmhurst, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 24, 1978, Ser. No. 963,492
Int. Cl.[2] H04Q *9/00*
U.S. Cl. 179—84 R **6 Claims**

1. A voltage switch for connecting a source of ringing signals to a telephone subscriber station line, for use in a telephone system including a processing unit operated to generate first and second ring control signals, said voltage switch comprising:

switch control means connected to said processing unit initially operated in response to said first ring control signal;

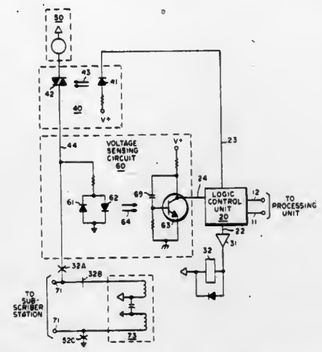
first switching means connected to said switch control means operated to establish a ringing signal circuit path to said subscriber line;

second switching means connected to said switch control means, operated after a predetermined time to connect said ringing signal circuit path to said source of ringing signals, conducting said ringing signals to said line;

said switch control means further operated in response to said second ring control signal to render said second switch means inoperative and conditioned to render said first switch means inoperative;

voltage sensing means connected between said ringing signal circuit path and said switch control means, operated in response to said rendering of said second switch means inoperative to still further operate said conditioned switch control means to render said first switch means inoperative;

whereby said ringing signal source is initially connected to and further disconnected from said subscriber station only when ringing signals are not present on said ringing signal circuit path.

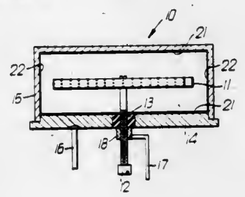


4,201,898

INERTIA SWITCHES

Harry Jones, Ashton-under-Lyne, and David L. Slater, Oldham, both of England, assignors to Ferranti Limited, Hollinwood, England

Filed Jun. 2, 1978, Ser. No. 911,945
Claims priority, application United Kingdom, Jun. 4, 1977, 23840/77
Int. Cl.[2] H01H *35/14*
U.S. Cl. 200—61.45 R **9 Claims**



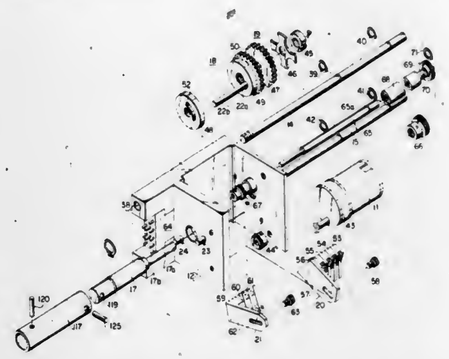
1. An inertia switch comprising a first part in the form of a resilient element attached at one end thereof to a support member and coiled about said one end substantially in the form of a spiral, the other end being free to move, a casing enclosing said resilient element, one wall of which casing carries the support member, said support being a post extending through said wall and movable along its length by adjustment means to alter the stable position of the resilient element inside the casing, the resilient element and the walls of said casing being electrically conductive so that movement of said free end through a predetermined distance in response to an acceleration force effects switching of an electric circuit by contact between the resilient element and the walls of the casing, the support post being electrically conductive, connecting the resilient element to one terminal of the switch and being electrically insulated from the casing wall, a suitable part of the casing wall being electrically insulated to prevent switching due to acceleration forces acting to displace the resilient element in a specified direction.

4,201,899

POWER ACTUATOR FOR A COAXIAL R F POWER SWITCH

Kenneth Owen, 6201 Hibbling La., Springfield, Va. 22150

Continuation-in-part of Ser. No. 806,485, Jun. 14, 1977, abandoned. This application Jun. 9, 1978, Ser. No. 913,970
Int. Cl.[2] H01H *3/00*
U.S. Cl. 200—153 R **16 Claims**



1. A power actuator for a coaxial line switch, said actuator comprising:

(a) reversible motor means for intermitently driving and then reversing a coaxial line switch through a predetermined angle of rotation;

(b) reversible auxiliary actuator means driven by said motor means through a second predetermined angle of rotation;

(c) delay cam means interposed between said motor means and said coaxial switch means whereby said auxiliary actuator begins its rotation before said coaxial switch means begins to rotate;

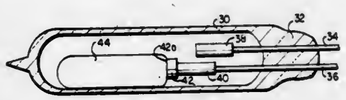
(d) first and second sets of auxiliary switch means engaged by said auxiliary actuator means, with said first set actuated as actuator begins its angle of rotation, and said second set actuated as said actuator ends its rotation.

4,201,900

SNAP ACTION TILT ACTUATED MERCURY SWITCH

George B. Marchev, Short Hills, N.J., assignor to Gordos Corporation, Bloomfield, N.J.

Filed Feb. 26, 1979, Ser. No. 15,414
Int. Cl.[2] H01H *29/04*
U.S. Cl. 200—220 **11 Claims**



1. A tilt actuated conductive liquid switch comprising:

an elongated envelope of electrically insulating material sealed off from the atmosphere,

a pair of electrodes each supported on and within the envelope and providing conductive means which extends through the envelope to terminals outside the envelope providing electrical connection to said electrodes, their electrodes and their supporting structure being arranged in a vertical plane during operation to extend from one end side-by-side into the envelope generally in the direc-

tion of elongation, the lower one of said electrodes projecting further into the envelope than the higher one and terminating in a blunt termination, such that in the selected operating orientation the envelope is arranged generally horizontally with the lower electrode projecting furtherest into the envelope beneath the other electrode, and

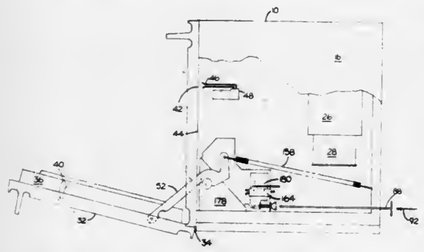
a mass of cohesive conductive liquid within said envelope, the mass being sufficiently great and the position of the lower electrode being such as to require penetration by the lower electrode as it passes to contact the shorter higher electrode and sufficiently small to clear both electrodes except when tilted with the electrode and lowered, the blunt termination on the lower electrode being of sufficient area in a transverse direction opposed to liquid movement and proper shape to effectively block passage of the liquid mass until the liquid surface tension effect thereof is overcome by the component of weight opposed to it, in order to provide a snap action effect.

4,201,901

ADJUSTABLE SAFETY INTERLOCK FOR MICROWAVE OVENS

Barton O. Schuchert, Iowa City, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Mar. 20, 1978, Ser. No. 888,201
Int. Cl.² H05B 9/06; H01H 3/16; E05C 13/10
U.S. Cl. 219—10.55 C **4 Claims**



1. A microwave oven apparatus, comprising:

(a) a cavity having walls defining a cooking enclosure and having an access opening;

(b) an outer case disposed about a portion of the cavity;

(c) a door for closing the access opening;

(d) a microwave energy source adapted to radiate energy within the enclosure;

(e) an electrical circuit for energizing the source and controlling the operation of the apparatus;

(f) a switch for interrupting the electrical circuit and de-energizing the microwave energy source;

(g) means for activating the switch upon closure of the door, wherein the activation means comprises a longitudinal member having its forward end connected to the door and a portion of its distal end disposed to contact the switch upon closure of the door, and a tension spring attached at one end of the distal end of the longitudinal member and at the other end to one of the cavity walls to urge the distal end into contact with the switch;

(h) means for supporting the switch disposed between the cavity and the outer case so that relative movement between the swich and the activation means is permitted, wherein the support means comprises a first support bracket mounted on one of the cavity walls, and a second support bracket pivotally attached to the first support bracket on which the switch is mounted in a fixed position;

(i) means for moving the switch relative to the activation means and for securing the switch in a selected position, wherein the movement means comprises:

a first tab formed from the first support bracket and having a hole therein, a second tab formed from the second support bracket and having a hole therein, an adjusting bolt that slides through the holes in the tabs, and means for retaining the bolt in the first tab;

a compression spring having one end pushing against the first tab and the other end pushing against the second tab to bias the switch means away from the activation means, whereby the contacting of the switch with the distal end of the longitudinal member is determined by the combination of the tension spring bias in conjunction with the longitudinal member, the compression spring bias between the first and second tabs, and the bias of the adjusting bolt; and

(j) means for gaining access to the means for moving the switch after the outer case is positioned about the cavity, and means for closing the means for gaining access, wherein the means for gaining access comprises:

a hole in the outer case, and

a first wall extending beyond a second, abutting cavity wall and having a hole therein that is axially aligned with the hole in the outer case and said adjusting bolt.

4,201,902

ELECTRODE FOR AIR-CARBON ARC CUTTING AND GOUGING

Perry J. Rieppel, Worthington, and Raymond A. Sadauskas, Columbus, both of Ohio, assignors to Arcair Company, Lancaster, Ohio

Division of Ser. No. 848,816, Nov. 9, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,650
Int. Cl.² B23K 9/23
U.S. Cl. 219—69 M **2 Claims**



1. A method of lowering the operating noise level at least 20 dbA of the conventional air-carbon arc cutting and gouging process by the steps of:

replacing the conventional copper coated carbon-graphite electrode with a carbon-graphite electrode having a 0.002" to 0.012" of commercially pure aluminum as a coating uniform in thickness to ±0.001"; and

operating said method at a maximum delivered air pressure as measured in the torch head of 60 psi.

4,201,903

METHOD AND APPARATUS FOR MANUFACTURING A LOAD BEARING STRUCTURAL ELEMENT HAVING SPECIAL INTERNAL ATMOSPHERIC CONDITIONS

Otto A. Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Fed. Rep. of Germany

Division of Ser. No. 533,453, Dec. 16, 1974, Pat. No. 4,090,340, which is a continuation-in-part of Ser. No. 502,094, Aug. 30, 1974, abandoned. This application Feb. 21, 1978, Ser. No. 879,739
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1973, 2343792; Dec. 15, 1973, 2362497
Int. Cl.² B23K 9/00, 11/00
U.S. Cl. 219—78.12 **6 Claims**

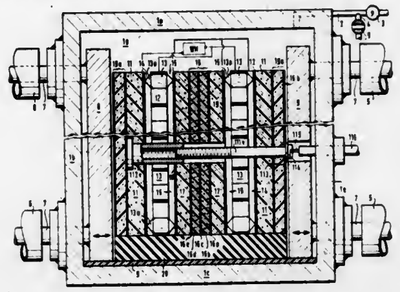
1. A method for the manufacture of a load-bearing structural element comprising the steps of:

(a) positioning outer structural shell assemblies made at least partially from sound insulating material in a housing in spaced apart arrangement so as to provide a hollow space;

(b) inserting a pair of honeycomb plates in the hollow space between said shell assemblies in spaced relation thereto and spaced from each other;

(c) positioning a central load-bearing support assembly made at least partially from sound insulating material between said honeycomb plates, with said central support assembly being spaced from said honeycomb plates so as to provide gaps therebetween;

(d) pressing said outer structural shell assemblies inwardly so as to press the edges of said honeycomb plates firmly against the surfaces of both the outer structural shell assemblies and the adjacent surfaces of the central load-bearing support assembly, and



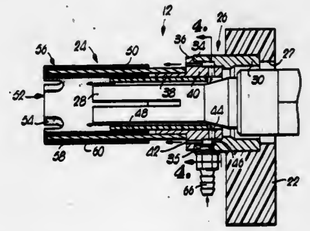
(e) applying a welding current to said honeycomb plates and the adjacent outer shell assemblies and central support assembly so as to rigidly interconnect said honeycomb plates thereto, thereby to provide a load-bearing, flexure-resistant composite building element which is both sound and heat insulating.

4,201,904

AIR COOLED HEAD FOR STUD WELDING GUN

Larry G. Weidman, Prairie Village, Kans., assignor to Geo. P. Reintjes Co., Inc., Kansas City, Mich.

Filed May 22, 1978, Ser. No. 907,919
Int. Cl.² B23K 9/20
U.S. Cl. 219—98 **1 Claim**



1. The invention comprising:

a high amperage electric arc stud welding gun having a tubular stud holder;

an elongated, tubular, metallic relatively permanent ferrule of substantially constant diameter operatively coupled to said gun, one end portion of the ferrule circumscribing the stud holder in radially spaced relationship therefrom, the other, work end portion of the ferrule extending outwardly from the stud holder for engagement with a workpiece, the area of engagement by the operating head with the workpiece being limited to the diameter of said work end portion of the ferrule, and the surrounding said work end being unconfined, whereby studs may be welded on the workpiece in closely spaced relationship, limited only by said diameter of the work end portion of the ferrule;

a tubular insulating sleeve disposed between said one end portion of the ferrule and the stud holder, the sleeve being spaced from the stud holder whereby to define an annular fluid passageway of substantially constant, relatively small cross-sectional dimension between the sleeve and the stud holder to permit delivery of cooling fluid to the interior of the ferrule;

means for delivery of cooling fluid under pressure unidirectionally from said one end portion to said work end portion and generally along the length of said ferrule and proximal both faces of the circular sidewall thereof for cooling of the ferrule and stripping of slag therefrom, including

an annular insert having a body portion circumscribing said sleeve, the insert having a first and second set of passages, said first set of passages being in fluid communication with the relatively small passageway between the sleeve and the stud holder, said second set of passages circumscribing the ferrule in closely spaced relationship thereto for deliverying cooling fluid along the exterior thereof; and

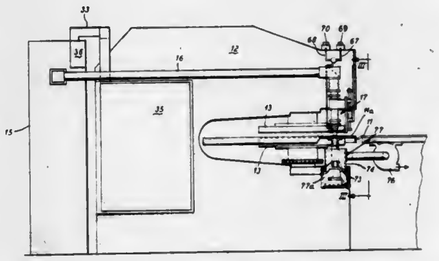
means for delivering cooling fluid under pressure to said insert and said first and second passages, said air being under sufficient pressure for cooling said ferrule and thereby extend the life thereof, and for stripping slag from said ferrule.

4,201,905

LASER CUTTING HEAD ATTACHMENT FOR PUNCH PRESSES

Stephen C. Clark, Williamsville, and Victor T. Carbone, Cheektowaga, both of N.Y., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Aug. 29, 1978, Ser. No. 937,754
Int. Cl.² B23K 26/00
U.S. Cl. 219—121 L **6 Claims**



1. In a machine tool punch press having a main frame, main frame carried upper and lower spaced rotatable turrets respectively carrying punch tools and die tools, a main frame carried vertically reciprocatable punch ram stationed at a work station, a worktable extending outwardly from adjacent the lower turret at least to the sides and front thereof having at least a stationary portion adjacent the lower turret, the stationary portion aligned with the work station and spaced to a side thereof, a central automatic control controlling the turrets and punch ram and further controlling workpiece movement apparatus effective to move a workpiece with respect to at least the stationary portion of the worktable and the work station, the improvement of:

(a) a vertically movable laser cutting head carried by the main frame above the stationary portion of the worktable, the cutting head including a hollow tip assembly adjacent the bottom thereof and a beam focusing optical means adjustably fixably spaced from a bottom of the tip assembly and vertically movable with the cutting head,

(b) a laser beam generator, the laser beam generator being spaced from the machine tool punch press and main frame and being substantially isolated therefrom whereby vibration of the machine tool punch press is isolated from the beam generator,

(c) an optical beam pathway interconnecting the cutting head and the laser beam generator, the pathway including beam bending optics directing a laser beam through the

tip, an opening through the stationary portion of the worktable aligned with the laser beam eminating from the hollow tip,

(d) a control means automatically alternatively controlling punching operation and laser operation from said central automatic control, said control means including means for vertically moving the cutting head in dependent relationship to selection of laser operation, said control means being a portion of said central control.

4,201,906

METHOD AND APPARATUS FOR ARC WELDING

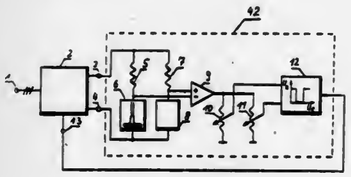
Peter Puschner, Dreiländerweg 127, Vaalserquartier, Gut Fuchstal, 5100 Aachen, Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,362

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2728980

Int. Cl.² B23K *9/10*

U.S. Cl. 219—137 PS **10 Claims**



1. A method of arc welding, employing a programmed welding energy source actuatable, in a time interval of about one millisecond or less, between a first operating condition in which the energy source energizes a welding process in accordance with a predetermined operational characteristic and a second operating condition in which the energy source energizes the welding process in accordance with a predetermined requirement characteristic that is distinctively different from the operation characteristic, comprising the steps of:

A. continuously monitoring a given electrical parameter of the welding process and comparing that parameter with the corresponding electrical parameter of a simulated welding process energized from the same energy source;

B. actuating the welding energy source to its second operating condition whenever the comparison of step A indicates that the relation of the compared parameters has departed from a given tolerance range; and

C. actuating the welding energy source back to its first operating condition when the comparison of step A indicates that the relation of the compared parameters has returned to the tolerance range.

4,201,907

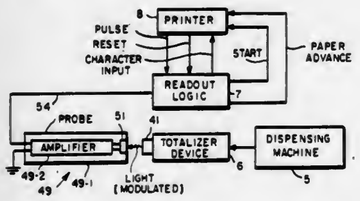
TOTALIZER SYSTEM

David M. Otten, Newton, Mass., assignor to International Totalizing Systems, Inc., Newton, Mass.

Filed Aug. 29, 1977, Ser. No. 828,675

Int. Cl.² G06M *3/06;* **G07C** *3/10*

U.S. Cl. 235—92 AC **9 Claims**



1. A totalizer transmitter for being fixedly coupled to a money operated machine for making sales, said transmitter providing a light output signal while coupled to the machine, said transmitter comprising counter means for counting data representing the number of times the machine makes a sale, a free running clock means for providing a plurality of clock signals, serial transmission means coupled to said counter, the data in said serial transmission means continuously updated from said counter in response to one of said plurality clock signals, said serial transmission means continuously providing a transmitted signal in response to another of said plurality of clock signals, said transmitted signal having an output waveform of data and clock information in a coded form in which each bit of the clock information is in the period of the output waveform and the data is the pulse width of the output waveform, and a light emitting diode coupled to said serial transmission means for transmitting light signals representing the coded output signal, whereby the transmitted signal is read out without the necessity of any external interrogation signal.

4,201,908

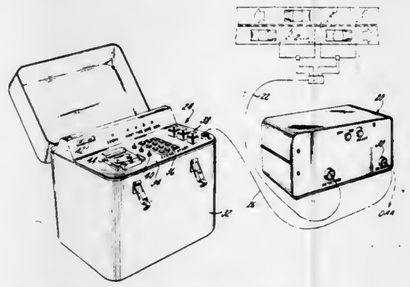
MEASUREMENT AND RECORDING APPARATUS AND SYSTEM

Bernard A. Johnson, Deerfield, and Frederick P. Gardner, Wonder Lake, both of Ill., assignors to Mangood Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 789,416, Apr. 21, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 897,005

Int. Cl.² G08G *1/065;* **G06F** *15/48*

U.S. Cl. 235—92 TC **26 Claims**



1. Apparatus for counting and recording the count of events at a surveillance site comprising, in combination:

a recorder unit adapted to be located at a surveillance site and connected to detector means providing successive detector signals responsive to successive actuations of said detector means by successive events, and

a portable reader instrument separate from and adapted to be connected to said recorder unit,

said recorder unit including semi-conductor memory means having separate locations for storage of data and instructions of a program, means including a programmable data processor connected to and operable under the control of a program of instructions stored in said memory means to function in a recording mode, a time of day clock means connected to supply timing signals on a real time basis to said data processor, said data processor including an arithmetic and logic unit for performing computational and decisional processes in a sequence determined by said program to count said events in response to said detector signals, and to accumulate said count as data in separate locations in said memory means for separate real time periods based upon said timing signals,

said reader instrument having means for connection to said recorder unit, a recording device, and manually operable means for generating read commands and for transmitting said read commands over said connection means to said recorder unit,

said data processor of said recorder unit being operable under the control of said program to respond to said read commands and shift from a recording mode to a read mode and transmit count data accumulated in separate locations in said memory means of said recorder unit through said connection means to said reader instrument,

said reader instrument including means for operating said recording device to re-record accumulated count data received from said reader unit.

4,201,909

DATA-TRANSMISSION SYSTEM AND METHOD USING FIBER-OPTICAL TRANSMISSION

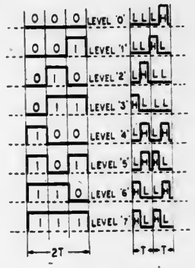
Renato Dogliotti, and Giancarlo Pirani, both of Turin, Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Oct. 5, 1978, Ser. No. 948,870

Claims priority, application Italy, Oct. 13, 1977, 69277 A/77

Int. Cl.² H04B *9/00*

U.S. Cl. 455—608 **9 Claims**



1. A method of conveying data over a fiber-optical transmission path having a transmitting end and a receiving end, comprising the steps of:

generating luminous energy at the transmitting end;

establishing a series of clock cycles of predetermined length T which define successive coding periods of duration 2T;

modulating said luminous energy by changing its intensity in at least one clock cycle T of any coding period 2T from a first to a second amplitude level to generate a distinctive pulse while limiting the width of said distinctive pulse to a maximum of T/2 with maintenance of said first amplitude level in at least one half of each clock cycle;

selecting the number of distinctive pulses and the time position thereof within each coding period in accordance with the digital values of input signals from a multilevel source pursuant to a predetermined modulation code;

transmitting the luminous energy so modulated over the fiber-optical path to the receiving end;

generating at said receiving end a recurrent ramp signal of duration T synchronized with said clock cycles;

deriving from luminous energy arriving at said receiving end, with the aid of said ramp signal, a three-level electrical signal for each clock cycle;

sampling said three-level interval at a rate 1/T; and

comparing the resulting samples with predetermined thresholds for obtaining therefrom ternary-signal pairs occurring in successive periods 2T and representing the digital values of corresponding input signals.

4,201,910

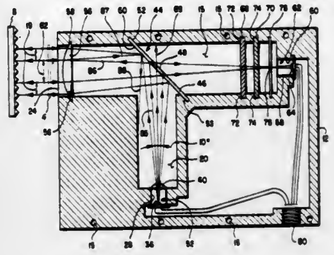
PHOTOSENSOR ASSEMBLY

James S. Copeland, and Raymond Primm, both of Roswell, N. Mex., assignors to Innovation Industries, Inc., Roswell, N. Mex.

Filed Mar. 27, 1978, Ser. No. 890,066

Int. Cl.² H01J *3/14*

U.S. Cl. 250—216 **8 Claims**



1. A photosensor assembly comprising

means defining a first passage,

means defining a second passage which intersects said first passage,

a light source disposed to direct light from said second passage to the intersection of said second passage with said first passage,

a lens disposed at one end of said first passage,

beam splitter means disposed in said first passage at the intersection of said second passage with said first passage, said beam splitter means including a plate having an opening therein, one side of said plate having a reflective surface for reflecting towards said lens light received from said light source,

means disposed at the other end of said first passage for detecting light which shall have passed through said lens and the opening in said plate,

said lens being positioned relative to said beam splitter means to focus and direct light received from outside said first passage through the opening in said plate to said detecting means.

4,201,911

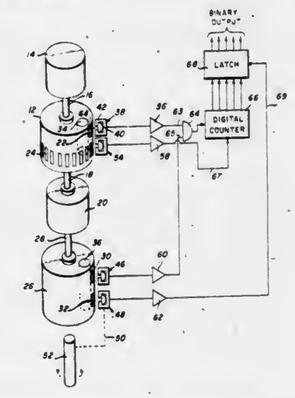
SHAFT ANGLE DIGITIZER

Charles R. Dering, Northridge, Calif., assignor to Richard M. Glueck, Chappaqua, N.Y.

Filed Mar. 15, 1978, Ser. No. 886,667

Int. Cl.² G01D *5/38*

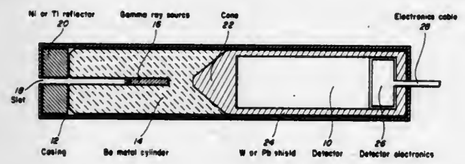
U.S. Cl. 250—231 SE **9 Claims**



5. An analog-to-digital encoder comprising:

a first rotating member having "fine" reference intelligence thereon;
a first pick-up means for scanning the "fine" reference intelligence and providing a "fine" reference signal;
a second rotating member mechanically connected to the first rotating member having "coarse" reference and transfer command intelligence thereon;
a speed reducer mechanically connected to the first member and to the second member to rotate the second member at a lower speed than the first member;
second and third pick-up means for scanning the "coarse" reference and transfer command intelligence and providing "coarse" reference and transfer command signals where the third pick-up means is connected to a means responsive to angular rotation to move the third pick-up to vary the angle between the "coarse" reference and transfer command signals in accordance with the shaft position and means for measuring the angle;
a counting means connected to the pick-up means providing the "fine" and coarse" reference intelligence to reset the counting means; and
a storage means connected to the counting means responsive to the transfer command signal to provide an output corresponding to the angular position of the input shaft.

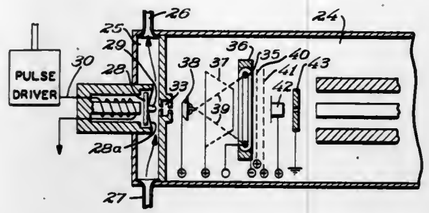
4,201,912
SUBTHRESHOLD NEUTRON INTERROGATOR FOR DETECTION OF RADIOACTIVE MATERIALS
Michael L. Evans; Howard O. Menlove, and Michael P. Baker, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 3, 1978, Ser. No. 948,266
Int. Cl.² G01V 5/00
U.S. Cl. 250—253 **28 Claims**



1. An interrogation device for detecting the presence of fissionable material comprising:
interrogation means for producing a continuous source of photoneutrons at energy levels below 500 keV;
means for continuously detecting induced fast neutrons produced by interrogated fissionable material at energy levels above 500 keV.

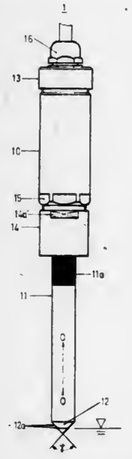
4,201,913
SAMPLING SYSTEM FOR MASS SPECTROMETER
William W. Bursack, and Erik T. Tromborg, both of Minneapolis, Minn., assignors to Honeywell Inc, Minneapolis, Minn.
Filed Oct. 6, 1978, Ser. No. 949,295
Int. Cl.² B01D 59/44; H01J 39/34
U.S. Cl. 250—288 **4 Claims**

1. An apparatus for introducing a gaseous sample into an enclosure of high vacuum, such as a mass spectrometer, said apparatus comprising:
sealing means between a supply of gaseous sample and said enclosure of high vacuum said sealing means further comprising an enlarged hollow cavity forming an antechamber between said enclosure of high vacuum and said gaseous sample supply said cavity having a first opening therein in comunication with said gaseous sample for admitting amounts of said gaseous sample into said antechamber and a second opening in said antechamber in communication with said enclosure of high vacuum allowing the passage of said sample into said enclosure of high vacuum;
closure means for closing said first opening; and



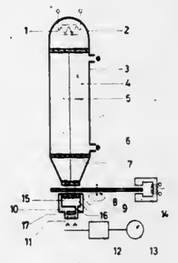
means for operating said closure means such that pulses of said gaseous sample are admitted to said antechamber of a predetermined duration and frequency in such a manner to provide a substantially steady state flow condition into said enclosure of high vacuum.

4,201,914
ELECTRICAL INSTRUMENT TO DETECT THE PRESENCE OF LIQUID AND METHOD OF OPERATING THE SAME
Benno Perren, Austrasse 33, 5430 Wettingen, Switzerland
Filed Feb. 27, 1978, Ser. No. 881,799
Claims priority, application Switzerland, Mar. 7, 1977, 2788/77
Int. Cl.² G01J 1/00; G01N 21/26
U.S. Cl. 250—341 **22 Claims**



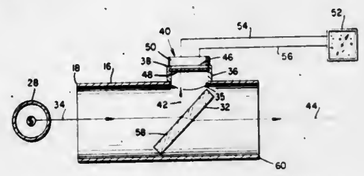
1. In an electrooptical instrument to detect the presence of liquid, containing at least a monochromatic infrared source, a light conductor having an optical axis and which totally reflects infrared radiation from at least one surface thereof, an infrared detector, and signal processing circuitry, the improvement which comprises:
the infrared source has a maximum radiation strength of less than 200 mW/sterad;
the main maximum in the angular distribution of the infrared radiation is at least approximately axiallysymmetric and oriented in the direction of the optical axis of the light conductor;
the angular distribution of the infrared radiation is such that the intensity falls off to half its maximum value less than 4° away from the symmetry axis; and
a resistor is connected in series with said infrared detector.

4,201,915
PNEUMATIC INFRARED RADIATION DETECTOR HAVING A HERMETICALLY SEALED CHAMBER AND A WINDOW
Günter Schunk, and Albert Randow, both of Bruchköbel, Fed. Rep. of Germany, assignors to Leybold-Hereaus GmbH & Co. KG, Cologne, Fed. Rep. of Germany
Filed May 2, 1978, Ser. No. 902,617
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720636
Int. Cl.² G01J 1/00
U.S. Cl. 250—343 **4 Claims**



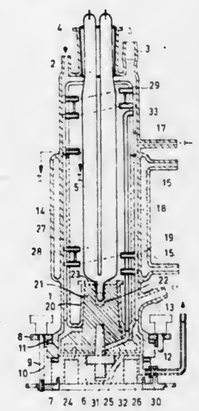
1. In a pneumatic infrared radiation detector for intermittent irradiation with infrared light, of the type having a hermetically sealed chamber including a metal cup having a highly reflective inner surface forming the back of the chamber and having a flange-like rim at the open end thereof and a radiation admitting window at the open end of the cup and a flow detector connected to the chamber, wherein the improvement comprises: the window composed of material selected from the group consisting of calcium fluoride and barium fluoride and sealed vacuum tight to the cup with glass solder having a coefficient of expansion of between 110 and 150.10^{-7}/K and the cup comprising a thin-walled noble metal vessel, wherein the noble metal is gold or silver.

4,201,916
ULTRAVIOLET RADIATION SENSOR FOR USE IN LIQUID PURIFICATION SYSTEM
Sidney Ellner, R.F.D. #2, Bedford, N.Y. 10506
Filed Mar. 20, 1978, Ser. No. 888,179
Int. Cl.² G01J 1/42; G01N 21/26, 21/00
U.S. Cl. 250—372 **8 Claims**



1. For use in an ultraviolet purification system in which liquid flowing through a housing is exposed to ultraviolet radiation emitted by a light source within said housing,
an ultraviolet radiation sensor comprising a hollow support tube having a first open end and a second open end, and adapted to be mounted on a wall of said housing with said open end in direct communication with said light source whereby to receive an incident radiation beam from said light source,
beamsplitting means disposed within said mounting tube at an intermediate location between said first end and said second end, said beamsplitting means being adapted to reflect ultraviolet radiation and transmit visible radiation and being located in line with the axis of said beam entering said support tube through said first end,
ultraviolet radiation detection means mounted on said support tube in a position offset from the axis of said beam,
said beam splitting means being positioned to reflect the ultraviolet radiation of said beam in a direction angular to the axis of said beam and toward said offset detection means, and to transmit the visible radiation of said beam through said support tube and out through the open second end thereof, and
electrical meter means connected to said ultraviolet radiation detection means and adapted to monitor ultraviolet radiation detected by said ultraviolet radiation detection means,
said ultraviolet detection means comprising a glass plate, a phosphor layer deposited on said glass plate with said phosphor layer adapted for emission of visible radiation responsive to incident ultraviolet radiation, photocell means disposed adjacent to said glass plate and adapted for receipt of said visible radiation emitted by said phosphor layer, and electrical connection means connecting said photocell and said electrical meter means.

4,201,917
APPARATUS FOR IRRADIATION OF FLUIDS
Alfred Graentzel, Durmersheimer Str. 98, Karlsruhe, Fed. Rep. of Germany
Filed Jul. 12, 1978, Ser. No. 924,002
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733344
Int. Cl.² G01N 21/24
U.S. Cl. 250—431 **7 Claims**



1. Apparatus for the irradiation of fluids to cause a chemical reaction therein, said apparatus comprising: an axially symmetrical container having its axis disposed during operation in a vertical position; a rotor centrally supported within said container for rotation therein, said rotor being spaced from the inner surface of the container so as to form a flow path of annular cross-section for receiving the fluid to be irradiated and having wiping elements adapted to remove any deposits from the inner surface of said container, said container having a fluid inlet at its upper end; and a fluid outlet at its lower end; a radiation source disposed adjacent said flow path; shielding means arranged at the inlet end portion of said container between said source and said flow path and extending downwardly from the upper end of said container a predetermined distance for shielding the fluid in said flow path from irradiation by said source; gas discharge outlets at the opposite axial ends of said container, and a gas inlet arranged at the lower end of said shielding means for the admission of a carrier gas providing for upward and downward gas flow zones within said container from said gas inlet to said gas outlets, the upper gas outlet serving to discharge gases containing carbon of inorganic origin driven out of the fluid in the shielded section of

said flow path and the lower gas outlet serving to discharge gases containing carbon of organic origin generated by irradiation of the fluid in an unshielded section of said flow path at the lower end of said container so as to permit distinct measurement of organic compounds in the fluid.

4,201,918

APPARATUS FOR THE ELECTRON BEAM IRRADIATION OF A FLOWABLE MATERIAL, MORE PARTICULARLY SEWAGE SLUDGE

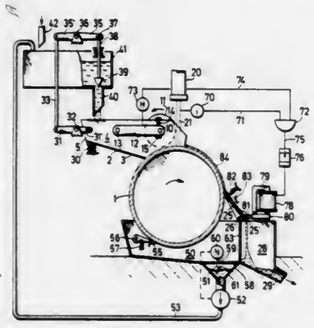
Beda Latzer, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 27, 1978, Ser. No. 900,622

Claims priority, application Switzerland, May 4, 1977, 5556/77

Int. Cl.² G01N *23/00*

U.S. Cl. 250—433 **20 Claims**



1. An apparatus for the electron beam irradiation of a flowable material, more particularly sewage sludge, the apparatus having a conveying drum moving the material through the electron beam, means for supplying the material to the drum, a resiliently mounted dispensing roller for spreading the material in a thin layer on the drum, a doctor device for removing the material from the drum, and a collecting tank for irradiated material, characterised in that a final control element is adapted to adjust the doctor device between a position in which the material enters the collecting tank and a position in which the material reaches a trough for material to be recirculated; and the final control element so responds to signals from an electron beam intensity pickoff and from a pickoff responding to the distance between the dispensing roller and the drum that when at least one of the measured values departs from its tolerance range, the doctor device guides the material into the trough.

4,201,919

X-RAY FILM LOADER

Gunter Schmidt, Malibu, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 805,817, Jun. 13, 1977, abandoned. This application Jan. 23, 1979, Ser. No. 5,720

Int. Cl.² G03B *41/16*

U.S. Cl. 250—468 **10 Claims**

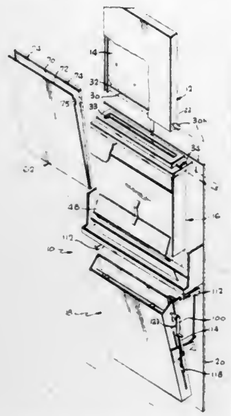
1. Apparatus for receiving a lighttight envelope containing a stack of film sheets and for loading one film sheet at a time into a cassette, comprising:

a lighttight dispenser housing having upper and lower walls provided with openings;

a lighttight receiver housing mounted on and having an exit at its lower end for discharging said stack of films to the dispenser housing;

means at the upper end of said receiver housing for holding one end of the said envelope, and means at the lower end of said receiver housing for clamping the opposite end of the envelope, said clamping means being releasable from outside said receiver housing to allow the film stack to fall down through said lower end of the receiver housing to the dispenser housing;

means in said dispenser housing for passing only one film sheet at a time, to fall through said lower end of said dispenser housing; and



a lighttight cassette-holding housing disposed under said dispenser housing for holding a cassette in an open position under the lower end of said dispenser housing portion, and including cassette closing means for closing the cassette while it lies in said cassette-holding housing.

4,201,920

APPARATUS FOR IRRADIATING A TARGET ON TWO OPPOSITE FACES BY MEANS OF AN ACCELERATED CHARGED PARTICLE BEAM

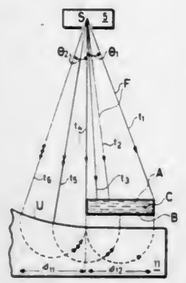
Dominique Tronc, and Claude Levaillant, both of Buc, France, assignors to C.G.R. MeV, Buc, France

Filed Jun. 27, 1978, Ser. No. 919,551

Claims priority, application France, Jul. 1, 1977, 77 20376

Int. Cl.² H01J *37/00*

U.S. Cl. 250—492 B **11 Claims**



1. A two-face irradiation apparatus for irradiating, by means of a charged particle beam, a target having at least two opposite faces A and B, said apparatus comprising a charged particle accelerator, a microwave generator supplying a microwave signal, means for injecting this microwave signal into said accelerating structure, means for obtaining a scanning beam of a predetermined amplitude corresponding to a scanning angle θ from said beam of accelerated particles moving in a vacuum-tight scanning chamber, said target being disposed over part of the path followed by the scanning beam corresponding to a scanning angle θ_1 in such a way that the scanning beam of angle θ_1 impinges on said face A of said target; a magnetic deflection system provided with two pole pieces delimiting an air gap disposed downstream of said target, these pole pieces, which are arranged parallel to the scanning plane, having a length at least equal to said amplitude of said scanning beam on a level with said pole pieces, said scanning chamber being provided with at least one opening for positioning said target on the portion of said scanning beam corresponding to a scanning angle θ_1, said opening being provided with at least one vacuum-tight window which is transparent to said scanning beam, the portion of the beam corresponding to a scanning angle $\theta_2=\theta-\theta_1$ and which is not intercepted by said target, entering said air gap of the pole pieces and being reflected to impinge on said opposite face B, said pole pieces having a face, so-called useful face, facing said opposite face B, said useful face comprising several sections having different curvatures for obtaining a reflected beam substantially perpendicular to said opposite face B.

4,201,921

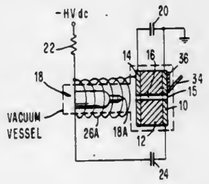
ELECTRON BEAM-CAPILLARY PLASMA FLASH X-RAY DEVICE

Richard A. McCorkle, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,238

Int. Cl.² H05B *31/22*

U.S. Cl. 250—493 **14 Claims**



1. An x-ray device for employment in a vacuum chamber comprising:

a first plate of a conductive material;

an intermediate layer of an insulating material attached to said first conductive plate;

a second plate of a conductive material attached to said intermediate layer and electrically isolated from said first conductive plate;

a cylindrical capillary passage formed by a first capillary opening which extends through said first conductive plate, said layer of insulating material and said second conducting plate;

a first electrode having a tapered end, said electrode spaced apart from said second conducting plate and aligned with said cylindrical capillary passage;

means for supplying ions to said cylindrical capillary passage;

first means for storing capacitive energy so that said second plate is maintained at a potential with respect to said first plate;

second means for storing capacitive energy so that said first electrode is maintained at a potential with respect to said first plate;

means for electrically connecting said first electrode and said second conducting plate allowing passage of a current to equalize the potential between said second conductive plate and said first electrode; and

means for triggering a discharge between said first conductive plate and said second conductive plate, where an ionized plasma is established in said cylindrical capillary passage and said electrode discharges an electron beam into said plasma causing the generation of x-rays.

4,201,922

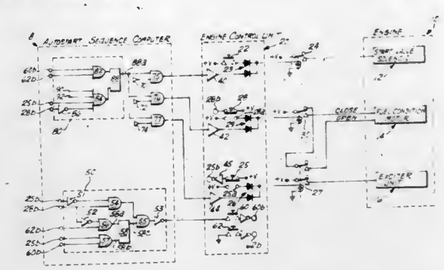
AUTOMATIC START/MANUAL START INTERLOCK SYSTEM FOR A GAS TURBINE ENGINE

Orva H. Douglas, and Quinciano G. Mendoza, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 750,301, Dec. 13, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 913,152

Int. Cl.² B60K *33/00*

U.S. Cl. 290—38 R **20 Claims**



1. A starting apparatus for an engine, said starting apparatus comprising:

engine starting equipment connected to the engine,

first means for generating a sequence of first signals,

second means for providing second signals,

control means responsive to said first signals and said second signals for operating said engine starting equipment,

first switch means connected to said first means for initiating the generation of said first signals,

second switch means for selectively coupling said second signals to said control means,

first latch means responsive to said second switch means for enabling and disabling said first switch means, and

second latch means responsive to said second switch means for enabling and disabling said first signals.

4,201,923

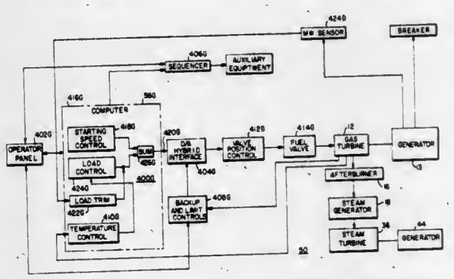
COMBINED CYCLE ELECTRIC POWER PLANT AND A GAS TURBINE HAVING IMPROVED MEGAWATT LOAD CONTROL

Terry J. Reed, North Huntingdon, and Jack R. Smith, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,730

Int. Cl.² H02P *9/04*

U.S. Cl. 290—40 R **21 Claims**



1. A gas turbine electric power plant comprising a compressor section and a turbine section, a plurality of combustors for energizing the driving gas flow for the turbine section, means for generating electric power under the driving power of the turbine, a gas turbine control system including means for controlling the flow of fuel to the turbine combustors, means for generating a fuel reference having one portion thereof corresponding to load demand in units of electrical power generation and having another portion thereof corresponding to the

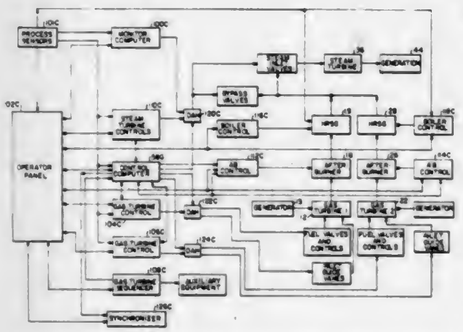
fuel required for idling operation, and means for coupling said fuel reference generating means to said fuel flow controlling means.

4,201,924

COMBINED CYCLE ELECTRIC POWER PLANT WITH A STEAM TURBINE HAVING A SLIDING PRESSURE MAIN BYPASS AND CONTROL VALVE SYSTEM

Robert Uram, East Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 13, 1974, Ser. No. 497,503
Int. Cl.[2] H02P 9/04
U.S. Cl. 290—40 R **16 Claims**



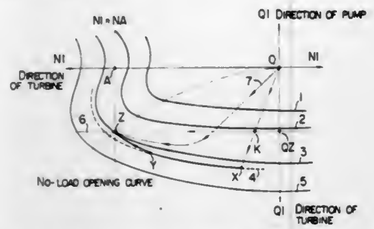
1. A combined cycle electric power plant comprising at least one gas turbine, means for generating steam in response to heat energy from the gas turbine, a steam turbine driven by steam supplied to it from the steam generating means, means for generating electric power under the driving power of the turbines, control valve means to control the admission of steam from the steam generating means to the steam turbine, bypass valve means to control the steam from the steam generating means to bypass the steam turbine, means for controlling the operation of the steam generating means and the turbines, said controlling means including a steam turbine control system having an automatic control, said automatic control including a means to generate a first representation of steam flow from the steam generating means, a means to generate a second representation of steam pressure, a means responsive to the first representation to generate a third representation of steam pressure as a function of steam flow according to a predetermined characterization, a means to generate a representation of speed/load demand for the steam turbine, a means governed by the second representation and the third representation to operate the bypass valve means to control the steam pressure according to the predetermined characterization, a first means responsive to the speed/load demand representation to modulate the control valve means to admit steam to the turbine, and a second means governed by the second and third representation to operate the control valves to control the steam pressure to be not less than a predetermined variation from said predetermined characterization whereby the bypass valves are operated to maintain a predetermined pressure flow relationship to the steam turbine, and the control valves respond to the predetermined pressure flow relationship only when the bypass valve is closed to minimize the probability of water carryover into the steam turbine.

4,201,925

METHOD FOR STARTING HYDRAULIC TURBINE GENERATOR

Takao Kuwabara; Hiroshi Okumura, and Toshiaki Yokoyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1977, Ser. No. 818,594
Claims priority, application Japan, Jul. 26, 1976, 51-88214
Int. Cl.[2] H02P 9/04
U.S. Cl. 290—52 **2 Claims**



1. A method for starting a hydraulic turbine system having a generator, a turbine with a runner coupled to drive the generator at a rated r.p.m., and wicket gates for adjusting the flow rate of water running into the runner, comprising the steps of:

quickly opening the wicket gates from a fully closed condition of the rates until the flow rate of the water reaches the fixed flow rate that corresponds to operation of the turbine at rated r.p.m. and the design no-load wicket gate opening for the head during the step;

thereafter slowing opening the wicket gates to maintain the fixed flow rate as the speed increases to the rated r.p.m., to thereby compensate for the tendency to reduce turbine flow rate with an increase in r.p.m. of the runner; and

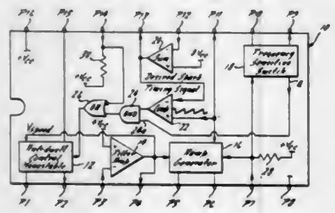
thereafter synchronizing the turbine-generator at no-load to an electric power transmission system.

4,201,926

ELECTRONIC CIRCUIT FOR USE IN A VARIETY OF ENGINE CONTROL SYSTEMS

LaVerne A. Caron, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 752,493, Dec. 20, 1976, Pat. No. 4,102,310.
This application Mar. 13, 1978, Ser. No. 885,913
Int. Cl.[2] H03K 19/08; F02P 5/08
U.S. Cl. 307—141 **9 Claims**



6. In an electronic timing control circuit the subcombination comprising:

first and second terminals adapted to be connected with a DC power supply for energizing circuitry of the subcombination;

an output stage which is switchable from one state to another state to produce at an output thereof an output signal;

a third terminal connected with said output of said output stage and at which said output signal is given;

a fourth terminal adapted to receive a variable frequency trigger signal;

a fifth terminal adapted to receive a variable frequency trigger signal;

a sixth terminal adapted to receive a desired timing signal representing desired timing of said output signal;

circuit means coupling said fourth, fifth, and sixth terminals and said output stage such that when a trigger signal is received at said fourth terminal said output stage will produce said output signal in response thereto so long as said output stage is in its one state at the time that the effect of the trigger signal received at said fourth terminal is felt by said output stage, and when a trigger signal is received at said fifth terminal at a frequency greater than a selected frequency, a desired timing signal received at said sixth input terminal will control, at least in part, the time at which said output stage produces said output signal;

at least one additional terminal associated with said output stage adapted to be connected with at least one circuit device external to the circuitry of the subcombination for imparting a desired characteristic to said output stage; and

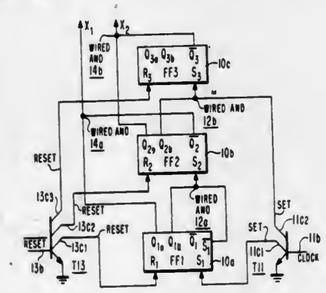
at least one further terminal associated with said means adapted to be connected with a further at least one circuit device external to the circuitry of the subcombination for imparting a desired characteristic to said means.

4,201,927

CIRCUIT FOR PRODUCING SEQUENTIALLY SPACED PULSES

Borys Zuk, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 8, 1978, Ser. No. 903,688
Claims priority, application United Kingdom, May 24, 1977, 21890/77
Int. Cl.[2] H03K 3/286, 5/13
U.S. Cl. 307—269 **5 Claims**



1. A circuit for generating two consecutive, non-overlapping pulses, comprising:

first, second, and third bistable circuit elements, each bistable element having a set input for setting the element to one stable state, a reset input for setting the element to another stable state, and true and false outputs; each bistable element being of the type which is set to said one stable state when the signal at its set input makes a transition from a first binary value to a second binary value subsequent to the signal at its reset input having made a transition to said second binary value; each bistable circuit being initially in a stable state;

means for applying an input signal of one binary value to said set input of said first bistable element for setting it to its second stable state, other than its initial state;

means, responsive to said input signal representing a bit of the other than said one binary value and to said first bistable circuit being in its second stable state, coupled to the set input of said second bistable circuit, for setting it to its second, other than initial, stable state;

means, responsive to said input signal representing a bit of said one binary value and to said second bistable circuit being in its second stable state, coupled to the set input of said third bistable circuit for setting it to its second other than initial, stable state;

means for combining outputs of said first and second bistable circuits for producing a first pulse; and

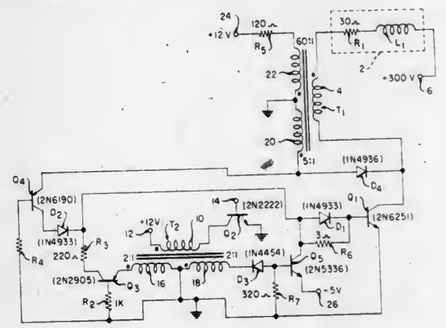
means for combining outputs of said second and third bistable circuits for producing a second pulse consecutive to, and non-overlapping with, said first pulse.

4,201,928

POWER TRANSISTOR ACTUATING AND BOOTSTRAP DRIVE CIRCUIT

Philip W. Koetsch, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 27, 1978, Ser. No. 872,965
Int. Cl.[2] H03K 1/00
U.S. Cl. 307—270 **7 Claims**



1. A drive circuit for a switching transistor, said switching transistor comprising a base, collector, and emitter and being adapted to control the application of electrical power to an inductive load, comprising:

an actuating circuit connected to deliver a first gating current to the base of said switching transistor in response to a driving signal, the magnitude of said current being sufficient to actuate and maintain said switching transistor in a conductive state during a low range;

a bootstrap drive circuit connected to deliver a second gating current to the base of said switching transistor, the magnitude of which varies in positive proportion to the switching transistor's load and is sufficient to maintain said switching transistor in a conductive state for loads in excess of said low load range;

circuit means for rapidly deactuating said switching transistor in response to the removal of a driving signal, said deactuating circuit means comprising a deactuating switching transistor connected in circuit with the base of said switching transistor so as to render said switching transistor nonconductive when said deactuating switching transistor is conductive; and

a pulse transformer having a primary winding adapted to receive a driving pulse signal, a first secondary winding connected in circuit with the remainder of said actuating circuit, and a second secondary winding connected in circuit with the base of said deactuating switching transistor to render said deactuating switching transistor nonconductive when a drive pulse is applied to said pulse transformer, and conductive during the absence of a drive pulse at said pulse transformer.

4,201,929

SINGLE PHASE STEPPING MOTOR

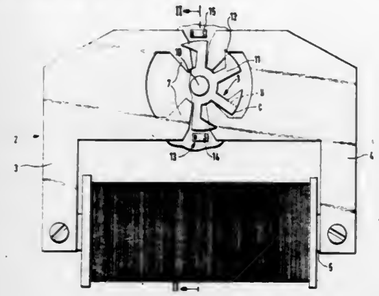
Roland Sudler, Frankfurt, and Walter Happel, Morfelden, both of Fed. Rep. of Germany, assignors to Quarz-Zeit AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,101

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1977, 2707251

Int. Cl.² H02K *37/00*

U.S. Cl. 310—49 R **7 Claims**



1. In a single phase stepping motor, particularly for clocks, with a rotor with several pole teeth, of which each pole tooth comprises a main pole and an auxiliary pole formed on the latter, and with a stator, the latter being made of two stator parts connected with one another via a bridge part, the latter carrying the excitation winding, of which each stator part on its free end transfers into an equal or smaller number (in comparison to the rotor pole number) of stator pole teeth, the stator pole teeth being directed towards the face side of the rotor, as well as a permanent magnetic circuit arranged between the stator pole teeth by means of which circuit the rest position of the rotor is determined with the unexcited condition of the stator, the improvement wherein

the rotor defines a circumferential edge, each of the auxiliary poles of the rotor comprising a projection extending in the circumferential direction in the region of the edge of the rotor,

the stator pole teeth and the rotor pole teeth radially overlap so that respective face sides face each other, the permanent magnetic circuit comprises at least one permanent magnet spaced apart from said stator and from said rotor, said at least one permanent magnet being arranged beyond the circumferential edge of the rotor and having a pole axis extending substantially tangential to the rotor and a size such that a part of the magnetic lines of force close across a zone of the circumferential edge solely of one main pole and corresponding auxiliary pole formed on the latter constituting a single rotor pole of the rotor, respectively,

means including the excitation winding for alternatingly exciting the stator parts.

4,201,930

AC GENERATOR HAVING A CLAWTOOTH ROTOR WITH IRREGULAR TRAPIZOIDAL TEETH

Mitsuo Inagaki, Okazaki; Yoshiyuki Hattori, Toyoake, and Masahiro Taguchi, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

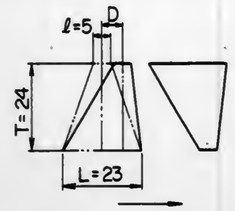
Filed Jul. 7, 1978, Ser. No. 922,851

Claims priority, application Japan, Jul. 15, 1977, 52-85466

Int. Cl.² H02K *5/24, 1/22*

U.S. Cl. 310—51 **2 Claims**

1. In an AC three-phase generator including an armature core having a plurality of teeth arranged with a predetermined slot pitch, a plurality of three-phase armature windings wound on said armature core and a rotor disposed to face said armature core with a small gap therebetween and having at least one pair of finger magnetic poles disposed to be energized to opposite polarities, the improvement wherein each of said finger magnetic poles has its surface facing said armature core formed into an irregular trapezoidal shape having a base of about three times as wide as said slot pitch and a side opposite



to said base, said base and said side having center points, the center points of said side displaced with respect to the center point of said base in the direction of rotation of said rotor, the ratio of the displacement of said side to said predetermined slot pitch being in the range of 0.2 to 0.7.

4,201,931

APPARATUS FOR PROTECTING THE TARGET OF AN IMAGE-PRODUCING TUBE FROM INJURIOUSLY HIGH LOCAL CURRENT DENSITIES

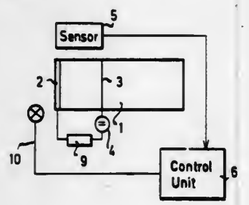
Günther Kürbitz, Aalen-Ebnat; Walter Wegener, Aalen, and Hans-Richard Weinheimer, Königsbronn, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Sep. 27, 1977, Ser. No. 837,016

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645032

Int. Cl.² H01J *31/26*

U.S. Cl. 315—10 **7 Claims**



1. Apparatus for protecting the target of an image-producing tube from injuriously high local current densities, attributable to excessively high local-illumination at the cathode of such tube, comprising detector means responsive to onset of an unacceptably high local-illumination intensity condition at the cathode, such response producing an electrical pulse output upon occurrence of said condition, control means connected to the output of said detector means, a cathode-target excitation circuit including a variable-resistance element, and means connected to said control means and operative to rapidly change the resistance of said variable-resistance element upon the occurrence of such an electrical pulse output of said detector means, such rapid change being in the direction and to a value which reduces electron flow between the cathode and target of the tube.

4,201,932

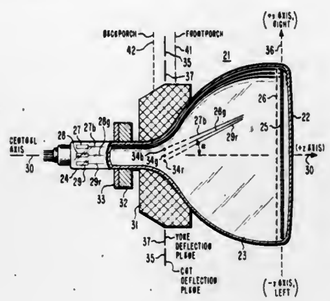
COLOR PURITY ADJUSTING METHOD

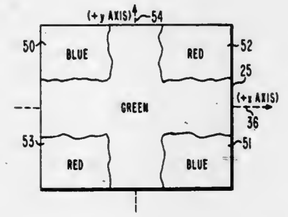
Joseph L. Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,534

Int. Cl.² H01J *29/50, 31/00*

U.S. Cl. 315—13 C **13 Claims**





1. A method of adjusting for color purity of a color cathode ray tube, said cathode ray tube including purity adjusting apparatus, comprising the steps of:

placing magnetic apparatus adjacent said cathode ray tube capable of generating an auxiliary magnetic field and magnetizing metallic components of said cathode ray tube with said auxiliary magnetic field, said auxiliary magnetic field of sufficient strength to create upon the removal of said auxiliary magnetic field a remanent field of sufficient strength for use as an aid in adjusting the color purity of said cathode ray tube;

removing said auxiliary magnetic field;

operating said cathode ray tube to generate a color pattern upon the screen of said cathode ray tube by the interaction of said remanent field with at least one electron beam of at least one electron gun of said cathode ray tube; and

adjusting said purity adjusting apparatus to obtain a color pattern indicative of a correct color purity.

4,201,933

ELECTRON GUN STRUCTURE FOR A PICKUP TUBE

Takanori Hisada, Yokohama, and Kyohei Fukuda, Mobara, both of Japan, assignors to Hitachi, Ltd., Japan

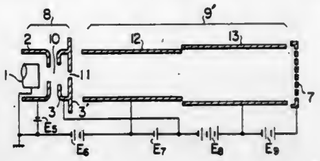
Filed May 22, 1978, Ser. No. 908,372

Claims priority, application Japan, May 27, 1977, 52-60974

Int. Cl.² H01J *29/56*

U.S. Cl. 315—16 **5 Claims**

3. An electron gun structure for a pickup tube having a target, comprising: a cathode lens electrode assembly including a cathode for producing an electron beam and a plurality of electrodes; a beam disc electrode having a beam limiting hole; a main lens electrode assembly for accelerating and focusing said electron beam, said beam disc electrode being between said cathode lens electrode assembly and said main lens electrode assembly; and means for supplying potentials to said cathode lens electrode assembly, said beam disc electrode and said main lens electrode assembly for establishing a crossover in said cathode lens electrode assembly and for making the beam spot on the target of the tube minimum; in which said main lens electrode assembly includes a first electrode and a second electrode arranged in succession in the direction of the passage of said electron beam, and said potential supplying means includes first means for supplying said first and second



electrodes with first and second potentials to form a bipotential electron lens in said main lens electrode assembly and second means for supplying said beam disc electrode with a third potential, said first potential being lower than said second potential and the ratio of said third potential to said first potential being set to provide substantially a minimum coefficient of aberration for the main lens electrode assembly.

4,201,934

EXTERNAL SENSOR FOR ELECTRONIC FLASH

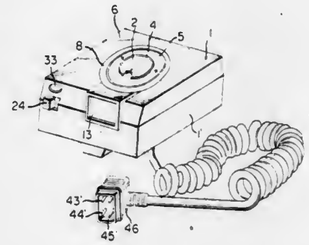
Koreaki Esaki, Suita, Japan, assignor to West Electric Co., Ltd., Osaka, Japan

Filed Mar. 21, 1978, Ser. No. 888,629

Claims priority, application Japan, Mar. 25, 1977, 52-36718[U]

Int. Cl.² H05B *41/32*

U.S. Cl. 315—151 **4 Claims**



1. An external sensor detachably connected to an electronic flash of the type having a flash control circuit capable of controlling the flash duration of a flash tube which flashes by discharging the energy stored on a main capacitor, said external sensor comprising

(a) a light receiving unit for generating a flash interrupt signal when the amount of light reflected back from a subject and received by said light receiving unit has reached a predetermined level and for transmitting said flash interrupt signal to said flash control circuit in said electronic flash,

(b) a mode selection switch for selecting an automatic flash exposure mode wherein the flash duration is controlled by said flash interrupt signal from said light receiving unit or a manual flash exposure mode wherein said light receiving unit is disabled,

(c) a display means which is turned on when said mode selection switch is set to said automatic flash exposure mode,

(d) flash exposure data display means for displaying flash exposure data comprising film speed, aperture, and distance to a subject, said display means being illuminated by said first-mentioned display means in said automatic flash exposure mode,

(e) a pair of molds which house said light receiving unit, said

mode selection switch, said first-mentioned display means and said flash exposure data display means, and

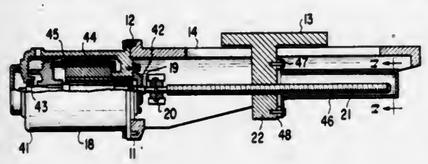
(f) a window through one of said pair of molds for permitting a user to view the data displayed by said flash exposure data display means.

4,201,935

METHOD AND APPARATUS FOR CONTROLLING THE FEED OF MACHINE TOOLS

Nobuo Fukuma, Toyota, and Yoshito Kato, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 17, 1977, Ser. No. 760,010
Claims priority, application Japan, Jan. 16, 1976, 51-4531; Sep. 3, 1976, 51-119367[U]; Oct. 28, 1976, 51-145011[U]
Int. Cl.² H02K 7/10
U.S. Cl. 318—15 **2 Claims**



1. An improved D.C. motor driven feed including a screw and nut which moves the table of a machine tool through predetermined positions in accordance with orders to change the rate of feed, said apparatus comprising:

a power damping circuit;

a switching circuit for electrically coupling said power damping circuit to said D.C. motor for a predetermined time whenever there is an order to change the rate of feed; and

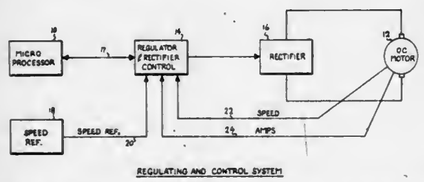
a cylindrical protective cover having a central axis coupled to said nut and covering said feed screw such that a central axis of said feed screw is displaced to one side of said central axis of said protective cover and a bottom inside cylindrical surface of said cover is in relative near proximity to the feed screw and the top inside cylindrical surface of said cover is in relative far proximity to said feed screw.

4,201,936

MOTOR SPEED REGULATOR AND CONTROL SYSTEM

Paul J. Roumanis, Stratford, Conn., assignor to General Electric Company, Salem, Va.

Filed Dec. 10, 1976, Ser. No. 749,641
Int. Cl.² H02P 5/12
U.S. Cl. 318—341 **10 Claims**



REGULATING AND CONTROL SYSTEM

1. A method of controlling a DC motor in a system of the type including a data processor programmed to calculate a firing angle to develop a firing pulse to fire a controllable rectifier connected between an AC source and the DC motor to regulate the speed thereof, comprising the steps of:

(a) providing, in the processor, stored parameters proportional to desired motor speed and firing angles;

(b) generating an interrupt signal to the processor;

(c) directing the processor, in response to said interrupt signal, to,

(1) read a value proportional to acutal motor speed,

(2) read a value proportional to motor current,

(3) calculate a value proportional to firing angle as specified by the combined differences between the desired motor speed and said actual motor speed and a value proportional to a previously read motor current and the last read motor current and previously calculated differences of said combined differences,

(4) select a one of said stored firing angles based on said calculated value,

(d) generating a firing pulse to fire a rectifier at a time specified by the value of said selected firing angle; and

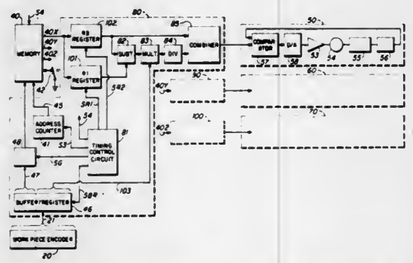
(e) repeating steps c and d utilizing said firing pulse as said interrupt signal.

4,201,937

CONTROL APPARATUS FOR PROGRAMMABLE MANIPULATOR

Akiyoshi Irie, Himeji, Japan, assignor to Unimation, Inc., Danbury, Conn.

Filed Apr. 7, 1978, Ser. No. 894,562
Int. Cl.² G05B 19/24
U.S. Cl. 318—568 **30 Claims**



1. In a programmable manipulator having a manipulator arm movable in a plurality of axes, control apparatus for controlling the movement of the manipulator arm to describe a predetermined work operation with respect to a workpiece capable of movement along a predetermined path, said control apparatus comprising:

means for storing two or more series of command signals, each of said series of command signals representing the same series of points along the predetermined work operation with respect to the workpiece at respective positions of the workpiece;

means for generating a workpiece position signal representing the position of the workpiece along the predetermined path;

means responsive to said workpiece position signal and the two series of command signals that correspond to the two respective workpiece positions on either side of said workpiece position signal for generating interpolation control signals accounting for workpiece position;

means for controlling said interpolation signal generating means to successively interpolate between said two series of command signals along said series of points; and

means responsive to said interpolation control signals for moving said manipulator arm.

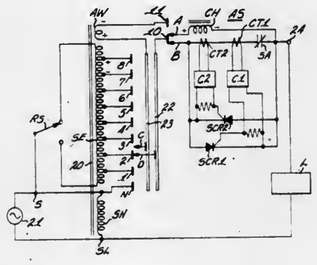
4,201,938

VOLTAGE REGULATOR WHICH ELIMINATES ARCING DURING TAP CHANGES

Manfred E. Neumann, New Berlin, Wis., assignor to Siemens-Allis, Inc., Atlanta, Ga.

Filed Oct. 2, 1978, Ser. No. 947,871
Int. Cl.² G05F 1/14
U.S. Cl. 323—43.5 R **8 Claims**

1. In a tap changing voltage regulator having an exciting winding, a tapped electrical winding inductively linked to said exciting winding and having a plurality of taps, a pair of tap changer switch selector contacts adapted to sequentially engage said taps, an auxiliary winding inductively linked to said exciting winding and being coupled at one end to one of said selector contacts, an auxiliary switch having first and second stationary contacts connected respectively to the other end of said auxiliary winding and to the other selector contact and also having first and second movable contacts normally engaging the same stationary contact and a pair of normally closed contacts, said first movable contact being connected through an inductor to an outgoing load-current-carrying line and said second movable contact being connected through said normally closed contacts to said outgoing line, a pair of inversely parallel thyristors connected in shunt to said normally closed contacts, said auxiliary switch being adapted to step said first and second movable contacts between said stationary contacts



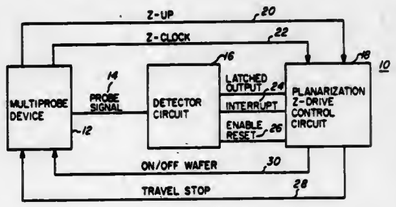
and to disengage said first movable contact from one stationary contact and to engage it with the other before said second movable contact disengages said one stationary contact and to then open said normally closed contacts and to subsequently disengage said second movable contact from said one stationary contact and engage it with the other, whereby circulating current may flow through said movable contacts, said inductor and said normally closed contacts when said selector contacts bridge adjacent taps during a tap change, means for supplying gating current to said thyristors during a tap change and for removing said gating current subsequent to the opening of said normally closed contacts but prior to the disengagement of said second movable contact from said one stationary contact, whereby circulating and load current are statically interrupted by said thyristors at a current zero and said second movable contact is then free to move arclessly into engagement with said other stationary contact.

4,201,939

MULTIPROBE CONTACT MONITOR AND CONTROL SYSTEM

Edward C. Lee, and Thillaigovindan Natarajan, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1978, Ser. No. 918,905
Int. Cl.² G01R 31/02, 1/06
U.S. Cl. 324—158 P **7 Claims**



1. A planarization and overtravel control circuit for a multiprobe test system having a multiprobe device with a plurality of data-detector probes attached thereto for testing a semiconductor wafer having a plurality of integrated circuits disposed thereon, and further detecting contact of said plurality of data-detector probes with the surface of said semiconductor wafer, said plurality of data-detector probes electrically connected to a detector circuit where signals from said data-detector probes are electrically screened to designate when any one of said plurality of data-detector probes has made contact with the surface of said semiconductor wafer; said planarization and overtravel control circuit comprising:

reset circuit means for delivering an electrical signal to a latch circuit within said detector circuit for initializing said latch circuit to receive a signal from said plurality of data-detector probes when contact is made with the surface of said semiconductor wafer;

planarization monitor circuit means electrically connected to said reset circuit means for determining when said data-detector probes lie within a predetermined planarization limiting resetting the said latch circuit of said detector circuit when any one of said plurality of data-detector probes falls outside said planarization limit; and

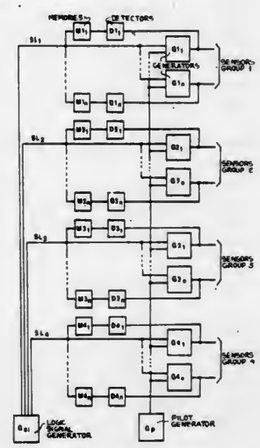
overtravel control circuit means for determining when the data-detector probes have travelled a predetermined distance into said semiconductor wafer.

4,201,940

METHOD AND APPARATUS FOR MEASURING THE POSITION OF REGULATING RODS IN A NUCLEAR REACTOR

Regis Dardenne, Roselies, Belgium, assignor to ACEC, Ateliers de Constructions Electriques de Charleroi, Charleroi, Belgium

Continuation of Ser. No. 710,107, Jul. 30, 1976, abandoned. This application Jun. 20, 1978, Ser. No. 917,274
Claims priority, application Belgium, Jul. 31, 1975, 158796
Int. Cl.² G01R 33/00
U.S. Cl. 324—207 **2 Claims**



1. A method for measuring the position of regulating rods in a nuclear reactor through the measure of a voltage appearing across the terminals of an induction coil fed by a constant current AC supply, each regulating rod being interlocked with a control rod able to move along the longitudinal axis of said coil, said process comprising the steps of arranging said regulating rods into a certain number of groups in such a way that the said regulating rods are randomly distributed throughout the reactor so that no two regulating rods in the same group are located close to one another, feeding the thus formed groups of regulating rods in sequence, measuring the voltage appearing across the terminals of the coils of each group during a time interval corresponding to the feeding time interval of that group, and memorizing said voltage for a time interval corresponding to the non-feeding time period of the group.

4,201,941

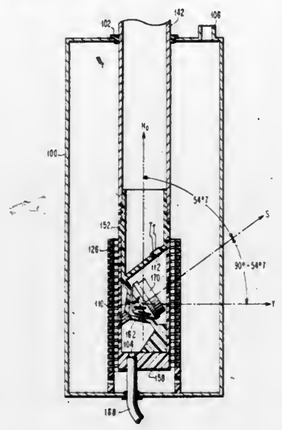
SPINNING APPARATUS FOR NMR SPECTROMETERS

Colin A. Fyfe, Guelph, Canada; Horst G. Mossbrugger, San Jose, and Costantino S. Yannoni, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1978, Ser. No. 930,846

Int. Cl.[2] G01R *33/08*

U.S. Cl. 324—321 **18 Claims**



1. Spinning apparatus for nuclear magnetic resonance spectrometers, including

a stator assembly comprising

a body member having a central longitudinal axis,

said body member having a conical bore arranged therein with the apex of said bore at one side of the body member with the longitudinal axis of said bore arranged at an angle to said longitudinal axis of said body member lying between 45° and 90° and with the base of the conical bore lying between said longitudinal axis of said body member and said one side thereof,

said body member having a multiple of apertures therethrough into said conical bore forming jets and a bore communicating with said jets and extending parallel to said longitudinal axis of said body member to one end thereof for carrying gas to said conical bore for establishing a gas bearing and for driving a rotor assembly, and

a cover member adapted to fit over said body member about said conical bore for substantially confining a rotor assembly in said conical bore and for directing driving gas in said body member,

said cover member having at least one aperture on the side of said body member opposite said one side for venting gas spent in driving said rotor assembly, and

a rotor assembly comprising

a conical head portion and a cylindrical tail portion of diameter smaller than that of the base of said conical head portion with the dimensions of said conical head portion in part substantially complementing those of said conical bore and in part substantially departing from those of said conical bore in said stator assembly, and

the overall dimensions of said rotor assembly are less than the internal dimensions delimited by said cover member.

4,201,942

DATA CONVERSION SYSTEM

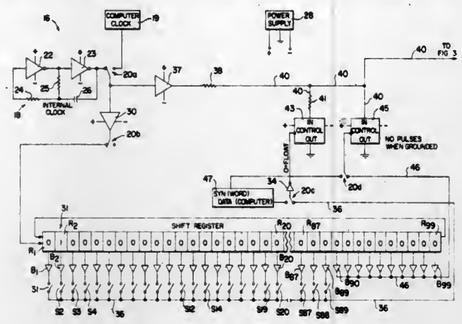
Edward W. Downer, 5252 Evergreen Dr., North Olmsted, Ohio 44070

Filed Mar. 8, 1978, Ser. No. 884,696

Int. Cl.[2] H04B *1/00*

U.S. Cl. 375—17 **11 Claims**

1. A data conversion method comprising the steps of generating a repetitive clock signal having first and second phases of a predetermined amplitude, representing a series of binary digits through actuation of a series of switching means each having a first condition corresponding to one binary situation and a second condition corresponding to the other binary situation, inputting said clock signal to a counting means to



produce a plurality of timing signals, and inputting said plurality of timing signals to said series of switching means to produce a data signal, generating an output signal by combining said clock signal and said data signal, and transmitting said output signal through use of a communication means.

4,201,943

TUNING CIRCUIT FOR A HIGH FREQUENCY HETERODYNE RECEIVER WITH TUNING CONTROLLED BY DIRECT VOLTAGE

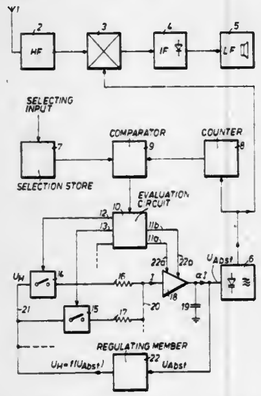
Otto Klank, Arpke, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 3, 1978, Ser. No. 892,868

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1977, 2718472

Int. Cl.[2] H04B *1/16*

U.S. Cl. 455—185 **9 Claims**



1. In a circuit for a high frequency heterodyne receiver, including a controllable reactance element connected to receive a tuning voltage to effect tuning, an electronic counter for digital determination of the reception frequency by periodic counting of the oscillations of at least one heterodyne oscillator of the receiver, a selection memory, a comparator connected for comparing the result of counting by the counter with the content of the selection memory, an evaluation circuit connected for evaluating the result of the comparison, and an integrating circuit including a capacitor connected to be controlled by the evaluation circuit for producing the tuning voltage, the improvement wherein said circuit further comprises means connected to supply a charging current to said capacitor, said means including a source of an auxiliary voltage, a plurality of circuit units connected in parallel with one another between said voltage source and said integrating circuit, each said circuit unit being composed of a series arrangement of a resistor and an electronic switch connected to have its switching state controlled by a respective component of the comparison result produced by said comparator, whereby the charging current to said capacitor is a function of the value of the auxiliary voltage and the switching states of said electronic switches, and regulating means connected for causing the value of said auxiliary voltage to be a function of the value of said tuning voltage.

4,201,944

RECEIVER HAVING A MEASUREMENT INSTRUMENT WHICH IS USED AS A TUNING SCALE

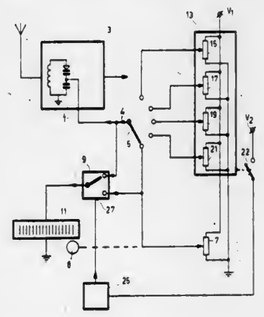
Johan W. Beunders, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 790,297, Apr. 25, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 958,319

Claims priority, application Netherlands, Apr. 27, 1976, 7604444

Int. Cl.[2] H04B *1/06*

U.S. Cl. 455—155 **4 Claims**



1. A receiver comprising a tuning section, an adjustable tuning signal source means for supplying to said section an electrical quantity corresponding to a frequency, a presettable tuning signal source means for supplying to said section an electrical quantity corresponding to a frequency, said electrical quantities causing said tuning section to be tuned to said corresponding frequencies respectively, a measuring instrument means for indicating the frequency to which an electrical quantity supplied by one of said sources corresponds, and means for providing presetting of said presettable source to an electrical quantity equal to an electrical quantity of said adjustable source including periodic commutator means coupled to said measuring instrument and source and means for alternately coupling each of said source means to said measuring instrument means.

4,201,945

PHASE COMPARING APPARATUS

Tsutomu Ohgishi, Yahata; Toru Akiyama, and Tadashi Sakurai, both of Neyagawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed May 8, 1978, Ser. No. 903,789

Claims priority, application Japan, May 20, 1977, 52/60183; May 20, 1977, 52/60184

Int. Cl.[2] H04B *1/06*

U.S. Cl. 455—183 **20 Claims**

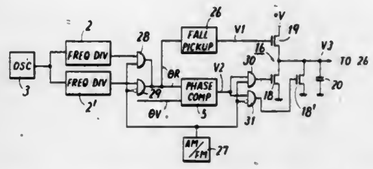
11. A phase comparing apparatus, comprising:

means for providing a first frequency signal of a reference frequency,

means for providing a second frequency signal of a frequency or phase being compared with that of said first frequency signal,

phase comparator means responsive to said first and second frequency signal providing means for comparing the frequencies or phases of said first and second frequency signals for providing an output representative of a frequency difference or a phase difference between said first and second frequency signals,

charging/discharging circuit means responsive to one of said first and second frequency signal providing means for being forced to one of the charged and discharged states and responsive to the output of said phase comparator means for being forced toward the other of the charged and discharged states at a predetermined time constant as a function of said output of said phase comparator means, and



means for providing a third frequency signal of a frequency lower than those of said first and second frequency signals,

first state storing means coupled to said charging/discharging circuit means and said third frequency signal providing means and responsive to a predetermined level between said one and said other of charged and discharged states of the charging/discharging circuit means for assuming a first storing state and responsive to the third frequency signal for assuming a second storing state, and

second state storing means responsive to the output of the first state storing means and the third frequency signal for assuming one storing state for providing an output representative of the frequency difference or phase difference between the first and second frequency signals.

4,201,946

AM-FM DETECTOR CIRCUIT STABILIZED AGAINST FABRICATION AND TEMPERATURE VARIATIONS

Robert J. McFadyen, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,645

Int. Cl.[2] H03D *3/22, 5/00*

U.S. Cl. 329—2 **10 Claims**

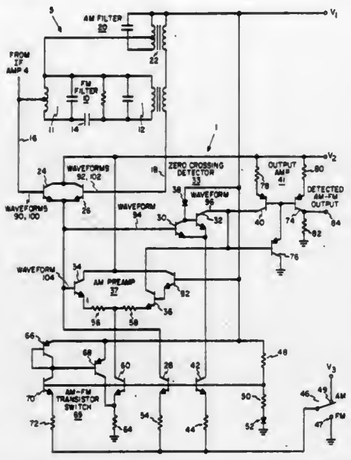
1. An AM-FM detector circuit exhibiting highly stable operating characteristics compensated for fabrication process and ambient temperature variations, said circuit being selectively responsive to frequency modulated signals of a first center frequency or amplitude-modulated signals of a second center frequency, comprising:

(a) a differentially connected emitter follower pair of transistors of matching current conduction properties, the collectors of which are adapted to be coupled to dc voltage means, the emitters of which are joined and coupled to a switchable load impedance and the bases of which are adapted to receive said frequency modulated signals in a quadrature phase relationship at said first center frequency for a condition of zero signal modulation and are adapted to receive said amplitude modulated signals in an inverse phase relationship at said second center frequency, for producing at said emitters during frequency modulation detection a bipolar voltage having zero crossing widths proportional to the frequency modulation and for producing at said emitters during amplitude modulation detection a detected voltage resulting from full wave rectification of the amplitude modulated signals,

(b) zero crossing detector means operable during frequency

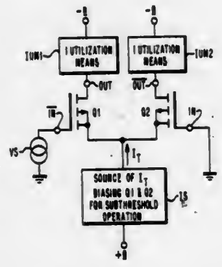
modulation detection and responsive to said bipolar voltage at said emitters for generating current pulses of relatively constant amplitude and of pulse widths corresponding to said zero crossing widths,

(c) differential amplifier means operable during amplitude modulation detection and responsive to said detected voltage at said emitters for providing linear amplification of said voltage by generating a corresponding amplified current, and



(d) output means including a transistor current amplifier responsive during frequency modulation detection to the current pulses generated by said zero crossing detector means for integrating said pulses and providing a first amplified output current having a time averaged amplitude proportional to the modulation of said frequency modulated signals, and responsive during amplitude modulation detection to the current generated by said differential amplifier means for providing a second amplified output current having an amplitude proportional to the modulation of said amplitude modulated signals.

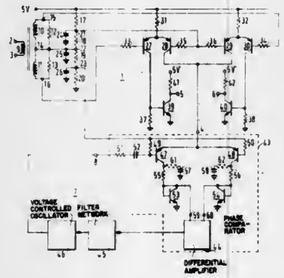
4,201,947
LONG-TAILED-PAIR CONNECTIONS OF MOSFET'S OPERATED IN SUB-THRESHOLD REGION
Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 10, 1978, Ser. No. 876,634
Int. Cl.² H03F *3/45, 3/16*; H03K *5/20*
U.S. Cl. 330—253 **3 Claims**



1. In a long-tailed pair connection of first and second transistor means having respective input electrodes and having respective common and output electrodes between which an output current flows responsive to an input voltage between its common and input electrodes, the transconductances of which transistor means change more rapidly as a function of their output currents in a range of lower output currents, with means for supplying the entire tail current for said long-tailed pair connection to the interconnected common electrodes of said first and second transistor means, the improvement for the purpose of reducing the input offset error potential which would have to be applied between the input electrodes of said transistor means to maintain the division of the tail current between them in predetermined ratio, wherein said means for supplying the entire tail current for said long-tailed pair consists of:

means for supplying said tail current within said range.

4,201,948
PHASE-LOCKED LOOP CLOCK PULSE EXTRACTION CIRCUIT
Marcel C. R. Natens, Antwerp, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.
Filed May 24, 1978, Ser. No. 909,241
Int. Cl.² H03B *3/04*
U.S. Cl. 331—8 **9 Claims**



1. A circuit for extracting a clock pulse waveform from an input pulse waveform comprising:

a phase-locked loop including

a phase comparator having a first input to which said input waveform is coupled, a second input and an output which is coupled in cascade with at least a voltage controlled oscillator whose output is coupled to said second input, said clock waveform being present at said output of said oscillator and having negative going transitions occurring substantially in the middle of the pulses of said input waveform;

said phase comparator including

gating means coupled to said first and second inputs controlled by said clock waveform and said input waveform to produce first and second intermediate pulse waveforms each having pulses constituted by different portions of the pulses of said input waveform and proportional to the pulse density of said input waveform,

filter means connected directly to said gate means responsive to said first and second intermediate waveforms to produce first and second output waveforms which are equal to the mean amplitude values of said first and second intermediate waveforms, and

subtractor means coupled to said filter means to produce a comparator output signal at said output of said comparator which is a function of the ratio of said first and second output waveforms and independent of the pulse density of said input waveform,

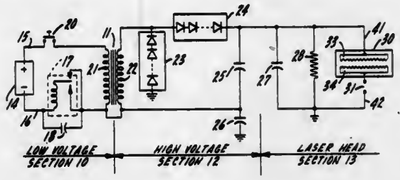
said gating means including

first and second gates each receiving said input waveform, said first and second gates being interconnected such that one of said first and second gates receives said clock waveform to control both of said first and second gates to produce said first intermediate waveform at the output of one of said first and second gates and said second intermediate waveform at the output of the other of said first and second gates, and

said filter means includes

first and second filter circuits each coupled to a different one of the outputs of said first and second gates to produce said first output waveform at the output of one of said first and second filter circuits and said second output waveform at the output of the other of said first and second filter circuits.

4,201,949
PORTABLE GAS LASER AND POWER SUPPLY
Gene A. Robbins, P.O. Box 7639, Roswell, N. Mex. 88201
Filed Jul. 27, 1977, Ser. No. 819,485
Int. Cl.² H01S *3/097*
U.S. Cl. 331—94.5 PE **4 Claims**



1. A laser head and energization system, including:

a stepup transformer, having primary and secondary windings;

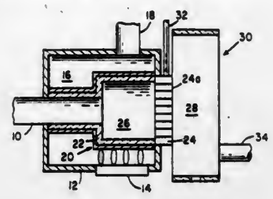
a low voltage section, including a pair of input conductors for receiving a d-c input voltage, a switch coupled between one of the input conductors and one side of the primary winding, and a vibrator coupled between the other input conductor and the other side of the primary winding;

a high voltage section, including a voltage doubler arrangement having first and second diode assemblies coupled to one side of the secondary winding, a first capacitor coupled between the other side of the secondary winding and one of the diode assemblies, and a second capacitor coupled between ground and the common connection between the secondary winding and the first capacitor; and

a laser head section, including a laser head containing a gas and having as the only electrically conductive members in the laser head a pair of electrodes with opposed, serrated edges to effect pre-ionization of the gas, a pair of conductive members, each attached to one of the electrodes and extending outwardly to provide means for establishing an electrical connection with an adjacent circuit, and a high-voltage capacitor comprising a plastic tube, a pair of foil electrodes and a plurality of dielectric layers between the pair of foil electrodes, which foil electrodes and dielectric layers are wound around the plastic tube to form said high-voltage capacitor, one of said foil electrodes extending to a point adjacent but spaced from one of the conductive members to define a spark gap, and means, including a conducting strip, for establishing an electrical connection between the other foil plate of the high voltage capacitor and the other of the conductive members attached to the electrodes.

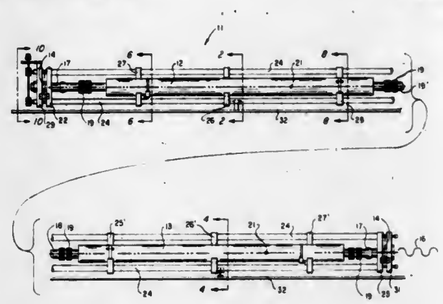
4,201,950
LOW DEACTIVATION CHEMICAL LASER
Thomas A. Barr, Jr., Huntsville; Miles E. Holloman, Decatur, and Joseph M. Walters, Harvest, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 3, 1978, Ser. No. 875,053
Int. Cl.² H01S *3/095*
U.S. Cl. 331—94.5 G **7 Claims**

1. A low deactivation chemical laser device comprising an oven having a chamber therein that is lined with a ceramic material that resists the corrosive action of atomic fluorine and an inlet means to said chamber for the introduction of chemicals containing fluorine; a laser cavity having a chamber therein, an outlet for exhausting expended gases from said cavity, and laser output means; a laser nozzle injector fluidly interconnecting said chamber of said oven with said chamber of said laser cavity and an inlet injector connected into said



laser nozzle injector for injecting deuterium and/or hydrogen to said chamber of said cavity; and an external heat source comprising a hydrocarbon/air burner type furnace disposed relative to said oven for heating said oven sufficiently to cause said fluorine to be converted to atomic fluorine, and whereby said atomic fluorine can pass through said laser nozzle injector into said laser cavity to mix with said deuterium and/or hydrogen to cause a lasing action and a laser output to be produced.

4,201,951
CASCADED PLASMA TUBE ION LASER HAVING SINGLE RESONATOR STRUCTURE
Galen E. Mohler, Los Altos, Calif., assignor to Lexel Corporation, Palo Alto, Calif.
Filed Apr. 3, 1978, Ser. No. 892,742
Int. Cl.² H01S *3/02*
U.S. Cl. 331—94.5 D **13 Claims**



1. A cascaded ion laser comprising:

A. resonator structure supporting at opposed, spaced apart locations, means to mount a pair of optical reflectors in opposition to one another to define an optical axis therebetween;

B. lasing structure supported by said resonator structure defining an elongated optical cavity between said mounting means for said reflectors, which structure includes at least two plasma tube assemblies axially aligned with one another along said optical axis separately enclosing lasable mediums;

C. a base for said resonator structure; and

D. mounting structure connecting said base to said resonator structure, which mounting structure is secured to said resonator structure generally at the locations at which the respective planes orthogonal to said optical axis containing the centers of gravity of said two plasma tube assemblies meet said resonator structure, whereby the weight of said envelopes are balanced relative to said mounting structure to minimize the effect of unbalanced gravity

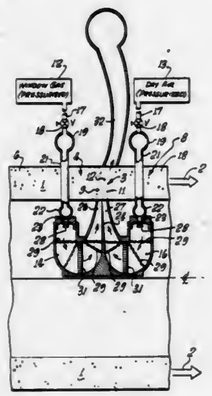
forces on the axial alignment of each of said envelopes with said optical axis.

4,201,952

GAS LASER AERODYNAMIC WINDOW

Charles C. Stewart, 144 Nashoba Rd., Concord, Mass. 01742; Joel M. Avidor, 17 Gordon St., Rehovot, Israel; Evan R. Pugh, 61 Bertwell Rd., Lexington, Mass. 02173, and John W. Lothrop, 154B, Peabody, Mass. 01960

Filed Apr. 11, 1978, Ser. No. 895,416
Int. Cl.[2] H01S *3/02*
U.S. Cl. 331—94.5 D 5 Claims



1. Aerodynamic light-transmissive window apparatus for transmitting a high energy laser beam from the interior of a gas laser to an outside environment comprising:

a pressurized supply source formed of a window gas having an index of refraction substantially matching that of the laser gas in said laser,

a second pressurized supply source formed of a gas also having an index of refraction substantially matching that of said outside environment,

nozzle means disposed for directing a window-forming gas jet across the entire cross-sectional area of said laser beam, said nozzle means including means partitioning it into at least a pair of jet-forming orifices,

means communicably coupling each of said gas supply sources independently to a separate one of said jet-forming orfices whereby said window-forming gas jet is formed of contiguous first and second streams of said supply gases having a boundary interface one with the other and interfaces with said laser gas and said outside environment respectively, and

means for controlling the velocities of said contiguous streams,

whereby optical distortions normally produced by said shear and boundary interfaces are minimized by said equalized velocities at said boundary interface and by said matching indices of refraction at said shear interfaces,

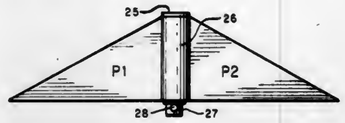
said window forming jet dynamically maintaining a fixed interior gas pressure and said control means equalizing the velocities of said streams and establishing a particular jet velocity at which said jet yieldably bends a fixed and predetermined amount responsively to said interior gas pressure whereby said interior pressure is maintained.

4,201,953

LASER SYSTEM WITH TRIANGULATED CAPACITOR ENCIRCLING THE LASER HEAD

Gene A. Robbins, P.O. Box 7639, Roswell, N. Mex. 88201

Filed May 1, 1978, Ser. No. 901,429
Int. Cl.[2] H01S *3/09*
U.S. Cl. 331—94.5 PE 5 Claims



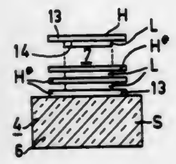
1. A laser head comprising a cylindrical member and a capacitor assembly concentric with said cylindrical member, characterized in that the capacitor assembly comprises at least three metallic foil members, with the edge portions of two of the metallic members extending through the cylindrical member to form electrodes, a plurality of insulating sheets interspersed between the metallic foil members to provide insulation in the capacitor assembly, and further characterized in that each of said metallic foil members is substantially triangular, to assist in beam formation in the laser.

4,201,954

GAS DISCHARGE LASER FOR GENERATING LINEARLY POLARIZED RADIATION

Johannes van der Wal, and Gijsbertus Bouwhuis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1978, Ser. No. 907,554
Claims priority, application Netherlands, Mar. 7, 1978, 7802454
Int. Cl.[2] H01S *3/08*
U.S. Cl. 331—94.5 C 3 Claims



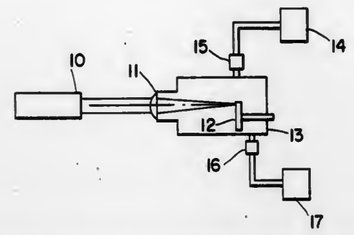
1. A gas discharge laser for generating linearly polarized radiation, comprising a laser tube and a set of two reflectors the optical axis of which coincides with the axis of the laser tube, said reflectors being composed of at least a substrate on which a number of layers are provided which preferably have a quarter wavelength thickness and alternately comprise two dielectric materials having different indices of refraction, at least one of the said reflectors reflecting anisotropically, and wherein at least one of the layers of the anisotropic reflector is so strongly anisotropic that the difference in reflection of the reflector for light polarized in two mutually perpendicular directions is at least 0.5%.

4,201,955

METHOD OF PRODUCING POPULATION INVERSION AND LASING AT SHORT WAVELENGTHS BY CHARGE TRANSFER

Raymond C. Elton, Potomac, and Robert H. Dixon, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1978, Ser. No. 889,072
Int. Cl.[2] H01S *3/22*
U.S. Cl. 331—94.5 G 16 Claims



1. Apparatus for generating stimulated emission comprising:

a housing,

a target within said housing,

means for admitting a gaseous medium about said target,

laser means for irradiating said target to generate highly stripped target ions with varying velocities,

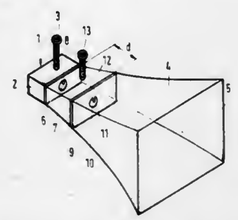
whereby reactions between said highly stripped target ions and a gaseous medium electron environment about said target produce a population inversion with stimulated emission.

4,201,956

ARRANGEMENT FOR THE GENERATION AND RADIATION OF MICROWAVES

Karl-Heinz Kienberger, Schopfheim-Wiechs, and Don J. R. Stock, Schopfheim-Langenau, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,368
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744883
Int. Cl.[2] H01Q *13/02*; H03B *5/18, 9/12*
U.S. Cl. 331—96 4 Claims



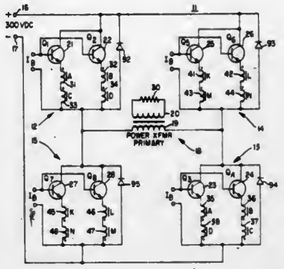
1. An arrangement for the generation and radiation of microwave radiation, including a microwave oscillator having a cavity resonator directly coupled with the input of a horn radiator by way of an apertured diaphragm, the cross-section of the horn radiator expanding in size from said input thereof to the output thereof and wherein there is arranged within the expanding horn radiator a second apertured diaphragm disposed at a distance from the first said apertured diaphragm such that together with the first said apertured diaphragm it forms a filter resonator for frequency filtering the oscillator output as it is fed to the horn radiator, the first apertured diaphragm being common to the oscillator cavity and to the filter resonator cavity.

4,201,957

POWER INVERTER HAVING PARALLEL SWITCHING ELEMENTS

Franklin J. Cathell, San Diego, Calif., assignor to Qualidyne Systems, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 835,403, Sep. 21, 1977, Pat. No. 4,105,957. This application Aug. 1, 1978, Ser. No. 930,095
Int. Cl.[2] H02M *7/537*; H03K *3/30*
U.S. Cl. 331—110 12 Claims



8. A circuit for switching current from a DC source to AC current to be supplied to a load comprising a DC series circuit including a first switch arm connected between one terminal of the source and one terminal for the load, a second switch arm connected between a second terminal for the load and a second terminal of the source, each of said switch arms including N parallel switching elements, each having a control electrode, an input electrode, and an output electrode, each of said elements being rendered into a conducting condition between the input and output electrodes thereof in response to the voltage of the control electrode being a predetermined amount greater than the voltage of the input electrode, and into a cut-off condition between the input and output electrodes thereof in response to the voltage of the control electrode being a predetermined amount less than the voltage of the input electrode, means for simultaneously applying a biasing signal to all of the switching elements so that the elements have a tendency to be simultaneously biased into conducting and cut-off conditions, different ones of said elements having a tendency to be activated into the conducting and cut-off states at different times in response to the biasing signal, means for overcoming the tendency of different ones of said elements to be activated at different times, said means for overcoming including means for coupling current flowing through the ith element of the first switch arm with current flowing through the ith element of the second switch arm, where i=1, 2, . . . , N.

4,201,958

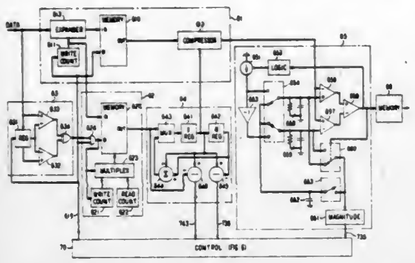
DELTA MODULATION WHICH PARTITIONS INPUT SIGNAL INTO VARIABLE-TIME SEGMENTS THAT ARE ITERATIVELY ENCODED

Syed V. Ahamed, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 864,499, Dec. 27, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 965,991
Int. Cl.[2] H03K *13/22*
U.S. Cl. 332—11 D 8 Claims

1. A method for encoding an input signal into a bit stream representing a delta modulation of said input signal, characterized by the steps of:

partitioning said input signal into concatenated time segments based on selected characteristics of said signal; and



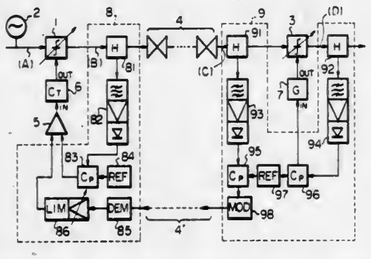
independently encoding each of said segments by selecting a sequence of bits to fit each of said segments within assigned limits.

4,201,959

AUTOMATIC EQUALIZATION SYSTEM

Yasuhiko Niiro, Yokohama, and Hiroharu Wakabayashi, Tokyo, both of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1977, Ser. No. 854,103
Claims priority, application Japan, Nov. 24, 1976, 51/140161
Int. Cl.[2] H04B *3/10*
U.S. Cl. 333—16 **6 Claims**



1. An automatic equalization system having a transmitting equalizer at the transmission station, a receiving equalizer at the receiving station and a transmission line provided between the two stations, comprising a pilot signal generator provided at the input of the transmitting equalizer, means for detecting the level of the pilot signal at the output of the transmitting equalizer, means for detecting the level of the pilot signal at the input of the receiving equalizer, means for transmitting the signal relating to the detected level at the input of the receiving equalizer back to the transmitting station, and means for controlling the gain of the transmitting equalizer so that the sum of the detected level at the output of the transmitting equalizer and the detected level at the input of the receiving equalizer becomes a predetermined value.

4,201,960

METHOD FOR AUTOMATICALLY MATCHING A RADIO FREQUENCY TRANSMITTER TO AN ANTENNA

Frank R. Skutta, and Lee D. Tice, both of Palantine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 24, 1978, Ser. No. 909,155
Int. Cl.[2] H03H *7/40*
U.S. Cl. 333—17 M **34 Claims**

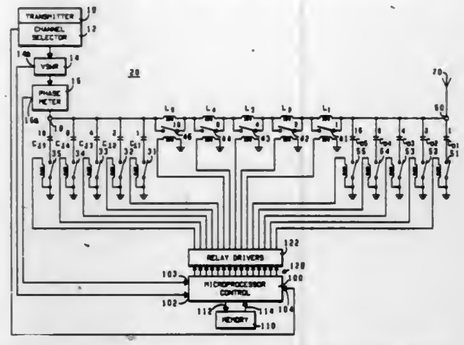
1. A method for matching the nominal real impedance of a transmitter to an antenna comprising the steps of:

(a) providing a first terminal adapted for connection to said transmitter;

(b) providing a second terminal adapted for connection to said antenna;

(c) providing a variable series inductance coupled between said first and second terminals;

(d) providing a variable shunt capacitance coupled to a predetermined one of said first and second terminals;



(e) predeterminedly controlling said inductance and capacitance in a first mode such that the impedance at said first terminal is substantially real having a value less than said nominal real impedance; and

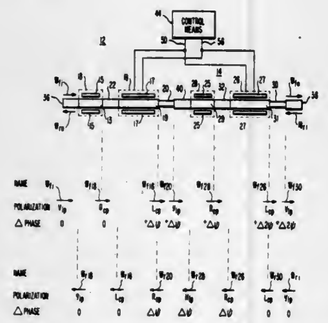
(f) predeterminedly varying said inductance and capacitance in a second mode to increase the real part of the impedance at said first terminal until it is within a predetermined range from said nominal impedance.

4,201,961

UNIDIRECTIONAL PHASE SHIFTER

Gerald I. Klein, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 16, 1978, Ser. No. 916,166
Int. Cl.[2] H01P *1/40*
U.S. Cl. 333—24.1 **7 Claims**



1. Variable phase change apparatus providing a fixed phase change for electromagnetic energy propagating therethrough in a first direction and a variable phase change in addition to said fixed phase change for electromagnetic energy propagating therethrough in a direction opposite said first direction, said electromagnetic energy being characterized by linear or circular polarization, said circularly polarized electromagnetic energy being characterized by first or second senses, said phase change apparatus comprising:

(a) first and second cascaded differential phasor sections each including:

(1) first and second converting means each of which for converting linearly polarized electromagnetic wave energy to circularly polarized energy and for converting circularly polarized electromagnetic wave energy to linearly polarized energy; and

(2) phase changing means interposed therebetween for reversing the sense of circularly polarized energy propagating therethrough in said first direction or said opposite direction and for effecting a nonreciprocal phase change for circularly polarized energy having said first sense and propagating therethrough in said opposite direction or having said first sense and propagating therethrough in said first direction; and

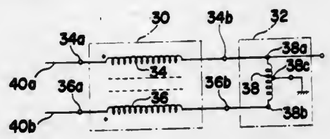
(b) means for coupling the first converting means of said first differential phasor to the second converting means of said second differential phasor.

4,201,962

INPUT TRANSFORMER ARRANGEMENT FOR USE IN A TELEVISION RECEIVER

Nobukazu Hosoya, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 20, 1978, Ser. No. 953,082
Claims priority, application Japan, Oct. 20, 1977, 52-126970
Int. Cl.[2] H03H *7/38, 7/42*
U.S. Cl. 333—25 **8 Claims**



1. An input transformer arrangement for use in a television receiver, including an unbalanced signal suppress transformer for suppressing an unbalanced signal carried on at least one of a pair of lead wires constituting a feeder line extending between the television receiver and an antenna therefor, and an impedance transformer, said input transformer comprising:

a first coil having input and output ends;

a second coil having input and output ends, said first and second coils magnetically coupled to each other in such a manner as to match the phase sequence of the first coil with that of the second coil for forming a first transformer theretogether; and

a third coil connected between the output end of the first coil and output end of the second coil, said third coil having a center portion thereof grounded for forming a second transformer,

the first transformer adapted to suppress the unbalanced signal while the second transformer is adapted to reduce the impedance.

4,201,963

3-POSITION, 4-PORT WAVEGUIDE SWITCH

George R. Welti, Leesburg, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jan. 26, 1978, Ser. No. 872,709
Int. Cl.[2] H01P *1/12*
U.S. Cl. 333—106 **8 Claims**

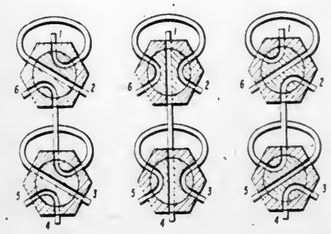
1. A rotary microwave switch for switching microwave signals comprising:

a rotary switch stator having six waveguide ports spaced at 60° intervals;

a rotor having six input ports spaced at 60° intervals and positioned to be simultaneously in communication with said six waveguide ports, respectively;

said rotor having a first connecting transmission means across the diameter of the rotor connecting two of said ports spaced 180° apart; and

said rotor further having a second and third connecting transmission means on each side of said first connecting



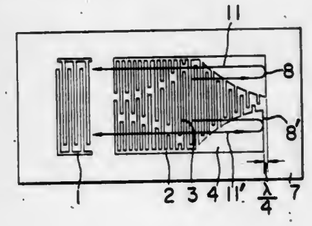
transmission means, each connected to two adjacent ones of said ports which are spaced 60° apart.

4,201,964

ELASTIC SURFACE WAVE DEVICE

Yoshihiko Noro, Kamakura; Katashi Hazama, Zushi; Jun Yamada, Yokohama; Hitoshi Yanagihara, Yokohama, and Michiyori Miura, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 20, 1978, Ser. No. 917,220
Claims priority, application Japan, Jun. 20, 1977, 52-72056
Int. Cl.[2] H03H *9/04, 9/26, 9/32, 9/30*
U.S. Cl. 333—151 **6 Claims**



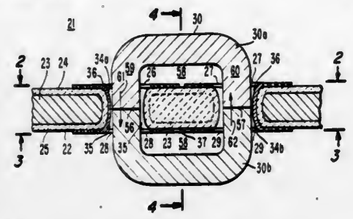
1. An elastic surface wave device comprising a substrate of a piezoelectric material serving as a medium of the propagation of an elastic surface wave and a plurality of interdigital transducers each including a pair of interleaved comb-like electrodes provided on said substrate, each of said comb-like electrodes having a plurality of fingers to be interleaved, wherein at least one of said interdigital transducers has an overlap-weighted pair of interleaved comb-like electrodes, those portions of overlapped fingers at ends of said overlap-weighted pair of interleaved comb-like electrodes which do not contribute to the overlap weighting being formed into unitary stem areas, those edges of said unitary stem areas of said interleaved comb-like electrodes of said at least one interdigital transducer which are perpendicular to the elastic surface wave propagating direction including a combination of at least one pair of partial edges, the positions of said partial edges in each of said at least one pair of partial edges differing by $(2n+1)$. $(\lambda/4)$ from each other in the elastic surface wave propagating direction, and the lengths of the partial edges in the said each pair of the partial edges being equal to each other, where n represents zero or a positive integer and λ represents the wavelength of the elastic surface wave.

4,201,965

INDUCTANCE FABRICATED ON A METAL BASE PRINTED CIRCUIT BOARD

Lubomyr S. Onyshkevych, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 29, 1978, Ser. No. 920,461
Int. Cl.[2] H01F *27/28*
U.S. Cl. 336—180 **14 Claims**



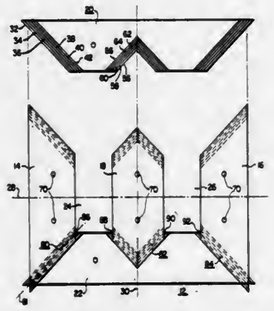
1. A high-Q inductance for a metallic base printed circuit board, comprising:
a printed circuit board metallic support base;
a ferromagnetic core placed through a first aperture in said metallic support base for providing a preferred path in said ferromagnetic core for time-varying magnetic flux;
an overlayer of insulating material deposited on said metallic support base for providing electrical insulation from said metallic support base;
an electrically conductive printed coil structure deposited on said overlayer and located about said ferromagnetic core for generating said time varying magnetic flux,
said metallic support base including a gap extending outwardly from the vicinity of said first aperture in a manner that will intersect closed paths within said metallic support base that are linked by said time-varying magnetic flux for forming a high-Q inductance by substantially impeding across said gap the flow of dissipative eddy currents in said closed paths.

4,201,966

MAGNETIC CORE STRUCTURE

Angelo A. De Laurentis, South Pymatuning Township, Mercer County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 4, 1979, Ser. No. 935
Int. Cl.[2] H01F *27/24*
U.S. Cl. 336—217 **2 Claims**



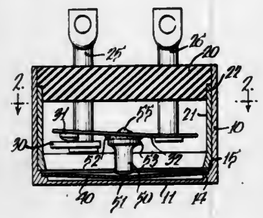
1. A magnetic core comprising:
a plurality of stacked groups of layers of metallic laminations, each of said groups including a plurality of said layers;
each of said layers including first and second outer leg laminations and an inner leg lamination, each having first and second ends, and first and second yoke laminations forming a magnetic core having said outer and inner leg laminations connected by said yoke laminations and a plurality of outer and associated inner corners;
said yoke and said leg laminations having their ends cut diagonally to provide a closed magnetic circuit having diagonal joints between adjoining ends of said yoke and leg laminations;
the length dimensions of said outer and inner leg laminations and said first and second yoke laminations progressively varying in opposite directions from layer to layer within each group, while the respective midpoints of each leg and yoke lamination are aligned to offset said diagonally cut ends of said leg and yoke laminations from layer to layer in a stepped pattern that progresses at least three steps in one direction;
the relative locations of said leg and yoke laminations in the direction of their diagonal cut ends being selected to divide the voids formed at said inner corners of said magnetic core by the intersection of said leg and yoke laminations uniformly between said leg and yoke laminations in each group of layers of laminations.

4,201,967

THERMAL SWITCH AND METHOD OF ASSEMBLY AND TOOL USED THEREIN

Ronald W. Romerdahl, Redmond, and Milton R. Knight, Rothwell, both of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed May 15, 1978, Ser. No. 906,099
Int. Cl.[2] H01H *37/52, 61/00*
U.S. Cl. 337—354 **16 Claims**



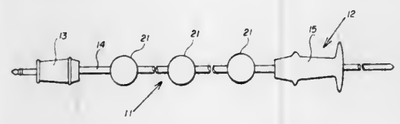
1. A thermal switch having a fixed contact, a movable contact, an armature spring carrying the movable contact, a thermally-responsive actuator spaced from and movable toward and away from the armature spring, a striker pin carried on the armature spring for transmitting actuating movement of the actuator to the armature spring, and a layer of adhesive between the striker pin and the armature spring for bonding thereof together and providing a controllable thickness layer to establish the effective length of the striker pin.

4,201,968

TEMPERATURE PROBE ASSEMBLY

Michael S. Parisi, and John A. Pauly, both of Milford, Mass., assignors to Walter Kidde & Co., Inc., Clifton, N.J.

Filed Aug. 16, 1978, Ser. No. 934,032
Int. Cl.[2] H01C *7/04*
U.S. Cl. 338—28 **8 Claims**



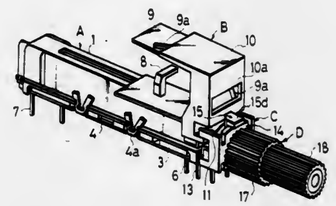
1. A temperature probe assembly comprising:
a probe adapted for insertion into food products, said probe comprising a temperature responsive sensor;
a coaxial cable having one end secured to said probe and having electrically isolated inner and outer conductors connected to said temperature responsive sensor and an outer insulative sheath, said insulative sheath being discontinuous so as to create at a plurality of spaced apart locations on said cable insulation gaps in which a length of said outer conductor is exposed;
an insulative unit molded over said insulative sheath and covering each of said gaps, each of said insulative units being bonded intimately to each of said exposed lengths of said outer conductor, so as to cause severing thereof in response to a predetermined relative movement between the insulative unit bonded thereto and said insulative sheath; and
an electrical plug connected to the opposite end of said cable.

4,201,969

VARIABLE RESISTOR AND SWITCH ASSEMBLY

Masami Tanaka, and Yukihiko Nomura, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1978, Ser. No. 919,801
Claims priority, application Japan, Jun. 28, 1977, 52-85117[U]
Int. Cl.[2] H01C *10/40*
U.S. Cl. 338—180 **8 Claims**



1. In a combined variable resistor and switch assembly including a variable resistor section having a slider movable along a resistance element by means of a rotatable shaft operatively associated with said slider, and a rotary switch section coaxial with said shaft and having
a plate supporting a common terminal and a plurality of change-over terminals,
a frame held to said plate,
a movable contact formed of electrically conductive material and held between said terminal supporting plate and said frame,
an operation member adapted to rotate said movable contact so as to electrically connect said common terminal with a selected change-over terminal, the improvement comprising:
said frame having openings therein, and coacting means formed respectively on said movable contact and said operation member and having portions extending through said openings for rotating said movable contact by actuation of said operation member.

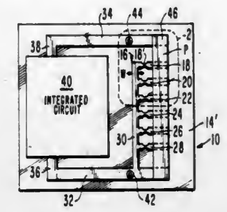
4,201,970

METHOD AND APPARATUS FOR TRIMMING RESISTORS

Lubomyr S. Onyshkevych, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,744
Int. Cl.[2] H01C *10/00*
U.S. Cl. 338—195 **8 Claims**

1. A method of trimming a resistor, to one end portion of which a first terminal is connected, to a value in a desired range comprising the steps of:
connecting between a common second terminal and N different points along the resistor N fusible links, respectively, each fusible link having a certain current carrying capacity and opening when that capacity is exceeded;
applying a constant voltage between said first and second terminals of a value such that at least the fusible link closest to said first terminal opens and a sufficient number of additional links, if any, burn out to cause the value of resistance present between said terminals to be within said desired range and the value of current flowing through any still intact fusible link to be lower than its current carrying capacity.

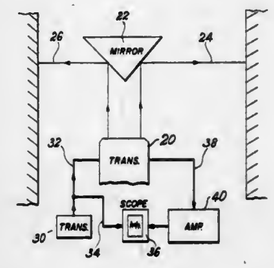


4,201,971

ULTRASONIC CENTERING APPARATUS

Robert Saglio, Antony, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 14, 1978, Ser. No. 896,306
Claims priority, application France, May 31, 1977, 77 16500
Int. Cl.[2] G01B *17/00*
U.S. Cl. 367—95 **4 Claims**



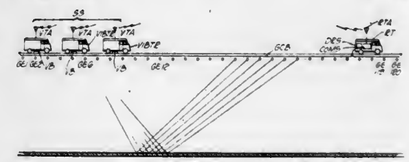
1. An ultrasonic centering apparatus, wherein it comprises at least one ultrasonic transducer placed within an enclosure, said transducer transmitting at least one ultrasonic wave, means for collecting the different ultrasonic echos from the walls of said enclosure, means for measuring the time gap separating the reception of the different echos and means for displacing the transducer or transducers until the different echos are received at the same time by said echo receiving means.

4,201,972

SEISMIC PROSPECTING SYSTEM

Charles M. Edwards, and J. Robert Fort, both of Pasadena, Calif., assignors to United Geophysical Corporation, Pasadena, Calif.

Continuation of Ser. No. 304,562, Nov. 7, 1972, abandoned. This application Oct. 28, 1977, Ser. No. 846,320
Int. Cl.[2] G01V *1/28*
U.S. Cl. 367—40 **71 Claims**



70. In a system for seismic surveying,

an improved seismic data acquisition system for acquiring and processing seismic data respecting subsurface formations during the course of exploring an area of the earth by generating seismic waves at seismic wave source areas and receiving such waves at spreads of geophone stations located in the area of exploration, after deflection by subsurface formations, comprising the combination of:

seismic wave generating means for generating trains of seismic source waves of changing frequency within a series of source areas adjacent the surface of the earth, each said train of generated seismic waves having a frequency that varies as a continuous function of time over an extended period and for supplying digital electrical signals representative of the generated seismic waves, such waves traveling downwardly into the earth being deflected upwardly by subsurface formations;

means for receiving corresponding trains of deflected seismic waves at respective spreads of geophone stations located in the area of exploration;

means for converting the respective trains of seismic waves received at the geophone stations into corresponding trains of digital electrical signals;

means for combining such sets of trains of digital electrical signals with such digital signals representative of the generated seismic waves to produce an ensemble of cross-correlated trains of waves representative of the deflection characteristics of formations encountered by the source waves; and

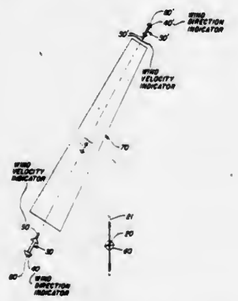
means for displaying an ensemble of such cross-correlated trains of seismic waves prior to receiving and correlating of later generated seismic waves during the course of such exploration.

4,201,973

AIRPORT LANDING INDICATOR APPARATUS

Theodore Jackson, P.O. Box 407, Council, Id. 83612, and Ken Johnson, Council, Id., assignors to Theodore Jackson, Council, Id.

Filed Jul. 21, 1978, Ser. No. 926,629
Int. Cl.² G08G 5/00; H04B 7/26
U.S. Cl. 340—26 **2 Claims**



1. Airport landing indicator apparatus comprising:

wind direction monitoring means;

at least two runway locator means, each of said locator means disposed at opposing ends of a runway and each of said locator means including

a multiplicity of high intensity lamps set in such configuration as to define an arrow and

a multiplicity of low intensity lamps adjacent to said high intensity lamps as to define a second arrow, the arrows oriented so as to indicate directional aircraft approach to the runway when lit;

at least two specific wind direction indicator means, each of said indicator means located at the rear of the arrows defined by the high and low intensity lamps and each of said indicator means including at least two lamps adapted to indicate approximate wind direction; and

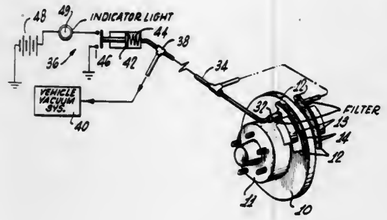
switch means controlled by said wind direction monitoring means and operable to provide electricity from an external power source to light the lamps of a selected locator means and a selected specific wind direction indicator means dependent upon wind direction.

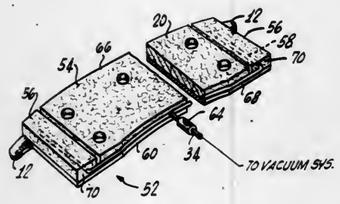
4,201,974

BRAKE APPARATUS WITH AIR ACTUATED REMOTE WEAR INDICATOR

Raoul G. Fima, Van Nuys, Calif., assignor to Jumpak Products Inc., Anaheim, Calif.

Filed Aug. 29, 1977, Ser. No. 828,817
Int. Cl.² B60Q 1/44
U.S. Cl. 340—52 A **6 Claims**





1. A brake apparatus including a rotatable member connected to a wheel of a vehicle for rotation therewith, a non-rotatable brake shoe disposed adjacent said rotatable member, means for moving said brake shoe toward said rotatable member to apply a braking force to said wheel, a friction pad having a predetermined working thickness and subject to wear, and means for securing said pad to said shoe, wherein the improvement comprises:

an aperture in said pad;

an aperture in said shoe aligned with said aperture in said pad;

an insert at least as subject to wear as said pad disposed within said apertures, said insert having a closed end defining an interruption level at which said rotatable member will form a hole therein as said pad wears, said interruption level being within said working thickness,

an air conduit one end of which is attached to said insert so that said insert forms a closed end on said conduit;

means for normally maintaining said conduit at an air pressure level different from atmospheric pressure; and

indicator means connected to said conduit for producing a visible indication of the need to replace said pad in response to a change in air pressure in said conduit.

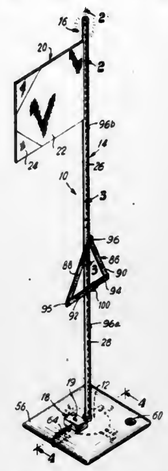
4,201,975

DISPLAY DEVICE

Herbert Marcus, 635 Redding Rd., West Redding, Conn. 06896

Filed Oct. 12, 1977, Ser. No. 841,561
Int. Cl.² B60Q 7/00; E01F 9/00, 9/01
U.S. Cl. 340—84 **17 Claims**

1. A display device comprising a relatively flat base, and including a plurality of outwardly directed arms extending from the base, each of said arms terminating in a support leg for the base, said arms arranged in pairs with each pair including a short arm and a long arm; a staff supported by said base; said base further including means for receiving one end of said staff;



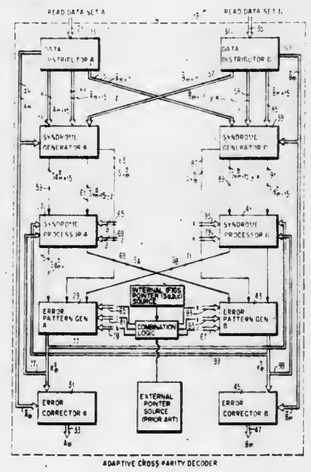
and a signal device, located at the other end of said staff, for providing a visual indication of the presence of the display device.

4,201,976

PLURAL CHANNEL ERROR CORRECTING METHODS AND MEANS USING ADAPTIVE REALLOCATION OF REDUNDANT CHANNELS AMONG GROUPS OF CHANNELS

Arvind M. Patel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,653
Int. Cl.² G06F 11/12
U.S. Cl. 371—50 **14 Claims**



1. In combination: a parallel multi-channel data handling system (FIG. 1-3, 5, 7), the channels (FIG. 6) being partitioned into a first and second set; means for ascertaining channels in error externally and generating pointer signals (i,j,k,x,y,z); and apparatus (9, 19) for correcting up to three channels in error in any one set, the other set having no more than one channel in error; said apparatus comprising:

means (9) for encoding and writing into a first channel in each set vertical parity checks limited to that set;

means (9, 193-207, FF1-FF7) for encoding and writing into a second channel of each set parity checks taken over both sets of channels in a predetermined positively or negatively sloped direction;

means (25, 27, FIGS. 7 and 8) for determining syndromes (Sv_m^a, Sv_m^b, Sd_{m+l}^a, Sd_{m+x}^b, S_A, S_B) from the parity checks and data written into the channels;

means (29, FIG. 10) responsive to the external pointer signals designating at least one known channel in error for generating correction signals (e_m^a, e_m^b) from at least two syndromes intersecting the same error in the known error channel; and

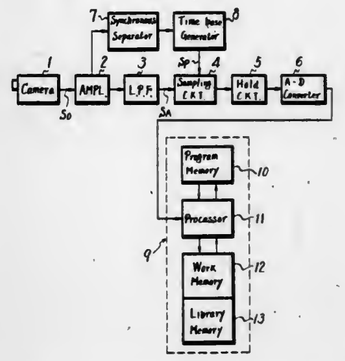
means (31, FIG. 11) for correcting said errors by logically combining the correction signals (e_m^a, e_m^b) with the original known channel data (A_m, B_m).

4,201,977

DATA PROCESSING AND STORAGE SYSTEM USING FILTERING AND SAMPLING TECHNIQUES

Toshiyuki Shimizu, Tokyo, Japan, assignor to Hajime Industries, Ltd., Japan

Continuation-in-part of Ser. No. 721,765, Sep. 9, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,913
Claims priority, application Japan, Sep. 18, 1975, 50-113358
Int. Cl.² G06K 9/02
U.S. Cl. 340—146.3 H **7 Claims**

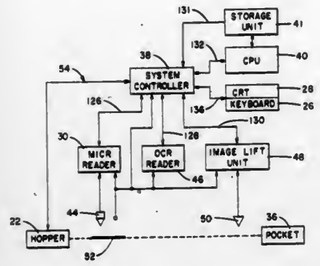


1. An information signal processing system for use with a pattern recognition system which has means (1) for converting an information signal of an object to be recognized into an electrical signal (S_O), means (7) for receiving the electrical signal from said converting means and producing horizontal and vertical synchronizing signals from the electrical signal and producing a sampling signal (S_P), means (4) for sampling said electrical signal from said converting means controlled by said sampling signal and means (9) for sequentially comparing output signals from said sampling means with reference signals, said information signal processing system being characterized in that said sampling signal producing means comprises means (8) receiving the vertical synchronizing. signal (S_V) and producing a plurality of sampling signals (S_P) in one period between adjacent vertical synchronizing signals, and filtering means (3) provided which receives the electrical signal (S_O) from said converting means and produces an envelope signal (S_A) which is approximately equal to said electrical signal (S_O) from said converting means and supplies its output to said means (4) for sampling, the filtering characteristic of said filtering means (3) being selected so as to smooth said electrical signal (S_A) from said converting means during at least more than one horizontal scanning period, said signal (S_A) from said filtering means being supplied to said sampling means, and said sampling signals (S_P) from said sampling signal producing means (8) being also supplied to said sampling means to determine its sampling time within one period.

4,201,978
DOCUMENT PROCESSING SYSTEM

Robert B. Nally, Waterloo, Canada, assignor to NCR Canada Ltd. — NCR Canada Ltee, Mississauga, Canada

Filed Oct. 19, 1978, Ser. No. 953,046
Int. Cl.[2] G06K 9/04
U.S. Cl. 340—146.3 C 6 Claims

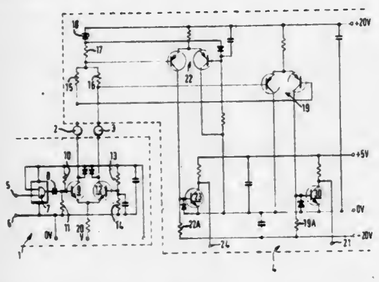


1. A system for processing documents encoded with alpha-numeric characters and containing human readable characters comprising:
(a) storage means;
(b) utilization means;
(c) means for generating data including keyboard means for entering into said storage means the encoded alpha-numeric characters on the document and data locating the human readable characters on the document, said data being stored in said storage means at an address represented by the encoded alpha-numeric characters;
(d) means for reading encoded alpha-numeric characters on a document being processed;
(e) and means responsive to the reading of the encoded alpha-numeric characters for retrieving from said storage means and transferring to said utilization means the data locating the human readable characters on the document stored in said storage means at the address represented by the encoded alpha-numeric characters.

4,201,979
CONVEYING DATA SIGNALS BETWEEN RELATIVELY ROTATABLE UNITS

John R. Baron, London, England, assignor to British Aircraft Corporation Limited, London, England

Filed Jul. 24, 1978, Ser. No. 927,181
Claims priority, application United Kingdom, Jul. 27, 1977, 31457/77
Int. Cl.[2] G08B 29/00; G08C 9/00; G08B 21/00
U.S. Cl. 340—181 7 Claims

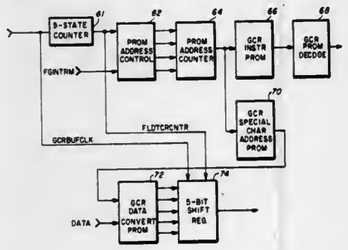


1. Apparatus for carrying a binary digital input signal having first and second logic levels between relatively rotatable first and second units, comprising; first and second wiping connectors for carrying current between the relatively rotatable first and second units; means responsive to the existence of the first or the second logic level in the binary ditital input signal to pass a current through the first or the second wiping connector, respectively, from the first unit to the second unit; output means responsive to current flow to the second unit through the first or the second wiping connector to generate an output signal having a first or a second logic level, respectively, and means responsive to the absence of current in both wiping connectors, when the apparatus is in operation, to provide an indication of a fault.

4,201,980
GCR DATA WRITE CONTROL APPARATUS

Stanley I. Friedman; Charles P. Cobeen, both of Phoenix, and Herbert K. Jacobsthal, Scottsdale, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 26, 1978, Ser. No. 973,260
Int. Cl.[2] H03K 13/24
U.S. Cl. 340—347 DD 10 Claims



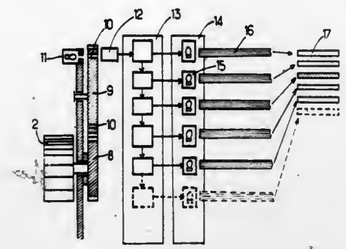
1. A GCR write control apparatus for use in a data processing system wherein raw data is group coded recorded prior to being written on magnetic tape, comprising:
first memory means for storing a plurality of instructions;
second memory means for storing a special character table and a code conversion table for converting raw data into GCR data;
first addressing means for accessing said first memory means;
second addressing means for accessing said second memory means, said second addressing means coupled to the output of said first addressing means and to a source of raw data;
transmitting means coupled to the output of said second memory means and synchronized with said raw data for transmitting special characters and converted data to said magnetic tape; and
control means for incrementing said first addressing means.

4,201,981
DEVICE FOR THE DISPLAY OF DATA REPRESENTATIVE OF QUANTITIES

Jean L. Grissonnanche, Le Pecq, France, assignor to Societe Francais d'Equipements pour la Navigation Aerienne, Velizy-Villacoublay, France

Filed May 11, 1978, Ser. No. 904,751
Claims priority, application France, May 18, 1977, 77 15337
Int. Cl.[2] G08B 5/00
U.S. Cl. 340—380 8 Claims

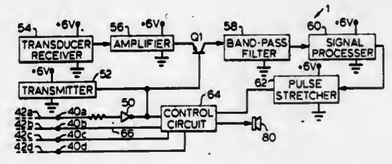
1. A system for indicating values, such as the values of command in a process or in a system of automatic piloting of an aircraft, comprising:
(a) a manual element, such as a rotatably mounted knob, for commanding an indicator;
(b) means, responsive to the action effectuated on said manual element, for transforming the information into a succession of pulses;
(c) means for counting said pulses;
(d) an indicator means, responsive to said counting means and comprising a luminous index having graduations along its length to indicate an output reading, and where the output reading is a function in amplitude of the count in said counting means and in direction of the direction of action effectuated on said manual element, whereby an indication is supplied to the operator through the intermediary of the manual element, with the indication being comparable to a reference for an output reading.



4,201,982
FOUR WIRE MULTI-SATELLITE INTRUSION ALARM WITH MULTIPLEX ANNUNCIATION

Peter E. Humphries, King, Canada, assignor to Contronic Controls Limited, Mississauga, Canada

Continuation-in-part of Ser. No. 770,867, Feb. 22, 1977, Pat. No. 4,138,674. This application Apr. 20, 1978, Ser. No. 898,238
Int. Cl.[2] G08B 29/00
U.S. Cl. 340—506 11 Claims

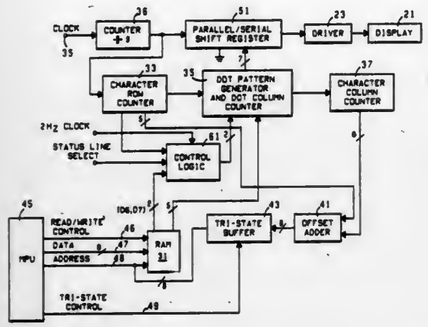


1. An intrusion alarm system comprising:
(1) a master control unit having:
(a) two master power supply terminals, and power supply means coupled thereto for supplying power to said master power supply terminals,
(b) a master drive signal terminal, and a drive signal generator coupled thereto for applying a drive signal to said master drive signal terminal,
(c) a master alarm signal terminal, and a detector coupled thereto and responsive to receipt of a predetermined high level first alarm signal thereat for generating a second alarm signal,
(2) a plurality of satellite units, each having:
(a) a satellite drive signal terminal, and a transmitter coupled thereto and responsive to receipt of said drive signal thereat for transmitting a radiation field in a supervised area,
(b) a receiver for receiving a portion of said radiation field which is reflected from objects in said area,
(c) signal processing means coupled to said receiver for comparing the transmitted and received fields and responsive to disturbances in said received field caused by a moving intruder in the supervised area, for generating a third alarm signal upon occurrence of such disturbance,
(d) a satellite alarm signal terminal,
(e) a control circuit coupled to said signal processing means and to said satellite alarm signal terminal and responsive to receipt of said third alarm signal for generating said high level first alarm signal at said satellite alarm signal terminal,
(f) enable means responsive to receipt of said third alarm signal and operative for thereupon producing an enable signal,
(g) two satellite power receiving terminals for receiving power and coupled to said transmitter, said receiver, said signal processing means, and said control circuit for supplying power thereto,
(3) a cable having only four wires connecting each satellite unit to said master control unit, two of said wires being connected between said master power supply terminals and said satellite power receiving terminals, a third of said wires being connected between said master drive signal terminal and said satellite drive signal terminal, and the fourth of said wires being connected to said master alarm signal terminal and said satellite alarm signal terminal,
(4) each satellite further having:
(h) satellite counter means, and means connected between said satellite counter means and said control circuit for enabling said satellite counter means upon production of said enable signal and subsequent termination of application of said drive signal to said satellite drive signal terminal,
(i) said satellite counter means including means connected with said satellite drive signal terminal and responsive, when said counter means has been enabled, to receipt of a high level counting signal at said satellite drive signal terminal for causing said satellite counter means to count,
(j) said satellite counter means having an output corresponding to a selected count of said counter means said selected count being different from that of each counter means of each other satellite,
(k) said satellite counter means further including means connected to said satellite alarm signal terminal for generating, if said counter means has been enabled, a short duration high level fourth alarm signal at said selected count of said satellite counter means, the duration of said high level fourth alarm signal being not greater than the duration of a count of said satellite counter means,
(5) each master control unit further having:
(d) master counter means coupled to said master drive signal terminal for generating said high level counting signal at said master drive signal terminal, said high level counting signal having a count for each satellite,
(e) control means coupled to said master drive signal terminal and to said master counter means and selectively operable to discontinue application of said drive signal to said master drive signal terminal and to then initiate operation of said master counter means for application of said high level counting signal to said master drive signal terminal,
(f) said control means including means for terminating operation of said master counter means after said master counting means has generated a selected number of counts, said selected number being at least equal to the total number of said satellites,
(6) and satellite status indicating means comprising:
(a) register means having a plurality of indicating outputs, one corresponding to each satellite;
(b) said register means including means connected to said alarm signal terminal and to said master counter means and responsive to receipt of said fourth high level alarm signal during a selected number of said master counter means for generating an indicating signal at the indicating output corresponding to the satellite associated with said selected count,
(c) and indicating means connected to said register means and responsive to said indicating signals for indicating the status of said satellites,
whereby an investigator inspecting said register means may determine which if said satellites has or has not generated a said high level first alarm signal.

4,201,983
ADDRESSING CIRCUITRY FOR A VERTICAL SCAN DOT MATRIX DISPLAY APPARATUS

Richard A. Magerl, Schaumburg; George E. Dykas, Vernon Hills, and Kenneth W. Hamilton, Rolling Meadows, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1978, Ser. No. 882,691
Int. Cl.² G06F 3/14
U.S. Cl. 340—709 **3 Claims**



1. An addressing circuitry for a column-wise scanning dot matrix display having R character rows and Q character columns where either R or Q or both are not equal to 2n wherein R, Q and n are integer numbers, respectively, said addressing circuitry comprising:

a clock source for generating timing signal pulses,

a random access memory for storing information in binary character codes wherein said memory has at least X character locations, X being equal to R times Q, and said information in binary character codes are stored in continuum,

a character row counter responsive to the timing signal,

a character column counter responsive to the timing signal,

means for providing addressing signal to said random access memory to read out the binary characters stored therein, said random access memory responsive to the addressing signal for reading out the stored binary characters,

a dot pattern generator for converting the binary-coded characters read out of the random access memory into dot matrix pattern characters, and

an off-set adder coupled between said character row counter and said character column counter and said random access memory, wherein said row and column counters, and said off-set adder are arranged to provide a unique offset to the addressing signal for enabling said addressing means to address and read out said random access memory so that the information in binary character codes stored in continuum are read out in a proper sequence and displayed in a dot matrix form on said dot matrix display panel in a proper sequence.

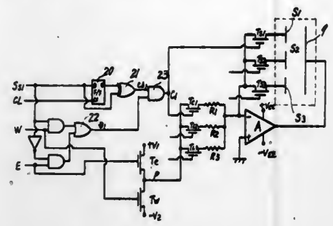
4,201,984
CURRENT CONTROLLED DRIVE SYSTEM FOR ELECTROCHROMIC DISPLAYS OF THE SEGMENTED TYPE

Yasuhiko Inami, Tenri; Sadatoshi Takechi, Nara; Tadanori Hishida, Kashihara; Hisashi Uede, Wakayama, and Hiroshi Take, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1977, Ser. No. 800,009
Claims priority, application Japan, May 24, 1976, 51-60958
Int. Cl.² G06F 3/14
U.S. Cl. 340—763 **14 Claims**

1. In a circuit for an electrochromic display which includes an electrochromic material and a predetermined number of display segments, various combinations of the display segments defining different desired display patterns, the improvement comprising:

a current supply source means connected to the electrochromic display; and

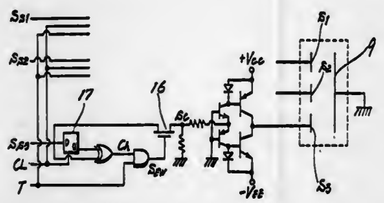


control means for selecting a constant value of the output current of said current supply source corresponding to the number of display segments which are to have their display states changed.

4,201,985
CONSTANT CURRENT SUPPLY DRIVE FOR ELECTROCHROMIC DISPLAYS OF THE SEGMENTED TYPE

Yasuhiko Inami, Tenri; Tadanori Hishida, Kashihara; Kozo Yano, Tenri; Hiroshi Hamada, Tenri, and Hiroshi Nakauchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1977, Ser. No. 800,008
Claims priority, application Japan, May 24, 1976, 52-60959
Int. Cl.² G09F 9/32
U.S. Cl. 340—785 **18 Claims**



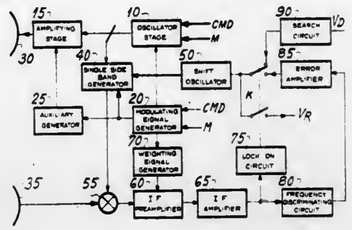
1. In a driver circuit for an electrochromic display which includes an electrochromic material and a predetermined number of display segments, combinations of the display segments defining different desired display patterns, the improvement comprising:

a plurality of constant current supply source means one of said constant current supply source means being connected to each of the respective display segments for causing an electric current of an individually fixed value to flow through said display segments; and control means for selectively enabling each of said constant current supply source means thereby causing electric current of a fixed value to be drawn through said constant current supply source means connected to said display segment and drawn from the respective display segment when said respective display segment is desired to be colored and causing electric current of a fixed value to be poured into the display segment and conducted through said constant current supply source means connected to said display segment when said display segment is desired to be bleached.

4,201,986
CONTINUOUS WAVE RADAR EQUIPMENT

Paul Ducrocq, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 3, 1978, Ser. No. 958,342
Claims priority, application France, Nov. 8, 1977, 77 33612
Int. Cl.² G01S 9/24
U.S. Cl. 343—14 **11 Claims**

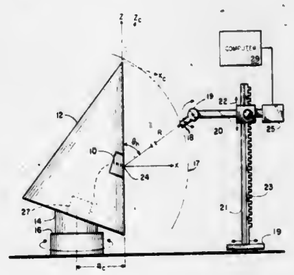


1. A radar equipment operating with a virtually continuous wave and comprising a transmitter/receiver assembly, the transmitter being formed by an oscillator stage whose frequency can be modulated, said oscillator stage being associated with a power amplifier stage, the receiver being of the superheterodyne type and in particular the multi-channel superheterodyne type which enables the echo of a target to be tracked directionally, wherein said transmitter/receiver assembly is capable of operating in two separate modes, namely a first mode in which the transmitted carrier wave F_o is frequency modulated linearly over a range ΔF, and a second mode in which the carrier wave is pure, said transmitter further including means for modulating said oscillator stage linearly through a sawtooth pattern signal whose repetition period is T_R, said receiver further including, on the one hand, at least one amplification channel whose final pass band is substantially equal to the reciprocal of the period T_R and whose gain is weighted periodically at this same rate T_R, and, on the other hand, a generator which supplies a local microwave signal whose phase is coherent with the transmitted signal and whose frequency is shifted by an amount equal to the intermediate amplification frequency plus the beat frequency F_b resulting from the transit time of the echo and the Doppler frequency shift.

4,201,987
METHOD FOR DETERMINING ANTENNA NEAR-FIELDS FROM MEASUREMENTS ON A SPHERICAL SURFACE

Gus P. Tricoles, San Diego, and Eugene L. Rope, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1978, Ser. No. 883,430
Int. Cl.² G01R 29/10
U.S. Cl. 343—703 **4 Claims**



1. The method for determining the field distribution at any point about a radiating antenna from measurements on a spherical surface comprising:

radiating a signal from a transmitting antenna to be measured;

receiving the radiated signal at a preselected range defining a spherical surface about the radiating antenna;

measuring the phase and intensity of the received signal;

reconstructing the near-field of the radiating antenna using the conjugate of the measured phase and intensity of said received signal by computing the field at any point within the measurement sphere, including the radiating aperture according to the equation,

$$u_i^* = \int \left(u_h^* \frac{\partial g}{\partial n} - g \frac{\partial u_h^*}{\partial n} \right) dS_i;$$

determining the spectrum of the reconstructed near-field within the measurement sphere by Fourier transformation according to the equation,

$$u_i = \int\int u_i^* e^{-i} d_y d_z^{2\pi(vz+\mu y)};$$

filtering said spectrum by multiplying with filter functions, $1+(1-V^2)^{-\frac{1}{2}}$ and $1+(1-V^2)^{\frac{1}{2}}$, to enhance its accuracy;

analytically continuing said filtered spectra by extending the spectra beyond the conventional limit of $1/\lambda$, where λ is the wavelength to further enhance its accuracy; and

computing the fields within the measurement surface including the field at the radiating antenna aperture by inverse Fourier transformation of said filtered and continued spectra according to the inverse of equation,

$$u_i = \int\int u_i^* e^{-i} d_y d_z^{2\pi(vz+\mu y)}$$

to provide accurate near-field data which may be used to calculate accurate far-fields of said radiating source.

4,201,988
WIDEBAND VHF ANTENNA

Douglas M. Dilley, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 5, 1979, Ser. No. 17,749
Int. Cl.² H01Q 1/32
U.S. Cl. 343—715 **16 Claims**



1. A wideband VHF antenna operable simultaneously on multiple frequencies comprising:

an elongated dielectric antenna whip having first and second ends;

a first electric conductor of length L1 secured to said dielectric whip and extending substantially along the entire length thereof;

a second electric conductor of length L1 secured to said

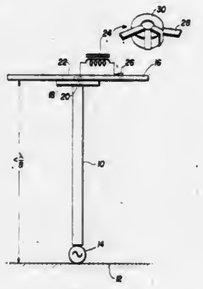
dielectric whip and extending substantially along the entire length thereof;
a first electric connector connecting said first electric conductor to said second electric conductor;
a third electric conductor of length L2 secured to said dielectric antenna whip and disposed in the neutral plane between said first and second electric conductors;
a second electric connector connecting said second electric conductor to said third electric conductor; and
a wideband transformer connected to said first electric conductor.

4,201,989

WIDEBAND ANTENNA WITH FREQUENCY DEPENDENT FERRITE CORE INDUCTOR

Watson P. Czerwinski, Forked River, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 11, 1979, Ser. No. 28,934
Int. Cl.[2] H01Q *1/32, 9/38*
U.S. Cl. 343—715 **14 Claims**



1. A low profile wideband antenna system coupled to radio apparatus operable over a predetermined frequency range and adapted for VHF operation, comprising in combination:
a counterpoise;
an end fed monopole antenna element mounted on said counterpoise;
a top capacitance loading element located at the opposite end of said antenna element from said counterpoise; and
a frequency dependent series inductor coupled between said antenna element and said top capacitance loading element, said frequency dependent series inductor including a winding wound on a core of ferrite material which material exhibits a μ characteristic which decreases with respect to frequency over a predetermined portion of said frequency range.

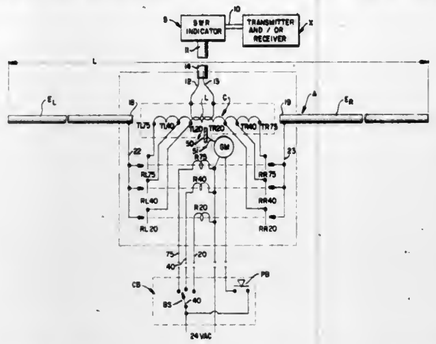
4,201,990

TUNABLE DIPOLE ANTENNA

John Altmayer, Cape Coral, Fla., assignor to Hustler, Inc., Kissimmee, Fla.

Continuation-in-part of Ser. No. 569,794, Apr. 21, 1975, abandoned. This application Jul. 22, 1977, Ser. No. 818,009
Int. Cl.[2] H01Q *9/16*
U.S. Cl. 343—747 **11 Claims**

1. A remotely, tuned, band-switched dipole antenna comprised of a single pair of elongated dipole elements in aligned relationship with their adjacent ends in electrically insulated relationship, a multi-turn coil of electrically conductive material positioned adjacent said adjacent ends, said coil having at least a pair of spaced taps, one on each side of its center plane, means connecting a pair of said taps to respective adjacent ends of said dipole members, a disc of a material to affect the inductance of said coil positioned within said coil midway between the ends of said coil and rotatable about a diameter of said coil from a first position where the plane of said disc is perpendicular to the axis of said coil to a second position, motor means for rotating said disc between said positions and means remote from said antenna for actuating said motor whereby said antenna may be electrically tuned from a remote



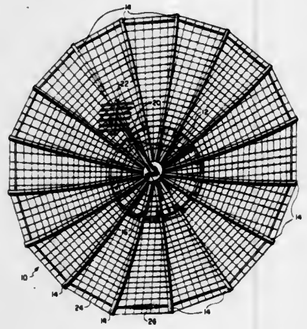
point; said means for connecting said taps on said coil to said adjacent ends of said dipole elements including relays having contacts thereon and means for selectively energizing said relays.

4,201,991

ANTENNA STRUCTURE ASSEMBLED FROM SEPARABLE PARTS

James K. Vines, Park Forest South, Ill., assignor to Paraframe, Inc., Monee, Ill.

Filed Mar. 16, 1978, Ser. No. 887,354
Int. Cl.[2] H01Q *15/20, 19/12*
U.S. Cl. 343—840 **5 Claims**



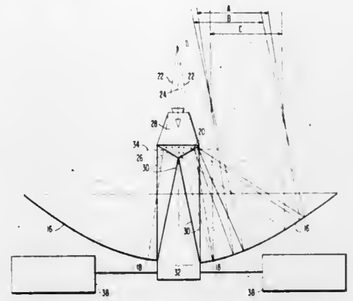
1. A structure for use in an antenna for receiving or broadcasting radio frequency signals, comprising, in combination:
a flat base;
a plurality of pre-stressed arms having an interior end and an exterior end, each of which arms is formed of a plurality of generally flat overlapping layers of resilient material permanently bonded to each other in a bowed configuration;
means for mounting the interior end of the arms to the base, so that the exterior ends are positioned in a radial array about the base; and
cable means mounted about said arm ends for securing together said plurality of arms in a radiating array about the base together and for stressing the arms into a generally parabolic shape.

4,201,992

MULTIBEAM COMMUNICATIONS SATELLITE

George R. Welti, Leesburg, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Apr. 20, 1978, Ser. No. 898,051
Int. Cl.[2] H01Q *1/28*
U.S. Cl. 343—840 **5 Claims**



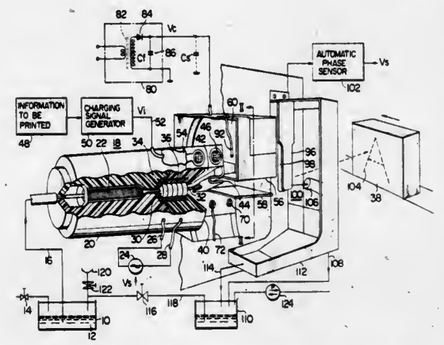
1. In a multibeam communications satellite of the type having an antenna which comprises a reflector and a plurality of feeds for directing radiation at different areas of the surface of said reflector for redirection to various points on earth, the improvement comprising said reflector surface being described by a plane parabolic generating curve rotated about an axis of revolution which is coplanar with said generating curve but angularly displaced from the axis of symmetry thereof by an angle of less than 12°.

4,201,993

INK JET PRINTER USING INFLAMMABLE INK

Syoichi Ito, Ibaraki, and Mithuo Suzuki, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 22, 1978, Ser. No. 972,216
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



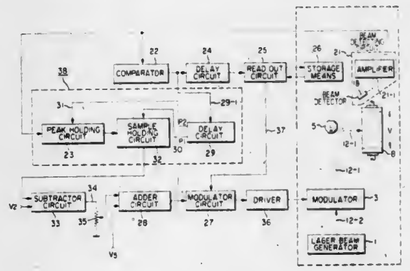
1. An ink jet printer using inflammable ink comprising:
an ink reservoir for storing ink including inflammable solvent;
means for supplying the inflammable ink under predetermined pressure;
a nozzle for ejecting the ink received from the ink supplying means and forming a series of ink droplets;
means mounted downstream from the nozzle for charging each ink droplet;
charging signal generator for producing a voltage signal in accordance with information to be printed to determine an amount of charge to be imparted to each ink droplet and for supplying the charging means with the voltage signal;
a pair of deflecting plates mounted downstream from the charging means for deflecting the charged ink droplets, the value of the capacitance is so selected that the electrostatic energy stored betwen the plates when a predetermined d.c. voltage is supplied thereto, is less than the minimum spark ignition energy of the inflammable ink vapor occured in operation;
an electric source for supplying the deflecting plates with the predetermined d.c. voltage;
an insulating support for supporting the deflecting plates;
a resistor connected between the deflecting plates and the electric source, the value of the resistance is so selected that the spark ignition energy discharged when the spark ignition occurs between the deflecting plates, is less than the minimum spark ignition energy.

4,201,994

INFORMATION FORMATION APPARATUS

Kazuo Hoshito, Kawasaki; Hideaki Sato, Yokohama; Takashi Kitamura, Yokohama, and Koichi Masegi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1977, Ser. No. 833,342
Claims priority, application Japan, Sep. 17, 1976, 51-111563
Int. Cl.[2] G01D *15/14*
U.S. Cl. 346—108 **18 Claims**



1. An information formation apparatus for forming information on a beam-irradiated member by the use of a beam, comprising:
beam formation means for forming a beam modulated by information signals applied thereto;
deflector means for deflecting said beam in accordance with a scan pass;
an information formation member on which the beam deflected by said deflector means is projected, said information formation member having an information formation region on which information is formed by said beam;
means for detecting the intensity of said beam at a predetermined time other than the time when said beam scans said information formation region, and producing a detection signal in accordance with the intensity of said beam;
peak holding means for detecting and holding the maximum level in said detection signal; and
comparison means for comparing said maximum level with a reference level and producing a control signal in accordance with a difference therebetween.

4,201,995

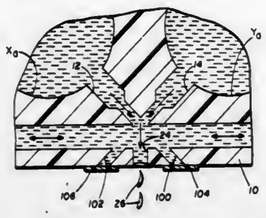
COINCIDENCE GATE INK JET WITH INCREASED OPERATING PRESSURE WINDOW

Kenneth H. Fischbeck, Dallas, and Ganesh L. Harpavat, Plano, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1978, Ser. No. 966,436
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **18 Claims**

1. A coincidence gate ink jet comprising: an outlet orifice, a first transducer chamber, a second transducer chamber, first passage means communicating said first transducer chamber to said orifice, second passage means communicating said second

transducer chamber to said orifice, said first and second passage means intersecting each other adjacent said orifice, the axis of each of said first and second passage means at said intersection being at an angle with the axis of said orifice, pressure absorbing chamber means communicated with said orifice and intersection, means for allowing fluid displacement in said absorbing chamber means when only one transducer is



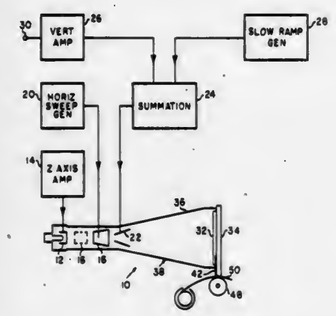
actuated, said pressure absorbing chamber means being so designed and arranged relative to said intersection and said orifice that the minimum pressure required to express a droplet through said orifice upon actuation of only one of said transducers will be increased compared to the minimum pressure required to express a droplet from the orifice of a similar ink jet structure without the absorbing chamber means.

4,201,996

CATHODE RAY TUBE HAVING IMAGE TRANSFER MEANS

William W. Stein, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 5, 1978, Ser. No. 948,724
Int. Cl.[2] H04N *5/80*
U.S. Cl. 346—158 **4 Claims**



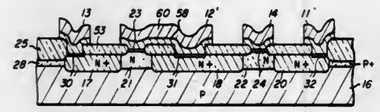
1. A display and recording system comprising:
a cathode ray tube including an electron gun for generating a writing beam of electrons, deflection means for deflecting said writing beam in accordance with input signals that are applied thereto, and a faceplate having a phosphor screen thereon for visually displaying information thereon corresponding to the deflection thereon of said writing beam by said deflection means;
image transfer means disposed along said faceplate, said image transfer means defining a first section and a second section, said first section located inside said cathode ray tube and having a portion covered by a part of said phosphor screen, said second section extending along an edge of said faceplate outside said cathode ray tube and remote from said visual display;
recording means for passage along and in engagement with said second section of said image transfer means; and
means operatively connected to said deflection means for selectively deflecting said writing beam along said part of said phosphor screen to scroll the visually displayed image line by line along said part and transfer the line by line image via said image transfer means to provide a permanent said recording means to record of the visually displayed information thereon.

4,201,997

MESFET SEMICONDUCTOR DEVICE AND METHOD OF MAKING

Henry M. Darley, Plano; Theodore W. Houston, Richardson, both of Tex., and James B. Kruger, Thousand Oaks, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 21, 1978, Ser. No. 898,582
Int. Cl.[2] H01L *29/48*
U.S. Cl. 357—15 **6 Claims**



1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
first, second, and third current carrying electrodes of the opposite conductivity type in surface adjacent regions of said substrate;
a first high resistivity region of said opposite conductivity type in a surface adjacent region of said substrate and between and contiguous with at least one perimeter portion of said first and second current carrying electrodes;
a second high resistivity region of said opposite conductivity type in a surface adjacent region of said substrate and between and contiguous with at least one perimeter portion of said second and third carrying electrodes;
a first dielectric region in said substrate surrounding said device;
a heavily doped region of said first conductivity type lying below and in contact with said first dielectric region;
a second dielectric region in said substrate lying between said first dielectric region and overlying part of each of said current carrying electrodes and said high resistivity regions in the areas where said current carrying electrodes and said high resistivity regions are contiguous;
a metal silicide region formed in each of said current carrying electrodes at least one perimeter portion of each metal silicide region lying contiguous with at least one perimeter portion of said first dielectric region;
a metal silicide region in each of said first and second high resistivity regions, the ends of said metal silicide regions in said high resistivity regions lying contiguous with a perimeter portion of said first dielectric region, each of said metal silicide regions creating a metal-semiconductor junction as a control element.

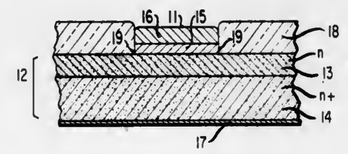
4,201,998

DEVICES WITH SCHOTTKY METAL CONTACTS FILLING A DEPRESSION IN A SEMI-CONDUCTOR BODY

Alfred Y. Cho, Summit, and Martin V. Schneider, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 770,014, Feb. 18, 1977, Pat. No. 4,108,738. This application May 30, 1978, Ser. No. 910,118
Int. Cl.[2] H01L *29/48*
U.S. Cl. 357—15 **1 Claim**

1. A semiconductor device comprising:
(a) a GaAs substrate doped with Sn to a concentration on the order of $10^{18}cm^{-3}$;
(b) an ohmic contact disposed on a major surface of said substrate;
(c) a GaAs epitaxial layer about 1500A thick disposed on an opposite major surface of said substrate and being doped with Sn to a concentration with abruptly changes from about $10^{18}cm^{-3}$ at the interface with said substrate to the order of $10^{16}cm^{-3}$ in said epitaxial layer and decreases with distance from said interface to the free surface of said layer;
(d) a passivating layer disposed on said free surface and having an aperture therein to expose a portion of said epitaxial layer;
(e) a depression in said epitaxial layer underneath said aperture extending under at least a portion of said passivating layer, said depression having a generally curved profile including peripheral curved portions which intersect said free surface and a central portion having a depth of about 400A which joins said peripheral portions, the distance



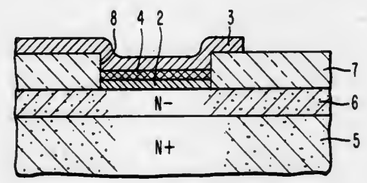
between said central portion of said depression and said interface being sufficiently small to allow voltage punch-through under conditions of reverse bias, the carrier concentration in said epitaxial layer decreasing from about $4\times10^{16}cm^{-3}$ at a depth of about 400A from said free surface to about $3\times10^{16}cm^{-3}$ at said free surface, the carrier concentration near said free surface being sufficiently small to prevent breakdown at the intersection of said curved portions with said free surface under conditions of reverse bias, and
the curved shape of said depression and the carrier concentration being mutually adapted to confine reverse bias breakdown to said central portion of said depression; and
(f) a metal filling said depression and forming a Schottky barrier contact with said epitaxial layer.

4,201,999

LOW BARRIER SCHOTTKY DIODES

James K. Howard, Fishkill; Frank E. Turene, Pleasant Valley, and James F. White, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,815
Int. Cl.[2] H01L *29/48, 29/56, 23/48*
U.S. Cl. 357—15 **4 Claims**



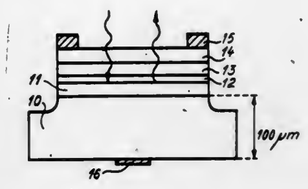
1. A schottky barrier contact on a silicon surface comprised of sequential layers of
a transition metal adjacent said surface;
an intermetallic compound of a said metal and aluminum; and
aluminum.

4,202,000

DIODE CAPABLE OF ALTERNATELY FUNCTIONING AS AN EMITTER AND DETECTOR OF LIGHT OF THE SAME WAVELENGTH

Jean-Claude Carballes, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 22, 1978, Ser. No. 918,263
Claims priority, application France, Jun. 27, 1977, 77 19616
Int. Cl.[2] H01L *31/12*
U.S. Cl. 357—19 **6 Claims**



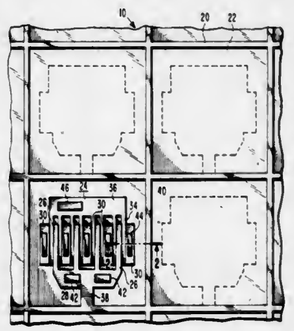
1. A diode capable of functioning alternately as an emitter and detector of light for a predetermined wavelength, comprising: an active semiconductor material layer capable of absorbing or generating photons of said predetermined wavelength, depending upon the direction in which it is biassed, first and second localizing semiconductor material layers having opposite conductivity types and respectively forming two heterojunctions with said active semiconductor material layer, said two localizing layers: electrical contact means for establishing electrical connection to each of said localizing layers so that said diode can be biassed in either the forward or reverse direction and; wherein said active layer having a thickness and a doping such that it is the site of an avalanche phenomenon when said diode is biassed in the reverse direction, for a predetermined voltage having a magnitude less than 30 volts.

4,202,001

SEMICONDUCTOR DEVICE HAVING GRID FOR PLATING CONTACTS

Walter F. Reichert, East Brunswick, and Ho-Chung Huang, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 5, 1978, Ser. No. 903,121
Int. Cl.[2] H01L *29/80, 27/10, 29/66*
U.S. Cl. 357—22 **13 Claims**



1. A semiconductor device comprising:
a body including a semiconductor material having a surface,
a continuous metal grid on said surface and dividing said surface into a plurality of areas, with each area being surrounded by a portion of said grid
a separate semiconductor element in each of said areas, each

of said semiconductor elements including a plurality of contacts, and

means on said surface electrically connecting at least one of said contacts of each of said semiconductor elements to said grid.

4,202,002

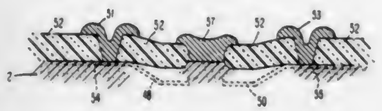
ION-IMPLANTED LAYERS WITH ABRUPT EDGES

F. H. De La Moneda, Reston, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 760,788, Jan. 19, 1977, which is a division of Ser. No. 701,375, Jun. 30, 1976, Pat. No. 4,029,522. This application Jun. 5, 1978, Ser. No. 912,597

Int. Cl.² H01L *29/80, 29/78, 29/48*

U.S. Cl. 357—22 **7 Claims**



1. In a semiconductor device, an asymmetrical, buried, conductive layer beneath the surface of a semiconductor substrate, comprising:

an ion-implanted conductive layer formed in the bulk of the substrate having a first end with an angular contour contacting the surface of the substrate and a second end abruptly terminating within the bulk of said substrate.

4,202,003

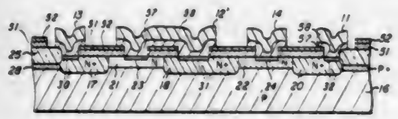
MESFET SEMICONDUCTOR DEVICE AND METHOD OF MAKING

Henry M. Darley, Plano; Theodore W. Houston, Richardson, and Han T. Yuan, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 21, 1978, Ser. No. 898,581

Int. Cl.² H01L *29/48*

U.S. Cl. 357—15 **7 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

first, second, and third current carrying electrodes of the opposite conductivity type in surface adjacent regions of said substrate;

a first high resistivity region of said opposite conductivity type in a surface adjacent region of said substrate and between and contiguous with at least one perimeter portion of said first and second current carrying electrodes;

a second high resistivity region of said opposite conductivity type in a surface adjacent region of said substrate and between and contiguous with at least one perimeter portion of said second and third carrying electrodes;

a thick dielectric region in said substrate surrounding said device;

a heavily doped region of said first conductivity type lying below and in contact with said thick dielectric region;

a metal silicide region formed in each of said current carrying electrodes at least one perimeter portion of each metal silicide region lying contiguous with at least one perimeter portion of said thick dielectric region;

a metal silicide region in each of said first and second high resistivity regions, the ends of said metal silicide regions in said high resistivity regions lying contiguous with a perimeter portion of said thick dielectric region, said metal silicide regions creating metal-semiconductor junctions as control elements.

4,202,004

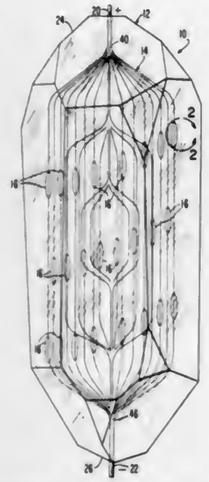
ENERGY CONVERSION UNIT

David C. Andersen, 425 First St., Los Altos, Calif. 94022

Filed Sep. 20, 1978, Ser. No. 944,097

Int. Cl.² H01L *27/14*

U.S. Cl. 357—30 **9 Claims**



1. An energy conversion unit comprising: a body of an n-type semiconductor material capable of permitting electrons to be liberated therefrom when electromagnetic radiation is absorbed by the body, there being an electrically conducting loom assembly embedded in the body, said assembly being comprised of a plurality of loom units, each loom unit having an electrode with a p-type semiconductor material thereon and means coupled with the electrode for defining an electrical current flow path extending away therefrom, said semiconductor materials defining a plurality of n-p junctions across which liberated electrons flow to the electrodes and along said current flow paths; and conductor means coupled to the loom assembly and extending outwardly from the crystal for connecting said current flow paths to an electrical circuit externally of the body.

4,202,005

DISTRIBUTED COLLECTOR BALLAST RESISTOR STRUCTURE

Paul W. Sanders, Manhattan Beach, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Nov. 20, 1978, Ser. No. 962,122

Int. Cl.² H01L *27/02*

U.S. Cl. 357—51 **7 Claims**

1. In a distributed collector contacted transistor, a distributed collector ballast resistor structure comprising:

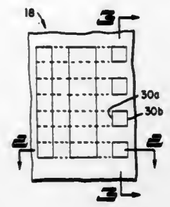
a semiconductive substrate layer;

a plurality of collector regions disposed in the surface of said substrate;

an epitaxial layer bonded to the surface of said substrate and collector regions;

an emitter region disposed in the surface of said epitaxial layer and extending above each collector region;

a base region disposed in the surface of said epitaxial layer and extending above each collector region;



a plurality of collector contacts, each such contact being disposed in the surface of said epitaxial layer and above a respective collector region.

4,202,006

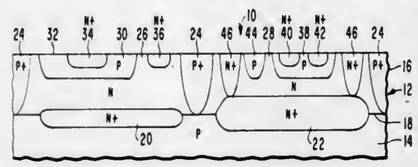
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Heshmat Khajezadeh, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 877,856, Feb. 15, 1978. This application May 21, 1979, Ser. No. 41,086

Int. Cl.² H01L *27/04*

U.S. Cl. 357—63 **4 Claims**



1. A semiconductor integrated circuit device comprising:

a body of semiconductive material including a substrate of one type conductivity and an epitaxial layer of opposite type conductivity with an interface therebetween,

a first localized region of opposite type conductivity in said substrate adjacent to said interface and containing opposite type conductivity modifiers consisting essentially of a first chemical element,

a second localized region of opposite type conductivity in said substrate adjacent to said interface and spaced from said region of opposite type conductivity, said second region containing opposite type conductivity modifiers consisting essentially of a second different chemical element,

said first and second chemical elements being characterized by substantially equal diffusion coefficients in said semiconductive material but substantially different vapor pressures at the growth temperature of said epitaxial layer, said second chemical element having a relatively high vapor pressure whereby that portion of said epitaxial layer which is adjacent to said second region contains an autodoped number of atoms of said second chemical element which is greater than the autodoped number of atoms of said first chemical element in that portion of said epitaxial layer which is adjacent to said first localized portion,

said semiconductor material being silicon, said one type being P type, said opposite type being N type, said first chemical element being antimony, and said second chemical element being arsenic.

4,202,007

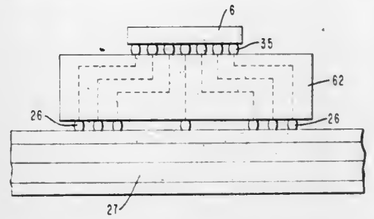
MULTI-LAYER DIELECTRIC PLANAR STRUCTURE HAVING AN INTERNAL CONDUCTOR PATTERN CHARACTERIZED WITH OPPOSITE TERMINATIONS DISPOSED AT A COMMON EDGE SURFACE ~~OF THE~~ LAYERS

William E. Dougherty, Wappingers Falls, and Stuart E. Greer, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,213

Int. Cl.² H01L *39/02, 23/48, 29/44*

U.S. Cl. 357—80 **4 Claims**



1. A planar support for attachment to at least one semiconductor device having a plurality of terminals fixed thereon and arranged in a first grid pattern upon one side of the device, comprising

(A) a unitized plurality of superposed dielectric planar layers,

(B) a conductor pattern comprised of a plurality of conductor leads between at least one original adjacent pair of said layers and extending in a return path to and between a common edge surface of said layers,

(a) with said conductor leads substantially coextensive and parallel with the planes of said layers,

(b) with said edge surfaces disposed at the ends of the original interfaces of said layers,

(c) with the common adjacent terminations of said leads disposed at a first portion of said edge surface in a configuration corresponding to a first grid pattern of predetermined spacing, and

(d) with the opposite common terminations of said leads disposed at a second portion of said edge surface in a second grid pattern having spacings substantially larger than said first spacing,

(C) a distribution pattern of conductors on said edge surface and comprised of a plurality of leads having one end connected to respective ones of opposite terminations with the opposite ends terminating at dispersed contact points on a third portion of said edge surface with the spacing between said points being substantially greater than the spacing of both said first and second grid patterns, and

(D) contact pins extending from said contact points to the opposite edge surface of said layers in projecting relationship therefrom, with said contact pins coextending with and parallel with the planes of said layers and conductor pattern.

4,202,008

PRODUCTION OF COMPOSITE IMAGES

Reginald King, Hampton, England, assignor to Evershed Power-Optics Limited, Chertsey, England

Filed Mar. 29, 1977, Ser. No. 782,579

Claims priority, application United Kingdom, Mar. 29, 1976, 12589/76

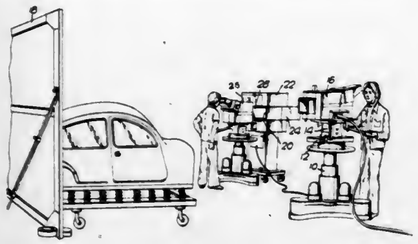
Int. Cl.² H04N *5/22, 5/24*

U.S. Cl. 358—22 **7 Claims**

1. A method for producing composite images in which a foreground camera views a subject in front of a colored screen, a background camera views an image of a background scene,

and a mixing circuit derives from the foreground and background cameras a composite signal which represents the foreground subject but in which the background signal is substituted for the foreground camera signal whenever the latter represents said colored screen, the method further comprising the steps of:

generating signals responsive to panning and tilting movements of the foreground camera, said signals representing the extend of such movements; and



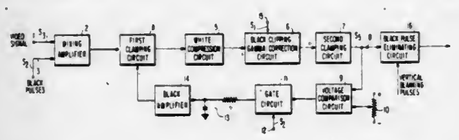
mounting an opaque picture constituting the background image on a support so as to be viewed directly by the back-ground camera and moving said picture in first and second mutually perpendicular directions in a plane perpendicular to the optical axis of the background camera in response to said signals generated in response to panning and tilting movements so that the image provided by the background camera appears to move in a direction opposite to the direction of panning or tilting movement of the foreground camera, said opaque picture being larger than the shot viewed by said background camera.

4,202,009

PROCESSING AMPLIFIER FOR THREE-TUBE COLOR TELEVISION CAMERA

Yasuichi Ushiyama, and Setsuo Yamamoto, both of Toyko, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1978, Ser. No. 930,269
Claims priority, application Japan, Aug. 3, 1977, 52/93506
Int. Cl.[2] H04N *9/53*
U.S. Cl. 358—32 **5 Claims**



1. A processing amplifier device for stabilizing black level in a red, green or blue channel of a three-tube color television camera, said device comprising:

a preamplifier for amplifying a video signal from said channel;

a mixing amplifier circuit operable to mix the output of said preamplifier with black pulses of a predetermined level during a blanking period;

a first clamping circuit for clamping the output of said mixing amplifier circuit to a first predetermined voltage level during that part of the blanking period which is free of the black pulses added thereto;

correction means for effecting black clipping and gamma correction to the output signal of said first clamping circuit;

a second clamping circuit for clamping the output of said correction means to a second predetermined voltage level during said part of the blanking period;

a comparison circuit for comparing the level of said black pulses in the output of said second clamping circuit with a reference voltage; and

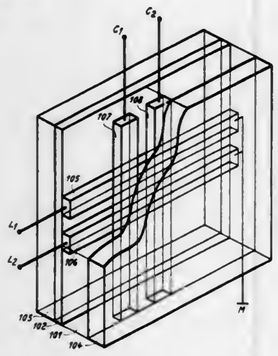
a feedback loop arranged to control the clamp voltage level of said first clamping circuit in accordance with the output of said comparison circuit.

4,202,010

THERMOELECTRIC DISPLAY CELL FOR RECORDING IMAGES LINE BY LINE

Michel Hareng, and Serge Le Berre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 2, 1978, Ser. No. 902,112
Claims priority, application France, May 5, 1977, 77 13738
Int. Cl.[2] H04N *9/30, 5/66*; G02F *1/13*; G09F *9/30*
U.S. Cl. 358—56 **16 Claims**



1. A display device for displaying images represented by a video signal comprising successive pluralities of successive portions, said device comprising:

a thermoelectric recordable layer having a characteristic such that erasure of a recorded image occurs at an erasure temperature;

means for heating above said temperature said layer along a plurality of lines corresponding respectively to said pluralities of successive portions of the video signal; said lines being heated temporarily one after the other and each line being heated simultaneously along its length;

means for applying a plurality of electrical fields respectively to a plurality of portions of said layer overlying parts of each line after the heating of one of said lines and until said one line reaches a temperature below said erasure temperature, said plurality of electrical fields representing one of said successive pluralities of successive portions of the video signal, thereby causing said plurality of successive portions of the video signal to be recorded in said layer at said parts of said one line.

4,202,011

TELEVISION SIGNAL CODER

Toshio Koga, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

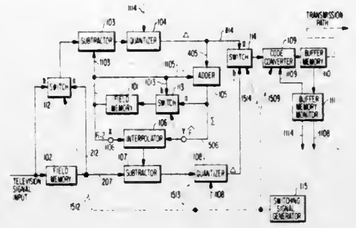
Filed Dec. 28, 1977, Ser. No. 865,147
Claims priority, application Japan, Dec. 28, 1976, 51-158290
Int. Cl.[2] H04N *7/12*
U.S. Cl. 358—136 **6 Claims**

1. A television signal coder for coding a television signal by making use of correlation, said television signal consisting of a series of fields each representing a number of two-dimensionally arranged picture elements of an optical image to be transmitted, said coder comprising:

means for selecting n fields of said television signal among every m fields of said television signal, said m and n being positive integers, said n being less than said m;

means for deriving an array of interpolated values corresponding to the interpolation between said picture elements of preceding and succeeding fields adjacent to said selected n fields

first coding means for coding the difference between the television signal level in said selected n fields and said interpolated values;



second coding means for coding the television signal in the (m−n) fields consisting of said m fields excluding said selected n fields; and

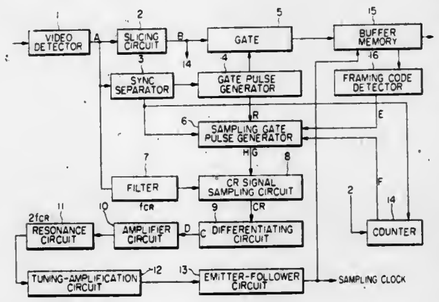
means for code-converting the outputs of said first and second coding means.

4,202,012

SAMPLING CLOCK REPRODUCING DEVICE

Masayoshi Hirashima, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Mar. 1, 1978, Ser. No. 882,087
Claims priority, application Japan, Mar. 15, 1977, 52-28840; May 20, 1977, 52-59262
Int. Cl.[2] H04N *7/08*
U.S. Cl. 358—147 **5 Claims**



1. Apparatus for deriving sampling clock signals from a television signal including horizontal sync signals defining corresponding time intervals, vertical sync signals, a predetermined number of pilot signals comprising a group following a particular one of said horizontal sync signals during each field of said television signal, and a group of binary coded signals following each group of said pilot signals and extending over at least two of said time intervals, said binary coded signals having a predetermined phase relationship with said pilot signals, said apparatus comprising:

a sampling circuit for sampling said pilot signal;

means for repetitively generating a pilot signal sampling gate pulse whose leading edge is defined by a waveform which is derived by delaying a horizontal sync signal and whose trailing edge is defined by a signal produced when a predetermined number of pilot signals has been counted, said trailing edge of said pilot signal sampling gate pulse occurring prior to the termination of the last of said predetermined number of pilot signals in the corresponding group thereof;

sampling means for applying said pilot signal sampling gate pulse to said sampling circuit, thereby sampling only said pilot signal; and

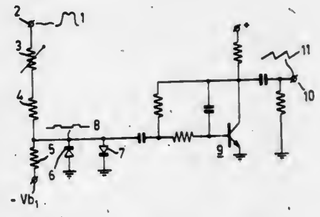
means responsive to the signal derived by said sampling means for generating sampling clock signals for sampling said binary coded signals.

4,202,013

LINE TIME BASE IN TELEVISION RECEIVER

Johannes S. A. van Hattum, and Jan A. C. Korver, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 229,081, Feb. 24, 1972, Pat. No. 3,764,744. This application Sep. 24, 1973, Ser. No. 400,403
Claims priority, application Netherlands, Mar. 16, 1971, 7103466
The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.
Int. Cl.[2] H04N *5/04*
U.S. Cl. 358—158 **5 Claims**



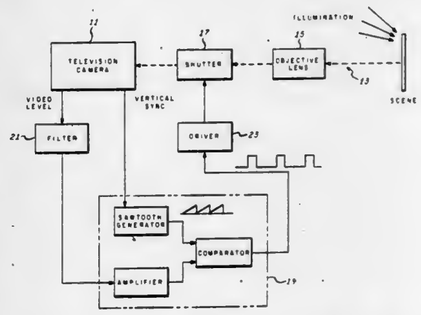
1. A circuit for producing from a television line flyback signal a stable reference signal regardless of the load upon the line signal source, said circuit comprising input means for receiving a line flyback signal; means direct current coupled to said input means for amplitude limiting said flyback signal to a first voltage if said flyback signal is above said first voltage; means direct current coupled to said input means for amplitude limiting said flyback signal to a second voltage if said flyback signal is below said second voltage and an output means coupled to limiting means for supplying a reference signal in accordance with said limited flyback signals.

4,202,014

PULSE MODULATED AUTOMATIC LIGHT CONTROL

Lawrence H. Gilligan, and James E. Hermansdorfer, both of Charlottesville, Va., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,261
Int. Cl.[2] H04N *5/26*
U.S. Cl. 358—228 **3 Claims**



1. An automatic light control for a television camera comprising voltage-variable birefringence crystal shutter means for

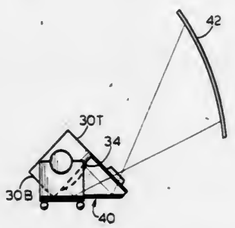
controlling the average intensity of light reaching said camera, and means for adjusting the transmissivity of said shutter means in response to an electrical signal, said transmissivity adjusting means including a pulse width modulator connected to initiate a pulse in response to a vertical synchronizing signal produced in said camera and to maintain the pulse for a length of time that varies inversely with the magnitude of the video level signal produced in said camera, said pulse width modulator being coupled to the shutter means so as to switch the shutter means to a specified high transmissivity state during the occurrence of an output pulse and to maintain the shutter in a specified low transmissivity state in the absence of an output pulse.

4,202,015

VIDEO PROJECTION SYSTEM

Henry D. Udo, 549 Poinsettia St., Chula Vista, Calif. 92011, and Lawrence F. Pickett, 5941 Steeplechase Rd., Bonita, Calif. 92002

Filed Jan. 25, 1978, Ser. No. 872,220
Int. Cl.[2] H04N 5/64, 5/74
U.S. Cl. 358—237 **6 Claims**



1. A video projection system for projecting an enlarged video image from a television receiver onto a screen, comprising in combination:

a mounting cradle comprising a generally rectangular box-like frame for extending snugly around the top, bottom and two sides for receiving and securing the housing of a television receiver with the face of the receiver defined by the screen and face thereof exposed and directed outward, and including support means including a base and a pair of vertically extending support members including trunion means for supporting said frame for pivotal movement about a horizontal axis,

a television receiver securely mounted in said frame with the face thereof directed outward for pivoting about said horizontal axis between face up and face down positions for projection of an enlarged image and to an outward position for normal viewing, and

projection means including enlarging lens means for mounting on the face of said receiver for enlargement and projection of an image from said receiver to a screen, said receiver being pivoted to a selected one of a face up position with the bottom of said receiver toward said screen, and a face down position with the bottom of the receiver away from the screen for projecting an enlarged true image on a vertical viewing screen,

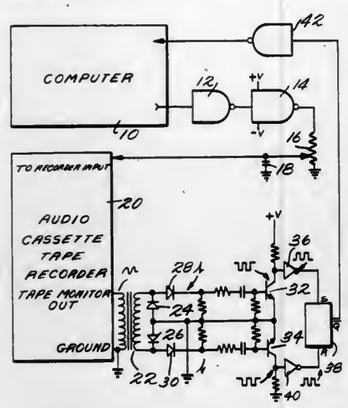
wherein said projection means is supported on the face of said television receiver and covering the screen thereof during face up projection and is supported on said base and covering the screen of said television receiver during face down projection.

4,202,016

DIGITAL MAGNETIC DATA STORAGE AND RETRIEVAL USING AUDIO ANALOG RECORDING TECHNIQUES

Harry R. Sampey, Box 484, Vanderbilt, Pa. 15486

Filed Jan. 30, 1978, Ser. No. 873,543
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—40 **9 Claims**



1. An apparatus for storing and recovering a digital signal indicative of digital data on magnetic recording tape comprising:

means for recording said digital signal in respectively corresponding analog form onto said tape, without saturating said tape;

playback means for reading said tape and generating a transition detection signal indicative of transitions in said analog form of said digital signal recorded on said tape, said playback means including a transformer responsive to the output read from said tape, two diodes having anodes commonly connected to ground and having cathodes connected across an output winding of said transformer, and two transistors having bases connected respectively to said two diode cathodes, emitters connected to ground and collectors connected respectively through resistors to a positive voltage and to ground; and

means responsive to said transition signal for generating an output digital signal having transitions corresponding to the transitions of said digital signal to be stored and recovered, said output digital signal generating means comprising a flip-flop having set and reset terminals connected respectively to the collectors of said transistors.

4,202,017

MAGNETIC RECORDING SIGNAL EQUALIZATION APPARATUS

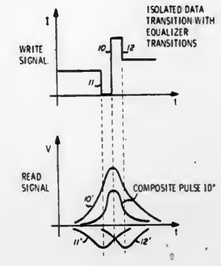
Arthur P. Geffon, Sunnyvale, and George V. Jacoby, Los Altos, both of Calif., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 8, 1978, Ser. No. 903,415
Int. Cl.[2] G11B 5/09, 5/47
U.S. Cl. 360—45 **11 Claims**

1. Magnetic data recording apparatus for supplying a recording signal including ac bias and write data occurring at a repetition frequency to a magnetic recording transducer to record data in the form of magnetic patterns in a magnetizable medium, comprising:

means for supplying an ac bias signal to the recording transducer, said ac signal occurring at a frequency greater than said repetition frequency,

means for generating data transitions representative of the data to be recorded, and means operatively associated with the data transition generating means for producing an equalizer transition preceding each data transition an an equalizer transition following each data transition, the equalizer transitions having substantially equal magnitudes and being oppositely sensed to the associated data transition and having an amplitude greater than about 0.375 times the amplitude of the data transition, and said



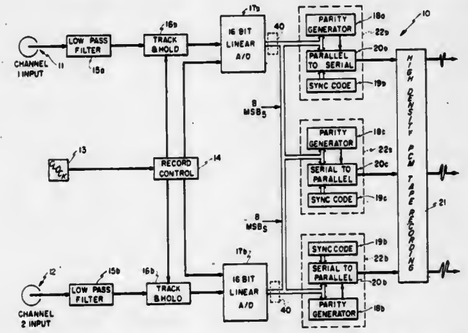
equalizer transitions being uniformly spaced from the data transition so as to combine therewith on readout from the magnetizable medium to provide a composite data read pulse of reduced width at the base and half amplitude levels and means for combinationally coupling said ac bias signal and said transitions to said magnetic recording transducer.

4,202,018

APPARATUS AND METHOD FOR PROVIDING ERROR RECOGNITION AND CORRECTION OF RECORDED DIGITAL INFORMATION

Thomas G. Stockham, Jr., Salt Lake City, Utah, assignor to Soundstream, Inc., Salt Lake City, Utah

Filed Sep. 27, 1978, Ser. No. 946,067
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—47 **15 Claims**



1. A recorder apparatus for recording of an analog signal in digital form for storage and playback comprising,

main flows each arranged to receive a multiple channel input;

means for providing a digital representation of an analog signal;

clocked record control circuitry means for controlling said means for providing a digital representation of an analog signal;

a backup flow arranged to receive most significant portions of each data word each said main flow;

means for adding synchronization and parity coding to each data word on each said main and backup flow;

means for recording said main and backup flow data on a permanent media;

means for reading said data from said permanent media;

bit synchronizer circuitry means for determining bit intervals in each data word on each data word on each said flow passing that data and generating a clock signal therewith;

synchronizer code finding means receiving clock pulsing from said bit synchronizer circuitry means for locating the synchronizer coding in each data word on each flow and passing appropriate signals when such code is present and when it is absent in each data word;

parity checking circuitry means for locating a parity bit in each data word on each flow and passing appropriate signals when parity coding is present and when it is absent;

comparator selector circuitry means for comparing the most significant data on said main flow against the data on said backup flow reflective thereof to determine if a match exists and for passing appropriate signals when a match exists and when said data does not match;

error detector and corrector circuitry means connecting to said synchronizer code finding means, said parity checking circuitry means and said comparator selector circuitry means for determining whether there is an error present in main and backup flow data and selecting which information is most likely correct for passage from said comparator selector circuitry means;

data word memory circuitry means receiving said data from said comparator selector circuitry means and clock signals for synchronizing the main flow information output to a playback head;

a means for producing clock signals connecting to said data word memory circuitry means; and

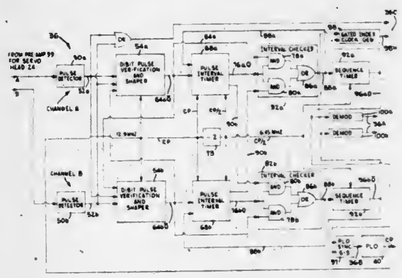
means for delivery of an analog signal from said digital representation.

4,202,019

TIMING CIRCUIT AND METHOD FOR A TRACK FOLLOWING SERVO IN A DATA STORAGE SYSTEM

Paul M. Popoff; Siu K. Lee, both of Sunnyvale, Calif., and James J. Touchton, Boulder, Colo., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 880,906
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—51 **10 Claims**



1. In a track following data storage system of the type which has at least a first servo track having a magnetization pattern of a first type interrupted by relative short magnetizations of a second type, a second servo track juxtaposed to said first servo track and having a magnetization pattern of said second type interrupted by relatively short magnetizations of said first type, the relatively short designations in said first track being offset from the relatively short designations in said second track, signal producing means operatively associated with said servo tracks for producing in response to relative movement with respect to said servo tracks a first signal having successive dibit pairs formed by positive and negative portions of amplitudes representative of the lateral position of said signal producing means relative to the tracks and a second signal that is the inverse of the first signal, and a phase-locked-oscillator having a sync input and producing a clock pulse in phase with signals applied to the sync input, an improved timing circuit for syn-

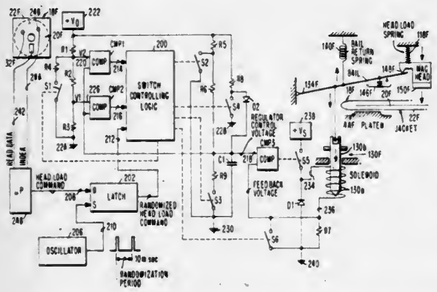
chronizing said phase-locked-oscillator to the rate at which the relatively short magnetizations move relative to said signal producing means comprising a first detector coupled to said signal producing means for producing a first rectified signal representative of only the positive portions of said first signal, a second detector coupled to said signal producing means for producing a second rectified signal, a first timer coupled to said first detector for generating a first timing signal having a duration approximating that of a single dibit, a second timer coupled to said second detector for generating a second timing signal having a duration approximating that of a single dibit, first gating means responsive to said first timer and said second detector for producing upon coincidence of said first timing signal and said second rectified signal a first verified pulse representative of a dibit of a first polarity, second gating means responsive to said second timer and said first detector for producing upon coincidence of said second timing signal and said first rectified signal a second verified pulse representative of a dibit of a second polarity opposite from said first polarity, and means coupling said first and second verified pulses to the sync input of said phase-locked-oscillator.

4,202,020

MAGNETIC HEAD LOAD CONTROL SYSTEM

Jeffrey L. Lovgren, and William P. Quinlan, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,727
Int. Cl.² G11B *21/12*
U.S. Cl. 360—75 **16 Claims**



1. Information transferring apparatus for use with a moving information carrying medium comprising:

a transducer movable from an inoperative position separated from the medium and toward the medium and to an operative data transferring position on a single selected track on the medium,

motor means connected with said transducer for so moving the transducer from its said inoperative position to its operative position when the motor means is operable,

control mechanism connected with said motor means for rendering the motor means so operable to cause it to move said transducer from its said inoperative position to its said operative position on the reception of a transducer load command signal applied to the control mechanism, and

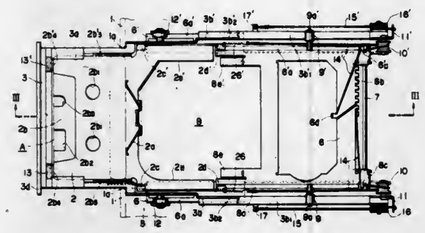
means for randomly delaying this energization of said motor means to move said transducer from its said inoperative position to its operative position at a random time after said transducer load command signal is applied to said control mechanism.

4,202,021

FRONT-LOADED CASSETTE TAPE DECK

Tetsuo Nagase; Hideo Watanabe, and Akira Inomata, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,153
Claims priority, application Japan, Jun. 30, 1977, 52-77234; Jun. 30, 1977, 52-77235; Jun. 30, 1977, 52-77236; Jun. 30, 1977, 52-77237; Jun. 30, 1977, 52-77238; Jun. 30, 1977, 52-77239
Int. Cl.² G11B *15/66, 23/04*
U.S. Cl. 360—96.5 **8 Claims**



1. A cassette tape transport mechanism comprising:

(a) conveying means adapted to receive a cassette for conveying said cassette reciprocally in opposite directions between a first position and a second position;

(b) auxiliary conveying means mechanically coupled to said conveying for movement relative thereto and adapted for reciprocal movement in the same two directions, respectively, as said conveying means for moving said conveying means a greater distance than said auxiliary conveying means; and,

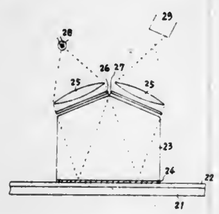
(c) maintaining means for maintaining said conveying means in said second position when said conveying means is moved to said second position.

4,202,022

MAGNETIC TRANSFER RECORD FILM AND APPARATUS FOR MAGNETO-OPTICALLY READING MAGNETIC RECORD PATTERNS USING THE SAME

Nobutake Imamura, Tokyo; Yoshinori Mimura, Tachikawa, and Toshihiko Kobayashi, Mitaka, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Division of Ser. No. 733,929, Oct. 19, 1976, Pat. No. 4,126,494. This application Aug. 14, 1978, Ser. No. 933,651
Claims priority, application Japan, Oct. 20, 1975, 50-125357; Oct. 20, 1975, 50-125358
Int. Cl.² G11B *5/32*; G11C *13/04*
U.S. Cl. 360—114 **4 Claims**



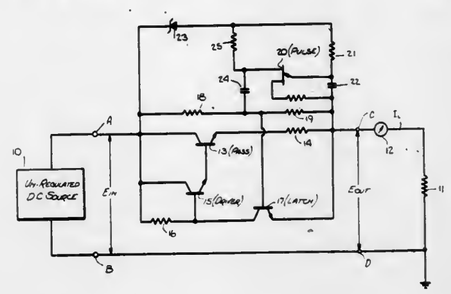
1. An apparatus for magneto-optically reading magnetic record patterns, comprising: a transparent substrate; a magnetic transfer record film having a thickness exceeding 500 A disposed on said substrate and having an easy axis of magnetization in a direction perpendicular to the film surface, said film comprising an amorphous alloy consisting essentially of a rare earth metal selected from the group consisting of Gd, Tb, Dy and Ho and having a concentration X wherein $0.15<X<0.35$, and the balance of the film a metal selected from the group consisting of Fe, Co and Ni, and said film having an easy axis of magnetization in a direction perpendicular to the film surface, a magnetic coercive force of less than 500 Oe and a saturation magnetic moment which is minimum with respect to a change in the concentration X within a temperature range of 100° C. from room temperature; and means for optically reading magnetic patterns on said film.

4,202,023

OVERLOAD PROTECTOR

Kay G. Sears, Keyport, N.J., assignor to Entron, Inc., Morganville, N.J.

Filed Dec. 7, 1977, Ser. No. 858,371
Int. Cl.² H02H *3/08*
U.S. Cl. 361—18 **1 Claim**



1. An overload protector interposed between a d-c voltage source and a load supplied thereby, said protector comprising:

A. a current-control network constituted by a pass transistor connected in series with a current-limiting resistor between the source and the load;

B. a latching network connected across the control network formed by a resistor in series with a latching transistor;

C. a driver transistor connected to the base of the pass transistor, the base of the driver transistor being connected to the junction of said resistor and latching transistor of said latching network;

D. a voltage divider connected across the control network, said divider formed by two resistors connected in series and having a tap connected to the base of the latching transistor to render the latching transistor conductive when the voltage across the divider is high, said driver transistor and said pass transistor being conductive uner normal load conditions below a predetermined limit to supply current to the load, in which condition the voltage across the divider is low and said latching transistor is then non-conductive, the voltage drop across said current-limiting resistor reaching a value when said current exceeds said limit under overload conditions to bias said pass transistor to cut-off, at which point the voltage drop across said divider becomes high to apply a bias to the base of said latching transistor to render it conductive and thereby bias the driver transistor to its "off" state, which driver transistor then biases the pass transistor to its "off" state; and

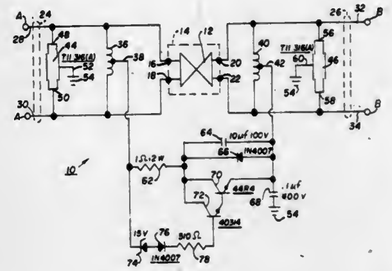
E. an automatic resetting stage coupled to said control network to periodically sample the state of said load and to restore said pass transistor to its "on state" and to restore the normal supply of current to said load when the current drawn during a sampling interval falls below said limit, said resetting stage including a slow speed pulser which is connected to said control network through a diode which is rendered conductive to activate said pulses when said pass transistor is rendered non-conductive, which applies a pulse to the base of the latching transistor when an overload condition is sampled to render said latching transistor non-conductive and thereby allow current to again flow in the current-limiting resistor, said pulses being formed by a pulse transistor connected to an R-C network which is charged through said conductive diode and discharged by said pulse transistor when the charge attains a critical value to produce a pulse, said pulse being applied to the base of the latching transistor through a capacitor.

4,202,024

REPEATER BYPASS PROTECTION APPARATUS

Frank L. Simokat, Babylon, N.Y., assignor to TII Industries, Inc., Lindenhurst, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,646
Int. Cl.² H04B *3/56*
U.S. Cl. 361—91 **11 Claims**



1. A repeater bypass protection apparatus for repeaters having a pair of input and output terminals connected respectively to input and output transmission lines, comprising, in combination:

(a) first and second coil means having a center tap, said first coil means being connected across said input terminals, said second coil means being connected across said output terminals;

(b) current path means connected between said first coil means center tap and said second coil means center tap for providing a D.C. current path therebetween, said current path having a relatively high impedance during normal operating conditions and essentially instantaneously changing to a relatively low impedance during over voltage transients appearing on said input transmission lines; and

(c) capacitor means connected between said second coil means center tap and ground for blocking D.C. current flow therebetween.

4,202,025

A CIRCUIT FOR PROTECTING AN ELECTRONIC EXCHANGE AGAINST OVERLOADS

Gérard Le Cardonnel, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 11, 1976, Ser. No. 685,389
Claims priority, application France, May 16, 1975, 75 15435
Int. Cl.² H02H *5/04*
U.S. Cl. 361—103 **1 Claim**

1. A telephone line circuit protected against overloads, said circuit comprising:

a line transformer for isolating a subscriber line from an exchange;

a call relay for switching said subscriber line from said line transformer to a call transformer under the control of an external call signal;

an isolating relay for disconnecting said subscriber line from said line circuit under the control of an external switching signal;

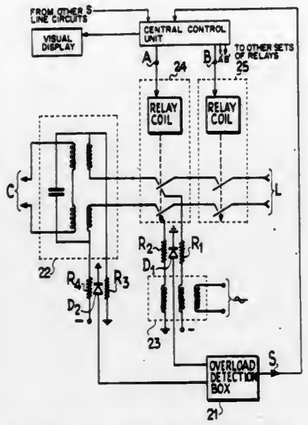
normal resistors connected to said line transformer for feeding said subscriber line with direct current during normal operation;

call resistors connected between said call transformer and

said call relay for feeding said subscriber line with direct current during calling;

at least one normal diode in close contact with at least one of said normal resistors;

at least one call diode in close contact with at least one of said call resistors; and



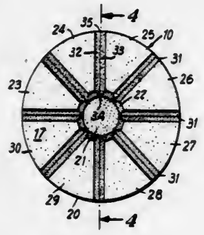
a circuit for forward biasing said normal and call diodes, monitoring the bias of said normal and call diodes, and emitting on an output connection a logical signal when said bias rises to a predetermined value.

4,202,026

ELECTRODE FOR TELEPHONE PROTECTOR MODULES

Paul V. DeLuca, Port Washington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,880
Int. Cl.² H02H *3/22*
U.S. Cl. 361—119 **4 Claims**



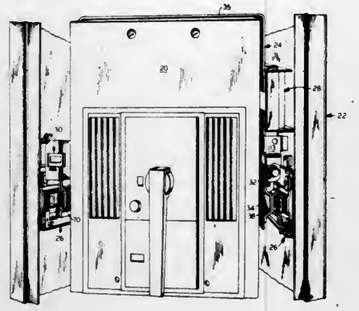
1. In a telephone line protective device, including a pair of spaced electrodes and an insulating sleeve mounting one of said electrodes and forming an inner gap between said pair of electrodes, the improvement comprising: one of said opposed surfaces having a plurality of radially arranged grooves extending into the surface thereof, to define a corresponding plurality of pie-shaped sectors therebetween; said electrode having a principle longitudinal axis, there being a centrally disposed blind curvilinear recess in said one of said opposed surfaces, and communicating at the periphery thereof with said radially arranged grooves; whereby during arcing between said opposed surfaces, venting of expanding gases may be transmitted over said recess to flow along each of said grooves, irrespective of which of said pie-shaped surfaces receives the arc.

4,202,027

CIRCUIT BREAKER DRAWOUT WITH ENGAGED POSITION LATCH

Eric A. Ericson, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,432
Int. Cl.² H02B *1/04*
U.S. Cl. 361—338 **7 Claims**



1. A drawout apparatus for racking a circuit breaker into and out of an engaged position with respect to load current carrying primary disconnect contacts of a switchboard, said apparatus comprising, in combination:

A. a carriage mounting the circuit breaker;

B. opposed rail assemblies mounted by the switchboard to each side of a switchboard cubicle and supporting said carriage for racking movement into and out of the circuit breaker engaged position;

C. a manually operated racking mechanism mechanically assisting racking movement of the circuit breaker into and out of its engaged position, said racking mechanism including coacting camming means separately mounted by said carriage and the switchboard; and

D. a latching mechanism including

(1) a first latch member mounted by one of said carriage and switchboard for movement between latching and nonlatching positions,

(2) a second latch member fixedly mounted to the other of said carriage and switchboard, and

(3) means carried by said camming means for controllably positioning said first latch member to its latching position in latching engagement with said second latch member incident with operation of said racking mechanism in racking the circuit breaker fully into its engaged position and controllably positioning said first latch member to its non-latching position removed from latching engagement with said second latch member incident with initial operation of said racking mechanism preparatory to racking the circuit breaker out of its engaged position.

4,202,028

GROUND AND TEST APPARATUS WITH INDICIA MEANS

Leslie L. Baird, West Burlington, Iowa, assignor to General Electric Company, Philadelphia, Pa.

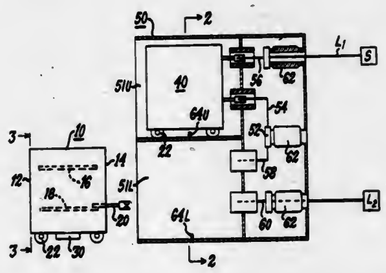
Filed Nov. 27, 1978, Ser. No. 963,863
Int. Cl.² H02B *1/04*
U.S. Cl. 361—343 **11 Claims**

1. A ground and test apparatus in combination with switchgear apparatus wherein the switchgear apparatus includes an upper circuit breaker compartment and a lower circuit breaker compartment, each of the compartments including at least one pair of vertically spaced-apart electrical switchgear contacts, one of the pair of switchgear contacts comprising a bus-side contact and the other of the pair of contacts comprising a line

or load side contact, the pairs of switchgear contacts in the upper and lower compartments being substantially identically disposed along a common vertical axis except the relative vertical position of the bus-side contact and the line or load side contact in the upper and lower compartments is reversed, wherein the combination comprises:

(a) a housing having spaced-apart front and rear sides and being of a configuration suitable for insertion into said upper or lower compartments of said switchgear apparatus with said rear side facing said pair of electrical contacts of said upper or lower compartments of said switchgear apparatus;

(b) at least one pair of vertically spaced-apart housing electrical conductors extending at least partially between said front and rear sides of said housing, said pair of housing conductors being spaced-apart in substantially the same manner as said spaced-apart electrical switchgear contacts of said switchgear apparatus, at least one member of said pair of housing conductors at said rear side of said housing being adapted so that when said housing is fully inserted



into one of said compartments, said conductor is electrically connected to a predetermined member of said pair of switchgear contacts of said upper or lower compartment of said switchgear apparatus and said one member of said pair of housing conductors is physically accessible for connection to ground at said front side of said housing;

(c) indicia means located on said front side of said housing for visually indicating the proper relative vertical location of said bus-side and line or load side electrical switchgear contacts in said upper or lower compartments; and

(d) inhibiting means coupled to said indicia means for physically inhibiting the full insertion of said housing into said upper or lower compartments when said indicia means visually indicates an improper relative vertical location of said bus-side and line or load side electrical switchgear contacts in said upper and lower compartments, said inhibiting means permitting the full insertion of said housing into said upper or lower compartments when said indicia means visually indicates the proper relative vertical location of said bus-side and line or load side electrical switchgear contacts.

4,202,029

TRANSPORTABLE TELEPHONE EXCHANGE APPARATUS

Hiroshi Yoshikawa, Fujisawa; Akihiro Kawakami, and Hideaki Sato, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

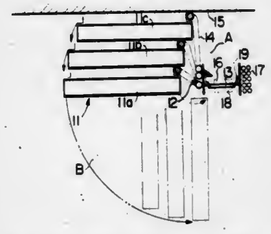
Continuation of Ser. No. 503,876, Sep. 6, 1974, abandoned, which is a continuation of Ser. No. 364,495, May 29, 1973, abandoned. This application Aug. 19, 1976, Ser. No. 715,721
Int. Cl.² H02B *1/04*
U.S. Cl. 361—394 **7 Claims**

1. A telephone exchange apparatus housed in a mobile container having longitudinally extending side walls comprising:

a plurality of groups of frames, each group of frames comprising plural movable frames with each frame having a front and a rear face, one half of said plurality of groups being disposed along one of the longitudinally extending side walls and the other half of said plurality of groups being disposed along the other one of the longitudinally extending side walls, respectively, the frames in each group being positioned in a normal state such that the rear face of a hindmost frame in each said group is closely confronted in parallel with one of said longitudinally extending side walls with substantially no clearance therebetween, that the front face of a foremost frame in each said group is accessible from a central maintenance path extending longitudinally and transversely in the center of said container, and that the front and rear faces of two mutually adjacent frames in each said group are confronted in parallel with each other with substantially no clearance therebetween;

hinge members connected to each of said frames for enabling the respective frames in each group to rotate about a common vertical axis positioned near to one lateral end of a frame in each said group for displacement from positions in the normal state to positions in a maintenance state and vice versa,

outer ends of the respective frames of each group following a substantially common locus along the displacement path thereof, so that the one half of the plurality of groups of



frames are positioned transversely apart from the other half of the plurality of groups of the frames with only the central maintenance path therebetween in the normal state,

the groups disposed along both side walls of the container being commonly positionable in the maintenance state in said central maintenance path, said central maintenance path having only such a width extending transversely to the longitudinal side walls as substantially equal to a longitudinal length of one frame whereby nonutilizable space within said container is minimized and space utilization factor of the frames is improved, and

a terminal frame respectively provided for each said group of frames in the vicinity of the common vertical axis positioned near to one lateral end of a frame in each said group, each of said terminal frames being fixedly secured to said container and having a terminal strip with front and back sides on which connection terminals are mounted, respectively, said terminal strip for each said group of frames being mounted to the respective terminal from so as to longitudinally extend in parallel with one side wall corresponding to said group with a small maintenance space between said one side wall and said terminal strip.

4,202,030

ILLUMINATION DEVICE FOR MOTOR VEHICLES

Masayuki Kimura, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 3, 1978, Ser. No. 874,874
Claims priority, application Japan, Feb. 7, 1977, 52/013422[U]
Int. Cl.² B60Q *1/12*
U.S. Cl. 362—61 **7 Claims**

1. An illumination device for motor vehicles which include

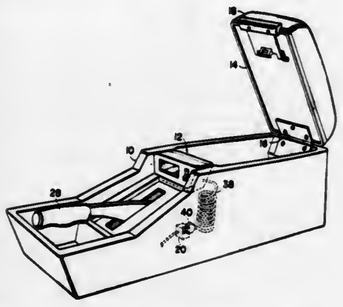
a floor mounted console provided within the passenger compartment, said illumination device comprising:

three receptacles provided in said console;

a case having an opening therein and which is detachably provided in a front recepticle of said three receptacles of said console sd that said case can be easily installed and removed from said console;

a lamp provided in said case adjacent to said opening;

a portable source of power for said lamp whereby said illumination device can be easily removed from said console and utilized in various location within said passenger compartment; and



a box cover hingeably coupled to said console, said cover extending over said three recepticles such that when said illumination device provided in said front receptacle, said illumination device illuminates an instrument panel of said motor vehicle and said cover prevents said illumination device from casting light onto a windshield of said motor vehicle.

4,202,031

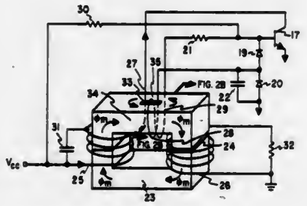
STATIC INVERTER EMPLOYING AN ASSYMETRICALLY ENERGIZED INDUCTOR

Joseph P. Hesler, Liverpool; Samuel M. Korzekwa, Baldwinsville, and Robert J. McFadyen, Syracuse, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,578

Int. Cl.² H02M 7/48

U.S. Cl. 363—97 **18 Claims**



1. A static inverter comprising:

A. input terminals for connection to a source of dc potentials,

B. an inductor having:

1. a core of substantially linear magnetic material having a closed main magnetic path and including a small aperture in a segment of said path which partitions the cross-section of said main magnetic path into two branches and creates a low reluctance closed flux path,

2. a primary power winding encircling the full core cross-section for generating flux around said main magnetic path,

3. a feedback control winding encircling one of said branches for generating a flux around said low reluctance closed path having the same direction as said main flux in a first branch and an opposite direction in the second branch,

4. a second feedback winding encircling said first branch,

5. a third feedback winding encircling said second branch,

C. an electrical gain element having control, common and output electrodes for intermittent energization of said inductor from said dc source,

said primary power winding, said feedback control winding, and said gain element being serially connected between said dc input terminals so that normal conduction by said gain element causes flux along said main magnetic path in a first direction, storing magnetic energy, and non-conduction by said gain element causes said main flux to collapse, releasing magnetic energy and creating a high voltage surge,

said second and third feedback windings being serially connected between said control and common electrodes, said second feedback winding in a sense to increase gain element conduction and said third feedback winding in a sense to decrease gain element conduction when the flux in said main magnetic path increases in said first direction and in the same sense in respect to flux encircling said low reluctance flux path, said three feedback windings forming a current transformer providing feedback in a sense to increase gain element conduction as the main flux in said first direction increases until saturation of said first branch prevents further current transformer action, said first branch saturation preventing further induction in said second feedback winding, and inducing a voltage in said third feedback winding in a sense to turn off said gain element,

D. means coupled to said inductor for deriving an output when said gain element is turned on and off, and

E. passive means for protecting said gain element from the inductive surge and energy released when said gain element is turned off.

4,202,032

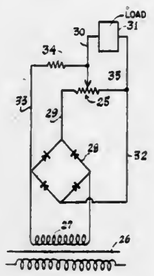
POWER CONTROL CIRCUIT

Gene Morez, Morton Grove, Ill., assignor to Troller Corporation, Chicago, Ill.

Filed Apr. 11, 1977, Ser. No. 786,570

Int. Cl.² H02M 7/02, 7/217

U.S. Cl. 363—126 **6 Claims**



1. A power control circuit providing a complete range of signals to a load that varies from "full on" to "full off" comprising:

(a) an AC power source and a transformer providing primary and secondary windings,

(b) a full wave rectifier connected to said secondary winding of said transformer,

(c) a variable signal control connected in circuit between an output of said rectifier and the load having a full on position for supplying a full wave signal to the load, and a negative return from its full off position to another output of said rectifier, and

(d) a circuit connection between said secondary winding and the signal output side of said variable signal control for supplying a half wave AC signal to the full wave signal supplied to the load through said variable signal control.

4,202,033

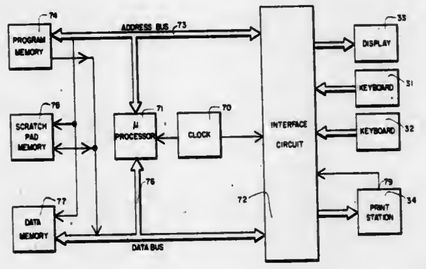
APPARATUS AND METHOD UTILIZING CALCULATOR FOR QUALITY CONTROL OF HEMATOLOGY SAMPLE ANALYSIS

Stanley W. Strobel, San Carlos, Calif., assignor to Royco Instruments, Inc., Menlo Park, Calif.

Filed Dec. 27, 1977, Ser. No. 864,282

Int. Cl.² G06F 15/42; G01N 33/16

U.S. Cl. 364—416 **6 Claims**



1. A calculator-register apparatus for monitoring calibration of hematology parameter measurement apparatus for performing measurements on test samples comprising: means for receiving parameter measurements on successive test samples and generating a moving average value for at least one parameter, means for storing a baseline value of at least one parameter measured in response to a baseline sample tested when said measurement apparatus is known to be in calibration, means for storing entry of a subsequent value of said at least one parameter measured on said baseline sample after a predetermined duration of operation, means for calculating a difference value between said baseline reading on said baseline sample and said subsequent value for each said at least one parameter, and means for accessing values coupled to said means for receiving parameter measurements and to said means for calculating, said means for accessing values being actuated in response to a command for providing outputs indicative of said moving average value and said difference readings, whereby an indication of necessity for recalibration is provided by said moving average value and said difference value.

4,202,034

ADAPTIVE CONTROLLER FOR OCEAN CHARACTERISTIC MEASUREMENT SYSTEM

Philip N. Bowditch, Cohasset; John M. Dahlen, Duxbury; John F. McKenna, Jr., Gloucester; John T. Shillingford, Jr., Milton; Frank J. Siraco, Malden, and William E. Toth, Bolton, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 16, 1978, Ser. No. 934,334

Int. Cl.² B63G 8/14

U.S. Cl. 364—420 **8 Claims**

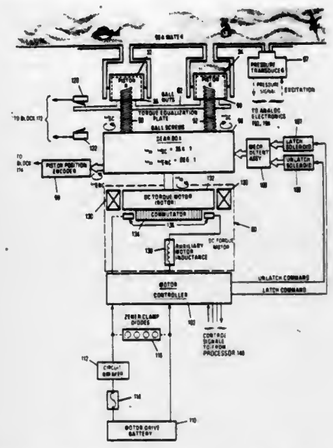
1. A control system for an ocean characteristic measuring system including a platform and control means to controllably move said platform between two vertically displaced underwater points, said control means comprising:

A. one or more sensors for generating sensor signals representative of water characteristics outside said platform,

B. storage means for storing predetermined operating programs,

C. operation control means including: means for selecting one or more of said sensor signals, and means for selecting one or more of said operating programs,

D. BCS generating means responsive to said selected sensor signals and said selected operator program for generating buoyancy control signals representative of desired buoyancy for said platform, and



E. means for varying the buoyancy of said platform in response to said buoyancy control signals.

4,202,035

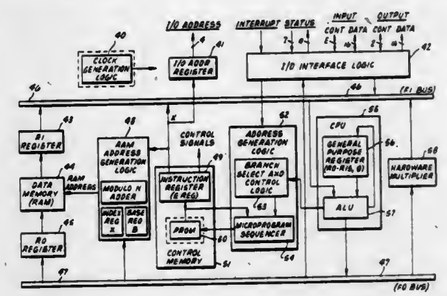
MODULO ADDRESSING APPARATUS FOR USE IN A MICROPROCESSOR

John H. Lane, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 25, 1977, Ser. No. 854,763

Int. Cl.² G06F 9/20

U.S. Cl. 364—200 **14 Claims**



1. An apparatus for generating addresses, said apparatus coupled to a microprocessor having addressable memory and a clock means for generating clocking signals, said microprocessor adapted for executing instructions for storing and retrieving data words at locations identified by the generated addresses in said addressable memory, said apparatus comprising:

a. Means for selecting a predetermined range of addresses in said addressable memory during storage or retrieval of data words by said microprocessor initiated by at least one transition one of said clock means signals,

b. Means for calculating a numerical value representative of at least one of said addresses within said range associated with any particular data word during the execution of an instruction for the storing or retrieving of data words by said microprocessor concurrent with the selection of said range of addresses by said selecting means, initiated by at least one transition of one of said clock means signals, said selecting, and said calculating means operatively connected to said microprocessor and said clock means, said means for calculating including:

first means for generating a digital value representative of a relative address,

at least one first register for storing said digital value representative of said relative address during at least one transition of said clocking signal, said register operatively connected to said first generating means,

second means for generating a digital value representative of an absolute address,

at least one second register for storing said digital value representative of said absolute address,

adding means responsive to said clocking signal for adding at least a portion of said digital values of said first and second registers such that the resulting digital value is representative of an address within said selected range of said addresses, said adding means being operatively connected to said registers, and

wherein said first register is operatively coupled to said first generating means and wherein said second register is operatively coupled to said second generating means, and

c. means for coupling said numerical value to said microprocessor whereby said microprocessor may access said particular data word associated with said address.

4,202,036

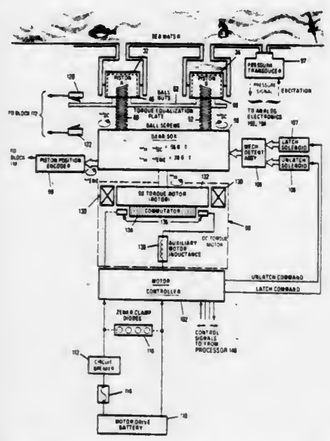
BUOYANCY CONTROL FOR OCEAN CHARACTERISTIC MEASUREMENT SYSTEM

Philip N. Bowditch, Cohasset; John M. Dahlen, Duxbury; John F. McKenna, Jr., Gloucester; John T. Shillingford, Jr., Milton; Frank J. Siraco, Malden, and William E. Toth, Bolton, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 16, 1978, Ser. No. 934,495

Int. Cl.² G01F *23/00*; B63G *8/14*

U.S. Cl. 364—420 **14 Claims**



1. A controlled buoyancy platform adapted to pass between two vertically displaced underwater points, comprising:

one or more displacement pistons and associated cylinder assemblies affixed to said platform, each of said cylinder assemblies including a port means for coupling the interior region of said cylinder on one side of said piston to the region exterior to said platform,

control means for generating a buoyancy control signal representative of a desired buoyancy for said platform,

sealing means for establishing a water-tight seal between each of said pistons and its associated cylinder, whereby the interior regions of said cylinder on opposite sides of said pistons are isolated, and actuating means responsive to said buoyancy control signal for selectively translating each of said pistons to a point in its associated cylinder assembly whereby the buoyancy of said platform as established by the volume displaced by the respective pistons in their associated cylinder assemblies corresponds to said desired buoyancy.

4,202,037

COMPUTER MICROSCOPE APPARATUS AND METHOD FOR SUPERIMPOSING AN ELECTRONICALLY-PRODUCED IMAGE FROM THE COMPUTER MEMORY UPON THE IMAGE IN THE MICROSCOPE'S FIELD OF VIEW

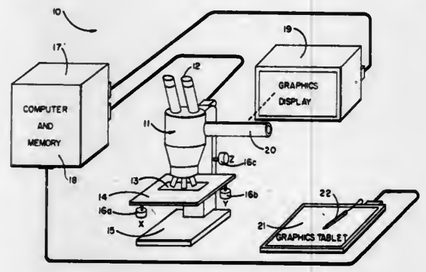
Edmund M. Glaser, 2411 Brambleton Rd., Baltimore, Md. 21209, and Hendrik Van der Loos, 26 chemin de Bellevue, 1005 Lausanne, Switzerland

Filed Apr. 12, 1978, Ser. No. 895,709

Claims priority, application Switzerland, Apr. 22, 1977, 5080/77

Int. Cl.² G06F *15/42*; G06M *3/14*; H01J *39/12*

U.S. Cl. 364—518 **29 Claims**



1. A computer microscope, comprising

computer means including memory means for storing data,

graphics display means connected to the computer means for electronically producing an image which includes selected data from the computer memory means, and a set of programmed procedures and instructions available to the operator,

microscope means for viewing a preparation therein and including optical beam splitter means juxtaposed to the graphics display means and optically aligned therewith, thereby providing a pictorial superposition of the electronically-produced image of the graphics display means upon the image of the preparation in the microscope means, and

manually-manipulatable means interfaced with the computer means and selectively activated by the operator while continuing to view the pictorial superposition in the microscope means,

whereby the operator may control the microscope means via the computer means, and whereby the operator may selectively enter into the computer memory means additional data derived from the preparation, without requiring a diversion of the operator's eyes away from the field of view in the microscope means.

4,202,038

METHOD OF EFFECTING ONE OF SEVERAL DIFFERENT CIRCUIT CONNECTIONS

Stig Anders Petersson, Ormingeringen 48A,, 13200 Saltsjo-Boö, Sweden

Continuation of Ser. No. 823,222, Aug. 10, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,917

Int. Cl.² G06F *15/02*; H01H *7/00*

U.S. Cl. 364—709 **21 Claims**

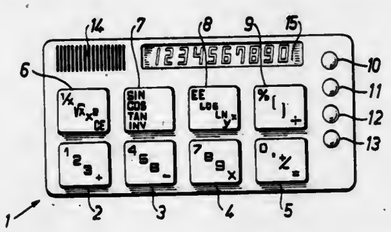
1. Method of effecting one of several predetermined mutual different circuit connections comprising the steps of

initiating a course of sequentially occurring time windows, or time frames, or time intervals, or time slots in a predetermined sequence, starting from an initial first time slot, including

actuating a switch to start said sequence and maintaining actuation of said switch for at least a certain time corresponding to the first time slot in said initiated sequence, a first preset circuit connection being associated with said first time slot and being prepared upon actuation of the switch;

temporally associating respective further circuit connections with respective time slots including

preparing respective circuit connections associated with the respective time slots as sequential time slots occur, circuit connections associated with preceding time slots being disconnected and new circuit connections established



whereby, when actuation of a switch persists for a longer period than the interval of said time slot, the circuit connections will shift at a predetermined point of time corresponding to the transition between said first time slot and the sequentially occurred time slot, and subsequently, to the transition between subsequent time slots;

controlling the length of the time course by selecting a predetermined number of the sequential time slots to effect the circuit connection associated with the respective selected one of the time slots;

and indicating each point of time corresponding to a time slot to provide an operator with a preceptible output of the then existing time slot of the course during each instant of time.

4,202,039

SPECIALIZED MICROPROCESSOR FOR COMPUTING THE SUM OF PRODUCTS OF TWO COMPLEX OPERANDS

Gabriel I. Epenoy, Vence; Roland Kuhne, LaColle sur Loup; Bernard Laurent, St-Laurent-du-Var, and Philippe E. Thirion, St-Paul-de-Vence, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

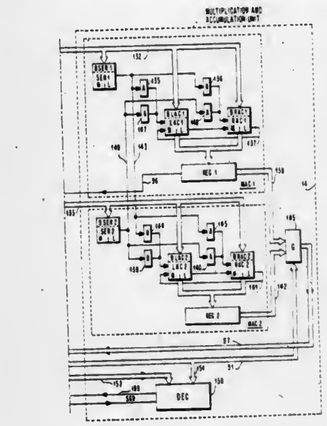
Filed Nov. 29, 1978, Ser. No. 964,316

Claims priority, application France, Dec. 30, 1977, 77 39966

Int. Cl.² G06F *7/52*

U.S. Cl. 364—757 **3 Claims**

1. Processor for computing a sum of products $S=\Sigma\pm Pi$, where each product Pi is the product of two n-bit complex operands $Ai+j\,Bi$, referred to as the multiplier, and $Ci+j\,Di$, referred to as the multiplicand, characterized in that it comprises: an instruction storage for storing instructions serving to control the operation of the processor, decoding means for decoding the instructions read out of the instruction storage and for controlling the operation of the processor, a data storage for storing the complex operands, and a multiplication and accumulation unit that includes: first and second multiplier-accumulator devices each of which is provided with a Multiplier input and a Multiplicant input, first and second multiplier input buffers, first and second multiplicant input buffers, first gating means for transferring to the first multiplier input buffer the real part Ai of the multiplier read out of the data storage, second gating means for transferring to the second multiplier input buffer the imaginary part Bi of the multiplier read out of the data storage, third gating means for simultaneously transferring to said first and second multiplicand input buffers the real part Ci of the multiplicand read out of the data storage, means for applying the real part Ai and the imaginary part Bi of the multiplier to the Multiplier input of said first and second multiplier-accumulator devices, respectively, and the real part Ci of the multiplicand to the Multiplicand input of said first and second devices, which then simultaneously compute the products Ai Ci and Bi Ci, respectively, means for simultaneously transferring to said first and second multiplicand input buffers the imaginary part Di of the multiplicand read out of the data storage, and means for applying the real part Ai and the imaginary part Bi of the multiplier to the Multiplier input of said second and first multiplier-accumulator devices, respectively, and the imaginary part Di of the multiplicand to the Multiplicand input of said first and second devices, the first of which computes the product $-Bi\,Di$ and adds same to the product Ai Ci, thereby providing the real part $Ai\,Ci-Bi\,Di$ of the product Pi, and the second of which computes the product Ai Di and adds same to the product Bi Ci, thereby providing the imaginary part $Bi\,Ci+Ai\,Di$ of the product Pi.



4,202,040

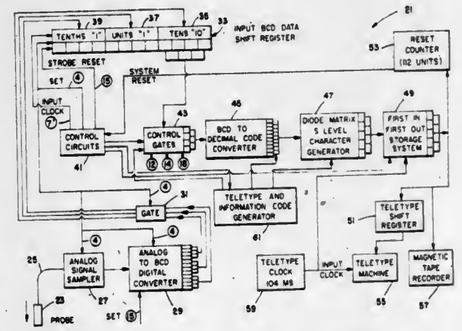
DATA PROCESSING SYSTEM

Eddie L. Whitworth, and Ronald G. Russell, both of Pacific Grove, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1976, Ser. No. 680,551

Int. Cl.² G06F *3/05, 5/02*

U.S. Cl. 364—900 **6 Claims**



1. An information processing system comprising:

(a) first means for receiving and storing first digital information having a first format and representing first decimal members;

(b) second means for generating second digital information

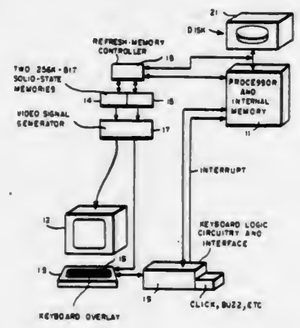
having said first format and representing second decimal numbers;
(c) third means for selectively transferring the output of said first means and the output of said second means;
(d) fourth means for converting said first and second digital information having said first format into decimal information;
(e) fifth means for generating signals representing non numeric information;
(f) sixth means for converting said decimal information and non numeric information into third digital information having a second format;
(g) the outputs of said first and second means being operably connected to the input of said third means, the output of said third means being operably connected to the input of said fourth means, the output of said fourth and fifth means connected to the input of said sixth means;
(h) control means for sequentially transferring said first and second digital information from said first and second means to said third means, for transferring said first and second digital information from said third means to said fourth means, for transferring said decimal information from said fourth means and said non numeric information from said fifth means to said sixth means;
(i) the output of said sixth means being operably connected to processing means;
(j) seventh means for generating decimal numeric information;
(k) eighth means operably connected between said fourth and sixth means and to the output of said seventh means for selectively transferring the output of said fourth means and said seventh means to said sixth means;
(l) a ring counter including a first group of stages, a second group of stages, and a third group of stages;
(m) a plurality of binary digit switches; and
(n) said second means including said first group of stages and said plurality of binary digit switches wherein the outputs of said first group of stages are respectively connected to the inputs of said plurality of binary digit switches and the outputs of said plurality of binary digit switches are connected to the input of said third means.

4,202,041

DYNAMICALLY VARIABLE KEYBOARD TERMINAL

Roy Kaplow, Newton, and Michael K. Molnar, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 11, 1977, Ser. No. 814,723
Int. Cl.² G06F *3/14, 13/06*
U.S. Cl. 364—900 **12 Claims**



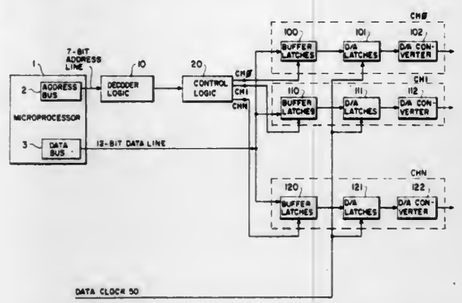
1. A dynamic keyboard terminal system comprising
a memory means for storing a data base comprising information concerning symbols and keyboard images, wherein said symbol information includes at least a symbol code for identifying said symbol and symbol description information describing said symbol, said description information including at least information defining a symbol configuration or information defining an action associated with said symbol and wherein said keyboard information includes at least a description of the keys involved in said keyboard image, each said key description including at least the location of the key, the appearance of the key, and the symbol code associated with the key;
input means comprising a panel means having a keyboard image and a plurality of touch-sensitive locations which can be activated by a user in a manner such that selected combinations of activated touch-sensitive locations corresponding to symbols available in said data base can provide information concerning the modification of previously available symbols and keyboard images or the creation of new symbols and keyboard images;
logic means, responsive to the information concerning said modified or new symbols and keyboard images, for storing said information in said data base;
means for displaying a selected one of said keyboard images in alignment with said panel means so tht one or more selected touch-sensitive locations are associated with each of the keys of the currently displayed keyboard image;
accessing means, responsive to the selective activation of a key by a user, for accessing stored information concerning a selected symbol associated with said activated key or received symbol code; and
further means, responsive to the accessed information, for displaying the configuration of said symbol and performing the associated action of said symbol.

4,202,042

DIGITAL TO ANALOG INTERFACE FOR SIMULTANEOUS ANALOG OUTPUTS

John P. Connors, Silver Spring, Md.; Bernard J. Nordmann, Bronx, N.Y.; David M. Wainland, Cardiff, N.J., and Henry P. Bell, Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1977, Ser. No. 813,038
Int. Cl.² H03K *13/175*
U.S. Cl. 364—900 **1 Claim**



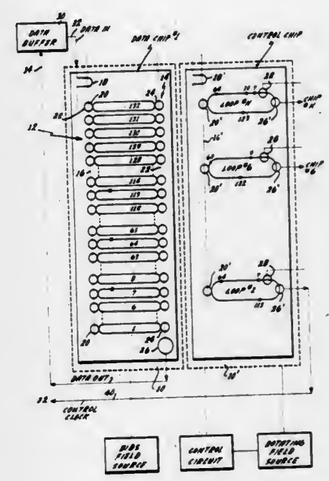
1. In a data processing system comprising a digital processing unit, having an address bus output for a multi-bit address word and a data bus output for a multi-bit data word, and a plurality of digital-to-analog (D/A) converters, wherein a plurality of said data words are sequentially routed, one to each of said plurality of D/A converters, with a particular data word being routed to the D/A converter indicated by a corresponding, unique address word; a digital interface circuit for coupling said digital processing unit to said plurality of digital-to-analog converters while minimizing processing delays, whereby simultaneous, synchronous, multi-channel analog outputs are obtained from said digital processing unit; said digital interface circuit comprising:
a plurality of D/A latching means for storing a single, multi-bit data word, each having a data input, a data output coupled to one of said plurality of D/A converters, and an enabling input, whereby, when and only when an enabling pulse is given to said enabling input, a data word appearing at said data input will be stored in, and will appear at said data output of, each of said D/A latching means;
a plurality of buffer latching means for storing a single, multi-bit data word, each having a data input coupled to said data output bus, a data output coupled to said data input of one of said plurality of D/A latching means, and an enabling input, whereby, when and only when an enabling pulse is given to said enabling input, a data word appearing at said data input will be stored in, and will appear at said data output of, each of said buffer latching means;
control logic means coupled to said enabling input of each of said plurality of buffer latching means, said control logic means comprising a number of NAND gates equal to or greater than the number of D/A converters, the output of said NAND gates comprising the outputs of said control logic means, with the output of a particular NAND gate being coupled to the enabling input of the corresponding buffer latching means;
decoder logic means coupled between said control logic means and said address bus output, said decoder means comprising at least one decoder device having a number of outputs equal to or greater than the number of said D/A converters, each of said decoder outputs being coupled to a corresponding input of one of said NAND gates; and
external clock means coupled to said enabling input of each of said plurality of D/A latching means for generating clock pulses having a period between pulses greater than the processing time of said digital processing unit, whereby said digital processing unit, said plurality of D/A converters, and any of a plurality of peripheral devices coupled to said digital processing unit may be synchronized while minimizing processing delays in said digital processing unit;
said decoder logic means selecting, for a particular address word, the one of its outputs coupled to one of said NAND gates associated with the particular D/A converter of said plurality of D/A converters which corresponds to that address word, whereby the output of said NAND gate will be an enabling pulse;
said control logic means transmitting an enabling pulse to said enabling input of the particular one of said plurality of buffer latching means associated with the particular D/A converter indicated by the output of said decoder logic; thereby enabling the particular buffer latching means and, concomitantly, storing the particular data word, of said plurality of data words, appearing at the data input of the particular buffer latching means;
said external clock means, after the sequential storing of said plurality of said data words in the appropriate one of said plurality of buffer latching means, transmitting an enabling latching pulse to said enabling input of each of said D/A latching means; thereby, for each of said plurality of D/A latching means, simultaneously and synchronously enabling the D/A latching means, and, concomitantly, storing the data word appearing in the particular buffer latching means coupled to the D/A latching means, whereby each of said plurality of data words appears simultaneously and synchronously at the corresponding one of said plurality of D/A converters.

4,202,043

BUBBLE MEMORY DEFECT TOLERANT LOGIC CONTROL CIRCUIT

Farooq M. Quadri, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 3, 1977, Ser. No. 848,083
Int. Cl.² G11C *19/08*
U.S. Cl. 365—15 **5 Claims**



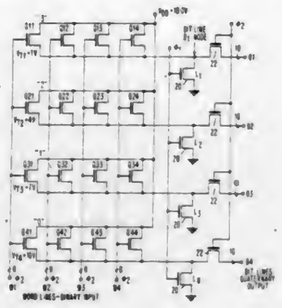
1. A bubble memory system having a rotating in-plane magnetic field for bubble propagation comprising:
a data chip including bubble propagation track means,
a plurality of storage loop means formed of propagate elements, some of which may be defective, for supporting bubble domains therein, a bubble or the absence of a bubble constituting bits of binary information circulating in said storage loop means in response to the rotation of said in-plane magnetic field.
data chip transfer means for each storage loop means for transferring said bits to and from said storage loop means and to and from said track means, and
detector means connected to said track means for serial detection of bits therein and generating a signal representing said bits; and
a control chip comprising bubble propagation track means,
control loop means formed of propagate elements for supporting bubble domains therein,
control chip transfer means for said control loop means for transferring bubbles to said control loop means from said track means in a preselected order so as to identify defective storage loop means, if any,
said control chip being operatively connected to said data chip but having its control transfer means independent of said data chip transfer means so that bits in said data chip do not enter said control loop means, and
means connected to said control loop means for inhibiting identified defective loop means from contributing to the representation of said bits including detector means for the serial detection of bubbles circulating in said control loop means, a clock source having a same cyclical period as said rotating magnetic field, and means connected to said in-plane rotating magnetic field and to said clock source for preventing the transfer of bits into defective loop means and for identifying and eliminating any defective loop means positioned in the serial generation of bit signals by said detection means on said data chip.

4,202,044

QUATERNARY FET READ ONLY MEMORY

Kenneth E. Beilstein, Jr., Essex Junction, Vt., and Harish N. Kotecha, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1978, Ser. No. 915,338
Int. Cl.² G11C *11/40*
U.S. Cl. 365—182 **10 Claims**



1. A multilever read only memory, comprising: a plurality of storage FET devices arranged into rows and columns, with each device having one predefined permanent threshold voltage out of N possible threshold voltages, N being greater than 2, with each FET in said row of FET devices having its drain connected to a common drain voltage and its source connected to a common bit line output and with each FET in said column of FET devices having its gate connected to a common word line input;

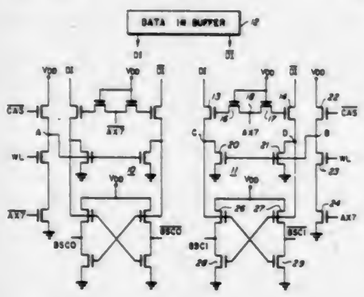
whereby a binary input signal on one of said word lines generate a one-out-of N-level signal on each of said bit lines.

4,202,045

WRITE CIRCUIT FOR A READ/WRITE MEMORY

Roger I. Kung, and Jerry D. Moench, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 5, 1979, Ser. No. 17,747
Int. Cl.² G11C *13/00*
U.S. Cl. 365—203 **8 Claims**



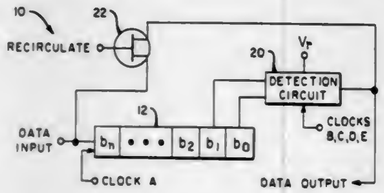
5. A circuit for controllably coupling data from an input buffer into a system, the circuit having a first and a second voltage terminal, comprising: a first and a second transistor for coupling data and its complement from the input buffer into the circuit; a third and a fourth transistor coupled in series between gate electrodes of the first and second transistors, the third and fourth transistors having gate electrodes coupled to the first voltage terminal and a first select signal coupled to a junction formed in between the third and fourth transistors; a fifth transistor having a gate electrode and being coupled between the first transistor and the second voltage terminal; a sixth transistor having a gate electrode and being coupled between the second transistor and the second voltage terminal; a seventh and an eighth transistor coupled in series between the first and second voltage terminal, and each transistor having a gate electrode; a ninth and a tenth transistor coupled in series between the first and second voltage terminals and each transistor having a gate electrode, the gate electrode of the seventh and tenth transistors being coupled to the first transistor and the gate electrodes of the ninth and eighth transistors being coupled to the second transistor; and a control signal coupled to the gate electrodes of the fifth and sixth transistors.

4,202,046

DATA STORAGE SYSTEM FOR STORING MULTILEVEL SIGNALS

William P. Ward, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 1, 1978, Ser. No. 939,021
Int. Cl.² G11C *19/28, 7/06*
U.S. Cl. 365—222 **12 Claims**



11. In a memory system having a charge transfer device shift register with a plurality of storage cells, with each storage cell for storing a signal having a value representing one of at least three data levels, a detection circuit for detecting the data level of the signal in one of said storage cells, comprising:

comparison means for comparing the signal in said one storage cell with the signal in an adjacent storage cell having a known data level;

summing means for adding a constant adjustment signal and an incrementally-changing adjustment signal to the signal in one of said storage cell and said adjacent storage cell prior to comparison by said comparison means; and

storing means for initially storing a signal representing the same known data level as the signal in said adjacent storage cell and for incrementally changing the value of the initially stored signal corresponding to the incrementally-changing adjustment signal until the signal stored in said storing means has a value representing the same data level as the signal in said one storage cell.

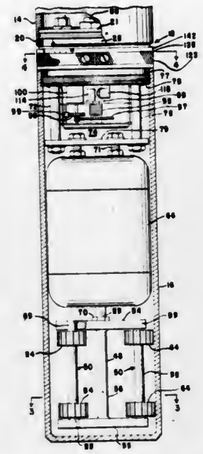
4,202,047

ACOUSTIC JAMMER AND TORPEDO DECOY

Vivian L. Chrisler, deceased, late of Vienna, Va. (by Cecelia B. Chrisler, executrix); William H. Gilbert, Hyattsville, and George L. Boyer, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1953, Ser. No. 339,498
Int. Cl.² H04K *3/00*
U.S. Cl. 367—1 **6 Claims**

1. An acoustic decoy adapted to operate underwater, said decoy comprising a motor means, a circular spindle means connected to said motor means and adapted to be rotated thereby, said spindle means having a pair of axially aligned spaced parallel discs, a plurality of radially extending sockets formed in the periphery of each disc with the sockets of respective discs being in axial alignment with each other, a roller comprising a shaft slidably and loosely supported within each pair of aligned sockets, each of said rollers comprising a pair of hammers on the associated shaft and a casing means surrounding said spindle means on the sides and one end thereof, said casing means comprising a cylindrical casing concentric with the axis of rotation of said spindle means, said sockets terminating radially inwardly from said casing a distance sufficient to



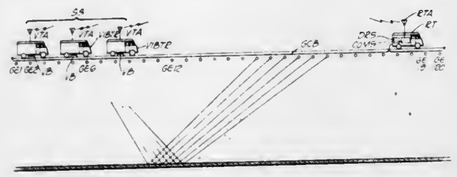
receive the associated shaft with its hammers spaced from said casing when said spindle means is not rotating, whereby said hammers are moved by centrifugal force to impinge against the sides of said casing whenever the spindle is rotated.

4,202,048

SEISMIC PROSPECTING SYSTEM

Charles M. Edwards, Pasadena, Calif., assignor to United Geophysical Corporation, Pasadena, Calif.

Continuation of Ser. No. 304,500, Nov. 7, 1972, abandoned. This application Nov. 11, 1976, Ser. No. 740,803
Int. Cl.² G01V *1/36, 1/30*
U.S. Cl. 367—40 **18 Claims**



1. In a system for seismic surveying in which a vehicle is moved along a line of exploration: the combination therewith of:

means including a chirp signal generator for generating a sequence of digital chirp signals and imparting a corresponding sequence of seismic chirp signals to the earth, whereby a plurality of trains of seismic waves are returned to the surface of the earth where each train of seismic waves is received at each of a plurality of geophone stations located along said line of exploration, each train of seismic waves corresponding to a different seismic chirp signal;

a seismic-wave signal conversion means for converting trains of seismic waves received at each of said plurality of geophone stations into a corresponding train of digital signals, whereby an ensemble of trains of digital signals is produced that corresponds to application of each said sequence of chirp signals to the earth,

whereby a corresponding sequence of trains of digital seismic-wave signals is created as said vehicle advances along the line of exploration, digital seismic-wave signals of different ensembles of digital seismic-wave signals corresponding to seismic waves received from common areas beneath the surface;

a digital computer system comprising a compositor computer and a correlation computer on said vehicle for receiving said ensembles of digital seismic-wave signals and processing said digital seismic-wave signals and said digital chirp signals to simultaneously form an ensemble of composited correlated digital seismic-wave records corresponding to successive common areas beneath the surface;

control means in communications with said computer system for coordinately controlling operations of said chirp generator, said compositor computer and said correlator computer in accordance with a series of parameters as said vehicle moves along the line of exploration to operate said chirp signal generator intermittently to generate a predetermined number of sequences of seismic-wave chirp signals thereby imparting said corresponding sequences of trains of seismic waves to the earth, and to form a plurality of such ensembles of composited correlated records; and

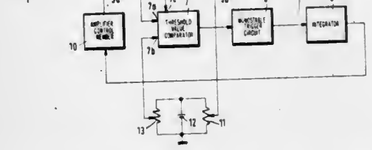
keyboard means for actuating said control means for establishing values for said parameters.

4,202,049

ULTRASONIC-FILLING POSITION LIMIT SWITCH OPERATING ACCORDING TO THE ECHO PRINCIPLE

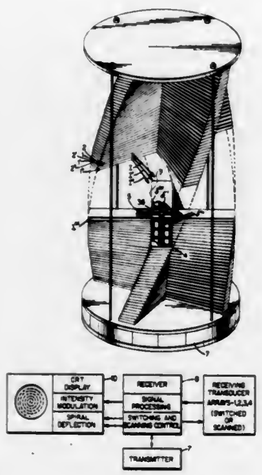
Gustav Wetzel, Loerrach, Fed. Rep. of Germany, assignor to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 944,168
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743409
Int. Cl.² G01S *9/66, 7/66*
U.S. Cl. 367—96 **3 Claims**



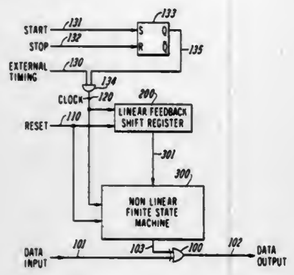
1. In an ultrasonic filling position limit switch having arranged in a container at the filling level to be attained at least one ultrasonic transducer for sending out ultrasonic pulses and for receiving echo pulses reflected off the opposite container wall, an amplifier for the electric output signals of the ultrasonic transducer connected to the ultrasonic transducer and a threshold limit switch connected to the amplifier output which supplies an output signal when the amplifier output signal exceeds a predetermined threshold value, the improvement that the amplifier output is fed back to an amplifier control input by means of an amplifier control circuit which seeks to maintain the amplifier output signal at an adjustable constant nominal value, and a control device which (a) blocks the control circuit for the duration of time in each sending period required for the sending out of the ultrasonic sending pulses and for receiving the echo pulses, (b) releases the amplifier control circuit during each sending period between the time interval provided for sending out the sending pulses and the time interval provided for receiving the echo pulses and (c) blocks the threshold limit switch during the sending out of the sending pulses and during the release time of the amplifier control circuit.

4,202,050
MULTI-ANGULAR SECTOR SOUND TRANSMITTING AND RECEIVING SYSTEM
Martin Klein, Rte. 111 - R.F.D. 2, Salem, N.H. 03079
Filed Nov. 28, 1969, Ser. No. 880,641
Int. Cl.[2] G01S *9/68, 3/84*
U.S. Cl. 367—105 9 Claims



1. A multiple angular sector sound system for receiving sound waves having, in combination, a plurality of adjacent sets of stacked pluralities of arrays of sound-to-electric energy transducers, each array of a set comprising a line of plurality of successive transducers, the successive line arrays of each set of arrays being stacked one upon another in a direction normal to said array lines and with successive array lines twisted at successive angles to the preceding array line to define an angular sector over the set of arrays with each successive array line corresponding to successive angles within that sector, each set being oriented with respect to an adjacent set to define an adjacent angular sector, and means for switching successive line arrays of successive sets of arrays successively to common receiving means responsive to the electric energy transduced thereby, such that the output of the receiving means provides successive electrical signals corresponding to the sound received by the successive arrays along successive angles over the successive scanned angular sectors.

4,202,051
DIGITAL DATA ENCIPHERING AND DECIPHERING CIRCUIT AND METHOD
George I. Davida, and David L. Wells, both of Milwaukee, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Oct. 3, 1977, Ser. No. 839,034
Int. Cl.[2] H04L *9/04*
U.S. Cl. 375—2 5 Claims

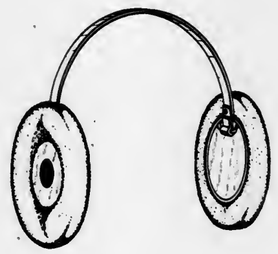


1. A digital data enciphering and deciphering circuit comprising:
a data input;
a clock input;
a start signal input;
a data output;
linear feedback shift register means comprising: a first input connected to said start signal input, a second input connected to said clock input, an output and means for generating at said linear feedback shift register means output a pseudorandom signal;
nonlinear finite state machine means comprising: a first input connected to said start signal input, a second input connected to said clock input, a third input connected to said output of said linear feedback shift register, an output and means for generating at said output of said nonlinear finite state machine means a nonlinear pseudorandom signal corresponding to said pseudorandom signal present at said linear feedback shift register means output such that said pseudorandom signal present at said linear feedback shift register output can not be translated into said nonlinear pseudorandom signal by means of a linear sequential machine means comprising: unit delays, module p adders and modulo p scalar multipliers connected such that every closed loop contains at least one unit delay element, where p is the number base of the logic system used to construct such a linear sequential machine, and such that the output combinations of said nonlinear finite state machine means are randomly distributed; and
combining means comprising: a first input connected to said output of said nonlinear finite state machine means, a second input connected to said data input, and output connected to said data output and means for combining said nonlinear pseudorandom signal with digital data present on said data input to generate transformed digital data on said data output.

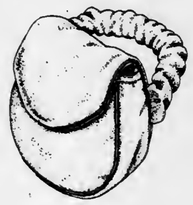
DESIGNS

MAY 6, 1980

254,876
EAR MUFFS HAVING EAR COVERINGS REPRESENTING PHONOGRAPH RECORDS
Valerie C. Reitenga, 11180 Terry, Plymouth, Mich. 48170, and Richard J. Dergis, 7089 Bonnie Dr., W., Apt. 22, Westland, Mich. 48185
Filed Sep. 19, 1977, Ser. No. 834,376
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—259



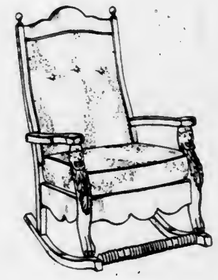
254,877
PURSE
Timmy S. Woods, 1727 Angelo Dr., Beverly Hills, Calif. 90210
Filed Feb. 6, 1978, Ser. No. 875,752
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52



254,878
CHAIR
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Filed May 9, 1977, Ser. No. 795,173
The portion of the term of this patent subsequent to Sep. 19, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



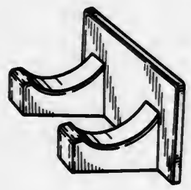
254,879
ROCKER
Leonard Eisen, Montvale, N.J., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed Dec. 14, 1977, Ser. No. 860,426
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



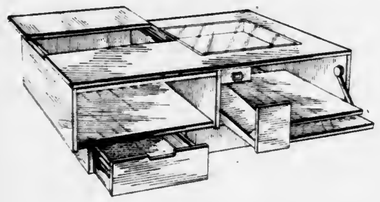
254,880
CHAIR
Max W. Durney, 180 Ely Rd., Petaluma, Calif. 94952
Filed Feb. 17, 1978, Ser. No. 879,012
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



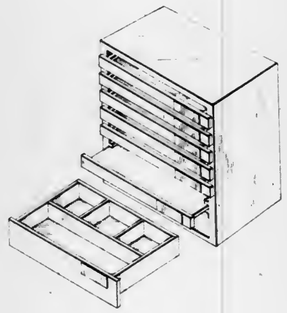
254,881
WALL-MOUNTABLE RACK FOR HOLDING A RAZOR OR THE LIKE
Alan R. Pyskaty, Glendale Heights, Ill., assignor to EPL Tool Co., Bensenville, Ill.
Filed Dec. 7, 1978, Ser. No. 967,159
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*; D8—*08*
U.S. Cl. D6—88



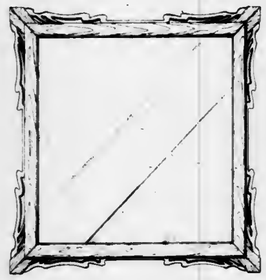
254,882
CABINET FOR HOUSING STEREOPHONIC AND ELECTRONIC EQUIPMENT
Bertrand Kempf, 46, rue des Martyrs, 75009 Paris, France
Filed Sep. 1, 1977, Ser. No. 829,989
Claims priority, application France, Mar. 3, 1977, 40.050
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—159



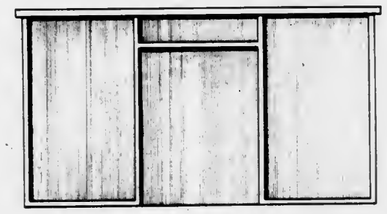
254,883
STORAGE CASE FOR STATIONERY ARTICLES OR THE LIKE
Anne-Marie Jorda-Segui, 4 Impasse Abel Varet, F-92110 Clichy, France
Filed Aug. 25, 1977, Ser. No. 828,257
Claims priority, application France, Feb. 25, 1977, 77 75476
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165



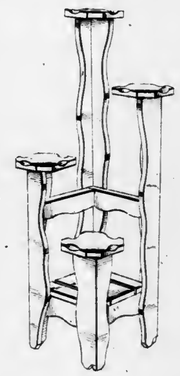
254,884
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Dec. 12, 1977, Ser. No. 859,934
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



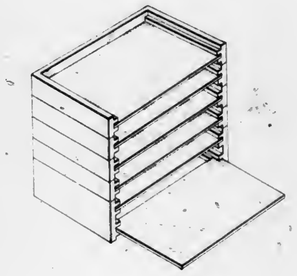
254,885
CABINET FOR HOUSING STEREO COMPONENTS
Larry L. Decker, 3421 Manchester Rd., SW., Massillon, Ohio 44646
Filed Jan. 26, 1978, Ser. No. 872,591
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—175



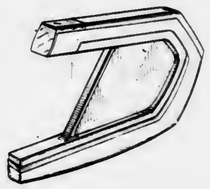
254,886
PLANT STAND
Alan M. Haines, 473 Mahoning Ave. NW., Warren, Ohio 44483
Filed Jan. 26, 1978, Ser. No. 873,098
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—183



254,887
MODULAR STORAGE UNIT HAVING PULL-OUT SHELVES OR SIMILAR ARTICLE
Anne-Marie Jorda-Segui, 4 Impasse Abel Varet, F-92110 Clichy, France
Filed Aug. 25, 1977, Ser. No. 828,256
Claims priority, application France, Feb. 25, 1977, 77 75476
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



254,888
END STANDARD FOR AN AIRCRAFT SEAT
Ralph G. Marrujo, Winston-Salem, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Mar. 17, 1978, Ser. No. 887,973
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



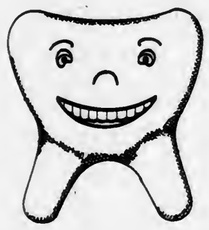
254,889
LEG FOR AN AIRCRAFT SEAT
Ralph G. Marrujo, Winston-Salem, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Mar. 17, 1978, Ser. No. 887,977
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



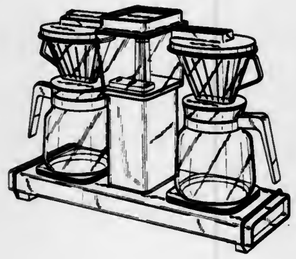
254,890
TABLE BASE
Robert L. Wilson, Senatobia, Miss., assignor to Chromcraft Corporation, Amsterdam, N.Y.
Filed Feb. 3, 1978, Ser. No. 874,726
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



254,891
CHILD'S PILLOW
Linda J. Mills, 28 SW. 101, Oklahoma City, Okla. 73139
Filed Jul. 11, 1977, Ser. No. 814,805
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—202



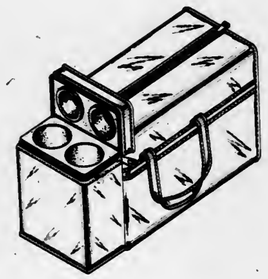
254,892
COFFEEMAKER
Gerard C. Smit, Amerongen, Netherlands, assignor to Smitdesign B.V., Amerongen, Netherlands
Filed Nov. 10, 1977, Ser. No. 850,413
Claims priority, application Benelux, May 13, 1977, 775189502
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—62



254,893
COFFEEMAKER
Gerard C. Smit, Amerongen, Netherlands, assignor to Smitdesign B.V., Amerongen, Netherlands
Filed Nov. 10, 1977, Ser. No. 850,414
Claims priority, application Benelux, May 13, 1977, 775189501
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—62



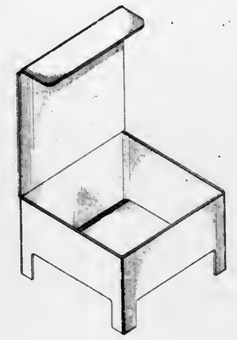
254,894
COMBINED CARRYING CASE AND INSULATED BOTTLE HOLDER
Martin Zoland, 6/112 Walsh St., South Yarra, Melbourne, Australia
Filed Nov. 28, 1977, Ser. No. 855,450
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D7—77



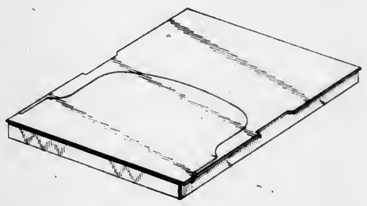
254,895
BOTTLE OR SIMILAR ARTICLE
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 662,297, Mar. 1, 1976, Pat. No. Des. 247,280. This application Feb. 14, 1977, Ser. No. 768,303
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—59



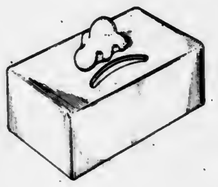
254,896
BOX
William A. Moore, 2204 Fiesta Ave., Newport Beach, Calif. 92660
Filed Aug. 11, 1977, Ser. No. 823,804
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



254,897
PAPER CASSETTE
Walter K. Jonas, 3M Deutschland GmbH, P.O. Box 643, D 4040 Neuss 1, Fed. Rep. of Germany
Filed Dec. 30, 1977, Ser. No. 866,464
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D9—224



254,898
COVER FOR FACIAL TISSUE BOX
George P. Buerk, 704 Silver Spur Rd., Rolling Hills, Calif. 90274
Filed May 15, 1978, Ser. No. 906,056
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—259



254,899
COMBINED PUMP AND CAP FOR A CONTAINER
Tetsuya Tada, 6-3, 2-chome, Kakinokizaka, Meguro-ku, Tokyo, Japan
Filed Sep. 2, 1977, Ser. No. 830,481
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—276





254,900
POCKET TIMEPIECE
Eric Oppliger, Rte. des Convers, 2616 Renan, Switzerland
Filed Apr. 11, 1977, Ser. No. 786,397
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—37



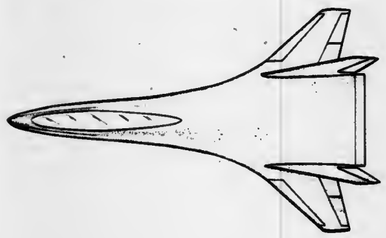
254,901
SMOKE DETECTOR
William W. Ng, Pasadena, Calif., assignor to Multirich Enterprise USA Incorporated
Filed Jan. 3, 1978, Ser. No. 866,252
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



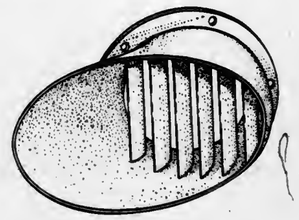
254,902
CHARM
Antonio M. Jaramillo, 337 W. Olive, Inglewood, Calif. 90301, and Allan Dennis, 4602 Pacific Coast Hwy., Torrance, Calif. 90505
Filed Mar. 16, 1978, Ser. No. 887,777
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61



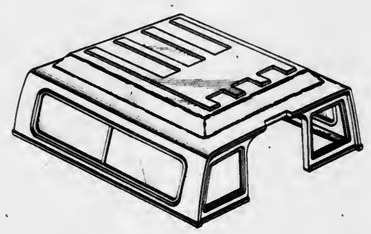
254,903
AIRCRAFT
Erling Holmen, Huntington, and Gordon Rosenthal, Jericho, both of N.Y., assignors to Fairchild Industries, Inc., Germantown, Md.
Filed Nov. 28, 1977, Ser. No. 855,596
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71



254,904
EXHAUST STACK
Edward J. Swearingen, P.O. Box 32622, San Antonio, Tex. 78216
Filed Jan. 30, 1978, Ser. No. 873,128
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—81



254,905
PICK-UP TRUCK CAP
John Collins, Elkhart, Ind., assignor to Leer, Inc., Ind.
Filed Mar. 27, 1978, Ser. No. 890,851
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



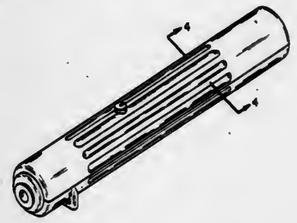
254,906
COMBINED BABY CARRIAGE AND BASKET
Shinroku Nakao, Yokohama; Kouichi Kobayashi, and Yuzo Abe, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Mar. 13, 1979, Ser. No. 20,135
Claims priority, application Japan, Nov. 20, 1978, 53-49243
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129



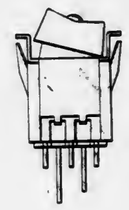
254,907
AERODYNAMIC SPOILER FOR ATTACHMENT TO AN UPPER REAR PORTION OF AN AUTOMOBILE
Björn E. A. Envall, Vanersborg, and Ralph E. Jonsson, Trollhättan, both of Swedeii, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Mar. 13, 1978, Ser. No. 886,170
Claims priority, application Sweden, Sep. 12, 1977, 771824
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



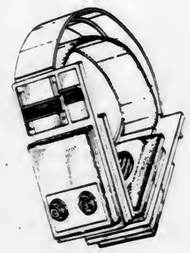
254,908
STARTER FOR SMALL ENGINES
Benjamin Bowsky; Donald E. Coyle; David W. Newman, and Larry G. Burrows, all of Cincinnati, Ohio, assignors to Emerson Electric Co., St. Louis, Mo.
Filed Sep. 21, 1977, Ser. No. 835,424
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D13—2



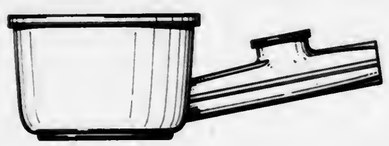
254,909
SWITCH
Minoru Sano, Yokosuka, Japan, assignor to Fujisoku Electric Co., Ltd., Kawasaki, Japan
Filed Jul. 25, 1978, Ser. No. 928,009
Claims priority, application Japan, May 19, 1978, 53-20181; May 19, 1978, 53-20182; May 19, 1978, 53-20183; May 19, 1978, 53-20184; May 19, 1978, 53-20185; Jun. 7, 1978, 53-23349
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—37



254,910
COMBINED HEADPHONE AND RADIO
Gilbert K. Lung, Kowloon, Hong Kong, assignor to Sonway Manufacturers Ltd., Kowloon, Hong Kong
Filed Nov. 4, 1977, Ser. No. 848,542
Claims priority, application United Kingdom, Oct. 4, 1977, 981781/77
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36



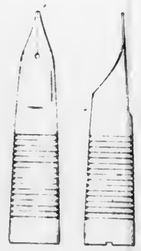
254,911
KAZOO OR SIMILAR ARTICLE
John A. Larson, Rte. #4, Box 227, Prior Lake, Minn. 55372
Filed Sep. 19, 1977, Ser. No. 834,374
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D17—10



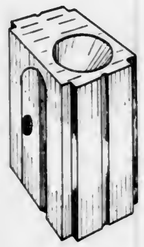
254,912
FOUNTAIN PEN
Shoichiro Ito, Hatano, Japan, assignor to Pilot Man-Nen Hitsu Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1978, Ser. No. 906,529
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—48



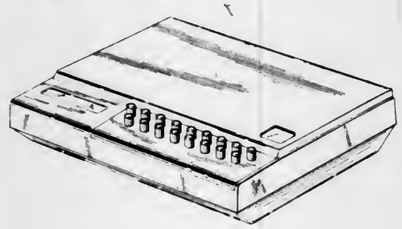
254,913
FOUNTAIN PEN NIB
Shoichiro Ito, Hatano, Japan, assignor to Pilot Man-Nen Hitsu Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1978, Ser. No. 906,530
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—55



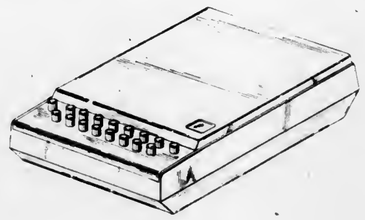
254,914
PENCIL SHARPENER
Werner Möbius, Hindenburgstrasse 77, Erlangen, Fed. Rep. of Germany
Filed Feb. 23, 1978, Ser. No. 880,352
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 7372
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—73



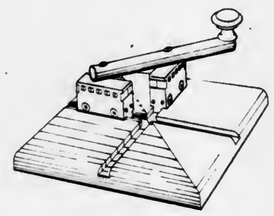
254,915
TELEPHONE INDEX OR THE LIKE
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1977, Ser. No. 865,865
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



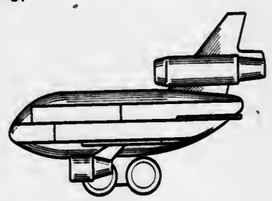
254,916
TELEPHONE INDEX OR THE LIKE
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1977, Ser. No. 865,866
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



254,917
DEMONSTRATION DEVICE OR THE LIKE
Noel E. Council, 3504 Woodlawn Dr., Raleigh, N.C. 27609
Filed Jan. 13, 1978, Ser. No. 869,387
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



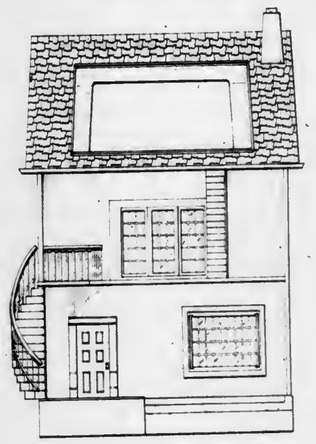
254,918
TOY AIRPLANE
Ladislav Havranek, Im Roggebode 5, 5400 Baden, Switzerland, assignor to Ladislav Havranek, Baden and Werner W. Kleeman, Thalwil, both of, Switzerland
Filed Jun. 22, 1977, Ser. No. 809,126
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



254,919
TOY STETHOSCOPE
Howard N. Bollinger; Linda J. Donaldson, and Dale I. Goldberg, all of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed May 12, 1977, Ser. No. 796,083
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109



254,920
TOY DOLL HOUSE
Richard W. M. Kimbrough, New York, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 23, 1978, Ser. No. 880,855
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114



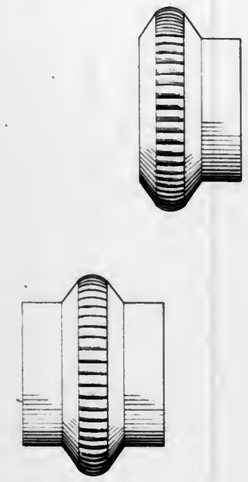
254,921
STUFFED DOLL
Ronald K. Fritkin, Rolling Meadows, Ill., assignor to Fritkin-Jones Design Group Inc., Chicago, Ill.
Filed Feb. 3, 1978, Ser. No. 874,920
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168



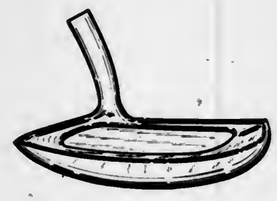
254,922
CLOWN FIGURE TOY
Norman Walker, London, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 24, 1978, Ser. No. 872,350
Claims priority, application United Kingdom, Dec. 2, 1977, 982462/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—173



254,923
ROLLING TOY OR SIMILAR ARTICLE
Robert A. Pitton, 342 Chittenden Ave., Columbus, Ohio 43201
Filed Dec. 5, 1977, Ser. No. 857,868
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—203



254,924
CENTER SHAFT PUTTER HEAD
Theodore N. Madison, Windsor, Conn., assignor to Questor Corporation, Toledo, Ohio
Filed May 18, 1978, Ser. No. 907,148
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



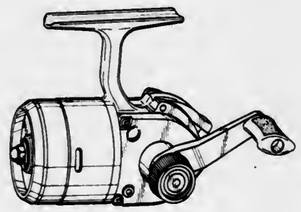
254,925
OFF SET PUTTER HEAD
Theodore N. Madison, Windsor, Conn., assignor to Questor Corporation, Toledo, Ohio
Filed May 18, 1978, Ser. No. 907,263
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



254,926
GOLF CLUB GRIP
Karsten Solheim, 501 W. Wakonda La., Phoenix, Ariz. 85023
Filed Jun. 28, 1978, Ser. No. 920,017
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—222



254,927
FISHING REEL
Yasomatsu Morishita, Hiroshima, Japan, assignor to Ryobi Ltd., Fuchu, Japan
Filed Jan. 9, 1978, Ser. No. 868,142
Claims priority, application Japan, Aug. 20, 1977, 52-33065
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



254,928
SUCTION DRAIN GUARD FOR SWIMMING POOLS
Cleo D. Mathis, 1808 Potrero Ave., South El Monte, Calif. 91733
Filed Mar. 15, 1977, Ser. No. 777,615
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—41



254,929
DISPENSER FOR AIR-FRESHENING VAPORS
Ian Butcher, Paris; Bernard Rabussier, Avanton, and Philippe Lecomte, Plaisance Vouille, all of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jul. 6, 1978, Ser. No. 922,466
Claims priority, application Switzerland, Jan. 6, 1978, 109,638/78
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



254,930
DISPENSER FOR AIR-FRESHENING VAPORS
Jean-Pierre Mandon, Chasseneuil-du-Poitou, and Philippe Lecomte, Plaisance Vouille, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jul. 6, 1978, Ser. No. 922,467
Claims priority, application Switzerland, Jan. 6, 1978, 109,623/78
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



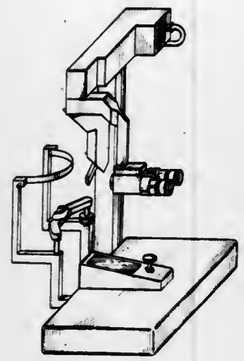
254,931
DISPENSER FOR AIR-FRESHENING VAPORS
Jean-Pierre Mandon, Chasseneuil-du-Poitou, and Philippe Lecomte, Plaisance Vouille, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jul. 6, 1978, Ser. No. 922,468
Claims priority, application Switzerland, Jan. 6, 1978, 109,623/78
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



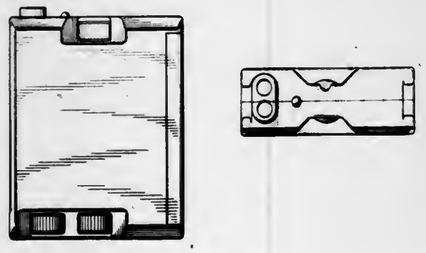
254,932
DISPENSER FOR AIR-FRESHENING VAPORS
Ian Butcher, Paris; Bernard Rabussier, Avanton, and Philippe Lecomte, Plaisance Vouille, all of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jul. 6, 1978, Ser. No. 922,469
Claims priority, application Switzerland, Jan. 6, 1978, 109,638/78
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



254,933
SLIT LAMP
Ortwin Mulier, Lorch, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany
Filed Jan. 19, 1978, Ser. No. 870,738
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2860
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—17



254,934
TRANSCUTANEOUS NERVE STIMULATOR CASE
Richard L. Walus, Columbia Heights, Minn., assignor to Stimtech, Inc., Minneapolis, Minn.
Filed Jan. 17, 1979, Ser. No. 4,086
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—36



254,935
MASCARA SHIELD
Lyn A. Staudinger, Balboa Island, Calif., assignor to Shadow Company, Glendale, Calif.
Filed Jan. 23, 1978, Ser. No. 871,419
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7



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TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MAY, 1980

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Betong AB: *See—*
Thomsen, Ove; and Bondpers, Per-Erik, 4,201,711, Cl. 264-157.000.
A. Monk & Company Limited: *See—*
Sinclair, Alexander S.; and Eccleston, Barry C., 4,201,275, Cl. 182-37.000.
A. Raymond: *See—*
Kuttler, Otto, 4,201,111, Cl. 85-32.00V.
A. Schild S.A.: *See—*
Visconti, Gerald; and Gilomen, Beat, 4,201,042, Cl. 368-170.000.
AB Syntes: *See—*
Nylander, Perry, 4,201,826, Cl. 428-268.000.
AB Ziristor: *See—*
Olsen, Jan-Erik, 4,201,609, Cl. 156-85.000.
Abbott Laboratories: *See—*
Cambio, Orlando D., Jr., 4,201,208, Cl. 128-214.200.
Abbott, Thomas I., to Eastman Kodak Company. Blocked competing developers for color transfer. 4,201,578, Cl. 430-222.000.
Abrams, D. David, to Mego Corp. Toy house with roof-supporting stanchions. 4,201,010, Cl. 46-12.000.
ACEC, Ateliers de Constructions Electriques de Charleroi: *See—*
Dardenne, Regis, 4,201,940, Cl. 324-207.000.
Achterberg, Arnoldus: *See—*
Dockhorn, Wolfgang; and Achterberg, Arnoldus, 4,201,082, Cl. 73-153.000.
Ackerman, Gary M.; and Edgington, Nicholas, to AIT Corporation. Digital indicator. 4,200,986, Cl. 33-174.00P.
Adams, Harold R. Packing injector gun. 4,201,318, Cl. 222-324.000.
Adams, Thomas M. Lacing assembly for a shoe. 4,200,998, Cl. 36-50.000.
Adin, Anthony; and Fleming, James C., to Eastman Kodak Company. Radiation sensitive co(III)complex photoreduction element with image recording layer. 4,201,588, Cl. 430-167.000.
Adin, Anthony: *See—*
Levinson, Steven R.; and Adin, Anthony, 4,201,590, Cl. 430-617.000.
Adolph Saurer Limited: *See—*
Gattiker, Ernst, 4,201,280, Cl. 192-18.00A.
Advance Dental Corporation: *See—*
Johnston, Reece W., 4,200,980, Cl. 433-8.000.
AEG - Telefunken Kabelwerke AG, Rheydt: *See—*
Rautenberg, Peter; Hildenbrand, Hartmut; and Parmar, Daljit-Singh, 4,201,607, Cl. 156-70.000.
Aga, Toshio: *See—*
Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,201,084, Cl. 73-194.0VS.
Agarwal, Maya, to Goodyear Tire & Rubber Company, The. Random copolyester adhesive resins. 4,201,859, Cl. 528-302.000.
Agarwall, Dwarika P.: *See—*
Ingersoll, Clyde E.; and Agarwall, Dwarika P., 4,201,577, Cl. 75-134.00N.
Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, 4,201,768, Cl. 424-92.000.
AGFA-Gevaert, A.G.: *See—*
Stemme, Otto; and Wagner, Karl, 4,201,460, Cl. 354-171.000.
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Monbaliu, Marcel J.; and Van Poucke, Raphael K., 4,201,584, Cl. 430-389.000.
Pollet, Robert J.; Vandeputte, Camille A.; Sels, Francis J.; and van Veelen, George F., 4,201,585, Cl. 430-376.000.
Aggio, Giordano. Container for the transport or storage of food, particularly pizza. 4,201,301, Cl. 206-507.000.
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Airco, Inc.: *See—*
Carden, Douglas D., 4,201,737, Cl. 261-142.000.
Aisan Kogyo Kabushiki Kaisha: *See—*
Ohnishi, Takanori; Shiozawa, Ken; and Shimizu, Nobuo, 4,201,734, Cl. 261-34.00B.
AIT Corporation: *See—*
Ackerman, Gary M.; and Edgington, Nicholas, 4,200,986, Cl. 33-174.00P.
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Kwant, Pieter B.; Kanbier, Dirk; Tjan, Petrus W. H. L.; and Akbar, Mohammed, 4,201,659, Cl. 208-73.000.
Akita, Sigeyuki; and Wakamatsu, Hisato, to Nippon Soken, Inc. Apparatus for measuring temperature. 4,201,087, Cl. 73-339.00A.
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Ohgishi, Tsutomu; Akiyama, Toru; and Sakurai, Tadashi, 4,201,945, Cl. 455-183.000.
A.G. (Patents) Limited: *See—*
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Alcorn, George E.; Bergeron, David L.; and Stephens, Geoffrey B., to International Business Machines Corp. Hardened photoresist master image mask process. 4,201,800, Cl. 430-5.000.
Aldag, John; and Wells, Willis L., to Bantam Systems, Inc. Building frame construction. 4,201,021, Cl. 52-93.000.
Aleff, Hans P. Finger actuated pump assembly. 4,201,317, Cl. 222-207.000.
Ali, Frank F. Rotary stripper device. 4,200,947, Cl. 15-198.000.
Ali, Majid; and Nalebuff, Donald J. Diagnostic test for allergic disorders and kit therefor. 4,201,221, Cl. 128-630.000.
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Segal, Leon, 4,201,855, Cl. 528-125.000.
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Tanaka, Masami; and Nomura, Yukihiko, 4,201,969, Cl. 338-180.000.
Alsdorf, Franz. Security pouch to be clipped to articles of clothing. 4,201,259, Cl. 150-47.000.
Altmayer, John, to Hustler, Inc. Tunable dipole antenna. 4,201,990, Cl. 343-747.000.
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Vallejos, Tony E., 4,201,174, Cl. 123-188.00B.
ALZA Corporation: *See—*
Buckles, Richard G.; and Leeper, Harold M., 4,201,207, Cl. 128-214.00F.
Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., 4,201,211, Cl. 128-268.000.
AM International, Inc.: *See—*
Masiello, Felix R.; and Kula, John S., 4,201,354, Cl. 242-71.700.
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Amana Refrigeration, Inc.: *See—*
Schuchert, Barton O., 4,201,901, Cl. 219-10.55C.
Amariti, Luigi, to DeSoto, Inc. Liquid developers for electrostatic images comprising an aliphatic hydrocarbon, binder, polymeric carbamate and a cresol. 4,201,685, Cl. 430-114.000.
Amerace Corporation: *See—*
Goldberg, Bruce S., 4,201,838, Cl. 429-145.000.
American Can Company: *See—*
Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., 4,201,596, Cl. 127-37.000.
Watt, William R., 4,201,640, Cl. 204-159.110.
American Cyanamid Company: *See—*
DePaolo, George R., 4,201,803, Cl. 427-381.000.
O'Neal, Thomas D., 4,201,565, Cl. 71-76.000.
American Home Products Corporation: *See—*
Hasegawa, Jun, 4,201,866, Cl. 560-194.000.
Mack, Frank J.; and Ronayne, Walter M., 4,201,289, Cl. 206-0.500.
American Hospital Supply Corporation: *See—*
Hurt, Wesley D.; and Koski, John P., 4,201,693, Cl. 252-408.000.
American Loose Leaf Corp.: *See—*
Almgren, Robert, 4,201,492, Cl. 402-54.000.
American Zephyr Corporation: *See—*
Lagsdin, Andry, 4,201,137, Cl. 104-69.000.
Ametek, Inc.: *See—*
Bowen, John C., 4,201,190, Cl. 126-450.000.
AMF Incorporated: *See—*
Holman, Rudolph G.; and Ketchum, Frank W., 4,201,177, Cl. 124-23.00R.
Andera, Joseph F.; and Eisenberg, Robert C., to Frigitronics of Conn., Inc. Dispensing system employing liquid cryogen. 4,201,319, Cl. 222-396.000.
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Huhne, Erwin D.; and Anders, Jochen H., 4,201,341, Cl. 239-79.000.
Andersen, David C. Energy conversion unit. 4,202,004, Cl. 357-30.000.
Andersen, Per F. Wave making machines. 4,201,496, Cl. 405-79.000.
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Ando, Tetsuo: *See—*
Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,201,084, Cl. 73-194.0VS.

Aoi, Kunio: *See—*
Yamazaki, Noboru; Yuasa, Teruo; Morimoto, Yoshio; Aoi, Kunio; and Takase, Tsutomu, 4,201,877, Cl. 568-720.000.

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Apatova, Larisa D.: *See—*
Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D., 4,201,882, Cl. 13-27.000.

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Aquafilter Corporation: *See—*
Kaye, Paul, 4,201,232, Cl. 131-187.000.

Arai, Kozo: *See—*
Kotani, Teizo; Inoue, Takashi; and Arai, Kozo, 4,201,848, Cl. 525-314.000.

Arai, Mamoru: *See—*
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.

Arakawa, Jun: *See—*
Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, 4,201,589, Cl. 430-139.000.

Arcair Company: *See—*
Rieppel, Perry J.; and Sadauskas, Raymond A., 4,201,902, Cl. 219-69.00M.

Arendt, Henry P.; Deaton, Thomas M.; and Kohn, Gary A., to Otis Engineering Corporation. Tubing retrievable surface controlled subsurface safety valve. 4,201,363, Cl. 251-62.000.

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McCartney, Ronald L.; Arnold, Bruce K.; and Hogan, Vaughn C., 4,201,444, Cl. 350-96.210.

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Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Tanouchi, Masatoshi; Takeuchi, Hiroshi; Ban, Kazuki; and Asahina, Yoshiyuki, 4,201,871, Cl. 562-486.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Uno, Naoyuki; Urano, Fumio; Tano, Eiichi; and Kurei, Hiroshi, 4,201,462, Cl. 354-289.000.

Asahina, Yoshiyuki: *See—*
Tanouchi, Masatoshi; Takeuchi, Hiroshi; Ban, Kazuki; and Asahina, Yoshiyuki, 4,201,871, Cl. 562-486.000.

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Mattsson, Bertil; and Nilsson, Jan, 4,201,071, Cl. 72-60.000.

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Kosseim, Alexander J. M.; Atwood, Gilbert R.; and Sokolik, Joseph E., Jr., 4,201,752, Cl. 423-235.000.

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Gerlier, Jean-Pierre; and Augier, Jacques, 4,201,478, Cl. 356-440.000.

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Stump, Lee K., 4,201,142, Cl. 111-7.000.

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Musto, Dominick J.; and Lerner, Harold, 4,201,476, Cl. 356-386.000.

Austin, John J., to Champion International Corporation. Butterfly carton and blank for forming same. 4,201,331, Cl. 229-39.00R.

Auto-Place, Inc.: *See—*
Kirsch, Jerry, 4,201,313, Cl. 221-171.000.

Automated Packaging Systems, Inc.: *See—*
Lerner, Bernard; and Liebhart, Dana J., 4,201,029, Cl. 53-429.000.

Automotive Products Limited: *See—*
Bainbridge, Wilfred, 4,201,054, Cl. 60-562.000.
Bainbridge, Wilfred N.; and Parsons, David, 4,201,055, Cl. 60-562.000.

Avidor, Joel M.: *See—*
Stewart, Charles C.; Avidor, Joel M.; Pugh, Evan R.; and Lothrop, John W., 4,201,952, Cl. 331-94.50D.

Aylesworth, Preston L.: *See—*
Schwitters, Stephen W.; and Aylesworth, Preston L., 4,201,558, Cl. 62-70.000.

Aymard, Pierre: *See—*
Dewitte, Jean; and Aymard, Pierre, 4,201,560, Cl. 65-21.000.

Aziz, Paul D.; and Hincks, Robert W., to Data Management, Incorporated. Combination checkwriting and bookkeeping assembly and method of using same. 4,201,402, Cl. 282-9.00A.

B. F. Goodrich Company, The: *See—*
Bartley, Donald R.; Sidles, James; and Sabo, Stephen C., 4,201,261, Cl. 152-357.00A.

Babian, Gunther W.: *See—*
Cully, Maryann; Pines, Arthur N.; Metzler, Richard B.; and Babian, Gunther W., 4,201,808, Cl. 428-40.000.

Bach, Nicholas J.: *See—*
Kornfeld, Edmund C.; and Bach, Nicholas J., 4,201,862, Cl. 546-67.000.

Backhaus, Franz J. Device for making sauces. 4,201,487, Cl. 366-304.000.

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Badische Corporation: *See—*
Hurley, Rupert B., 4,201,740, Cl. 264-38.000.

Bainbridge, Wilfred, to Automotive Products Limited. Hydraulic master cylinder. 4,201,054, Cl. 60-562.000.

Bainbridge, Wilfred N.; and Parsons, David, to Automotive Products Limited. Hydraulic master cylinder. 4,201,055, Cl. 60-562.000.

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Baker, Michael P.: *See—*
Evans, Michael L.; Menlove, Howard O.; and Baker, Michael P., 4,201,912, Cl. 250-253.000.

Balazs, Karoly: *See—*
Vadasz, Peter; Tokes, Szabolcs; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.

Balde, Dan R., to db Systems Ltd. Portable electrical cable interconnection assembly. 4,201,278, Cl. 191-12.400.

Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten: *See—*
Lardon, Marcel A., 4,201,479, Cl. 356-445.000.

Ban, Kazuki: *See—*
Tanouchi, Masatoshi; Takeuchi, Hiroshi; Ban, Kazuki; and Asahina, Yoshiyuki, 4,201,871, Cl. 562-486.000.

Bandag Incorporated: *See—*
Brodie, Edwin T.; and Brewer, Donaldee, 4,201,610, Cl. 156-96.000.

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Bannerman, James K.: *See—*
Barker, Larry D.; and Bannerman, James K., 4,201,679, Cl. 252-8.50A.

Bantam Systems, Inc.: *See—*
Aldag, John; and Wells, Willis L., 4,201,021, Cl. 52-93.000.

Barber, Harold G., Jr.; and Raimond, Charles L. Audio power percussion pickups. 4,201,107, Cl. 84-1.140.

Barber, Jerry. Set of golf balls. 4,201,384, Cl. 273-199.00R.

Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L. Vortex-type oil mist generator. 4,201,276, Cl. 184-55.00A.

Barker, Craig S.; and Bockwinkel, Joe L., to Shakertown Corporation. Shake panel assembling machine. 4,201,614, Cl. 156-273.000.

Barker, Larry D.; and Bannerman, James K., to Dresser Industries, Inc. Drilling fluid additive. 4,201,679, Cl. 252-8.50A.

Barner, Richard; and Schmid, Max, to Hoffmann-La Roche Inc. Hydroquinones. 4,201,879, Cl. 568-766.000.

Barnes, Richard D.: *See—*
Donnelli, Joseph W.; and Barnes, Richard D., 4,201,255, Cl. 144-32.00R.

Barney, Howard H., to Dunn Instruments, Inc. Internal body organ motion picture synthesizing apparatus. 4,201,223, Cl. 128-653.000.

Baron, John R., to British Aircraft Corporation Limited. Conveying data signals between relatively rotatable units. 4,201,979, Cl. 340-181.000.

Barr, Thomas A., Jr.; Holloman, Miles E.; and Walters, Joseph M., to United States of America, Army. Low deactivation chemical laser. 4,201,950, Cl. 331-94.50G.

Bartholomew, Victor L., to Hudson Oxygen Therapy Sales Company. Oxygen mask. 4,201,205, Cl. 128-205.250.

Bartlett, Robert L.: *See—*
Irelan, Edward A.; Bartlett, Robert L.; and Walch, John W., 4,200,978, Cl. 30-276.000.

Bartley, Donald R.; Sidles, James; and Sabo, Stephen C., to B. F. Goodrich Company, The. Vehicle tire. 4,201,261, Cl. 152-357.00A.

Barton, Edson K. Continuous visual display apparatus. 4,201,002, Cl. 40-524.000.

Bartsch, Ulrich: *See—*
Salje, Ernst; and Bartsch, Ulrich, 4,201,103, Cl. 83-835.000.

BASF Aktiengesellschaft: *See—*
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.
Kurtz, Walter; Horn, Dieter; and Ditter, Walter, 4,201,710, Cl. 260-156.000.
Schoettle, Klaus; Uhl, Karl; Wittkamp, Heinrich; Dobler, Peter; and Lewin, Helmut, 4,201,356, Cl. 242-197.000.

Basil, Berkeley; and Wooldridge, Kenneth R. H., to May & Baker Limited. Benzophenone derivatives. 4,201,790, Cl. 424-330.000.

Basile, Pedro. Pressure cooker closure fastening means. 4,201,312, Cl. 220-314.000.

Baslow, Floyd M. Fabric-covered chair rail. 4,201,359, Cl. 248-345.100.

Bass Research and Design, Inc.: *See—*
Butler, Dennis L., 4,201,182, Cl. 124-24.00R.

Battenfeld Maschinenfabriken: *See—*
Holzschuh, Johann, 4,201,533, Cl. 425-451.900.

Bauer, Adolf: *See—*
Weber, Karl-Heinz; Bauer, Adolf; and Langbein, Adolf, 4,201,712, Cl. 260-244.400.

Bauer, Josef, to Siemens Aktiengesellschaft. Test plug and sealing plug for cable fittings. 4,201,309, Cl. 220-235.000.

Bauer, Richard G.: *See—*
Mast, William C.; and Bauer, Richard G., 4,201,829, Cl. 428-332.000.

Baugh, Benton F., to Vetco, Inc. Emergency override with hermetic seal. 4,201,238, Cl. 137-68.00R.

Baumgartner, Harlow E.: *See—*
Gillespie, Herman L.; and Baumgartner, Harlow E., 4,200,944, Cl. 9-1.100.

Baumgartner, Lois C.: *See—*
Gillespie, Herman L.; and Baumgartner, Harlow E., 4,200,944, Cl. 9-1.100.

Baur, Rolf, to Schenk-Filterbau Gesellschaft mit beschrankter Haftung. Method of and device for filtering liquids. 4,201,670, Cl. 210-75.000.

Baxter Travenol Laboratories, Inc.: *See—*
Brown, Richard I.; and Leaf, Roger L., 4,201,525, Cl. 417-477.000.
Dennehey, T. Michael; and Wolf, Ludwig, Jr., 4,201,406, Cl. 285-3.000.

Bayer Aktiengesellschaft: *See—*
Dieterich, Dieter, 4,201,852, Cl. 528-67.000.
Ebneth, Harold, 4,201,825, Cl. 428-263.000.
Harnisch, Horst, 4,201,713, Cl. 546-41.000.
Imhauser, Gunter; Brauner, Dieter; and Muschelknautz, Edgar, 4,201,482, Cl. 366-98.000.
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, 4,201,847, Cl. 521-172.000.
Psaar, Hubertus, 4,201,707, Cl. 260-162.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Michassouridis, Athanasios, 4,201,169, Cl. 123-124.00R.

Bayley, Richard I. Methanol vaporization and injection system for internal combustion engine. 4,201,167, Cl. 123-122.00E.

BBC Brown Boveri & Company Limited: *See—*
Muller, Klaus, 4,201,635, Cl. 204-1.00R.

Beatrice Foods Co.: *See—*
Schwitters, Stephen W.; and Aylesworth, Preston L., 4,201,558, Cl. 62-70.000.

Beck, Ralph E.: *See—*
Kolk, Michael R.; Beck, Ralph E.; and Hoyle, Roy E., 4,201,516, Cl. 416-213.00R.

Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., to Betz Laboratories, Inc. Deposit control through the use of oligomeric phosphonic acid derivatives. 4,201,669, Cl. 210-58.000.

Becker, Ormonde C. Trap loader safety assembly. 4,201,181, Cl. 124-6.000.

Becker, Otto A. Method and apparatus for manufacturing a load bearing structural element having special internal atmospheric conditions. 4,201,903, Cl. 219-78.120.

Beckman Instruments, Inc.: *See—*
Conn, Thomas E.; and Edwards, John R., 4,201,335, Cl. 233-26.000.
Louderback, Allan L., 4,201,694, Cl. 252-408.000.

Bedell, Stanley F.; Sullivan, Charles I.; and Taylor, Lloyd D., to Polaroid Corporation. Graft copolymers as diffusion control layers in photographic diffusion transfer products. 4,201,587, Cl. 430-224.000.

Beecham Group Limited: *See—*
Cassidy, Frederick; and Wootton, Gordon, 4,201,864, Cl. 560-39.000.

Beggs, Donald: *See—*
Scarlett, John C.; and Beggs, Donald, 4,201,571, Cl. 75-35.000.

Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., to International Business Machines Corporation. Quaternary FET read only memory. 4,202,044, Cl. 365-182.000.

Belkind, Benjamin A., to Velsicol Chemical Corporation. 2-(1-Ethylpropylamino)-3-cyano-4-methoxymethyl-5-nitro-6-methylpyridine. 4,201,568, Cl. 71-94.000.

Bell, Henry P.: *See—*
Connors, John P.; Nordmann, Bernard J.; Wainland, David M.; and Bell, Henry P., 4,202,042, Cl. 364-900.000.

Bell & Howell Company: *See—*
Hams, Kenneth A., 4,201,378, Cl. 271-261.000.
Orsinger, Winston A.; and Reinert, Warren D., 4,201,617, Cl. 156-351.000.

Bell Telephone Laboratories, Incorporated: *See—*
Ahamed, Syed V., 4,201,958, Cl. 332-11.00D.
Alles, Harold G., 4,201,105, Cl. 84-1.010.
Beni, Gerardo; and Shay, Joseph L., 4,201,454, Cl. 350-357.000.
Cho, Alfred Y.; and Schneider, Martin V., 4,201,998, Cl. 357-15.000.
Feit, Eugene D., 4,201,580, Cl. 430-319.000.

Bellows, Alfred H.: *See—*
Ribich, William A.; Hug, Hans A.; and Bellows, Alfred H., 4,201,270, Cl. 173-43.000.

Beloit Corporation: *See—*
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., 4,201,624, Cl. 162-205.000.

Belvin, Frank: *See—*
Duncan, Thomas P., Jr., 4,201,817, Cl. 428-141.000.

Beni, Gerardo; and Shay, Joseph L., to Bell Telephone Laboratories, Incorporated. Heat treated electrochromic devices. 4,201,454, Cl. 350-357.000.

Benisek, Ladislav, to International Wool Secretariat. Zirconium flame-resist, low smoke emission treatment. 4,201,805, Cl. 427-389.000.

Bennett, Richard N.; and Lichaa, Albert, to National Instrument Co., Inc. Anti-spilling safety device for high-speed filling machines. 4,201,251, Cl. 141-284.000.

Bergeron, David L.: *See—*
Alcorn, George E.; Bergeron, David L.; and Stephens, Geoffrey B., 4,201,800, Cl. 430-5.000.

Bergstrom, Jan I.: *See—*
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., 4,201,624, Cl. 162-205.000.

Bergwerksverband GmbH: *See—*
Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, 4,201,695, Cl. 252-411.00R.

Berman, Philip G.: *See—*
Feldman, Henry L.; Berman, Philip G.; and Washburn, William L., 4,201,218, Cl. 128-402.000.

Bernard, Pierre: *See—*
Delaplace, Philippe; and Bernard, Pierre, 4,201,248, Cl. 139-21.000.

Berry, Clyde F. Steam turbine governor. 4,201,520, Cl. 417-36.000.

Bertelsen, Henry F. Basis for a tabletop for an extension table. 4,201,816, Cl. 428-137.000.

Berthelon, Jean-Jacques: *See—*
Briet, Philippe; Berthelon, Jean-Jacques; and Depin, Jean-Claude, 4,201,783, Cl. 424-256.000.

Bethea, James W., III; Mitchell, O. Clayton; and Richards, George B. Method and apparatus for measuring stimulated acoustic reflex latency time. 4,201,225, Cl. 128-746.000.

Bethlehem Steel Corporation: *See—*
Chuss, David M.; and Pinckney, Benjamin H., 4,201,315, Cl. 222-66.000.
Chuss, David M.; and Scheirer, James W., 4,201,627, Cl. 201-39.000.

Betta, Walter, to WABING S.r.L. Pulley arrangement for the laying out of electrical leads in a bundle fashion. 4,201,369, Cl. 254-193.000.

Betz Laboratories, Inc.: *See—*
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,201,669, Cl. 210-58.000.

Beunders, Johan W., to U.S. Philips Corporation. Receiver having a measurement instrument which is used as a tuning scale. 4,201,944, Cl. 455-155.000.

Beyer, Douglas E.: *See—*
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,201,729, Cl. 260-665.00R.

Biasotti, Joseph B.: *See—*
Vartanian, Paul F.; and Biasotti, Joseph B., 4,201,554, Cl. 44-62.000.

Bierig, Robert W.; and Steele, S. Robert, to Raytheon Company. Process for making a negative resistance diode utilizing spike doping. 4,201,604, Cl. 148-175.000.

Bigbee, Marvin L.; Lindstrom, Harold R.; and Ryan, Edward C., to Deere & Company. Feed grinding and mixing apparatus. 4,201,348, Cl. 241-101.00B.

Bihl, Paul R.: *See—*
Krug, Martin; and Bihl, Paul R., 4,201,064, Cl. 62-239.000.

Bio-Rad Laboratories, Inc.: *See—*
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,201,763, Cl. 424-8.000.

Birch, Arthur D. Portable disassemblable stand for weight lifting equipment. 4,201,380, Cl. 272-117.000.

Bizzak, Frank W., to Motorola, Inc. Pointer and scale indicating assembly. 4,201,148, Cl. 116-241.000.

Black, Milton W. Method and means for heating by wood burning. 4,201,185, Cl. 126-77.000.

Blanc, Roger; and Jorcin, Serge. Apparatus for drying boots. 4,200,993, Cl. 34-104.000.

Blanken, Thomas C.; and Schellekens, Joannes C. A., to Shell Oil Company. Bituminous carpet backing. 4,201,812, Cl. 428-95.000.

Blessing, Hubert, to Levi Strauss & Co. Sew length control and measuring apparatus. 4,201,145, Cl. 112-306.000.

Blount, David H. Process to produce allyl halides copolymers. 4,201,702, Cl. 260-28.5AS.

Bockwinkel, Joe L.: *See—*
Barker, Craig S.; and Bockwinkel, Joe L., 4,201,614, Cl. 156-273.000.

Bodkin, Lawrence E. Bow having a self held cock position. 4,201,183, Cl. 124-24.00R.

Bodlaj, Viktor, to Siemens Aktiengesellschaft. Device/process for contact free distance and thickness measurement. 4,201,475, Cl. 356-381.000.

Boehringer Ingelheim GmbH: *See—*
Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., 4,201,211, Cl. 128-268.000.
Weber, Karl-Heinz; Bauer, Adolf; and Langbein, Adolf, 4,201,712, Cl. 260-244.400.

Boeing Company, The: *See—*
Douglas, Orva H.; and Mendoza, Quinciano G., 4,201,922, Cl. 290-38.00R.

Boeniger, Regula: *See—*
Krasnobajew, Victor; and Boeniger, Regula, 4,201,857, Cl. 525-398.000.

Bogard, William E.: *See—*
De Martelaere, David L.; and Bogard, William E., 4,201,056, Cl. 60-584.000.

Bokelmann, Horst: *See—*
Patzelt, Heinrich; and Bokelmann, Horst, 4,201,321, Cl. 222-478.000.

Bona, Constantin: *See—*
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, 4,201,768, Cl. 424-92.000.

Bondpers, Per-Erik: *See—*
Thomsen, Ove; and Bondpers, Per-Erik, 4,201,711, Cl. 264-157.000.

Bonomo, Melvin E., to M & W Gear Company. Pressure responsive sensing device. 4,201,081, Cl. 73-141.00R.

Bonum-Werk Inhaber Friedrich Hetzmannseder: *See—*
Hrabik, Heinrich, 4,201,296, Cl. 206-205.000.

Borg-Warner Corporation: *See—*
Halpern, Yuval; and Fleenor, Clifton T., 4,201,705, Cl. 260-45.8NT.

Bormann, Dieter; Knabe, Bernd; Schrinner, Elmar; and Worm, Manfred, to Hoechst Aktiengesellschaft. 7[(2-Amino-thiazol-4-yl)glyoxylamido]-cephem derivatives and processes for their preparation. 4,201,779, Cl. 424-246.000.

Borstelmann, Wolfgang, to Holstein und Kappert GmbH. Machine for the filling of liquids into containers. 4,201,249, Cl. 141-39.000.

Bossetti, Renato, to S.I.T.I. Societa Impianti Termoelettrici Industriali (s.a.s.). Oven for firing ceramic material or the like. 4,201,542, Cl. 432-128.000.

Bott, Theodore R.: *See—*
Ellis, Stephen R.; Bott, Theodore R.; Kay, Howard E.; and Hughes, Noel, 4,201,736, Cl. 261-98.000.

Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., to International Business Machines Corporation. Copy production machines having job separation capabilities. 4,201,464, Cl. 355-14.00R.

Bouchard, Andre C.: *See—*
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,201,540, Cl. 431-361.000.

Bouffard, Jean: *See—*
Walling, Jorg-Hein; and Bouffard, Jean, 4,201,250, Cl. 141-250.000.

Bouwhuis, Gijsbertus: *See—*
van der Wal, Johannes; and Bouwhuis, Gijsbertus, 4,201,954, Cl. 331-94.50C.

Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., to Charles Stark Draper Laboratory, Inc., The. Adaptive controller for ocean characteristic measurement system. 4,202,034, Cl. 364-420.000.

Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., to Charles Stark Draper Laboratory, Inc., The. Buoyancy control for ocean characteristic measurement system. 4,202,036, Cl. 364-420.000.

Bowen, John C., to Ametek, Inc. Solar energy collector assembly and sub-assemblies thereof. 4,201,190, Cl. 126-450.000.

Bower, David S.; and Smith, Fred J., to Digital Products Corporation. Telephone polling apparatus using a plurality of timers to detect the line conditions. 4,201,896, Cl. 179-18.00B.

Boyama, Kimihiro: *See—*
Nanjo, Hirotoshi; and Boyama, Kimihiro, 4,201,171, Cl. 123-148.0AC.

Boyce, Arthur V., Jr.: *See—*
Klingaman, Richard J.; and Boyce, Arthur V., Jr., 4,201,300, Cl. 206-45.190.

Boyer, George L.: *See—*
Chrisler, Vivian L., deceased; Gilbert, William H.; and Boyer, George L., 4,202,047, Cl. 367-1.000.

Bozal Gonzalez, Jose L. Cardiac pace-maker. 4,201,219, Cl. 128-419.0PG.

Bradley, Margaret E. Surgical apparatus for use in syringing a patient's ear. 4,201,212, Cl. 128-275.000.

Brailsford, Harry B.: *See—*
Davenport, Anthony F.; and Brailsford, Harry B., 4,201,017, Cl. 51-163.200.

Braithwaite, David G.: *See—*
Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,201,758, Cl. 423-497.000.

Braithwaite, Dennis: *See—*
Kitchen, Roger M.; and Braithwaite, Dennis, 4,200,955, Cl. 16-106.000.

Brand, Wilhelm, to Hermann Berstorff Maschinenbau GmbH. Extrusion apparatus for manufacturing foamed thermoplastic material. 4,201,480, Cl. 366-79.000.

Brandenburg, Frank J., Jr. Method of venting heat from homes. 4,201,121, Cl. 98-33.00R.

Brandenstein, Manfred: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,282, Cl. 192-98.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,424, Cl. 308-6.00C.

Branislav, Bilen. Device for relieving the rudder shaft in ships. 4,201,146, Cl. 114-163.000.

Braun, Gunther. Vibrating roller. 4,201,493, Cl. 404-117.000.

Brauner, Dieter: *See—*
Imhauser, Gunter; Brauner, Dieter; and Muschelknautz, Edgar, 4,201,482, Cl. 366-98.000.

Breeden, Robert H.; Farrell, Robert G.; and Taylor, Henry D., to Sperry Rand Corporation. Power transmission. 4,201,052, Cl. 60-445.000.

Brems, John H. Pallet registry system. 4,201,284, Cl. 198-345.000.

Breston, Michael P.: *See—*
Stahl, Alfred R., 4,201,130, Cl. 100-271.000.

Brewer, Donaldee: *See—*
Brodie, Edwin T.; and Brewer, Donaldee, 4,201,610, Cl. 156-96.000.

Brewster, Philip W., to Exxon Research & Engineering Co. Alkanol solutions of organo molybdenum complexes as friction reducing antiwear additives. 4,201,683, Cl. 252-32.70E.

Bricker, Jack A., to PPG Industries, Inc. Position selectable glass surface temperature scanner. 4,201,563, Cl. 65-162.000.

Bridgestone Tire Company Limited: *See—*
Goshima, Norio; and Matsuda, Akira, 4,201,147, Cl. 116-34.00B.

Briet, Philippe; Berthelon, Jean-Jacques; and Depin, Jean-Claude, to Lipha Lyonnaise Industrielle Pharmaceutique. Antidepressant substituted hexahydro benzopyrano [3,2-c] pyridines. 4,201,783, Cl. 424-256.000.

Briggs, Eugene C.; and Gustafson, William E., to Keohring Company. High pressure heater. 4,201,544, Cl. 432-222.000.

Brisson, John R., to Lodal, Inc. Platen slide cover for refuse handling systems. 4,201,508, Cl. 414-525.00R.

Bristol-Myers Company: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,201,860, Cl. 544-277.000.

British Aircraft Corporation Limited: *See—*
Baron, John R., 4,201,979, Cl. 340-181.000.

British Steel Corporation: *See—*
Hyde, Eric A., 4,201,630, Cl. 202-241.000.

Brochstein, Eugenius: *See—*
Ostersetzer, Shlomo; and Brochstein, Eugenius, 4,201,526, Cl. 418-136.000.

Brodie, Edwin T.; and Brewer, Donaldee, to Bandag Incorporated. Tire retreading method using pressure vessel. 4,201,610, Cl. 156-96.000.

Brooks, Ronald E.: *See—*
Slusarczuk, George M. J.; and Brooks, Ronald E., 4,201,831, Cl. 428-403.000.

Brouthers, Paul E., to D.W.A. Associates, Inc. Gun sight. 4,200,989, Cl. 33-257.000.

Brown, Claud L. Method of increasing extractable oleoresinous and tall oil material from pine wood. 4,201,566, Cl. 71-92.000.

Brown, Richard I.; and Leaf, Roger L., to Baxter Travenol Laboratories, Inc. Peristaltic pump. 4,201,525, Cl. 417-477.000.

Brozenske, Donald A.: *See—*
Garten, Herbert; and Brozenske, Donald A., 4,201,426, Cl. 308-26.000.

Brumlik, George C. Cellular linear filaments with transverse partitions. 4,201,813, Cl. 428-97.000.

Brunsch, Klaus: *See—*
Weiland, Emil; Schindler, Rudolf; and Brunsch, Klaus, 4,201,815, Cl. 428-113.000.

Brunswick Corporation: *See—*
Bankstahl, Herbert A., 4,201,391, Cl. 277-30.000.

Brunswick Industrial Supply Company: *See—*
Eagens, Jeffrey D., 4,201,350, Cl. 241-298.000.

Bruyere, Marcel F. M., to Societe dite: Berthiez. Machines, particularly machine-tools, driven through a gear device. 4,201,100, Cl. 82-2.00D.

Brynn, Gerald E., to General Motors Corporation. Passive lap and shoulder belt system. 4,201,401, Cl. 280-803.000.

Buchanan, Wes. Toilet seat volatile gas incinerator. 4,200,940, Cl. 4-348.000.

Bucher-Guyer AG.: *See—*
Vogt, Willy, 4,201,530, Cl. 425-260.000.

Buckles, Richard G.; and Leeper, Harold M., to ALZA Corporation. Bladder for liquid dispenser. 4,201,207, Cl. 128-214.00F.

Buggele, Alvin E. Fluid refining apparatus. 4,201,629, Cl. 202-158.000.

Bullwinkle, Benjamin B.: *See—*
Paptzun, George J.; Hall, Collin C.; and Bullwinkle, Benjamin B., 4,201,365, Cl. 251-328.000.

Bumgarner, Robert L.; and Knutson, Arthur O. Bag. 4,201,299, Cl. 206-554.000.

Bunker, David D., to Bunker Instruments, Inc. Electric stringed instrument. 4,201,108, Cl. 84-1.160.

Bunker Instruments, Inc.: *See—*
Bunker, David D., 4,201,108, Cl. 84-1.160.

Burd, John W.; Stone, Bobbie D.; Tucker, William F.; and Gupta, Kedar P., to Monsanto Company. Apparatus for zone refining. 4,201,746, Cl. 422-250.000.

Burgett, Michael W.: *See—*
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,201,763, Cl. 424-8.000.

Burgoon, Jack L.; and Smith, William R., to Scott & Fetzer Company, The. Machine for cleaning surfaces. 4,200,951, Cl. 15-321.000.

Burns, Chester A., to Cordura Marketing, Inc. Data telecommunications terminal. 4,201,887, Cl. 179-2.0DP.

Burns Foods Limited of Calgary, Alberta, Canada: *See—*
Cheney, Earl J., 4,200,959, Cl. 17-32.000.

Burns, Robert V.: *See—*
Dorth, John P.; Burns, Robert V.; and Tarr, Lloyd A., 4,201,897, Cl. 179-84.00R.

Burridge, Len, Jr., to Haag, Ronald G. Combined hat and throwable amusement device. 4,201,009, Cl. 46-1.00F.

Burroughs Corporation: *See—*
Quadri, Farooq M., 4,202,043, Cl. 365-15.000.

Burroughs, Reginald L.: *See—*
Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., 4,201,596, Cl. 127-37.000.

Bursack, William W.; and Tromborg, Erik T., to Honeywell Inc. Sampling system for mass spectrometer. 4,201,913, Cl. 250-288.000.

Burton, Parsons & Company, Inc.: *See—*
Trager, Seymour F.; and Green, Keith, 4,201,706, Cl. 424-78.000.

Buske, Walter E.; and Hoyt, Charles W., to Wolverine Corporation. Material treatment system, 4,201,499, Cl. 406-75.000.

Busker, Leroy H.: *See—*
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., 4,201,624, Cl. 162-205.000.

Butler, Dennis L., to Bass Research and Design, Inc. Compound bow. 4,201,182, Cl. 124-24.00R.

Byam, Peter M., to Fasco Industries, Inc. Method of manufacturing a choke control device. 4,201,735, Cl. 261-39.00E.

C.G.R. MeV: *See—*
Tronc, Dominique; and Levaillant, Claude, 4,201,920, Cl. 250-492.00B.

Calderon, Reynaldo; and Towell, Billy H., to Texaco Inc. Rotatable washer self-cleaning helical spring screen and methods. 4,201,266, Cl. 166-231.000.

Caldwell, Dan H., to Fargo Manufacturing Company, Inc. Grounding connector. 4,201,433, Cl. 339-14.00L.

California Institute of Technology: *See—*
Margolis, Jack S.; McCleese, Daniel J.; Shumate, Michael S.; and Seaman, Clay H., 4,201,468, Cl. 356-28.500.

Calmes, Jean P.: *See—*
Passoni, Teresio; Mascheroni, Alberto; and Calmes, Jean P., 4,201,097, Cl. 74-529.000.

Calvert, Rodney K.; and Fishback, Alton J., to Mead Corporation, The. Machine for manipulating a collapsed basket style carton into set-up condition and for adhering end flaps to end panels at each end of the carton. 4,201,118, Cl. 93-39.00R.

Cambio, Orlando D., Jr., to Abbott Laboratories. Sterile connecting device. 4,201,208, Cl. 128-214.200.

Camco, Incorporated: *See—*
Thomason, James M.; and Logan, Francis D., 4,201,265, Cl. 166-117.500.

Cameron Iron Works, Inc.: *See—*
Troxell, John N., Jr., 4,201,242, Cl. 137-531.000.

Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, to Eastman Kodak Company. Photographic film units containing a polymeric mordant which covalently bonds with certain dyes. 4,201,840, Cl. 430-17.000.

Campion, John S.; and Steed, Van E. Screen. 4,201,449, Cl. 350-117.000.

Canada-Cities Service, Ltd.: *See—*
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Kuehn, Lorne A.; and Pogorski, Louis A., 4,201,206, Cl. 128-201.130.

Canon Kabushiki Kaisha: *See—*
Harigaya, Isao; Taguchi, Tetsuya; Ito, Fumio; and Yazaki, Mutsunobu, 4,201,463, Cl. 354-86.000.
Hoshito, Kazuo; Sato, Hideaki; Kitamura, Takashi; and Masegi, Koichi, 4,201,994, Cl. 346-108.000.
Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, 4,201,441, Cl. 350-3.610.

Canron Corporation: *See—*
Shupe, Charles A., 4,201,602, Cl. 148-146.000.

Cantelon, Ruth F. Game apparatus. 4,201,388, Cl. 273-251.000.

Carballes, Jean-Claude, to Thomson-CSF. Diode capable of alternately functioning as an emitter and detector of light of the same wavelength. 4,202,000, Cl. 357-19.000.

Carbone, Victor T.: *See—*
Clark, Stephen C.; and Carbone, Victor T., 4,201,905, Cl. 219-121.00L.

Carden, Douglas D., to Airco, Inc. Nebulizing apparatus. 4,201,737, Cl. 261-142.000.

Carl Schenck AG: *See—*
Guyot, Volker; Maus, Otfrid; and Mueller, Martin, 4,201,091, Cl. 73-462.000.

Carl Zeiss-Stiftung: *See—*
Kurbitz, Gunther; Wegener, Walter; and Weinheimer, Hans-Richard, 4,201,931, Cl. 315-10.000.

Carlson, Robert E., to TRW Inc. Pump and motor assembly. 4,201,521, Cl. 417-53.000.

Carlton, Christopher F. Symmetrical speaker having structural reinforcing ports. 4,201,274, Cl. 181-156.000.

Caron, LaVerne A., to Chrysler Corporation. Electronic circuit for use in a variety of engine control systems. 4,201,926, Cl. 307-141.000.

Carpenter Technology Corporation: *See—*
Henthorne, Michael; and DeBold, Terry, 4,201,575, Cl. 75-122.000.

Carr, Harold F., Jr.; and Humphries, David F., to Ernest Holmes Division Dover Corporation. Towing apparatus. 4,201,399, Cl. 280-402.000.

Carrier Corporation: *See—*
Griffin, Charles K., 4,201,065, Cl. 62-510.000.
Heffernan, Edward J., 4,201,061, Cl. 62-98.000.
Kolk, Michael R.; Beck, Ralph E.; and Hoyle, Roy E., 4,201,516, Cl. 416-213.00R.

Carswell, William: *See—*
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, 4,201,283, Cl. 194-1.00A.

Carter, James G.: *See—*
Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., 4,201,692, Cl. 252-372.000.

Case, Marianna. Towel having inflatable pillow incorporated therein. 4,200,942, Cl. 5-419.000.

Case, Richard P., to White Consolidated Industries, Inc. Electronic liquid level monitor and controller. 4,201,240, Cl. 137-392.000.

Cassidy, Frederick; and Wootton, Gordon, to Beecham Group Limited. Oxy-alkylamino acids and esters. 4,201,864, Cl. 560-39.000.

Castleman, B. Wayne, to United States of America, Air Force. Anode assisted sputter etch and deposition apparatus. 4,201,654, Cl. 204-298.000.

Castolin GmbH: *See—*
Huhne, Erwin D.; and Anders, Jochen H., 4,201,341, Cl. 239-79.000.

Caterpillar Tractor Co.: *See—*
Muntjanoff, John R., 4,201,510, Cl. 414-730.000.

Cathell, Franklin J., to Qualidyne Systems, Inc. Power inverter having parallel switching elements. 4,201,957, Cl. 331-110.000.

Celanese Corporation: *See—*
Hannon, Martin J.; and Greene, Richard K., 4,201,834, Cl. 428-407.000.
Hughes, O. Richard, 4,201,714, Cl. 260-340.90R.
Hughes, O. Richard, 4,201,728, Cl. 568-454.000.
Nowak, Michael T., 4,201,642, Cl. 204-159.170.
Slinkard, William E., 4,201,868, Cl. 560-232.000.

Cemsto B.V.: *See—*
Smies, Jan F.; and Dijkmans, Leo, 4,200,952, Cl. 15-322.000.

Cerla N.V.: *See—*
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., 4,201,512, Cl. 415-90.000.

Cessna Aircraft Company, The: *See—*
Martin, Robert J., 4,201,116, Cl. 91-387.000.

Chalmers, Walter M., to Ferranti Limited. Electric connectors. 4,201,432, Cl. 339-14.00R.

Chamberlain, Neal C., to FMC Corporation. Automatic corn cutter feeder. 4,201,285, Cl. 198-400.000.

Champion International Corporation: *See—*
Austin, John J., 4,201,331, Cl. 229-39.00R.
Roccaforte, Harry I., 4,201,294, Cl. 206-45.140.
Roccaforte, Harry I., 4,201,329, Cl. 229-17.0SC.

Chan, Ka-Kong; and Pawson, Beverly A., to Hoffmann-La Roche Inc. Fluorinated aromatic polyenes. 4,201,727, Cl. 568-442.000.

Chandler, Ronald W.: *See—*
Mueller, Frederick N.; and Chandler, Ronald W., 4,200,982, Cl. 33-126.600.

Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., to ALZA Corporation; and Boehringer Ingelheim GmbH. Therapeutic system for administering clonidine transdermally. 4,201,211, Cl. 128-268.000.

Chang, Chin H.: *See—*
Savage, David W.; Chang, Chin H.; and Longo, John M., 4,201,665, Cl. 210-32.000.

Charbonneau, Jack W.; Law, Richard S.; Ludwig, Willis J.; and Otteson, Wayne O., to Minnesota Mining and Manufacturing Company. Pressure-sensitive marking materials. 4,201,404, Cl. 282-27.500.

Charles, Georges M., to Potain Poclain Materiel (P.P.M.). Device for handling containers. 4,201,511, Cl. 414-738.000.

Charles, Paul A. S. Solar heat collector with channeled panel. 4,201,194, Cl. 126-449.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.

Chedid, Louis: *See—*
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, 4,201,768, Cl. 424-92.000.

Chellis, Leroy N.; and Ellis, Theron L., to International Business Machines Corporation. Dimensionally stable laminated printed circuit cores or boards and method of fabricating same. 4,201,616, Cl. 156-307.100.

Chen, Chia-Ming. Phenol-aldehyde resin composition containing pecan pith extract and an aldehyde. 4,201,699, Cl. 260-7.000.

Chen, Chia-Ming. Phenol-aldehyde resin composition containing peanut hull extract and an aldehyde. 4,201,700, Cl. 260-7.000.

Chen, Chia-Ming. Organic phenol extract compositions of pecan pith agricultural residues and method. 4,201,851, Cl. 528-1.000.

Chen, Kuang S.: *See—*
Wan, Jeffrey K. S.; and Chen, Kuang S., 4,201,638, Cl. 204-158.00R.

Cheney, Earl J., to Burns Foods Limited of Calgary, Alberta, Canada. Apparatus for forming bacon product analogues and the like. 4,200,959, Cl. 17-32.000.

Cherevaty, Anatoly A.: *See—*
Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D., 4,201,882, Cl. 13-27.000.

Cheung, Tak M.: *See—*
Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., 4,201,773, Cl. 424-180.000.

Chevron Research Company: *See—*
Jensen, Harbo P., 4,201,658, Cl. 208-39.000.

Chippewa Paper Products Corporation: *See—*
Melehan, George, 4,201,028, Cl. 53-137.000.

Cho, Alfred Y.; and Schneider, Martin V., to Bell Telephone Laboratories, Incorporated. Devices with Schottky metal contacts filling a depression in a semi-conductor body. 4,201,998, Cl. 357-15.000.

Chouteau, Jacques; and Magne, Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Process for treating a flow of tobacco leaves. 4,201,229, Cl. 131-146.000.

Chrisler, Cecelia B., executrix: *See—*
Chrisler, Vivian L., deceased; Gilbert, William H.; and Boyer, George L., 4,202,047, Cl. 367-1.000.

Chrisler, Vivian L., deceased (by Chrisler, Cecelia B., executrix); Gilbert, William H.; and Boyer, George L., to United States of America, Navy. Acoustic jammer and torpedo decoy. 4,202,047, Cl. 367-1.000.

Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., to United States of America, Energy. Gas mixtures for gas-filled particle detectors. 4,201,692, Cl. 252-372.000.

Chrysler Corporation: *See—*
Caron, LaVerne A., 4,201,926, Cl. 307-141.000.

Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P. Method of rolling section billets. 4,201,075, Cl. 72-204.000.

Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., to American Can Company. Continuous process for cellulose saccharification. 4,201,596, Cl. 127-37.000.

Church, Shirley L.; and Hilts, Loren M., to Goodyear Tire & Rubber Company, The. Separation apparatus. 4,201,628, Cl. 202-158.000.

Chuss, David M.; and Pinckney, Benjamin H., to Bethlehem Steel Corporation. Empty hopper detector. 4,201,315, Cl. 222-66.000.

Chuss, David M.; and Scheirer, James W., to Bethlehem Steel Corporation. Coke quenching practice for one-spot cars. 4,201,627, Cl. 201-39.000.

Ciabatti, Romeo: *See—*
Guzzi, Umberto; and Ciabatti, Romeo, 4,201,865, Cl. 560-121.000.

Ciavatta, Vitale G., to Mare Corporation. Amino acid-vitamin formulations for skin, hair and scalp conditioners. 4,201,235, Cl. 132-7.000.

Ciba-Geigy Corporation: *See—*
Daly, James E., 4,201,762, Cl. 423-633.000.
Zondler, Helmut; and Lehmann, Hans, 4,201,854, Cl. 528-121.000.

Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for obtaining agents having mitogenic and/or adjuvant properties from Nocardia cells and compositions containing such agents. 4,201,768, Cl. 424-92.000.

Cirami, Salvatore, to Myles, Jack, a part interest. Semi-automatic gear-shift for dual derailleur bicycle. 4,201,095, Cl. 74-217.00B.

Citizen Watch Co., Ltd.: *See—*
Nakayama, Yasuaki, 4,201,040, Cl. 368-35.000.

Clark, Stephen C.; and Carbone, Victor T., to Houdaille Industries, Inc. Laser cutting head attachment for punch presses. 4,201,905, Cl. 219-121.00L.

Clark, William E., to Continental Oil Company. Method for the conversion of calcium sulfoxy compounds into calcium carbonate compounds in sulfur oxide treatment processes. 4,201,754, Cl. 423-242.000.

Clark, William E., to Continental Oil Company. Method for regenerating calcium sulfoxy compounds produced in the combustion of carbonaceous fuels in fluidized beds. 4,201,759, Cl. 423-567.00A.

Cleary, Gary W.: *See—*
Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., 4,201,211, Cl. 128-268.000.

Coal Industry (Patents) Limited: *See—*
Randell, Arthur A.; and Hodgkinson, Norman, 4,201,676, Cl. 252-1.000.

Coastal Abrasive & Tool Company Inc.: *See—*
Roth, Robert B., 4,200,965, Cl. 29-81.00J.

Cobb, Clyde E.; and Muths, Donald A., to Textron Inc. Electrohydraulic servovalve having removably attached feedback element. 4,201,114, Cl. 91-3.000.

Cobeen, Charles P.: *See—*
Friedman, Stanley I.; Cobeen, Charles P.; and Jacobsthal, Herbert K., 4,201,980, Cl. 340-347.0DD.

Codman & Shurtleff, Inc.: *See—*
Oser, Zale, 4,200,939, Cl. 3-1.900.
Townsend, Paul R., 4,201,213, Cl. 128-312.000.

Coe, Noel N.: *See—*
Saeman, Walter C.; Coe, Noel N.; and Faust, John P., 4,201,756, Cl. 423-266.000.

Coen Company, Inc.: *See—*
Voorheis, Temple S., 4,201,539, Cl. 431-354.000.

Cohen, Hyman: *See—*
Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, 4,201,840, Cl. 430-17.000.

Cohen, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Intermediates for steroid total synthesis process utilizing asymmetric induction. 4,201,869, Cl. 560-255.000.

Cohen, Stuart C.; and Rosenquist, Niles R., to General Electric Company. Flame-retarded thermoplastic polyester compositions having improved arc resistance and process for preparing same. 4,201,704, Cl. 260-40.00R.

Cole, Bernard M. Spray decoration. 4,201,806, Cl. 428-4.000.

Cole, Robert J. Extrusion dies of spiral mandrel type. 4,201,532, Cl. 425-380.000.

Colgate-Palmolive Company: *See—*
Fischer, Charles F.; and Marchesani, Cesare N., 4,201,528, Cl. 425-209.000.
Klingaman, Richard J.; and Boyce, Arthur V., Jr., 4,201,300, Cl. 206-45.190.
Klingaman, Richard J., 4,201,316, Cl. 222-80.000.
Perla, Guilio; and D'Arcangeli, Alessandro, 4,201,743, Cl. 264-148.000.

Colite Industries, Inc.: *See—*
Witt, Frank A., 4,201,003, Cl. 40-545.000.
Witt, Frank A., 4,201,004, Cl. 40-545.000.

College Research Corporation: *See—*
Evans, Marvin; and Miller, David H., 4,201,370, Cl. 266-44.000.

Collier, David L. Cabinet drawer guide and slide connector. 4,201,429, Cl. 312-330.00R.

Combustion Engineering, Inc.: *See—*
Nofal, Abb A., 4,201,755, Cl. 423-242.000.

Combustion Equipment Associates, Inc.: *See—*
Lyshkow, Norman A.; and Lewis, David F., 4,201,551, Cl. 44-1.00D.

Cominco Ltd.: *See—*
Swinkels, Godefridus M.; and Maschmeyer, Dennis G., 4,201,748, Cl. 423-27.000.

Commissariat a l'Energie Atomique: *See—*
Saglio, Robert, 4,201,971, Cl. 367-95.000.

Communications Satellite Corporation: *See—*
Welti, George R., 4,201,963, Cl. 333-106.000.
Welti, George R., 4,201,992, Cl. 343-840.000.

Compagnie Francaise de Raffinage: *See—*
Legendre, Michel; and Engelhard, Philippe, 4,201,696, Cl. 252-442.000.

Compagnie Internationale pour l'Informatique: *See—*
Gosset, Cyrille; and Thomas, Jean-Marc, 4,201,488, Cl. 400-121.000.

Condec Corporation: *See—*
Phipps, Arthur L., 4,201,534, Cl. 425-461.000.

Coney, Charles H., to Eastman Kodak Company. Dielectric coating compositions from polyesters and rosin esters. 4,201,701, Cl. 260-22.0CQ.

Conn, Thomas E.; and Edwards, John R., to Beckman Instruments, Inc. Microtest plate carrier overspeed protection device. 4,201,335, Cl. 233-26.000.

Connell, Talbert D., to Crutcher Resources Corporation. Pivotal backup pads for welding. 4,201,326, Cl. 228-50.000.

Connors, John P.; Nordmann, Bernard J.; Wainland, David M.; and Bell, Henry P., to United States of America, Navy. Digital to analog interface for simultaneous analog outputs. 4,202,042, Cl. 364-900.000.

Conoco, Inc.: *See—*
Anderson, Ardis L.; and Huyser, Marvin E., 4,201,657, Cl. 208-23.000.
Peterson, Marvin L.; and Maxson, Orwin G., 4,201,637, Cl. 204-148.000.

Continental Group, Inc., The: *See—*
Hekal, Ihab M., 4,201,664, Cl. 210-23.00H.

Continental Oil Company: *See—*
Clark, William E., 4,201,754, Cl. 423-242.000.
Clark, William E., 4,201,759, Cl. 423-567.00A.
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,201,655, Cl. 208-8.0LE.

Contronic Controls Limited: *See—*
Humphries, Peter E., 4,201,982, Cl. 340-506.000.

Cook, John S., to Mattel, Inc. Toy motorcycle. 4,201,011, Cl. 46-209.000.

Copeland, James S.; and Primm, Raymond, to Innovation Industries, Inc. Photosensor assembly. 4,201,910, Cl. 250-216.000.

Cordura Marketing, Inc.: *See—*
Burns, Chester A., 4,201,887, Cl. 179-2.0DP.

Corinth Co. Inc.: *See—*
Frantello, Alfred A., 4,201,034, Cl. 56-295.000.

Corning Glass Works: *See—*
Pierson, Joseph E.; and Tarcza, Walter H., 4,201,561, Cl. 65-30.00R.
Rittler, Hermann L., 4,201,559, Cl. 65-2.000.

Corrigan, Francis R., to General Electric Company. Large boron nitride abrasive particles. 4,201,757, Cl. 423-290.000.

Costruzioni Meccaniche Lonati S.p.A.: *See—*
Lonati, Francesco, 4,201,067, Cl. 66-222.000.

Cotton, John M.: *See—*
Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., 4,201,889, Cl. 320-68.000.
Lawrence, Alan J.; Cotton, John M.; and Denenberg, Jeffrey N., 4,201,891, Cl. 370-58.000.

Couch, Philip R.; and Philpott, David A., to International Standard Electric Corporation. Digital data transmission system. 4,201,884, Cl. 375-53.000.

Coverley, Roger D. Large area cleaning system. 4,200,950, Cl. 15-314.000.

Cowsar, Donald R., to United States of America, Army. Novel fabric containing microcapsules of chemical decontaminants encapsulated within semipermeable polymers. 4,201,822, Cl. 428-240.000.

Cox, Clayton E. Cornerboard for pallets. 4,201,138, Cl. 108-55.100.

Cox, John W., to Transworld Drilling Company. Submersible pipe installation systems. 4,201,074, Cl. 72-168.000.

Coxon, DeWayne A.; and Gates, Timothy P., to Jordan College. Solar heat air system. 4,201,192, Cl. 126-422.000.

Coyne, Roy J.: *See—*
Lombardi, Louis J.; and Coyne, Roy J., 4,201,842, Cl. 430-281.000.

Crankshaw, Michael; and Kucheck, Leo, to Label-Aire Inc. Label applicator for irregularly shaped articles. 4,201,621, Cl. 156-567.000.

Crawford, Henry; and Jessiman, Alexander F., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Release hook assemblies. 4,201,410, Cl. 294-83.00R.

Crawford, Kenneth Z., to Polycarrier Company. Bottle carrier. 4,201,322, Cl. 224-45.0AB.

Crawford, Lynn D.: *See—*
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,201,237, Cl. 135-2.000.

Createchnil Patent AG: *See—*
Zapp, Walter, 4,201,489, Cl. 400-485.000.

Crossett, E. S.; and McCormick, Willard L. Apparatus and method for closing a severed sternum. 4,201,215, Cl. 128-335.000.

Croucher, Robert L.; and Robson, Ernest G. Earth moving equipment. 4,201,001, Cl. 37-190.000.

Crowe, Robert E. Installing panels of interlocking blocks. 4,201,494, Cl. 405-17.000.

Crutcher Resources Corporation: *See—*
Connell, Talbert D., 4,201,326, Cl. 228-50.000.

Crutchfield, Marvin M.; Langguth, Robert P.; and Mayer, James M., to Monsanto Company. Chloroimide fabric bleaches. 4,201,687, Cl. 252-102.000.

Crutchfield, Marvin M.; and Upton, Charles J., to Monsanto Company. Method of preparing polyacetal carboxylates. 4,201,858, Cl. 528-232.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Dogliotti, Renato; and Pirani, Giancarlo, 4,201,909, Cl. 455-608.000.

Cully, Maryann; Pines, Arthur N.; Metzler, Richard B.; and Babian, Gunther W., to Union Carbide Corporation. Radiation curable silicone release compositions. 4,201,808, Cl. 428-40.000.

Culver, Irven H.; and Szymber, Oleg, to Primus Mfg., Inc. Visual indicator for alternate units of measure. 4,200,985, Cl. 33-141.00R.

Cummings, Richard D., to Exxon Research & Engineering Co. Solar collector and heat trap. 4,201,188, Cl. 126-429.000.

Curran, Matthew J.: *See—*
Arendt, Ronald H.; and Curran, Matthew J., 4,201,760, Cl. 423-600.000.

Currell, Herbert H. Methods of and apparatus for manufacturing pile fabrics. 4,201,608, Cl. 156-72.000.

Curtius, Horst: *See—*
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.

Cycowicz, Izchak: *See—*
Gill, Glenn G.; and Cycowicz, Izchak, 4,200,941, Cl. 5-13.000.

Czerwinski, Watson P., to United States of America, Army. Wideband antenna with frequency dependent ferrite core inductor. 4,201,989, Cl. 343-715.000.

D.W.A. Associates, Inc.: *See—*
Brouthers, Paul E., 4,200,989, Cl. 33-257.000.

Daane, Robert A.: *See—*
Stibbe, Paul H.; and Daane, Robert A., 4,201,323, Cl. 226-97.000.

Dahlen, John M.: *See—*
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.

Dahlstrom, Robert V.: *See—*
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,201,763, Cl. 424-8.000.

Daimler-Benz Aktiengesellschaft: *See—*
Reidelbach, Willi; and Schmid, Walter, 4,201,418, Cl. 297-474.000.

Dainippon Jochugiku Kabushiki Kaisha: *See—*
Katsuda, Yoshio; and Minamite, Yoshihiro, 4,201,787, Cl. 424-304.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Tomita, Masatsugu; Takase, Yoshiyuki; and Komiya, Toshio, 4,201,781, Cl. 424-246.000.

Daly, James E., to Ciba-Geigy Corporation. Transparent red iron oxide pigments and process for producing same. 4,201,762, Cl. 423-633.000.

Damerau, Herbert R. Liquid filter with novel seal means. 4,201,675, Cl. 210-387.000.

Damon Corporation: *See—*
Nolan, Thomas E., Jr., 4,201,066, Cl. 64-1.00V.

D'Angelo, Augustino. Toothbrush. 4,201,490, Cl. 401-175.000.

Danko, Oliver L.; Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; and Kish, Edward E. Bellows valve. 4,201,366, Cl. 251-335.00B.

D'Arcangeli, Alessandro: *See—*
Perla, Guilio; and D'Arcangeli, Alessandro, 4,201,743, Cl. 264-148.000.

Darda, Siegfried: *See—*
Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., 4,201,211, Cl. 128-268.000.

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Aziz, Paul D.; and Hincks, Robert W., 4,201,402, Cl. 282-9.00A.

Datwyler, Max, to Max Datwyler & Co. Package arrangement for a doctor blade, especially for an intaglio or gravure printing doctor. 4,201,297, Cl. 206-349.000.

Dau, Gary J., to Electric Power Research Institute, Inc. Method of detecting and monitoring a leak caused by a through wall crack in a high pressure fluid system. 4,201,092, Cl. 73-587.000.

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Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

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Davidson, Bruce L.: *See—*
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,201,780, Cl. 424-246.000.

Davidson, Thomas L., to Robertson Paper Box Co., Inc. Display carton. 4,201,291, Cl. 206-44.00R.

Davidson, Thomas L.; and Gonet, Charles F., to Robertson Paper Box Co., Inc. Dispenser carton. 4,201,292, Cl. 206-44.00R.

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Davis, Philip S.: *See—*
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,201,669, Cl. 210-58.000.

Day, Flory M. Cutting tool. 4,201,501, Cl. 407-92.000.

Dayen, William R., to Gilbert Associates, Inc. Flue gas desulfurization process. 4,201,753, Cl. 423-242.000.

db Systems Ltd.: *See—*
Balde, Dan R., 4,201,278, Cl. 191-12.400.

De La Moneda, F. H., to International Business Machines Corporation. Ion-implanted layers with abrupt edges. 4,202,002, Cl. 357-22.000.

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Figge, Irving E.; and Dean, Edward H., 4,201,612, Cl. 156-224.000.

Deaton, Thomas M.: *See—*
Arendt, Henry P.; Deaton, Thomas M.; and Kohn, Gary A., 4,201,363, Cl. 251-62.000.

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DeBold, Terry: *See—*
Henthorne, Michael; and DeBold, Terry, 4,201,575, Cl. 75-122.000.

Deborah Services Limited: *See—*
Kitchen, Roger M.; and Braithwaite, Dennis, 4,200,955, Cl. 16-106.000.

Deepsea Ventures, Inc.: *See—*
Latimer, John P., 4,200,999, Cl. 37-54.000.

Deere & Company: *See—*
Bigbee, Marvin L.; Lindstrom, Harold R.; and Ryan, Edward C., 4,201,348, Cl. 241-101.00B.
Harvey, James R., 4,201,098, Cl. 74-761.000.

Deigner, Paul: *See—*
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.

Deinhammer, Wolfgang; and Spes, Hellmuth, to Wacker-Chemie GmbH. Process for the anilidization of carboxylic acid esters. 4,201,715, Cl. 260-345.70R.

Delaplace, Philippe; and Bernard, Pierre, to Lindauer Dornier Gesellschaft mbH. Process and apparatus for single-filling manufacture of double-nap fabrics. 4,201,248, Cl. 139-21.000.

De Laurentis, Angelo A., to Westinghouse Electric Corp. Magnetic core structure. 4,201,966, Cl. 336-217.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, to Wisconsin Alumni Research

Foundation. 24,24-Difluoro-1α,25-dihydroxycholecalciferol. 4,201,881, Cl. 568-819.000.
DeLuca, Paul V., to Porta Systems Corp. Electrode for telephone protector modules. 4,202,026, Cl. 361-119.000.
De Martelaere, David L.; and Bogard, William E., to Kent-Moore Corporation. Brake bleeder adapter. 4,201,056, Cl. 60-584.000.
Den Besten, Leroy E.; and O'Connell, James R. Mining machine bit and mounting thereof. 4,201,421, Cl. 299-86.000.
De Negris, Michael A.; and Lees, Philip, to United Technologies Corporation. Burner nozzle assembly for gas turbine engine. 4,201,046, Cl. 60-39.370.
Denenberg, Jeffrey N.: *See—*
Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., 4,201,889, Cl. 320-68.000.
Lawrence, Alan J.; Denenberg, Jeffrey N.; Rubinstein, Murray; and Upp, Daniel C., 4,201,890, Cl. 370-68.000.
Lawrence, Alan J.; Cotton, John M.; and Denenberg, Jeffrey N., 4,201,891, Cl. 370-58.000.
Dennehey, T. Michael; and Wolf, Ludwig, Jr., to Baxter Travenol Laboratories, Inc. Spike connector for solution bag. 4,201,406, Cl. 285-3.000.
DePaolo, George R., to American Cyanamid Company. Method for sizing and coloring textile materials. 4,201,803, Cl. 427-381.000.
Depas, Laddie A., Sr., to Miller, Maurice L.; and Thomas, Harold W., part interest to each. Fluid operated rotary valve. 4,201,422, Cl. 303-10.000.
Depin, Jean-Claude: *See—*
Briet, Philippe; Berthelon, Jean-Jacques; and Depin, Jean-Claude, 4,201,783, Cl. 424-256.000.
Dering, Charles R., to Glueck, Richard M. Shaft angle digitizer. 4,201,911, Cl. 250-231.0SE.
Derschmidt, Hans; and Sahlstorfer, Hermann, to Messerschmitt-Bolkow-Blohm GmbH. Rotor without flapping hinges and without lead-lag hinges. 4,201,515, Cl. 416-134.00A.
DeSoto, Inc.: *See—*
Amariti, Luigi, 4,201,685, Cl. 430-114.000.
Dettmer, Edward V., to Dow Chemical Company, The. Method and apparatus for reclaiming polymer from scrap plastic film rolls. 4,200,967, Cl. 29-426.200.
Deutsch Relays, Inc.: *See—*
Lockyer, John, 4,201,437, Cl. 339-121.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Smolka, Heinz G.; and Schumann, Klaus, 4,201,689, Cl. 252-184.000.
Triebel, Wolfgang; Hari, Siegfried; Koert, Hubert; and Evers, Fritz, 4,201,828, Cl. 428-332.000.
Dewitte, Jean; and Aymard, Pierre, to Truth Incorporated. Manufacture of spherical balls. 4,201,560, Cl. 65-21.000.
Dexter Corporation, The: *See—*
Neumann, Daniel L., 4,201,308, Cl. 220-81.00R.
Dialytic Electrolysis Laboratorium (Proprietary) Limited: *See—*
Tepe, Walter; and Van Niewenhuizen, Adam J. J., 4,201,549, Cl. 23-230.00R.
Diehl, Franz: *See—*
Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, 4,201,246, Cl. 138-30.000.
Dieterich, Dieter, to Bayer Aktiengesellschaft. Polyurethanes based on modified polyisocyanates containing sulphonic acid ester groups and process for the production thereof. 4,201,852, Cl. 528-67.000.
Digital Products Corporation: *See—*
Bower, David S.; and Smith, Fred J., 4,201,896, Cl. 179-18.00B.
Dijkmans, Leo: *See—*
Smies, Jan F.; and Dijkmans, Leo, 4,200,952, Cl. 15-322.000.
Dilley, Douglas M., to United States of America, Navy. Wideband VHF antenna. 4,201,988, Cl. 343-715.000.
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., to General Electric Company. Rotary feed for tomographic scanning apparatus. 4,201,430, Cl. 339-5.00M.
Dismer, Raymond H. Solar energy collector having a fiber-optic cable. 4,201,197, Cl. 126-451.000.
Ditter, Walter: *See—*
Kurtz, Walter; Horn, Dieter; and Ditter, Walter, 4,201,710, Cl. 260-156.000.
Dixon, Robert H.: *See—*
Elton, Raymond C.; and Dixon, Robert H., 4,201,955, Cl. 331-94.50G.
Dobler, Peter: *See—*
Schoettle, Klaus; Uhl, Karl; Wittkamp, Heinrich; Dobler, Peter; and Lewin, Helmut, 4,201,356, Cl. 242-197.000.
Dockhorn, Wolfgang; and Achterberg, Arnoldus. Process and equipment for determining the density of a loaded drilling fluid from a deep well, in particular an oil well. 4,201,082, Cl. 73-153.000.
Dr. Eugen Durrwachter Doduco: *See—*
Harmsen, Ulf O., 4,201,327, Cl. 228-176.000.
Dodd, Alec G., to Rolls-Royce Limited. Fuel systems for gas turbine engines. 4,201,044, Cl. 60-39.09R.
Dogliotti, Renato; and Pirani, Giancarlo, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Data-transmission system and method using fiber-optical transmission. 4,201,909, Cl. 455-608.000.
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, to Nisshin Steel Co., Ltd.; and Nippon Paint Co., Ltd. Plating-inhibitor for partially plating steel plate with molten metal. 4,201,592, Cl. 106-2.000.
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Tamaoku, Katsuki; Nakahara, Keishi; Sumiyoshi, Hideo; and Tachibana, Masahiro, 4,201,548, Cl. 23-230.00R.
Domas, Friedrich: *See—*
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.
Domenicali, Peter L.; and Hunter, George C., to Zygo Corporation. Optical interferometer system with CCTV camera for measuring a wide range of aperture sizes. 4,201,473, Cl. 356-360.000.
Donnelli, Joseph W.; and Barnes, Richard D., to Southern Imperial, Inc. Machine for threading fasteners into workpieces. 4,201,255, Cl. 144-32.00R.
Dornbush, James N.: *See—*
Rollag, Dwayne A.; Dornbush, James N.; and Renner, Robert C., 4,201,663, Cl. 210-16.000.
Dorth, John P.; Burns, Robert V.; and Tarr, Lloyd A., to GTE Automatic Electric Laboratories Incorporated. Ringing voltage transfer circuit. 4,201,897, Cl. 179-84.00R.
Dougherty, William E.; and Greer, Stuart E., to International Business Machines Corporation. Multi-layer dielectric planar structure having an internal conductor pattern characterized with opposite terminations disposed at a common edge surface of the layers. 4,202,007, Cl. 357-80.000.
Douglas, Orva H.; and Mendoza, Quinciano G., to Boeing Company, The. Automatic start/manual start interlock system for a gas turbine engine. 4,201,922, Cl. 290-38.00R.
Dover Corporation: *See—*
Atkey, Richard E., 4,201,053, Cl. 60-459.000.
Dow Chemical Company, The: *See—*
Dettmer, Edward V., 4,200,967, Cl. 29-426.200.
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,201,729, Cl. 260-665.00R.
Downer, Edward W. Data conversion system. 4,201,942, Cl. 375-17.000.
Dragerwerk Aktiengesellschaft: *See—*
Rinne, Gerhart; and Sachtler, Jurgen, 4,201,204, Cl. 128-203.270.
Draper, Richard W., to Schering Corporation. 6-Acyloxy-1,4,6-pregnatrienes, their use as anti-inflammatory agents, methods for their manufacture, and 6-oxo-1,4-pregnadiene intermediates. 4,201,778, Cl. 424-241.000.
Dresser Industries, Inc.: *See—*
Barker, Larry D.; and Bannerman, James K., 4,201,679, Cl. 252-8.50A.
Drum Engineering Company Limited, The: *See—*
Martin, Benjamin, 4,201,243, Cl. 137-510.000.
D'Silva, Thomas L., to GTE Sylvania Incorporated. Copper brazing alloy foils containing germanium. 4,201,601, Cl. 148-32.000.
Dubois, Robert A.; and Smith, George F., to Greif Bros. Corporation. Variable capacity all-plastic drum. 4,201,306, Cl. 220-5.00R.
Ducrocq, Paul, to Thomson-CSF. Continuous wave radar equipment. 4,201,986, Cl. 343-14.000.
Duncan, Thomas P., Jr., to Duncan, Thomas P., Jr.; and Belvin, Frank. Door mat. 4,201,817, Cl. 428-141.000.
Dunn Instruments, Inc.: *See—*
Barney, Howard H., 4,201,223, Cl. 128-653.000.
duPont, Anthony A. Engine economizer control unit. 4,201,164, Cl. 123-117.00R.
Du Pont de Nemours, E. I., and Company: *See—*
Lee, Kyu T., 4,201,567, Cl. 71-94.000.
Schmidt, Gunter, 4,201,919, Cl. 250-468.000.
Dupre, Dallas D., III, to PPG Industries, Inc. Electrolytic cell membrane sealing means. 4,201,652, Cl. 204-258.000.
Dykas, George E.: *See—*
Magerl, Richard A.; Dykas, George E.; and Hamilton, Kenneth W., 4,201,983, Cl. 340-709.000.
E. B. Metal Rubber Industries, Inc.: *See—*
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, 4,201,283, Cl. 194-1.00A.
E. Gowrie Limited: *See—*
Gowrie, Eric, 4,201,154, Cl. 119-15.000.
E.T.I. Corporation: *See—*
Murphy, Wesley T., 4,201,026, Cl. 52-731.000.
Eagens, Jeffrey D., to Brunswick Industrial Supply Company. Reconditioned sand muller. 4,201,350, Cl. 241-298.000.
Early, Judson H.: *See—*
Off, Joseph W. A.; and Early, Judson H., 4,200,937, Cl. 2-227.000.
Eastman Kodak Company: *See—*
Abbott, Thomas I., 4,201,578, Cl. 430-222.000.
Adin, Anthony; and Fleming, James C., 4,201,588, Cl. 430-167.000.
Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, 4,201,840, Cl. 430-17.000.
Coney, Charles H., 4,201,701, Cl. 260-22.0CQ.
Groet, Nicholas H.; and Lindsay, Jacque K., 4,201,841, Cl. 430-567.000.
Jackson, Winston J., Jr.; and Morris, John C., 4,201,856, Cl. 528-190.000.
Levinson, Steven R.; and Adin, Anthony, 4,201,590, Cl. 430-617.000.
Reithel, Raymond F., 4,201,583, Cl. 430-97.000.
Reithel, Raymond F., 4,201,591, Cl. 430-619.000.
Thomas, Harold T.; Howe, Dennis G.; and Lee, James K., 4,201,581, Cl. 430-396.000.
White, Richard L., 4,201,582, Cl. 430-351.000.
Eaton, Homer L., to Eaton-Leonard Corporation. Reaction bender for pipe. 4,201,073, Cl. 72-155.000.
Eaton-Leonard Corporation: *See—*
Eaton, Homer L., 4,201,073, Cl. 72-155.000.

Ebneth, Harold, to Bayer Aktiengesellschaft. Metallized textile material. 4,201,825, Cl. 428-263.000.
Eccleston, Barry C.: *See—*
Sinclair, Alexander S.; and Eccleston, Barry C., 4,201,275, Cl. 182-37.000.
Edgar Pickering (Blackburn) Ltd.: *See—*
Mellor, Leslie, 4,200,994, Cl. 34-158.000.
Edgington, Nicholas: *See—*
Ackerman, Gary M.; and Edgington, Nicholas, 4,200,986, Cl. 33-174.00P.
Edholm, John H.: *See—*
Wolinski, Leon E.; Riebling, Richard G.; and Edholm, John H., 4,201,732, Cl. 525-363.000.
Edwards, Charles M.; and Fort, J. Robert, to United Geophysical Corporation. Seismic prospecting system. 4,201,972, Cl. 367-40.000.
Edwards, Charles M., to United Geophysical Corporation. Seismic prospecting system. 4,202,048, Cl. 367-40.000.
Edwards, Harry, to Imperial Chemical Industries Limited. Apparatus for coating a web. 4,201,150, Cl. 118-323.000.
Edwards, John R.: *See—*
Conn, Thomas E.; and Edwards, John R., 4,201,335, Cl. 233-26.000.
Egan Machinery Company: *See—*
Verner, David A.; and Kipp, Henry A., 4,201,527, Cl. 425-72.00R.
Egbers, Gerhard: *See—*
Artzt, Peter; Hehl, Rudolf; Egbers, Gerhard; and Schenek, Anton, 4,201,037, Cl. 57-301.000.
Ehrly, Albrecht; and Schmitt, Hans J. Method and apparatus for measurement and registration of the aggregation rate of particles suspended in a liquid. 4,201,470, Cl. 356-39.000.
Eisenberg, Robert C.: *See—*
Andera, Joseph F.; and Eisenberg, Robert C., 4,201,319, Cl. 222-396.000.
El Mar Plastics, Inc.: *See—*
Schor, S. Allen, 4,201,353, Cl. 242-68.500.
Electric Power Research Institute, Inc.: *See—*
Dau, Gary J., 4,201,092, Cl. 73-587.000.
Electronic Time Company ETIC S.A.: *See—*
Froidevaux, Jacques, 4,201,077, Cl. 73-6.000.
Elf Union: *See—*
Ronc, Michel, 4,201,193, Cl. 126-448.000.
Eli Lilly and Company: *See—*
Kornfeld, Edmund C.; and Bach, Nicholas J., 4,201,862, Cl. 546-67.000.
Elin-Union Aktiengesellschaft: *See—*
Felber, Willibald; and Woschnagg, Elmar, 4,201,089, Cl. 73-350.000.
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Maciag, Edmund D., 4,201,122, Cl. 98-2.140.
Maciag, Edmund D.; and Frymire, Garold D., 4,201,123, Cl. 98-2.140.
Elkin, B. Jack, to McCampbell, James D. Crematory ash grinder. 4,201,347, Cl. 241-92.000.
Ellis, Clarence E. Wood resin cooking apparatus. 4,201,125, Cl. 99-446.000.
Ellis, Leslie E. Book and hanging device. 4,200,945, Cl. 11-1.0ET.
Ellis, Stephen R.; Bott, Theodore R.; Kay, Howard E.; and Hughes, Noel. Fluid distribution and contacting elements. 4,201,736, Cl. 261-98.000.
Ellis, Theron L.: *See—*
Chellis, Leroy N.; and Ellis, Theron L., 4,201,616, Cl. 156-307.100.
Ellner, Sidney. Ultraviolet radiation sensor for use in liquid purification system. 4,201,916, Cl. 250-372.000.
Elmore, I. James; and West, Robert F., to Stanley Works, The. Nail holder. 4,201,258, Cl. 145-46.000.
Elmore, James: *See—*
West, Robert F.; and Elmore, James, 4,200,983, Cl. 33-138.000.
Elton, Raymond C.; and Dixon, Robert H., to United States of America, Navy. Method of producing population inversion and lasing at short wavelengths by charge transfer. 4,201,955, Cl. 331-94.50G.
Emblem, Harold G.: *See—*
Walters, Ian R.; and Emblem, Harold G., 4,201,594, Cl. 106-38.350.
Emhart Zurich S. A.: *See—*
Keller, Rene, 4,201,338, Cl. 235-454.000.
Endress u. Hauser GmbH u. Co.: *See—*
Kienberger, Karl-Heinz; and Stock, Don J. R., 4,201,956, Cl. 331-96.000.
Wetzel, Gustav, 4,202,049, Cl. 367-96.000.
Energetics Science, Inc.: *See—*
Stetter, Joseph R., 4,201,634, Cl. 204-1.00T.
Engelhard Minerals & Chemicals Corporation: *See—*
Pitts, Frank, 4,201,750, Cl. 423-162.000.
Engelhard, Philippe: *See—*
Legendre, Michel; and Engelhard, Philippe, 4,201,696, Cl. 252-442.000.
Entron, Inc.: *See—*
Sears, Kay G., 4,202,023, Cl. 361-18.000.
Environmental Sciences Associates, Inc.: *See—*
Matson, Wayne R., 4,201,646, Cl. 204-195.00H.
Epenoy, Gabriel I.; Kuhne, Roland; Laurent, Bernard; and Thirion, Philippe E., to International Business Machines Corporation. Specialized microprocessor for computing the sum of products of two complex operands. 4,202,039, Cl. 364-757.000.
Eppenbach, Lawrence C. Measuring dispenser. 4,201,320, Cl. 222-456.000.
Epse Broll, Madeleine C.: *See—*
Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., 4,201,725, Cl. 260-583.00H.
Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Process for producing ^{52}manganese. 4,201,625, Cl. 176-11.000.
Ericson, Eric A., to General Electric Company. Circuit breaker drawout with engaged position latch. 4,202,027, Cl. 361-338.000.
Erlichman, Irving, to Polaroid Corporation. Photographic film assemblage having interconnected film units. 4,201,457, Cl. 354-86.000.
Ernest Holmes Division Dover Corporation: *See—*
Carr, Harold F., Jr.; and Humphries, David F., 4,201,399, Cl. 280-402.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Clutch release assembly and bearing therefor. 4,201,282, Cl. 192-98.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Rolling bearing having two-sided race rails. 4,201,424, Cl. 308-6.00C.
Erwin Kampf GmbH & Co. Machinenfabrik, Firma: *See—*
Kamfe, Eberhard; and Schmidt, Willi, 4,200,963, Cl. 26-73.000.
Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik: *See—*
Hartmann, Klaus; and Siersch, Wolfgang, 4,201,467, Cl. 356-28.000.
Esaki, Koreaki, to West Electric Co., Ltd. External sensor for electronic flash. 4,201,934, Cl. 315-151.000.
Etablissements Matthys and Societe G.A.R.A.P.: *See—*
Matthys, Pierre, 4,201,129, Cl. 100-233.000.
Ethicon, Inc.: *See—*
Mattei, Frank V., 4,201,216, Cl. 128-335.500.
Ethyl Corporation: *See—*
Malec, Robert E., 4,201,684, Cl. 252-47.500.
Zorzi, Paul A.; Jones, Jesse D.; and Kucsma, Michael E., 4,201,703, Cl. 260-37.0PC.
Etoh, Yukihiro: *See—*
Tanaka, Toshiaki; and Etoh, Yukihiro, 4,201,165, Cl. 123-119.00A.
Ettel, Victor A.: *See—*
O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., 4,201,653, Cl. 204-263.000.
Evans, Kenneth R. Nut cracking apparatus. 4,201,126, Cl. 99-574.000.
Evans, Larry. Quill drive with variable feed. 4,201,271, Cl. 173-146.000.
Evans, Marvin; and Miller, David H., to College Research Corporation. Method and apparatus for heat treating materials to remove contaminants. 4,201,370, Cl. 266-44.000.
Evans, Michael L.; Menlove, Howard O.; and Baker, Michael P., to United States of America, Energy. Subthreshold neutron interrogator for detection of radioactive materials. 4,201,912, Cl. 250-253.000.
Evers, Fritz: *See—*
Triebel, Wolfgang; Hari, Siegfried; Koert, Hubert; and Evers, Fritz, 4,201,828, Cl. 428-332.000.
Evershed Power-Optics Limited: *See—*
King, Reginald, 4,202,008, Cl. 358-22.000.
Ex-Cell-O Corporation: *See—*
Hendry, James W., 4,201,742, Cl. 264-45.500.
Exxon Research & Engineering Co.: *See—*
Asher, William J.; and Tsien, Hsue C., 4,201,691, Cl. 252-314.000.
Brewster, Philip W., 4,201,683, Cl. 252-32.70E.
Cummings, Richard D., 4,201,188, Cl. 126-429.000.
Johnson, Burnett H., 4,201,820, Cl. 428-195.000.
Johnson, Jack W.; and Whittingham, M. Stanley, 4,201,839, Cl. 429-194.000.
Lipinski, Henry F.; and Wantling, Steven J., 4,201,681, Cl. 252-33.200.
Savage, David W.; Chang, Chin H.; and Longo, John M., 4,201,665, Cl. 210-32.000.
Tornqvist, Erik G. M.; and Gessler, Albert M., 4,201,850, Cl. 526-337.000.
Eymard, Pierre: *See—*
Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., 4,201,725, Cl. 260-583.00H.
Falk, Roland: *See—*
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.
Far-Mar-Co., Inc.: *See—*
Rao, Ganta V.; and Shoup, Floyd K., 4,201,708, Cl. 260-112.00G.
Fargo Manufacturing Company, Inc.: *See—*
Caldwell, Dan H., 4,201,433, Cl. 339-14.00L.
Farkas, Richard W., to Samuel Moore and Company. Method of making self-temperature regulating electrical heating cable. 4,200,973, Cl. 29-611.000.
Farrell, Robert G.: *See—*
Breeden, Robert H.; Farrell, Robert G.; and Taylor, Henry D., 4,201,052, Cl. 60-445.000.
Fasco Industries, Inc.: *See—*
Byam, Peter M., 4,201,735, Cl. 261-39.00E.
Faust, John P.: *See—*
Saeman, Walter C.; Coe, Noel N.; and Faust, John P., 4,201,756, Cl. 423-266.000.
Fazekas, Josef: *See—*
Stecher, Friedhelm; Fazekas, Josef; Johren, Paul; and Morsbach, Martin, 4,201,804, Cl. 427-393.600.
Feder, Hubert C. Hybrid energy convertor. 4,201,059, Cl. 60-639.000.

Feder, Joseph; Ku, Katharine; and Ku, Mau-Jung, to Monsanto Company. Cell culture reactor. 4,201,845, Cl. 435-285.000.

Federal-Mogul Corporation: *See—*
Arnold, Robert A.; and Warren, Raymond, 4,201,504, Cl. 414-27.000.

Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, to Hoechst Aktiengesellschaft. Process for the preparation of azo dyestuffs on fiber materials consisting of, or containing, cellulose fibers. 4,201,547, Cl. 8-543.000.

Fehric, Mustafa. Multiple purpose woodworking structure. 4,201,254, Cl. 144-1.00G.

Feit, Eugene D., to Bell Telephone Laboratories, Incorporated. Lithographic fabrication with treatment of "living polymer". 4,201,580, Cl. 430-319.000.

Felber, Willibald; and Woschnagg, Elmar, to Elin-Union Aktiengesellschaft. Temperature measuring device for transformers and reactors. 4,201,089, Cl. 73-350.000.

Feldman, Henry L.; Berman, Philip G.; and Washburn, William L. Therapeutic heat application. 4,201,218, Cl. 128-402.000.

Felleisen, Peter: *See—*
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,204,149, Cl. 118-52.000.

Fenne, Ivor, to Lucas Industries Limited. Fuel injection systems. 4,201,160, Cl. 123-32.00G.

Ferag AG: *See—*
Honegger, Werner, 4,201,377, Cl. 271-225.000.
Meier, Jacques, 4,201,286, Cl. 198-461.000.

Ferguson, John R. Automatic control selector for a compressor system. 4,201,517, Cl. 417-12.000.

Ferran, Robert J.: *See—*
Riegert, Richard P., 4,201,645, Cl. 204-192.00R.

Ferranti Limited: *See—*
Chalmers, Walter M., 4,201,432, Cl. 339-14.00R.
Jones, Harry; and Slater, David L., 4,201,898, Cl. 200-61.45R.

Fiat-Allis Construction Machinery, Inc.: *See—*
Joyce, Hardin, Jr., 4,201,273, Cl. 180-12.000.

Fichtel & Sachs AG: *See—*
Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, 4,201,246, Cl. 138-30.000.

Figge, Irving E.; and Dean, Edward H., to United States of America, Army. Bonding plastic layers. 4,201,612, Cl. 156-224.000.

Filan, John J.; Holl, Walter W.; and Wellman, George R., to Smith-Kline Corporation. Bis[triethylphosphine)aurio]sulfonium sugars. 4,201,775, Cl. 424-180.000.

Fima, Raoul G., to Jumpak Products Inc. Brake apparatus with air actuated remote wear indicator. 4,201,974, Cl. 340-52.00A.

Fine, Ronald J. Dental articulator and tray system. 4,200,981, Cl. 433-60.000.

Fink, Ray D. Detachable tool combining bracket and method. 4,200,984, Cl. 33-138.000.

Finney, Roy P.; and Lynch, Henry W., to Medical Engineering Corp. Penile implant. 4,201,202, Cl. 128-79.000.

Firth Carpets Limited: *See—*
Jackson, Stanley P., 4,201,143, Cl. 112-79.00R.

Fischer, Charles F.; and Marchesani, Cesare N., to Colgate-Palmolive Company. Mechanical means for reducing cracking in soap bars. 4,201,528, Cl. 425-209.000.

Fischer, Paul W.: *See—*
Pye, David S.; and Fischer, Paul W., 4,201,678, Cl. 252-8.50A.

Fishback, Alton J.: *See—*
Calvert, Rodney K.; and Fishback, Alton J., 4,201,118, Cl. 93-39.00R.

Fishbeck, Kenneth H.; and Harpavat, Ganesh L., to Xerox Corporation. Coincidence gate ink jet with increased operating pressure window. 4,201,995, Cl. 346-140.00R.

Fisher, Michael H.: *See—*
Mrozik, Helmut H.; Fisher, Michael H.; and Kulsa, Peter, 4,201,861, Cl. 536-17.00A.

Fisher, Michael S.: *See—*
Fisher, Roy G.; and Fisher, Michael S., 4,201,048, Cl. 60-322.000.

Fisher, Roy G.; and Fisher, Michael S. Exhaust system connector. 4,201,048, Cl. 60-322.000.

Fitch, Steven J.; and Tanner, Charles A., to SCM Corporation. Process for quenching of fine particulates. 4,201,570, Cl. 75-1.00T.

Fives-Cail Babcock: *See—*
Pillon, Rene, 4,201,371, Cl. 266-50.000.

Fleenor, Clifton T.: *See—*
Halpern, Yuval; and Fleenor, Clifton T., 4,201,705, Cl. 260-45.8NT.

Fleming, James C.: *See—*
Adin, Anthony; and Fleming, James C., 4,201,588, Cl. 430-167.000.

Fletcher-Terry Company, The: *See—*
Insolio, Thomas A., 4,201,104, Cl. 83-886.000.

FMC Corporation: *See—*
Chamberlain, Neal C., 4,201,285, Cl. 198-400.000.
Liao, Hsiang P., 4,201,667, Cl. 210-50.000.
Overton, Billy J., 4,200,953, Cl. 15-349.000.
Palmer, Warren G.; and Pritchard, John N., 4,201,477, Cl. 356-434.000.
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,201,780, Cl. 424-246.000.

Ford Motor Company: *See—*
Hansen, Charles A., 4,201,509, Cl. 414-694.000.
Martin, Terence A., 4,201,057, Cl. 60-593.000.

Fort, J. Robert: *See—*
Edwards, Charles M.; and Fort, J. Robert, 4,201,972, Cl. 367-40.000.

Foseco Trading AG.: *See—*
Neat, Frank, 4,201,606, Cl. 149-37.000.

Foster-Miller Associates, Inc.: *See—*
Ribich, William A.; Hug, Hans A.; and Bellows, Alfred H., 4,201,270, Cl. 173-43.000.

Fourcadier, Chantal: *See—*
Grollier, Jean-Francois; and Fourcadier, Chantal, 4,201,766, Cl. 424-70.000.

Fowler, Richard A.: *See—*
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,201,540, Cl. 431-361.000.

Frame, George L.: *See—*
Seale, Glenn C.; and Frame, George L., 4,201,386, Cl. 273-236.000.

Francik, Carl J.: *See—*
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., 4,201,624, Cl. 162-205.000.

Frank, Dudley B.: *See—*
Garabedian, Arthur, 4,201,179, Cl. 123-198.00F.

Frantello, Alfred A., to Corinth Co. Inc. Attachment for drive shaft of rotary lawn mowers. 4,201,034, Cl. 56-295.000.

Franzke, Jurgen, to Roscherwerke GmbH. Apparatus for tumbling foodstuffs under vacuum. 4,201,483, Cl. 366-139.000.

Fredin, Ell C.; Morgan, James W.; and Waimer, Milo H. Automobile tool. 4,200,943, Cl. 7-100.000.

Freeman, Donald W.: *See—*
Kadan, Ranjit S.; Freeman, Donald W.; Spadaro, James J.; and Ziegler, George M., Jr., 4,201,709, Cl. 260-123.500.

Freitag, Fred H. Grave site cover. 4,200,964, Cl. 27-30.000.

French, Floyd R.; and Paige, Janet N., to Goeders, Calvin N. Spray disinfectant aerosol. 4,201,764, Cl. 424-45.000.

French, Lionel J. B. R., to Sulby Engineering Development Company Limited, The. Apparatus for applying an adhesive to a book. 4,201,615, Cl. 156-304.000.

Freund, Hans; and Kotzab, Werner, to SKF Kugellagerfabriken GmbH. Locking device for anti-friction bearings with split inner ring. 4,201,425, Cl. 308-236.000.

Frick, Egon, to Orenstein & Koppel Aktiengesellschaft. Rotatory crane with plural jibs. 4,201,305, Cl. 212-47.000.

Fricker, Richard; and Goswell, Robin W., to A.G. (Patents) Limited. Production of sherry wine. 4,201,792, Cl. 426-15.000.

Friedman, Evelyn: *See—*
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, 4,201,283, Cl. 194-1.00A.

Friedman, Stanley I.; Cobeen, Charles P.; and Jacobsthal, Herbert K., to Honeywell Information Systems Inc. GCR Data write control apparatus. 4,201,980, Cl. 340-347.0DD.

Frigitronics of Conn., Inc.: *See—*
Andera, Joseph F.; and Eisenberg, Robert C., 4,201,319, Cl. 222-396.000.

Frisbee, Claude M., to J. I. Case Company. Adjustment mechanism for dozer blade. 4,201,268, Cl. 172-804.000.

Froidevaux, Jacques, to Electronic Time Company ETIC S.A. Method for measuring the rate or the frequency error of a quartz timepiece and measuring apparatus for carrying out this method. 4,201,077, Cl. 73-6.000.

Fromson, Howard A.; and Gracia, Robert F., to Fromson, Howard A. Decorated anodized aluminum article. 4,201,821, Cl. 428-203.000.

Frymire, Garold D.: *See—*
Maciag, Edmund D.; and Frymire, Garold D., 4,201,123, Cl. 98-2.140.

Fuchs, Ernst F.: *See—*
Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., 4,201,773, Cl. 424-180.000.

Fuji Photo Film Co., Ltd.: *See—*
Hori, Kiyotaka; and Nagatomo, Shigeru, 4,201,586, Cl. 430-621.000.
Ogawa, Hiroshi; and Tamai, Yasuo, 4,201,809, Cl. 428-65.000.
Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, 4,201,589, Cl. 430-139.000.

Fujikawa, Hisao: *See—*
Kowaka, Masamichi; and Fujikawa, Hisao, 4,201,574, Cl. 75-122.000.

Fukino, Kunihiro, to Nippon Kogaku K.K. Stop-down device in a bellows device. 4,201,461, Cl. 354-272.000.

Fukuda, Kyohei: *See—*
Hisada, Takanori; and Fukuda, Kyohei, 4,201,933, Cl. 315-16.000.

Fukuda, Takashi: *See—*
Nagano, Hiroo; Fukuda, Takashi; Nagai, Hiroshi; and Nakamura, Yasuyuki, 4,201,650, Cl. 204-209.000.

Fukui, Kiyozumi, to Teijin Seiki Company Limited. Drive controlling mechanism. 4,201,279, Cl. 192-3.00N.

Fukuma, Nobuo; and Kato, Yoshito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the feed of machine tools. 4,201,935, Cl. 318-15.000.

Fukumoto, Tsumoru: *See—*
Okamoto, Rokuro; Fukumoto, Tsumoru; Takamatsu, Akira; and Takeuchi, Tomio, 4,201,843, Cl. 435-76.000.

Fulbright, Gene R. N.: *See—*
Matejec, John K.; Lowry, Jerry D.; and Fulbright, Gene R. N., 4,201,395, Cl. 280-11.37M.

Fullerton, Wardle; and Wolanski, Bohdan, to Merck & Co., Inc. Viral liposome particle. 4,201,767, Cl. 424-89.000.

Fulmer, Glenn E.: *See—*
Kehr, Clifton L.; Wood, Louis L.; Marans, Nelson S.; and Fulmer, Glenn E., 4,201,846, Cl. 521-137.000.

Fursov, Viktor V.: *See—*
Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D., 4,201,882, Cl. 13-27.000.

Furusawa, Tomotaka: *See—*
Kimura, Masaharu; Otuki, Yoshiharu; Sugio, Akitoshi; and Furusawa, Tomotaka, 4,201,849, Cl. 525-401.000.

Fyfe, Colin A.; Mossbrugger, Horst G.; and Yannoni, Costantino S., to International Business Machines Corporation. Spinning apparatus for NMR spectrometers. 4,201,941, Cl. 324-321.000.

Gallagher, Bernard J.: *See—*
Danko, Oliver L.; Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; and Kish, Edward E., 4,201,366, Cl. 251-335.00B.

Gambardella, Harry N. Framework for a box kite. 4,201,357, Cl. 244-153.00R.

Garabedian, Arthur, to Frank, Dudley B. Split engine vacuum control fuel metering system. 4,201,179, Cl. 123-198.00F.

Gardner, Frederick P.: *See—*
Johnson, Bernard A.; and Gardner, Frederick P., 4,201,908, Cl. 235-92.0TC.

Gardner, Thomas H.: *See—*
Whitehead, Gareth D. J.; and Gardner, Thomas H., 4,201,128, Cl. 100-45.000.

Garritsen, Peter G.: *See—*
O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., 4,201,653, Cl. 204-263.000.

Garten, Herbert; and Brozenske, Donald A., to General Electric Company. Bearing clamping assembly for a gas turbine engine. 4,201,426, Cl. 308-26.000.

Gaspar, Gyula: *See—*
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.

Gasper, Kenneth E., to Olin Corporation. Liquid polymer hydration. 4,201,867, Cl. 560-205.000.

Gates, Timothy P.: *See—*
Coxon, DeWayne A.; and Gates, Timothy P., 4,201,192, Cl. 126-422.000.

Gattiker, Ernst, to Adolph Saurer Limited. Clutch-brake unit for the main shaft of a loom. 4,201,280, Cl. 192-18.00A.

Gazzoni, Domenico, to Sorema, Srl. Drier for small sized materials. 4,200,991, Cl. 34-57.00R.

Gebr. van Capelleveen B.V.: *See—*
van Capelleveen, Pieter, 4,201,288, Cl. 198-778.000.

Gebrueder Buehler AG: *See—*
Straub, Paul; and Jost, Heinrich, 4,201,287, Cl. 198-530.000.

Geddes, John J.; and Hocker, G. Benjamin, to Honeywell Inc. Fiber optic temperature sensor using liquid component fiber. 4,201,446, Cl. 350-96.290.

Geffon, Arthur P.; and Jacoby, George V., to Sperry Rand Corporation. Magnetic recording signal equalization apparatus. 4,202,017, Cl. 360-45.000.

Gemini Systems, Inc.: *See—*
Skow, Lynn R., 4,201,187, Cl. 126-110.00E.

General Electric Company: *See—*
Arendt, Ronald H.; and Curran, Matthew J., 4,201,760, Cl. 423-600.000.
Baird, Leslie L., 4,202,028, Cl. 361-343.000.
Cohen, Stuart C.; and Rosenquist, Niles R., 4,201,704, Cl. 260-40.00R.
Corrigan, Francis R., 4,201,757, Cl. 423-290.000.
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,201,430, Cl. 339-5.00M.
Ericson, Eric A., 4,202,027, Cl. 361-338.000.
Garten, Herbert; and Brozenske, Donald A., 4,201,426, Cl. 308-26.000.
Hall, Walter L.; and O'Connell, William J. J., 4,201,832, Cl. 428-412.000.
Hallgren, John E., 4,201,721, Cl. 260-463.000.
Hesler, Joseph P.; Korzekwa, Samuel M.; and McFadyen, Robert J., 4,202,031, Cl. 363-97.000.
Lupinski, John H., 4,201,837, Cl. 428-457.000.
Marion, Roland M., 4,201,039, Cl. 368-241.000.
Mark, Victor; Mitchell, Lawrence C.; and Hedges, Charles V., 4,201,878, Cl. 568-723.000.
McFadyen, Robert J., 4,201,946, Cl. 329-2.000.
M'Sadoques, Andre J., 4,201,439, Cl. 339-259.00R.
Roumanis, Paul J., 4,201,936, Cl. 318-341.000.
Slusarczuk, George M. J.; and Brooks, Ronald E., 4,201,831, Cl. 428-403.000.
van Sorge, Bernardus J., 4,201,880, Cl. 568-804.000.
Ziegler, William D., 4,201,345, Cl. 241-46.00R.

General Motors Corporation: *See—*
Brynn, Gerald E., 4,201,401, Cl. 280-803.000.

General Nutrition Corporation: *See—*
Walsh, David E., 4,201,349, Cl. 241-247.000.

Genovese, David L.; and Madarasz, Miklos, to Sealectro Corporation. Miniature matrix assembly. 4,201,436, Cl. 339-96.000.

Geo. P. Reintjes Co., Inc.: *See—*
Weidman, Larry G., 4,201,904, Cl. 219-98.000.

Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., to Institute Po Mechanika I Biomechanika. Method of and a device for hydro-automatic sprinkling with sinking hydrants. 4,201,340, Cl. 239-66.000.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz J., 4,201,101, Cl. 83-22.000.

Gerber, Heinz J., to Gerber Garment Technology, Inc. Cutting method and apparatus with automatic tool sharpening. 4,201,101, Cl. 83-22.000.

Gerbet, Roger G.; Leroux, Jean-Claude; Morin, Daniel L.; and Leclercq, Marius F., to Societe Nationale des Poudres et Explosifs. Racquet frames. 4,201,381, Cl. 273-73.00F.

Gerhart, James P., deceased; and Gerhart, Merle A., executrix. Core-spacer-core mandrel loader. 4,201,505, Cl. 414-27.000.

Gerhart, Merle A., executrix: *See—*
Gerhart, James P., deceased; and Gerhart, Merle A., executrix, 4,201,505, Cl. 414-27.000.

Gerlier, Jean-Pierre; and Augier, Jacques, to Institut Pasteur. Photometer with automatic test sample selection, scanning and analysis system. 4,201,478, Cl. 356-440.000.

Gessi, Giovanni. Roller-skate bicycle for amusement, moving by the swinging movement of the driver. 4,201,396, Cl. 280-229.000.

Gessler, Albert M.: *See—*
Tornqvist, Erik G. M.; and Gessler, Albert M., 4,201,850, Cl. 526-337.000.

GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft: *See—*
Kralowetz, Bruno; and Kirchberger, Peter, 4,201,500, Cl. 407-43.000.

Gherner, Lidio. Hydraulic motor. 4,201,117, Cl. 91-499.000.

Gilbert Associates, Inc.: *See—*
Dayen, William R., 4,201,753, Cl. 423-242.000.

Gilbert, Earl F., to Westvaco Corporation. Hinged cover container with hand hole lock. 4,201,330, Cl. 229-33.000.

Gilbert, John F.; and Lyons, Nicholas L., to Gilbert, John Francis; and Gilbert, Margaret. Mesh structures. 4,201,814, Cl. 428-107.000.

Gilbert, John Francis: *See—*
Gilbert, John F.; and Lyons, Nicholas L., 4,201,814, Cl. 428-107.000.

Gilbert, Margaret: *See—*
Gilbert, John F.; and Lyons, Nicholas L., 4,201,814, Cl. 428-107.000.

Gilbert, William H.: *See—*
Chrisler, Vivian L., deceased; Gilbert, William H.; and Boyer, George L., 4,202,047, Cl. 367-1.000.

Gill, Glenn G.; and Cycowicz, Izchak, to Mohasco Corporation. Pull-out sofa bed and hardware therefor. 4,200,941, Cl. 5-13.000.

Gillery, F. Howard, to PPG Industries, Inc. Low resistance indium oxide coatings. 4,201,649, Cl. 204-192.00P.

Gillespie, Herman L.; and Baumgartner, Harlow E., to Baumgartner, Lois C. Bow or keel solid lift assembly for boats. 4,200,944, Cl. 9-1.100.

Gilligan, Lawrence H.; and Hermansdorfer, James E., to Sperry Corporation. Pulse modulated automatic light control. 4,202,014, Cl. 358-228.000.

Gilomen, Beat: *See—*
Visconti, Gerald; and Gilomen, Beat, 4,201,042, Cl. 368-170.000.

Giuffre, Luigi: *See—*
Spaziante, Placido M.; Giuffre, Luigi; and Modica, Giovanni, 4,201,647, Cl. 204-195.00F.

Givaudan Corporation: *See—*
Krasnobajew, Victor; and Boeniger, Regula, 4,201,857, Cl. 525-398.000.

Glachet, Charles, to La Calhene. Bidirectional joining device. 4,201,310, Cl. 220-256.000.

Glaser, Edmund M.; and Van der Loos, Hendrik. Computer microscope apparatus and method for superimposing an electronically-produced image from the computer memory upon the image in the microscope's field of view. 4,202,037, Cl. 364-518.000.

Glueck, Richard M.: *See—*
Dering, Charles R., 4,201,911, Cl. 250-231.0SE.

Goeders, Calvin N.: *See—*
French, Floyd R.; and Paige, Janet N., 4,201,764, Cl. 424-45.000.

Goetzewerke Friedrich Goetze AG: *See—*
Stecher, Friedhelm; Fazekas, Josef; Johren, Paul; and Morsbach, Martin, 4,201,804, Cl. 427-393.600.

Gohring, Werner: *See—*
Luiten, Cornelis H.; and Gohring, Werner, 4,201,600, Cl. 148-16.500.

Goldberg, Bruce S., to Amerace Corporation. Laminated microporous article. 4,201,838, Cl. 429-145.000.

Goldstein, Stanley A. Cooler for chilling a working fluid. 4,201,262, Cl. 165-117.000.

Goncharov, Leonid M.: *See—*
Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D., 4,201,882, Cl. 13-27.000.

Gonet, Charles F.: *See—*
Davidson, Thomas L.; and Gonet, Charles F., 4,201,292, Cl. 206-44.00R.

Gooding, Trevor F., to Wilkinson Sword Limited. Shaving units. 4,200,976, Cl. 30-47.000.

Goodyear Tire & Rubber Company, The: *See—*
Agarwal, Maya, 4,201,859, Cl. 528-302.000.
Church, Shirley L.; and Hilts, Loren M., 4,201,628, Cl. 202-158.000.
Makinson, Charles L., 4,201,744, Cl. 264-250.000.

Mast, William C.; and Bauer, Richard G., 4,201,829, Cl. 428-332.000.

Gordos Corporation: *See*—
Marchev, George B., 4,201,900, Cl. 200-220.000.

Gorin, Everett: *See*—
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,201,655, Cl. 208-8.0LE.

Gorog, Sandor: *See*—
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.

Goshima, Norio; and Matsuda, Akira, to Bridgestone Tire Company Limited. Tire pressure drop warning apparatus. 4,201,147, Cl. 116-34.00B.

Gosset, Cyrille; and Thomas, Jean-Marc, to Compagnie Internationale pour l'Informatique. Recording/control arrangement for a dot recording machine. 4,201,488, Cl. 400-121.000.

Goswell, Robin W.: *See*—
Fricker, Richard; and Goswell, Robin W., 4,201,792, Cl. 426-15.000.

Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, to Japan Atomic Energy Research Institute; Toshiba Ray-O-Vak K.K.; and Yuasa Battery Co., Ltd. Radiation grafting process for preparing a membrane for battery separator. 4,201,641, Cl. 204-159.170.

Gowrie, Eric, to E. Gowrie Limited. Chambers for housing animals in toxycology laboratories. 4,201,154, Cl. 119-15.000.

Gracia, Robert F.: *See*—
Fromson, Howard A.; and Gracia, Robert F., 4,201,821, Cl. 428-203.000.

Graentzel, Alfred. Apparatus for irradiation of fluids. 4,201,917, Cl. 250-431.000.

Granath, Kirsti A.: *See*—
Ingelman, Bjorn G.; Richter, Ary W.; and Granath, Kirsti A., 4,201,772, Cl. 424-180.000.

Grant Oil Tool Company: *See*—
Watts, James T., 4,201,392, Cl. 277-165.000.

Gras, Ranulf W., to Teradyne, Inc. Substrate carrier. 4,201,374, Cl. 269-37.000.

Green Cross Corporation, The: *See*—
Naito, Ryoichi; Shiino, Satoru; and Inahara, Hirohisa, 4,201,776, Cl. 424-195.000.

Green, Keith: *See*—
Trager, Seymour F.; and Green, Keith, 4,201,706, Cl. 424-78.000.

Greene, Richard K.: *See*—
Hannon, Martin J.; and Greene, Richard K., 4,201,834, Cl. 428-407.000.

Greer, Stuart E.: *See*—
Dougherty, William E.; and Greer, Stuart E., 4,202,007, Cl. 357-80.000.

Gregorig, Stephen I. N.: *See*—
Pitt, Gillies D.; and Gregorig, Stephen I. N., 4,201,471, Cl. 356-70.000.

Greif Bros. Corporation: *See*—
Dubois, Robert A.; and Smith, George F., 4,201,306, Cl. 220-5.00R.

Gresch, Heinz: *See*—
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,201,751, Cl. 423-210.000.

Griffin, Charles K., to Carrier Corporation. Variable capacity vapor compression refrigeration system. 4,201,065, Cl. 62-510.000.

Griffin, Warren R., to United States of America, Air Force. Fluorine containing polyethers. 4,201,876, Cl. 568-677.000.

Griffith, Jeremy N. Demountable seating furniture. 4,201,417, Cl. 297-442.000.

Grissonnanche, Jean L., to Societe Francais d'Equipements pour la Navigation Aerienne. Device for the display of data representative of quantities. 4,201,981, Cl. 340-380.000.

Grochowski, Horst: *See*—
Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, 4,201,695, Cl. 252-411.00R.

Groet, Nicholas H.; and Lindsay, Jacque K., to Eastman Kodak Company. Process for preparing photographic elements exhibiting differential micro- and macro-area recording characteristics. 4,201,841, Cl. 430-567.000.

Grollier, Jean-Francois; and Fourcadier, Chantal, to L'Oreal. Hair conditioning composition and method of using the same. 4,201,766, Cl. 424-70.000.

Gronen, Willy: *See*—
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.

Gruppo Lepetit S.p.A.: *See*—
Guzzi, Umberto; and Ciabatti, Romeo, 4,201,865, Cl. 560-121.000.

GTE Automatic Electric Laboratories Incorporated: *See*—
Dorth, John P.; Burns, Robert V.; and Tarr, Lloyd A., 4,201,897, Cl. 179-84.00R.
McLaughlin, Donald W., 4,201,893, Cl. 370-58.000.
McLaughlin, Donald W., 4,201,894, Cl. 370-58.000.
Vrba, James J., 4,201,885, Cl. 375-106.000.

GTE Sylvania Incorporated: *See*—
D'Silva, Thomas L., 4,201,601, Cl. 148-32.000.
Liang, Anthony, 4,201,719, Cl. 260-429.00R.
Shea, Richard J., 4,201,438, Cl. 339-144.00R.
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,201,540, Cl. 431-361.000.

Gubaidulin, Vyacheslav F.: *See*—
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Leviches, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.

Gulf Oil Canada Limited: *See*—
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.

Gulf Oil Corporation: *See*—
Hedrich, Loren W., 4,201,569, Cl. 71-98.000.

Gunn, Damon M. Article sorting apparatus and method. 4,201,339, Cl. 235-487.000.

Gupta, Kedar P.: *See*—
Burd, John W.; Stone, Bobbie D.; Tucker, William F.; and Gupta, Kedar P., 4,201,746, Cl. 422-250.000.

Gustafson, William E.: *See*—
Briggs, Eugene C.; and Gustafson, William E., 4,201,544, Cl. 432-222.000.

Gustafsson, Berth U., to Projectus Industriprodukter Aktiebolag. Method for controlling the flow through a distillation apparatus and a device for carrying out the method. 4,201,631, Cl. 203-1.000.

Guyot, Volker; Maus, Otfrid; and Mueller, Martin, to Carl Schenck AG. Method and apparatus for determining the angle of imbalance of a balancing machine. 4,201,091, Cl. 73-462.000.

Guzzi, Umberto; and Ciabatti, Romeo, to Gruppo Lepetit S.p.A. Novel prostaglandin analogues. 4,201,865, Cl. 560-121.000.

Haag, Ronald G.: *See*—
Burridge, Len, Jr., 4,201,009, Cl. 46-1.00F.

Haase, Thomas. Method and apparatus for in vivo measurement of blood gas partial pressures, blood pressure and blood pulse. 4,201,222, Cl. 128-634.000.

Hagen, Magnus F.; and Stanley, Donald, to Standard Precision, Inc. Synchronized traveling carriage assembly. 4,201,423, Cl. 308-6.00R.

Haggar Company: *See*—
Off, Joseph W. A.; and Early, Judson H., 4,200,937, Cl. 2-227.000.

Hajime Industries, Ltd.: *See*—
Shimizu, Toshiyuki, 4,201,977, Cl. 340-146.30H.

Haley, George D. Method for refining ferrophosphorus for use in the production of phosphorus-containing steel. 4,201,576, Cl. 75-132.000.

Hall, Arthur L. Pressurized fluid control circuit. 4,201,051, Cl. 60-407.000.

Hall, Collin C.: *See*—
Paptzun, George J.; Hall, Collin C.; and Bullwinkle, Benjamin B., 4,201,365, Cl. 251-328.000.

Hall, Harold H., Jr.: *See*—
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,201,540, Cl. 431-361.000.

Hall, John B.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Hall, Walter L.; and O'Connell, William J. J., to General Electric Company. Non melt-drip flame retardant polycarbonate composition. 4,201,832, Cl. 428-412.000.

Hallgren, John E., to General Electric Company. Catalytic aromatic carbonate process. 4,201,721, Cl. 260-463.000.

Halpern, Yuval; and Fleenor, Clifton T., to Borg-Warner Corporation. Intumescent flame retardant polyolefin compositions. 4,201,705, Cl. 260-45.8NT.

Hamada, Hiroshi: *See*—
Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo; Hamada, Hiroshi; and Nakauchi, Hiroshi, 4,201,985, Cl. 340-785.000.

Hamer-Hodges, Kenneth J.: *See*—
Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., 4,201,889, Cl. 320-68.000.

Hamilton, Kenneth W.: *See*—
Magerl, Richard A.; Dykas, George E.; and Hamilton, Kenneth W., 4,201,983, Cl. 340-709.000.

Hamilton, Lewis R.: *See*—
Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, 4,201,840, Cl. 430-17.000.

Hams, Kenneth A., to Bell & Howell Company. Skew detector. 4,201,378, Cl. 271-261.000.

Hanai, Kiyoshi; and Sugiura, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Sugiura Seisakusho Co. Ltd. Hub nut with washer. 4,201,110, Cl. 85-32.00R.

Haneishi, Tatsuo: *See*—
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.

Hannon, Martin J.; and Greene, Richard K., to Celanese Corporation. Powder composition and method of preparation. 4,201,834, Cl. 428-407.000.

Hansen, Charles A., to Ford Motor Company. Backhoe swing cylinder hydraulic circuit. 4,201,509, Cl. 414-694.000.

Happel, Walter: *See*—
Sudler, Roland; and Happel, Walter, 4,201,929, Cl. 310-49.00R.

Harato, Takuo: *See*—
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,201,749, Cl. 423-127.000.

Hareng, Michel; and Le Berre, Serge, to Thomson-CSF. Thermoelectric display cell for recording images line by line. 4,202,010, Cl. 358-56.000.

Hari, Siegfried: *See*—
Triebel, Wolfgang; Hari, Siegfried; Koert, Hubert; and Evers, Fritz, 4,201,828, Cl. 428-332.000.

Harigaya, Isao; Taguchi, Tetsuya; Ito, Fumio; and Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Photographic camera device. 4,201,463, Cl. 354-86.000.

Harkins, James L. Method of cooking meat. 4,201,796, Cl. 426-238.000.

Harmsen, Ulf O., to Dr. Eugen Durrwachter Doduco. Method of producing a laminar contact material including a layer of silver and a metal oxide dispersed therein. 4,201,327, Cl. 228-176.000.

Harnisch, Horst, to Bayer Aktiengesellschaft. Naphthostyril dyestuffs. 4,201,713, Cl. 546-41.000.

Harnish, Wayne N.: *See*—
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,201,780, Cl. 424-246.000.

Harpavat, Ganesh L.: *See*—
Fishbeck, Kenneth H.; and Harpavat, Ganesh L., 4,201,995, Cl. 346-140.00R.

Harris Corporation: *See*—
Schroeder, James E., 4,200,968, Cl. 29-571.000.

Hartmann, Job-Werner: *See*—
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.

Hartmann, Klaus; and Siersch, Wolfgang, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Gas velocity meter. 4,201,467, Cl. 356-28.000.

Hartzell Manufacturing, Inc.: *See*—
Larson, Donald A.; and Reichert, Theodore J., 4,201,298, Cl. 206-387.000.

Harvey, James R., to Deere & Company. Transmission. 4,201,098, Cl. 74-761.000.

Hasegawa, Jun, to American Home Products Corporation. O-Hemisuccinate of propranolol. 4,201,866, Cl. 560-194.000.

Hashizume, Hiroshi: *See*—
Kimura, Tsuneo; and Hashizume, Hiroshi, 4,201,872, Cl. 562-487.000.

Hassinger, Donald F.: *See*—
Jacob, Keith D., 4,201,451, Cl. 350-278.000.

Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Ignition system for internal combustion engine. 4,201,163, Cl. 123-117.00R.

Hattori, Yoshiyuki: *See*—
Inagaki, Mitsuo; Hattori, Yoshiyuki; and Taguchi, Masahiro, 4,201,930, Cl. 310-51.000.

Hauni-Werke Korber & Co., KG: *See*—
Rudszinat, Willy, 4,201,102, Cl. 83-298.000.

Hauser, Hans: *See*—
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.

Hazama, Katashi: *See*—
Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, 4,201,964, Cl. 333-151.000.

Hedges, Charles V.: *See*—
Mark, Victor; Mitchell, Lawrence C.; and Hedges, Charles V., 4,201,878, Cl. 568-723.000.

Hedrich, Loren W., to Gulf Oil Corporation. 2,3-Disubstituted aralkylaminoacrylonitriles and use as herbicides. 4,201,569, Cl. 71-98.000.

Heeb, Othmar: *See*—
Maier, Elmar; and Heeb, Othmar, 4,201,324, Cl. 227-9.000.

Heffern, Edward W.: *See*—
Sabol, Albert R.; Petrille, Dennis G.; and Heffern, Edward W., 4,201,682, Cl. 252-33.400.

Heffernan, Edward J., to Carrier Corporation. Automatic chilled water setpoint temperature control. 4,201,061, Cl. 62-98.000.

Hehl, Rudolf: *See*—
Artzt, Peter; Hehl, Rudolf; Egbers, Gerhard; and Schenek, Anton, 4,201,037, Cl. 57-301.000.

Heinrich, William P.: *See*—
Slepak, Bernard; Tucker, John E.; and Heinrich, William P., 4,201,080, Cl. 73-73.000.

Heitkamp, Dieter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Magnetically supported particle matrix for accumulating or affecting substances dissolved or finely dispersed in a liquid or gas. 4,201,827, Cl. 428-283.000.

Hekal, Ihab M., to Continental Group, Inc., The. Ultrafiltration or reverse osmosis treatment of emulsified oil metal working coolants. 4,201,664, Cl. 210-23.00H.

Hendry, James W., to Ex-Cell-O Corporation. Method and apparatus for injection molding foamed resin products having a smooth finish on their surface. 4,201,742, Cl. 264-45.500.

Heniff, William V., Jr. Container for storing paint and a roller-type paint applicator. 4,200,949, Cl. 15-257.060.

Henkel Corporation: *See*—
Krbechek, Leroy O., 4,201,716, Cl. 260-397.400.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Smolka, Heinz G.; and Schumann, Klaus, 4,201,689, Cl. 252-184.000.
Waltenberger, Peter; Uphues, Gunter; and Petzold, Manfred, 4,201,680, Cl. 252-8.600.

Henrick, Clive A.: *See*—
Anderson, Richard J.; and Henrick, Clive A., 4,201,874, Cl. 562-598.000.

Henry, Ronald A.; and Martin, Eugene C., to United States of America, Navy. Polymeric binders of nitrated phenols and polyisocyanates which reversibly dissociate at elevated temperatures. 4,201,853, Cl. 528-85.000.

Henthorne, Michael; and DeBold, Terry, to Carpenter Technology Corporation. Austenitic stainless corrosion-resistant alloy. 4,201,575, Cl. 75-122.000.

Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity: *See*—
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.

Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for the thermal treatment of alkali-containing pulverized raw material to be used in the manufacture of cement. 4,201,546, Cl. 432-106.000.

Hermann Berstorff Maschinenbau GmbH: *See*—
Brand, Wilhelm, 4,201,480, Cl. 366-79.000.

Hermansdorfer, James E.: *See*—
Gilligan, Lawrence H.; and Hermansdorfer, James E., 4,202,014, Cl. 358-228.000.

Hesler, Joseph P.; Korzekwa, Samuel M.; and McFadyen, Robert J., to General Electric Company. Static inverter employing an assymetrically energized inductor. 4,202,031, Cl. 363-97.000.

Hess, Peter, to Metallwerk Max Brose GmbH. Operating mechanism for a motorcar window. 4,201,014, Cl. 49-325.000.

Heybourn, Frank: *See*—
Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., 4,201,507, Cl. 414-331.000.

Higashiguchi, Shigehiko. Transferable flocked fiber design material. 4,201,810, Cl. 428-90.000.

Hijikata, Akiko: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,201,863, Cl. 546-166.000.

Hildenbrand, Hartmut: *See*—
Rautenberg, Peter; Hildenbrand, Hartmut; and Parmar, Daljit-Singh, 4,201,607, Cl. 156-70.000.

Hill, Harold W., Jr. Passive audio signal mixing apparatus. 4,201,895, Cl. 179-100.10R.

Hilti Aktiengesellschaft: *See*—
Jochum, Peter, 4,201,325, Cl. 227-9.000.
Maier, Elmar; and Heeb, Othmar, 4,201,324, Cl. 227-9.000.

Hilts, Loren M.: *See*—
Church, Shirley L.; and Hilts, Loren M., 4,201,628, Cl. 202-158.000.

Hilzensauer, Volkmar: *See*—
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, 4,201,833, Cl. 428-404.000.

Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., to Molins Limited. Apparatus for handling rod-like articles. 4,201,507, Cl. 414-331.000.

Hincks, Robert W.: *See*—
Aziz, Paul D.; and Hincks, Robert W., 4,201,402, Cl. 282-9.00A.

Hinson, Virgil H.: *See*—
Jarman, Davis R.; and Hinson, Virgil H., 4,201,076, Cl. 72-392.000.

Hioki, Shunkichi: *See*—
Koyahata, Hirosi; and Hioki, Shunkichi, 4,201,390, Cl. 274-15.00R.

Hiraki, Shunichi: *See*—
Aoyama, Masaharu; Hiraki, Shunichi; and Yonezawa, Toshio, 4,200,969, Cl. 29-577.00R.

Hirashima, Masayoshi, to Matsushita Electric Industrial Co., Ltd. Sampling clock reproducing device. 4,202,012, Cl. 358-147.000.

Hisada, Takanori; and Fukuda, Kyohei, to Hitachi, Ltd. Electron gun structure for a pickup tube. 4,201,933, Cl. 315-16.000.

Hishida, Tadanori: *See*—
Inami, Yasuhiko; Takechi, Sadatoshi; Hishida, Tadanori; Uede, Hisashi; and Take, Hiroshi, 4,201,984, Cl. 340-763.000.
Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo; Hamada, Hiroshi; and Nakauchi, Hiroshi, 4,201,985, Cl. 340-785.000.

Hitachi, Ltd.: *See*—
Hisada, Takanori; and Fukuda, Kyohei, 4,201,933, Cl. 315-16.000.
Ito, Syoichi; and Suzuki, Mithuo, 4,201,993, Cl. 346-75.000.
Kuwabara, Takao; Okumura, Hiroshi; and Yokoyama, Toshiaki, 4,201,925, Cl. 290-52.000.
Maeda, Yoshio, 4,201,472, Cl. 356-226.000.
Nishimura, Yutaka; and Oyama, Yoshishige, 4,201,166, Cl. 123-119.0EC.
Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, 4,201,964, Cl. 333-151.000.
Okada, Tomoyuki; and Sugiura, Noboru, 4,201,173, Cl. 123-148.00C.
Sasayama, Takao; and Suda, Seiji, 4,201,161, Cl. 123-32.0EB.
Tanaka, Tomoyuki; Shirasawa, Toshikatsu; and Okamura, Masahiro, 4,201,598, Cl. 148-1.500.
Yoshikawa, Hiroshi; Kawakami, Akihiro; and Sato, Hideaki, 4,202,029, Cl. 361-394.000.

Hocker, G. Benjamin: *See*—
Geddes, John J.; and Hocker, G. Benjamin, 4,201,446, Cl. 350-96.290.

Hodge, Malcolm H., to TRW Inc. Optical fiber coupler for interfacing with light sources and detectors. 4,201,443, Cl. 350-96.200.

Hodgkinson, Norman: *See*—
Randell, Arthur A.; and Hodgkinson, Norman, 4,201,676, Cl. 252-1.000.

Hoechst Aktiengesellschaft: *See*—
Bormann, Dieter; Knabe, Bernd; Schrinner, Elmar; and Worm, Manfred, 4,201,779, Cl. 424-246.000.
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.

Hoffmann-La Roche Inc.: *See—*
Barner, Richard; and Schmid, Max, 4,201,879, Cl. 568-766.000.
Chan, Ka-Kong; and Pawson, Beverly A., 4,201,727, Cl. 568-442.000.
Cohen, Noal; and Saucy, Gabriel, 4,201,869, Cl. 560-255.000.
Olson, Gary L.; and Saucy, Gabriel, 4,201,726, Cl. 568-413.000.
Suchy, Milos, 4,201,789, Cl. 424-305.000.
Valenta, Zdenek, 4,201,717, Cl. 260-397.450.

Hofmann, William E.; and Long, Alton W., to Owens-Illinois, Inc. Method for coating glassware. 4,201,562, Cl. 65-60.00B.

Hogan, Vaughn C.: *See—*
McCartney, Ronald L.; Arnold, Bruce K.; and Hogan, Vaughn C., 4,201,444, Cl. 350-96.210.

Holl, Herbert B.; and Roberts, Thomas G., to United States of America, Army. Variable angle of incidence reflectometer with a continuous read out. 4,201,474, Cl. 356-369.000.

Holl, Walter W.: *See—*
Filan, John J.; Holl, Walter W.; and Wellman, George R., 4,201,775, Cl. 424-180.000.

Holloman, Miles E.: *See—*
Barr, Thomas A., Jr.; Holloman, Miles E.; and Walters, Joseph M., 4,201,950, Cl. 331-94.50G.

Holman, David J.; and James, Howard, to United Kingdom Atomic Energy Authority. Analytical apparatus. 4,201,643, Cl. 204-180.00R.

Holman, Rudolph G.; and Ketchum, Frank W., to AMF Incorporated. Compound bow. 4,201,177, Cl. 124-23.00R.

Holstein und Kappert GmbH: *See—*
Borstelmann, Wolfgang, 4,201,249, Cl. 141-39.000.
Schwinghammer, Gunther, 4,201,674, Cl. 210-333.00R.

Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich. Gas purification. 4,201,751, Cl. 423-210.000.

Holzschuh, Johann, to Battenfeld Maschinenfabriken. Mold closing and locking device. 4,201,533, Cl. 425-451.900.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kawashima, Yoshinori; Watanabe, Masaki; and Kinoshita, Katsuharu, 4,201,393, Cl. 277-92.000.
Ohama, Yasumichi, 4,201,168, Cl. 123-122.0AB.

Honda Motor Co., Ltd.: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.

Honegger, Werner, to Ferag AG. Conveyor system having a lateral take-off conveyor for flat products, especially paper products. 4,201,377, Cl. 271-225.000.

Honeywell Inc.: *See—*
Bursack, William W.; and Tromborg, Erik T., 4,201,913, Cl. 250-288.000.
Geddes, John J.; and Hocker, G. Benjamin, 4,201,446, Cl. 350-96.290.
Mott, Richard C., 4,201,245, Cl. 137-624.110.
Mott, Richard C., 4,201,336, Cl. 235-200.0WB.

Honeywell Information Systems Inc.: *See—*
Friedman, Stanley I.; Cobeen, Charles P.; and Jacobsthal, Herbert K., 4,201,980, Cl. 340-347.0DD.

Hoogenbosch, Thomas C., to J. & A. Atlas Nominees Pty. Ltd. Towing device. 4,201,400, Cl. 280-511.000.

Hori, Kiyoshi, to Nippon Paint Co., Ltd. Method of forming a decorative relief pattern. 4,201,801, Cl. 427-274.000.

Hori, Kiyotaka; and Nagatomo, Shigeru, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 4,201,586, Cl. 430-621.000.

Horn, Dieter: *See—*
Kurtz, Walter; Horn, Dieter; and Ditter, Walter, 4,201,710, Cl. 260-156.000.

Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., to United States of America, Health, Education and Welfare. 7-O-(2,6-Dideoxy-α-L-lyxo-hexopyranosyl)-daunomycinone, desmethoxy daunomycinone, adriamycinone, and carminomycinone. 4,201,773, Cl. 424-180.000.

Horton, John R., III. Construction for the interior of a van or truck. 4,201,414, Cl. 296-169.000.

Horton, Robert L., to Phillips Petroleum Company. Process for converting sulfur in hydrocarbon to water soluble form. 4,201,662, Cl. 208-228.000.

Hoshito, Kazuo; Sato, Hideaki; Kitamura, Takashi; and Masegi, Koichi, to Canon Kabushiki Kaisha. Information formation apparatus. 4,201,994, Cl. 346-108.000.

Hosoya, Nobukazu, to Sanyo Electric Co., Ltd. Input transformer arrangement for use in a television receiver. 4,201,962, Cl. 333-25.000.

Houdaille Industries, Inc.: *See—*
Clark, Stephen C.; and Carbone, Victor T., 4,201,905, Cl. 219-121.00L.

Houston, Theodore W.: *See—*
Darley, Henry M.; Houston, Theodore W.; and Kruger, James B., 4,201,997, Cl. 357-15.000.
Darley, Henry M.; Houston, Theodore W.; and Yuan, Han T., 4,202,003, Cl. 357-15.000.

Houtkamp, Johannes J., to N.V. Optische Industrie "De Oude Delft". Process for applying a light-absorbing, electron permeable layer within an image intensifier tube. 4,201,797, Cl. 427-66.000.

Howard, James K.; Turene, Frank E.; and White, James F., to International Business Machines Corporation. Low barrier Schottky diodes. 4,201,999, Cl. 357-15.000.

Howe, Dennis G.: *See—*
Thomas, Harold T.; Howe, Dennis G.; and Lee, James K., 4,201,581, Cl. 430-396.000.

Howell, Joseph R., Jr. Bong with full-bore removable plug standard. 4,201,230, Cl. 131-173.000.

Hoyle, Roy E.: *See—*
Kolk, Michael R.; Beck, Ralph E.; and Hoyle, Roy E., 4,201,516, Cl. 416-213.00R.

Hoyt, Charles W.: *See—*
Buske, Walter E.; and Hoyt, Charles W., 4,201,499, Cl. 406-75.000.

Hrabik, Heinrich, to Bonum-Werk Inhaber Friedrich Hetzmannseder. Preservative for film. 4,201,296, Cl. 206-205.000.

Hruza, Denis E., Sr.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Hsu, Yun T. Self-closing door hinge. 4,200,957, Cl. 16-154.000.

Huang, Ho-Chung: *See—*
Reichert, Walter F.; and Huang, Ho-Chung, 4,202,001, Cl. 357-22.000.

Huang, Jen-Chi, to Polychrome Corporation. Aluminum substrates grained with a saturated solution of aluminum salts of mineral acids. 4,201,836, Cl. 428-457.000.

Hubbard, James H.: *See—*
Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,201,464, Cl. 355-14.00R.

Hubner, Otto. Appliance for the care and cleaning of teeth and gums. 4,201,200, Cl. 128-66.000.

Hudson Oxygen Therapy Sales Company: *See—*
Bartholomew, Victor L., 4,201,205, Cl. 128-205.250.

Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, to BASF Aktiengesellschaft. Process for the manufacture of magnetic recording media. 4,201,486, Cl. 366-196.000.

Huetter, Ulrich. Wind turbine. 4,201,514, Cl. 416-37.000.

Hug, Hans A.: *See—*
Ribich, William A.; Hug, Hans A.; and Bellows, Alfred H., 4,201,270, Cl. 173-43.000.

Huggler, Peter E., to McGraw-Edison Company. Temperature sensitive timing device for toaster appliance. 4,201,124, Cl. 99-327.000.

Hughes, David E.; and Pugh, George W., Jr., to United States of America, Agriculture. Veterinary ocular ring device for sustained drug release. 4,201,210, Cl. 128-260.000.

Hughes, Noel: *See—*
Ellis, Stephen R.; Bott, Theodore R.; Kay, Howard E.; and Hughes, Noel, 4,201,736, Cl. 261-98.000.

Hughes, O. Richard, to Celanese Corporation. Stabilized catalyst complex of rhodium metal, bidentate ligand and monodentate ligand. 4,201,714, Cl. 260-340.90R.

Hughes, O. Richard, to Celanese Corporation. Hydroformylation catalyst and process. 4,201,728, Cl. 568-454.000.

Huhne, Erwin D.; and Anders, Jochen H., to Castolin GmbH. Device for automatic depositing by welding. 4,201,341, Cl. 239-79.000.

Humphries, David F.: *See—*
Carr, Harold F., Jr.; and Humphries, David F., 4,201,399, Cl. 280-402.000.

Humphries, Peter E., to Contronic Controls Limited. Four wire multisatellite intrusion alarm with multiplex annunciation. 4,201,982, Cl. 340-506.000.

Hunt, James A. Emergency illumination apparatus. 4,201,005, Cl. 40-570.000.

Hunter, Don L.; and Woods, William G., to United States Borax & Chemical Corp. N^3-(Cycloalkyl)alkyl-2,4-dinitro-6-trifluoromethyl-1,3-phenylenediamine compounds. 4,201,724, Cl. 260-577.000.

Hunter, George C.: *See—*
Domenicali, Peter L.; and Hunter, George C., 4,201,473, Cl. 356-360.000.

Hunter, Lee. Wheel alignment checking device. 4,200,988, Cl. 33-203.200.

Hurley, Rupert B., to Badische Corporation. Process for purifying and activating aqueous inorganic salt solutions employed in the wet spinning of filamentary vinyl polymers. 4,201,740, Cl. 264-38.000.

Hurt, Wesley D.; and Koski, John P., to American Hospital Supply Corporation. Stable schiff reagent. 4,201,693, Cl. 252-408.000.

Hustler, Inc.: *See—*
Altmayer, John, 4,201,990, Cl. 343-747.000.

Hutchins, Ned M., to Occidental Oil Shale, Inc. Control of airblast during explosive expansion in an in situ oil shale retort. 4,201,419, Cl. 299-2.000.

Huyser, Marvin E.: *See—*
Anderson, Ardis L.; and Huyser, Marvin E., 4,201,657, Cl. 208-23.000.

Hyde, Donald B., Jr., to Hyde's Incorporated. Bird feeder. 4,201,155, Cl. 119-51.00R.

Hyde, Eric A., to British Steel Corporation. Cleaning coke oven doors or door jambs. 4,201,630, Cl. 202-241.000.

Hyde, Jack, to Koppers Company, Inc. Hot blast stove breast wall. 4,201,543, Cl. 432-217.000.

Hyde's Incorporated: *See—*
Hyde, Donald B., Jr., 4,201,155, Cl. 119-51.00R.

Iddon Brothers Limited: *See—*
Iddon, Michael I.; and Turner, Donald M., 4,201,481, Cl. 366-79.000.

Iddon, Michael I.; and Turner, Donald M., to Iddon Brothers Limited. Scrolls for extruding machines. 4,201,481, Cl. 366-79.000.

Igarashi, Kikuo; and Sugawara, Tamio, to Shionogi & Co., Ltd. Novel aminoglycoside derivatives. 4,201,774, Cl. 424-180.000.

Igari, Akira: *See—*
Kanno, Michio; and Igari, Akira, 4,201,673, Cl. 210-321.00B.

Igelbuscher, Heinrich: *See—*
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,201,751, Cl. 423-210.000.

Ignatiev, Stanislav N.: *See—*
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.

Iizuka, Haruhiko, to Nissan Motor Company, Limited. Split engine operation of closed loop controlled multi-cylinder internal combustion engine with air-admission valve. 4,201,180, Cl. 123-198.00F.

Ikekawa, Nobuo: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,201,881, Cl. 568-819.000.

Ikuta, Yoshiji: *See—*
Nakao, Masatane; and Ikuta, Yoshiji, 4,200,966, Cl. 29-243.500.

Ilsemann, Heino. Device for inserting tape cassettes or the like and enclosures particularly into hinged boxes. 4,201,027, Cl. 53-53.000.

Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, to Kokusai Denshin Denwa Kabushiki Kaisha. Magnetic transfer record film and apparatus for magneto-optically reading magnetic record patterns using the same. 4,202,022, Cl. 360-114.000.

Imhauser, Gunter; Brauner, Dieter; and Muschelknautz, Edgar, to Bayer Aktiengesellschaft. Perforated mixing elements for static and dynamic mixers. 4,201,482, Cl. 366-98.000.

Imperial Chemical Industries Limited: *See—*
Edwards, Harry, 4,201,150, Cl. 118-323.000.

Imperial Oil Limited: *See—*
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.

Ina, Toshikazu: *See—*
Kawai, Hisasi; and Ina, Toshikazu, 4,201,159, Cl. 123-32.0EB.

Inagaki, Mitsuo; Hattori, Yoshiyuki; and Taguchi, Masahiro, to Nippon Soken, Inc. AC Generator having a clawtooth rotor with irregular trapizoidal teeth. 4,201,930, Cl. 310-51.000.

Inahara, Hirohisa: *See—*
Naito, Ryoichi; Shiino, Satoru; and Inahara, Hirohisa, 4,201,776, Cl. 424-195.000.

Inami, Yasuhiko; Takechi, Sadatoshi; Hishida, Tadanori; Uede, Hisashi; and Take, Hiroshi, to Sharp Kabushiki Kaisha. Current controlled drive system for electrochromic displays of the segmented type. 4,201,984, Cl. 340-763.000.

Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo; Hamada, Hiroshi; and Nakauchi, Hiroshi, to Sharp Kabushiki Kaisha. Constant current supply drive for electrochromic displays of the segmented type. 4,201,985, Cl. 340-785.000.

Inco Limited: *See—*
O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., 4,201,653, Cl. 204-263.000.

Ingelman, Bjorn G.; Richter, Ary W.; and Granath, Kirsti A., to Pharmacia Aktiebolag. Sterile aqueous solution of a mixture of isomaltooligosaccharides and its use for parenteral administration to mammals. 4,201,772, Cl. 424-180.000.

Ingersoll, Clyde E.; and Agarwall, Dwarika P., to Williams Gold Refining Company Incorporated. Ceramic substrate alloy. 4,201,577, Cl. 75-134.00N.

Innocenti Santeustacchio S.p.A.: *See—*
Passoni, Teresio; Mascheroni, Alberto; and Calmes, Jean P., 4,201,097, Cl. 74-529.000.

Innovation Industries, Inc.: *See—*
Copeland, James S.; and Primm, Raymond, 4,201,910, Cl. 250-216.000.

Inomata, Akira: *See—*
Nagase, Tetsuo; Watanabe, Hideo; and Inomata, Akira, 4,202,021, Cl. 360-96.500.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,201,777, Cl. 428-212.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Carbonaceous bodies. 4,201,777, Cl. 428-212.000.

Inoue, Michihiro: *See—*
Kimura, Takeji; Takemoto, Toyoki; Inoue, Michihiro; and Sato, Masaharu, 4,201,106, Cl. 84-1.090.

Inoue, Shigeo; and Miyamoto, Norioki, to Kao Soap Company, Limited. Process for producing a hydroxyfatty acid ester. 4,201,844, Cl. 435-135.000.

Inoue, Takashi: *See—*
Kotani, Teizo; Inoue, Takashi; and Arai, Kozo, 4,201,848, Cl. 525-314.000.

Insolio, Thomas A., to Fletcher-Terry Company, The. Glass cutter. 4,201,104, Cl. 83-886.000.

Institut Francais du Petrole: *See—*
Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, 4,201,661, Cl. 208-139.000.

Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR: *See—*
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

Institut Pasteur: *See—*
Gerlier, Jean-Pierre; and Augier, Jacques, 4,201,478, Cl. 356-440.000.

Institute Po Mechanika I Biomechanika: *See—*
Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., 4,201,340, Cl. 239-66.000.

Institutul National Pentru Creatie Stiintifica si Tehnica-Increst: *See—*
Teodorescu, Constantin; and Polizu, Radu, 4,201,141, Cl. 110-259.000.

International Business Machines Corp.: *See—*
Alcorn, George E.; Bergeron, David L.; and Stephens, Geoffrey B., 4,201,800, Cl. 430-5.000.
Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., 4,202,044, Cl. 365-182.000.
Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,201,464, Cl. 355-14.00R.
Chellis, Leroy N.; and Ellis, Theron L., 4,201,616, Cl. 156-307.100.
De La Moneda, F. H., 4,202,002, Cl. 357-22.000.
Dougherty, William E.; and Greer, Stuart E., 4,202,007, Cl. 357-80.000.
Epenoy, Gabriel I.; Kuhne, Roland; Laurent, Bernard; and Thirion, Philippe E., 4,202,039, Cl. 364-757.000.
Fyfe, Colin A.; Mossbrugger, Horst G.; and Yannoni, Costantino S., 4,201,941, Cl. 324-321.000.
Howard, James K.; Turene, Frank E.; and White, James F., 4,201,999, Cl. 357-15.000.
Lovgren, Jeffrey L.; and Quinlan, William P., 4,202,020, Cl. 360-75.000.
McCorkle, Richard A., 4,201,921, Cl. 250-493.000.
Patel, Arvind M., 4,201,976, Cl. 371-50.000.

International Flavors & Fragrances Inc.: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

International Nickel Co., Inc., The: *See—*
Subramanian, Kojur N.; Nissen, Norman C.; and Thomas, John A., 4,201,648, Cl. 204-112.000.

International Standard Electric Corporation: *See—*
Couch, Philip R.; and Philpott, David A., 4,201,884, Cl. 375-53.000.
Natens, Marcel C. R., 4,201,948, Cl. 331-8.000.
Thompson, George H. B.; and Selway, Peter R., 4,201,447, Cl. 350-96.310.

International Telephone and Telegraph: *See—*
Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., 4,201,889, Cl. 320-68.000.
Lawrence, Alan J.; Denenberg, Jeffrey N.; Rubinstein, Murray; and Upp, Daniel C., 4,201,890, Cl. 370-68.000.

International Telephone and Telegraph Corporation: *See—*
Lawrence, Alan J.; Cotton, John M.; and Denenberg, Jeffrey N., 4,201,891, Cl. 370-58.000.
Maklad, Mokhtar S.; and Pureza, Pablo C., 4,201,151, Cl. 118-642.000.
McCartney, Ronald L.; Arnold, Bruce K.; and Hogan, Vaughn C., 4,201,444, Cl. 350-96.210.
Paptzun, George J.; Hall, Collin C.; and Bullwinkle, Benjamin B., 4,201,365, Cl. 251-328.000.

International Totalizing Systems, Inc.: *See—*
Otten, David M., 4,201,907, Cl. 235-92.0AC.

International Wool Secretariat: *See—*
Benisek, Ladislav, 4,201,805, Cl. 427-389.000.

Inukai, Masatoshi: *See—*
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.

Iori, Giuseppe: *See—*
Paret, Giancarlo; Vetere, Alessandro; and Iori, Giuseppe, 4,201,633, Cl. 203-58.000.

Iowa State University Research Foundation, Inc.: *See—*
Al-Jalil, Hamid, 4,201,227, Cl. 130-8.000.

Ipri, Alfred C.: *See—*
Scott, Joseph H., Jr.; and Ipri, Alfred C., 4,201,603, Cl. 148-174.000.

Ipsen Industries International GmbH: *See—*
Luiten, Cornelis H.; and Gohring, Werner, 4,201,600, Cl. 148-16.500.

Irelan, Edward A.; Bartlett, Robert L.; and Walch, John W., to McGraw-Edison Company. Shield for grass trimmer. 4,200,978, Cl. 30-276.000.

Irie, Akiyoshi, to Unimation, Inc. Control apparatus for programmable manipulator. 4,201,937, Cl. 318-568.000.

Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: *See—*
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, 4,201,833, Cl. 428-404.000.

ITI Limited: *See—*
Mougin, Georges L., 4,201,498, Cl. 405-303.000.

Ito, Fumio: *See—*
Harigaya, Isao; Taguchi, Tetsuya; Ito, Fumio; and Yazaki, Mutsunobu, 4,201,463, Cl. 354-86.000.

Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, to Yokogawa Electric Works, Ltd. Vortex flow meter. 4,201,084, Cl. 73-194.0VS.

Ito, Syoichi; and Suzuki, Mithuo, to Hitachi, Ltd. Ink jet printer using inflammable ink. 4,201,993, Cl. 346-75.000.

Itoh, Kunio; and Oshima, Toshimichi, to Shin-Etsu Chemical Co., Ltd. Rubber compositions. 4,201,698, Cl. 260-3.000.

Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, to Sankyo Company Limited. Antibiotic substances No. 17927A_1 and No.

17927A2 and process for producing the same. 4,201,769, Cl. 424-117.000.
ITT Industries, Incorporation: *See*—
Pitt, Gillies D.; and Gregorig, Stephen I. N., 4,201,471, Cl. 356-70.000.
J. & A. Atlas Nominees Pty. Ltd: *See*—
Hoogenbosch, Thomas C., 4,201,400, Cl. 280-511.000.
J. I. Case Company: *See*—
Frisbee, Claude M., 4,201,268, Cl. 172-804.000.
Jackson, Stanley P., to Firth Carpets Limited. Cam driven sliding needle bar. 4,201,143, Cl. 112-79.00R.
Jackson, Theodore; and Johnson, Ken, to Jackson, Theodore. Airport landing indicator apparatus. 4,201,973, Cl. 340-26.000.
Jackson, Winston J., Jr.; and Morris, John C., to Eastman Kodak Company. Liquid crystal copolyesters containing terephthalic acid, 2,6-naphthalenedicarboxylic acid, hydroquinone and resorcinol. 4,201,856, Cl. 528-190.000.
Jacob, Keith D., to Hassinger, Donald F. Wide angled rear view mirror apparatus. 4,201,451, Cl. 350-278.000.
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, to E. B. Metal Rubber Industries, Inc. Pilferage protection for satellite vending machine having dual pricing capability. 4,201,283, Cl. 194-1.00A.
Jacobson, Paul R.: *See*—
Scheinhaus, Myron G.; and Jacobson, Paul R., 4,200,997, Cl. 36-11.500.
Jacobson, Sava. Remote playout telephone answering device. 4,201,888, Cl. 179-6.00E.
Jacobsthal, Herbert K.: *See*—
Friedman, Stanley I.; Cobeen, Charles P.; and Jacobsthal, Herbert K., 4,201,980, Cl. 340-347.0DD.
Jacoby, George V.: *See*—
Geffon, Arthur P.; and Jacoby, George V., 4,202,017, Cl. 360-45.000.
Jaggle, Gunther; Scharl, Herbert; and Krauss, Rudolf, to Robert Bosch GmbH. Fuel injection nozzle assembly for internal combustion engines. 4,201,172, Cl. 123-139.0AW.
James Brown & Sons Limited: *See*—
Widmer, Colin F., 4,201,372, Cl. 266-270.000.
James, Howard: *See*—
Holman, David J.; and James, Howard, 4,201,643, Cl. 204-180.00R.
Janik, John W. Signal and receptacle combination. 4,201,334, Cl. 232-34.000.
Japan Atomic Energy Research Institute: *See*—
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, 4,201,641, Cl. 204-159.170.
Japan Synthetic Rubber Co., Ltd.: *See*—
Kotani, Teizo; Inoue, Takashi; and Arai, Kozo, 4,201,848, Cl. 525-314.000.
Jarman, Davis R.; and Hinson, Virgil H. Front end alignment system. 4,201,076, Cl. 72-392.000.
Jasulaitis, William A.: *See*—
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,201,655, Cl. 208-8.0LE.
Jean, Albert L. Cigarette retarding and snuffing device. 4,201,233, Cl. 131-237.000.
Jeco Company Limited: *See*—
Tanaka, Toyonaru, 4,201,041, Cl. 368-85.000.
Jellinek, Karl; and Muller, Rolf, to Rutgerswerke Aktiengesellschaft. Boiling water and weather resistant cellulose fiber reinforced board material. 4,201,835, Cl. 428-288.000.
Jenaer Glaswerk Schott & Gen.: *See*—
Scheidler, Herwig; Wennemann, Dietmar; and Schwank, Bernd, 4,201,184, Cl. 126-39.00J.
Jennings, Gary L., to Pyramid Manufacturing Company. Wheeled portable well drilling and workover apparatus. 4,201,022, Cl. 52-118.000.
Jensen, Harbo P., to Chevron Research Company. Pour point depressant made from the asphaltene component of thermally treated shale oil. 4,201,658, Cl. 208-39.000.
Jessiman, Alexander F.: *See*—
Crawford, Henry; and Jessiman, Alexander F., 4,201,410, Cl. 294-83.00R.
Jochum, Peter, to Hilti Aktiengesellschaft. Fastening element setting device. 4,201,325, Cl. 227-9.000.
John, E. Roy. Electroencephalographic method and system for the quantitative description of patient brain states. 4,201,224, Cl. 128-731.000.
John Nolan Design Limited: *See*—
Nolan, John P. S., 4,201,035, Cl. 57-6.000.
John Zink Company: *See*—
Zink, John S.; and Reed, Robert D., 4,201,191, Cl. 126-360.00A.
Johnson, Bernard A.; and Gardner, Frederick P., to Mangood Corporation. Measurement and recording apparatus and system. 4,201,908, Cl. 235-92.0TC.
Johnson, Burnett H., to Exxon Research & Engineering Co. Microcellular heterocyclic polymer structures. 4,201,820, Cl. 428-195.000.
Johnson, David R., to United States of America, Energy. Preparation of U_3O_8. 4,201,738, Cl. 264-0.500.
Johnson, Frank S., to Marvel Metal Products Company. Cabinet assembly. 4,201,428, Cl. 312-257.00R.
Johnson, Jack W.; and Whittingham, M. Stanley, to Exxon Research and Engineering Co. Cell containing an alkali metal anode, a solid cathode, and a closoborane and/or closocarborane electrolyte. 4,201,839, Cl. 429-194.000.
Johnson, Ken: *See*—
Jackson, Theodore; and Johnson, Ken, 4,201,973, Cl. 340-26.000.
Johnson, Marvin M.: *See*—
Wu, Yulin; Johnson, Marvin M.; and Nowack, Gerhard P., 4,201,875, Cl. 568-575.000.
Johnston, Reece W., to Advance Dental Corporation. Orthodontic formulation and method. 4,200,980, Cl. 433-8.000.
Johren, Paul: *See*—
Stecher, Friedhelm; Fazekas, Josef; Johren, Paul; and Morsbach, Martin, 4,201,804, Cl. 427-393.600.
Jones, Colin, to Linkman Building Company Limited. Greenhouses. 4,201,019, Cl. 52-15.000.
Jones, Harry; and Slater, David L., to Ferranti Limited. Inertia switches. 4,201,898, Cl. 200-61.45R.
Jones, Ira D. Viewing rod for determining the level of liquid within a receptacle. 4,201,086, Cl. 73-327.000.
Jones, Jesse D.: *See*—
Zorzi, Paul A.; Jones, Jesse D.; and Kucsma, Michael E., 4,201,703, Cl. 260-37.0PC.
Jorcin, Serge: *See*—
Blanc, Roger; and Jorcin, Serge, 4,200,993, Cl. 34-104.000.
Jordan College: *See*—
Coxon, DeWayne A.; and Gates, Timothy P., 4,201,192, Cl. 126-422.000.
Jost, Heinrich: *See*—
Straub, Paul; and Jost, Heinrich, 4,201,287, Cl. 198-530.000.
Joyce, Glover C.: *See*—
Kirk, Calvin K.; Joyce, Glover C.; and Messier, Francis L., 4,201,016, Cl. 51-105.0SP.
Joyce, Hardin, Jr., to Fiat-Allis Construction Machinery, Inc. Vehicle axle suspension system. 4,201,273, Cl. 180-12.000.
Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, to Institut Francais du Petrole. Process for producing aromatics of high purity from oil cuts. 4,201,661, Cl. 208-139.000.
Jumpak Products Inc.: *See*—
Fima, Raoul G., 4,201,974, Cl. 340-52.00A.
Jungbluth, Otto. Three-dimensional structures made of beams and plates. 4,201,023, Cl. 52-334.000.
Junkers, John K. Hydraulic wrench. 4,201,099, Cl. 81-57.390.
Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, to Bergwerksverband GmbH. Arrangement for regenerating particulate adsorbents. 4,201,695, Cl. 252-411.00R.
Jurida, Vladslav J. Kitchen utensil. 4,200,958, Cl. 17-29.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Kondo, Kenichi, 4,201,038, Cl. 368-73.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kitagawa, Hiroshi, 4,201,109, Cl. 84-1.260.
Kabushiki Kaisha Saginomiya Seisakusho: *See*—
Nishimi, Ichiro; and Ohira, Hideaki, 4,201,362, Cl. 251-29.000.
Kabushiki Kaisha Sato: *See*—
Sato, Yo, 4,201,134, Cl. 101-288.000.
Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,201,133, Cl. 101-288.000.
Sato, Yo, 4,201,619, Cl. 156-384.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Tarusawa, Yasutaka, 4,201,043, Cl. 368-10.000.
Kadan, Ranjit S.; Freeman, Donald W.; Spadaro, James J.; and Ziegler, George M., Jr., to United States of America, Agriculture. Process for producing a low gossypol protein product from glanded cottonseed. 4,201,709, Cl. 260-123.500.
Kagayama, Joe, to Tsuyama Manufacturing Company, Ltd. Reflector for spokewise wheels. 4,201,448, Cl. 350-99.000.
Kageyama, Hidehei: *See*—
Kageyama, Toshihiko; and Kageyama, Hidehei, 4,200,977, Cl. 30-162.000.
Kageyama, Toshihiko; and Kageyama, Hidehei, to Kotobuki & Co. Ltd. Cutter knife. 4,200,977, Cl. 30-162.000.
Kahler, Werner. Live poultry conveying, counting and crating device. 4,201,156, Cl. 119-82.000.
Kamath, Venkatesh: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.
Kamfe, Eberhard; and Schmidt, Willi, to Erwin Kampf GmbH & Co. Machinenfabrik, Firma. Machine for simultaneous biaxially stretching, 4,200,963, Cl. 26-73.000.
Kamiyama, Satoru: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.
Kanbier, Dirk: *See*—
Kwant, Pieter B.; Kanbier, Dirk; Tjan, Petrus W. H. L.; and Akbar, Mohammed, 4,201,659, Cl. 208-73.000.
Kaneko, Tsugio: *See*—
Minagawa, Yukinori; Kaneko, Tsugio; and Yamaguchi, Kunihiko, 4,201,747, Cl. 423-21.500.
Kanno, Michio; and Igari, Akira, to Terumo Corporation. Apparatus for dialysis of solution. 4,201,673, Cl. 210-321.00B.
Kao Soap Company, Limited: *See*—
Inoue, Shigeo; and Miyamoto, Norioki, 4,201,844, Cl. 435-135.000.
Kaplan, Barbara W., to Union Carbide Corporation. Water soluble pesticidal quaternary ammonium salt compounds. 4,201,786, Cl. 424-282.000.

Kaplow, Roy; and Molnar, Michael K., to Massachusetts Institute of Technology. Dynamically variable keyboard terminal. 4,202,041, Cl. 364-900.000.
Karacsonyi, Paul: *See*—
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.
Kasai, Akio: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.
Katayama, Akira; and Shimoi, Osamu. Knob for a door lock. 4,201,069, Cl. 70-422.000.
Katchka, Jay R.; and Kelly, Samuel T., to Robertshaw Controls Company. Method of manufacturing a solenoid. 4,200,972, Cl. 29-602.00R.
Kathawala, Faizulla G., to Sandoz Inc. Cyclopropanyl-bearing hydrazides. 4,201,785, Cl. 424-274.000.
Kato Electric and Machinery Co. Ltd.: *See*—
Koyahata, Hirosi; and Hioki, Shunkichi, 4,201,390, Cl. 274-15.00R.
Kato, Hisakatsu: *See*—
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,201,749, Cl. 423-127.000.
Kato, Hisao: *See*—
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, 4,201,592, Cl. 106-2.000.
Kato, Yoshito: *See*—
Fukuma, Nobuo; and Kato, Yoshito, 4,201,935, Cl. 318-15.000.
Katsuda, Yoshio; and Minamite, Yoshihiro, to Dainippon Jochugiku Kabushiki Kaisha. Isovaleric acid ester derivatives, and insecticides containing said derivatives. 4,201,787, Cl. 424-304.000.
Kauzal, Gabriel P. Organic fertilizer. 4,201,564, Cl. 71-20.000.
Kawai, Hisasi; and Ina, Toshikazu, to Nippon Soken, Inc. Electronic control method and apparatus for combustion engines. 4,201,159, Cl. 123-32.0EB.
Kawakami, Akihiro: *See*—
Yoshikawa, Hiroshi; Kawakami, Akihiro; and Sato, Hideaki, 4,202,029, Cl. 361-394.000.
Kawakami Kagaku Kogyo Company Ltd.: *See*—
Sumitani, Kenji, 4,201,794, Cl. 426-96.000.
Kawamura, Hideo: *See*—
Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, 4,201,668, Cl. 210-51.000.
Kawamura, Masao, to Kitamura Valve Seizo Kabushiki Kaisha. Sealing device for a valve. 4,201,239, Cl. 137-72.000.
Kawamura, Norio: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.
Kawasaki, Toshihiro: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.
Kawashima, Yoshinori; Watanabe, Masaki; and Kinoshita, Katsuharu, to Honda Giken Kogyo Kabushiki Kaisha. Linked chain with improved sealing rings. 4,201,393, Cl. 277-92.000.
Kay, Howard E.: *See*—
Ellis, Stephen R.; Bott, Theodore R.; Kay, Howard E.; and Hughes, Noel, 4,201,736, Cl. 261-98.000.
Kaye, Paul, to Aquafilter Corporation. Cigarette holder with filter. 4,201,232, Cl. 131-187.000.
Kehr, Clifton L.; Wood, Louis L.; Marans, Nelson S.; and Fulmer, Glenn E., to W. R. Grace & Co. Dimensionally stable polyurethane foam. 4,201,846, Cl. 521-137.000.
Keller, Rene, to Emhart Zurich S. A. Mold identification. 4,201,338, Cl. 235-454.000.
Kelly, Samuel T.: *See*—
Katchka, Jay R.; and Kelly, Samuel T., 4,200,972, Cl. 29-602.00R.
Kent-Moore Corporation: *See*—
De Martelaere, David L.; and Bogard, William E., 4,201,056, Cl. 60-584.000.
Kenyon, Jack, to Moseley Rubber Co. Ltd., The. Cake displacement means for filter presses. 4,201,672, Cl. 210-225.000.
Keohring Company: *See*—
Briggs, Eugene C.; and Gustafson, William E., 4,201,544, Cl. 432-222.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann, 4,201,625, Cl. 176-11.000.
Heitkamp, Dieter, 4,201,827, Cl. 428-283.000.
Ketchum, Frank W.: *See*—
Holman, Rudolph G.; and Ketchum, Frank W., 4,201,177, Cl. 124-23.00R.
Keystone Consolidated Industries, Inc.: *See*—
Orr, John L., 4,201,427, Cl. 312-21.000.
Khajezadeh, Heshmat, to RCA Corporation. Semiconductor integrated circuit device. 4,202,006, Cl. 357-63.000.
Kienberger, Karl-Heinz; and Stock, Don J. R., to Endress u. Hauser GmbH u. Co. Arrangement for the generation and radiation of microwaves. 4,201,956, Cl. 331-96.000.
Kikumoto, Ryoji: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,201,863, Cl. 546-166.000.
Kimura, Masaharu; Otuki, Yoshiharu; Sugio, Akitoshi; and Furusawa, Tomotaka, to Mitsubishi Gas Chemical Company, Inc. Acetal resin composition. 4,201,849, Cl. 525-401.000.
Kimura, Masayuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Illumination device for motor vehicles. 4,202,030, Cl. 362-61.000.
Kimura, Takeji; Takemoto, Toyoki; Inoue, Michihiro; and Sato, Masaharu, to Matsushita Electric Industrial Co., Ltd. Electronic musical instrument. 4,201,106, Cl. 84-1.090.
Kimura, Tsuneo; and Hashizume, Hiroshi, to Mitsubishi Chemical Industries Ltd. Process for preparing purified terephthalic acid. 4,201,872, Cl. 562-487.000.
King, Reginald, to Evershed Power-Optics Limited. Production of composite images. 4,202,008, Cl. 358-22.000.
Kinoshita, Katsuharu: *See*—
Kawashima, Yoshinori; Watanabe, Masaki; and Kinoshita, Katsuharu, 4,201,393, Cl. 277-92.000.
Kipp, Henry A.: *See*—
Verner, David A.; and Kipp, Henry A., 4,201,527, Cl. 425-72.00R.
Kirchberger, Peter: *See*—
Kralowetz, Bruno; and Kirchberger, Peter, 4,201,500, Cl. 407-43.000.
Kirk, Calvin K.; Joyce, Glover C.; and Messier, Francis L., to Warner & Swasey Company, The. Apparatus for grinding a workpiece. 4,201,016, Cl. 51-105.0SP.
Kirsch, Jerry, to Auto-Place, Inc. Hopper feeder for singly dispensing short rods or tubes. 4,201,313, Cl. 221-171.000.
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Building material elements, particularly building boards, and a process for their production. 4,201,833, Cl. 428-404.000.
Kiscaden, Roy W.: *See*—
Vani, Elo N.; and Kiscaden, Roy W., 4,201,045, Cl. 60-39.09R.
Kish, Edward E.: *See*—
Danko, Oliver L.; Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; and Kish, Edward E., 4,201,366, Cl. 251-335.00B.
Kishi, Hiroyoshi: *See*—
Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, 4,201,441, Cl. 350-3.610.
Kitagawa, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Envelope waveform generator for electronic musical instruments, 4,201,109, Cl. 84-1.260.
Kitamura, Takashi: *See*—
Hoshito, Kazuo; Sato, Hideaki; Kitamura, Takashi; and Masegi, Koichi, 4,201,994, Cl. 346-108.000.
Kitamura Valve Seizo Kabushiki Kaisha: *See*—
Kawamura, Masao, 4,201,239, Cl. 137-72.000.
Kitchen, Roger M.; and Braithwaite, Dennis, to Deborah Services Limited. Girder roller fittings. 4,200,955, Cl. 16-106.000.
Kiwala, Jacob: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.
Klank, Otto, to Licentia Patent-Verwaltungs-G.m.b.H. Tuning circuit for a high frequency heterodyne receiver with tuning controlled by direct voltage. 4,201,943, Cl. 455-185.000.
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, to Bayer Aktiengesellschaft. Process of preparing foams with internal mold-release agents. 4,201,847, Cl. 521-172.000.
Klein, Gerald I., to Westinghouse Electric Corp. Unidirectional phase shifter. 4,201,961, Cl. 333-24.100.
Klein, Martin. Multi-angular sector sound transmitting and receiving system. 4,202,050, Cl. 367-105.000.
Klimenko, Valentin M.: *See*—
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.
Klingaman, Richard J.; and Boyce, Arthur V., Jr., to Colgate-Palmolive Company. Capsule package. 4,201,300, Cl. 206-45.190.
Klingaman, Richard J., to Colgate-Palmolive Company. Capsule having frangible wall portion. 4,201,316, Cl. 222-80.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,201,546, Cl. 432-106.000.
Nissen, Reinhard, 4,201,573, Cl. 75-109.000.
Zickgraf, Karl, 4,201,745, Cl. 422-199.000.
Knabe, Bernd: *See*—
Bormann, Dieter; Knabe, Bernd; Schrinner, Elmar; and Worm, Manfred, 4,201,779, Cl. 424-246.000.
Knight, Milton R.: *See*—
Romerdahl, Ronald W.; and Knight, Milton R., 4,201,967, Cl. 337-354.000.
Knoblauch, Karl: *See*—
Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, 4,201,695, Cl. 252-411.00R.
Knutson, Arthur O.: *See*—
Bumgarner, Robert L.; and Knutson, Arthur O., 4,201,299, Cl. 206-554.000.
Kobale, Manfred; Pink, Hans; and Schaefer, Helwig, to Siemens Aktiengesellschaft. Liquid crystal cell having an insulating layer of a silicon oxide base. 4,201,453, Cl. 350-340.000.
Kobayashi, Kazuo: *See*—
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, 4,201,175, Cl. 123-191.00M.
Kobayashi, Toshihiko: *See*—
Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, 4,202,022, Cl. 360-114.000.

Kobayashi, Yoshiro: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,201,881, Cl. 568-819.000.

Koert, Hubert: *See*—
Triebel, Wolfgang; Hari, Siegfried; Koert, Hubert; and Evers, Fritz, 4,201,828, Cl. 428-332.000.

Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, to BASF Aktiengesellschaft. Apparatus for spin coating in the production of thin magnetic layers for magnetic discs. 4,201,149, Cl. 118-52.000.

Koester, Eberhard: *See*—
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.

Koetsch, Philip W., to NCR Corporation. Power transistor actuating and bootstrap drive circuit. 4,201,928, Cl. 307-270.000.

Koga, Toshio, to Nippon Electric Co., Ltd. Television signal coder. 4,202,011, Cl. 358-136.000.

Kohler, Henry A., to Truly Magic Products, Inc. Liquid applicator. 4,201,491, Cl. 401-264.000.

Kohn, Gary A.: *See*—
Arendt, Henry P.; Deaton, Thomas M.; and Kohn, Gary A., 4,201,363, Cl. 251-62.000.

Kokubo, Eiichi: *See*—
Miyagawa, Tuyoshi; Kokubo, Eiichi; and Yoshida, Minoru, 4,201,131, Cl. 101-4.000.

Kokusai Denshin Denwa Co., Ltd.: *See*—
Niiro, Yasuhiko; and Wakabayashi, Hiroharu, 4,201,959, Cl. 333-16.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, 4,202,022, Cl. 360-114.000.

Kokusan Denki Co., Ltd.: *See*—
Nanjo, Hirotoshi; and Boyama, Kimihiro, 4,201,171, Cl. 123-148.0AC.

Kolk, Michael R.; Beck, Ralph E.; and Hoyle, Roy E., to Carrier Corporation. Impeller for a centrifugal machine. 4,201,516, Cl. 416-213.00R.

Kollross, Gunter. Method and apparatus for shirring of synthetic tubes, particularly casings for sausage production. 4,200,960, Cl. 17-42.000.

Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D. Induction melting furnace. 4,201,882, Cl. 13-27.000.

Komiya, Toshio: *See*—
Tomita, Masatsugu; Takase, Yoshiyuki; and Komiya, Toshio, 4,201,781, Cl. 424-246.000.

Kondo, Kenichi, to Kabushiki Kaisha Daini Seikosha. Alarm electronic watch. 4,201,038, Cl. 368-73.000.

Konen, Jerome P., Sr. Chain stretcher apparatus. 4,201,367, Cl. 254-67.000.

Kopp, Hermann, to Max Weishaupt GmbH. Large burners, particularly for liquid fuels. 4,201,538, Cl. 431-351.000.

Koppers Company, Inc.: *See*—
Hyde, Jack, 4,201,543, Cl. 432-217.000.

Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. 2-Azaergolines and 2-aza-8(or 9)-ergolenes. 4,201,862, Cl. 546-67.000.

Korver, Jan A. C.: *See*—
van Hattum, Johannes S. A.; and Korver, Jan A. C., 4,202,013, Cl. 358-158.000.

Korzekwa, Samuel M.: *See*—
Hesler, Joseph P.; Korzekwa, Samuel M.; and McFadyen, Robert J., 4,202,031, Cl. 363-97.000.

Koski, John P.: *See*—
Hurt, Wesley D.; and Koski, John P., 4,201,693, Cl. 252-408.000.

Kosseim, Alexander J. M.; Atwood, Gilbert R.; and Sokolik, Joseph E., Jr., to Union Carbide Corporation. Process for the selective removal of sulfur dioxide from effluent gases. 4,201,752, Cl. 423-235.000.

Kotani, Teizo; Inoue, Takashi; and Arai, Kozo, to Japan Synthetic Rubber Co., Ltd. Process for preparing polymers having high molecular weight. 4,201,848, Cl. 525-314.000.

Kotecha, Harish N.: *See*—
Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., 4,202,044, Cl. 365-182.000.

Kotobuki & Co. Ltd.: *See*—
Kageyama, Toshihiko; and Kageyama, Hidehei, 4,200,977, Cl. 30-162.000.

Kotzab, Werner: *See*—
Freund, Hans; and Kotzab, Werner, 4,201,425, Cl. 308-236.000.

Kowaka, Masamichi; and Fujikawa, Hisao, to Sumitomo Metal Industries, Ltd. Low carbon Ni-Cr austenitic steel having an improved resistance to stress corrosion cracking. 4,201,574, Cl. 75-122.000.

Koyahata, Hirosi; and Hioki, Shunkichi, to Kato Electric and Machinery Co. Ltd. Semi-automatic record player. 4,201,390, Cl. 274-15.00R.

Kralowetz, Bruno; and Kirchberger, Peter, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft. Profile milling cutter for a circular milling of cylindrical portions of crankshafts. 4,201,500, Cl. 407-43.000.

Krasnobajew, Victor; and Boeniger, Regula, to Givaudan Corporation. Novel condensation products having high activity to insolubilize proteins and protein-insolubilized products. 4,201,857, Cl. 525-398.000.

Krauss, Rudolf: *See*—
Jaggle, Gunther; Scharl, Herbert; and Krauss, Rudolf, 4,201,172, Cl. 123-139.0AW.

Kravchenko, Iya M.: *See*—
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

Krbechek, Leroy O., to Henkel Corporation. Preparation of 22-steroid acetals. 4,201,716, Cl. 260-397.400.

Krug, Martin; and Bihl, Paul R., to Sutrak Transportkalte, GmbH & Co. Air conditioner for a bus. 4,201,064, Cl. 62-239.000.

Kruger, James B.: *See*—
Darley, Henry M.; Houston, Theodore W.; and Kruger, James B., 4,201,997, Cl. 357-15.000.

Krupp-Koppers GmbH: *See*—
Wiemer, Erich, 4,201,346, Cl. 241-66.000.

Ku, Katharine: *See*—
Feder, Joseph; Ku, Katharine; and Ku, Mau-Jung, 4,201,845, Cl. 435-285.000.

Ku, Mau-Jung: *See*—
Feder, Joseph; Ku, Katharine; and Ku, Mau-Jung, 4,201,845, Cl. 435-285.000.

Kubodera, Seiiti: *See*—
Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, 4,201,589, Cl. 430-139.000.

Kucheck, Leo: *See*—
Crankshaw, Michael; and Kucheck, Leo, 4,201,621, Cl. 156-567.000.

Kucsma, Michael E.: *See*—
Zorzi, Paul A.; Jones, Jesse D.; and Kucsma, Michael E., 4,201,703, Cl. 260-37.0PC.

Kudlich, Hans: *See*—
Zimmer, Peter; and Kudlich, Hans, 4,201,132, Cl. 101-118.000.

Kuehn, Lorne A.; and Pogorski, Louis A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Heat receiver for divers. 4,201,206, Cl. 128-201.130.

Kuhne, Roland: *See*—
Epenoy, Gabriel I.; Kuhne, Roland; Laurent, Bernard; and Thirion, Philippe E., 4,202,039, Cl. 364-757.000.

Kuhs, Rudolf: *See*—
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,201,546, Cl. 432-106.000.

Kula, John S.: *See*—
Masiello, Felix R.; and Kula, John S., 4,201,354, Cl. 242-71.700.

Kulsa, Peter: *See*—
Mrozik, Helmut H.; Fisher, Michael H.; and Kulsa, Peter, 4,201,861, Cl. 536-17.00A.

Kung, Herbert. Concrete form component. 4,201,361, Cl. 249-183.000.

Kung, Roger I.; and Moench, Jerry D., to Motorola, Inc. Write circuit for a read/write memory. 4,202,045, Cl. 365-203.000.

Kunze, Dieter, to Siemens Aktiengesellschaft. Plug connection for light-wave conductors. 4,201,445, Cl. 350-96.210.

Kuppers, Gottfried: *See*—
Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann, 4,201,625, Cl. 176-11.000.

Kurauchi, Takeo: *See*—
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, 4,201,592, Cl. 106-2.000.

Kurbitz, Gunther; Wegener, Walter; and Weinheimer, Hans-Richard, to Carl Zeiss-Stiftung. Apparatus for protecting the target of an image-producing tube from injuriously high local current densities. 4,201,931, Cl. 315-10.000.

Kurei, Hiroshi: *See*—
Uno, Naoyuki; Urano, Fumio; Tano, Eiichi; and Kurei, Hiroshi, 4,201,462, Cl. 354-289.000.

Kurii, Masaaki: *See*—
Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, 4,201,163, Cl. 123-117.00R.

Kurita, Yoshio; and Shibata, Yukitake, to Yokogawa Electric Works, Ltd. Velocity detecting apparatus. 4,201,083, Cl. 73-194.00E.

Kurtz, Walter; Horn, Dieter; and Ditter, Walter, to BASF Aktiengesellschaft. Azo dyes of the pyridone series useful for flowable printing inks. 4,201,710, Cl. 260-156.000.

Kuttler, Otto, to A. Raymond. Sheet metal fastener and method of making. 4,201,111, Cl. 85-32.00V.

Kuwabara, Takao; Okumura, Hiroshi; and Yokoyama, Toshiaki, to Hitachi, Ltd. Method for starting hydraulic turbine generator. 4,201,925, Cl. 290-52.000.

Kwant, Pieter B.; Kanbier, Dirk; Tjan, Petrus W. H. L.; and Akbar, Mohammed, to Shell Oil Company. Process for the preparation of gas oil. 4,201,659, Cl. 208-73.000.

La Calhene: *See*—
Glachet, Charles, 4,201,310, Cl. 220-256.000.

Labaz: *See*—
Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., 4,201,725, Cl. 260-583.00H.

Label-Aire Inc.: *See*—
Crankshaw, Michael; and Kucheck, Leo, 4,201,621, Cl. 156-567.000.

Lafitte, George A., Jr., to Lockheed Corporation. Plastic/composite structural panel. 4,201,024, Cl. 52-394.000.

Lagasse, Alain: *See*—
Violland, Robert; and Lagasse, Alain, 4,201,824, Cl. 428-262.000.

Lagsdin, Andry, to American Zephyr Corporation. Sled and slide construction. 4,201,137, Cl. 104-69.000.

Lambert, Joe. Portable animal handling unit. 4,201,157, Cl. 119-82.000.

Lane, John H., to McDonnell Douglas Corporation. Modulo addressing apparatus for use in a microprocessor. 4,202,035, Cl. 364-200.000.

Langbein, Adolf: *See*—
Weber, Karl-Heinz; Bauer, Adolf; and Langbein, Adolf, 4,201,712, Cl. 260-244.400.

Langer, Karoly: *See*—
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.

Langguth, Robert P.: *See*—
Crutchfield, Marvin M.; Langguth, Robert P.; and Mayer, James M., 4,201,687, Cl. 252-102.000.

Lapple, Charles E.: *See*—
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., 4,201,512, Cl. 415-90.000.

Lardon, Marcel A., to Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten. Device for measuring the reflection of a plane, specularly reflecting surface. 4,201,479, Cl. 356-445.000.

Larson, Donald A.; and Reichert, Theodore J., to Hartzell Manufacturing, Inc. Storage case. 4,201,298, Cl. 206-387.000.

Larson, Roger G. Apparatus for determining the liquid level in a tank. 4,201,085, Cl. 73-304.00C.

Latimer, John P., to Deepsea Ventures, Inc. Pivotable means for decreasing drag effects on a generally cylindrical dredge pipe. 4,200,999, Cl. 37-54.000.

Latzer, Beda, to Sulzer Brothers Limited. Apparatus for the electron beam irradiation of a flowable material, more particularly sewage sludge. 4,201,918, Cl. 250-433.000.

Laurel Bank Machine Co., Ltd.: *See*—
Miyagawa, Tuyoshi; Kokubo, Eiichi; and Yoshida, Minoru, 4,201,131, Cl. 101-4.000.

Laurent, Bernard: *See*—
Epenoy, Gabriel I.; Kuhne, Roland; Laurent, Bernard; and Thirion, Philippe E., 4,202,039, Cl. 364-757.000.

Law, Richard S.: *See*—
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Olivieri, Anthony; and Macrina, Anthony J., 4,201,613, Cl. 156-270.000.

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Chouteau, Jacques; and Magne, Pierre, 4,201,229, Cl. 131-146.000.

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Kehr, Clifton L.; Wood, Louis L.; Marans, Nelson S.; and Fulmer, Glenn E., 4,201,846, Cl. 521-137.000.

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Zimmer, Peter; and Kudlich, Hans, 4,201,132, Cl. 101-118.000.

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Swinkels, Godefridus M.; and Maschmeyer, Dennis G., 4,201,748, Cl. 423-27.000.

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Guyot, Volker; Maus, Otfrid; and Mueller, Martin, 4,201,091, Cl. 73-462.000.

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Datwyler, Max, 4,201,297, Cl. 206-349.000.

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Kopp, Hermann, 4,201,538, Cl. 431-351.000.

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Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., 4,201,692, Cl. 252-372.000.

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Peterson, Marvin L.; and Maxson, Orwin G., 4,201,637, Cl. 204-148.000.

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Evans, Michael L.; Menlove, Howard O.; and Baker, Michael P., 4,201,912, Cl. 250-253.000.
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Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., 4,201,771, Cl. 424-177.000.
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Derschmidt, Hans; and Sahlstorfer, Hermann, 4,201,515, Cl. 416-134.00A.
Nikowitsch, Peter, 4,201,135, Cl. 102-56.0SC.
Weiland, Emil; Schindler, Rudolf; and Brunsch, Klaus, 4,201,815, Cl. 428-113.000.
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Kirk, Calvin K.; Joyce, Glover C.; and Messier, Francis L., 4,201,016, Cl. 51-105.0SP.
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Hess, Peter, 4,201,014, Cl. 49-325.000.
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Logan, James D., 4,201,093, Cl. 73-618.000.
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Ulveling, Leon; Mailliet, Pierre; and Metz, Jean, 4,201,373, Cl. 266-271.000.
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Patzelt, Heinrich; and Bokelmann, Horst, 4,201,321, Cl. 222-478.000.
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Evans, Marvin; and Miller, David H., 4,201,370, Cl. 266-44.000.
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Katsuda, Yoshio; and Minamite, Yoshihiro, 4,201,787, Cl. 424-304.000.
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Wolf, Roger P., 4,201,119, Cl. 93-60.000.
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Bethea, James W., III; Mitchell, O. Clayton; and Richards, George B., 4,201,225, Cl. 128-746.000.
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Ruin, Jean, 4,201,355, Cl. 242-84.10R.
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Yamazaki, Noboru; Yuasa, Teruo; Morimoto, Yoshio; Aoi, Kunio; and Takase, Tsutomu, 4,201,877, Cl. 568-720.000.
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Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, 4,201,964, Cl. 333-151.000.
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Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, 4,201,668, Cl. 210-51.000.
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Rohn, Charles L., 4,201,818, Cl. 428-159.000.
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Sasiela, Ronald J.; and Layne, Daniel T., 4,201,484, Cl. 366-153.000.
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Spaziante, Placido M.; Giuffre, Luigi; and Modica, Giovanni, 4,201,647, Cl. 204-195.00F.
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Kung, Roger I.; and Moench, Jerry D., 4,202,045, Cl. 365-203.000.
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Wooten, Richard L., 4,201,332, Cl. 229-92.000.
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Morcom, Paul J. Plastic collapsible article carrier. 4,201,295, Cl. 206-174.000.
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Morgan, J. Randolph: *See—*
Warren, Glenn B.; and Morgan, J. Randolph, 4,201,047, Cl. 60-39.630.
Morgan, James W.: *See—*
Fredin, Ell C.; Morgan, James W.; and Waimer, Milo H., 4,200,943, Cl. 7-100.000.
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Gerbet, Roger G.; Leroux, Jean-Claude; Morin, Daniel L.; and Leclercq, Marius F., 4,201,381, Cl. 273-73.00F.

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Jackson, Winston J., Jr.; and Morris, John C., 4,201,856, Cl. 528-190.000.
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Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,201,669, Cl. 210-58.000.
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Stecher, Friedhelm; Fazekas, Josef; Johren, Paul; and Morsbach, Martin, 4,201,804, Cl. 427-393.600.
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Kenyon, Jack, 4,201,672, Cl. 210-225.000.
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Fyfe, Colin A.; Mossbrugger, Horst G.; and Yannoni, Costantino S., 4,201,941, Cl. 324-321.000.
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Bizzak, Frank W., 4,201,148, Cl. 116-241.000.
Kung, Roger I.; and Moench, Jerry D., 4,202,045, Cl. 365-203.000.
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Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.
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Guyot, Volker; Maus, Otfrid; and Mueller, Martin, 4,201,091, Cl. 73-462.000.
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Jellinek, Karl; and Muller, Rolf, 4,201,835, Cl. 428-288.000.
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Meek, Nigel W.; Robb, John; and Munro, James A., 4,201,033, Cl. 56-13.600.
Muntjanoff, John R., to Caterpillar Tractor Co. Automatic grapple control system. 4,201,510, Cl. 414-730.000.
Murata, Kazuo: *See—*
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, 4,201,641, Cl. 204-159.170.
Murphy, Wesley T., to E.T.I. Corporation. Structural member. 4,201,026, Cl. 52-731.000.
Murray, Robert G.: *See—*
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., 4,201,512, Cl. 415-90.000.
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Imhauser, Gunter; Brauner, Dieter; and Muschelknautz, Edgar, 4,201,482, Cl. 366-98.000.
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Cobb, Clyde E.; and Muths, Donald A., 4,201,114, Cl. 91-3.000.
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Lyons, James E.; Schneider, Abraham; and Myers, Harry K., Jr., 4,201,731, Cl. 585-361.000.
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Cirami, Salvatore, 4,201,095, Cl. 74-217.00B.
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Nagano, Hiroo; Fukuda, Takashi; Nagai, Hiroshi; and Nakamura, Yasuyuki, 4,201,650, Cl. 204-209.000.
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Nagata, Wataru: *See—*
Narisada, Masayuki; and Nagata, Wataru, 4,201,782, Cl. 424-248.510.
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Hori, Kiyotaka; and Nagatomo, Shigeru, 4,201,586, Cl. 430-621.000.
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Nagel, Peter: *See—*
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.
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Nakagawa, Susumu: *See—*
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Nakahara, Keishi: *See—*
Tamaoku, Katsuki; Nakahara, Keishi; Sumiyoshi, Hideo; and Tachibana, Masahiro, 4,201,548, Cl. 23-230.00R.
Nakahara, Masaki: *See—*
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.
Nakajima, Mutsuo: *See—*
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.
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Nakamura, Yasuyuki: *See—*
Nagano, Hiroo; Fukuda, Takashi; Nagai, Hiroshi; and Nakamura, Yasuyuki, 4,201,650, Cl. 204-209.000.
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Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo; Hamada, Hiroshi; and Nakauchi, Hiroshi, 4,201,985, Cl. 340-785.000.
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Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,201,758, Cl. 423-497.000.
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Ali, Majid; and Nalebuff, Donald J., 4,201,221, Cl. 128-630.000.
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Nannen, William G. Thread reconditioning tool. 4,201,503, Cl. 408-215.000.
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Lee, Edward C.; and Natarajan, Thillaigovindan, 4,201,939, Cl. 324-158.00P.
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Bennett, Richard N.; and Lichaa, Albert, 4,201,251, Cl. 141-284.000.
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Nally, Robert B., 4,201,978, Cl. 340-146.30C.
NCR Corporation: *See—*
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Lewis, Wayne J.; and Ward, William P., 4,201,337, Cl. 235-303.200.
Ward, William P., 4,202,046, Cl. 365-222.000.
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Mirtain, Henri J.; Shichman, Daniel; and Neville, James J., 4,201,260, Cl. 152-361.0DM.

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Rowell, Robert L.; and Vasconcellos, Stephen R., 4,201,552, Cl. 44-51.000.

Newton, Joel A., to Sprague Electric Company. Treating pulp-and-paper mill streams. 4,201,666, Cl. 210-47.000.

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Shukla, Jayendra G.; Smith, Ray E.; and Nicholson, Richard R., 4,201,677, Cl. 252-8.100.
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Mattsson, Bertil; and Nilsson, Jan, 4,201,071, Cl. 72-60.000.

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Koga, Toshio, 4,202,011, Cl. 358-136.000.
Ushiyama, Yasuichi; and Yamamoto, Setsuo, 4,202,009, Cl. 358-32.000.

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Fukino, Kunihiro, 4,201,461, Cl. 354-272.000.
Nakano, Yoshiyuki, 4,201,459, Cl. 354-147.000.

Nippon Paint Co., Ltd.: *See—*
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, 4,201,592, Cl. 106-2.000.
Hori, Kiyoshi, 4,201,801, Cl. 427-274.000.

Nippon Soken, Inc.: *See—*
Akita, Sigeyuki; and Wakamatsu, Hisato, 4,201,087, Cl. 73-339.00A.
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Iizuka, Haruhiko, 4,201,180, Cl. 123-198.00F.
Tanaka, Toshiaki; and Etoh, Yukihiro, 4,201,165, Cl. 123-119.00A.

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Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, 4,201,592, Cl. 106-2.000.

Nitta, Tomio, to Tokai Seiki Co., Ltd. Fuel tank of a disposable cigarette gas lighter. 4,201,537, Cl. 431-344.000.

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Noel, Eugene M. Non-clogging gravity transfer connector for closed containers. 4,201,252, Cl. 141-286.000.

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Nolan, Thomas E., Jr., to Damon Corporation. Flexible shaft construction for a high inertia centrifuge. 4,201,066, Cl. 64-1.00V.

Nomura, Hideo: *See—*
Toyota, Akira; Nozawa, Katsumi; and Nomura, Hideo, 4,201,522, Cl. 417-311.000.

Nomura, Yukihiko: *See—*
Tanaka, Masami; and Nomura, Yukihiko, 4,201,969, Cl. 338-180.000.

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Northern Telecom Limited: *See—*
Walling, Jorg-Hein; and Bouffard, Jean, 4,201,250, Cl. 141-250.000.

Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc. Process and apparatus for the determination of the total organic substance content of gases by a flame ionization detector. 4,201,550, Cl. 23-232.00E.

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Nowak, Michael T., to Celanese Corporation. Radiation-curable coating composition having utility as a moisture barrier film. 4,201,642, Cl. 204-159.170.

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NTN Toyo Bearing Company: *See—*
Nakao, Masatane; and Ikuta, Yoshiji, 4,200,966, Cl. 29-243.500.

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Houtkamp, Johannes J., 4,201,797, Cl. 427-66.000.

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Hutchins, Ned M., 4,201,419, Cl. 299-2.000.

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Den Besten, Leroy E.; and O'Connell, James R., 4,201,421, Cl. 299-86.000.

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Hall, Walter L.; and O'Connell, William J. J., 4,201,832, Cl. 428-412.000.

Off, Joseph W. A.; and Early, Judson H., to Haggar Company. Method of manufacturing garments. 4,200,937, Cl. 2-227.000.

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O'Hara, James J. Portable pick-up device. 4,201,409, Cl. 294-1.0BA.

Ohgishi, Tsutomu; Akiyama, Toru; and Sakurai, Tadashi, to Sanyo Electric Co., Ltd. Phase comparing apparatus. 4,201,945, Cl. 455-183.000.

Ohio State University, The: *See—*
Stevens, Vernon C., 4,201,770, Cl. 424-177.000.

Ohira, Hideaki: *See—*
Nishimi, Ichiro; and Ohira, Hideaki, 4,201,362, Cl. 251-29.000.

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Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,201,863, Cl. 546-166.000.

Ohnishi, Takanori; Shiozawa, Ken; and Shimizu, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Kogyo Kabushiki Kaisha. Carburetor. 4,201,734, Cl. 261-34.00B.

Ohnuma, Teruyuki: *See—*
Oyama, Hazime; Suzuki, Kohji; Mochizuki, Manabu; and Ohnuma, Teruyuki, 4,201,465, Cl. 355-15.000.

Okabe, Itsuro: *See—*
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, 4,201,175, Cl. 123-191.00M.

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Okamoto, Rokuro; Fukumoto, Tsumoru; Takamatsu, Akira; and Takeuchi, Tomio, to Sanraku Ocean Co., Ltd. Process for manufacturing tylosin derivatives. 4,201,843, Cl. 435-76.000.

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Tanaka, Tomoyuki; Shirasawa, Toshikatsu; and Okamura, Masahiro, 4,201,598, Cl. 148-1.500.

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Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,201,860, Cl. 544-277.000.

Okumura, Hiroshi: *See—*
Kuwabara, Takao; Okumura, Hiroshi; and Yokoyama, Toshiaki, 4,201,925, Cl. 290-52.000.

Olah, George A., to Produits Chimiques Ugine Kuhlmann. Hydrocarbon conversions using solid superacid catalysts based on fluorinated graphite. 4,201,730, Cl. 585-730.000.

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Olin Corporation: *See—*
Gasper, Kenneth E., 4,201,867, Cl. 560-205.000.
Saeman, Walter C.; Coe, Noel N.; and Faust, John P., 4,201,756, Cl. 423-266.000.

Olivieri, Anthony; and Macrina, Anthony J. Method and apparatus involving adhesive backed photographs. 4,201,613, Cl. 156-270.000.

Olofsson, Bjorn O. E. Device for cooling and silencing of noise of a compressor or vacuum pump. 4,201,523, Cl. 417-312.000.

Olschewski, Armin: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,282, Cl. 192-98.000.
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Olsen, Jan-Erik, to AB Ziristor. Method for T or butt sealing of laminated all-plastic material. 4,201,609, Cl. 156-85.000.

Olson, Gary L.; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Synthesis of Vitamin E. 4,201,726, Cl. 568-413.000.

Olsson, Mats A. Device for cleaning fabric filters. 4,201,556, Cl. 55-292.000.

Olympus Optical Co., Ltd.: *See—*
Okada, Takeshi; and Ogawa, Mototugu, 4,201,198, Cl. 128-4.000.
Yuta, Koichi, 4,201,440, Cl. 350-1.200.

O'Neal, Thomas D., to American Cyanamid Company. Imidazolinyl benzamides as plant growth regulants. 4,201,565, Cl. 71-76.000.

O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., to Inco Limited. Electrowinning cell with bagged anode. 4,201,653, Cl. 204-263.000.

O'Neill, Eugene E., to United States Gypsum Company. Process for preparing calcined gypsum and gypsum board. 4,201,595, Cl. 106-109.000.

Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., to Merck & Co., Inc. Antibiotic A43F. 4,201,771, Cl. 424-177.000.

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Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.

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Onyshkevych, Lubomyr S., to RCA Corporation. Method and apparatus for trimming resistors. 4,201,970, Cl. 338-195.000.

Orenstein & Koppel Aktiengesellschaft: *See—*
Frick, Egon, 4,201,305, Cl. 212-47.000.

Orr, John L., to Keystone Consolidated Industries, Inc. Sewing machine positioner device. 4,201,427, Cl. 312-21.000.

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Osborg, Hans. Method of improving combustion of fuels and novel fuel compositions. 4,201,553, Cl. 44-52.000.

Oser, Zale, to Codman & Shurtleff, Inc. Method for fixation of prostheses to bone. 4,200,939, Cl. 3-1.900.

Oshima, Toshimichi: *See—*
Itoh, Kunio; and Oshima, Toshimichi, 4,201,698, Cl. 260-3.000.

Oslin, G. Robert; and Seamans, Clarence, to Qonaar Corporation. Fare collection apparatus. 4,201,333, Cl. 232-7.000.

Ostersetzer, Shlomo; and Brochstein, Eugenius. Pivoted blade between rotor and stator having arcuate sections. 4,201,526, Cl. 418-136.000.

Otis Engineering Corporation: *See—*
Arendt, Henry P.; Deaton, Thomas M.; and Kohn, Gary A., 4,201,363, Cl. 251-62.000.
Taylor, Donald F., 4,201,364, Cl. 251-175.000.

Otten, David M., to International Totalizing Systems, Inc. Totalizer system. 4,201,907, Cl. 235-92.0AC.

Otteson, Wayne O.: *See—*
Charbonneau, Jack W.; Law, Richard S.; Ludwig, Willis J.; and Otteson, Wayne O., 4,201,404, Cl. 282-27.500.

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Kimura, Masaharu; Otuki, Yoshiharu; Sugio, Akitoshi; and Furusawa, Tomotaka, 4,201,849, Cl. 525-401.000.

Outmans, Harry D., to Union Oil Company of California. Geothermal power plant. 4,201,060, Cl. 60-641.000.

Ovalstrapping, Inc.: *See—*
Pasic, James A., 4,201,127, Cl. 100-7.000.

Overfield, Norbert W., to Stanadyne, Inc. Fuel injection pump with positive displacement delivery valve having two port areas opened according to fuel flow rate. 4,201,170, Cl. 123-139.0BD.

Overton, Billy J., to FMC Corporation. Surface sweeper with floating broom chamber. 4,200,953, Cl. 15-349.000.

Owen, Kenneth. Power actuator for a coaxial R F power switch. 4,201,899, Cl. 200-153.00R.

Owens-Corning Fiberglas Corporation: *See—*
Shannon, Richard F., 4,201,247, Cl. 138-141.000.

Owens-Illinois, Inc.: *See—*
Hofmann, William E.; and Long, Alton W., 4,201,562, Cl. 65-60.00B.
Ninneman, Lawrence D., 4,201,535, Cl. 425-548.000.
Platt, Michael H., 4,201,264, Cl. 165-162.000.

Owens, James D. Ice cream dispenser. 4,201,112, Cl. 83-355.000.

Oyama, Hazime; Suzuki, Kohji; Mochizuki, Manabu; and Ohnuma, Teruyuki, to Ricoh Company, Ltd. Drum cleaning process and apparatus for electrophotography. 4,201,465, Cl. 355-15.000.

Oyama, Yoshishige: *See—*
Nishimura, Yutaka; and Oyama, Yoshishige, 4,201,166, Cl. 123-119.0EC.

Ozaki, Yoshisuke, to Massachusetts Institute of Technology. Chromatography method and apparatus. 4,201,671, Cl. 210-138.000.

Packer Plastics, Inc.: *See—*
Schwartzburg, James H.; Little, Eric A.; and Wilson, Eddie A., 4,201,360, Cl. 249-140.000.

Paige, Janet N.: *See—*
French, Floyd R.; and Paige, Janet N., 4,201,764, Cl. 424-45.000.

Palmai, Gyorgy: *See—*
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.

Palmer, Michael A. Pipe cover and holder. 4,201,231, Cl. 131-176.000.

Palmer, Warren G.; and Pritchard, John N., to FMC Corporation. Suspended solids meter. 4,201,477, Cl. 356-434.000.

Palosi, Eva: *See—*
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Spaziante, Placido M.; Giuffre, Luigi; and Modica, Giovanni, 4,201,647, Cl. 204-195.00F.

Pannenbecker, Heinrich. Blown film process. 4,201,741, Cl. 264-40.100.

Paptzun, George J.; Hall, Collin C.; and Bullwinkle, Benjamin B., to International Telephone and Telegraph Corporation. Lined gate valve having improved seat. 4,201,365, Cl. 251-328.000.

Paquin, Patrick J. Solid-fuel burner. 4,201,186, Cl. 126-83.000.

Paraframe, Inc.: *See—*
Vines, James K., 4,201,991, Cl. 343-840.000.

Paret, Giancarlo; Vetere, Alessandro; and Iori, Giuseppe, to Snamprogetti S.p.A. Separating aromatic hydrocarbons from mixtures containing them. 4,201,633, Cl. 203-58.000.

Parisi, Michael S.; and Pauly, John A., to Walter Kidde & Co., Inc. Temperature probe assembly. 4,201,968, Cl. 338-28.000.

Parker, Floyd J. Livestock restraining chute. 4,201,158, Cl. 119-98.000.

Parmar, Daljit-Singh: *See—*
Rautenberg, Peter; Hildenbrand, Hartmut; and Parmar, Daljit-Singh, 4,201,607, Cl. 156-70.000.

Parsons, David: *See—*
Bainbridge, Wilfred N.; and Parsons, David, 4,201,055, Cl. 60-562.000.

Pasic, James A., to Ovalstrapping, Inc. Hold-down acceleration device. 4,201,127, Cl. 100-7.000.

Passagne, Claude G.; Lippler, Remy R.; Senet, Jean-Pierre G.; and Plazanet, Jacques, to Societe Nationale des Poudres et Explosifs. Aliphatic polycarbonate-triols and modified aminoplast resins derived therefrom. 4,201,720, Cl. 260-463.000.

Passoni, Teresio; Mascheroni, Alberto; and Calmes, Jean P., to Innocenti Santeustacchio S.p.A. Device for locking and releasing the mandrel-holding carriage of a piercing pressure mill. 4,201,097, Cl. 74-529.000.

Patel, Arvind M., to International Business Machines Corporation. Plural channel error correcting methods and means using adaptive reallocation of redundant channels among groups of channels. 4,201,976, Cl. 371-50.000.

Paterick, Robert J., to Maremont Corporation. Tubular assembly. 4,201,407, Cl. 285-304.000.

Patonay, Gabor: *See—*
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.

Patzelt, Heinrich; and Bokelmann, Horst, to Metzeler Schaum GmbH. Applicator device for flowable reaction masses. 4,201,321, Cl. 222-478.000.

Paul Wurth-S.A.: *See—*
Ulveling, Leon; Mailliet, Pierre; and Metz, Jean, 4,201,373, Cl. 266-271.000.

Pauly, John A.: *See—*
Parisi, Michael S.; and Pauly, John A., 4,201,968, Cl. 338-28.000.

Pawson, Beverly A.: *See—*
Chan, Ka-Kong; and Pawson, Beverly A., 4,201,727, Cl. 568-442.000.

Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., to FMC Corporation. Mono-5-substituted-3-chloro-4H-1,2,6-thiadiazin-4-one antifungal agents. 4,201,780, Cl. 424-246.000.

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Likholai, Vasily K.; and Tjunkin, Boris A., 4,201,420, Cl. 299-2.000.

Perla, Guilio; and D'Arcangeli, Alessandro, to Colgate-Palmolive Company. Method of making soap bars. 4,201,743, Cl. 264-148.000.

Perren, Benno. Electrical instrument to detect the presence of liquid and method of operating the same. 4,201,914, Cl. 250-341.000.

Petersen, Ross K. Precleaner. 4,201,557, Cl. 55-327.000.

Peterson, David C., to Upjohn Company, The. 9-Deoxy-9,10-didehydro-PGD$_2$ analogs. 4,201,873, Cl. 562-503.000.

Peterson, Marvin L.; and Maxson, Orwin G., to Conoco, Inc. Sacrificial anode apparatus. 4,201,637, Cl. 204-148.000.

Petersson, Stig Anders. Method of effecting one of several different circuit connections. 4,202,038, Cl. 364-709.000.

Petit, Jean-Francois: *See—*
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, 4,201,768, Cl. 424-92.000.

Petri, Hermann: *See—*
Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann, 4,201,625, Cl. 176-11.000.

Petrille, Dennis G.: *See—*
Sabol, Albert R.; Petrille, Dennis G.; and Heffern, Edward W., 4,201,682, Cl. 252-33.400.

Petro-Canada Exploration Inc.: *See—*
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.

Petrov, Evgeny A.: *See—*
Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L., 4,201,276, Cl. 184-55.00A.

Petzold, Manfred: *See—*
Waltenberger, Peter; Uphues, Gunter; and Petzold, Manfred, 4,201,680, Cl. 252-8.600.

Pflug, Gunther: *See—*
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, 4,201,833, Cl. 428-404.000.

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Ingelman, Bjorn G.; Richter, Ary W.; and Granath, Kirsti A., 4,201,772, Cl. 424-180.000.

Philips, Kochukadamthotil V. Adjustable clamp for V-block. 4,201,376, Cl. 269-156.000.

Phillips Petroleum Company: *See—*
Horton, Robert L., 4,201,662, Cl. 208-228.000.
MacEwen, George E., 4,201,328, Cl. 229-4.500.
Murtha, Timothy P., 4,201,632, Cl. 203-51.000.
Platt, Louis; and Poteet, Thomas S., 4,201,620, Cl. 156-494.000.
Wu, Yulin; Johnson, Marvin M.; and Nowack, Gerhard P., 4,201,875, Cl. 568-575.000.

Phillips, Robert L. Combination instrument for taking biomechanical measurements. 4,201,226, Cl. 128-774.000.

Philpott, David A.: *See—*
Couch, Philip R.; and Philpott, David A., 4,201,884, Cl. 375-53.000.

Phipps, Arthur L., to Condec Corporation. Foam extrusion die assembly. 4,201,534, Cl. 425-461.000.

Pickett, Lawrence F.: *See—*
Udo, Henry D.; and Pickett, Lawrence F., 4,202,015, Cl. 358-237.000.

Pierce, Everett T. Firewood cutting aid. 4,201,375, Cl. 269-46.000.

Pierson, Joseph E.; and Targza, Walter H., to Corning Glass Works. Method for hydrating silicate glasses. 4,201,561, Cl. 65-30.00R.

Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., to Labaz. Secondary amines. 4,201,725, Cl. 260-583.00H.

Pillon, Rene, to Fives-Cail Babcock. Control unit for torch-cutting machines used in continuous casting. 4,201,371, Cl. 266-50.000.

Pinckney, Benjamin H.: *See—*
Chuss, David M.; and Pinckney, Benjamin H., 4,201,315, Cl. 222-66.000.

Pines, Arthur N.: *See—*
Cully, Maryann; Pines, Arthur N.; Metzler, Richard B.; and Babian, Gunther W., 4,201,808, Cl. 428-40.000.

Pink, Hans: *See—*
Kobale, Manfred; Pink, Hans; and Schaefer, Helwig, 4,201,453, Cl. 350-340.000.

Pioneer Electronic Corporation: *See—*
Nagase, Tetsuo; Watanabe, Hideo; and Inomata, Akira, 4,202,021, Cl. 360-96.500.

Pirani, Giancarlo: *See—*
Dogliotti, Renato; and Pirani, Giancarlo, 4,201,909, Cl. 455-608.000.

Pitt, Gillies D.; and Gregorig, Stephen I. N., to ITT Industries, Incorporation. Oil concentration detector. 4,201,471, Cl. 356-70.000.

Pitts, Frank, to Engelhard Minerals & Chemicals Corporation. Processing of breunnerite to recover magnesium compounds. 4,201,750, Cl. 423-162.000.

Pixyfoto GmbH: *See—*
Viering, Rudolf, 4,201,458, Cl. 354-136.000.

Plastic Forming Company, Inc., The: *See—*
Schurman, Peter T., 4,201,531, Cl. 425-290.000.

Platt, Louis; and Poteet, Thomas S., to Phillips Petroleum Company. Web rolling apparatus. 4,201,620, Cl. 156-494.000.

Platt, Michael H., to Owens-Illinois, Inc. Solar water tank. 4,201,264, Cl. 165-162.000.

Plazanet, Jacques: *See—*
Passagne, Claude G.; Lippler, Remy R.; Senet, Jean-Pierre G.; and Plazanet, Jacques, 4,201,720, Cl. 260-463.000.

Pluck, John: *See—*
Tyrer, Philip G.; and Pluck, John, 4,201,178, Cl. 123-198.00D.

Podmaniczky, Andras: *See—*
Vadasz, Peter; Tokes, Szabolcs; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.

Pogorski, Louis A.: *See—*
Kuehn, Lorne A.; and Pogorski, Louis A., 4,201,206, Cl. 128-201.130.

Polaroid Corporation: *See—*
Bedell, Stanley F.; Sullivan, Charles I.; and Taylor, Lloyd D., 4,201,587, Cl. 430-224.000.
Erlichman, Irving, 4,201,457, Cl. 354-86.000.
Trapani, Giorgio B., 4,201,450, Cl. 350-150.000.

Polizu, Radu: *See—*
Teodorescu, Constantin; and Polizu, Radu, 4,201,141, Cl. 110-259.000.

Pollet, Robert J.; Vandeputte, Camille A.; Sels, Francis J.; and van Veelen, George F., to Agfa-Gevaert, N.V. Photographic bleach compositions containing bleach-accelerating compounds. 4,201,585, Cl. 430-376.000.

Polya, Endre: *See—*
Vadasz, Peter; Tokes, Szaboles; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.

Polycarrier Company: *See—*
Crawford, Kenneth Z., 4,201,322, Cl. 224-45.0AB.

Polychrome Corporation: *See—*
Huang, Jen-Chi, 4,201,836, Cl. 428-457.000.

Pool, Clarence. Cabbing device for gemstones. 4,201,018, Cl. 51-229.000.

Popoff, Paul M.; Lee, Siu K.; and Touchton, James J., to Sperry Rand Corporation. Timing circuit and method for a track following servo in a data storage system. 4,202,019, Cl. 360-51.000.

Porta Systems Corp.: *See—*
DeLuca, Paul V., 4,202,026, Cl. 361-119.000.

Potain Poclain Materiel (P.P.M.): *See—*
Charles, Georges M., 4,201,511, Cl. 414-738.000.

Poteet, Thomas S.: *See—*
Platt, Louis; and Poteet, Thomas S., 4,201,620, Cl. 156-494.000.

PPG Industries, Inc.: *See—*
Bricker, Jack A., 4,201,563, Cl. 65-162.000.
Dupre, Dallas D., III, 4,201,652, Cl. 204-258.000.
Gillery, F. Howard, 4,201,649, Cl. 204-192.00P.
Tolliver, Richard J., 4,201,351, Cl. 242-56.00B.

Pratt, Albert R.: *See—*
Morrison, Raymond C.; and Pratt, Albert R., 4,201,096, Cl. 74-531.000.

Pratt & Lambert, Inc.: *See—*
Wolinski, Leon E.; Riebling, Richard G.; and Edholm, John H., 4,201,732, Cl. 525-363.000.

Preisa, Ieva E.: *See—*
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

Preus, Paul. Protected aquatic sports area. 4,201,495, Cl. 405-63.000.

Primm, Raymond: *See—*
Copeland, James S.; and Primm, Raymond, 4,201,910, Cl. 250-216.000.

Primus Mfg., Inc.: *See—*
Culver, Irven H.; and Szymber, Oleg, 4,200,985, Cl. 33-141.00R.

Pritchard, John N.: *See—*
Palmer, Warren G.; and Pritchard, John N., 4,201,477, Cl. 356-434.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Olah, George A., 4,201,730, Cl. 585-730.000.

Projectus Industriprodukter Aktiebolag: *See—*
Gustafsson, Berth U., 4,201,631, Cl. 203-1.000.

Psaar, Hubertus, to Bayer Aktiengesellschaft. Methine dyestuffs containing a phenyl azo group. 4,201,707, Cl. 260-162.000.

Pugh, Evan R.: *See—*
Stewart, Charles C.; Avidor, Joel M.; Pugh, Evan R.; and Lothrop, John W., 4,201,952, Cl. 331-94.50D.

Pugh, George W., Jr.: *See—*
Hughes, David E.; and Pugh, George W., Jr., 4,201,210, Cl. 128-260.000.

Pureza, Pablo C.: *See—*
Maklad, Mokhtar S.; and Pureza, Pablo C., 4,201,151, Cl. 118-642.000.

Puschner, Peter. Method and apparatus for arc welding. 4,201,906, Cl. 219-137.0PS.

Puyplat, Olivier, to Societe Industrielle de Mecanique. Reflector for automobile headlights. 4,201,452, Cl. 350-288.000.

Pye, David S.; and Fischer, Paul W., to Union Oil Company of California. Foam drilling and workover in high temperature wells. 4,201,678, Cl. 252-8.50A.

Pyramid Manufacturing Company: *See—*
Jennings, Gary L., 4,201,022, Cl. 52-118.000.

Pyroban Limited: *See—*
Tyrer, Philip G.; and Pluck, John, 4,201,178, Cl. 123-198.00D.

Qonaar Corporation: *See—*
Oslin, G. Robert; and Seamans, Clarence, 4,201,333, Cl. 232-7.000.

Quadri, Farooq M., to Burroughs Corporation. Bubble memory defect tolerant logic control circuit. 4,202,043, Cl. 365-15.000.

Qualidyne Systems, Inc.: *See—*
Cathell, Franklin J., 4,201,957, Cl. 331-110.000.

Quarz-Zeit AG: *See—*
Sudler, Roland; and Happel, Walter, 4,201,929, Cl. 310-49.00R.

Queen's University at Kingston: *See—*
Wan, Jeffrey K. S.; and Chen, Kuang S., 4,201,638, Cl. 204-158.00R.

Quinlan, William P.: *See—*
Lovgren, Jeffrey L.; and Quinlan, William P., 4,202,020, Cl. 360-75.000.

Quirk, Leo. Auxiliary safety valve for a pressurized fluid system. 4,201,244, Cl. 137-614.200.

Racz, Janos A.: *See—*
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,201,430, Cl. 339-5.00M.

Raimond, Charles L.: *See—*
Barber, Harold G., Jr.; and Raimond, Charles L., 4,201,107, Cl. 84-1.140.

Rakshys, Joseph W.: *See—*
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,201,729, Cl. 260-665.00R.

Ramesohl, Hubert: *See—*
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,201,546, Cl. 432-106.000.

Ramhorst, Louis H. Wild well control method and apparatus. 4,201,267, Cl. 166-315.000.

Randell, Arthur A.; and Hodgkinson, Norman, to Coal Industry (Patents) Limited. Method of heat treating a material. 4,201,676, Cl. 252-1.000.

Randow, Albert: *See—*
Schunk, Gunter; and Randow, Albert, 4,201,915, Cl. 250-343.000.

Rannenberg, Katherine. Perpetual or long life calendar. 4,201,405, Cl. 283-4.000.

Rao, Ganta V.; and Shoup, Floyd K., to Far-Mar-Co., Inc. Method for fractionating the whole wheat kernel by sequential milling. 4,201,708, Cl. 260-112.00G.

Rathmell, Richard K. Automatic speed shift for bicycles and the like. 4,201,094, Cl. 74-217.00B.

Rautenberg, Peter; Hildenbrand, Hartmut; and Parmar, Daljit-Singh, to AEG - Telefunken Kabelwerke AG, Rheydt. Manufacture of optical fiber cables. 4,201,607, Cl. 156-70.000.

Raytheon Company: *See—*
Bierig, Robert W.; and Steele, S. Robert, 4,201,604, Cl. 148-175.000.
Morrison, Raymond C.; and Pratt, Albert R., 4,201,096, Cl. 74-531.000.

RCA Corporation: *See—*
Khajezadeh, Heshmat, 4,202,006, Cl. 357-63.000.
Onyshkevych, Lubomyr S., 4,201,965, Cl. 336-180.000.
Onyshkevych, Lubomyr S., 4,201,970, Cl. 338-195.000.
Reichert, Walter F.; and Huang, Ho-Chung, 4,202,001, Cl. 357-22.000.
Schade, Otto H., Jr., 4,201,947, Cl. 330-253.000.
Scott, Joseph H., Jr.; and Ipri, Alfred C., 4,201,603, Cl. 148-174.000.
Smith, Joseph L., 4,201,932, Cl. 315-13.00C.
Zuk, Borys, 4,201,927, Cl. 307-269.000.

Reed, Robert D.: *See—*
Zink, John S.; and Reed, Robert D., 4,201,191, Cl. 126-360.00A.

Reed, Russell, Jr.; Sieg, George F.; Rhyn, Elmer J.; and Waldon, Billy E., to United States of America, Navy. Gas generator propellant for airbreathing missiles. 4,201,605, Cl. 149-19.100.

Reed, Terry J.; and Smith, Jack R., to Westinghouse Electric Corp. Combined cycle electric power plant and a gas turbine having improved megawatt load control. 4,201,923, Cl. 290-40.00R.

Reichert, Theodore J.: *See—*
Larson, Donald A.; and Reichert, Theodore J., 4,201,298, Cl. 206-387.000.

Reichert, Walter F.; and Huang, Ho-Chung, to RCA Corporation. Semiconductor device having grid for plating contacts. 4,202,001, Cl. 357-22.000.

Reid, Ansell L.: *See—*
Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,201,758, Cl. 423-497.000.

Reidelbach, Willi; and Schmid, Walter, to Daimler-Benz Aktiengesellschaft. Anchoring arrangement of an end- or deflection-point of a safety belt, especially in motor vehicles. 4,201,418, Cl. 297-474.000.

Reim, William K. Film image removal process and apparatus. 4,201,015, Cl. 51-74.00R.

Reimer, Hans: *See—*
Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, 4,201,246, Cl. 138-30.000.

Reinert, Warren D.: *See—*
Orsinger, Winston A.; and Reinert, Warren D., 4,201,617, Cl. 156-351.000.

Reithel, Raymond F., to Eastman Kodak Company. Electrically activated recording material and process. 4,201,583, Cl. 430-97.000.

Reithel, Raymond F., to Eastman Kodak Company. Electrically activated recording material and process. 4,201,591, Cl. 430-619.000.

Renner, Robert C.: *See—*
Rollag, Dwayne A.; Dornbush, James N.; and Renner, Robert C., 4,201,663, Cl. 210-16.000.

Revermann, Mike; and Spector, George. Balloon buster game. 4,201,387, Cl. 273-243.000.

Rexham Corporation: *See—*
Wiles, Jerald R., 4,201,031, Cl. 53-455.000.

Rhone-Poulenc Industries: *See—*
Violland, Robert; and Lagasse, Alain, 4,201,824, Cl. 428-262.000.

Rhone-Poulenc-Textile: *See—*
Sangalli, Silvio, 4,201,032, Cl. 53-522.000.

Rhyn, Elmer J.: *See—*
Reed, Russell, Jr.; Sieg, George F.; Rhyn, Elmer J.; and Waldon, Billy E., 4,201,605, Cl. 149-19.100.

Ribich, William A.; Hug, Hans A.; and Bellows, Alfred H., to Foster-Miller Associates, Inc. Roof bolter. 4,201,270, Cl. 173-43.000.

Richards, Albert G. Teaching device and method for dental X-ray techniques. 4,200,996, Cl. 35-17.000.

Richards, George B.: *See—*
Bethea, James W., III; Mitchell, O. Clayton; and Richards, George B., 4,201,225, Cl. 128-746.000.

Richardson Company, The: *See—*
Lombardi, Louis J.; and Coyne, Roy J., 4,201,842, Cl. 430-281.000.

Richter, Ary W.: *See—*
Ingelman, Bjorn G.; Richter, Ary W.; and Granath, Kirsti A., 4,201,772, Cl. 424-180.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.

Ricoh Company, Ltd.: *See—*
Oyama, Hazime; Suzuki, Kohji; Mochizuki, Manabu; and Ohuuma, Teruyuki, 4,201,465, Cl. 355-15.000.

Riebling, Richard G.: *See—*
Wolinski, Leon E.; Riebling, Richard G.; and Edholm, John H., 4,201,732, Cl. 525-363.000.

Riechert, Dieter. Grate with replaceable wear elements. 4,201,545, Cl. 432-239.000.

Riegert, Richard P., to Ferran, Robert J. Closed-loop sputtering system and method of operating same. 4,201,645, Cl. 204-192.00R.

Rieppel, Perry J.; and Sadauskas, Raymond A., to Arcair Company. Electrode for air-carbon arc cutting and gouging. 4,201,902, Cl. 219-69.00M.

Rieter Machine Works Ltd.: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,201,036, Cl. 57-291.000.

Rigazio, Anthony W.; and Rubin, Allen, to Spartus Corporation. Package for protection and display of clocks and the like. 4,201,293, Cl. 206-45.190.

Rinne, Gerhart; and Sachtler, Jurgen, to Dragerwerk Aktiengesellschaft. Breathing gas humidifier. 4,201,204, Cl. 128-203.270.

Rittler, Hermann L., to Corning Glass Works. Method of producing a glass-ceramic. 4,201,559, Cl. 65-2.000.

Robb, John: *See—*
Meek, Nigel W.; Robb, John; and Munro, James A., 4,201,033, Cl. 56-13.600.

Robbins, Gene A. Portable gas laser and power supply. 4,201,949, Cl. 331-94.5PE.

Robbins, Gene A. Laser system with triangulated capacitor encircling the laser head. 4,201,953, Cl. 331-94.5PE.

Robbins, Raymond E. Vine support and/or guide clip for installation on brick walls. 4,201,013, Cl. 47-44.000.

Robert Bosch GmbH: *See—*
Jaggle, Gunther; Scharl, Herbert; and Krauss, Rudolf, 4,201,172, Cl. 123-139.0AW.

Roberts, Thomas G.: *See—*
Holl, Herbert B.; and Roberts, Thomas G., 4,201,474, Cl. 356-369.000.

Robertshaw Controls Company: *See—*
Katchka, Jay R.; and Kelly, Samuel T., 4,200,972, Cl. 29-602.00R.
Marquis, Edgar E., 4,200,974, Cl. 29-622.000.

Robertson Paper Box Co., Inc.: *See—*
Davidson, Thomas L., 4,201,291, Cl. 206-44.00R.
Davidson, Thomas L.; and Gonet, Charles F., 4,201,292, Cl. 206-44.00R.

Robinson, Frederick J.; and Tracy, Clarence J., to Motorola, Inc. Method for removing photoresist by hydrogen plasma. 4,201,579, Cl. 430-323.000.

Robinson, T. Garrett. Device for increasing efficiency of fuel. 4,201,140, Cl. 110-218.000.

Robson, Ernest G.: *See—*
Croucher, Robert L.; and Robson, Ernest G., 4,201,001, Cl. 37-190.000.

Rocca, Anthony A. Accessory item. 4,201,807, Cl. 428-35.000.

Roccaforte, Harry I., to Champion International Corporation. Hand locked display carton and blank therefore. 4,201,294, Cl. 206-45.140.

Roccaforte, Harry I., to Champion International Corporation. Double cell slide dispenser. 4,201,329, Cl. 229-17.0SC.

Rohm and Haas Company: *See—*
Russell, Larry M., 4,201,823, Cl. 428-246.000.

Rohn, Charles L., to Mobil Oil Corporation. Flexible plastic foam. 4,201,818, Cl. 428-159.000.

Rollag, Dwayne A.; Dornbush, James N.; and Renner, Robert C. Method and apparatus for the enhanced treatment of food processing waste waters using aerobic microorganisms. 4,201,663, Cl. 210-16.000.

Rolls-Royce Limited: *See—*
Dodd, Alec G., 4,201,044, Cl. 60-39.09R.

Rolls-Royce (1971) Limited: *See—*
Sales, Stephen, 4,201,513, Cl. 416-2.000.

Romerdahl, Ronald W.; and Knight, Milton R., to Sundstrand Data Control, Inc. Thermal switch and method of assembly and tool used therein. 4,201,967, Cl. 337-354.000.

Ronayne, Walter M.: *See—*
Mack, Frank J.; and Ronayne, Walter M., 4,201,289, Cl. 206-0.500.

Rone, Michel, to Elf Union. Solar energy absorbing roof. 4,201,193, Cl. 126-448.000.

Rope, Eugene L.: *See—*
Tricoles, Gus P.; and Rope, Eugene L., 4,201,987, Cl. 343-703.000.

Roscherwerke GmbH: *See—*
Franzke, Jurgen, 4,201,483, Cl. 366-139.000.

Rosenquist, Niles R.: *See—*
Cohen, Stuart C.; and Rosenquist, Niles R., 4,201,704, Cl. 260-40.00R.

Ross, Frederick W. Impact device with linear single acting air spring. 4,201,269, Cl. 173-1.000.

Roth, Eldon N. Method and apparatus for dividing fat and lean meat. 4,201,302, Cl. 209-577.000.

Roth, Robert B., to Coastal Abrasive & Tool Company Inc. Rotary stripper. 4,200,965, Cl. 29-81.00J.

Roumanis, Paul J., to General Electric Company. Motor speed regulator and control system. 4,201,936, Cl. 318-341.000.

Rowe, David E. Lift apparatus for camper top. 4,201,413, Cl. 296-165.000.

Rowell, Robert L.; and Vasconcellos, Stephen R., to New England Power Service Company. Coal-oil slurry compositions. 4,201,552, Cl. 44-51.000.

Rowell, Ross F. Brassiere wires. 4,201,220, Cl. 128-476.000.

Rowin, Gerald L.: *See—*
Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., 4,201,771, Cl. 424-177.000.

Royco Instruments, Inc.: *See—*
Strobel, Stanley W., 4,202,033, Cl. 364-416.000.

Rubin, Allen: *See—*
Rigazio, Anthony W.; and Rubin, Allen, 4,201,293, Cl. 206-45.190.

Rubinstein, Murray: *See—*
Lawrence, Alan J.; Denenberg, Jeffrey N.; Rubinstein, Murray; and Upp, Daniel C., 4,201,890, Cl. 370-68.000.

Rudelson, Viktor M.: *See—*
Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L., 4,201,276, Cl. 184-55.00A.

Rudszinat, Willy, to Hauni-Werke Korber & Co., KG. Apparatus for subdividing running webs into sections of varying length. 4,201,102, Cl. 83-298.000.

Rug Crafters: *See—*
Montell, Joseph J., 4,201,811, Cl. 428-92.000.

Ruin, Jean, to Mitchell S.A. Fishing reels. 4,201,355, Cl. 242-84.10R.

Russell, Diane H.: *See—*
Voorhees, John J.; and Russell, Diane H., 4,201,788, Cl. 424-304.000.

Russell, Larry M., to Rohm and Haas Company. Method for making fiber reinforced articles. 4,201,823, Cl. 428-246.000.

Russell, Ronald G.: *See—*
Whitworth, Eddie L.; and Russell, Ronald G., 4,202,040, Cl. 364-900.000.

Rutgerswerke Aktiengesellschaft: *See—*
Jellinek, Karl; and Muller, Rolf, 4,201,835, Cl. 428-288.000.

Ryan, Edward C.: *See—*
Bigbee, Marvin L.; Lindstrom, Harold R.; and Ryan, Edward C., 4,201,348, Cl. 241-101.00B.

Rysti, Alpo. Lumber-stacking method and apparatus. 4,201,506, Cl. 414-68.000.

S.I.T.I. Societa Impianti Termoelettrici Industriali (s.a.s.): *See—*
Bosseti, Renato, 4,201,542, Cl. 432-128.000.

Sabo, Stephen C.: *See—*
Bartley, Donald R.; Sidles, James; and Sabo, Stephen C., 4,201,261, Cl. 152-357.00A.

Sabol, Albert R.; Petrille, Dennis G.; and Heffern, Edward W., to Standard Oil Company (Indiana). Method of preparing overbased magnesium sulfonates. 4,201,682, Cl. 252-33.400.

Sachtler, Jurgen: *See—*
Rinne, Gerhart; and Sachtler, Jurgen, 4,201,204, Cl. 128-203.270.

Sadauskas, Raymond A.: *See—*
Rieppel, Perry J.; and Sadauskas, Raymond A., 4,201,902, Cl. 219-69.00M.

Sado, Ryoichi: *See—*
Nakamura, Akio; and Sado, Ryoichi, 4,201,435, Cl. 339-59.00M.

Saeman, Walter C.; Coe, Noel N.; and Faust, John P., to Olin Corporation. Granular calcium hypochlorite coated with an inorganic salt. 4,201,756, Cl. 423-266.000.

Saglio, Robert, to Commissariat a l'Energie Atomique. Ultrasonic centering apparatus. 4,201,971, Cl. 367-95.000.

Sahlstorfer, Hermann: *See—*
Derschmidt, Hans; and Sahlstorfer, Hermann, 4,201,515, Cl. 416-134.00A.

Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd.; and National Patent Development Corporation. Silver halide photo-sensitive material prepared with solvent and solvent soluble polymer. 4,201,589, Cl. 430-139.000.

Sakhuja, Ravinder K., to Thermo Electron Corporation. Jet impingement solar collector. 4,201,195, Cl. 126-449.000.

Sakurai, Tadashi: *See—*
Ohgishi, Tsutomu; Akiyama, Toru; and Sakurai, Tadashi, 4,201,945, Cl. 455-183.000.

Salama, Amal M.: *See—*
United States of America, National Aeronautics and Space Administration; and Salama, Amal M., 4,201,622, Cl. 156-605.000.

Sales, Stephen, to Rolls-Royce (1971) Limited. Gas turbine engines. 4,201,513, Cl. 416-2.000.

Salje, Ernst; and Bartsch, Ulrich, to Salje, Ernst. Circular saw tool. 4,201,103, Cl. 83-835.000.

Sampey, Harry R. Digital magnetic data storage and retrieval using audio analog recording techniques. 4,202,016, Cl. 360-40.000.

Samuel Moore and Company: *See—*
Farkas, Richard W., 4,200,973, Cl. 29-611.000.

Samuels, Peter B.; and Wood, Ernest C. Cartridge for a surgical clip applying device. 4,201,314, Cl. 221-198.000.

Sanders, James M.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Sanders, Paul W., to TRW Inc. Distributed collector ballast resistor structure. 4,202,005, Cl. 357-51.000.

Sandoz Inc.: *See—*
Kathawala, Faizulla G., 4,201,785, Cl. 424-274.000.

Sanford, Emerson, to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Ontario Energy Corporation; Imperial Oil Limited; Canada-Cities Service, Ltd.; and Gulf Oil Canada Limited. Process aid addition in hot water process based on feed fines content. 4,201,656, Cl. 208-11.0LE.

Sangalli, Silvio, to Rhone-Poulenc-Textile. Apparatus for making bundles of textile strands. 4,201,032, Cl. 53-522.000.

Sankyo Company Limited: *See—*
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.

Sanraku Ocean Co., Ltd.: *See—*
Okamoto, Rokuro; Fukumoto, Tsumoru; Takamatsu, Akira; and Takeuchi, Tomio, 4,201,843, Cl. 435-76.000.

Sanyo Electric Co., Ltd.: *See—*
Hosoya, Nobukazu, 4,201,962, Cl. 333-25.000.
Ohgishi, Tsutomu; Akiyama, Toru; and Sakurai, Tadashi, 4,201,945, Cl. 455-183.000.

Sasayama, Takao; and Suda, Seiji, to Hitachi, Ltd. Control system for internal combustion engine. 4,201,161, Cl. 123-32.0EB.

Sasiela, Ronald J.; and Layne, Daniel T., to Modern Maid Food Products, Inc. Continuous mixing apparatus. 4,201,484, Cl. 366-153.000.

Sasmoco, S.A.: *See—*
Neukomm, Serge, 4,201,234, Cl. 131-265.000.

Sastri, Chaturvedula: *See—*
Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann, 4,201,625, Cl. 176-11.000.

Satellite Business Systems: *See—*
Schmidt, William G., 4,201,892, Cl. 370-104.000.

Sato, Hideaki: *See—*
Hoshito, Kazuo; Sato, Hideaki; Kitamura, Takashi; and Masegi, Koichi, 4,201,994, Cl. 346-108.000.
Yoshikawa, Hiroshi; Kawakami, Akihiro; and Sato, Hideaki, 4,202,029, Cl. 361-394.000.

Sato, Masaharu: *See—*
Kimura, Takeji; Takemoto, Toyoki; Inoue, Michihiro; and Sato, Masaharu, 4,201,106, Cl. 84-1.090.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Printing pressure damping mechanism for hand labeler. 4,201,133, Cl. 101-288.000.

Sato, Yo, to Kabushiki Kaisha Sato. Printing pressure damping mechanism for hand labeler. 4,201,134, Cl. 101-288.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Portable label printing and applying machine. 4,201,619, Cl. 156-384.000.

Saucy, Gabriel: *See—*
Cohen, Noal; and Saucy, Gabriel, 4,201,869, Cl. 560-255.000.
Olson, Gary L.; and Saucy, Gabriel, 4,201,726, Cl. 568-413.000.

Saunders, Frederick H. Building panel and panel assembly. 4,201,020, Cl. 52-580.000.

Saunders, Norman B. Curtain assembly. 4,201,189, Cl. 126-429.000.

Savage, David W.; Chang, Chin H.; and Longo, John M., to Exxon Research & Engineering Co. Use of nonstoichiometric carbon-sulfur compounds to remove components from liquids. 4,201,665, Cl. 210-32.000.

Scarlett, John C.; and Beggs, Donald, to Midrex Corporation. Method for the direct reduction of iron and production of fuel gas using gas from coal. 4,201,571, Cl. 75-35.000.

Schade, Otto H., Jr., to RCA Corporation. Long-tailed-pair connections of MOSFET's operated in sub-threshold region. 4,201,947, Cl. 330-253.000.

Schaefer, Dieter: *See—*
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.

Schaefer, Helwig: *See—*
Kobale, Manfred; Pink, Hans; and Schaefer, Helwig, 4,201,453, Cl. 350-340.000.

Schaller, Joseph P. Simulated football game. 4,201,383, Cl. 273-94.000.

Scharl, Herbert: *See—*
Jaggle, Gunther; Scharl, Herbert; and Krauss, Rudolf, 4,201,172, Cl. 123-139.0AW.

Scheidler, Herwig; Wennemann, Dietmar; and Schwank, Bernd, to Jenaer Glaswerk Schott & Gen. Glass ceramic stove and subassemblies therefor. 4,201,184, Cl. 126-39.00J.

Scheinhaus, Myron G.; and Jacobson, Paul R. Sandal. 4,200,997, Cl. 36-11.500.

Scheirer, James W.: *See—*
Chuss, David M.; and Scheirer, James W., 4,201,627, Cl. 201-39.000.

Schellekens, Joannes C. A.: *See—*
Blanken, Thomas C.; and Schellekens, Joannes C. A., 4,201,812, Cl. 428-95.000.

Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, to Rieter Machine Works Ltd. False twist machine. 4,201,036, Cl. 57-291.000.

Schenek, Anton: *See—*
Artzt, Peter; Hehl, Rudolf; Egbers, Gerhard; and Schenek, Anton, 4,201,037, Cl. 57-301.000.

Schenk-Filterbau Gesellschaft mit beschrankter Haftung: *See—*
Baur, Rolf, 4,201,670, Cl. 210-75.000.

Schenkel, Eduard: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,201,036, Cl. 57-291.000.

Schenz, Manfred, to Wilhelm Mende & Company. Laminated chipboard. 4,201,819, Cl. 428-172.000.

Schering Corporation: *See—*
Draper, Richard W., 4,201,778, Cl. 424-241.000.

Schertler, William E. Check valve with removable seat. 4,201,241, Cl. 137-527.000.

Schindler, Rudolf: *See—*
Weiland, Emil; Schindler, Rudolf; and Brunsch, Klaus, 4,201,815, Cl. 428-113.000.

Schmid, Max: *See—*
Barner, Richard; and Schmid, Max, 4,201,879, Cl. 568-766.000.

Schmid, Walter: *See—*
Reidelbach, Willi; and Schmid, Walter, 4,201,418, Cl. 297-474.000.

Schmidt, Gunter, to Du Pont de Nemours, E. I., and Company. X-ray film loader. 4,201,919, Cl. 250-468.000.

Schmidt, Willi: *See—*
Kamfe, Eberhard; and Schmidt, Willi, 4,200,963, Cl. 26-73.000.

Schmidt, William G., to Satellite Business Systems. Multi-rate TDMA communication system. 4,201,892, Cl. 370-104.000.

Schmitt, Hans J.: *See—*
Ehrly, Albrecht; and Schmitt, Hans J., 4,201,470, Cl. 356-39.000.

Schmitt, Marvin G. Gauge. 4,200,987, Cl. 33-178.00R.

Schneider, Abraham: *See—*
Lyons, James E.; Schneider, Abraham; and Myers, Harry K., Jr., 4,201,731, Cl. 585-361.000.

Schneider, Heinz-Georg: *See—*
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, 4,201,847, Cl. 521-172.000.

Schneider, Kurt: *See—*
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,201,546, Cl. 432-106.000.

Schneider, Martin V.: *See—*
Cho, Alfred Y.; and Schneider, Martin V., 4,201,998, Cl. 357-15.000.

Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,201,881, Cl. 568-819.000.

Schoettle, Klaus; Uhl, Karl; Wittkamp, Heinrich; Dobler, Peter; and Lewin, Helmut, to BASF Aktiengesellschaft. Cartridge arrangement comprising an adapter. 4,201,356, Cl. 242-197.000.

Scholl, Inc.: *See—*
Sichak, Stephen, 4,201,765, Cl. 424-45.000.

Schonberger, Milton. Method of adjusting resistance of a thermistor. 4,200,970, Cl. 29-593.000.

Schoppe, Fritz. Process and installation for the production of calcined material. 4,201,541, Cl. 432-58.000.

Schor, S. Allen, to El Mar Plastics, Inc. Winding core for magnetic tape adapted for stacking. 4,201,353, Cl. 242-68.500.

Schreiber, William L.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Schrinner, Elmar: *See—*
Bormann, Dieter; Knabe, Bernd; Schrinner, Elmar; and Worm, Manfred, 4,201,779, Cl. 424-246.000.

Schroeder, James E., to Harris Corporation. VMOS transistor and method of fabrication. 4,200,968, Cl. 29-571.000.

Schubert & Salzer: *See—*
Artzt, Peter; Hehl, Rudolf; Egbers, Gerhard; and Schenek, Anton, 4,201,037, Cl. 57-301.000.

Schuchert, Barton O., to Amana Refrigeration, Inc. Adjustable safety interlock for microwave ovens. 4,201,901, Cl. 219-10.55C.

Schumann, Klaus: *See—*
Smolka, Heinz G.; and Schumann, Klaus, 4,201,689, Cl. 252-184.000.

Schunk, Gunter; and Randow, Albert, to Leybold-Hereaus GmbH & Co. KG. Pneumatic infrared radiation detector having a hermetically sealed chamber and a window. 4,201,915, Cl. 250-343.000.

Schurman, Peter T., to Plastic Forming Company, Inc., The. Reinforced bearing aperture in thermoplastic sheet material. 4,201,531, Cl. 425-290.000.

Schwander, Andreas: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,201,036, Cl. 57-291.000.

Schwank, Bernd: *See—*
Scheidler, Herwig; Wennemann, Dietmar; and Schwank, Bernd, 4,201,184, Cl. 126-39.00J.

Schwarte, Jurgen: *See—*
Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, 4,201,695, Cl. 252-411.00R.

Schwartzburg, James H.; Little, Eric A.; and Wilson, Eddie A., to Packer Plastics, Inc. Injection molding of embossed articles. 4,201,360, Cl. 249-140.000.

Schweizerische Lokomotiv-und Maschinenfabrik: *See—*
Meier, Bruno; and Luginbuhl, Otto, 4,201,277, Cl. 188-196.00D.

Schwinghammer, Gunther, to Holstein und Kappert GmbH. Apparatus for cleaning plate-type filter elements located in a tank filter. 4,201,674, Cl. 210-333.00R.

Schwitters, Stephen W.; and Aylesworth, Preston L., to Beatrice Foods Co. Method and apparatus for preparing and dispensing a semi-frozen product. 4,201,558, Cl. 62-70.000.

SCM Corporation: *See—*
Fitch, Steven J.; and Tanner, Charles A., 4,201,570, Cl. 75-1.00T.
Vande Kieft, Joseph A., 4,201,802, Cl. 427-370.000.

Scott & Fetzer Company, The: *See—*
Burgoon, Jack L.; and Smith, William R., 4,200,951, Cl. 15-321.000.

Scott, Joseph H., Jr.; and Ipri, Alfred C., to RCA Corporation. Method of fabricating improved short channel MOS devices utilizing selective etching and counterdoping of polycrystalline silicon. 4,201,603, Cl. 148-174.000.

Seale, Glenn C.; and Frame, George L., to Triad Associates. Genealogy apparatus. 4,201,386, Cl. 273-236.000.

Sealectro Corporation: *See—*
Genovese, David L.; and Madarasz, Miklos, 4,201,436, Cl. 339-96.000.

Seaman, Clay H.: *See—*
Margolis, Jack S.; McCleese, Daniel J.; Shumate, Michael S.; and Seaman, Clay H., 4,201,468, Cl. 356-28.500.

Seamans, Clarence: *See—*
Oslin, G. Robert; and Seamans, Clarence, 4,201,333, Cl. 232-7.000.

Sears, Kay G., to Entron, Inc. Overload protector. 4,202,023, Cl. 361-18.000.

Seaton, John J.; and Slagle, James K., to United States Steel Corporation. Graphite lubricant application method. 4,201,070, Cl. 72-42.000.

Seecamp, Lueder. Telescoping return-spring assembly for automatic handguns. 4,201,113, Cl. 89-199.000.

Seelenbinder, Terry G., to AM International, Inc. Photoprinter with self-locating roll spreader. 4,201,466, Cl. 355-104.000.

Segal, Leon, to Allied Chemical Corporation. Novel polyesters and preparation thereof by interfacial condensation of bifunctional acid halides or anhydrides with bisphenols. 4,201,855, Cl. 528-125.000.

Segawa, Takashi, to Shimano Industrial Company Limited. Gear crank for bicycles. 4,201,120, Cl. 74-594.200.

Seitzer, Walter H., to Suntech, Inc. Process for making iron oxide of controlled particle size. 4,201,761, Cl. 423-633.000.

Sels, Francis J.: *See—*
Pollet, Robert J.; Vandeputte, Camille A.; Sels, Francis J.; and van Veelen, George F., 4,201,585, Cl. 430-376.000.

Selway, Peter R.: *See—*
Thompson, George H. B.; and Selway, Peter R., 4,201,447, Cl. 350-96.310.

Semrau, Konrad T.: *See—*
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., 4,201,512, Cl. 415-90.000.

Senet, Jean-Pierre G.: *See—*
Passagne, Claude G.; Lippler, Remy R.; Senet, Jean-Pierre G.; and Plazanet, Jacques, 4,201,720, Cl. 260-463.000.

Seppi, Edward J.: *See—*
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,201,430, Cl. 339-5.00M.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
Chouteau, Jacques; and Magne, Pierre, 4,201,229, Cl. 131-146.000.

Shakertown Corporation: *See—*
Barker, Craig S.; and Bockwinkel, Joe L., 4,201,614, Cl. 156-273.000.

Shannon, Richard F., to Owens-Corning Fiberglas Corporation. Fibrous product and method and apparatus for producing same. 4,201,247, Cl. 138-141.000.

Sharp Kabushiki Kaisha: *See—*
Inami, Yasuhiko; Takechi, Sadatoshi; Hishida, Tadanori; Uede, Hisashi; and Take, Hiroshi, 4,201,984, Cl. 340-763.000.
Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo, Hamada, Hiroshi; and Nakauchi, Hiroshi, 4,201,985, Cl. 340-785.000.

Shay, Joseph L.: *See—*
Beni, Gerardo; and Shay, Joseph L., 4,201,454, Cl. 350-357.000.

Shea, Richard J., to GTE Sylvania Incorporated. Spring contact for arc discharge tube base. 4,201,438, Cl. 339-144.00R.

Shell Oil Company: *See—*
Blanken, Thomas C.; and Schellekens, Joannes C. A., 4,201,812, Cl. 428-95.000.
Kwant, Pieter B.; Kanbier, Dirk; Tjan, Petrus W. H. L.; and Akbar, Mohammed, 4,201,659, Cl. 208-73.000.

Shepherd, William E. Guard for a high voltage electrical terminal bushing. 4,201,883, Cl. 174-139.000.

Sherritt Gordon Mines Limited: *See—*
Swinkels, Godefridus M.; and Maschmeyer, Dennis G., 4,201,748, Cl. 423-27.000.

Shiba, Keisuke: *See—*
Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, 4,201,589, Cl. 430-139.000.

Shibata, Yukitake: *See—*
Kurita, Yoshio; and Shibata, Yukitake, 4,201,083, Cl. 73-194.00E.

Shichman, Daniel: *See—*
Mirtain, Henri J.; Shichman, Daniel; and Neville, James J., 4,201,260, Cl. 152-361.0DM.

Shiino, Satoru: *See—*
Naito, Ryoichi; Shiino, Satoru; and Inahara, Hirohisa, 4,201,776, Cl. 424-195.000.

Shillingford, John T., Jr.: *See—*
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.

Shimano Industrial Company Limited: *See*—
Segawa, Takashi, 4,201,120, Cl. 74-594.200.

Shimizu, Makoto; and Shirakawa, Kunikazu, to Shinano Kenshi Co., Ltd. Method of manufacturing cup-shaped coil assembly of electric motors. 4,200,971, Cl. 29-598.000.

Shimizu, Nobuo: *See*—
Ohnishi, Takanori; Shiozawa, Ken; and Shimizu, Nobuo, 4,201,734, Cl. 261-34.00B.

Shimizu, Toshiyuki, to Hajime Industries, Ltd. Data processing and storage system using filtering and sampling techniques. 4,201,977, Cl. 340-146.30H.

Shimoi, Osamu: *See*—
Katayama, Akira; and Shimoi, Osamu, 4,201,069, Cl. 70-422.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Itoh, Kunio; and Oshima, Toshimichi, 4,201,698, Cl. 260-3.000.

Shin-Etsu Polymer Co. Ltd.: *See*—
Nakamura, Akio; and Sado, Ryoichi, 4,201,435, Cl. 339-59.00M.

Shinano Kenshi Co., Ltd.: *See*—
Shimizu, Makoto; and Shirakawa, Kunikazu, 4,200,971, Cl. 29-598.000.

Shinto Paint Co., Ltd.: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.

Shionogi & Co., Ltd.: *See*—
Igarashi, Kikuo; and Sugawara, Tamio, 4,201,774, Cl. 424-180.000.
Narisada, Masayuki; and Nagata, Wataru, 4,201,782, Cl. 424-248.510.

Shiozawa, Ken: *See*—
Ohnishi, Takanori; Shiozawa, Ken; and Shimizu, Nobuo, 4,201,734, Cl. 261-34.00B.

Shirakawa, Kunikazu: *See*—
Shimizu, Makoto; and Shirakawa, Kunikazu, 4,200,971, Cl. 29-598.000.

Shirasawa, Toshikatsu: *See*—
Tanaka, Tomoyuki; Shirasawa, Toshikatsu; and Okamura, Masahiro, 4,201,598, Cl. 148-1.500.

Shoup, Floyd K.: *See*—
Rao, Ganta V.; and Shoup, Floyd K., 4,201,708, Cl. 260-112.00G.

Shufflebarger, Earl D.: *See*—
Danko, Oliver L.; Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; and Kish, Edward E., 4,201,366, Cl. 251-335.00B.

Shukla, Jayendra G.; Smith, Ray E.; and Nicholson, Richard R., to Velsicol Chemical Corporation. Intumescent composition comprising cyclic nitrogen compound and phosphorus compounds. 4,201,677, Cl. 252-8.100.

Shukla, Jayendra G.: *See*—
Sienkowski, Kenneth J.; Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,201,593, Cl. 106-18.140.

Shulgin, Grigory M.: *See*—
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.

Shumate, Michael S.: *See*—
Margolis, Jack S.; McCleese, Daniel J.; Shumate, Michael S.; and Seaman, Clay H., 4,201,468, Cl. 356-28.500.

Shupe, Charles A., to Canron Corporation. Rail hardening machine and method. 4,201,602, Cl. 148-146.000.

Shuster, Edward J.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Sichak, Stephen, to Scholl, Inc. Preparation for treating dermatitis in the nature of tinea pedis. 4,201,765, Cl. 424-45.000.

Sidles, James: *See*—
Bartley, Donald R.; Sidles, James; and Sabo, Stephen C., 4,201,261, Cl. 152-357.00A.

Sieg, George F.: *See*—
Reed, Russell, Jr.; Sieg, George F.; Rhyn, Elmer J.; and Waldon, Billy E., 4,201,605, Cl. 149-19.100.

Siemens Aktiengesellschaft: *See*—
Bauer, Josef, 4,201,309, Cl. 220-235.000.
Bodlaj, Viktor, 4,201,475, Cl. 356-381.000.
Kobale, Manfred; Pink, Hans; and Schaefer, Helwig, 4,201,453, Cl. 350-340.000.
Kunze, Dieter, 4,201,445, Cl. 350-96.210.

Siemens-Allis, Inc.: *See*—
Neumann, Manfred E., 4,201,938, Cl. 323-43.50R.

Sienkowski, Kenneth J.; Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., to Velsicol Chemical Corporation. Novel intumescent composition. 4,201,593, Cl. 106-18.140.

Siersch, Wolfgang: *See*—
Hartmann, Klaus; and Siersch, Wolfgang, 4,201,467, Cl. 356-28.000.

Simko, David M.: *See*—
Danko, Oliver L.; Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; and Kish, Edward E., 4,201,366, Cl. 251-335.00B.

Simokat, Frank L., to TII Industries, Inc. Repeater bypass protection apparatus. 4,202,024, Cl. 361-91.000.

Sinclair, Alesander S.; and Eccleston, Barry C., to A. Monk & Company Limited. Means for the renovating and refurbishing of overhead structures. 4,201,275, Cl. 182-37.000.

Siraco, Frank J.: *See*—
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.

Skendrovic, Lawrence, to William M. Bailey Company. Method and apparatus for tap hole reaming. 4,201,502, Cl. 408-1.00R.

SKF Kugellagerfabriken GmbH: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,282, Cl. 192-98.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,424, Cl. 308-6.00C.
Freund, Hans; and Kotzab, Werner, 4,201,425, Cl. 308-236.000.

Skow, Lynn R., to Gemini Systems, Inc. Modular solid fuel furnace system. 4,201,187, Cl. 126-110.00E.

Skutta, Frank R.; and Tice, Lee D., to Motorola, Inc. Method for automatically matching a radio frequency transmitter to an antenna. 4,201,960, Cl. 333-17.00M.

Slagle, James K.: *See*—
Seaton, John J.; and Slagle, James K., 4,201,070, Cl. 72-42.000.

Slamar, Frank, to United States Steel Corporation. Method for increasing the scrap melting capability of bottom blown processes. 4,201,572, Cl. 75-60.000.

Slater, David L.: *See*—
Jones, Harry; and Slater, David L., 4,201,898, Cl. 200-61.45R.

Slater, Robert L. Nostril expander. 4,201,217, Cl. 128-342.000.

Slednev, Vladimir P.: *See*—
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.

Slepak, Bernard; Tucker, John E.; and Heinrich, William P., to Slepak, Bernard. Moisture indicator. 4,201,080, Cl. 73-73.000.

Slinkard, William E., to Celanese Corporation. Reaction of methanol with synthesis gas. 4,201,868, Cl. 560-232.000.

Slusarczuk, George M. J.; and Brooks, Ronald E., to General Electric Company. Magnetic adsorbent composite. 4,201,831, Cl. 428-403.000.

Smies, Jan F.; and Dijkmans, Leo, to Cemsto B.V. Device for cleaning floors by means of a liquid. 4,200,952, Cl. 15-322.000.

Smith, Donald C. Endoscope attachment to a viewing instrument for insertion into the uterine cavity. 4,201,199, Cl. 128-7.000.

Smith, Fred J.: *See*—
Bower, David S.; and Smith, Fred J., 4,201,896, Cl. 179-18.00B.

Smith, George F.: *See*—
Dubois, Robert A.; and Smith, George F., 4,201,306, Cl. 220-5.00R.

Smith, Jack R.: *See*—
Reed, Terry J.; and Smith, Jack R., 4,201,923, Cl. 290-40.00R.

Smith, Jesse C. Chassis for printed circuit boards. 4,201,303, Cl. 211-41.000.

Smith, Joseph L., to RCA Corporation. Color purity adjusting method. 4,201,932, Cl. 315-13.00C.

Smith, Ray E.: *See*—
Shukla, Jayendra G.; Smith, Ray E.; and Nicholson, Richard R., 4,201,677, Cl. 252-8.100.
Sienkowski, Kenneth J.; Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,201,593, Cl. 106-18.140.

Smith, William R.: *See*—
Burgoon, Jack L.; and Smith, William R., 4,200,951, Cl. 15-321.000.

SmithKline Corporation: *See*—
Filan, John J.; Holl, Walter W.; and Wellman, George R., 4,201,775, Cl. 424-180.000.

Smolka, Heinz G.; and Schumann, Klaus, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of tenside-containing cation exchanger aluminosilicates. 4,201,689, Cl. 252-184.000.

Smythe, Lloyd E.: *See*—
Matousek, Jaroslav P.; and Smythe, Lloyd E., 4,201,469, Cl. 356-36.000.

Snamprogetti S.p.A.: *See*—
Paret, Giancarlo; Vetere, Alessandro; and Iori, Giuseppe, 4,201,633, Cl. 203-58.000.

Snell, John H. Tool for installation of toggle-screw anchors. 4,201,072, Cl. 72-114.000.

Societe dite: Berthiez: *See*—
Bruyere, Marcel F. M., 4,201,100, Cl. 82-2.00D.

Societe Francais d'Equipements pour la Navigation Aerienne: *See*—
Grissonnanche, Jean L., 4,201,981, Cl. 340-380.000.

Societe Industrielle de Mecanique: *See*—
Puyplat, Olivier, 4,201,452, Cl. 350-288.000.

Societe Nationale des Poudres et Explosifs: *See*—
Gerbet, Roger G.; Leroux, Jean-Claude; Morin, Daniel L.; and Leclercq, Marius F., 4,201,381, Cl. 273-73.00F.
Passagne, Claude G.; Lippler, Remy R.; Senet, Jean-Pierre G.; and Plazanet, Jacques, 4,201,720, Cl. 260-463.000.

Sokolik, Joseph E., Jr.: *See*—
Kosseim, Alexander J. M.; Atwood, Gilbert R.; and Sokolik, Joseph E., Jr., 4,201,752, Cl. 423-235.000.

Solarex Corporation: *See*—
Lindmayer, Joseph, 4,201,798, Cl. 427-74.000.

Soref, Richard A.: *See*—
McMahon, Donald H.; and Soref, Richard A., 4,201,442, Cl. 350-96.140.

Sorema, Srl: *See*—
Gazzoni, Domenico, 4,200,991, Cl. 34-57.00R.

Sorenson, Roderick J.: *See*—
Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., 4,201,773, Cl. 424-180.000.

Soundstream, Inc.: *See*—
Stockham, Thomas G., Jr., 4,202,018, Cl. 360-47.000.

Southall, Peter: *See*—
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, 4,201,283, Cl. 194-1.00A.

Southern Imperial, Inc.: *See*—
Donnelli, Joseph W.; and Barnes, Richard D., 4,201,255, Cl. 144-32.00R.

Spadaro, James J.: *See*—
Kadan, Ranjit S.; Freeman, Donald W.; Spadaro, James J.; and Ziegler, George M., Jr., 4,201,709, Cl. 260-123.500.

Sparkman, James M. Fishing lure and spinner. 4,201,008, Cl. 43-43.130.

Spartus Corporation: *See*—
Rigazio, Anthony W.; and Rubin, Allen, 4,201,293, Cl. 206-45.190.

Spaziante, Placido M.; Giuffre, Luigi; and Modica, Giovanni, to Pandor S.A. Measuring electrodes and process. 4,201,647, Cl. 204-195.00F.

Speckhart, Frank H. Aluminum valve spring retainer. 4,201,162, Cl. 123-90.670.

Spector, George: *See*—
Armstrong, James A.; and Spector, George, 4,201,597, Cl. 134-167.00R.
Revermann, Mike; and Spector, George, 4,201,387, Cl. 273-243.000.
Williams, Smith J.; and Spector, George, 4,201,412, Cl. 296-163.000.

Spencer, Bette M.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.

Sperry Corporation: *See*—
Gilligan, Lawrence H.; and Hermansdorfer, James E., 4,202,014, Cl. 358-228.000.
McMahon, Donald H.; and Soref, Richard A., 4,201,442, Cl. 350-96.140.

Sperry Rand Corporation: *See*—
Breeden, Robert H.; Farrell, Robert G.; and Taylor, Henry D., 4,201,052, Cl. 60-445.000.
Geffon, Arthur P.; and Jacoby, George V., 4,202,017, Cl. 360-45.000.
Popoff, Paul M.; Lee, Siu K.; and Touchton, James J., 4,202,019, Cl. 360-51.000.

Spes, Hellmuth: *See*—
Deinhammer, Wolfgang; and Spes, Hellmuth, 4,201,715, Cl. 260-345.70R.

Spiselman, Joseph W.: *See*—
Livaudais, Frank B., Jr.; and Spiselman, Joseph W., 4,201,791, Cl. 424-358.000.

Spivey, Paul R.: *See*—
Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,201,464, Cl. 355-14.00R.

Splett, Klaus: *See*—
Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, 4,201,246, Cl. 138-30.000.

Sprague Electric Company: *See*—
Newton, Joel A., 4,201,666, Cl. 210-47.000.

Sprecker, Mark A.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Springer, Hartmut: *See*—
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.

Stahl, Alfred R., to Breston, Michael P., a part interest. Fluid-operated press. 4,201,130, Cl. 100-271.000.

Stanadyne, Inc.: *See*—
Overfield, Norbert W., 4,201,170, Cl. 123-139.0BD.

Standard Oil Company (Indiana): *See*—
Sabol, Albert R.; Petrille, Dennis G.; and Heffern, Edward W., 4,201,682, Cl. 252-33.400.

Standard Precision, Inc.: *See*—
Hagen, Magnus F.; and Stanley, Donald, 4,201,423, Cl. 308-6.00R.

Stanford, George H. Snow plow attachment. 4,201,000, Cl. 37-117.500.

Stanley, Donald: *See*—
Hagen, Magnus F.; and Stanley, Donald, 4,201,423, Cl. 308-6.00R.

Stanley Works, The: *See*—
Elmore, I. James; and West, Robert F., 4,201,258, Cl. 145-46.000.
West, Robert F.; and Elmore, James, 4,200,983, Cl. 33-138.000.
West, Robert F., 4,200,990, Cl. 33-476.000.

Stecher, Friedhelm; Fazekas, Josef; Johren, Paul; and Morsbach, Martin, to Goetzewerke Friedrich Goetze AG. Gasket impregnated with a polymerizable liquid and method for its manufacture. 4,201,804, Cl. 427-393.600.

Steed, Van E.: *See*—
Campion, John S.; and Steed, Van E., 4,201,449, Cl. 350-117.000.

Steele, S. Robert: *See*—
Bierig, Robert W.; and Steele, S. Robert, 4,201,604, Cl. 148-175.000.

Stein, William W., to Tektronix, Inc. Cathode ray tube having image transfer means. 4,201,996, Cl. 346-158.000.

Stemme, Otto; and Wagner, Karl, to AGFA-Gevaert, A.G. Motor-driven still camera. 4,201,460, Cl. 354-171.000.

Stenild, Eddie. Self-propelled irrigation system. 4,201,343, Cl. 239-189.000.

Stephens, Charles E. Refinish painting apparatus. 4,201,799, Cl. 427-142.000.

Stephens, Geoffrey B.: *See*—
Alcorn, George E.; Bergeron, David L.; and Stephens, Geoffrey B., 4,201,800, Cl. 430-5.000.

Sternik, Jury L.: *See*—
Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L., 4,201,276, Cl. 184-55.00A.

Stetter, Joseph R., to Energetics Science, Inc. Method for the detection of hydrazine. 4,201,634, Cl. 204-1.00T.

Stevens, Vernon C., to Ohio State University, The. Antigenic modification of polypeptides. 4,201,770, Cl. 424-177.000.

Stevenson, Alden. Recirculating fluid pump control system. 4,201,518, Cl. 417-12.000.

Stewart, Charles C.; Avidor, Joel M.; Pugh, Evan R.; and Lothrop, John W. Gas laser aerodynamic window. 4,201,952, Cl. 331-94.50D.

Steyr-Daimler-Puch Aktiengesellschaft: *See*—
Matthias, Jan H., 4,201,397, Cl. 280-280.000.
Meier, Karl, 4,201,398, Cl. 280-289.00L.

Stibbe, Paul H.; and Daane, Robert A., to W. R. Grace & Co. High velocity web floating air bar having a recessed Coanda plate. 4,201,323, Cl. 226-97.000.

Stock, Don J. R.: *See*—
Kienberger, Karl-Heinz; and Stock, Don J. R., 4,201,956, Cl. 331-96.000.

Stockham, Thomas G., Jr., to Soundstream, Inc. Apparatus and method for providing error recognition and correction of recorded digital information. 4,202,018, Cl. 360-47.000.

Stone, Bobbie D.: *See*—
Burd, John W.; Stone, Bobbie D.; Tucker, William F.; and Gupta, Kedar P., 4,201,746, Cl. 422-250.000.

Stover, Edward R., to United States of America, Air Force. Carbon/carbon composite for re-entry vehicle applications. 4,201,611, Cl. 156-155.000.

Stram, George H., to Weldon Hydraulics, Inc. Mobile refractory apparatus for repairing interior furnace walls. 4,201,342, Cl. 239-128.000.

Straub, Paul; and Jost, Heinrich, to Gebrueder Buehler AG. Drag chain conveyor. 4,201,287, Cl. 198-530.000.

Strobel, Stanley W., to Royco Instruments, Inc. Apparatus and method utilizing calculator for quality control of hematology sample analysis. 4,202,033, Cl. 364-416.000.

Strzepek, Adolph A.: *See*—
Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., 4,201,596, Cl. 127-37.000.

Studiengesellschaft Kohle mbH: *See*—
Zosel, Kurt, 4,201,660, Cl. 208-86.000.

Stump, Lee K., to Ausherman Manufacturing Co., Inc. Ammonia applicator blade. 4,201,142, Cl. 111-7.000.

Subramanian, Kojur N.; Nissen, Norman C.; and Thomas, John A., to International Nickel Co., Inc., The. Nickel recovery from sulfur-deficient mattes. 4,201,648, Cl. 204-112.000.

Suchanek, Jaroslav. Long-distance truck tractor with living quarters. 4,201,415, Cl. 296-190.000.

Suchy, Milos, to Hoffmann-La Roche Inc. Cyclopropanecarboxylic acid naphthylmethyl ester. 4,201,789, Cl. 424-305.000.

Suda, Seiji: *See*—
Sasayama, Takao; and Suda, Seiji, 4,201,161, Cl. 123-32.0EB.

Sudler, Roland; and Happel, Walter, to Quarz-Zeit AG. Single phase stepping motor. 4,201,929, Cl. 310-49.00R.

Sugawara, Tamio: *See*—
Igarashi, Kikuo; and Sugawara, Tamio, 4,201,774, Cl. 424-180.000.

Sugio, Akitoshi: *See*—
Kimura, Masaharu; Otuki, Yoshiharu; Sugio, Akitoshi; and Furusawa, Tomotaka, 4,201,849, Cl. 525-401.000.

Sugiura, Noboru: *See*—
Okada, Tomoyuki; and Sugiura, Noboru, 4,201,173, Cl. 123-148.00C.

Sugiura Seisakusho Co. Ltd.: *See*—
Hanai, Kiyoshi; and Sugiura, Toshio, 4,201,110, Cl. 85-32.00R.

Sugiura, Toshio: *See*—
Hanai, Kiyoshi; and Sugiura, Toshio, 4,201,110, Cl. 85-32.00R.

Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., to Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR. Substituted 2-[2'-(5"-nitrofuryl-2")vinyl-and 4'-(5"-nitrofuryl-2"-1,3-butadieryl]quinoline-4-carboxylic acid amides and salts thereof. 4,201,784, Cl. 424-258.000.

Sulby Engineering Development Company Limited, The: *See*—
French, Lionel J. B. R., 4,201,615, Cl. 156-304.000.

Sullivan, Charles I.: *See*—
Bedell, Stanley F.; Sullivan, Charles I.; and Taylor, Lloyd D., 4,201,587, Cl. 430-224.000.

Sulzer Brothers Limited: *See*—
Latzer, Beda, 4,201,918, Cl. 250-433.000.
Lustgarten, George, 4,201,176, Cl. 123-196.00M.

Sumitani, Kenji, to Kawakami Kagaku Kogyo Company Ltd. Powder composition for soft drink. 4,201,794, Cl. 426-96.000.

Sumitomo Aluminium Smelting Company, Ltd.: *See—*
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,201,749, Cl. 423-127.000.
Sumitomo Metal Industries, Ltd.: *See—*
Kowaka, Masamichi; and Fujikawa, Hisao, 4,201,574, Cl. 75-122.000.
Nagano, Hiroo; Fukuda, Takashi; Nagai, Hiroshi; and Nakamura, Yasuyuki, 4,201,650, Cl. 204-209.000.
Sumiyoshi, Hideo: *See—*
Tamaoku, Katsuki; Nakahara, Keishi; Sumiyoshi, Hideo; and Tachibana, Masahiro, 4,201,548, Cl. 23-230.00R.
Sumner, Barbara E., to United States of America, Army. Method for making epitaxial silicon crystals with uniform doping levels. 4,201,623, Cl. 156-622.000.
Sun, Kwok K., to Upjohn Company, The. Process for separating 4,4'-diaminodiphenylmethane. 4,201,722, Cl. 260-570.00D.
Sun Oil Company of Pennsylvania: *See—*
Lyons, James E.; Schneider, Abraham; and Myers, Harry K., Jr., 4,201,731, Cl. 585-361.000.
Sundstrand Data Control, Inc.: *See—*
Romerdahl, Ronald W.; and Knight, Milton R., 4,201,967, Cl. 337-354.000.
Suntech, Inc.: *See—*
Seitzer, Walter H., 4,201,761, Cl. 423-633.000.
Surgical Appliance Industries, Inc.: *See—*
Applegate, Leslie T., 4,201,203, Cl. 128-80.00C.
Sutrak Transportkalte, GmbH & Co.: *See—*
Krug, Martin; and Bihl, Paul R., 4,201,064, Cl. 62-239.000.
Suttles, James M., to Mead Corporation, The. Shelving system. 4,201,139, Cl. 108-109.000.
Suzuki, Eiji. Vibration responsive mechanism. 4,201,536, Cl. 431-88.000.
Suzuki, Kohji: *See—*
Oyama, Hazime; Suzuki, Kohji; Mochizuki, Manabu; and Ohnuma, Teruyuki, 4,201,465, Cl. 355-15.000.
Suzuki, Mithuo: *See—*
Ito, Syoichi; and Suzuki, Mithuo, 4,201,993, Cl. 346-75.000.
Swinkels, Godefridus M.; and Maschmeyer, Dennis G., to Cominco Ltd.; and Sherritt Gordon Mines Limited. Process for thermal-activation of chalcopyrite-pyrite concentrates. 4,201,748, Cl. 423-27.000.
Szabados, Andreas. Sound insulated target apparatus with projectile butt container. 4,201,385, Cl. 273-102.400.
Szeberenyi, Szaboles: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.
Szekely, Gyorgy: *See—*
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.
Szommer, Ferenc: *See—*
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.
Szporny, Laszlo: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.
Szymber, Oleg: *See—*
Culver, Irven H.; and Szymber, Oleg, 4,200,985, Cl. 33-141.00R.
Tachibana, Masahiro: *See—*
Tamaoku, Katsuki; Nakahara, Keishi; Sumiyoshi, Hideo; and Tachibana, Masahiro, 4,201,548, Cl. 23-230.00R.
Taguchi, Masahiro: *See—*
Inagaki, Mitsuo; Hattori, Yoshiyuki; and Taguchi, Masahiro, 4,201,930, Cl. 310-51.000.
Taguchi, Tetsuya: *See—*
Harigaya, Isao; Taguchi, Tetsuya; Ito, Fumio; and Yazaki, Mutsunobu, 4,201,463, Cl. 354-86.000.
Taidisha Ltd.: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.
Taisan Industrial Co., Ltd.: *See—*
Toyota, Akira; Nozawa, Katsumi; and Nomura, Hideo, 4,201,522, Cl. 417-311.000.
Takahashi, Kusuhiko: *See—*
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, 4,201,641, Cl. 204-159.170.
Takamatsu, Akira: *See—*
Okamoto, Rokuro; Fukumoto, Tsumoru; Takamatsu, Akira; and Takeuchi, Tomio, 4,201,843, Cl. 435-76.000.
Takase, Tsutomu: *See—*
Yamazaki, Noboru; Yuasa, Teruo; Morimoto, Yoshio; Aoi, Kunio; and Takase, Tsutomu, 4,201,877, Cl. 568-720.000.
Takase, Yoshiyuki: *See—*
Tomita, Masatsugu; Takase, Yoshiyuki; and Komiya, Toshio, 4,201,781, Cl. 424-246.000.
Take, Hiroshi: *See—*
Inami, Yasuhiko; Takechi, Sadatoshi; Hishida, Tadanori; Uede, Hisashi; and Take, Hiroshi, 4,201,984, Cl. 340-763.000.
Takechi, Sadatoshi: *See—*
Inami, Yasuhiko; Takechi, Sadatoshi; Hishida, Tadanori; Uede, Hisashi; and Take, Hiroshi, 4,201,984, Cl. 340-763.000.
Takemoto, Toyoki: *See—*
Kimura, Takeji; Takemoto, Toyoki; Inoue, Michihiro; and Sato, Masaharu, 4,201,106, Cl. 84-1.090.
Takeuchi, Hiroshi: *See—*
Tanouchi, Masatoshi; Takeuchi, Hiroshi; Ban, Kazuki; and Asahina, Yoshiyuki, 4,201,871, Cl. 562-486.000.
Takeuchi, Tomio: *See—*
Okamoto, Rokuro; Fukumoto, Tsumoru; Takamatsu, Akira; and Takeuchi, Tomio, 4,201,843, Cl. 435-76.000.
Takiguchi, Yo: *See—*
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.
Taller, Andras: *See—*
Vadasz, Peter; Tokes, Szaboles; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.
Tamai, Yasuo: *See—*
Ogawa, Hiroshi; and Tamai, Yasuo, 4,201,809, Cl. 428-65.000.
Tamao, Yoshikuni: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,201,863, Cl. 546-166.000.
Tamaoku, Katsuki; Nakahara, Keishi; Sumiyoshi, Hideo; and Tachibana, Masahiro, to Dojindo Laboratory & Co., Ltd. Method for determining volatile substances in an aqueous solution and apparatus therefor. 4,201,548, Cl. 23-230.00R.
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, to Toyo Kogyo Co., Ltd. Cylinder head construction. 4,201,175, Cl. 123-191.00M.
Tanaka, Masami; and Nomura, Yukihiko, to Alps Electric Co., Ltd. Variable resistor and switch assembly. 4,201,969, Cl. 338-180.000.
Tanaka, Takashi: *See—*
Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, 4,201,441, Cl. 350-3.610.
Tanaka, Tomoyuki; Shirasawa, Toshikatsu; and Okamura, Masahiro, to Hitachi, Ltd. Electron irradiation process of glass passivated semiconductor devices for improved reverse characteristics. 4,201,598, Cl. 148-1.500.
Tanaka, Toshiaki; and Etoh, Yukihiro, to Nissan Motor Company, Limited. Internal combustion engine with dual induction system and with EGR system. 4,201,165, Cl. 123-119.00A.
Tanaka, Toshimitsu: *See—*
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, 4,201,175, Cl. 123-191.00M.
Tanaka, Toyonaru, to Jeco Company Limited. Digital electronic timepiece having a time correcting means. 4,201,041, Cl. 368-85.000.
Tanaka, Yoko: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,201,881, Cl. 568-819.000.
Tanner, Charles A.: *See—*
Fitch, Steven J.; and Tanner, Charles A., 4,201,570, Cl. 75-1.00T.
Tano, Eiichi: *See—*
Uno, Naoyuki; Urano, Fumio; Tano, Eiichi; and Kurei, Hiroshi, 4,201,462, Cl. 354-289.000.
Tanouchi, Masatoshi; Takeuchi, Hiroshi; Ban, Kazuki; and Asahina, Yoshiyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for recovering terephthalic acid. 4,201,871, Cl. 562-486.000.
Tarcza, Walter H.: *See—*
Pierson, Joseph E.; and Tarcza, Walter H., 4,201,561, Cl. 65-30.00R.
Tarr, Lloyd A.: *See—*
Dorth, John P.; Burns, Robert V.; and Tarr, Lloyd A., 4,201,897, Cl. 179-84.00R.
Tarusawa, Yasutaka, to Kabushiki Kaisha Suwa Seikosha. Wristwatch calculator imput key positioning assembly. 4,201,043, Cl. 368-10.000.
Taylor, Donald F., to Otis Engineering Corporation. Radially expandable tubular valve seal. 4,201,364, Cl. 251-175.000.
Taylor, Henry D.: *See—*
Breeden, Robert H.; Farrell, Robert G.; and Taylor, Henry D., 4,201,052, Cl. 60-445.000.
Taylor, Lloyd D.: *See—*
Bedell, Stanley F.; Sullivan, Charles I.; and Taylor, Lloyd D., 4,201,587, Cl. 430-224.000.
Teijin Seiki Company Limited: *See—*
Fukui, Kiyozumi, 4,201,279, Cl. 192-3.00N.
Tektronix, Inc.: *See—*
Stein, William W., 4,201,996, Cl. 346-158.000.
Telescope Folding Furniture Co., Inc., The: *See—*
Vanderminden, Robert D., 4,201,416, Cl. 297-184.000.
Tenna Corporation: *See—*
Nagel, Martin J., 4,201,886, Cl. 179-1.00A.
Teodorescu, Constantin; and Polizu, Radu, to Institutul National Pentru Creatie Stiintifica si Tehnica-Increst. Method of and apparatus for incinerating residential waste. 4,201,141, Cl. 110-259.000.
Tepe, Walter; and Van Niewenhuizen, Adam J. J., to Dialytic Electrolysis Laboratorium (Proprietary) Limited. Soil testing apparatus and method. 4,201,549, Cl. 23-230.00R.
Teradyne, Inc.: *See—*
Gras, Ranulf W., 4,201,374, Cl. 269-37.000.
Terumo Corporation: *See—*
Kanno, Michio; and Igari, Akira, 4,201,673, Cl. 210-321.00B.
Tetradyne Corporation: *See—*
Mueller, Frederick N.; and Chandler, Ronald W., 4,200,982, Cl. 33-126.600.
Texaco Inc.: *See—*
Calderon, Reynaldo; and Towell, Billy H., 4,201,266, Cl. 166-231.000.

Vartanian, Paul F.; and Biasotti, Joseph B., 4,201,554, Cl. 44-62.000.
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Trager, Seymour F.; and Green, Keith, to Burton, Parsons & Company, Inc. Treatment of corneal edema. 4,201,706, Cl. 424-78.000.
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Dewitte, Jean; and Aymard, Pierre, 4,201,560, Cl. 65-21.000.

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Hodge, Malcolm H., 4,201,443, Cl. 350-96.200.
Sanders, Paul W., 4,202,005, Cl. 357-51.000.

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Asher, William J.; and Tsien, Hsue C., 4,201,691, Cl. 252-314.000.

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Irie, Akiyoshi, 4,201,937, Cl. 318-568.000.

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Mills, Alfred L.; and Williams, John A., 4,201,690, Cl. 252-301.10W.

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Castleman, B. Wayne, 4,201,654, Cl. 204-298.000.
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Cowsar, Donald R., 4,201,822, Cl. 428-240.000.
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Beunders, Johan W., 4,201,944, Cl. 455-155.000.
van der Wal, Johannes; and Bouwhuis, Gijsbertus, 4,201,954, Cl. 331-94.50C.
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Nace, George W., 4,201,153, Cl. 119-3.000.
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Rowell, Robert L.; and Vasconcellos, Stephen R., 4,201,552, Cl. 44-51.000.

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Belkind, Benjamin A., 4,201,568, Cl. 71-94.000.
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Vetco, Inc.: *See—*
Baugh, Benton F., 4,201,238, Cl. 137-68.00R.

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Paret, Giancarlo; Vetere, Alessandro; and Iori, Giuseppe, 4,201,633, Cl. 203-58.000.

Vetter, Manfred. Arrangement for emergency opening a vehicle door. 4,201,368, Cl. 254-131.000.

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O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., 4,201,653, Cl. 204-263.000.

Vinals, Joaquin: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

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Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.

Vines, James K., to Paraframe, Inc. Antenna structure assembled from separable parts. 4,201,991, Cl. 343-840.000.

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Nixel, Fritz, 4,201,050, Cl. 60-357.000.

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Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, 4,201,847, Cl. 521-172.000.

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Kehr, Clifton L.; Wood, Louis L.; Marans, Nelson S.; and Fulmer, Glenn E., 4,201,846, Cl. 521-137.000.
Stibbe, Paul H.; and Daane, Robert A., 4,201,323, Cl. 226-97.000.

WABING S.r.L.: *See—*
Betta, Walter, 4,201,369, Cl. 254-193.000.

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Deinhammer, Wolfgang; and Spes, Hellmuth, 4,201,715, Cl. 260-345.70R.

Wagner, Karl: *See—*
Stemme, Otto; and Wagner, Karl, 4,201,460, Cl. 354-171.000.

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Fredin, Ell C.; Morgan, James W.; and Waimer, Milo H., 4,200,943, Cl. 7-100.000.

Wainland, David M.: *See—*
Connors, John P.; Nordmann, Bernard J.; Wainland, David M.; and Bell, Henry P., 4,202,042, Cl. 364-900.000.

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Niiro, Yasuhiko; and Wakabayashi, Hiroharu, 4,201,959, Cl. 333-16.000.

Wakamatsu, Hisato: *See—*
Akita, Sigeyuki; and Wakamatsu, Hisato, 4,201,087, Cl. 73-339.00A.

Walch, John W.: *See—*
Irelan, Edward A.; Bartlett, Robert L.; and Walch, John W., 4,200,978, Cl. 30-276.000.

Waldon, Billy E.: *See—*
Reed, Russell, Jr.; Sieg, George F.; Rhyn, Elmer J.; and Waldon, Billy E., 4,201,605, Cl. 149-19.100.

Walker, Ronald E., to Weyerhaeuser Company. Apparatus for proportioning and mixing powdered hardeners with liquid resins. 4,201,485, Cl. 366-156.000.

Walling, Jorg-Hein; and Bouffard, Jean, to Northern Telecom Limited. Powder distributor for filling a cable. 4,201,250, Cl. 141-250.000.

Wallshein, Melvin. Orthodontic biassing device with screw disengagement preventing means. 4,200,979, Cl. 433-7.000.

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Waltenberger, Peter; Uphues, Gunter; and Petzold, Manfred, to Henkel Kommanditgesellschaft auf Aktien. Smoothing agents for treating textile fiber material. 4,201,680, Cl. 252-8.600.

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Parisi, Michael S.; and Pauly, John A., 4,201,968, Cl. 338-28.000.

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Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,282, Cl. 192-98.000.
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Walters, Joseph M.: *See—*
Barr, Thomas A., Jr.; Holloman, Miles E.; and Walters, Joseph M., 4,201,950, Cl. 331-94.50G.

Wan, Jeffrey K. S.; and Chen, Kuang S., to Queen's University at Kingston. Triple ions of 1,2- and 1,4-dicarbonyl compounds and analogs thereof containing nitrogen and containing two strategic oxygen or nitrogen groups and process for producing same. 4,201,638, Cl. 204-158.00R.

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Lipinski, Henry F.; and Wantling, Steven J., 4,201,681, Cl. 252-33.200.

Ward, William P., to NCR Corporation. Data storage system for storing multilevel signals. 4,202,046, Cl. 365-222.000.

Ward, William P.: *See—*
Lewis, Wayne J.; and Ward, William P., 4,201,337, Cl. 235-303.200.

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MacDonald, J. G. Fraser, 4,201,281, Cl. 192-35.000.

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Kirk, Calvin K.; Joyce, Glover C.; and Messier, Francis L., 4,201,016, Cl. 51-105.0SP.

Warren, Glenn B.; and Morgan, J. Randolph. Low emission combustors. 4,201,047, Cl. 60-39.630.

Warren, Raymond: *See—*
Arnold, Robert A.; and Warren, Raymond, 4,201,504, Cl. 414-27.000.

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Feldman, Henry L.; Berman, Philip G.; and Washburn, William L., 4,201,218, Cl. 128-402.000.

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Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,201,655, Cl. 208-8.0LE.

Watanabe, Hideo: *See—*
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Kawashima, Yoshinori; Watanabe, Masaki; and Kinoshita, Katsuharu, 4,201,393, Cl. 277-92.000.

Watt, William R., to American Can Company. Method for producing bis-[4-(diphenylsulfonio)phenyl] sulfide bis-$M.X_6$ initiator and method for cationic polymerization of monomer formulations using same. 4,201,640, Cl. 204-159.110.

Watts, James T., to Grant Oil Tool Company. High and low pressure seal. 4,201,392, Cl. 277-165.000.

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Weber, Karl-Heinz; Bauer, Adolf; and Langbein, Adolf, to Boehringer Ingelheim GmbH. Process for preparation of 6-aryl-4H-s-triazolo-[3,4-c]-thieno-[2,3-e]-1,4-diazepines. 4,201,712, Cl. 260-244.400.

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Kurbitz, Gunther; Wegener, Walter; and Weinheimer, Hans-Richard, 4,201,931, Cl. 315-10.000.

Wehrmann, Felix: *See—*
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, 4,201,833, Cl. 428-404.000.

Weidman, Larry G., to Geo. P. Reintjes Co., Inc. Air cooled head for stud welding gun. 4,201,904, Cl. 219-98.000.

Weiland, Emil; Schindler, Rudolf; and Brunsch, Klaus, to Messerschmitt-Bolkow-Blohm GmbH. Shear transfer element. 4,201,815, Cl. 428-113.000.

Weinheimer, Hans-Richard: *See—*
Kurbitz, Gunther; Wegener, Walter; and Weinheimer, Hans-Richard, 4,201,931, Cl. 315-10.000.

Weldon Hydraulics, Inc.: *See—*
Stram, George H., 4,201,342, Cl. 239-128.000.

Wellman, George R.: *See—*
Filan, John J.; Holl, Walter W.; and Wellman, George R., 4,201,775, Cl. 424-180.000.

Wells, David L.: *See—*
Davida, George I.; and Wells, David L., 4,202,051, Cl. 375-2.000.

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Aldag, John; and Wells, Willis L., 4,201,021, Cl. 52-93.000.

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Welti, George R., to Communications Satellite Corporation. Multibeam communications satellite. 4,201,992, Cl. 343-840.000.

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Scheidler, Herwig; Wennemann, Dietmar; and Schwank, Bernd, 4,201,184, Cl. 126-39.00J.

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Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., 4,201,725, Cl. 260-583.00H.

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Esaki, Koreaki, 4,201,934, Cl. 315-151.000.

West, Robert F.; and Elmore, James, to Stanley Works, The. Self-extending rule. 4,200,983, Cl. 33-138.000.

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Elmore, I. James; and West, Robert F., 4,201,258, Cl. 145-46.000.

Western Electric Company, Incorporated: *See—*
Debiec, Richard P.; and Wydra, William T., 4,200,975, Cl. 29-827.000.

Westinghouse Electric Corp.: *See—*
De Laurentis, Angelo A., 4,201,966, Cl. 336-217.000.
Klein, Gerald I., 4,201,961, Cl. 333-24.100.
Reed, Terry J.; and Smith, Jack R., 4,201,923, Cl. 290-40.00R.
Uram, Robert, 4,201,924, Cl. 290-40.00R.
Vani, Elo N.; and Kiscaden, Roy W., 4,201,045, Cl. 60-39.09R.

Westland Aircraft Limited: *See—*
Lawrence, Derek I., 4,200,946, Cl. 14-4.000.

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Gilbert, Earl F., 4,201,330, Cl. 229-33.000.

Wetherald, Milo N. Oscillating flasher for deep water fishing. 4,201,006, Cl. 43-42.060.

Wetzel, Gustav, to Endress u. Hauser GmbH u. Co. Ultrasonic-filling position limit switch operating according to the echo principle. 4,202,049, Cl. 367-96.000.

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Walker, Ronald E., 4,201,485, Cl. 366-156.000.

White Consolidated Industries, Inc.: *See—*
Case, Richard P., 4,201,240, Cl. 137-392.000.

White, James F.: *See—*
Howard, James K.; Turene, Frank E.; and White, James F., 4,201,999, Cl. 357-15.000.

White, Richard L., to Eastman Kodak Company. Photothermographic and thermographic element, composition and process. 4,201,582, Cl. 430-351.000.

Whitehead, Gareth D. J.; and Gardner, Thomas H. Apparatus for the compacting and treatment of materials such as shredded paper. 4,201,128, Cl. 100-45.000.

Whiteley, Marie Ellen: *See—*
Whiteley, William B., 4,201,214, Cl. 128-330.000.

Whiteley, William B., to Whiteley, Marie Ellen, a part interest. Applicators. 4,201,214, Cl. 128-330.000.

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Johnson, Jack W.; and Whittingham, M. Stanley, 4,201,839, Cl. 429-194.000.

Whitworth, Eddie L.; and Russell, Ronald G., to United States of America, Navy. Data processing system. 4,202,040, Cl. 364-900.000.

Wicklund, June I. Auxiliary towel holder. 4,201,304, Cl. 211-87.000.

Widmer, Colin F., to James Brown & Sons Limited. Blast furnace tuyere. 4,201,372, Cl. 266-270.000.

Wiemer, Erich, to Krupp-Koppers GmbH. Device for crushing sinter and the like. 4,201,346, Cl. 241-66.000.

Wiles, Jerald R., to Rexham Corporation. Method of making, opening, filling and sealing a two-compartment pouch. 4,201,031, Cl. 53-455.000.

Wilhelm Mende & Company: *See—*
Schenz, Manfred, 4,201,819, Cl. 428-172.000.

Wilkins, Richard S. Submersible pump system using a submersible internal combustion engine. 4,201,524, Cl. 417-364.000.

Wilkinson Sword Limited: *See—*
Gooding, Trevor F., 4,200,976, Cl. 30-47.000.

William Boulton Limited: *See—*
Davenport, Anthony F.; and Brailsford, Harry B., 4,201,017, Cl. 51-163.200.

William M. Bailey Company: *See—*
Skendrovic, Lawrence, 4,201,502, Cl. 408-1.00R.

Williams, Clarence. Martial arts practice bag. 4,201,379, Cl. 272-76.000.

Williams Gold Refining Company Incorporated: *See—*
Ingersoll, Clyde E.; and Agarwall, Dwarika P., 4,201,577, Cl. 75-134.00N.

Williams, John A.: *See—*
Mills, Alfred L.; and Williams, John A., 4,201,690, Cl. 252-301.10W.

Williams, Smith J.; and Spector, George. Camping car. 4,201,412, Cl. 296-163.000.

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Wilson, Bradford W. Skip rope. 4,201,382, Cl. 272-75.000.

Wilson, Eddie A.: *See—*
Schwartzburg, James H.; Little, Eric A.; and Wilson, Eddie A., 4,201,360, Cl. 249-140.000.

Winter, Beat: *See—*
Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., 4,201,773, Cl. 424-180.000.

Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, to Fichtel & Sachs AG. Pressure accumulator. 4,201,246, Cl. 138-30.000.

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Davida, George I.; and Wells, David L., 4,202,051, Cl. 375-2.000.
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Schoettle, Klaus; Uhl, Karl; Wittkamp, Heinrich; Dobler, Peter; and Lewin, Helmut, 4,201,356, Cl. 242-197.000.

Wolanski, Bohdan: *See—*
Fullerton, Wardle; and Wolanski, Bohdan, 4,201,767, Cl. 424-89.000.

Wolbarsht, Mryon L. Method and apparatus for detecting the focusing condition of an optical system. 4,201,456, Cl. 353-101.000.

Wolf, Ludwig, Jr.: *See—*
Dennehey, T. Michael; and Wolf, Ludwig, Jr., 4,201,406, Cl. 285-3.000.

Wolf, Roger P., to Mine Safety Appliances Company. Filter pleating machine. 4,201,119, Cl. 93-60.000.

Wolinski, Leon E.; Riebling, Richard G.; and Edholm, John H., to Pratt & Lambert, Inc. Chemical milling of neoprene rubber. 4,201,732, Cl. 525-363.000.

Wollen, Carl H., to U.S. Industries. Impact absorbant article comprising frangible core having a tough-skinned covering and method of making same. 4,201,830, Cl. 428-375.000.

Wolverine Corporation: *See—*
Buske, Walter E.; and Hoyt, Charles W., 4,201,499, Cl. 406-75.000.

Wood, Ernest C.: *See—*
Samuels, Peter B.; and Wood, Ernest C., 4,201,314, Cl. 221-198.000.

Wood, Louis L.: *See—*
Kehr, Clifton L.; Wood, Louis L.; Marans, Nelson S.; and Fulmer, Glenn E., 4,201,846, Cl. 521-137.000.

Woods, William G.: *See—*
Hunter, Don L.; and Woods, William G., 4,201,724, Cl. 260-577.000.

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Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., 4,201,596, Cl. 127-37.000.

Wooldridge, Kenneth R. H.: *See—*
Basil, Berkeley; and Wooldridge, Kenneth R. H., 4,201,790, Cl. 424-330.000.

Wooten, Richard L., to Moore Business Forms, Inc. Mailing wrapper. 4,201,332, Cl. 229-92.000.

Wootton, Gordon: *See—*
Cassidy, Frederick; and Wootton, Gordon, 4,201,864, Cl. 560-39.000.

Worcester, Leslie, to Mark Telephone Products, Inc. Remote flow transducer for communication cable. 4,201,079, Cl. 73-40.50R.

Worm, Manfred: *See—*
Bormann, Dieter; Knabe, Bernd; Schrinner, Elmar; and Worm, Manfred, 4,201,779, Cl. 424-246.000.

Woschnagg, Elmar: *See—*
Felber, Willibald; and Woschnagg, Elmar, 4,201,089, Cl. 73-350.000.

Wu, Yulin; Johnson, Marvin M.; and Nowack, Gerhard P., to Phillips Petroleum Company. Catalyst and process for producing hydroperoxides. 4,201,875, Cl. 568-575.000.

Wydra, William T.: *See—*
Debiec, Richard P.; and Wydra, William T., 4,200,975, Cl. 29-827.000.

Xerox Corporation: *See—*
Fishbeck, Kenneth H.; and Harpavat, Ganesh L., 4,201,995, Cl. 346-140.00R.

Yamada, Jun: *See—*
Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, 4,201,964, Cl. 333-151.000.

Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, to Sumitomo Aluminium Smelting Company, Ltd. Method for the separation of precipitated aluminum hydroxide from sodium aluminate solution. 4,201,749, Cl. 423-127.000.

Yamaguchi, Kunihiko: *See—*
Minagawa, Yukinori; Kaneko, Tsugio; and Yamaguchi, Kunihiko, 4,201,747, Cl. 423-21.500.

Yamamoto, Setsuo: *See—*
Ushiyama, Yasuichi; and Yamamoto, Setsuo, 4,202,009, Cl. 358-32.000.

Yamanaka, Kenji, to Toyo Suisan Kaisha, Ltd. Handy container-pan for instantly frizzlable dry foods. 4,201,795, Cl. 426-110.000.

Yamasaki, Tetsuro: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,201,860, Cl. 544-277.000.

Yamashita, Haruhiro: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,201,860, Cl. 544-277.000.

Yamazaki, Noboru; Yuasa, Teruo; Morimoto, Yoshio; Aoi, Kunio; and Takase, Tsutomu, to Mitsui Toatsu Chemicals Inc. Process for producing a linear trimer of paraisopropenyl phenol. 4,201,877, Cl. 568-720.000.

Yanagihara, Hitoshi: *See—*
Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, 4,201,964, Cl. 333-151.000.

Yannoni, Costantino S.: *See—*
Fyfe, Colin A.; Mossbrugger, Horst G.; and Yannoni, Costantino S., 4,201,941, Cl. 324-321.000.

Yano, Kozo: *See—*
Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo; Hamada, Hiroshi; and Nakauchi, Hiroshi, 4,201,985, Cl. 340-785.000.

Yasukawa, Junichi: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.

Yazaki, Mutsunobu: *See—*
Harigaya, Isao; Taguchi, Tetsuya; Ito, Fumio; and Yazaki, Mutsunobu, 4,201,463, Cl. 354-86.000.

Yellow Springs Instrument Company, Inc.: *See—*
Trietley, Harry L., Jr., 4,201,088, Cl. 73-342.000.

Yokogawa Electric Works, Ltd.: *See—*
Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,201,084, Cl. 73-194.0VS.
Kurita, Yoshio; and Shibata, Yukitake, 4,201,083, Cl. 73-194.00E.

Yokono, Koujiro: *See—*
Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, 4,201,441, Cl. 350-3.610.

Yokoyama, Toshiaki: *See—*
Kuwabara, Takao; Okumura, Hiroshi; and Yokoyama, Toshiaki, 4,201,925, Cl. 290-52.000.

Yonezawa, Toshio: *See—*
Aoyama, Masaharu; Hiraki, Shunichi; and Yonezawa, Toshio, 4,200,969, Cl. 29-577.00R.

Yoshida, Minoru: *See—*
Miyagawa, Tuyoshi; Kokubo, Eiichi; and Yoshida, Minoru, 4,201,131, Cl. 101-4.000.

Yoshikawa, Hiroshi; Kawakami, Akihiro; and Sato, Hideaki, to Hitachi, Ltd. Transportable telephone exchange apparatus. 4,202,029, Cl. 361-394.000.

Yuan, Han T.: *See—*
Darley, Henry M.; Houston, Theodore W.; and Yuan, Han T., 4,202,003, Cl. 357-15.000.

Yuasa Battery Co., Ltd.: *See—*
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, 4,201,641, Cl. 204-159.170.

Yuasa, Teruo: *See—*
Yamazaki, Noboru; Yuasa, Teruo; Morimoto, Yoshio; Aoi, Kunio; and Takase, Tsutomu, 4,201,877, Cl. 568-720.000.

Yuta, Koichi, to Olympus Optical Co., Ltd. Lens system for micro film. 4,201,440, Cl. 350-1.200.

Zani, David A. Solar energy air heating device. 4,201,196, Cl. 126-450.000.

Zapp, Walter, to Createchnil Patent AG. Keyboard actuatable with the aid of the fingers of at least one hand. 4,201,489, Cl. 400-485.000.

Zickgraf, Karl, to Klockner-Humboldt-Deutz Aktiengesellschaft. Autoclave for carrying out of material conversions under high temperatures and high pressures. 4,201,745, Cl. 422-199.000.

Zidermane, Aina A.: *See—*
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

Ziegler, George M., Jr.: *See—*
Kadan, Ranjit S.; Freeman, Donald W.; Spadaro, James J.; and Ziegler, George M., Jr., 4,201,709, Cl. 260-123.500.

Ziegler, William D., to General Electric Company. Food cutter for dishwasher. 4,201,345, Cl. 241-46.00R.

Zimmer, Peter; and Kudlich, Hans, to Maschinenfabrik Peter Zimmer Aktiengesellschaft. Method of an apparatus for equalizing longitudinal stresses in an advancing web. 4,201,132, Cl. 101-118.000.

Zink, John S.; and Reed, Robert D., to John Zink Company. Liquid fuels vaporization. 4,201,191, Cl. 126-360.00A.

Zirconal Processes Limited: *See—*
Walters, Ian R.; and Emblem, Harold G., 4,201,594, Cl. 106-38.350.

Zoecon Corporation: *See—*
Anderson, Richard J.; and Henrick, Clive A., 4,201,874, Cl. 562-598.000.

Zondler, Helmut; and Lehmann, Hans, to Ciba-Geigy Corporation. Curable epoxide resin mixtures. 4,201,854, Cl. 528-121.000.

Zorzi, Paul A.; Jones, Jesse D.; and Kucsma, Michael E., to Ethyl Corporation. Polypivalolactone-polycarbonate blends. 4,201,703, Cl. 260-37.0PC.

Zosel, Kurt, to Studiengesellschaft Kohle mbH. Process for the separation of mixtures of various hydrocarbon compounds. 4,201,660, Cl. 208-86.000.

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Zumpano, Antonio. Driers for drying skeins of yarns and other purposes. 4,200,992, Cl. 34-58.000.

Zupancic, Boris, to LEK Tovarna Farmacevtskih in Kemicnih Izdelkov, n.sol.o. Process for the preparation of 2-(3-benzoylphenyl)-propionic acid. 4,201,870, Cl. 562-460.000.

Zygo Corporation: *See—*
Domenicali, Peter L.; and Hunter, George C., 4,201,473, Cl. 356-360.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 6TH DAY OF MAY, 1980

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Buckberg, Gerald D.; and Dyson, Charles W. Hypothermic cardioplegia administration set. T994,001, 5-6-80, Cl. 128-214.00R.

Dyson, Charles W.: *See—*
Buckberg, Gerald D.; and Dyson, Charles W., T994,001, Cl. 128-214.00R.

Harvey, Frederick W.; Hess, Norman E.; and Sethi, Gurdip S. Battery package and assembly. T994,002, 5-6-80, Cl. 429-158.000.

Hess, Norman E.: *See—*
Harvey, Frederick W.; Hess, Norman E.; and Sethi, Gurdip S., T994,002, Cl. 429-158.000.

Kilminster, Kenneth N. Azo dyes, azo dye-releasing compounds and photographic products and processes employing them. T994,003, 5-6-80, Cl. 430-242.000.

Sethi, Gurdip S.: *See—*
Harvey, Frederick W.; Hess, Norman E.; and Sethi, Gurdip S., T994,002, Cl. 429-158.000.

Shawl, Edward T. Process for the preparation of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates using solid acid catalysts. T994,004, 5-6-80, Cl. 560-25.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MAY, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Beloit Corporation: *See—*
Justus, Edgar J., Re. 30,268, Cl. 162-360.00R.

Betz, Erwin C. Wood fly ash reduction method. Re. 30,269, Cl. 423-332.000.

Bruschi, Barbara J., to Eastman Kodak Company. Multilayer analytical element. Re. 30,267, Cl. 23-230.00B.

Dietz, Wolfgang F. W., to RCA Corporation. Side pincushion correction system. Re. 30,271, Cl. 315-370.000.

Eastman Kodak Company: *See—*
Bruschi, Barbara J., Re. 30,267, Cl. 23-230.00B.

Eaton Corporation: *See—*
Piber, Earl T., Re. 30,270, Cl. 200-157.000.

Greene, Edwin R.; and Greene, Rodney F. Animal dryer. Re. 30,266, Cl. 34-86.000.

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Greene, Edwin R.; and Greene, Rodney F., Re. 30,266, Cl. 34-86.000.

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Kupcikevicius, Vytautas; and Mika, Anton L., to Union Carbide Corporation. Presizing disc with self-locking means. Re. 30,265, Cl. 17-41.000.

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RCA Corporation: *See—*
Dietz, Wolfgang F. W., Re. 30,271, Cl. 315-370.000.

Union Carbide Corporation: *See—*
Kupcikevicius, Vytautas; and Mika, Anton L., Re. 30,265, Cl. 17-41.000.

LIST OF PLANT PATENTEES

Duffett, William E.: *See—*
Jessel, Walter H., Jr.; and Duffett, William E., 4,531, Cl. 76.000.

Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara": *See—*
Holtkamp, Reinhold, 4,532, Cl. 69.000.
Holtkamp, Reinhold, 4,533, Cl. 69.000.

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Yoder Brothers, Inc.: *See—*
Jessel, Walter H., Jr.; and Duffett, William E., 4,531, Cl. 76.000.

LIST OF DESIGN PATENTEES

Abe, Yuzo: *See—*
Nakao, Shinroku; Kobayashi, Kouichi; and Abe, Yuzo, 254,906, Cl. D12-129.000.

Adkinson, Joseph E. Cocktail table. 254,884, 5-6-80, Cl. D6-175.000.

Airwick Industries, Inc.: *See—*
Butcher, Ian; Rabussier, Bernard; and Lecomte, Philippe, 254,929, Cl. D23-150.000.
Butcher, Ian; Rabussier, Bernard; and Lecomte, Philippe, 254,932, Cl. D23-150.000.
Mandon, Jean-Pierre; and Lecomte, Philippe, 254,930, Cl. D23-150.000.
Mandon, Jean-Pierre; and Lecomte, Philippe, 254,931, Cl. D23-150.000.

Ambasz, Emilio, to Center for Design Research and Development N.V. Chair. 254,878, 5-6-80, Cl. D6-31.000.

American Cyanamid Company: *See—*
Grodin, Adam J., 254,895, Cl. D9-59.000.

Bollinger, Howard N.; Donaldson, Linda J.; and Goldberg, Dale I., to CPG Products Corp. Toy stethoscope. 254,919, 5-6-80, Cl. D21-109.000.

Bowsky, Benjamin; Coyle, Donald E.; Newman, David W.; and Burrows, Larry G., to Emerson Electric Co. Starter for small engines. 254,908, 5-6-80, Cl. D13-2.000.

Buerk, George P. Cover for facial tissue box. 254,898, 5-6-80, Cl. D9-259.000.

Burrows, Larry G.: *See—*
Bowsky, Benjamin; Coyle, Donald E.; Newman, David W.; and Burrows, Larry G., 254,908, Cl. D13-2.000.

Butcher, Ian; Rabussier, Bernard; and Lecomte, Philippe, to Airwick Industries, Inc. Dispenser for air-freshening vapors. 254,929, 5-6-80, Cl. D23-150.000.

Butcher, Ian; Rabussier, Bernard; and Lecomte, Philippe, to Airwick Industries, Inc. Dispenser for air-freshening vapors. 254,932, 5-6-80, Cl. D23-150.000.

Carl Manufacturing Co., Ltd.: *See—*
Mori, Chuzo, 254,915, Cl. D19-76.000.
Mori, Chuzo, 254,916, Cl. D19-76.000.

Carl Zeiss-Stiftung: *See—*
Muller, Ortwin, 254,933, Cl. D24-17.000.

Center for Design Research and Development N.V.: *See—*
Ambasz, Emilio, 254,878, Cl. D6-31.000.

Chromcraft Corporation: *See—*
Wilson, Robert L., 254,890, Cl. D6-196.000.

Collins, John, to Leer, Inc. Pick-up truck cap. 254,905, 5-6-80, Cl. D12-156.000.

Combi Co., Ltd.: *See—*
Nakao, Shinroku; Kobayashi, Kouichi; and Abe, Yuzo, 254,906, Cl. D12-129.000.

Council, Noel E. Demonstration device or the like. 254,917, 5-6-80, Cl. D21-59.000.

Coyle, Donald E.: *See—*
Bowsky, Benjamin; Coyle, Donald E.; Newman, David W.; and Burrows, Larry G., 254,908, Cl. D13-2.000.

CPG Products Corp.: *See—*
Bollinger, Howard N.; Donaldson, Linda J.; and Goldberg, Dale I., 254,919, Cl. D21-109.000.

Decker, Larry L. Cabinet for housing stereo components. 254,885, 5-6-80, Cl. D6-175.000.

Dennis, Allan: *See—*
Jaramillo, Antonio M.; and Dennis, Allan, 254,902, Cl. D11-61.000.

Dergis, Richard J.: *See—*
Reitenga, Valerie C.; and Dergis, Richard J., 254,876, Cl. D2-259.000.

Donaldson, Linda J.: *See—*
Bollinger, Howard N.; Donaldson, Linda J.; and Goldberg, Dale I., 254,919, Cl. D21-109.000.

Durney, Max W. Chair. 254,880, 5-6-80, Cl. D6-73.000.

Eisen, Leonard, to Trend Line Furniture Corporation. Rocker. 254,879, 5-6-80, Cl. D6-49.000.

Emerson Electric Co.: *See—*
Bowsky, Benjamin; Coyle, Donald E.; Newman, David W.; and Burrows, Larry G., 254,908, Cl. D13-2.000.

Envall, Bjorn E. A.; and Jonsson, Ralph E., to Saab-Scania Aktiebolag. Aerodynamic spoiler for attachment to an upper rear portion of an automobile. 254,907, 5-6-80, Cl. D12-181.000.

EPL Tool Co.: *See—*
Pyskaty, Alan R., 254,881, Cl. D6-88.000.

Fairchild Industries, Inc.: *See—*
Holmen, Erling; and Rosenthal, Gordon, 254,903, Cl. D12-71.000.
Marrujo, Ralph G., 254,888, Cl. D6-192.000.
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Fritkin-Jones Design Group Inc.: *See—*
Fritkin, Ronald K., 254,921, Cl. D21-168.000.

Fritkin, Ronald K., to Fritkin-Jones Design Group Inc. Stuffed doll. 254,921, 5-6-80, Cl. D21-168.000.

Fujisoku Electric Co., Ltd.: *See—*
Sano, Minoru, 254,909, Cl. D13-37.000.

Goldberg, Dale I.: *See—*
Bollinger, Howard N.; Donaldson, Linda J.; and Goldberg, Dale I., 254,919, Cl. D21-109.000.

Grodin, Adam J., to American Cyanamid Company. Bottle or similar article. 254,895, 5-6-80, Cl. D9-59.000.

Haines, Alan M. Plant stand. 254,886, 5-6-80, Cl. D6-183.000.

Havranek, Ladislav, to Havranek, Ladislav; and Kleeman, Werner W. Toy airplane. 254,918, 5-6-80, Cl. D21-87.000.

Hilary Page "Sensible" Toys Limited: *See—*
Walker, Norman, 254,922, Cl. D21-173.000.

Holmen, Erling; and Rosenthal, Gordon, to Fairchild Industries, Inc. Aircraft. 254,903, 5-6-80, Cl. D12-71.000.

Ito, Shoichiro, to Pilot Man-Nen Hitsu Kabushiki Kaisha. Fountain pen. 254,912, 5-6-80, Cl. D19-48.000.

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Jaramillo, Antonio M.; and Dennis, Allan. Charm. 254,902, 5-6-80, Cl. D11-61.000.

Jonas, Walter K. Paper cassette. 254,897, 5-6-80, Cl. D9-224.000.

Jonsson, Ralph E.: *See—*
Envall, Bjorn E. A.; and Jonsson, Ralph E., 254,907, Cl. D12-181.000.

Jorda-Segui, Anne-Marie. Storage case for stationery articles or the like. 254,883, 5-6-80, Cl. D6-165.000.

Jorda-Segui, Anne-Marie. Modular storage unit having pull-out shelves or similar article. 254,887, 5-6-80, Cl. D6-186.000.

Kempf, Bertrand. Cabinet for housing stereophonic and electronic equipment. 254,882, 5-6-80, Cl. D6-159.000.

Kimbrough, Richard W. M., to Quaker Oats Company, The. Toy doll house. 254,920, 5-6-80, Cl. D21-114.000.

Kleeman, Werner W.: *See—*
Havranek, Ladislav, 254,918, Cl. D21-87.000.

Kobayashi, Kouichi: *See—*
Nakao, Shinroku; Kobayashi, Kouichi; and Abe, Yuzo, 254,906, Cl. D12-129.000.

Larson, John A. Kazoo or similar article. 254,911, 5-6-80, Cl. D17-10.000.

Lecomte, Philippe: *See—*
Butcher, Ian; Rabussier, Bernard; and Lecomte, Philippe, 254,929, Cl. D23-150.000.
Butcher, Ian; Rabussier, Bernard; and Lecomte, Philippe, 254,932, Cl. D23-150.000.
Mandon, Jean-Pierre; and Lecomte, Philippe, 254,930, Cl. D23-150.000.
Mandon, Jean-Pierre; and Lecomte, Philippe, 254,931, Cl. D23-150.000.

Leer, Inc.: *See—*
Collins, John, 254,905, Cl. D12-156.000.

Lung, Gilbert K., to Sonway Manufacturers Ltd. Combined headphone and radio. 254,910, 5-6-80, Cl. D14-36.000.

Madison, Theodore N., to Questor Corporation. Center shaft putter head. 254,924, 5-6-80, Cl. D21-219.000.

Madison, Theodore N., to Questor Corporation. Off set putter head. 254,925, 5-6-80, Cl. D21-219.000.

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Marrujo, Ralph G., to Fairchild Industries, Inc. Leg for an aircraft seat. 254,889, 5-6-80, Cl. D6-192.000.

Mathis, Cleo D. Suction drain guard for swimming pools. 254,928, 5-6-80, Cl. D23-41.000.

Mills, Linda J. Child's pillow. 254,891, 5-6-80, Cl. D6-202.000.

Mobius, Werner. Pencil sharpener. 254,914, 5-6-80, Cl. D19-73.000.

Moore, William A. Box. 254,896, 5-6-80, Cl. D9-224.000.

Mori, Chuzo, to Carl Manufacturing Co., Ltd. Telephone index or the like. 254,915, 5-6-80, Cl. D19-76.000.

Mori, Chuzo, to Carl Manufacturing Co., Ltd. Telephone index or the like. 254,916, 5-6-80, Cl. D19-76.000.

Morishita, Yasomatsu, to Ryobi Ltd. Fishing reel. 254,927, 5-6-80, Cl. D22-25.000.

Muller, Ortwin, to Carl Zeiss-Stiftung. Slit lamp. 254,933, 5-6-80, Cl. D24-17.000.

Multirich Enterprise USA Incorporated: *See—*
Ng, William W., 254,901, Cl. D10-106.000.

Nakao, Shinroku; Kobayashi, Kouichi; and Abe, Yuzo, to Combi Co., Ltd. Combined baby carriage and basket. 254,906, 5-6-80, Cl. D12-129.000.

Newman, David W.: *See—*
Bowsky, Benjamin; Coyle, Donald E.; Newman, David W.; and Burrows, Larry G., 254,908, Cl. D13-2.000.

Ng, William W., to Multirich Enterprise USA Incorporated. Smoke detector. 254,901, 5-6-80, Cl. D10-106.000.

Oppliger, Eric. Pocket timepiece. 254,900, 5-6-80, Cl. D10-37.000.

Pilot Man-Nen Hitsu Kabushiki Kaisha: *See—*
Ito, Shoichiro, 254,912, Cl. D19-48.000.
Ito, Shoichiro, 254,913, Cl. D19-55.000.

Pitton, Robert A. Rolling toy or similar article. 254,923, 5-6-80, Cl. D21-203.000.

Pyskaty, Alan R., to EPL Tool Co. Wall-mountable rack for holding a razor or the like. 254,881, 5-6-80, Cl. D6-88.000.

Quaker Oats Company, The: *See—*
Kimbrough, Richard W. M., 254,920, Cl. D21-114.000.

Questor Corporation: *See*—
Madison, Theodore N., 254,924, Cl. D21-219.000.
Madison, Theodore N., 254,925, Cl. D21-219.000.

Rabussier, Bernard: *See*—
Butcher, Ian; Rabussier, Bernard; and Lecomte, Philippe, 254,929, Cl. D23-150.000.
Butcher, Ian; Rabussier, Bernard; and Lecomte, Philippe, 254,932, Cl. D23-150.000.

Reitenga, Valerie C.; and Dergis, Richard J. Ear muffs having ear coverings representing phonograph records. 254,876, 5-6-80, Cl. D2-259.000.

Rosenthal, Gordon: *See*—
Holmen, Erling; and Rosenthal, Gordon, 254,903, Cl. D12-71.000.

Ryobi Ltd.: *See*—
Morishita, Yasomatsu, 254,927, Cl. D22-25.000.

Saab-Scania Aktiebolag: *See*—
Envall, Bjorn E. A.; and Jonsson, Ralph E., 254,907, Cl. D12-181.000.

Sano, Minoru, to Fujisoku Electric Co., Ltd. Switch. 254,909, 5-6-80, Cl. D13-37.000.

Shadow Company: *See*—
Staudinger, Lyn A., 254,935, Cl. D28-7.000.

Smit, Gerard C., to Smitdesign B.V. Coffeemaker. 254,892, 5-6-80, Cl. D7-62.000.

Smit, Gerard C., to Smitdesign B.V. Coffeemaker. 254,893, 5-6-80, Cl. D7-62.000.

Smitdesign B.V.: *See*—
Smit, Gerard C., 254,892, Cl. D7-62.000.
Smit, Gerard C., 254,893, Cl. D7-62.000.

Solheim, Karsten. Golf club grip. 254,926, 5-6-80, Cl. D21-222.000.

Sonway Manufacturers Ltd.: *See*—
Lung, Gilbert K., 254,910, Cl. D14-36.000.

Staudinger, Lyn A., to Shadow Company. Mascara shield. 254,935, 5-6-80, Cl. D28-7.000.

Stimtech, Inc.: *See*—
Walus, Richard L., 254,934, Cl. D24-36.000.

Swearingen, Edward J. Exhaust stack. 254,904, 5-6-80, Cl. D12-81.000.

Tada, Tetsuya. Combined pump and cap for a container. 254,899, 5-6-80, Cl. D9-276.000.

Trend Line Furniture Corporation: *See*—
Eisen, Leonard, 254,879, Cl. D6-49.000.

Walker, Norman, to Hilary Page "Sensible" Toys Limited. Clown figure toy. 254,922, 5-6-80, Cl. D21-173.000.

Walus, Richard L., to Stimtech, Inc. Transcutaneous nerve stimulator case. 254,934, 5-6-80, Cl. D24-36.000.

Wilson, Robert L., to Chromcraft Corporation. Table base. 254,890, 5-6-80, Cl. D6-196.000.

Woods, Timmy S. Purse. 254,877, 5-6-80, Cl. D3-52.000.

Zoland, Martin. Combined carrying case and insulated bottle holder. 254,894, 5-6-80, Cl. D7-77.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 6, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
227 4,200,937
269 4,200,938

CLASS 3
1.9 4,200,939

CLASS 4
348 4,200,940

CLASS 5
13 4,200,941
419 4,200,942

CLASS 7
100 4,200,943

CLASS 8
543 4,201,547

CLASS 9
1.1 4,200,944

CLASS 11
1 ET 4,200,945

CLASS 13
27 4,201,882

CLASS 14
4 4,200,946

CLASS 15
198 4,200,947
236 R 4,200,948
257.06 4,200,949
314 4,200,950
321 4,200,951
322 4,200,952
349 4,200,953

CLASS 16
48.5 4,200,954
106 4,200,955
130 4,200,956
154 4,200,957

CLASS 17
29 4,200,958
32 4,200,959
41 Re.30,265
42 4,200,960
73 4,200,961

CLASS 23
230 B Re.30,267
230 R 4,201,548
4,201,549
232 E 4,201,550

CLASS 24
30.5 W 4,200,962

CLASS 26
73 4,200,963

CLASS 27
30 4,200,964

CLASS 29
81 J 4,200,965
243.5 4,200,966
426.2 4,200,967
571 4,200,968
577 R 4,200,969
593 4,200,970
598 4,200,971
602 R 4,200,972
611 4,200,973
622 4,200,974
827 4,200,975

CLASS 30
47 4,200,976
162 4,200,977
276 4,200,978

CLASS 33
126.6 4,200,982
138 4,200,983
4,200,984
141 R 4,200,985
174 P 4,200,986
178 R 4,200,987
203.2 4,200,988
257 4,200,989
476 4,200,990

CLASS 34
57 R 4,200,991
58 4,200,992
86 Re.30,266
104 4,200,993
158 4,200,994

CLASS 35
17 4,200,995
4,200,996

CLASS 36
11.5 4,200,997
50 4,200,998

CLASS 37
54 4,200,999
117.5 4,201,000
190 4,201,001

CLASS 40
524 4,201,002
545 4,201,003
4,201,004
570 4,201,005

CLASS 43
42.06 4,201,006
42.12 4,201,007
43.13 4,201,008

CLASS 44
1 D 4,201,551
51 4,201,552
52 4,201,553
62 4,201,554

CLASS 46
1 F 4,201,009
12 4,201,010
209 4,201,011
256 4,201,012

CLASS 47
44 4,201,013

CLASS 49
325 4,201,014

CLASS 51
74 R 4,201,015
105 SP 4,201,016
163.2 4,201,017
229 4,201,018

CLASS 52
15 4,201,019
93 4,201,021
118 4,201,022
334 4,201,023
394 4,201,024
489 4,201,025
580 4,201,020
731 4,201,026

CLASS 53
53 4,201,027
137 4,201,028
429 4,201,029
432 4,201,030
455 4,201,031
522 4,201,032

CLASS 55
20 4,201,555
292 4,201,556
327 4,201,557

CLASS 56
13.6 4,201,033
295 4,201,034

CLASS 57
6 4,201,035
291 4,201,036
301 4,201,037

CLASS 60
39.09 R 4,201,044
4,201,045
39.37 4,201,046
39.63 4,201,047
322 4,201,048
325 4,201,049
357 4,201,050
407 4,201,051
445 4,201,052
459 4,201,053
562 4,201,054
4,201,055
584 4,201,056
593 4,201,057
618 4,201,058
639 4,201,059
641 4,201,060

CLASS 62
70 4,201,558
98 4,201,061
117 4,201,062
4,201,063
239 4,201,064
510 4,201,065

CLASS 64
1 V 4,201,066

CLASS 65
2 4,201,559
21 4,201,560
30 R 4,201,561
60 B 4,201,562
162 4,201,563

CLASS 66
222 4,201,067

CLASS 70
310 4,201,068
422 4,201,069

CLASS 71
20 4,201,564
76 4,201,565
92 4,201,566
94 4,201,567
4,201,568
98 4,201,569

CLASS 72
42 4,201,070
60 4,201,071
114 4,201,072
155 4,201,073
168 4,201,074
204 4,201,075
392 4,201,076

CLASS 73
6 4,201,077
12 4,201,078
40.5 R 4,201,079
73 4,201,080
141 R 4,201,081
153 4,201,082
194 E 4,201,083
194 VS 4,201,084
304 C 4,201,085
327 4,201,086
339 A 4,201,087
342 4,201,088
350 4,201,089
431 4,201,090
462 4,201,091
587 4,201,092
618 4,201,093

CLASS 74
217 B 4,201,094
4,201,095
529 4,201,097
531 4,201,096
594.2 4,201,120
761 4,201,098

CLASS 75
1 T 4,201,570
35 4,201,571
60 4,201,572
109 4,201,573
122 4,201,574
4,201,575
132 4,201,576
134 N 4,201,577

CLASS 81
57.39 4,201,099

CLASS 82
2 D 4,201,100

CLASS 83
22 4,201,101
298 4,201,102
355 4,201,112
835 4,201,103
886 4,201,104

CLASS 84
1.01 4,201,105
1.09 4,201,106
1.14 4,201,107
1.16 4,201,108
1.26 4,201,109

CLASS 85
32 R 4,201,110
32 V 4,201,111

CLASS 89
199 4,201,113

CLASS 91
3 4,201,114
218 4,201,115
387 4,201,116
499 4,201,117

CLASS 93
39 R 4,201,118
60 4,201,119

CLASS 98
2.14 4,201,122
4,201,123
33 R 4,201,121

CLASS 99
327 4,201,124
446 4,201,125
574 4,201,126

CLASS 100
7 4,201,127
45 4,201,128
233 4,201,129
271 4,201,130

CLASS 101
4 4,201,131
118 4,201,132
288 4,201,133
4,201,134

CLASS 102
56 SC 4,201,135
214 4,201,136

CLASS 104
69 4,201,137

CLASS 106
2 4,201,592
18.14 4,201,593
38.35 4,201,594
109 4,201,595

CLASS 108
55.1 4,201,138
109 4,201,139

CLASS 110
218 4,201,140
259 4,201,141

CLASS 111
7 4,201,142

CLASS 112
79 R 4,201,143
121.12 4,201,144
306 4,201,145

CLASS 114
163 4,201,146

CLASS 116
34 B 4,201,147
241 4,201,148

CLASS 118
52 4,201,149
323 4,201,150
642 4,201,151
712 4,201,152

CLASS 119
3 4,201,153
15 4,201,154
51 R 4,201,155
82 4,201,156
4,201,157
98 4,201,158

CLASS 123
32 EB 4,201,159
4,201,161
32 G 4,201,160
90.67 4,201,162
117 R 4,201,163
4,201,164
119 A 4,201,165
119 EC 4,201,166
122 AB 4,201,168
122 E 4,201,167
124 R 4,201,169
139 AW 4,201,172
139 BD 4,201,170
148 AC 4,201,171
148 C 4,201,173
188 B 4,201,174
191 M 4,201,175
196 M 4,201,176
198 D 4,201,178
198 F 4,201,179
4,201,180

CLASS 124
6 4,201,181
23 R 4,201,177
24 R 4,201,182
4,201,183

CLASS 126
39 J 4,201,184
77 4,201,185
83 4,201,186
110 E 4,201,187
360 A 4,201,191
422 4,201,192
429 4,201,188
4,201,189
448 4,201,193
449 4,201,194
4,201,195
450 4,201,190
4,201,196
451 4,201,197

CLASS 127
37 4,201,596

CLASS 128
4 4,201,198
7 4,201,199
66 4,201,200
76 C 4,201,201
79 4,201,202
80 C 4,201,203
201.13 4,201,206
203.27 4,201,204
205.25 4,201,205
214 F 4,201,207
214.2 4,201,208
218 P 4,201,209
260 4,201,210
268 4,201,211
275 4,201,212
312 4,201,213
330 4,201,214
335 4,201,215
335.5 4,201,216
342 4,201,217
402 4,201,218
419 PG 4,201,219
476 4,201,220
630 4,201,221
634 4,201,222
653 4,201,223
731 4,201,224
746 4,201,225
774 4,201,226

CLASS 130
8 4,201,227

CLASS 131
2 4,201,228
146 4,201,229
173 4,201,230
176 4,201,231
187 4,201,232
237 4,201,233
265 4,201,234

CLASS 132
7 4,201,235
40 4,201,236

CLASS 134
167 R 4,201,597

CLASS 135
2 4,201,237

CLASS 137
68 R 4,201,238
72 4,201,239
392 4,201,240
510 4,201,243
527 4,201,241
531 4,201,242
614.2 4,201,244
624.11 4,201,245

CLASS 138
30 4,201,246
141 4,201,247

CLASS 139
21 4,201,248

CLASS 141
39 4,201,249
250 4,201,250
284 4,201,251
286 4,201,252
392 4,201,253

CLASS 144
1 G 4,201,254
32 R 4,201,255
208 E 4,201,257
252 A 4,201,256

CLASS 145
46 4,201,258

CLASS 148
1.5 4,201,598
6.14 R 4,201,599
16.5 4,201,600
32 4,201,601
146 4,201,602
174 4,201,603
175 4,201,604

CLASS 149
19.1 4,201,605
37 4,201,606

CLASS 150
47 4,201,259

CLASS 152
357 A 4,201,261
361 DM 4,201,260

CLASS 156
70 4,201,607
72 4,201,608
85 4,201,609
96 4,201,610
155 4,201,611
224 4,201,612
270 4,201,613
273 4,201,614
304 4,201,615
307.1 4,201,616
351 4,201,617
380 4,201,618
384 4,201,619
494 4,201,620
567 4,201,621
605 4,201,622
622 4,201,623

CLASS 162
205 4,201,624
360 R Re.30,268

CLASS 165

117 4,201,262
146 4,201,263
162 4,201,264

CLASS 166

117.5 4,201,265
231 4,201,266
315 4,201,267

CLASS 172

804 4,201,268

CLASS 173

1 4,201,269
43 4,201,270
146 4,201,271

CLASS 174

139 4,201,883

CLASS 176

11 4,201,625

CLASS 179

1 A 4,201,886
2 DP 4,201,887
6 E 4,201,888
18 B 4,201,896
84 R 4,201,897
100.1 R 4,201,895

CLASS 180

6.48 4,201,272
12 4,201,273

CLASS 181

156 4,201,274

CLASS 182

37 4,201,275

CLASS 184

55 A 4,201,276

CLASS 188

196 D 4,201,277

CLASS 191

12.4 4,201,278

CLASS 192

3 N 4,201,279
18 A 4,201,280
35 4,201,281
98 4,201,282

CLASS 194

1 A 4,201,283

CLASS 196

14.52 4,201,626

CLASS 198

345 4,201,284
400 4,201,285
461 4,201,286
530 4,201,287
778 4,201,288

CLASS 200

61.45 R 4,201,898
153 R 4,201,899
157 Re.30,270
220 4,201,900

CLASS 201

39 4,201,627

CLASS 202

158 4,201,628
4,201,629
241 4,201,630

CLASS 203

1 4,201,631
51 4,201,632
58 4,201,633

CLASS 204

1 R 4,201,635
1 T 4,201,634
109 4,201,636
112 4,201,648
148 4,201,637
158 R 4,201,638
4,201,639
159.11 4,201,640
159.17 4,201,641
4,201,642
180 R 4,201,643
181 C 4,201,644
192 P 4,201,649
192 R 4,201,645
195 F 4,201,647
195 H 4,201,646
209 4,201,650
217 4,201,651
258 4,201,652
263 4,201,653
298 4,201,654

CLASS 206

0.5 4,201,289
38 4,201,290
44 R 4,201,291
4,201,292
45.14 4,201,294
45.19 4,201,293
4,201,300
174 4,201,295
205 4,201,296
349 4,201,297
387 4,201,298
507 4,201,301
554 4,201,299

CLASS 208

8 LE 4,201,655
11 LE 4,201,656
23 4,201,657
39 4,201,658
73 4,201,659
86 4,201,660
139 4,201,661
228 4,201,662

CLASS 209

577 4,201,302

CLASS 210

16 4,201,663
23 H 4,201,664
32 4,201,665
47 4,201,666
50 4,201,667
51 4,201,668
58 4,201,669
75 4,201,670
138 4,201,671
225 4,201,672
321 B 4,201,673
333 R 4,201,674
387 4,201,675

CLASS 211

41 4,201,303
87 4,201,304

CLASS 212

47 4,201,305

CLASS 219

10.55 C 4,201,901
69 M 4,201,902
78.12 4,201,903
98 4,201,904
121 L 4,201,905
137 PS 4,201,906

CLASS 220

5 R 4,201,306
62 4,201,307
81 R 4,201,308
235 4,201,309
256 4,201,310
307 4,201,311
314 4,201,312

CLASS 221

171 4,201,313
198 4,201,314

CLASS 222

66 4,201,315
80 4,201,316
207 4,201,317
324 4,201,318
396 4,201,319
456 4,201,320
478 4,201,321

CLASS 224

45 AB 4,201,322

CLASS 226

97 4,201,323

CLASS 227

9 4,201,324
4,201,325

CLASS 228

50 4,201,326
176 4,201,327

CLASS 229

4.5 4,201,328
17 SC 4,201,329
33 4,201,330
39 R 4,201,331
92 4,201,332

CLASS 232

7 4,201,333
34 4,201,334

CLASS 233

26 4,201,335

CLASS 235

92 AC 4,201,907
92 TC 4,201,908
200 WB 4,201,336
303.2 4,201,337
454 4,201,338
487 4,201,339

CLASS 239

66 4,201,340
79 4,201,341
128 4,201,342
189 4,201,343
242 4,201,344

CLASS 241

46 R 4,201,345
66 4,201,346
92 4,201,347
101 B 4,201,348
247 4,201,349
298 4,201,350

CLASS 242

56 B 4,201,351
56.2 4,201,352
68.5 4,201,353
71.7 4,201,354
84.1 R 4,201,355
197 4,201,356

CLASS 244

153 R 4,201,357

CLASS 248

283 4,201,358
345.1 4,201,359

CLASS 249

140 4,201,360
183 4,201,361

CLASS 250

216 4,201,910
231 SE 4,201,911
253 4,201,912
288 4,201,913
341 4,201,914
343 4,201,915
372 4,201,916
431 4,201,917
433 4,201,918
468 4,201,919
492 B 4,201,920
493 4,201,921

CLASS 251

29 4,201,362
62 4,201,363
175 4,201,364
328 4,201,365
335 B 4,201,366

CLASS 252

1 4,201,676
8.1 4,201,677
8.5 A 4,201,678
4,201,679
8.6 4,201,680
32.7 E 4,201,683
33.2 4,201,681
33.4 4,201,682
47.5 4,201,684
102 4,201,687
174.22 4,201,686
180 4,201,688
184 4,201,689
301.1 W 4,201,690
314 4,201,691
372 4,201,692
408 4,201,693
4,201,694
411 R 4,201,695
442 4,201,696
522 R 4,201,697

CLASS 254

67 4,201,367
131 4,201,368
193 4,201,369

CLASS 260

3 4,201,698
7 4,201,699
4,201,700
22 CQ 4,201,701
28.5 AS 4,201,702
37 PC 4,201,703
40 R 4,201,704
45.8 NT 4,201,705
112 G 4,201,708
123.5 4,201,709
156 4,201,710
162 4,201,707
244.4 4,201,712
340.9 R 4,201,714
345.7 R 4,201,715
397.4 4,201,716
397.45 4,201,717
409 4,201,718
429 R 4,201,719
463 4,201,720
4,201,721
570 AB 4,201,723
570 D 4,201,722
577 4,201,724
583 H 4,201,725
665 R 4,201,729
968 4,201,733

CLASS 261

34 B 4,201,734
39 E 4,201,735
98 4,201,736
142 4,201,737

CLASS 264

0.5 4,201,738
13 4,201,739
38 4,201,740
40.1 4,201,741
45.5 4,201,742
148 4,201,743
157 4,201,711
250 4,201,744

CLASS 266

44 4,201,370
50 4,201,371
270 4,201,372
271 4,201,373

CLASS 269

37 4,201,374
46 4,201,375
156 4,201,376

CLASS 271

225 4,201,377
261 4,201,378

CLASS 272

75 4,201,382
76 4,201,379
117 4,201,380

CLASS 273

73 F 4,201,381
94 4,201,383
102.4 4,201,385
199 R 4,201,384
236 4,201,386
243 4,201,387
251 4,201,388
272 4,201,389

CLASS 274

15 R 4,201,390

CLASS 277

30 4,201,391
92 4,201,393
165 4,201,392

CLASS 279

2 R 4,201,394

CLASS 280

11.37 M 4,201,395
229 4,201,396
280 4,201,397
289 L 4,201,398
402 4,201,399
511 4,201,400
803 4,201,401

CLASS 282

9 A 4,201,402
27.5 4,201,404

CLASS 283

4 4,201,405
21 4,201,403

CLASS 285

3 4,201,406
304 4,201,407

CLASS 290

38 R 4,201,922
40 R 4,201,923
4,201,924
52 4,201,925

CLASS 294

1 BA 4,201,409
1 CA 4,201,408
83 R 4,201,410

CLASS 296

50 4,201,411
163 4,201,412
165 4,201,413
169 4,201,414
190 4,201,415

CLASS 297

184 4,201,416
442 4,201,417
474 4,201,418

CLASS 299

2 4,201,419
4,201,420
86 4,201,421

CLASS 303

10 4,201,422

CLASS 307

141 4,201,926
269 4,201,927
270 4,201,928

CLASS 308

6 C 4,201,424
6 R 4,201,423
26 4,201,426
236 4,201,425

CLASS 310

49 R 4,201,929
51 4,201,930

CLASS 312

21 4,201,427
257 R 4,201,428
330 R 4,201,429

CLASS 315

10 4,201,931
13 C 4,201,932
16 4,201,933
151 4,201,934
370 Re.30,271

CLASS 318

15 4,201,935
341 4,201,936
568 4,201,937

CLASS 320

68 4,201,889

CLASS 323

43.5 R 4,201,938

CLASS 324

158 P 4,201,939
207 4,201,940
321 4,201,941

CLASS 329

2 4,201,946

CLASS 330

253 4,201,947

CLASS 331

8 4,201,948
94.5 C 4,201,954
94.5 D 4,201,951
4,201,952
94.5 G 4,201,950
4,201,955
94.5 PE 4,201,949
4,201,953
96 4,201,956
110 4,201,957

CLASS 332

11 D 4,201,958

CLASS 333

16 4,201,959
17 M 4,201,960
24.1 4,201,961
25 4,201,962
106 4,201,963
151 4,201,964

CLASS 336

180 4,201,965
217 4,201,966

CLASS 337

354 4,201,967

CLASS 338

28 4,201,968
180 4,201,969
195 4,201,970

CLASS 339

5 M 4,201,430
14 L 4,201,433
14 P 4,201,431
14 R 4,201,432
28 4,201,434
59 M 4,201,435
96 4,201,436
121 4,201,437
144 R 4,201,438
259 R 4,201,439

CLASS 340

26 4,201,973
52 A 4,201,974
84 4,201,975
146.3 C 4,201,978
146.3 H 4,201,977
181 4,201,979
347 DD 4,201,980
380 4,201,981
506 4,201,982
709 4,201,983
763 4,201,984
785 4,201,985

CLASS 343

14 4,201,986
703 4,201,987
715 4,201,988
4,201,989
747 4,201,990
840 4,201,991
4,201,992

CLASS 346

75 4,201,993
108 4,201,994
140 R 4,201,995
158 4,201,996

CLASS 350

1.2 4,201,440
3.61 4,201,441
96.14 4,201,442
96.20 4,201,443
96.21 4,201,444
4,201,445
96.29 4,201,446
96.31 4,201,447
99 4,201,448
117 4,201,449
150 4,201,450
278 4,201,451
288 4,201,452
340 4,201,453
357 4,201,454
358 4,201,455

CLASS 353

101 4,201,456

CLASS 354

86 4,201,457
4,201,463
136 4,201,458
147 4,201,459
171 4,201,460
272 4,201,461
289 4,201,462

CLASS 355

14 R 4,201,464
15 4,201,465
104 4,201,466

CLASS 356

28 4,201,467
28.5 4,201,468
36 4,201,469
39 4,201,470
70 4,201,471
226 4,201,472
360 4,201,473
369 4,201,474
381 4,201,475
386 4,201,476
434 4,201,477
440 4,201,478
445 4,201,479

CLASS 357

15 4,201,997
4,201,998
4,201,999
4,202,003
19 4,202,000
22 4,202,001
4,202,002
30 4,202,004
51 4,202,005
63 4,202,006
80 4,202,007

CLASS 358

22 4,202,008
32 4,202,009
56 4,202,010
136 4,202,011
147 4,202,012
158 4,202,013
228 4,202,014
237 4,202,015

CLASS 360

40 4,202,016
45 4,202,017

47 4,202,018
51 4,202,019
75 4,202,020
96.5 4,202,021
114 4,202,022

CLASS 361

18 4,202,023
91 4,202,024
103 4,202,025
119 4,202,026
338 4,202,027
343 4,202,028
394 4,202,029

CLASS 362

61 4,202,030

CLASS 363

90 4,202,031
124 4,202,032

CLASS 364

4,202,035
4,202,033
0 4,202,034
4,202,036
518 4,202,037
709 4,202,038
757 4,202,039
900 4,202,040
4,202,041
4,202,042

CLASS 365

15 4,202,043
182 4,202,044
203 4,202,045
222 4,202,046

CLASS 366

79 4,201,480
4,201,481
98 4,201,482
139 4,201,483
153 4,201,484
156 4,201,485
196 4,201,486
304 4,201,487

CLASS 367

1 4,202,047
40 4,201,972
4,202,048
95 4,201,971
96 4,202,049
105 4,202,050

CLASS 368

10 4,201,043
35 4,201,040
73 4,201,038
85 4,201,041
170 4,201,042
241 4,201,039

CLASS 370

58 4,201,891
4,201,893
4,201,894
68 4,201,890
104 4,201,892

CLASS 371

50 4,201,976

CLASS 375

2 4,202,051
17 4,201,942
53 4,201,884
106 4,201,885

CLASS 400

121 4,201,488
485 4,201,489

CLASS 401

175 4,201,490
264 4,201,491

CLASS 402

54 4,201,492

CLASS 404

117 4,201,493

CLASS 405

17 4,201,494
63 4,201,495
79 4,201,496
150 4,201,497
303 4,201,498

CLASS 406

75 4,201,499

CLASS 407

43 4,201,500
92 4,201,501

CLASS 408

1 R 4,201,502
215 4,201,503

CLASS 414

27 4,201,504
4,201,505
68 4,201,506
331 4,201,507
525 R 4,201,508
694 4,201,509
730 4,201,510
738 4,201,511

CLASS 415

90 4,201,512

CLASS 416

2 4,201,513
37 4,201,514
134 A 4,201,515
213 R 4,201,516

CLASS 417

12 4,201,517
4,201,518
36 4,201,520
38 4,201,519
53 4,201,521
311 4,201,522
312 4,201,523
364 4,201,524
477 4,201,525

CLASS 418

136 4,201,526

CLASS 422

199 4,201,745
250 4,201,746

CLASS 423

21.5 4,201,747
27 4,201,748
127 4,201,749
162 4,201,750
210 4,201,751
235 4,201,752
242 4,201,753
4,201,754
4,201,755
266 4,201,756
290 4,201,757
332 Re.30,269
497 4,201,758
567 A 4,201,759
600 4,201,760
633 4,201,761
4,201,762

CLASS 424

8 4,201,763
45 4,201,764
4,201,765
70 4,201,766
78 4,201,706
89 4,201,767
92 4,201,768
117 4,201,769
177 4,201,770
4,201,771
180 4,201,772
4,201,773
4,201,774
4,201,775
195 4,201,776
241 4,201,778
246 4,201,779
4,201,780
248.51 4,201,781
256 4,201,782
258 4,201,783
4,201,784
274 4,201,785
282 4,201,786
304 4,201,787
4,201,788
305 4,201,789
330 4,201,790
358 4,201,791

CLASS 425

72 R 4,201,527
209 4,201,528
238 4,201,529
260 4,201,530
290 4,201,531
380 4,201,532
451.9 4,201,533
461 4,201,534
548 4,201,535

CLASS 426

15 4,201,792
92 4,201,793
96 4,201,794
110 4,201,795
238 4,201,796

CLASS 427

66 4,201,797
74 4,201,798
142 4,201,799
274 4,201,801
370 4,201,802
381 4,201,803
389 4,201,805
393.6 4,201,804

CLASS 428

4 4,201,806
35 4,201,807
40 4,201,808
65 4,201,809
90 4,201,810
92 4,201,811
95 4,201,812
97 4,201,813
107 4,201,814
113 4,201,815
137 4,201,816
141 4,201,817
159 4,201,818
172 4,201,819
195 4,201,820
203 4,201,821
212 4,201,777
240 4,201,822
246 4,201,823
262 4,201,824
263 4,201,825
268 4,201,826
283 4,201,827
288 4,201,835
332 4,201,828
4,201,829
375 4,201,830
403 4,201,831
404 4,201,833
407 4,201,834
412 4,201,832
457 4,201,836
4,201,837

CLASS 429

145 4,201,838
194 4,201,839

CLASS 430

5 4,201,800
17 4,201,840
97 4,201,583
114 4,201,685
139 4,201,589
167 4,201,588
222 4,201,578
224 4,201,587
281 4,201,842
319 4,201,580
323 4,201,579
351 4,201,582
376 4,201,585
389 4,201,584
396 4,201,581
567 4,201,841
617 4,201,590
619 4,201,591
621 4,201,586

CLASS 431

88 4,201,536
344 4,201,537
351 4,201,538
354 4,201,539
361 4,201,540

CLASS 432

58 4,201,541
106 4,201,546
128 4,201,542
217 4,201,543
222 4,201,544
239 4,201,545

CLASS 433

7 4,200,979
8 4,200,980
60 4,200,981

CLASS 435

76 4,201,843
135 4,201,844
285 4,201,845

CLASS 455

155 4,201,944
183 4,201,945
185 4,201,943
608 4,201,909

CLASS 521

137 4,201,846
172 4,201,847

CLASS 525

314 4,201,848
363 4,201,732
398 4,201,857
401 4,201,849

CLASS 526

337 4,201,850

CLASS 528

1 4,201,851
67 4,201,852
85 4,201,853
121 4,201,854
125 4,201,855
190 4,201,856
232 4,201,858
302 4,201,859

CLASS 536

17 A 4,201,861

CLASS 544

277 4,201,860

CLASS 546

41 4,201,713
67 4,201,862
166 4,201,863

CLASS 560

39 4,201,864
121 4,201,865
194 4,201,866
205 4,201,867
232 4,201,868
255 4,201,869

CLASS 562

460 4,201,870
486 4,201,871
487 4,201,872
503 4,201,873
598 4,201,874

CLASS 568

413 4,201,726
442 4,201,727
454 4,201,728
575 4,201,875
677 4,201,876
720 4,201,877
723 4,201,878
766 4,201,879
804 4,201,880
819 4,201,881

CLASS 585

361 4,201,731
730 4,201,730

CLASSIFICATION OF DESIGNS

D2— 259 254,876
D3— 52 254,877
D6— 31 254,878
49 254,879
73 254,880
88 254,881
159 254,882
165 254,883
175 254,884
254,885
183 254,886
186 254,887
192 254,888
254,889
196 254,890
202 254,891
D7— 62 254,892
254,893
77 254,894
D9— 59 254,895
224 254,896
254,897
259 254,898
276 254,899
D10— 37 254,900
106 254,901
D11— 61 254,902
D12— 71 254,903
81 254,904
129 254,906
156 254,905
181 254,907
D13— 2 254,908
37 254,909
D14— 36 254,910
D17— 10 254,911
D19— 48 254,912
55 254,913
73 254,914
76 254,915
254,916
D21— 59 254,917
87 254,918
109 254,919
114 254,920
168 254,921
173 254,922
203 254,923
219 254,924
254,925
222 254,926
D22— 25 254,927
D23— 41 254,928
150 254,929
254,930
254,931
254,932
D24— 17 254,933
36 254,934
D28— 7 254,935

CLASSIFICATION OF PLANTS

P.— 36 4,530
69 4,532
4,533
76 4,531

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

128— 214 R T994,001
429— 158 T994,002
430— 242 T994,003
560— 25 T994,004

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,201,950		4,201,262		4,202,046		4,201,517		4,201,525	21 :	4,201,345
4 :	4,200,995		4,201,269		4,202,048		4,201,614		4,201,529		4,201,422
	4,201,980		4,201,290	08 :	4,201,048		4,201,654		4,201,558		4,201,544
6 :	4,201,011		4,201,302		4,201,413		4,201,896		4,201,568	22 :	4,201,062
	4,201,018		4,201,314		4,201,419		4,201,990		4,201,624		4,201,063
	4,201,092		4,201,335		4,201,464	13 :	4,201,024		4,201,626		4,201,236
	4,201,114		4,201,337		4,201,884		4,201,076		4,201,664		4,201,703
	4,201,152		4,201,353	09 :	4,200,983		4,201,118		4,201,685		4,201,709
	4,201,211		4,201,382		4,200,990		4,201,139		4,201,705		4,201,791
	4,201,223		4,201,384		4,201,046		4,201,311		4,201,739	23 :	4,201,000
	4,201,344		4,201,389		4,201,101		4,201,411		4,201,765	24 :	4,201,140
	4,201,347		4,201,392		4,201,104		4,201,566		4,201,842		4,201,218
	4,201,605		4,201,408		4,201,170		4,201,699		4,201,885		4,201,230
	4,201,618		4,201,423		4,201,186		4,201,700		4,201,893		4,201,251
	4,201,658		4,201,430		4,201,258		4,201,851		4,201,894		4,201,379
	4,201,694		4,201,444		4,201,291	16 :	4,201,973		4,201,897		4,201,412
	4,201,702		4,201,468		4,201,292	17 :	Re.30,265		4,201,908		4,201,570
	4,201,911		4,201,477		4,201,300		Re.30,269		4,201,949		4,201,798
	4,201,974		4,201,504		4,201,307		4,200,938		4,201,953		4,201,846
	4,202,019		4,201,512		4,201,316		4,200,949		4,201,960		4,201,892
9 :	4,200,974		4,201,534		4,201,319		4,200,950		4,201,983		4,201,955
	4,201,113		4,201,539		4,201,357		4,200,975		4,201,991		4,201,961
	4,201,975		4,201,575		4,201,402		4,201,007		4,202,032		4,202,037
01 :	4,201,241		4,201,601		4,201,405		4,201,021	18 :	4,200,944		4,202,042
	4,201,474		4,201,621		4,201,439		4,201,028		4,201,012	25 :	4,200,961
	4,201,822		4,201,622		4,201,473		4,201,080		4,201,086		4,200,981
02 :	4,201,320		4,201,645		4,201,531		4,201,081		4,201,322		4,200,986
04 :	4,201,518		4,201,678		4,201,722		4,201,136		4,201,682		4,200,989
	4,201,579		4,201,719		4,201,756		4,201,148		4,201,704		4,201,005
05 :	4,201,013		4,201,724		4,201,821		4,201,182		4,201,832		4,201,016
06 :	Re.30,266		4,201,763		4,201,889		4,201,194		4,201,862		4,201,066
	4,200,940		4,201,796		4,201,890		4,201,197		4,201,878		4,201,096
	4,200,942		4,201,811		4,201,891		4,201,245		4,201,932		4,201,137
	4,200,953		4,201,853		4,201,936		4,201,255	19 :	4,200,943		4,201,155
	4,200,972		4,201,874		4,202,027		4,201,273		4,201,098		4,201,188
	4,200,985		4,201,887	10 :	4,201,443		4,201,281		4,201,210		4,201,189
	4,200,987		4,201,888		4,201,567		4,201,285		4,201,227		4,201,195
	4,200,997		4,201,919		4,201,669		4,201,293		4,201,240		4,201,213
	4,201,060		4,201,928	11 :	4,201,339		4,201,294		4,201,268		4,201,233
	4,201,073		4,201,951		4,201,623		4,201,308		4,201,348		4,201,252
	4,201,079		4,201,957	12 :	4,200,945		4,201,318		4,201,375		4,201,270
	4,201,085		4,201,972		4,200,968		4,201,329		4,201,610		4,201,303
	4,201,122		4,201,976		4,201,009		4,201,331		4,201,981		4,201,374
	4,201,123		4,201,987		4,201,031		4,201,333		4,202,028		4,201,426
	4,201,138		4,201,988		4,201,034		4,201,336	20 :	Re.30,267		4,201,431
	4,201,164		4,202,004		4,201,072		4,201,406		4,201,116		4,201,438
	4,201,167		4,202,005		4,201,112		4,201,427		4,201,142		4,201,442
	4,201,174		4,202,015		4,201,181		4,201,428		4,201,157		4,201,450
	4,201,177		4,202,017		4,201,183		4,201,434		4,201,360		4,201,457
	4,201,179		4,202,033		4,201,202		4,201,449		4,201,569		4,201,499
	4,201,205		4,202,035		4,201,274		4,201,466		4,201,708		4,201,540
	4,201,207		4,202,040		4,201,299		4,201,510		4,201,867		4,201,552
	4,201,222		4,202,043		4,201,334		4,201,519		4,201,904		4,201,587

	4,201,604	33 :	4,201,520		4,202,023		4,201,921		4,200,954		4,201,225
	4,201,613		4,202,050	35 :	4,201,059		4,201,946		4,200,984		4,201,238
	4,201,646	34 :	4,200,939		4,201,910		4,201,999		4,201,015		4,201,242
	4,201,671		4,200,941		4,201,912		4,202,007		4,201,070		4,201,265
	4,201,907		4,200,970	36 :	4,200,964		4,202,024		4,201,119		4,201,266
	4,201,952		4,201,030		4,200,965		4,202,026		4,201,190		4,201,295
	4,201,968		4,201,045		4,200,979		4,202,031		4,201,263		4,201,326
	4,202,034		4,201,090		4,201,026	37 :	4,201,256		4,201,315		4,201,363
	4,202,036		4,201,094		4,201,039		4,201,456		4,201,342		4,201,364
	4,202,041		4,201,099		4,201,047		4,201,666		4,201,351		4,201,414
26 :	4,200,967		4,201,105		4,201,058		4,201,735		4,201,359		4,201,679
	4,200,996		4,201,216		4,201,061	38 :	4,201,231		4,201,378		4,201,758
	4,201,052		4,201,221		4,201,065		4,201,349		4,201,502		4,201,820
	4,201,056		4,201,235		4,201,095	39 :	4,200,947		4,201,503		4,201,868
	4,201,153		4,201,278		4,201,107		4,200,951		4,201,505		4,201,939
	4,201,192		4,201,289		4,201,209		4,200,956		4,201,516		4,201,995
	4,201,232		4,201,354		4,201,224		4,200,973		4,201,543		4,201,997
	4,201,271		4,201,380		4,201,228		4,201,029		4,201,563		4,202,003
	4,201,284		4,201,409		4,201,264		4,201,088		4,201,572		4,202,045
	4,201,313		4,201,433		4,201,283		4,201,203		4,201,576	49 :	4,201,002
	4,201,330		4,201,454		4,201,376		4,201,217		4,201,611		4,201,158
	4,201,394		4,201,476		4,201,386		4,201,247		4,201,617		4,201,237
	4,201,401		4,201,492		4,201,387		4,201,261		4,201,627		4,201,524
	4,201,403		4,201,495		4,201,416		4,201,272		4,201,649		4,201,651
	4,201,415		4,201,527		4,201,421		4,201,306		4,201,652		4,201,793
	4,201,451		4,201,528		4,201,436		4,201,350		4,201,655		4,202,018
	4,201,490		4,201,565		4,201,437		4,201,352		4,201,681	50 :	4,202,044
	4,201,508		4,201,580		4,201,484		4,201,366		4,201,693	51 :	4,200,999
	4,201,509		4,201,596		4,201,491		4,201,383		4,201,731		4,201,121
	4,201,521		4,201,603		4,201,551		4,201,501		4,201,753		4,201,151
	4,201,593		4,201,639		4,201,553		4,201,535		4,201,754		4,201,612
	4,201,675		4,201,640		4,201,554		4,201,555		4,201,759		4,201,740
	4,201,677		4,201,642		4,201,559		4,201,562		4,201,761		4,201,800
	4,201,684		4,201,648		4,201,561		4,201,571		4,201,767		4,201,817
	4,201,729		4,201,665		4,201,577		4,201,629		4,201,775		4,201,899
	4,201,733		4,201,667		4,201,578		4,201,730		4,201,823		4,201,963
	4,201,742		4,201,691		4,201,581		4,201,744		4,201,923		4,201,992
	4,201,764		4,201,697		4,201,582		4,201,757		4,201,924		4,202,002
	4,201,788		4,201,714		4,201,583		4,201,770		4,201,927		4,202,014
	4,201,799		4,201,718		4,201,588		4,201,773		4,201,966		4,202,047
	4,201,807		4,201,726		4,201,590		4,201,829		4,202,016	52 :	4,201,196
	4,201,830		4,201,727		4,201,591		4,201,859	44 :	4,201,317	53 :	4,201,006
	4,201,873		4,201,728		4,201,597		4,201,876	45 :	4,201,003		4,201,093
	4,201,926		4,201,771		4,201,616		4,201,883		4,201,004		4,201,108
27 :	4,201,185		4,201,778		4,201,628		4,201,886		4,201,358		4,201,127
	4,201,187		4,201,785		4,201,634		4,201,902		4,201,620		4,201,199
	4,201,244		4,201,803		4,201,706		4,201,942		4,201,738		4,201,388
	4,201,253		4,201,813		4,201,721	40 :	4,201,074	46 :	4,201,663		4,201,485
	4,201,298		4,201,818		4,201,732		4,201,115	47 :	4,201,051		4,201,922
	4,201,446		4,201,834		4,201,752		4,201,125		4,201,053		4,201,967
	4,201,557		4,201,838		4,201,760		4,201,191		4,201,162	54 :	4,201,786
	4,201,716		4,201,850		4,201,762		4,201,267		4,201,399	55 :	Re.30,268
	4,201,913		4,201,855		4,201,780		4,201,395		4,201,407		Re.30,270
	4,202,020		4,201,861		4,201,806		4,201,595		4,201,692		4,201,208
29 :	4,200,978		4,201,869		4,201,808		4,201,632		4,201,701		4,201,304
	4,200,988		4,201,895		4,201,831		4,201,637		4,201,856		4,201,323
	4,201,008		4,201,900		4,201,836		4,201,657	48 :	4,200,937		4,201,367
	4,201,124		4,201,947		4,201,837		4,201,662		4,200,980		4,201,370
	4,201,328		4,201,958		4,201,839		4,201,755		4,200,982		4,201,391
	4,201,332		4,201,965		4,201,840		4,201,875		4,200,998		4,201,404
	4,201,687		4,201,970		4,201,841	41 :	4,201,365		4,201,022		4,201,737
	4,201,746		4,201,989		4,201,866		4,201,429		4,201,025		4,201,881
	4,201,845		4,201,998		4,201,880		4,201,802		4,201,126		4,201,938
	4,201,858		4,202,001		4,201,905		4,201,996		4,201,145		4,202,051
30 :	4,201,226		4,202,006		4,201,916	42 :	Re.30,271		4,201,215		

DESIGN PATENTS

04 :	254,926		254,902		254,921	28 :	254,890	37 :	254,888		254,908
06 :	254,877		254,928	18 :	254,905	34 :	254,879		254,889		254,919
	254,880		254,935	24 :	254,884	36 :	254,878		254,917		254,923
	254,896	09 :	254,924	26 :	254,876		254,895				
	254,898		254,925	27 :	254,911		254,903	39 :	254,885	40 :	254,891
	254,901	17 :	254,881		254,934		254,920		254,886	48 :	254,904

PLANT PATENTS

41 :	4,530	54 :	4,531				

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

06 :	T994,001	36 :	T994,002	42 :	T994,004		

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May 13, 1980 Volume 994 Number 2

CONTENTS

	Page
Patent and Trademark Notices	
Patent Cooperation Treaty (PCT) Information	994 OG 10
Rules Service Company Address Change	994 OG 10
Patent Suits	994 OG 10
Reissue Applications Filed	994 OG 11
Patent Notices	
Certificates of Correction for the Week of May 13, 1980	994 OG 13
Disclaimers	994 OG 13
Errata	994 OG 13
January-March 1980 Classification Orders	994 OG 13
Set XIV of Addenda to the Classification Definitions	994 OG 14
National Technical Information Service	994 OG 14
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	994 OG 16
Condition of Patent Applications	994 OG 17
Reissue Patents Granted (30,272)	381
Plant Patents Granted (4,534)	383
Patents Granted	
General and Mechanical (4,202,052)	385
Chemical (4,202,662)	595
Electrical (4,202,997)	685
Design Patents Granted (254,936)	745
Index of Patentees	PI 1
Indices of Applicants of Reissues, Plants and Designs	PI 42
Classification of	
Patents (Including Reissues)	PI 45
Designs and Plants	PI 47
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 48
Designs and Plants	PI 49
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
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Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Jan. 28, 1980.

Rules Service Company Address Change

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Company
4341 Montgomery Avenue
Bethesda, Maryland 20014
(301) 656-4660

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Date: Apr. 7, 1980.

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

3,041,322, Loctite Corporation, ANAEROBIC CURING COMPOSITIONS CONTAINING ACRYLIC ACID DIESTERS; **3,046,262,** same, ACCELERATED ANAEROBIC CURING COMPOSITIONS; **3,218,305,** same, ACCELERATED ANAEROBIC COMPOSITIONS AND METHOD OF USING SAME, filed June 24, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2278, *Loctite Corporation* v. *Fel-Pro, Inc.* Cause is dismissed pursuant to memorandum opinion and order entered on Mar. 7, 1980.

3,046,262. (See 3,041,322.)

3,055,904, Ciba Geigy Chemical Corporation, NEW ISOINDOLINE DERIVATIVES. filed May 24, 1979, D.C.N.J. (Newark), Doc. 79-1582, *USV Laboratories* v. *Pharmadyne Laboratories, Inc.* Amendment to final judgment in favor of plaintiff filed Mar. 17, 1980.

3,065,590, Swanson-Erie Corp., MULTIPLE MOTION PROCESSING MACHINE; **3,221,868.** same, AUTOMATIC ASSEMBLY CENTER, filed Mar. 7, 1980, D.C., W.D. Pa. (Erie), Doc. 80-39 K ERIE, *Swanson-Erie Corporation* v. *Assembly Machines, Inc.*

3,097,614, William J. Duncan, TABLE EXTENSION SLIDE MECHANISM, filed July 26, 1978, D.C., M.D.N.C. (Greensboro), Doc. C-78-330-WS, *Acme Metal Slide, Inc.* v. *Sun Metal Products, Inc.* Action dismissed with prejudice pursuant to stipulation of dismissal between parties filed on Mar. 7, 1980.

3,129,748, Harold E. Varvel, OIL BURNER; **3,741,709,** Loris D. Clark, SOLID STATE SAFETY CONTROL FOR FUEL BURNING APPARATUS; **4,061,238,** Briggs et al., PORTABLE HEATER, filed Dec. 10, 1979, D.C., E.D. Mich. (Detroit), Doc. 79-74633, *Koehring Company* v. *Ex-Cell-O-Corp. and McCord Corporation.*

3,164,655, Howard and Kaplan, A METHOD OF MAKING BREAST PADS, CUPS AND FRONTS, filed May 17, 1979, D.C. Conn. (New Haven), Doc. N 79-186, *International Molders, Inc.* v. *Bontec Corp. and Donald Gurry.* Consent decree entered Feb. 27, 1980.

3,184,855, J. K. Brown, METHOD OF MAKING A PRINTER'S ROLLER, filed Dec. 12, 1977, D.C. Del. (Wilmington), Doc. 77-472, *Samuel Bingham Company* v. *Rodel, Inc.* Order vacating final consent judgment of Feb. 7, 1980 filed Mar. 3, 1980.

3,218,305. (See 3,041,322.)

3,231,968. (See 3,065,590.)

3,260,446, M & T Chemicals, Inc., ELECTRODEPOSITING A TIN-BISMUTH ALLOY AND ADDITIVES THEREFOR; **3,522,155,** same, METHOD OF ELECTRODEPOSITING A TIN-BISMUTH ALLOY AND COMPOSITIONS THEREFOR, filed Nov. 13, 1979, D.C., N.D. Ala. (Birmingham), Doc. CA 79-G-1276-S, *M & T Chemicals, Inc.* v. *Vulcan Materials Company.*

3,267,230, Jenn-Air Corporation, SELF-VENTILATING COOKING RANGE, filed Mar. 13, 1980, D.C. Del. (Wilmington), Doc. 80-122, *Jenn-Air Corporation* v. *Modern Maid Co.*

3,275,976, Inject-O-Meter Manufacturing Company, Inc., FERTILIZER APPLICATION PROCESS, filed Feb. 29, 1980, D.C., E.D. Wash. (Spokane), Doc. C-80-82, *Inject-O-Meter Mfg. Co., Inc.* v. *Agri-Systems Division of Min-Max International, Inc.*

3,280,697, E Z Paintr Corporation, EXTENSION HANDLE FOR PAINT ROLLER, filed July 25, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c3071, *E Z Paintr Corporation* v. *Lloyds Paint 'N Paper, Inc.* Consent judgment entered in favor of plaintiff and against defendant dated Jan. 16, 1980.

3,291,654, ACF Industries, Inc., RAILWAY CAR, filed Feb. 26, 1980, D.C. Del. (Wilmington), Doc. 80-94, *ACF Industries, Inc.* v. *MacLean-Fogg Co.*

3,408,968, W. P. Lear, MAGNETIC TAPE CARTRIDGE SYSTEM, filed Mar. 25, 1977, D.C. Mass. (Boston), Doc. 76-865-T, *Entec Plastics Engineering Corp.* v. *Gates Rubber Company.* Judgment entered Jan. 28, 1980.

3,409,579, Ashland Oil & Refining Company, FOUNDRY BINDER COMPOSITION COMPRISING BENZYLIC ETHER RESIN, POLYISOCYANATE & TERTIARY AMINE, filed Feb. 21, 1980, D.C., N.D. Ind. (South Bend), Doc. S80-0046, *Ashland Oil, Inc.* v. *Niles Chemical Paint Co., Inc.*

3,464,414, The Upjohn Company, MIXING VIAL CONSTRUCTION, filed July 12, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c2776, *The Upjohn Company* v. *Abbott Laboratories.* Stipulated order of dismissal dated Feb. 21, 1980.

3,522,155. (See 3,260,446.)

3,530,845, Georges Stcherbatcheff, MOTOR WHOSE MAGNETIC CIRCUIT COMPRISES A THIN LAYER OF HARD MAGNETIC MATERIAL, filed Oct. 26, 1978, D.C., S.D.N.Y., Doc. 78 C-5114 GLG, *Portescap* v. *Bulova Watch Company, Inc.* Action by plaintiff against defendant is hereby discontinued and dismissed pursuant to stipulation filed Mar. 10, 1980.

3,552,469, B & J Manufacturing Company, TIRE BEAD SEATER; **3,675,705.** same, TIRE BEAD SEATING AND INFLATION APPARATUS; **3,905,871,** same, TIRE MOUNTING, BEAD SEATING AND INFLATION APPARATUS AND METHOD OF USE, filed Feb. 6, 1975, D.C., N.D. Ill. (Chicago). Doc. 75c401, *B & J Manufacturing Company* v. *FMC Corporation.* Consent judgment entered Sept. 10, 1979.

3,613,264, Motionetics, Inc., WAVE CELL, filed June 19, 1978, D.C., N.D.N.Y. (Utica), Doc. 78-CV-282, *Motionetics, Incorporated* v. *Stephen Laffer, doing business as Boat Works.* Order of dismissal filed Jan. 8, 1980.

3,613,353, Bruce A Kock, WATCH; **3,685,282,** same, WATCH ESCAPEMENT MECHANISM, filed June 8, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-1254-SAW, *Bruce A. Kock* v. *Quaker Oats Co.* Order and final judgment filed Feb. 6, 1980.

3,675,705. (See 3,552,469.)

3,685,282. (See 3,613,353.)

3,741,709. (See 3,129,748.)

3,756,734, Martin Long, UNDERWATER ELECTRONIC FLASH ACTUATOR, filed Mar. 11, 1980, D.C., N.D. Calif. (San Francisco), Doc. C-80-741 RFP, *Martin Long* v. *O. H. Brigham.*

3,905,871. (See 3,552,469.)

3,806,312, McMaster and Nitschke, ROLLER HEARTH FURNACE; **3,936,291,** Harold A. McMaster, GLASS SHEET TEMPERING BLASTHEAD, filed Sept. 14, 1979, D.C., E.D. Mich. (Flint), Doc. 79-40214, *Glasstech, Inc.* v. *Double Seal Glass Company Inc.* Voluntary dismissal filed by plaintiff on Feb. 4, 1980.

3,807,069, Robert Daley, INDEXING DEVICE, filed May 16, 1979, U.S. Court of Appeals (First Circuit, Boston), Doc. 79-1195, *Robert Daley et al.* v. *Grafton Printing Co. Inc.* The judgment of the District Court is affirmed. Dated Mar. 18, 1980.

3,809,297, Bryan J. Grunewald, APPARATUS FOR DEVELOPING QUICKNESS IN SWINGING OF A BASEBALL BAT, filed Feb. 4, 1980, Bankruptcy Court, S.D. Calif. (San Diego), Doc. C-80-0022-P, *Bryan J. Grunewald* v. *Power Swing Partners, doing business as Power Swing.*

3,936,291. (See 3,806,312.)

3,987,989, Marvin A. Frenkel, SINGLE-HAND DIGITAL CALCULATOR, filed Feb. 29, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-70898, *Marvin A. Frenkel* v. *Chris-Craft Corporation.*

3,995,102, Raceway Components, Inc., INSERT DEVICE FOR CABLES, filed Mar. 13, 1980, D.C. Conn. (New Haven), Doc. N-80-86, *Raceway Components, Inc.* v. *Harvey Hubbell, Inc.*

4,011,630, Edward Ochylski, HOG SKINNING METHOD AND APPARATUS, filed June 22, 1979, D.C., E.D. Mo. (St. Louis), Doc. 79-770C (A), *Edward Ochylski* v. *St. Louis Meats, Incorporated.* Final decision filed Mar. 11, 1980.

4,081,238. (See 3,129,748.)

4,084,317, Matsuzaka Iron Works, Inc., SHEARING TOOL FOR SYNTHETIC RESIN TUBES; **D. 252,666,** same, VINYL PIPE CUTTER, filed Mar. 6, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80-00856 TJH, *Matsuzaka Iron Works, Inc.* v. *William Wallace Taylor, doing business as Continental International.*

4,106,878, Paul H. Jones, FIRE-RATED CEILINGS GRID CROSS JOINT, filed Feb. 25, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80-0791, *Edgar J. and Charmaine M. Sturmann* v. *NRM Investment Company.*

D. 247,735, Chicago Cutlery Consumer Products, Inc., HOLDER FOR CUTLERY AND SHARPENING STEEL, filed Mar. 10, 1980, D.C. Minn. (St. Paul), Doc. 3-80-180, *Chicago Cutlery Consumer Products, Inc.* v. *Bordein Corporation and Tommer Division of Bordein Corporation.*

D. 252,666. (See 4,084,317.)

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,379,756, Re. S.N. 092,306, Filed Nov. 8, 1979, Cl. 562/582, MANUFACTURE OF MALIC ACID, Carl R. Ahlgren, Owner of Record: *Allied Chemical Corporation, New York, N.Y.*, Attorney or Agent: Jay P. Friedenson, et al., Ex. Gp.: 126

3,542,629, Re. S.N. 115,117, Filed Jan. 24, 1980, Cl. 156/556, METHOD AND APPARATUS FOR PRODUCING AND TRANSPORTING SINGLE AND MULTILAYER CHIPBOARDS, Wolfgang Burkner, Owner of Record: *Carl Schenck Maschinenfabrik GmbH, Darmstadt, West Germany,* Attorney or Agent: Robert B. Russell, Ex. Gp.: 161

3,552,543, Re. S.N. 124,041, Filed Feb. 25, 1980, Cl. 198/219, ACCUMULATING LIFT AND CARRY CONVEYOR, Peter J. Manetta, Owner of Record: *MGA Inc., Warren, Mich.*, Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 313

3,584,396, Re. S.N. 111,130, Filed Jan. 10, 1980, Cl. 35/31, TEACHING DEVICE HAVING MEANS PRODUCING A SELF-GENERATED PROGRAM, Jerome C. Meyer, et al., Owner of Record: *Eric F. Burtis, Redwood City, Calif.*, Attorney or Agent: Francis A. Utecht, et al., Ex. Gp.: 334

3,732,516, Re. S.N. 105,793, Filed Mar. 6, 1980, Cl. 337/194, COMPACT CARTRIDGE-TYPE FUSE HOLDER, Jordan F. Puetz, Owner of Record: *Square D Company, Park Ridge, Ill.*, Attorney or Agent: William H. Schmeling, Ex. Gp.: 212

3,897,265, Re. S.N. 123,600, Filed Feb. 22, 1980, Cl. 429/35, GAS DEPOLARIZED ELECTROCHEMICAL CELLS AND METHOD OF ASSEMBLY, Arthur M. Jaggard, Owner of Record: *Gould Inc., St. Paul, Minn.*, Attorney or Agent: Augustus J. Hipp, Ex. Gp.: 114

4,018,929, Re. S.N. 119,601, Filed Feb. 7, 1980, Cl. 424/263, 3-LOWER ALKYLCARBANYLSUL-FONAMIDO-4-PHENYLAMINOPYRIDINES, N-OXIDES, DERIVATIVES THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME, Jacques E. DeLarge, et al., Owner of Record: *A. Christiaens Societe Anonyme, Brussels, Belgium,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 125

4,028,114, Re. S.N. 124,210, Filed Feb. 25, 1980, Cl. 430/289, PHOTOCHEMICAL SYSTEM FOR COATING THE LUMINESCENT SCREEN OF A COLOR TELEVISION PICTURE TUBE, Uwe Viohl, Owner of Record: *International Standard Electric Corporation, New York, N.Y.*, Attorney or Agent: Walter J. Baum, et al., Ex. Gp.: 166

4,042,176, Re. S.N. 065,567, Filed Aug. 10, 1979, Cl. 241/24, DEBONING APPARATUS AND METHOD, Nicholas R. Beck, et al., Owner of Record: *The Kartridge Pak Co., Davenport, Iowa,* Attorney or Agent: Fred S. Lockwood, et al., Ex. Gp.: 322

4,073,546, Re. S.N. 121,506, Filed Feb. 14, 1980, Cl. 303/115, ANTI-SKID VEHICLE BRAKING SYSTEM, John P. Bayliss, Owner of Record: *Girling Limited, Birmingham, England,* Attorney or Agent: Samuel Scrivener Jr., et al., Ex. Gp.: 315

4,075,056, Re. S.N. 092,734, Filed Nov. 9, 1979, Cl. 162/305, PRESS SECTION STRUCTURE, Donald A. Ely, et al., Owner of Record: *Beloit Corporation, Beloit, Wis.*, Attorney or Agent: James Van Santen, et al., Ex. Gp.: 173

4,075,605, Re. S.N. 122,799, Filed Feb. 19, 1980, Cl. 340/146.3 AC, CHARACTER RECOGNITION UNIT, Larry L. Hilley, et al., Owner of Record: *Recognition Equipment Incorporated, Irving, Tex.*, Attorney or Agent: John E. Vandigriff, Ex. Gp.: 237

4,076,350, Re. S.N. 124,336, Filed Feb. 25, 1980, Cl. 312/242, UNIVERSAL RECESSED WALL CABINET, Norman Benjamin Crist, Owner of Record: *Inventor,* Attorney or Agent: Robert W. Beach, et al., Ex. Gp.: 355

4,082,436, Re. S.N. 063,421, Filed Aug. 3, 1979, Cl. 352/72, MOTION PICTURE CAMERA, Robert E. Gottschalk, Owner of Record: *Panavision, Incorporated, Tarzana, Calif.*, Attorney or Agent: John B. Young, et al., Ex. Gp.: 211

4,103,554, Re. S.N. 121,907, Filed Feb. 15, 1980, Cl. 73/573, METHOD AND A DEVICE FOR ASCERTAINING THE DEGREE OF COMPACTION OF A BED OF MATERIAL WITH A VIBRATORY COMPACTING DEVICE, Heinz F. Thurner, Owner of Record: *Inventor,* Attorney or Agent: Terrell C. Birch, Ex. Gp.: 244

4,125,902, Re. S.N. 121,748, Filed Feb. 15, 1980, Cl. 2/74, FITS ALL SIZES WRAP-AROUND GARMENT, Michael B. Frank, Owner of Record: *Uniforms To You & Co., Chicago, Ill.*, Attorney or Agent: Fred S. Lockwood, et al., Ex. Gp.: 353

4,133,235, Re. S.N. 122,495, Filed Feb. 19, 1980, Cl. 83/74, CLOSED LOOP APPARATUS FOR CUTTING SHEET MATERIAL, Heinz J. Gerber, Owner of Record: *Gerber Garment Technology, Inc., East Hartford, Conn.,* Attorney or Agent: John C. Linderman, Ex. Gp.: 323

4,144,935, Re. S.N. 118,957, Filed Feb. 6, 1980, Cl. 166/248, APPARATUS AND METHOD FOR IN SITU HEAT PROCESSING OF HYDROCARBONACEOUS FORMATIONS, Jack Bridges, et al., Owner of Record: *I.I.T. Research Institute, Chicago, Ill.,* Attorney or Agent: John H. Tregoning, et al., Ex. Gp.: 354

4,149,711, Re. S.N. 124,779, Filed Feb. 26, 1980, Cl. 270/57, PERSONALIZED ON-LINE PRINTING AND INSERTING MAGAZINE BINDING MACHINE, Dale H. Jackson, Owner of Record: *Harris Corporation, Cleveland, Ohio,* Attorney or Agent: Thomas L. Tarolli, et al., Ex. Gp.: 337

4,175,937, Re. S.N. 111,773, Filed Jan. 14, 1980, Cl. 55/419, GAS-CONTAMINANT SEPARATOR, Steven G. Brandau, et al., Owner of Record: *Deere & Company, Moline, Ill.,* Attorney or Agent: H. Vincent Harsha, et al., Ex. Gp.: 177

4,177,176, Re. S.N. 122,919, Filed Feb. 20, 1980, Cl. 260/29.2 M, TREATMENT OF FIBRES, Peter M. Burrill, et al., Owner of Record: *Dow Corning Limited, London, England,* Attorney or Agent: Robert F. Fleming, Jr., Ex. Gp.: 142

4,182,552, Re. S.N. 124,722, Filed Feb. 26, 1980, Cl. 350/303, SIDE VIEW MIRROR EMPLOYING PRISM FOR BLIND SPOT CORRECTION, William Feinbloom, Owner of Record: *Inventor,* Attorney or Agent: Arthur L. Plevy, et al., Ex. Gp.: 257

PATENT NOTICES

Certificates of Correction for the Week of May 13, 1980

Re. 29,065	4,144,877	4,178,543	4,182,974
Re. 29,916	4,153,196	4,178,683	4,183,423
3,666,079	4,156,789	4,179,438	4,183,763
3,873,196	4,160,344	4,179,561	4,183,780
3,972,034	4,160,560	4,179,603	4,183,973
4,016,000	4,162,792	4,179,859	4,184,008
4,089,837	4,170,379	4,180,449	4,184,201
4,102,979	4,170,739	4,180,456	4,184,529
4,103,049	4,170,883	4,180,470	4,184,684
4,106,261	4,171,216	4,180,706	4,184,727
4,107,413	4,171,217	4,180,877	4,184,877
4,107,414	4,173,879	4,181,585	4,185,489
4,109,013	4,174,500	4,181,779	4,185,870
4,112,331	4,175,368	4,182,103	4,185,944
4,117,544	4,175,545	4,182,117	4,186,034
4,127,232	4,176,120	4,182,197	4,186,217
4,128,168	4,177,066	4,182,229	4,186,359
4,137,214	4,177,084	4,182,366	4,187,930
4,138,165	4,177,208	4,182,703	4,188,122
4,142,738	4,177,825	4,182,719	4,188,832
4,143,541	4,178,205	4,182,761	4,190,105
4,144,205	4,178,391	4,182,849	

Disclaimers

4,046,719.—*Robert J. Stanaback,* Gladstone, N.J. and *Michael J. Reale,* Southeast, N.Y. FLAME-RETARDANT RESINOUS COMPOSITIONS CONTAINING TRIHALONEOPENTYL HALOALKYL PHOSPHATES. Patent dated Sept. 6, 1977. Disclaimer filed Mar. 25, 1980, by the assignee, *Tenneco Chemicals, Inc.*

Hereby enters this disclaimer to claims 1, 2, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14 and 17 of said patent.

4,117,260.—*Frederic Nash Wilkenloh,* Conover, N.C. COAXIAL DROP WIRE. Patent dated Sept. 26, 1978. Disclaimer filed Mar. 17, 1980, by the assignee, *Comm/Scope Company.*

Hereby enters this disclaimer to the entire remaining term of said patent.

Erratum

All reference to Patent No. 4,197,317 to David J. Jollow of South Carolina for INHIBITING PLATELET AGGREGATION WITH SUBSTITUTED ACETANILIDES appearing in the OFFICIAL GAZETTE of Apr. 8, 1980 should be deleted since no patent was granted.

January-March 1980 Classification Orders

The reclassifications covered by the following classification changes became effective between January and March 1980.

		Class	Subclasses
Classification Order 713, effective January 24, 1980:			
Abolished		D48	ALL.
		D73	ALL.
Established		D24	68.
	(New)	D26	1-156.
		D28	8.1; 8.2
Title Changes		D10	46; 111.
		D16	42.
		D18	6.
		D20	10.
Classification Order 714, effective January 28, 1980:			
Abolished		178	50-51.
		179	2.5; 15.
Established		179	2.51.
	(New)	370	1-119.
Classification Order 715, effective January 28, 1980:			
Abolished		178	66-68; 69.1; 88.
		235	301-309; 312.
		250	199.
		325	ALL.
		340	146.1.
		343	175-181; 200-206; 225-228.
		358	191-195.
Established		178	66.1; 66.2; 67.1; 116-120.
		340	694-696.
		358	191.1; 192.1; 193.1; 194.1; 195.1
	(New)	371	1-72.
	(New)	375	1-121.
	(New)	455	1-355; 600-620.
Classification Order 716, effective February 19, 1980.			
Abolished		273	95-106.5.
Established		273	310-428.
Classification Order 717, effective February 19, 1980:			
Abolished		358	128.
Established		358	128.5; 128.6.
Classification Order 718, effective February 26, 1980:			
Abolished		60	39.65-39.74.
Established		60	39.83; 722-760.
Position Change		60	39.23.
Title Change		60	39.23.
Classification Order 719, effective February 26, 1980:			
Abolished		428	423-425.
Established		428	422.8; 423.1; 423.3-423.5; 423.7; 423.9; 424.2; 424.4; 424.6-424.8; 425.1; 425.3; 425.5; 425.6; 425.8; 425.9.
Classification Order 720, effective February 26, 1980:			
Abolished		427	207; 248; 372; 374; 376; 383; 385; 388; 390; 398; 407; 419; 420; 434.
Established		427	207.1; 208.2; 208.4; 208.6; 208.8; 248.1; 255.1-255.7; 372.2; 374.1-374.7; 376.1-376.8; 383.1; 383.3; 383.5; 383.7; 383.9.
Classification Order 720, effective February 26, 1980:			
Established		427	385.5; 388.1-388.5; 389.7-389.9 393.1-393.6; 397.7; 397.8 398.1-398.5; 407.1-407.3; 412.1-412.5; 419.1-419.8; 430.1; 434.2-434.7; 443.1; 443.2.
Classification Order 721, effective March 3, 1980:			
Established		128	Cross-Reference Art Collection.
		910.	
Classification Order 722, effective March 25, 1980:			
Abolished		29	426; 427; 624-630.
Established		29	426.1-426.6; 825-885.
Classification Order 723, effective March 26, 1980:			
Abolished		244	83-86.
Established		244	220-237.
Classification Order 724, effective March 26, 1980:			
Abolished		186	1.
Established		186	35-69.
Indent Changes		186	2-34.
Title Changes		186	
Classification Order 725, effective March 28, 1980:			
Abolished		58	ALL.
		324	181-191.
Established	(New)	368	1-327.

ALFRED C. MARMOR,
Administrator for Documentation,
April 16, 1980

Set XIV of Addenda to the Classification Definitions

The definitions of the classes listed below were modified by addenda as part of Classification Orders issued between October and December 31, 1979. All of these addenda have been consolidated into Set XIV of "Addenda to the Classification Definitions."

Class	Class	Class	Class	Class	Class
2	64	136	222	315	362
3	65	137	224	316	364
5	68	140	228	320	365
8	73	144	239	324	403
9	74	145	244	325	406
15	81	156	248	328	407
17	83	162	249	330	408
23	96	164	250	333	410
24	98	166	252	335	414
29	100	172	264	339	422
30	101	173	269	340	424
32	105	175	271	343	425
34	106	180	274	346	427
35	114	181	279	350	428
38	116	188	280	352	429
43	118	191	296	354	430
49	119	198	299	355	433
51	128	204	307	356	585
52	131	206	310	358	
60	132	219	312	360	
62	134	220	313	361	

The following newly established classes issued between October and December 1979: Classes D26, 368, 370, 371, 375, and 455.

ALFRED C. MARMOR,
Administrator for Documentation,
April 15, 1980.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

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Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 857,717. Alcohols as Hydrogen-Donor Solvents for Treatment of Coal. Filed Dec. 5, 1977.

Patent application 858,221. Regeneration of Lime from Sulfates for Fluidized-Bed Combustion. Filed Dec. 7, 1977.

Patent application 863,765. Hydrogenation Process for Solid Carbonaceous Materials. Filed Dec. 23, 1977.

Patent application 868,634. Valve System Incorporating Single Failure Protection Logic. Filed Jan. 11, 1978.

Patent application 868,953. Method for Calcining Nuclear Waste Solutions Containing Zirconium and Halides. Filed Jan. 12, 1978.

Patent application 871,919. Sintered Rare Earth—Iron Laves Phase Magnetostrictive Alloy Product and Preparation Thereof. Filed Jan. 24, 1978.

Patent application 878,047. Apparatus for Leaching Core Material From Clad Nuclear Fuel Pin Segments. Filed Feb. 15, 1978.

Patent application 880,678. Structure for Ceramic MHD Components. Filed Feb. 23, 1978.

Patent application 880,679. Self Locking Drive System for Rotating Plug of a Nuclear Reactor. Filed Feb. 23, 1978.

Patent application 880,820. Apparatus and Method for Feeding Coal Into a Coal Gasifier. Filed Feb. 23, 1978.

Patent application 880,918. Pyrolytic Coating Process. Filed Feb. 24, 1978.

Patent application 880,919. Method for Homogenizing Alloys Susceptible to the Formation of Carbide Stringers and Alloys Prepared Thereby. Filed Feb. 24, 1978.

Patent application 880,920. Method and Apparatus for Removing the Surface Layer From a Concrete Object. Filed Feb. 24, 1978.

Patent application 886,380. Alternate Liquid Fuel (A.L.F.) Compound and Method for Processing. Filed Mar. 14, 1978.

Patent application 889,691. System for Loading Slab-Gel Holders for Electrophoresis Separation. Filed Mar. 24, 1978.

Patent application 904,676. Rim for Rotary Inertial Energy Storage Device and Method. Filed May 10, 1978.

Patent application 904,678. Right/Left Assignment in Drift Chambers and Proportional Multiwire Chambers (PWC'S) Using Induced Signals. Filed May 10, 1978.

Patent application 906,308. Secondary Hardening Steel Having Improved Combination of Hardness and Toughness and Method of Preparation. Filed May 15, 1978.

Patent application 906,815. Manipulator for Rotating and Examining Small Spheres. Filed May 17, 1978.

Patent application 906,820. Reflecting Film Reflector and Method of Making the Same. Filed May 17, 1978.

Patent application 908,031. Enhancement of Laser Pulse Contrast Ratios Via Transient Response of Narrow Band Resonant Absorbers. Filed May 22, 1978.

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Patent application 911,248. Pulse Circuit for Gas Discharge Laser. Filed May 31, 1978.

Patent application 912,784. Adjustable Expandable Cryogenic Piston and Ring. Filed June 5, 1978.

Patent application 912,785. Alternating Phase Focused Linacs. Filed June 5, 1978.

Patent application 913,634. Differentially-Charged and Sequentially-Switched Square-Wave Pulse Forming Network. Filed June 8, 1978.

Patent application 915,419. Ceramic Component for Electrodes. Filed June 14, 1978.

Patent application 916,614. Corrosion Monitoring Apparatus. Filed June 19, 1978.

Patent application 918,259. Count-Doubling Time Safety Circuit. Filed June 23, 1978.

Patent application 918,618. Carbonaceous Fuel Combustion With Improved Desulfurization. Filed June 23, 1978.

Patent application 920,414. Electrochemical Cell and Method of Assembly. Filed June 29, 1978.

Patent application 920,415. Thermally Stable, Plastic-Bonded Explosives. Filed June 29, 1978.

Patent application 923,753. Post Pulse Shutter for Laser Amplifier. Filed July 11, 1978.

Patent application 924,336. Method and Apparatus for Forming Targets Using Light Pulses. Filed July 13, 1978.

Patent application 927,237. Method for Forming or Bonding a Liner. Filed July 24, 1978.

Patent application 927,442. Linear Motor Drive System for Continuous-Path Closed-Loop Position Control of an Object. Filed July 24, 1978.

Patent application 927,806. Valve for Controlling Solids Flow. Filed July 25, 1978.

Patent application 928,026. Process for Recovering Actinide Values. Filed July 25, 1978.

Patent application 928,027. Laser Target Fabrication, Structure and Method for Its Fabrication. Filed July 25, 1978.

Patent application 929,144. Method of Foaming a Liquid Metal. Filed July 28, 1978.

Patent application 930,616. Compensated Pulsed Alternator. Filed Aug. 3, 1978.

Patent application 930,629. Method and Apparatus for Controlling Accidental Releases of Tritium. Filed Aug. 3, 1978.

Patent application 930,782. Frost-Proof and Moisture-Proof Building Foundation. Filed Aug. 3, 1978.

Patent application 932,151. Internal Ring End Stoppering for Open Ended Plasma Containing Multicoil Solenoid. Filed Aug. 9, 1978.

Patent application 934,552. Means and Method for the Destruction of Particles Entrained in a Gas Stream. Filed Aug. 17, 1978.

Patent application 934,762. Recovery of Aluminum and Other Metal Values From Fly Ash. Filed Aug. 17, 1978.

Patent application 934,763. Multi-Atmospheric Halogen Compatible Cavity. Filed Aug. 17, 1978.

Patent application 934,764. Miniaturized Radiation Chirper. Filed Aug. 17, 1978.

Patent application 934,765. Synthetic Carbonaceous Fuels and Feedstocks. Filed Aug. 17, 1978.

Patent application 934,768. Process for Producing Hydrogen From Water Using Cobalt and Barium Compounds and Compositions Useful Therein. Filed Aug. 17, 1978.

Patent application 936,458. Beam/Seam Alignment Control for Electron Beam Welding. Filed Aug. 24, 1978.

Patent application 936,460. Preparation of U_3O_8. Filed Aug. 24, 1978.

Patent application 938,141. Liquid-Permeable Electrode. Filed Aug. 30, 1978.

Patent application 942,227. Enhancement of Laser Pulse Contrast Ratios Via Transient Response of Narrow Band Resonant Interferometers. Filed Sept. 14, 1978.

Patent application 942,228. Mosaic of Coded Aperture Arrays. Filed Sept. 14, 1978.

Patent application 942,230. Hand and Shoe Monitor. Filed Sept. 14, 1978.

Patent application 943,270. Scalable, High Power Laser Cavity for Static Metal Vapor Laser Media. Filed Sept. 15, 1978.

Patent application 943,827. MHD Generating System. Filed Sept. 19, 1978.

Patent application 945,375. Use of a Large Time-Compensated Scintillation Detector in Neutron Time-of-Flight Measurements. Filed Sept. 25, 1978.

Patent application 945,376. Fiber Optic Solid State Switch. Filed Sept. 25, 1978.

Patent application 945,923. Nonimaging Radiant Energy Direction Device. Filed Sept. 26, 1978.

Patent application 945,924. Portable Probe To Measure Sensitization of Stainless Steel. Filed Sept. 26, 1978.

Patent application 945,925. Method for Laser-Annealing Silicon. Filed Sept. 26, 1978.

U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th St., SW., Washington, D.C. 20590

Patent application 6–063,819. Rail Flaw Detector Position Control. Filed Aug. 6, 1979.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood, Bldg., Bethesday, Md. 20205

Patent Re. 29,888. System for Whole Body Imaging and Count Profiling With a Scintillation Camera. Filed Sept. 29, 1976. Reissued Jan. 23, 1979. Not available NTIS.

Patent 4,175,133. 1,2-Diaminocyclohexane Platinum (II) Complexes Having Antineoplastic Activity Against L1210 Leukemia. Filed Nov. 29, 1977. Patented Nov. 20, 1979. Not available NTIS.

Patent 4,177,348. Carbocyclic Analogs of Cytosine Nucleosides. Filed Dec. 13, 1977. Patented Dec. 4, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C St., NW
Washington, D.C. 20240

Patent 4,166,775. Electrochemical Gas Monitoring Method. Filed Sept. 22, 1977. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,167,477. Separation of Plastics by Flotation. Filed Jan. 17, 1978. Patented Sept. 11, 1979. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification. Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library. Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 5, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids: Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-5-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-19-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	8-2-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-12-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	10-25-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-23-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	9-5-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-12-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Snips; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-8-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-15-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-9-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-8-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements, Clutches.	11-28-78

Expiration of patents: The patents within the range of numbers indicated below expire during April 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,083,367 to 3,088,113, inclusive
Plant Patents ..... Numbers 2,244 to 2,257, inclusive

REISSUES

MAY 13, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,272

RECOVERY OF CELLULAR PROTEIN PRODUCTS FROM MICROBIOLOGICAL SYNTHESIS MASSES

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Ohio

Original No. 3,958,038, dated May 18, 1976, Ser. No. 418,915, Nov. 26, 1973. Application for reissue Dec. 30, 1976, Ser. No. 755,762

Int. Cl.[2] **A23J** *1/00*

U.S. Cl. 426—656 **8 Claims**

10. A process of recovering microbiologically produced cells from the medium in which they were produced comprising adding to the cell-containing medium gluten in an amount sufficient to cause flocculation at a pH in the range of 4 to 6, said addition of said gluten being made when said cell-containing medium is at a pH in the range of 4 to 6 that will permit flocculation, and then physically separating the flocculated cells from the medium in which they were produced.

Re. 30,273

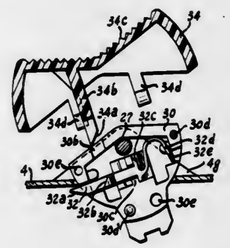
ROCKER SWITCH WITH INTEGRAL OFF LOCK

Stuart W. Grebner, Euclid, Ohio; James V. Johnson, Jr., and Leonardus J. Josemans, both of Smithfield, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Original No. 4,013,858, dated Mar. 22, 1977, Ser. No. 592,411, Jul. 2, 1975. Application for reissue Mar. 3, 1978, Ser. No. 883,352

Int. Cl.[2] **H01H** *9/28*

U.S. Cl. 200—42 T **14 Claims**



12. A self-enclosed pivoted-actuator switch comprising:
an insulating housing;
stationary contact means within said housing connected to external terminals;
movable contact means within said housing selectively operable to an "on" position closing a circuit with respect to said stationary contact means or to an "off" position opening said circuit;
an actuator assembly;
supporting means on said housing pivotally mounting said actuator assembly for reciprocal movement to actuate said movable contact means;
and said actuator assembly comprising:
contact actuator means extending from said pivotal supporting means into said housing for actuating said movable contact means to said "on" or "off" position;
a spring-biased locking member having a locking position and an unlocking position and projecting from said contact actuator means in its said locking position to catch on said housing thereby to prevent pivotal movement of said actuator assembly;
a removable operating member having a manually-engageable portion and means for coupling the same to said contact actuator means so that selective actuation thereof by said manually-engageable portion effects pivotal movement of both said removable operating member and said contact actuator means coupled thereto and means on said removable operating member which when inserted into said contact actuator means together with said coupling thereof moves said locking member against the force of its bias spring into said unlocking position clear of said housing to afford normal pivotal movement of said actuator assembly;
and said means for coupling said operating member to said contact actuator means comprises snap-on connection means for normally retaining said operating member on and firmly secured to said contact actuator means during actuation thereof to afford normal operation and for providing ready pull-off removability of said operating member to prevent unauthorized operation of said switch.

Re. 30,274

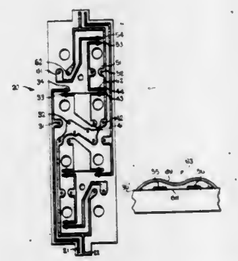
METHOD FOR MAKING A CIRCUIT BOARD AND ARTICLE MADE THEREBY

Donald A. Bolon, Scotia; Gary M. Lucas, Schenectady, both of N.Y., and Ralph L. Bartholomew, Painesville, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Original No. 3,988,647, dated Oct. 26, 1976, Ser. No. 509,893, Sep. 27, 1974. Application for reissue Apr. 21, 1978, Ser. No. 899,096

Int. Cl.[2] **G03B** *15/02*

U.S. Cl. 361—411 **7 Claims**



12. A circuit board for activating high voltage flash lamps, said circuit board including a non-conductive, thermoplastic substrate having a patterned electrically conductive coating on one of its surfaces and defining electrical circuitry for the flash lamps, said coating having a resistivity of less than 10 ohm-cm and comprising an organic resin matrix which has been cured into a non-tacky condition by ultraviolet radiation, said coating further comprising a particulated electrically conductive material selected from the group consisting of a particulated electrically conductive metal and a particulated electrically conductive metal containing material, including mixtures thereof, with no more than up to about **15%** by weight of said particulated electrically conductive material having an aspect ratio of diameter to thickness of a value greater than **20**.

PLANT PATENTS

GRANTED MAY 13, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,534

SUGAR MAPLE

John D. Siebenthaler, Dayton, Ohio, assignor to The Siebenthaler Company, Dayton, Ohio

Filed Aug. 21, 1978, Ser. No. 935,333
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of *Acer sacchrum* substantially as herein shown and described, characterized particularly by its rapid growth, hardiness, uprightness and conical shape of the tree at maturity and the distinctive coloration of the foliage.

4,535

AZALEA PLANT

Louis A. Hindla, 986 Church St., Bohemia, N.Y. 11716

Filed Feb. 21, 1979, Ser. No. 13,541
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—56 **1 Claim**

1. A new and distinct variety of azalea plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of purplish pink flowers borne in abundance in irregular rounded clusters on strong stems, the reverse of each flower petal having a nearly white stripe extending from the base at the center thereof, the evergreen, glossy dark green foliage retained well in winter, and the tall upright habit.

PATENTS

GRANTED MAY 13, 1980

ERRATA

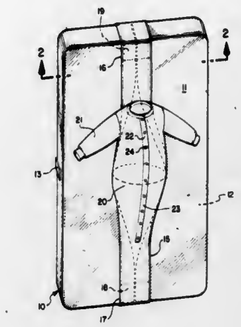
For CLASS	See PATENT NO.
024-263 R	4,202,087
433-189	4,202,097
433-168	4,202,098
433-176	4,202,099
433-007	4,202,100
433-225	4,202,101
433-127	4,202,102
433-153	4,202,103
331-094.5 G	4,202,104
368-272	4,202,165
368-082	4,202,166
568-793	4,202,199
221-093	4,202,468
254-093 H	4,202,514
239-177	4,202,596
401-196	4,202,652
430-050	4,202,693
430-215	4,202,694
430-008	4,202,695
430-306	4,202,696
430-306	4,202,697
430-418	4,202,698
430-302	4,202,699
210-032	4,202,737
210-022 A	4,202,760
430-106	4,202,785
548-204	4,202,818
556-467	4,202,831
424-311	4,202,841
525-302	4,202,845
430-106	4,202,913
375-116	4,203,002
455-111	4,203,003
174-135	4,203,004
370-050	4,203,008
307-252 C	4,203,047
375-001	4,203,070
375-001	4,203,071
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455-311	4,203,073
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343-781 P	4,203,105

PATENTS

GRANTED MAY 13, 1980

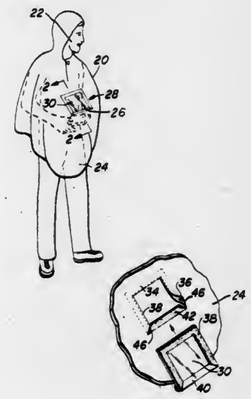
GENERAL AND MECHANICAL

4,202,052
EXTENDABLE INFANT SHEET AND SLEEPER
Lydia K. Bilanzich, 4575 Willow Rd., Salt Lake City, Utah 84117
Filed May 22, 1978, Ser. No. 908,534
Int. Cl.² A47G 9/00
U.S. Cl. 2—69.5 **8 Claims**



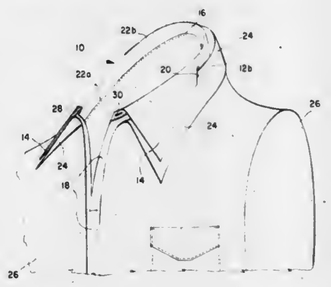
1. An infant sheet for use with a crib or bed mattress comprising:
a sheet member having a length greater than the length of said mattress and adapted for placement thereon;
a central pleat formed in said sheet member and extending the length thereof, said pleat being fixed in nonextending form at opposing end locations which are substantially centered along the width of said sheet member;
an extendable section of said central pleat formed in said sheet member between the fixed, nonextending pleat sections at said end locations; and
a central opening in said sheet member extending across said central pleat and adapted in configuration for attachment of a jacket member thereto.

4,202,053
WEATHER-PROOF GARMENT
Michael Bell, P.O. Box 400, Warrington, Pa. 18976
Filed Nov. 15, 1978, Ser. No. 960,886
Int. Cl.² A41D 3/08
U.S. Cl. 2—84 **7 Claims**



1. A garment for disposition on the trunk of a wearer and formed of a flexible, water-repellent material said garment having a front panel including an opening therein, a relatively rigid, transparent window pane and releasable securement means, said front panel including an inner surface, the periphery of said opening being defined by upper, lateral and lower edge portions, said window pane including an inner and outer surface, the periphery of said window pane being defined by upper, lateral and lower edge portions, said releasable securement means releasably securing the outer surface of said window pane along its upper and lateral edge portions to the inner surface of said front panel along the upper and lateral edge portions of said opening with said upper and lateral edge portions of said panel overlapping said upper and lateral edge portions of said window pane and with said lower edge portion of said window pane overlapping said lower edge portion of said panel to completely cover said opening in a good weather-tight relationship.

4,202,054
COLLAR CONSTRUCTION
Epifanio A. Siragusa, 519 Montauk Ave., New London, Conn. 06320
Filed Jul. 17, 1978, Ser. No. 925,426
Int. Cl.² A41B 1/00
U.S. Cl. 2—116 **7 Claims**

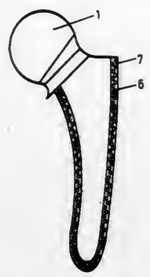


1. A collar adapted to be used in a garment such as a shirt sport shirt, or the like, comprising: an elongated panel having pointed front portions at opposite ends thereof, said panel including a free marginal edge and a connecting marginal edge extended between said pointed portions, said connecting marginal edge being adapted to be secured at the neckline of said garment, a plurality of slits spaced apart from each other, each slit extending from the free marignal edge and ending close to said connecting marginal edge, and a central inner rear portion extended substantially between said slits whereby said pointed portions being movable independently from each other and from said central inner rear portion without disturbing the overall appearance of the collar when the latter is used as an open sport collar over the lapels of the wearer's jacket.

4,202,055
ANCHORAGE FOR HIGHLY STRESSED ENDOPROSTHESES
Roland Reiner, Eschborn; Helmut Heide, Schwalbach, and Kari Koster, Lorsbach, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany
Filed May 12, 1977, Ser. No. 796,164
Claims priority, application Fed. Rep. of Germany, May 12, 1976, 2620907
Int. Cl.² A61F 1/24
U.S. Cl. 3—1.91 **9 Claims**

1. An implantable prosthesis anchorage which contains a non-porous outer coating in the regions which will be positioned in contact with bone, the non-porous outer coating

consisting of (i) at least one bioactive resorbable ceramic material which is a calcium phosphate and (ii) at least one polymer which is mechanically and chemically stable in the body, the ceramic material being in particulate form having particle diameters between 0.5 and 1 mm, and the ceramic material



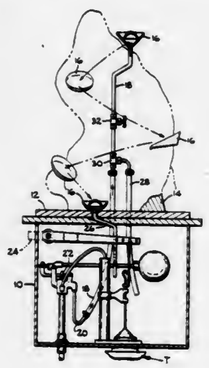
particles being incorporated in the polymer in such a way that resorption of the ceramic material leads to a polymer structure with continuous pores filled with living bone tissue, bioactivating bonding residues of the ceramic material being left on the inner surfaces of the filled pores which have been created by the resorption of the ceramic material.

4,202,056

TOILET WATERFALL

Christopher A. Watkins, 225 Estates Dr., Ben Lomond, Calif. 95005

Filed Dec. 20, 1976, Ser. No. 752,605
Int. Cl.[2] A47K *17/00*
U.S. Cl. 4—1 **3 Claims**



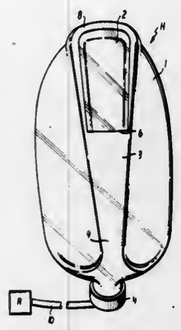
1. A toilet waterfall for a standard flush tank including a water inlet which comprises
- a cover arranged to rest on the open top of the toilet flush tank,
- a series of drip pans supported above and by said cover in staggered and superposed relation,
- a first conduit arranged for connection to the water inlet of the flush tank at one end and to discharge water into the uppermost one of said drip pans at its opposite end, and
- a second conduit connected between the lowermost one of said drip pans and said flush tank.

4,202,057

DEVICE FOR RECEIVING AND DISPOSING OF URINE FROM BEDRIDDEN WOMEN

Guillermo N. Ibarra, Calle General San Martin No. 222, Col. Reforma, Guadalajara, Jal., Mexico

Filed Sep. 5, 1978, Ser. No. 939,776
Int. Cl.[2] A61G *9/00*
U.S. Cl. 4—144.3 **5 Claims**



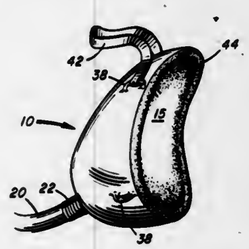
1. A device for receiving and disposing of urine from bedridden women, comprising a receptacle having the shape of an ellipse along the major axis of which there is arranged a raised portion having approximately the shape of an isosceles triangle with slightly rounded vertices, an opening in said raised portion adjacent the base of said triangle, grooves provided in said receptacle on opposite sides of said raised portion, said grooves running lengthwise and curving from the base side of the receptacle up to the opening in the raised portion for anatomical adaptation to a bedridden woman using the receptacle and a urine discharge tube arranged on the base side of the receptacle opposite the raised portion and wherein the raised portion has a cover portion which extends over approximately half its length from its smaller vertex to the base of the isosceles triangle; and wherein the widest part of the receptacle corresponds to the narrowest part of the opening in the raised portion.

4,202,058

FEMALE URINAL

Robert W. Anderson, 1765 S. 79th East Ave., Tulsa, Okla. 74112

Filed Oct. 31, 1978, Ser. No. 956,106
Int. Cl.[2] A61G *9/00*
U.S. Cl. 4—144.3 **4 Claims**



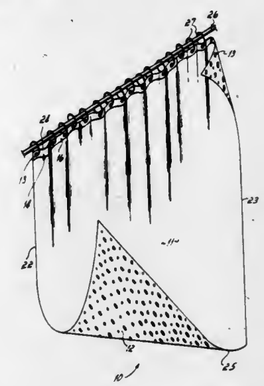
1. A urinal for supine or reclining female use comprising:
- a rigid outer shell defining an open chamber, edge portions of said outer shell defining a generally oval-shaped opening for the chamber;
- a flexible inner shell defining a receiving chamber positionable within said outer shell in such manner that edge portions of said inner shell protrude outwardly beyond edge portions of said outer shell, said protruding edge portions being deformable and said generally oval shape being such that said urinal is sealingly engaged with body parts of an intended user when the urinal is pressed against the body parts;
- said outer shell including an aperture defined therein and said inner shell including a duct section that communicates with the receiving chamber and extends through said aperture when said inner shell is positioned in said outer shell;
- manually powered pump means connectable to said duct section for evacuating urine from said receiving chamber after or during use of said urinal;
- a first tubing section for connecting an inlet of said pump means to said duct section;
- one-way valve means, positioned between the pump inlet and said duct section for limiting fluid flow to a direction extending from said duct section to said pump means; and
- a second tubing section connected to an outlet of said pump means for carrying urine away from said pump means; and further comprising
- a first pair of brackets positioned on opposite sides of upper portions of said outer shell;
- a second pair of brackets positioned on opposite sides of lower portions of said outer shell;
- adjustable hip straps connected to said first and second pairs of brackets for holding said urinal on a user in a position ready for use; and
- a hanger connected to said outer shell for suspending said urinal from a support.

4,202,059

REVERSIBLE SHOWER CURTAIN

Raymond F. Faragher, Jr., 620 Sunset Ct., Kenton Hills, Ky. 41011

Filed Jul. 25, 1977, Ser. No. 818,803
Int. Cl.[2] A47K *3/14*
U.S. Cl. 4—149 **7 Claims**



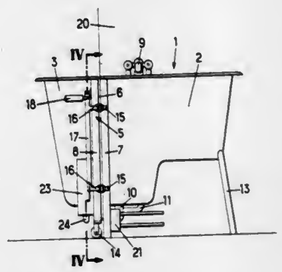
1. A four-piece reversible shower curtain having two sides, each side presenting a different aesthetic appearance from the other side, said curtain consisting of:
- a laminated curtain composite of two sheets, said sheets being coextensive from end-to-end and from top to bottom such that the edges of said curtain are absent of fold-over hems;
- each of said sheets having an inner side laminated to the inner side of the other sheet and each of said sheets having an outer side being totally uniform in its design and color and totally independent of the outer side of said other sheet whereby, each outer side presents a different aesthetic appearance from the other outer side; and
- a header structure consisting of a stiffening strip attached to an outer side of one of said sheets at an upper edge portion thereof, and a separate cover strip attached to said one sheet and being coextensive with and covering said stiffening strip, the ends of said covering strip being coextensive with respective ends of said two sheets, and said two sheets extending coextensively beneath said cover and stiffening strips to form a major portion of said curtain;
- said covering strip comprising aesthetically a continuation of the aesthetic appearance presented by the outer side of said one sheet such that said covering strip and said outer side of said one sheet together cooperate to produce a uniform aesthetic appearance different from that presented by the outer side of the other sheet;
- said curtain being reversible such that the aesthetic appearance presented by one outer side is not visible to a person viewing the curtain from the opposite outer side thereof.

4,202,060

OPENABLE BATH

Pierre Touze, 11, Rue G. Faussart, 92150 Suresnes, France

Filed Sep. 11, 1978, Ser. No. 941,078
Claims priority, application France, Sep. 15, 1977, 77 27947
Int. Cl.[2] A47K *3/02*
U.S. Cl. 4—173 R **7 Claims**



1. An openable bath for the use in particular of elderly or handicapped persons, comprising:
- a bath tub dimensionally greater in a longitudinal direction than in a transverse direction and divided in between its two longitudinal ends along a transverse vertical plane passing substantially through the deepest part of the bath tub into a fixed tub part and a movable tub part pivoted to the fixed part about a vertical pivotal axis located on one longitudinal side of the bath tub,
- a compressible seal extending around the two sides and the bottom of one of said two parts in the contact plane of said two parts,
- closure means located on the longitudinal side of the bath tub opposite to that of said pivotal axis for urging a contact surface of said movable part against a contact surface of said fixed part while compressing said seal, said tub parts then defining a bathing interior,
- a closure security device including locking means governed by a float responsive to the water level in the bath tub for locking the closure device in a closed position and holdng it locked while the bath tub contains water,
- a bath tap assembly for directly filling the bath tub with water, and
- filling security means for preventing the supply of water to said bath tap assembly when said bath tub is not completely closed.

4,202,061

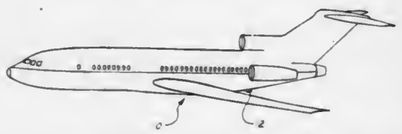
LAVATORY WASTEWATER DISPOSAL SYSTEM FOR AIRCRAFT

Kenneth L. Waters, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 29, 1978, Ser. No. 974,365
Int. Cl.[2] E03D *5/016*
U.S. Cl. 4—317 **28 Claims**

1. A waste liquid disposal system for an aircraft comprising:
- a. means defining a compartment capable of being pressurized by a source of pressurized air,

b. a source of waste liquid,
c. a disposal tank to receive said liquid,
d. a drainmast line to direct said liquid to an ambient location,
e. a diverting apparatus to direct said liquid to said disposal tank when said compartment is at a pressure substantially equal to pressure at said ambient location, and to direct said liquid to said drainmast line when pressure in said compartment is at least as high as a predetermined pressure level above pressure at said ambient location, said apparatus comprising:
1. inlet means having a downwardly extending rear inlet wall and a downwardly extending front inlet wall, said front and rear inlet walls defining an inlet,
2. means defining a diverting chamber positioned below said inlet, said diverting means having
a. a rear generally planar chamber wall extending downwardly from said rear inlet wall as a downward extension thereof, said rear chamber wall being generally vertically aligned so as to have a vertical component of alignment substantially greater than a horizontal component of alignment,
b. a lip member having a lower separating edge, a rear lip surface extending downwardly from said forward inlet wall to said separating edge, and a forward lip surface extending laterally forward from said edge,



c. a diverting wall having a diverting wall surface extending from said forward lip surface on a slant downwardly and forwardly, and disposed generally oppositely to said back wall,
d. said forward lip surface and an upward portion of said diverting wall defining a recess,
3. a first oulet means leading downwardly from said chamber at a lower end of said chamber back wall and connecting to said disposal tank in a manner that liquid flowing downwardly adjacent said chamber back wall flows into said first outlet means,
4. a second outlet means leading forwardly from said chamber at a location adjacent a lower end of said front chamber wall in a manner that liquid flowing downwardly adjacent said front chamber wall is able to enter said second outlet means and flow through said drainmast line,
f. vent means operatively connecting said inlet means and said first outlet means to pressurized air for said compartment,

whereby when said compartment is at the pressure substantially equal to the pressure at the ambient location, said liquid flows from said inlet means along said chamber back wall into said first outlet means, and when pressure in the compartment is at least as high as said predetermined pressure level above the pressure at the ambient location, said liquid is caused to flow from the inlet means adjacent said chamber forward wall and through said second outlet means.

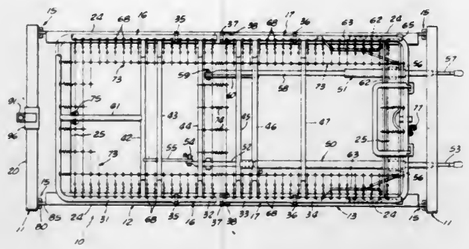
4,202,062

KNOCK-DOWN INVALID BED

Stanley T. Marcyan, Glendale, Calif., assignor to Marcy Tool Company, Glendale, Calif.

Filed Jul. 10, 1978, Ser. No. 923,243
Int. Cl.[2] A61G 7/10
U.S. Cl. 5—66 **5 Claims**

1. That improvement in a knock-down bed having a main frame detachably supported at its ends by head boards and readily separable into two halves at the midlength thereof which comprises:
each half of said main frame including a mattress support comprising link fabric means resiliently supported along its sides and at one end by a respective tubular sub-frame and including coil spring means detachably interconnecting the adjacent end halves of said link fabric means; and



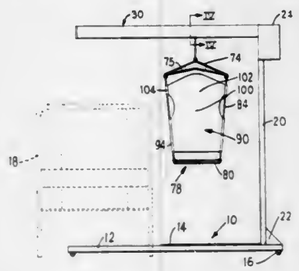
said tubular frame including a plurality of tubular struts having the major portion thereof spaced below and extending crosswise of said link fabric means with their ends rigidly fixed to the sides of said tubular sub-frame at spaced apart points therealong.

4,202,063

PATIENT LIFTING DEVICE

James B. Murray, P.O. Box 145, 301 E. Kalamazoo St., Bloomingdale, Mich. 49026

Filed Aug. 8, 1978, Ser. No. 932,011
Int. Cl.[2] A61G 1/02; A61H 1/02
U.S. Cl. 5—81 R **8 Claims**



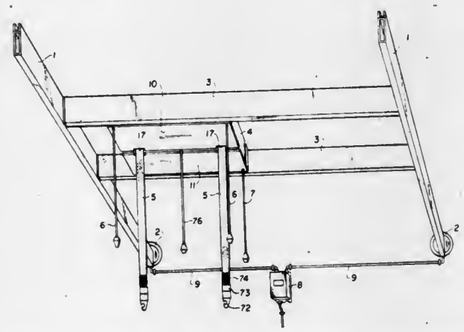
1. In an invalid hoist including:
a beam projecting in cantilever relation from an upright post supported on a base in spaced relation below the beam, said beam being formed of a sheet metal panel of a generally box shaped section having a top wall, spaced side walls and spaced apart inturned rail flanges on the lower edges of said side walls;
a carriage longitudinally movably supported within said beam;
a lifting cable having a free end depending from said carriage; and
a patient supporting harness connected to the free end of said cable, wherein the improvement comprises:
a rotatable tubular drum substantially enclosed inside said beam, said beam supporting said rotatable drum for longitudinal movement therewithin;
said beam enclosing therewithin said lifting cable wound on said drum, said lifting cable having its free end exiting from said beam downward between said inturned rail flanges;
a noncircular cross section shaft enclosed within said beam and rotatably supported at its ends by said cantilevered beam, said carriage supporting said drum for rotation with respect thereto and for said longitudinal movement of said drum within said beam;
means movable with said carriage along said beam and connected to said drum to engage the noncircular parts of said shaft to rotate said drum with said shaft; and
power means mounted on the end of said upright and drivingly connected to said shaft.

4,202,064

UNIT FOR VERTICAL AND HORIZONTAL PERSONAL TRANSPORT

Gunnar I. Joergensen, Ellemosevej 39, DK-2900 Hellerup, Denmark

Filed Apr. 20, 1978, Ser. No. 898,407
Claims priority, application Denmark, Apr. 26, 1977, 1831/77
Int. Cl.[2] A61C 1/02; A47C 17/40
U.S. Cl. 5—83 **10 Claims**



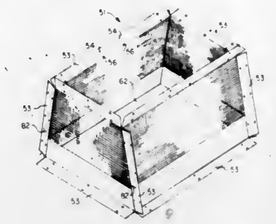
1. A coordinate-type hoist for a non-ambulatory individual, comprising:
first and second fixed parallel longitudinal rails;
means for mounting said rails in a horizontal plane near the ceiling of a room;
third and fourth parallel transverse rails extending between and supported by said fixed rails for sliding movement in the longitudinal direction;
a crab mounted for sliding movement on said third and fourth rails in the transverse direction;
at least one hoisting strap depending from said crab for supporting an individual;
a rotatable shaft means on said crab for winding and unwinding said straps to raise and lower the same;
a hoist motor on said crab for rotating said shaft means;
means for electrically insulating said motor from said crab;
means including said longitudinal and transverse rails for supplying electrical power to said hoist motor;
limit switch means coupled to said shaft means for disconnecting the power supply to said hoist motor when the number of rotations of said shaft means in either direction exceeds a corresponding predetermined value;
cutoff switch means adjacent the paths of travel of said straps for disconnecting the power supply to said hoist motor when either of said paths deviate from a desired trajectory as a result of erroneous winding or unwinding thereof; and
means independent of said power supplying means for lowering said straps.

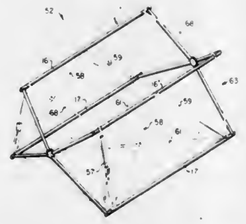
4,202,065

COLLAPSIBLE BABY ENCLOSURE

Barry J. Sullivan, #29, 670 San Antonio Rd., Palo Alto, Calif. 94301

Continuation-in-part of Ser. No. 799,790, May 23, 1977, abandoned. This application Jan. 13, 1978, Ser. No. 869,252
Int. Cl.[2] A47D 7/00
U.S. Cl. 5—99 A **15 Claims**





1. A structurally rigid baby enclosure erectable from a collapsed condition comprising:
A. a baby containment structure of a pliant material including:
(1) a pair of opposed side panels;
(2) a pair of opposed end panels; and
(3) a bottom panel; and
B. a collapsible frame structure to support said enclosure including:
(1) four side rods extending generally parallel to one another for generally the full length of said structure respectively adjacent the upper and lower margins of said side panels; and
(2) a pair of collapsible end support structures coupled respectively at opposite ends of said frame structure to all four of said side rods, each of said end support structures being manipulatable between a frame collapsed position in which the ends of all four of said side rods coupled thereto are positioned close to one another; and a locked, frame erected position in which said end support structure maintains said side rods spread apart from one another at said end.

4,202,066

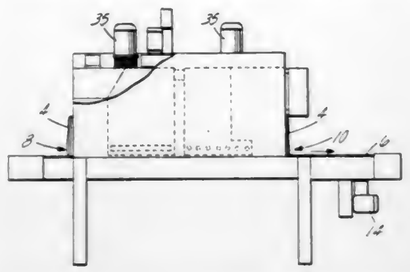
METHOD OF HEAT SETTING FOOTWEAR

Raymond Hanson, Rearsby, England, assignor to USM Corporation, Farmington, Conn.

Filed Apr. 20, 1978, Ser. No. 898,177
Claims priority, application United Kingdom, Jul. 20, 1977, 31030/77
Int. Cl.[2] A43D 9/00
U.S. Cl. 12—142 R **3 Claims**

3. The method of heat seating a lasted leather shoe upper for retension of shape in the toe portion of the upper, the steps which comprise: conveying the lasted shoe bottom down at selected variable speed through a dry air stream at an elevated temperature, said air stream being maintained at the point of

contact with the upper at a temperature in the range of 120° to 130° C. and a velocity of not less than 5 meters per second for not more than 3½ minutes, said shoe being disposed at a substantially fixed distance from the force of said air stream.

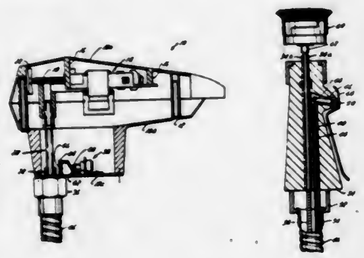


4,202,067

MOTORIZED WORK DEVICE WITH FLEXIBLE SHAFT

Bosko Stamatovic, 5786 - 13th Ave., Rosemount, Quebec, Canada

Filed Dec. 13, 1978, Ser. No. 968,962
Claims priority, application Canada, Oct. 30, 1978, 314734
Int. Cl.² A46B *13/02*
U.S. Cl. 15—28 **7 Claims**



1. A device for providing an angularly displaceable work tool at a point removed from the power source comprising drive means, switch means associated with the drive means for actuating the drive means between ON and OFF positions, a drive shaft connected to the drive means, the drive shaft comprising a flexible rotatable member connected at one end thereof to the drive means, the other end of the flexible drive shaft having a work tool associated therewith, and being secured thereto, a flexible non-extensible shaft connected at one end to the switch means, and being capable of being readily actuated to actuate the switch means, both of the flexible shafts being contained in a flexible protective housing, a housing providing a handle grip portion proximate said other end of the drive shaft, and trigger means mounted on said handle grip portion an operative relationship to said non-extensible shaft to actuate the switch means.

4,202,068

PORTABLE SCRUBBING TOOL

Frank R. Lester, Boynton Beach, Fla., and James Bullard, Adair, Okla., assignors to Nuvite Chemical Compounds Corporation, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 944,354, Sep. 21, 1978. This application Nov. 14, 1978, Ser. No. 960,633
Int. Cl.² A46B *13/02*
U.S. Cl. 15—28 **20 Claims**

1. A lightweight, portable pneumatic powered scrubbing tool comprising a brush means for brushing a surface; a pneumatic powered motor having a motor drive shaft connected to said brush means for rotating said brush means, said motor being mounted adjacent to said brush means and of a size so as not to extend beyond the periphery of said brush means, an elongated, tubular main support pole, means for pivotally connecting one end of said main support pole to said motor, a first flexible pneumatic fluid supply hose positioned substantially along the entire length of said main support pole and disposed therewithin, means for interconnecting said first flexible pneumatic fluid supply hose with said motor to provide pneumatic fluid to said motor for powering the motor, an elongated, tubular extension support pole coaxial with said main support pole and locking means for selectively positioning and locking said extension support pole to said main support pole at selected positions along the length of the main support pole by twisting said extension support pole and main support pole with respect to each other, in either direction.



4,202,069

WINDOW CLEANING APPARATUS

Hans W. Nixdorf, and Günther Tölle, both of Düsseldorf-Wittlaer, Fed. Rep. of Germany, assignors to ever clean GmbH H. W. Nixdorf, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 968,983
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756126
Int. Cl.² B60S *1/50*
U.S. Cl. 15—250.03 **16 Claims**



1. A windscreen cleaning device for vehicles, adapted to be detachably connected to a windscreen wiper, comprising: a container defining an elongated cavity for receiving a water-soluble, substantially solid cleaning agent; said container comprising a support part forming a closed circumferential wall portion of the container and extending completely over and covering said cavity, said container also comprising a closure part adapted to be fitted to said support part such that the support part and closure part enclose the cavity, said closure part having a wall portion with a grid-like opening zone forming substantially the sole entrance into said cavity, said opening zone being adapted to admit into said cavity splash and rain water carried by a stream of air during motion of the vehicle

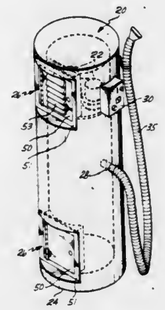
and also adapted to permit transfer of dissolved cleaning agent by said air out of said cavity onto a windscreen; said container also comprising means for detachably interconnecting said support part and said closure part; and connecting means connected to said support part for detachably connecting the cleaning device to a windscreen wiper in a position such that said closed circumferential wall portion of said support part which covers said cavity, forms the top side of said container and protects said cavity from rain while said vehicle is at rest, and such that said opening zone formed in said closure part points substantially downwardly in the direction towards said windscreen so that an exchange of liquid under the influence of the air stream may take place.

4,202,070

VACUUM APPARATUS WITH CONCRETE HOUSING, AND METHOD OF CONSTRUCTING SAME

Robert G. Harfst, 3751 NE. 192nd, Seattle, Wash. 98158

Filed Oct. 26, 1978, Ser. No. 955,131
Int. Cl.² A47L *5/38*
U.S. Cl. 15—300 A **38 Claims**



1. A vacuum apparatus comprising:
(a) an inner shell;
(b) vacuum means secured within said inner shell providing a suction within said inner shell when energized;
(c) a monolithic concrete outer housing disposed adjacent said inner shell surrounding said inner shell and enclosing the top and bottom thereof;
(d) a plurality of doors disposed on said housing each providing an opening within said housing and said inner shell and wherein one of said doors allows the removal of particles drawn into said inner shell, and another of said doors provides a vent for said vacuum means; and,
(e) a suction tube opening extending through said monolithic concrete outer housing and into said inner shell, said opening being disposed below said vacuum means and having a fitting therein attached to a suction tube such that when such vacuum means are energized, particles are drawn through said suction tube and said suction tube opening into said inner shell.

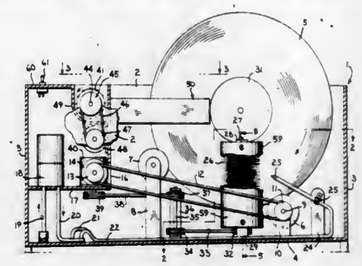
4,202,071

APPARATUS FOR WASHING AND DRYING PHONOGRAPH RECORDS

Mike A. Scharpf, 4624 Buehring Rd., Oshkosh, Wis. 54901

Filed Mar. 20, 1978, Ser. No. 888,216
Int. Cl.² B08B *5/02*
U.S. Cl. 15—302 **5 Claims**

1. An apparatus for washing and drying a phonograph record having a central label, comprising a container to contain a washing liquid, means disposed within the container for mounting a record for rotation about a horizontal axis, means for rotating the record, a pair of discharge jets disposed in spaced relation within the container and positioned to direct a washing liquid against opposite faces of the record, pumping means for delivering the washing liquid to said jets, a pair of brushes mounted for rotation about vertical axes and disposed circumferentially in the direction of record rotation from said jets, said brushes disposed to rotate in contact wth opposite faces of the record to clean the same, and air discharge means disposed circumferentially in the direction of record rotation from said brushes and disposed at a level above the jets, said pumping means and said air discharge means being operable simultaneously said air discharge means including an elongated open ended slot to receive the rotating record, said air discharge means being provided with downwardly directed elongated air discharge passages on either side of the slot for directing air downwardly against opposite faces of the record to remove the washing liquid and dry said surfaces and prevent the liquid from dripping downwardly into contact with the label as the record rotates upwardly beyond said air discharge means.

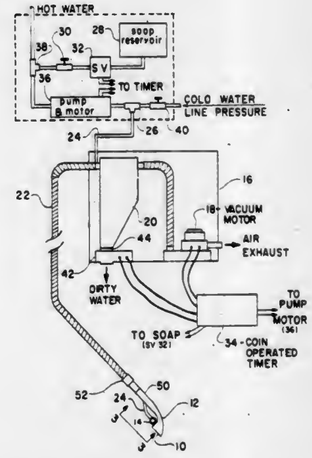


4,202,072

ANTIFREEZE MEANS FOR CAR-WASH WET-VACUUM CLEANING MACHINES

Albert S. Gonzales, 11521 Morenci N.E., Albuquerque, N. Mex. 87112

Filed Jan. 18, 1979, Ser. No. 4,407
Int. Cl.² A47L *5/38*; B08B *5/00*
U.S. Cl. 15—302 **5 Claims**



1. In apparatus for cleaning carpets and the like in an open car wash bay, said apparatus comprising a wet vacuum system for vacuuming dirty water from a carpet through a hand tool connected to the vacuum system by a flexible hose, and said tool having a vacuum nozzle adjacent to an open water spray chamber and a spray nozzle in the chamber connected to a spray valve comprised of a body on the tool for manual control of hot water delivered under pressure by a flexible line, said apparatus further comprising means for pressurizing said hot water only while the wet vacuum system is in use, an improvement comprising

a T-fitting connected in said hot water line near said pressurizing means for connecting a cold water line at low pressure and flow rate to said hot water line,

a moveable control element in the body of said spray valve which closes against a valve set in said body under the pressure of said hot water to block flow of hot water into said open water spray chamber of said tool,

means passing through said body for manually unseating said control element against said hot water pressure, and

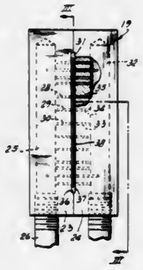
spring means in said valve body for unseating said control element while the hot water is not being pressurized to allow water from said cold water line to flow through said valve while the wet vacuum system is not in use.

4,202,073

MOISTURE STRIPPING DEVICE FOR FILM CLEANING APPARATUS

Richard J. Hughes, Mt. Prospect, Ill., assignor to Research Technology Inc., Lincolnwood, Ill.

Filed Jul. 25, 1978, Ser. No. 927,751
Int. Cl.[2] B08B *5/02*
U.S. Cl. 15—306 A **11 Claims**



1. A moisture stripping device for non-evaporatively stripping moisture from a moving film comprising:

a moisture stripper head having first and second planar surfaces facing each other and spaced apart by the order of magnitude of the thickness of a film to be stripped of moisture and forming a film slot therebetween,

said head, in the vicinity of each of said respective planar surfaces having a number of pressurized air openings for expelling pressurized air within the slot in a direction substantially normal to said respective planar surfaces,

said pressurized air openings being connected to a main pressure line which in turn is fed from a source of pressurized air,

means for positioning a travelling film within said film slot such that pressurized air from said air openings is generally directed against both surfaces of said film,

said film having a liquid coated thereon prior to entering the vicinity of said film slot, and

the pressure of air passing through said pressurized air openings substantially normal to the surfaces of said film being established at a level that provides a moisture barrier at the region of entry of the film into the film slot,

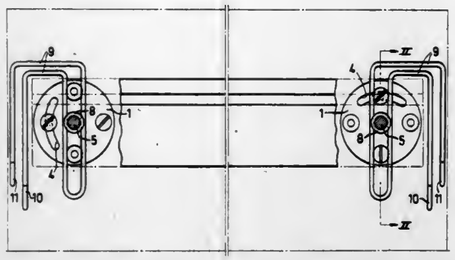
whereby the air pressure at the region of entry of the film into said slot effectively non-evaporatively strips moisture from the surface of the film and substantially minimizes formation of a mist of removed moisture.

4,202,074

CURTAIN SUSPENSION DEVICES

Göran J. F. Härd Af Segerstad, Borgmästarvagen 4, S-19030 Sigtuna, Sweden

Filed Oct. 4, 1978, Ser. No. 948,418
Claims priority, application Sweden, Oct. 7, 1977, 7711310
Int. Cl.[2] A47H *1/04*
U.S. Cl. 16—94 D **2 Claims**



1. A curtain suspension device comprising a curtain board and a pair of stem brackets, said curtain board having a horizontal hole at each end for engagement by one of said pair of stem brackets, each of said brackets comprising a wall plate having peripheral holes for fastening to a wall by means of screws, a central threaded hole, a bracket stem threadably engagable with the central threaded hole, said bracket stem extending in engaged position at right angles to the wall surface so as to support at its outer end said curtain board, and a spring clip for securing one upper corner of a curtain, said spring clip engaging said stem for sliding movement in a vertical direction wherein the wall plate of each stem bracket, diametrically opposite to one of said peripheral holes includes a slot in the form of an arc of a circle the center of which is coplanar with the center of said one of said peripheral holes whereby the wall plates of said two stem brackets can be mounted in a manner such that the symmetry axes of the respective wall plates through the peripheral hole, the center hole and the slot intersect at an angle of 90°.

4,202,075

DEVICE FOR FILLING A SHIRRED TUBULAR CASING

Wolfgang Michel, and Reinhold Becker, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,413
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809385
Int. Cl.[2] A22C *11/02*
U.S. Cl. 17—41 **17 Claims**

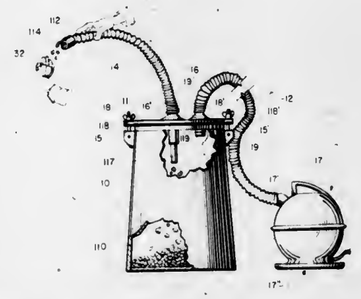
1. A calibrating device for use with a stuffing machine having a stuffing horn for uniformly controlling the filling of a shirred tubular casing with a food composition flowing under pressure from said stuffing horn, comprising a hollow calibrating pipe having a central bore therethrough for mounting said calibrating pipe on said stuffing horn, and having an enlarged circumference at one end thereof which stretches said casing and applies a frictional force thereto as said casing is drawn over said calibrating pipe during the filling of said casing, at least that portion of said calibrating pipe having said enlarged circumference being formed of a resilient material, wherein said calibrating pipe is of a length sufficient to carry an entire length of shirred tubular casing, said calibrating device further comprising means for securing said casing to said calibrating pipe at the end thereof opposite said enlarged end, wherein said calibrating pipe has depressions therein at the end opposite said enlarged end, and said means for securing said casing to said pipe comprises a ring having projections which engage the depressions in said pipe to secure said casing thereon.

4,202,076

SUCTION CRAB PICKER SYSTEM SUITABLE INTER ALIA FOR HOME USE

Paul Rancatore, 7900 Danube St., New Orleans, La. 70126

Continuation of Ser. No. 635,889, Nov. 28, 1975, abandoned. This application Aug. 16, 1977, Ser. No. 825,080
Int. Cl.[2] A22C *29/00*
U.S. Cl. 17—48 **2 Claims**



1. A method of extracting meat from the bodies of crabs which comprises the following steps:

(a) preliminarily processing the crab body to at least partially expose the meat including the following sub-steps -

(a-i) removing the upper outer shell (carapace) and the legs;

(a-ii) removing the entrails, etc.;

(a-iii) cutting the remaining inner, meat-bearing crab body into quarter sections by cutting through and across said body in the body's main plane from the area in proximity to the leg openings in the body to the opposing leg openings and severing the crab body in a vertical plane about its shorter horizontal center-line;

(b) providing a suction crab picker system, which system comprises -

(b-i) a separate, free-standing meat collecting container;

(b-ii) elongated tubular means associated with said container for conveying the meat from the crab sections to said container;

(b-iii) suction means connected to but separate from said container means comprising a standard, home-type vacuum cleaner, said vacuum cleaner developing between approximately 100–950 mm of water on the suction side of said vacuum cleaner and an air flow rate through said vacuum cleaner in the approximate range of 0.1–1.2 m^3/min.; and

(b-iv) a mechanical, projecting probe attached to the distal, operative end of said tubular conveyance means and extending out away therefrom in the longitudinal direction, said probe being used to physically contact the meat in the body and dislodging and prying the meat for extraction by said suction means through said conveyance means to said container;

(c) applying a suction from said standard, home-type vacuum cleaner through said conveyance means to the exposed meat to suck the meat from the body with the suction of said vacuum cleaner being in the range of approximately 100–950 mm of water on the suction side with an air flow rate through said vacuum cleaner being in the approximate range of 0.1–1.2 m^3/min., and simultaneously loosening the meat by prying and dislodging it loose using said projecting probe to physically contact the meat and move it about;

(d) conveying the loosened, sucked meat to said meat-collecting container pneumatically through said conveyance means; and

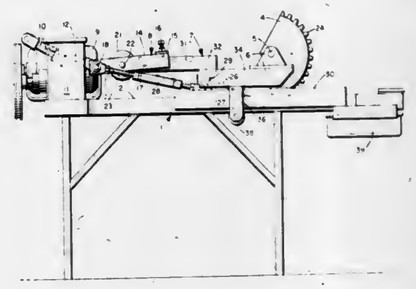
(e) exhausting the conveying gas out of said meat-collecting container; whereby the crab meat is relatively easily and quickly removed from the crab body.

4,202,077

CRAB PEELER

Harry M. Martin, Sr., Rte. 1, P.O. Box 450, Paulina, La. 70763

Filed Jun. 2, 1978, Ser. No. 911,896
Int. Cl.[2] A22C *29/02*
U.S. Cl. 17—73 **5 Claims**



1. A device for recovering crab meat from previously cooked crabs comprising:

a platform for receiving a quantity of crabs, one end of said platform being the peel end, the other end of said platform being the meat end;

means defining a convex surface;

means mounting said convex surface defining means for rolling movement back and forth along the top surface of said platform;

drive means;

means connecting said convex surface mounting means with said drive means;

a scraping blade located between said convex surface defining means and said peel end;

means mounting said blade to cause said blade to move back and forth from a position scraping the rolling surface of said convex surface defining means and a position scraping the top surface of said platform in the direction of said peel end, said blade being in a position scraping the rolling surface of said convex surface defining means when said convex surface defining means is rolling along the top surface of said platform in the direction of said meat end, but being in a position scrap- the top surface of said platform in the direction of said peel end when said convex surface defining means is rolling along the top surface of said platform in the direction of said peel end.

4,202,078

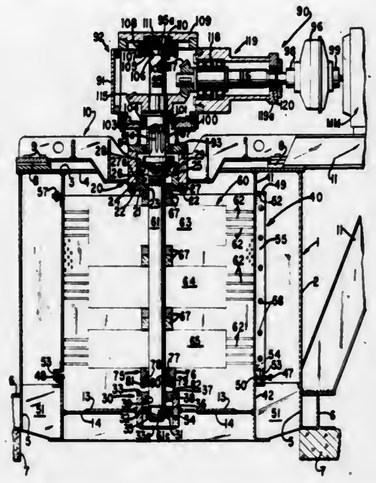
DEPITHER

Frank J. Malinak, Hamilton, Ohio, assignor to The Western States Machine Company, Hamilton, Ohio

Continuation of Ser. No. 609,186, Sep. 2, 1975, abandoned. This application Sep. 19, 1977, Ser. No. 834,789
Int. Cl.[2] D01B *1/30*; B02C *13/18*
U.S. Cl. 19—26 **13 Claims**

1. Apparatus for depithing fibrous vegetable material comprising: an upright enclosure supported by framework fixed to its base and having an opening in its top for an inflow of said material, a screening wall spaced inside said enclosure and forming the outer boundary of a zone for processing said material, a rigid frame structure supported detachably on the

enclosure top and bridging said opening, a rotary hammer assembly inside said screening wall, said assembly comprising a shaft having an upper end portion thereof extending through said frame structure and a multiplicity of hammers rotatable with said shaft for working material in said zone against said screening wall, means on said upper end portion for supporting said shaft in suspension from said frame structure so that said assembly will hang and tends to align itself in plumb position from said structure by gravity, means including an anti-friction bearing engaging a lower end portion of said shaft and fixing it



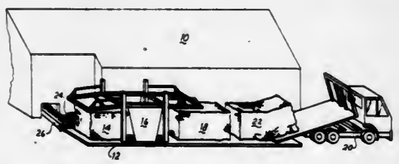
in plumbed position relative to said enclosure for holding said lower end portion radially only against displacement relative thereto, and drive means detachably engaged with the upper end of said shaft for rotating said hammer assembly, said drive means and said holding means being substantially free of the weight load of said hammer assembly, said lower end portion being detachable from said holding means so that, with said drive means detached from said shaft and said frame structure detached from said enclosure top, said hammer assembly can be removed and replaced, respectively, simply by lifting and lowering said frame structure.

4,202,079

COTTON GIN FEEDING SYSTEM

Jimmy F. Prather, P.O. Box 629, Brownfield, Tex. 79316

Division of Ser. No. 769,919, Feb. 18, 1977, Pat. No. 4,117,571.
This application Feb. 21, 1978, Ser. No. 879,609
Int. Cl.² D01G *7/00*
U.S. Cl. 19—64.5 **17 Claims**



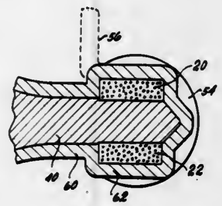
1. In a cotton gin feeding system having
an elongated slab,
a slab conveyer adjacent the slab, and
a feeder unit mounted for movement on the slab therealong,
the feeder unit forming means for feeding seed cotton on the slab onto the conveyer along the slab, THE IMPROVED STRUCTURE COMPRISING:
rick feeder means on each side of the feeder unit for feeding seed cotton on the slab onto the slab conveyer so that the feeder may be advanced in either direction against a rick of cotton on either side of the feeder unit on the slab,
a plurality of wheels on said feeder unit,
the axle of each of said wheels being parallel,
a first travel means for rotating at least one of said wheels in either direction, thereby
propelling the unit in either direction, and
a second travel means for propelling at least one of said wheels in either direction,
said second means for propelling being means for propelling at a substantially higher speed than said first means.

4,202,080

MASS SPECTROMETER FILTER

Robert A. Holzl, La Canada; Frederick P. Pickett, Sierra Madre, and James L. Lawrence, Jr., La Canada, all of Calif., assignors to U.T.I.-Spectrotherm Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 768,173, Feb. 14, 1977, abandoned, which is a division of Ser. No. 612,551, Sep. 11, 1975, abandoned.
This application Mar. 30, 1979, Ser. No. 25,568
Int. Cl.² H01J *9/14*
U.S. Cl. 29—25.18 **28 Claims**



1. A method for forming a mass filter for use in a mass spectrometer, comprising the steps of:
(a) forming a mandrel having precisely controlled dimensions, including electrode-forming surfaces and insulator positioning surfaces;
(b) polishing the electrode-forming surfaces;
(c) applying an adhesion-reducing coating to the surface of the mandrel;
(d) affixing insulators in contact with the mandrel at the insulator-positioning surfaces;
(e) heating the mandrel and insulators;
(f) reducing gaseous metal halide on the surface of the heated mandrel and insulators, whereby a layer of metal is deposited on the mandrel and insulators, adhering to the insulators and creating electrode surfaces on said electrode forming surfaces;
(g) cooling the mandrel, insulators, and deposited metal, whereby differences in thermal expansion cause release of the deposited metal from the mandrel;
(h) separating from the mandrel the deposited metal which is now bonded to the insulators forming a one-piece, self-supporting structure; and
(i) removing sufficient portions of the deposited metal overlying the insulators to create insulative paths electrically isolating the electrode surfaces created on the electrode forming surfaces.

4,202,081

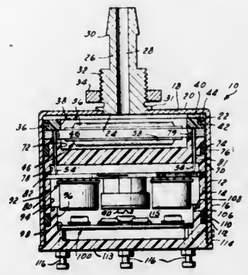
METHOD OF ASSEMBLING A PRESSURE SENSOR

Samuel A. Johnston, Fontana, Wis., assignor to Borg Instruments, Inc., Delavan, Wis.

Division of Ser. No. 693,436, Jun. 7, 1976, abandoned. This application Mar. 16, 1978, Ser. No. 887,049
Int. Cl.² H01G *5/18*
U.S. Cl. 29—25.41 **5 Claims**

1. A method of assembling a pressure sensor comprising the steps of:

securing an aneroid capsule and an electrical circuit electrically connected to the capsule to opposite sides of a first annular insulator;
securing a second annular insulator to the first annular insulator on the aneroid capsule side thereof;
placing the assembly of connected components in an open end of a can which has an opposite closed end having an aperture therein;



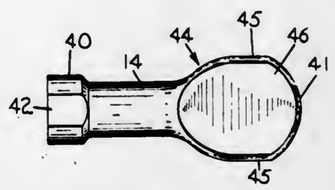
applying a vacuum to the aperture to suck the assembly into the can;
connecting electrical leads from the electrical circuit to electrical terminals which extend through a third annular insulator; and
securing the third insulator in the open end of the can.

4,202,082

METHOD OF MANUFACTURING SPHERICAL BEARINGS AND PARTS THEREFOR

Gordon T. Williams, Newtown, Conn., assignor to Incom International Inc., Pittsburgh, Pa.

Continuation of Ser. No. 628,027, Nov. 3, 1975, abandoned, which is a continuation of Ser. No. 564,924, Apr. 3, 1975, abandoned, which is a division of Ser. No. 524,388, Nov. 18, 1974, Pat. No. 3,897,616. This application Jul. 24, 1978, Ser. No. 927,201
Int. Cl.² B21D *53/10, 53/84*
U.S. Cl. 29—149.5 B **1 Claim**



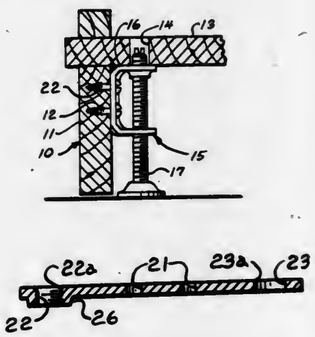
1. A method of manufacturing a spherical bearing rod end having an outer member, an intermediate member of yieldable material within and supported by said outer member and an inner race operationally supported by said intermediate member comprising preforming a rod end blank having a shank portion at one end thereof and a cylindrical section terminating in a hemispherical section at one other end thereof, flattening the cylindrical section between two punches and self aligning the cylindrical section between the two punches to cold form two enlarged faces, thereby keeping a longitudinal center line of the shank portion equidistant from the faces, said punches are so adapted to flatten the said cylindrical section such that the cylindrical section is compacted and densified in one axis and grows in a radial fashion in the perpendicularly disposed axis therefrom, said hemispherical section grows in a radial fashion to form a smoothly curved outer surface, said outward radial growth of the cylindrical section and hemispherical section form the rod end blank, a cold formed annular area has a controlled outer configuration wherein said rod end blank is provided with an outer surface with a curved section which blends with lesser curved sides or sections, said sides having formed thereon flattened areas wherein said flattened areas have a smooth surface finish, forming a bore partially through said faces thereby leaving a uniformly cold formed annular area to serve as the outer race member, and providing an annular lip at one end of the bore which is integral with the outer race member, inserting in said bore said intermediate member and said inner race member, by abutting one end of the intermediate member against the annular lip, and snapping and interlocking with mechanical interlocking means said intermediate member and inner race member within said bore to effect the bearing support of said inner race member within said intermediate member.

4,202,083

METHOD OF MAKING A FURNITURE LEVELING DEVICE

Kenneth H. Gutner, Highland Park, Ill. 60035

Filed Jun. 12, 1978, Ser. No. 914,396
Int. Cl.² B23P *13/00*
U.S. Cl. 29—150 **3 Claims**



1. A method of fabricating a leveling device for a furniture piece comprising stamping a first opening in a generally rectangular metal blank to provide a bore of predetermined diameter, stamping a second opening in said blank to provide a bore in diameter less than said predetermined diameter while extruding said blank thereabout to provide a depending metal throat, threading said second opening to provide at least three threads, shaping said metal blank into a generally C-shape to provide spaced arms containing said openings in aligned relation and installing a threaded bolt in said openings.

4,202,084

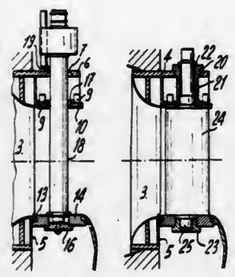
MACHINING PROCESS FOR THE IN SITU MOUNTING OF DISPLACEABLE GUIDE BLADES IN A SPIRAL TANK OF A HYDRAULIC MACHINE

Pierre Piguet, Onex, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Mar. 14, 1978, Ser. No. 886,397
Claims priority, application Switzerland, Mar. 23, 1977, 3639/77
Int. Cl.² B23P *15/00, 13/00*
U.S. Cl. 29—156.8 R **1 Claim**

1. A machining process for the in situ mounting of displaceable guide blades in a spiral tank of a hydraulic machine with each said blade including a medial blade having upper and lower mounting ends, comprising the steps of securing spaced-apart upper and lower bases to upper and lower rings of a related annulus of cross-pieces located in the tank, said upper ring including an extension disposed above and spaced from said upper base and extending toward the space in which the rotor of said machine turns, said extension having a roughly

cut hole therein, each of said two bases having a previously machined surface defining a hole therein, positioning said bases parallel to each other with the holes thereof in coaxial alignment with each other as well as with said roughly cut hole by manipulating said lower base relative said upper base, applying a separate centering piece within each of said holes of said spaced-apart upper and lower bases, placing the shaft of a machining device through said aligned roughly cut hole and the holes in said spaced apart upper and lower bases with said shaft engaging said two centering pieces as said centering



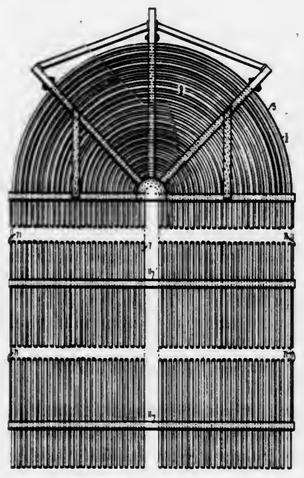
pieces provide a positioning template for said machining device, machining said roughly cut hole by means of a boring and milling tool attached to said machining device shaft, removing said boring and milling tool and shaft, removing said centering pieces, inserting bearing means within said spaced-apart machined holes in said extension and upper base, removing said lower base from said lower ring to allow inserting of said blade upper mounting means within said bearing means, inserting bearing means within said lower base, and reattaching said lower base to said lower ring with engagement of said lower base bearing means with said blade lower mounting end.

4,202,085

APPARATUS AND METHOD FOR INSTALLING ROWS OF U-SHAPED TUBES IN A HEAT EXCHANGER

Regis R. Vollmer, Penn Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1978, Ser. No. 965,017
Int. Cl.² B23P *15/26*
U.S. Cl. 29—157.3 C **11 Claims**



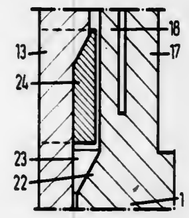
1. A support assembly for aligning and holding at least one row of U-shaped tubes having a U-bend portion and straight legs, said support assembly comprising a U-bend rack which aligns and holds the U-bend portion of at least one row of tubes in the relative positions in which the tubes are to be disposed in the heat exchanger, a plurality of leg racks which align and hold the legs of at least one row of U-shaped tubes in the relative positions in which the legs of the tubes are to be disposed in the heat exchanger, and means attached to said U-bend rack for lifting said support assembly and at least one row of tubes so that the legs of the tubes are generally vertically oriented when the support assembly and rows of tubes are lifted.

4,202,086

METHOD OF ASSEMBLING THE PARTS OF A HEAT EXCHANGER, AND A HEAT EXCHANGER THUS ASSEMBLED

Klaas Buit, Wassenaar, Netherlands, assignor to B.V. Neratoom, The Hague, Netherlands

Filed Aug. 11, 1978, Ser. No. 932,786
Claims priority, application Netherlands, Aug. 17, 1977, 7709088
Int. Cl.² B23P *15/26*
U.S. Cl. 29—157.3 R **5 Claims**



1. A method of assembling and sealing a pipe bundle within a shell vessel of a heat exchanger, which includes lowering a pipe bundle sub-assembly having a header at its upper end with an outside wall which telescopes into an open-topped vessel until a circumferential wall portion projecting from the outside wall of the header rests on an outer wall portion of the vessel and welding the two wall portions together to seal the header to the vessel, wherein the improvement comprises:

providing an outwardly extending circumferential projection around the periphery of the outside wall of the header below said circumferential wall portion and an inwardly extending circumferential projection around the inside wall of the vessel, the two projections being positioned so that the inward projection of the vessel is spaced a predetermined distance below the outward projection of the header when said wall portion of the header rests on said wall portion of the vessel so as to form an annular space between said two projections;

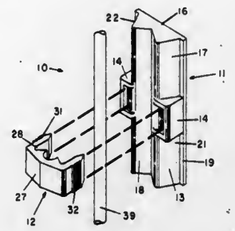
applying a deformable sealing ring around the periphery of the header below said outward projection or around the inside wall of the vessel above said inward projection prior to lowering the pipe bundle fully into the vessel, the sealing ring having a radial thickness less than the distance between the periphery of the header and the inside wall of the vessel to provide clearance for lowering the pipe bundle into the vessel and having a volume substantially equal to the volume of said annular space so that the sealing ring deforms to substantially fill said annular space and to hermetically seal between the header and the vessel when said circumferential wall portion of the header rests on said upstanding wall portion of the vessel.

4,202,087

DEVICE FOR RETAINING SETTING CABLES

Charles L. Wilderman, Grand Island, Nebr., assignor to Kelly Well Company, Inc., Grand Island, Nebr.

Filed Mar. 18, 1977, Ser. No. 778,912
Int. Cl.² A44B *21/00*; E21B *17/14*
U.S. Cl. 24—263 R **3 Claims**



1. A setting cable retainer device slidably securing alignment cables to a section used in well excavation shafts, the device comprising:

receiver guide means secured to the section, said guide means including a groove formed therein slidably receiving the cable; and

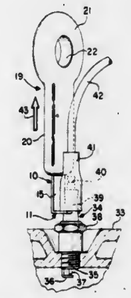
receiver strap means having an outer and an inner surface, said inner surface being generally W-shaped and including a concave passage complimentary to the groove formed in said guide means, the strap means coacting with said receiver guide means slidably securing the cable with the section between said receiver guide means and said retaining strap means, there said receiver guide means including a base element secured to the section and a pair of spaced housings secured to said base element each said housing having a securing means disposed therein for receiving said retaining strap means with the cable disposed between said housings, said base element and said retaining strap means, said securing means being a port formed in said housing and said retaining strap including a body unit means having a pair of spaced prongs projecting therefrom for insertion into said ports, each said port having a locking means formed therein to lock one of said prongs therein, said locking means comprising at least one serrated wall of said port and each said prong having a serrated wall to coact with and lockingly engage said serrated wall of said port.

4,202,088

SPARK PLUG BOOT PULLER

Laird H. Hansen, 407 N. Northwest Hwy., Palatine, Ill. 60067

Filed Sep. 7, 1978, Ser. No. 940,432
Int. Cl.² B25B *27/14*
U.S. Cl. 29—280 **2 Claims**



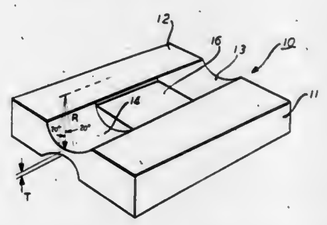
1. A tool for pulling the lead wires from engine spark plugs comprising an L-shaped steel core, said core having a flat base portion with a semi-circular cut-out therein flanked on each side by generally parallel side fingers, said core having a flat shank portion with a plurality of holes therethrough, a flexible plastic electrically insulating handle molded over and around the flat shank portion of the steel core and covering and filling the holes so that there is an interlock between the steel core and the flexible plastic handle, said flexible plastic handle having a shank portion extending beyond and in alignment with the steel core shank and said flexible plastic handle terminating in a flat ring hand engaging portion.

4,202,089

SPLAT-COOLED INSTRUMENT FLEXURE AND METHOD TO FABRICATE SAME

Bo Hans G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jun. 2, 1978, Ser. No. 912,231
Int. Cl.² B22D *11/126*
U.S. Cl. 29—527.6 **2 Claims**



1. The method of making a high strength flexure comprising the steps of:

heating a source of metal to form a molten material,

placing a quantity of said molten material on a rapidly moving water cooled wheel so as to form a sheet of metallic glass resulting from the rapid cooling of said molten material in contact with said water cooled wheel, and

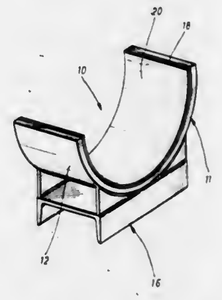
machining said sheet of metallic glass into flexures having two flat portions connected at each end by a necked down portion of metallic glass material.

4,202,090

LINED CURVILINEAR SUPPORT CRADLE AND A METHOD FOR MANUFACTURING THE SAME

James S. Cook, Friendswood, Tex., assignor to Econotherm Insulation Company, Inc., Houston, Tex.

Filed Mar. 20, 1978, Ser. No. 890,541
Int. Cl.² F16L *3/00*
U.S. Cl. 29—417 **18 Claims**



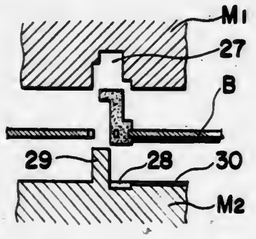
18. A method for making a lined curvilinear support cradle comprising the steps of:

attaching at least one mounting bracket to a pipe to thereby define a combination;

heating the combination to a temperature between 180° F. and 215° F. to thereby improve its bonding capability;

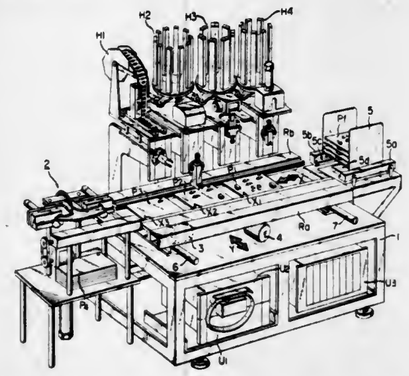
spinning the heated combination along the longitudinal axis of the pipe within the speed range between 50 and 460 revolutions per minute;
cleaning the inner surface of the spinning pipe to thereby prepare the surface for a primer;
applying to the inner surface of the spinning pipe a layer of urethane primer having a layer thickness of approximately five mils;
heating a polyurethane elastomer to a temperature between 180° F. and 200° F. to thereby improve its fluidity and bondability;
bulk injecting the heated elastomer into the spinning heated pipe to thereby apply on the inner surface of the pipe a centrifugally spin casted coating of the elastomer having a coating thickness between ½ and ¾ inch;
heating the coating of polyurethane elastomer at a temperature of approximately 215° F. for approximately eighteen hours to thereby cure the elastomer;
transversely dividing the pipe into shorter segments of pipe; and
dividing the pipe along its longitudinal axis into two pieces to thereby create first and second lined curvilinear support cradles from each said shorter segment.

4,202,091
METHOD OF MANUFACTURING A HYBRID FRAMEWORK CONSISTING OF METALLIC PLATE AND PROJECTION MADE OF SYNTHETIC RESIN
Masanori Ohnishi, Katano, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Kodama, Japan
Division of Ser. No. 664,037, Mar. 4, 1976, Pat. No. 4,075,395. This application Nov. 29, 1977, Ser. No. 855,907
Int. Cl.² B22D *11/126*; B32B *9/04*
U.S. Cl. 29—527.1 **1 Claim**



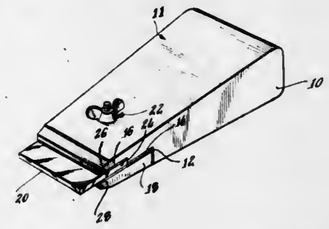
1. A method of manufacturing a hybrid framework assembly for use in electrical or mechanical devices as a substratum for supporting and actuating various components incorporated in said devices, said hybrid framework assembly including a base plate having therein at least one first opening, and at least one projection mounted on said base plate and made of synthetic resin and having the base thereof attached to one surface of said base plate and having a cross-section larger than said first opening and projecting from said one surface of said base plate over said first opening, said projection having a constricted portion which is integral with said projection and extending from said base through said first opening, and a mass of synthetic resin integral with the end of the constricted portion and tightly engaged with the surface of said base plate and at least partially covering said first opening for tightly holding said projection on said base plate, said manufacturing method comprising the steps of:
(a) forming said first opening in said base plate;
(b) forming in said base plate a second opening adjacent said first opening;
(c) placing against said one surface of said base a first molding block having a plane surface and at least one first recess formed in said plane surface, said first recess having a configuration for molding said projection and having an aperture opening out of said first recess through said plane surface which has a cross-sectional area larger than that of said first opening in said base plate, said first molding block being placed at a position to cover said first opening with said aperture of said first recess;
(d) at least a portion of said first recess a being aligned with said second opening;
(e) placing against the other surface of said base a second molding block having a plane surface with at least one second recess formed in said plane surface, said second recess having a configuration for molding said mass and having an aperture opening out of said second recess through said plane surface which has a cross-sectional area at least partially covering said first opening in said base plate and overlapping the edge of said base plate around at least part of said first opening, thereby forming a cavity by said first and second recesses extending through said first opening in said metallic base plate;
(f) providing said second molding block with a molding projection which extends through said second opening and is aligned with and extends into said first recess when said molding blocks are against said base plate, said molding projection having a cross-sectional shape for leaving a space between said molding projection and the edge of said second opening around the periphery of said opening;
(g) injecting molten synthetic resin from a cavity gate in at least one of said molding blocks into said first and second recesses and also in said openings in said base plate for entirely filling the cavity with said molten synthetic resin for forming said projection and integrally forming within said second opening, adjacent to said projection, a frame member of synthetic resin having a hole therein; and
(h) removing said first and second molding blocks from said base plate, leaving said projection firmly fixed on said base plate.

4,202,092
AUTOMATIC PART INSERTION MACHINE
Hatsuhiko Shibasaki; Junishi Omura, both of Ibaraki; Tetsuo Tanabe, Nagaokakyo, and Kazumi Takamori, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 833,569, Sep. 15, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,202
Claims priority, application Japan, Sep. 17, 1976, 51-112354; Sep. 17, 1976, 51-112355; Sep. 17, 1976, 51-112356; Sep. 17, 1976, 51-112357; Sep. 17, 1976, 51-112358; Sep. 17, 1976, 51-112359
Int. Cl.² H05K *3/30, 13/04*
U.S. Cl. 29—741 **10 Claims**



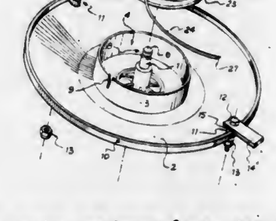
1. An automatic part insertion machine, for inserting parts having leads extending therefrom in holes of printed circuit boards comprising:
(a) a pair of parallel conveyor rails so arranged as to support a plurality of printed circuit boards in one row extending in a lengthwise direction,
(b) a first control means for simultaneously displacing said pair of parallel conveyor rails in a direction transverse to said lengthwise direction,
(c) a second control means for simultaneously displacing said plurality of printed circuit boards in the lengthwise direction,
(d) a device for feeding one by one printed circuit boards upon which are to be mounted electric parts onto said pair of parallel conveyor rails from one end thereof,
(e) a device for stacking one by one the printed circuit boards fed thereto from the other end of said pair of parellel conveyor rails,
(f) a plurality of part feeding devices arranged in one row in said lengthwise direction along one side of said pair of parallel conveyor rails for feeding different types of parts to respective printed circuit boards on said pair of parallel conveyor belts and inserting the leads of said fed parts into corresponding predetermined insertion holes of said printed circuit boards, and
(g) a numerical control system for controlling said first and second control means so as to cause said plurality of printed circuit boards to move along said pair of parallel conveyor rails and to stop when one of said plurality of printed circuit boards is adjacent a specified part feeding device, thereby positioning said one printed circuit board with respect to said specified part feeding device and to actuate said specified part feeding device to cause the leads of a corresponding part to be inserted into predetermined holes of said one printed circuit board.

4,202,093
LOW COST, RENEWABLE SCRAPING IMPLEMENT
Martin A. Wallerstein, 29 Oakwood Ave., Norwalk, Conn. 06851
Filed Mar. 13, 1978, Ser. No. 885,885
Int. Cl.² A47L *13/08*
U.S. Cl. 30—169 **3 Claims**



1. A hand held renewable scraping implement comprising:
a unitary, wedge shaped handle member having a pair of opposed sides converging toward each other at one end thereof, the opposite end of said sides being joined together to form an essentially flat working surface,
said handle member including first and second recessed areas therein adjacent said one end of said handle member,
said first recessed area extending deeper into said handle member than said second recessed area and extending the entire length of one edge of said handle member,
said first recessed area including a first abutment wall opposing said one edge and extending essentially parallel to the latter,
said second recessed area being disposed between said working surface and said first recessed area and adjacent the latter, said second recessed area extending to one of said opposed sides of said handle member and including a second abutment wall opposing said one edge and extending parallel to the latter;
a retaining member adapted to be received within said second recessed area and extending between the latter and said one edge of said handle member in overlaying opposed relationship to each of said recessed areas,
said handle member and said retaining member including aligned openings therein;
a polygonal scraping element comprising a sheet of glass having a plurality of scraping edges, said scraping element being received within said first recessed area between said handle member and said retaining member with one of said scraping edges thereof being disposed beyond said one edge of said handle member and extending in a direction essentially parallel with said working surface, and another of said scraping edges in abutment with said first abutment wall along essentially the entire length of the latter;
first and second resilient pads respectively interposed between said scraping element and said handle member, and between said scraping element and said retaining member; and
releasable securing means extending through said aligned openings in said handle member and said retaining member to urge the latter toward the former whereby to clamp said scraping element.

4,202,094
ROTARY MACHINE ATTACHMENT
Irene Kalmar, 49 Young St., Sylvania Heights, New South Wales 2224, Australia
Filed Jun. 28, 1978, Ser. No. 920,127
Claims priority, application Australia, Jul. 5, 1977, PD0711
Int. Cl.² B26B *27/00*; A01D *55/18*
U.S. Cl. 30—276 **5 Claims**



1. A grass cutting attachment for a rotary machine, said attachment comprising a shaft adapted at one end thereof to be rotated by said rotary machine; a cup shaped body coaxial with said shaft and secured thereto intermediate the ends thereof; said body having an interior cylindrical flange coaxial with said shaft and defining an annular cavity adjacent the other end of said shaft, said flange having a V-shape slit therein substantially parallel to said shaft and said body having an aperture therein at its periphery; a bobbin comprising a reel having a central tube with two parallel annular discs located one at each end of said tube, said reel being located within said annular cavity; means to secure said bobbin to said shaft; a length of filament having a portion thereof wound around said tube between said discs; and a flexible cover strip having an opening therein and wound around said filament portion located on said tube; the remainder of said filament passing through said opening, being clamped in said V-shaped slit and passing through said aperture whereby one end of said filament extends radially away from said shaft under the action of a centrifugal force created by said rotation.

4,202,095
STEAK KNIFE
Hilaire Gingras, C.P. 1328 475 Cote Joyeuse, Saint-Raymond, Cte Portneuf, Quebec, Canada (G0A 4G0)
Filed Dec. 7, 1977, Ser. No. 858,781
Int. Cl.² B25G *1/00*
U.S. Cl. 30—340 **1 Claim**

1. A steak knife for table use comprising a single-piece blade

and shank, made of flat stock, said blade being elongated, having a blunt outer end, an inner end joined to the inner end of said shank, a substantially straight top edge and a substantially straight bottom cutting edge, said straight top edge and said bottom cutting edge being substantially parallel to each other, the cutting edge being provided with serrations throughout its length and extending from the outer end to the inner end of said blade, said shank being elongated with substantially parallel top and bottom straight edges which are closer together than the edges of the blade, said shank bottom edge merging with said cutting edge and making an angle of about 40 degrees with an imaginary straight line projecting from, and aligned with, said cutting edge and an elongated handle fixed to and surrounding the outer end portion of said shank, said handle having its longitudinal axis substantially co-axial with the longitudinal axis of said shank.

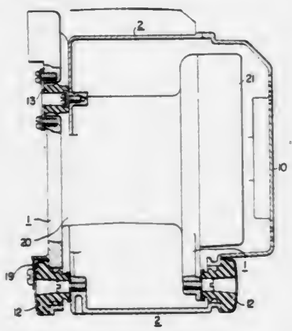


4,202,096

PORTABLE CHAIN SAW

Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Sep. 8, 1978, Ser. No. 940,684
Claims priority, application Japan, Apr. 24, 1978, 53-48480
Int. Cl.[2] B27B *17/00*
U.S. Cl. 30—381 **2 Claims**



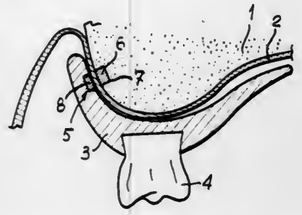
1. A portable chain saw comprising a drive-part assembly including an engine, a saw chain and the like, and a rear handle, and hollow, tubular, resilient members connecting said assemblies to each other, wherein the improvement resides in an arrangement with said resilient members being threadably connected to a side of said drive-part assembly in cantilever fashion through screws penetrating hollow portions of the resilient members, with said supporting assembly being fitted and held in place on the outer peripheries of tubular portions of said resilient members in a manner exposing one side of said supporting assembly, and with a side cover supporting a recoil starter fitted to said one side of said supporting member unitarily with the supporting assembly.

4,202,097

PROCESS AND DEVICE FOR RETAINING A PROSTHETIC ELEMENT ON AN OSSEOUS PART

Jean-Antoine Erlich-Deguemp, 20 rue de Vintimille, 75009 Paris, France

Filed Feb. 28, 1977, Ser. No. 772,999
Claims priority, application France, Feb. 27, 1976, 76 05598
Int. Cl.[2] A61C *13/00*
U.S. Cl. 433—189 **18 Claims**



1. An improved magnetic prosthesis-retaining device adapted for implantation in a cavity formed in an osseous part for retaining a prosthetic member having a magnetic element, the device comprising:

(a) at least one magnetic mass;

(b) a seating structure including keying means engageable with the wall of the cavity for firmly securing the magnetic mass seating structure fast to the osseous part, said seating structure constituted by a plate element having at least two stable positions, that is, a retracted position permitting its introduction into the cavity in the bone and an extended position for keying engagement with the bone after insertion of the plate in the bone cavity; and

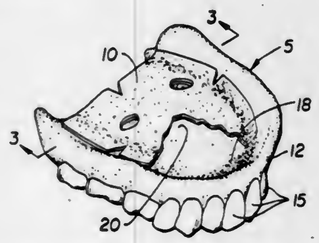
(c) means on said seating structure for retaining the at least one magnetic mass fixed thereto such that the sealing structure and the magnetic mass can be fixed against displacement relative to the osseous part.

4,202,098

DENTAL PLATE CUSHION

Leonard Russo, 177 Canal St., San Rafael, Calif. 94901

Filed Feb. 12, 1979, Ser. No. 11,256
Int. Cl.[2] A61C *13/00*
U.S. Cl. 433—168 **11 Claims**



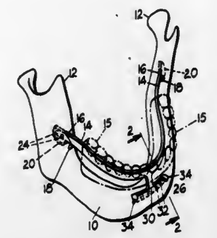
1. A denture cushion consisting essentially of moistened cellulose filter sheet material, inserted onto a mouth confronting portion of the denture, whereby when the wearer inserts the denture, with filter sheet material so placed, in his mouth and bites down to seat the dentures on his gums, the cellulose compresses and through suction causes the denture to adhere in its seated position on said gums and eliminates the need for conventional denture adhesives.

4,202,099

DENTURE SUPPORT FRAME

Ralph Roberts, 920 Rio Dell Ave., Rio Dell, Calif. 95562

Filed Sep. 5, 1978, Ser. No. 939,122
Int. Cl.[2] A61C *13/00*
U.S. Cl. 433—176 **5 Claims**



1. A denture support frame for lower dentures comprising

(a) a rigid bar arranged removably to support an artificial denture thereon,

(b) said bar having front and rear portions and being curved to the shape of the lower jaw bone,

(c) said bar having rear ramus implant portions,

(d) and front support means on said bar arranged for engagement with the jaw bone,

(e) each of said ramus implant portions comprising a tip end,

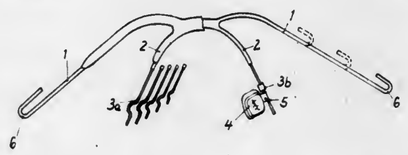
(f) at least one of said ramus implant portions at said tip end including a laterally extending flattened portion arranged to be inserted in a correspondingly sized lateral opening cut in the ramus portion of the jaw bone.

4,202,100

ORTHODONTIC APPLIANCE

Rolf Förster, Pforzheim, Fed. Rep. of Germany, assignor to Firma Bernhard Förster, Pforzheim, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,379
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2648990; Oct. 5, 1977, 2744740
Int. Cl.[2] A61C *7/00*
U.S. Cl. 433—7 **22 Claims**



1. An orthodontic appliance for exerting a correcting force on at least one tooth of a patient, comprising an oral elongated inner arch, at least one tooth connecting sleeve adapted to be connected to a tooth of a patient and forming a guide for said inner arch, and

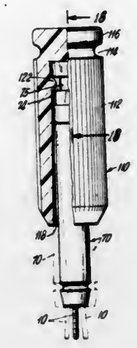
at least one clamping sleeve which resiliently clamps itself on said inner arch, and engages said tooth connecting sleeve, said clamping sleeve having a radially inwardly tapering longitudinal slot, which is adapted to receive an implement, which implement is operable to widen said slot, so that said clamping sleeve is slidable along said inner arch.

4,202,101

DENTAL ANCHOR AND A PLASTIC SHANK FOR HOLDING SAME

Bernard Weissman, New York, N.Y., assignor to Ipco Hospital Supply Corporation, White Plains, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,173
Int. Cl.[2] A61K *5/02*
U.S. Cl. 433—225 **30 Claims**



16. A combination of a dental anchor, a shank holding said dental anchor, and a hand driver holding and turning said shank, said combination comprising:

said dental anchor including at least one threaded section and one manipulating end section disposed along a longitudinal axis of said dental anchor and joined together by a frangible reduced thickness portion so that said sections can be severed after being threaded into a channel in a tooth;

said shank including a longitudinal opening extending inwardly from one end thereof, said shank opening receiving at least said manipulating end section therein;

said hand driver including an opening extending inwardly from one end thereof, said hand driver receiving an opposite end of said shank therein, said hand driver including first means for rotating said shank and second means for releasably retaining said shank within said hand driver with said second means permitting a pivotal relationship between said shank and said hand driver when said dental anchor is being threaded into the channel in the tooth; and

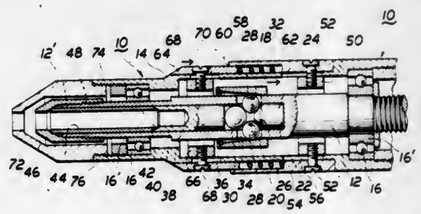
said hand driver being fabricated from a plastic material.

4,202,102

DEVICE FOR OPENING AND CLOSING A CHUCK FOR A DENTAL HANDPIECE

Takasuke Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Mfg., Co., Ltd., Tochigi, Japan

Filed May 12, 1978, Ser. No. 905,397
Claims priority, application Japan, May 12, 1977, 52-54932
Int. Cl.[2] A61C *9/00*
U.S. Cl. 433—127 **3 Claims**



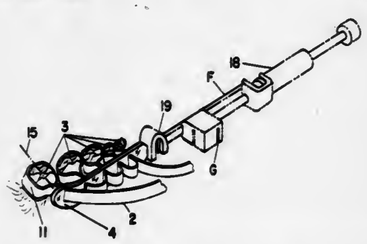
1. A device for opening and closing a chuck for a dental handpiece comprising: a housing having a conically tapering

end portion; an output shaft journalled for rotation in said housing, said output shaft having a hollow axial portion therein and a plurality of openings formed at equally spaced portions around said output shaft; a truncated cone-shaped column positioned in the innermost end of said hollow portion, said column having a diameter equal to that of said hollow portion, and a length extending from the innermost end of said hollow portion to said openings in said output shaft; a plurality of driving balls, each rotatably positioned in one of said openings in said output shaft; a driven ball rotatably positioned in said hollow portion of said output shaft to abut against said driving balls such that a portion of each of said driving balls protrudes from its corresponding opening; a ball pushing sleeve mounted for axial displacement on said output shaft, said sleeve having an outwardly tapering inner periphery and a means around said periphery adjacent to an outer orifice thereof to prevent disengagement from said output shaft, said tapering inner periphery contacting said driving balls; a cylindrical pusher slidably positioned in said hollow portion of said output shaft to abut against said driven ball, said pusher including a cylindrical hollow and also a tapering orifice; a chuck mounted in said hollow portion of said output shaft for displacement axially within said hollow portion and abutting against said cylindrical pusher; a cap mounted around the outermost end of said output shaft; a rear control sleeve means mounted on said housing for axial displacement thereon, said rear sleeve means including first lugs positioned within said housing for contacting one end of said ball pushing sleeve upon the displacement of said rear control sleeve means in a first direction; a front control sleeve means mounted on said housing for axial displacement thereon, said front control sleeve means including second lugs positioned within said housing for contacting the other end of said ball pushing sleeve upon displacement of said front control sleeve means in a second direction opposite to said first direction; and spring means positioned between said rear and front control sleeve means for biasing said rear control sleeve means in said second direction and for biasing said front control sleeve means in said first direction; wherein the movement of said front and rear control sleeve means causes said first and second lugs to engage corresponding ends of said pushing sleeve and thereby move said pushing sleeve in said first and second directions, thereby moving said driven balls into and out of said holes in said output shaft whereby said driven ball is moved axially in said hollow portion of said output shaft, thereby opening and closing said chuck.

4,202,103
MATRIX BAND GUIDE AND MATRIX RETAINER DEVICE

Michael E. Zall, Two Yorkshire Dr., Suffern, N.Y. 10901, and Stephen Silverhardt, 1436 Marshall La., Meadowbrook, Pa. 19046

Filed Feb. 24, 1977, Ser. No. 771,616
Int. Cl.² A61C 5/12
U.S. Cl. 433—153 **29 Claims**

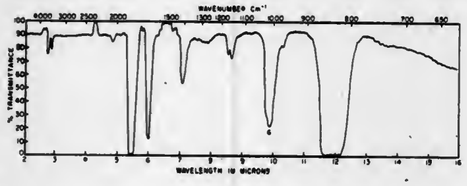


1. A matrix band guide for use in simultaneously applying a matrix band to a plurality of teeth comprised of a flexible elongated member having a plurality of slots, wherein the elongated member is of sufficient length and sufficient width to allow placement of the guide against the teeth and to guide the matrix band around the teeth, and wherein the slots extend a major portion of the width of the member and are of a width, height and spacing sufficient to permit the looping of the matrix band through the slots to form a plurality of loops for binding engagement with the teeth, whereby when the matrix band is drawn into binding engagement with the teeth the elongated member and the matrix band substantially conform to the taper and curvature of the teeth.

4,202,104
HCL OR DCL CHEMICAL LASER USING LASER INDUCED CHEMISTRY

James A. Merritt, Pulaski, Tenn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 24, 1978, Ser. No. 927,324
Int. Cl.² H01S 3/223
U.S. Cl. 331—94.5 G **3 Claims**



1. A method for the production of nascent chlorine by irradiating $COCl_2$ in admixture with H_2/D_2 to produce HCl or DCl in an excited vibrational state which lases, said method comprising:

(i) preparing a homogeneous admixture of $COCl_2$ and H_2/D_2;

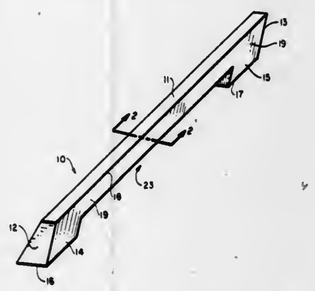
(ii) metering said admixture of $COCl_2$ and H_2/D_2 into a properly conditioned laser cell to achieve a predetermined pressure from about 25 to about 200 torr; and

(iii) irradiating said admixture of $COCl_2$ and H_2/D_2 for a predetermined time period with the P_{54} line of a cw CO_2 multiline laser operating at a predetermined power level to effect dissociation of $COCl_2$ to produce nascent chlorine atoms which immediately react with H_2/D_2 present to produce HCL or DCl in an excited vibrational state which lases.

4,202,105
BRUSH GUIDE

Kenneth A. Hogle, 15 Golden Ct., Cromwell, Conn. 06416

Filed Dec. 26, 1978, Ser. No. 972,999
Int. Cl.² B43L 7/00; A46B 17/00
U.S. Cl. 33—483 **7 Claims**



1. A device for guiding a brush to provide for the painting of a continuous line comprising:

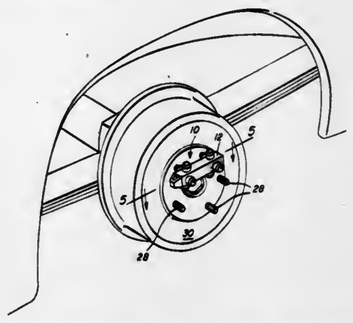
an elongated body, said body having a trapezoidal cross-sectional shape with parallel top and bottom surfaces and a pair of flat side surfaces interconnecting said top and bottom surfaces, said body top surface having a smaller area than said body bottom surface, a first continuous linear edge of said top surface defining a brush guide, a first of said body side surfaces extending from said first edge to a first edge of said body bottom surface, said first side and bottom surfaces meeting at an angle of greater than 90° whereby said top surface first edge is vertically offset from said bottom surface first edge; and

a pair of spaced apart legs extending from said body bottom surface, said legs defining an elongated space therebetween, said legs having the same cross-sectional shape as said body and having side surfaces which define extensions of said body side surfaces, said device being supported on flat bottom surfaces of said legs and first edges of bottom surfaces of said legs being vertically offset from said body top surface first edge by a greater distance than said body bottom surface first edge.

4,202,106
BOLT PATTERN GAUGE

James D. Olson, 831 Island Way, Clearwater, Fla. 33515

Filed Jan. 3, 1979, Ser. No. 788
Int. Cl.² G01B 3/30, 3/48
U.S. Cl. 33—168 R **10 Claims**



1. A bolt pattern gauge for accurately determining the distance between adjacent mounting holes on a vehicular wheel or adjacent studs on a hub of a vehicle, said gauge comprising an elongated body having a pair of laterally protruding extensions spaced longitudinally along said body, said extensions being adapted to engage adjacent wheel mounting studs on a vehicle and adapted to engage adjacent mounting holes on a vehicular wheel, each of said extensions including a free end insertable into one of said mounting holes and a hollowed interior for disposition over one of said studs.

4,202,107
REMOTE AXIS ADMITTANCE SYSTEM

Paul C. Watson, Assembly Associates, P.O. Box 45, Arlington Heights, Mass. 02175

Filed Oct. 23, 1978, Ser. No. 953,492
Int. Cl.² G01B 5/25
U.S. Cl. 33—169 C **12 Claims**

1. A remote axis admittance system comprising,

a first support means for receiving an actuating force,

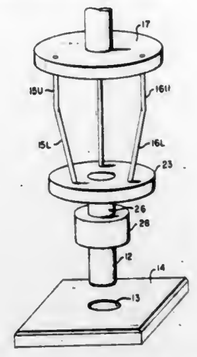
compliance means secured to said first support means and having a first portion defining a translation region and a second portion defining a rotation region,

said first and second portions being contiguous,

a second support means coupled to said first support means by said compliance means for supporting part gripping means,

and part gripping means carried by said second support member,

said translation region responding to a force developed about a compliance center or axis embraced by said part gripping means by deflecting in a direction producing translation of said part gripping means and said rotation

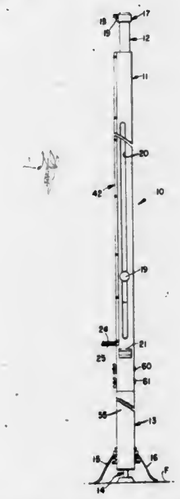


region responding to a moment by producing rotation about said compliance center or axis.

4,202,108
APPARATUS AND METHOD FOR MARKING POINTS AND LINES DURING BUILDING CONSTRUCTION

Daniel Adams, Jr., 812 N. Herman St., and Chester W. Craig, Sr., 504 Vann St., both of Goldsboro, N.C. 27530

Filed Aug. 4, 1978, Ser. No. 931,391
Int. Cl.² G01B 3/08
U.S. Cl. 33—189 **17 Claims**



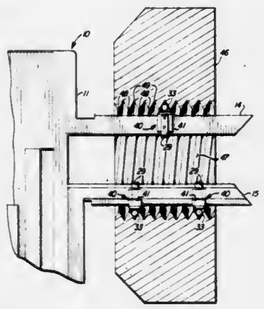
1. An apparatus for marking points and lines on a ceiling surface, comprising: a first layout tool having a plurality of elongate members adjustably secured together for axial extension relative to one another to different lengths for engagement between a ceiling and floor; a plumb rod suspended from the tool and having a pointer visible from externally of the tool for indicating when the tool is vertical in a first plane; a level mounted on the outside of the tool for indicating when the tool is vertical in a second plane perpendicular to the first plane; pointers at the top and bottom ends of the tool, for alignment of the pointer at the bottom end of the tool with an existing line or point on a floor of the building, whereby another point in vertical alignment with the line may be marked on the ceiling at the pointer on the top end of the tool, after the tool has been made vertical in both planes; chalk line holding means on the top end of the layout tool for holding one end of a chalk line in alignment with the pointer at the top of the tool; a chalk line

carried by the layout tool and held by the chalk line holding means; and a second tool for holding the other end of the chalk line, whereby the chalk line may be stretched taut between the tools for marking a line on the ceiling, said second tool comprising a plurality of elongate members adjustably secured together for axial extension relative to one another to different lengths for engagement between a ceiling and floor, said tools enabling a single workman to mark points and lines on a ceiling in vertical alignment with points and lines on a floor while the workman is standing on the floor, and without requiring the use of ladders and the like.

4,202,109
THREAD GAUGE

Thomas C. Schasteen, 9305 205th Ave. East, Sumner, Wash. 98390

Continuation of Ser. No. 589,043, Jun. 23, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,241
Int. Cl.[2] G01B *3/38, 3/40*
U.S. Cl. 33—199 R **3 Claims**



1. In a thread gauging device for measuring the pitch diameter of helical threads and for self-alignment with the pitch of said threads:

(a) a caliper including

(i) a frame,

(ii) a fixed blade element extending from said frame,

(iii) a movable blade element carried by said frame and parallel to said fixed blade element and movable relative thereto while maintaining said parallel relation, and

(iv) a scale for indicating the degree of separation between said blade elements;

(b) a pair of thread gauge attachments carried by one of said blade elements in longitudinally spaced relation along that blade element;

(c) a single thread gauge attachment carried by the other of said blade elements substantially at the middle of a longitudinal extent corresponding to the spacing of said thread gauges attached to the other of said blade elements;

(d) a base element included in each thread gauge attachment and in sliding engagement with the blade element associated therewith;

(e) each of said base elements being formed with a groove which slidably receives one of said blade elements;

(f) spring means on each of said base elements cooperating with the blade on which that base element is mounted to maintain that base element in sliding relation to the blade element; and

(g) a contact member carried by each of said base elements and receivable in thread grooves;

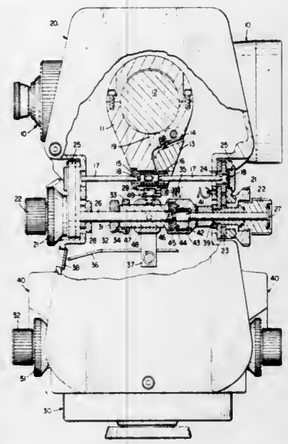
(h) said base elements being reversably positionable on said blade elements such that a pair said contacts on one blade element and one of said contacts on the other blade element may alternatively face toward or away from each,

the contact members of the pair of base elements on one thread gauge attachment being engaged with thread grooves in spaced relation with respect to the contact member in the other of said thread gauge attachments which is received in a thread groove between the thread grooves engaged by the pair of contact members on the other of said thread gauge attachments.

4,202,110
THEODOLITE TANGENT SCREW SYSTEM

J. Peter E. Kool, Succasunna, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed May 18, 1979, Ser. No. 40,365
Int. Cl.[2] G01C *1/00*
U.S. Cl. 33—299 **9 Claims**



1. In a geodetic instrument comprising a stationary base, an enclosed alidade standard rotatable on said base about a central vertical spindle, and a telescope rotatable in said standard on a transverse horizontal axle, an improved system for effecting precise, minute displacement of said alidade standard or telescope, said system comprising:

(a) an arm member associated with said spindle or axle and extending therefrom in a direction transverse to the axis of said spindle or axle, said arm member being arranged to normally pivot freely about said axis;

(b) locking means associated with said arm member for effecting firm engagement between said arm member and said spindle or axle;

(c) means communicating between said locking means and the exterior of said alidade standard for transmitting operating force to said locking means;

(d) a shaft member supported for rotation in said alidade standard and extending in a direction transverse to said axis and said arm member, said shaft member being situated proximate the distal end of said arm member and having at least one of its ends communicating with the exterior of said alidade standard;

(e) externally threaded advancing means encompassing said shaft member in the zone proximate said arm member and being arranged for rotation therewith;

(f) drive means threadedly engaging said advancing means and being displacable axially of said shaft member upon rotation of said advancing means;

(g) means linking said drive means with said arm member distal end to thereby transfer said drive means displacement to said arm member and effect pivotal displacement of said arm member and engaged spindle or axle about the axis thereof;

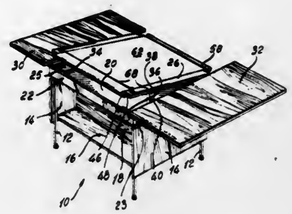
(h) a first control member affixed to said communicating end of said shaft member whereby rotary motion may be imparted to said shaft member; and

(i) a second control member arranged coaxially with said first control member and engaging said means communicating with said locking means whereby operating force may be applied for transmission to said locking means.

4,202,111
DRAFTING APPARATUS

Peter V. Bachley, 473 St. Helene St., Apt. 211, Longueuil, Quebec, Canada

Continuation-in-part of Ser. No. 696,386, Jun. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 599,966, Jul. 29, 1975, abandoned. This application Nov. 11, 1977, Ser. No. 850,677
Int. Cl.[2] B43L *13/02*
U.S. Cl. 33—444 **1 Claim**



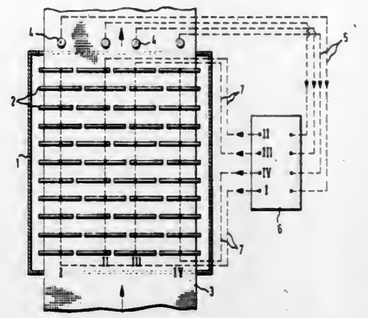
1. A drafting table comprising a flat board and a flexible member travelling about the board, the board having two straight parallel edges, an idler roller at each parallel edge and at right angles to the travel of the flexible member, the flexible member passing about the board over the idler rollers and kept taut, the flexible member being such that a drawing can be fastened thereto and can be conveyed about the board, the flexible member including parallel, spaced-apart end edges, and spaced-apart, parallel elastic tension members extending between the end edges at right angles thereto for tensioning the flexible members, wherein the resilient tension members apply tension over different longitudinal areas of the flexible member, compensating for the different conditions affecting the flexible member, the tension members being spaced further apart near the center of the flexible member than they are near the longitudinal edges thereof, a plurality of additional idler rollers below the board and parallel with the idler rollers at the edges of the board, the flexible member being threaded through the additional rollers whereby additional drawing surface area is provided by the flexible member.

4,202,112
PROCESS FOR THE UNIFORM DYEING OF TEXTILE MATERIAL WEBS WITH THE AID OF A UNIFORM PRE-DRYING

Hans-Ulrich von der Eltz, Frankfurt am Main, and Siegfried Glander, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 8, 1977, Ser. No. 858,897
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2655972
Int. Cl.[2] F26B *3/28*
U.S. Cl. 34—4 **9 Claims**

1. A process for the uniform pre-drying of damp textile material webs in an infrared pre-drying tunnel, subsequent to a continuous wet treatment operation in the dyeing or finishing of fiber materials, including: measuring a moisture content remaining on said textile material web, wherein, in the course of a material run, immediately following an infrared pre-drying tunnel for the continuously fed material, several measuring positions are arranged transversely to the transport direction of said material; determining the residual moisture at these positions on said textile material web, by means of a contactless method, whereby measuring values in form of pulses are obtained; transmitting said measuring pulses with low inertia to a control element of the preceeding pre-dryer; and controlling the heating power of several separately controllable heating fields, distributed across the width of said drying tunnel, said

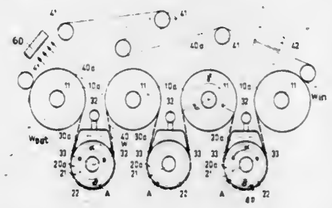


controlling being in a correspondent relationship with measured values of the moisture obtained at a measuring position.

4,202,113
PAPER MACHINE DRYING SECTION AND METHOD FOR OPERATING SAME

Matti Kankaanpaa, Espoo, Finland, assignor to Valmet Oy, Finland

Filed Apr. 3, 1978, Ser. No. 892,961
Claims priority, application Finland, Apr. 4, 1977, 771056
Int. Cl.[2] F26B *3/24*
U.S. Cl. 34—23 **16 Claims**

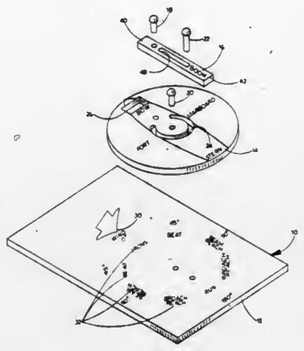


1. In a method for operating a paper machine drying section having drying cylinders arranged in two horizontal main rows, with said drying cylinders including at least one cylinder group equipped with a drying fabric means forming a loop and lapping the drying cylinders of said cylinder group in zig-zag fashion so that the cylinders of one row are outer cylinders situated outside and the cylinders of the other row are inner cylinders situated inside said loop, and for drying a continuous fibrous web travelling together with and supported by said fabric means at said one cylinder group, said fibrous web during its travel along said cylinder group having portions in direct contact with the outer cylinders and portions separated from the inner cylinders by said fabric means, said inner cylinders being formed with outwardly opening voids in their outer surfaces, said outer surfaces being non-perforated, the step of creating in said voids by suction means applied externally to said inner cylinders a pressure lower than the pressure at the outer surface of the portions of said web travelling along said inner cylinders while separated therefrom by said fabric means, thus providing a pressure differential urging said web against said drying fabric means at said inner cylinders to prevent detachment of said web from said drying fabric means.

4,202,114
SAILING TRAINING DEVICE

Steven Berson, 25 Marsh St., Newport, R.I. 02840

Filed May 8, 1978, Ser. No. 903,534
Int. Cl.[2] G09B 9/06
U.S. Cl. 35—11 A 7 Claims



1. In a teaching aid for teaching individuals to sail sailboats the combination comprising:
first, second, and third planar members;
said first planar member depicting the wind direction near the surface of the water;
said second planar member representing the bow of a sailboat;
said third planar member formed to represent the boom of a sailboat;
first, second, and third axis members;
said first axis member interconnecting said second and third planar members;
said second axis member interconnecting said first and second planar members for mutual rotation;
said first planar member interconnected to said third planar member by said third axis member.

4,202,115
SHOT SIMULATING APPARATUS

Jacques M. L. Borel, 10 Square Raynouard, 78150 Rocquencourt, France

Filed Jun. 12, 1978, Ser. No. 914,686
Int. Cl.[2] F41F 27/00
U.S. Cl. 35—25 9 Claims



1. A portable apparatus for simulating a shot with a fire-arm, in particular a shot with a rifle, comprising a support having a butt, an image recording apparatus, such as a camera providing an immediate development of the prints or the like, secured to the support having a butt, a trigger, means defining a line of sight, a magnifying optical device having an optical axis which is substantially parallel to the line of sight with a very small parallax, means for forming an image of cross-wires on the recorded image, actuating and connecting delay means connecting the trigger to the recording apparatus, said delay means being adjustable and the delay produced being substantially equal to the time which elapses in a real fire-arm between the moment the striker strikes against the detonator of the charge and the moment when the charge issues from the mouth of the barrel of the fire-arm.

4,202,116
SPORT SHOE TREAD

Armin A. Dassler, Ringstrasse 121, D-8522 Herzogenaurach, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,589
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 7728190[U]
Int. Cl.[2] A43B 23/28; A43C 15/02
U.S. Cl. 36—59 R 5 Claims

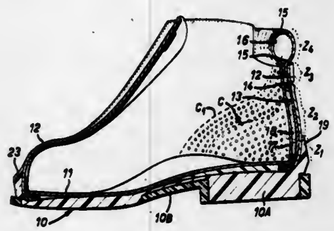


1. A tread for a sport shoe which includes a synthetic resin sole having integrally molded projections extending out from a tread surface, characterized in that the tread includes a one-piece, thin-walled metal part, the thin-walled metal part includes at least two separate, dimensionally reinforced surface sections which bear integrally formed projections, means are provided for fixing an inner surface of the metal part to the synthetic resin sole, said fixing means includes a thin wire grid embedded in the synthetic resin sole, the thin wire grid being welded to the inner surface of the metal part, and in that the integrally molded projections of the sole fill the projections of the metal part.

4,202,117
SHOE, MORE PARTICULARLY FOR TODDLERS

Pierre Bidegain, Pau, France, assignor to Bidegain S.A., Pau, France

Filed Jan. 23, 1979, Ser. No. 5,854
Claims priority, application France, Nov. 3, 1978, 78 31111
Int. Cl.[2] A43B 3/30
U.S. Cl. 36—112 6 Claims

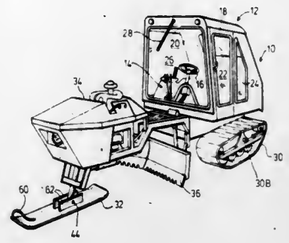


1. A shoe, more particularly for toddlers, comprising an outer sole, a primary sole, a flexible body, a rear reinforcement located at the back of the body and extending from the base of the flexible body to an upper end spaced from the top of the flexible body, and a foam cushion arranged at the back and at the top of the body, wherein said shoe comprises at the back, from the bottom to the top, successive zones of decreasing rigidity and increasing flexibility; namely a first zone comprising, from inside to outside, a soft lining, a foam filling, said rear reinforcement, said flexible body and an upward extension of the outer sole; a second zone comprising, from inside to outside, said soft lining, said foam filling, said inner reinforcement and said flexible body; a third zone comprising, from inside to outside, said soft lining, said foam filling and said flexible body; and a fourth zone comprising said foam cushion surrounded by said soft lining.

4,202,118
SNOWMOBILE TRAIL GROOMER

Ross Held, Port Hope, Canada, assignor to D. T. Equipment Limited, Port Hope, Canada

Filed Nov. 20, 1978, Ser. No. 961,934
Int. Cl.[2] E01H 5/00; A01B 59/048
U.S. Cl. 37—41 8 Claims

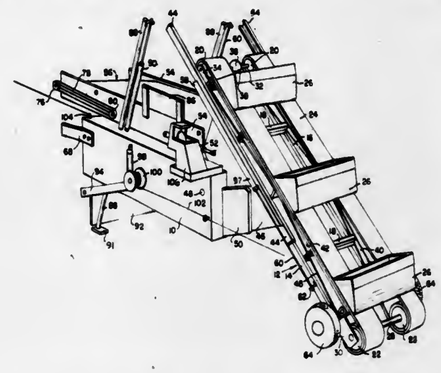


1. A snowmobile trail groomer comprising a main cab for seating the driver, steering and control means for operating the groomer, a steerable ski at the front of the groomer spaced from the main cab for steering and control purposes, an adjustable and tiltable blade disposed between the ski and cab, the drive means comprising an engine and track means comprising bogies and an endless track supported on either side of the cab, the bogies being secured within the track for driving the endless track, the track means being pivotally connected to the cab at a position on the cab for relative pivotal movement with respect to the cab, the engine for driving the bogies for driving the track, and substantial weight mounted on, and supported by, the steerable ski.

4,202,119
WATERWAY CLEANER WITH ENDLESS BUCKET CONVEYOR

Frederick J. Grace, 354 Gifford St., Apt. 4, Falmouth, Mass. 02540

Filed Jan. 9, 1978, Ser. No. 867,775
Int. Cl.[2] E02F 3/14, 9/04
U.S. Cl. 37—69 8 Claims

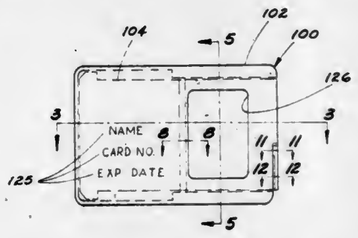


1. A waterway cleaner comprising a floating hull, an extendable and pivotable ladder mounted at one end of said hull, means for controlling the angular position of said ladder from a non-operative substantially horizontal position to a downwardly inclined operative position, means for extending and retracting said ladder in each of said positions, an endless chain of spaced scoops mounted on said ladder, means for driving said endless chain, an endless belt conveyor mounted on the top of said hull, said belt conveyor projecting beyond the otheer end of said hull and being adapted to convey material dumped by said scoops to a scow tied to said other end of said hull, a pair of substantially parallel telescoping legs projecting from the bottom of said hull, each disposed in a substantially vertical plane proximate one side of said hull and each being inclined at a predetermined angle toward said other end of said hull and having an end engageable with the bottom of the waterway, means for telescopically reciprocating each of said legs for controllably engaging said end thereof with the bottom of the waterway for providing additional support for said hull and for forwardly propelling said hull, a scraper blade mounted swingable at said other end of said hull and positionable from an elevated position to a submerged position for engagement with the bottom of said waterway, means for displacing said scraper from said first to said second position, and a pair of freely rotatable support wheels each fastened to one side of said ladder proximate the lower end thereof for rolling engagement with said bottom of said waterway.

4,202,120
IDENTIFICATION CARD, SENSOR, AND SYSTEM

Elton D. Engel, 34005 LaMoyne, Livonia, Mich. 48154

Filed Apr. 10, 1978, Ser. No. 895,011
Int. Cl.[2] G09F 3/00
U.S. Cl. 40—2.2 7 Claims



1. An identification card comprising a frame, a transparent element large enough for impression of an identifying portion of a user's thumbprint or fingerprint thereon, and means for relatively selectively positioning said element and said frame to a first operative position wherein a user is precluded from impressing his thumbprint or fingerprint on said transparent element and to a second operative position where he can impress his thumbprint or fingerprint on said transparent element, wherein said transparent element is disposed on a slide which is slideably mounted on said frame for displacement to said first and second operative positions, and including wiping means effective to wipe a print from said transparent element as said slide is displaced from the second operative position to the first operative position.

4,202,121
DISPLAY DEVICE

George Maris, 2954 Logan Blvd., Chicago, Ill. 60647, and Carl G. Nelson, 1941 N. Cleveland, Chicago, Ill. 60604

Filed Dec. 19, 1977, Ser. No. 862,016
Int. Cl.[2] G09F 1/12
U.S. Cl. 40—152.1 6 Claims

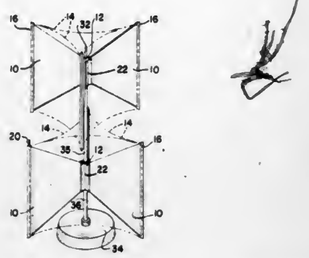
1. A graphic display device for holding and showing visual display such as a number of photographs, and other visual members, the improvement comprising:
a base member;
a display spindle with means attached to the base member and having means extending upwardly therefrom;
a core;
said core having means mountable and rotatable about said spindle;
fin means with means extending outwardly from said core;
said core having means for releasably connecting the fin means;
said fin means including outer grip means for engaging and

holding a visual display in a curved, self-supporting manner;

means positioning the core above the base member to allow the core and attached fin means and visual display to rotate freely about said spindle;

said core includes pairs of arm members extending outwardly thereof;

said arm members spaced apart a first distance to provide a receptacle means for receipt of the fin means;



said fin means having a surface and having raised means extending from said surface to provide inner grip means to contain the associated fin within the receptacle means;

said arm members include cantilever means deflectable as said inner grip means of the fin means are inserted within the receptacle means to thereby provide biasing, holding force for retaining the fin means within said receptacle means and attached to said core.

4,202,122

SELF-SUPPORTING UNITARY PLATE FOR HOLDING PHOTOGRAPHIC SLIDES

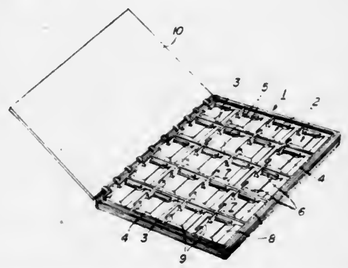
Naokuni Namiki, Hoya, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Jul. 24, 1978, Ser. No. 927,411

Claims priority, application Japan, Aug. 30, 1977, 52-115238[U]

Int. Cl.² G09F *1/10*

U.S. Cl. 40—158 B **6 Claims**



1. In a self-supporting plate for holding photographic slides including a unitary plate having a plurality of depressions spaced apart in lateral and longitudinal relationship and surrounded by two side partition walls and two end partition walls and having a substantially flat bottom wall, each of said depressions being adapted to receive a photographic slide therein; the improvements comprising:

projections provided on and along part of the opposite side surfaces of said side partition walls, said projections being adjacent to one of said end partition walls in parallel spaced relation to said flat bottom and projecting inwardly of each depression; and

a groove running in said flat bottom of said depression between the mutually opposing projections of each depression, with its opposite side partition walls positioned on the opposite sides of a line on said bottom wall of said depression in parallel thereto, said line being coincident with a line interconnecting the front ends of said mutually opposing projections, as viewed in a direction to insert a photographic slide.

4,202,123

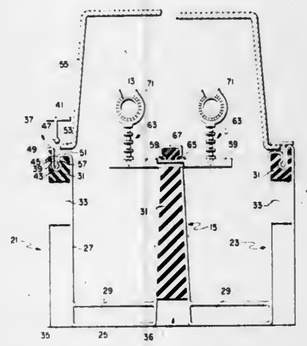
APPARATUS FORMING THREE DIMENSIONAL SIGN DISPLAY CHARACTER

Frank A. Witt, Lexington, S.C., assignor to Colite Industries, Inc., West Columbia, S.C.

Continuation of Ser. No. 700,218, Jun. 28, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 956,101

Int. Cl.² G09F *7/14*

U.S. Cl. 40—596 **10 Claims**



1. A sign display element for visually displaying information comprising: a unitary base structure, thinly molded from a plastic-type material and formed to include:

(a) means forming a bottom member having an outside perimeter of the shape of said element;

(b) means forming a continuous hollow wall member upstanding from and disposed along the entire perimeter of said bottom member means, said wall member means having a top side wall, an inside wall and an outside wall, said inside wall narrowly spaced from said outside wall forming the hollow within said wall member; and

rigidifying means providing rigidity and support to said thinly molded plastic material, said rigidifying means formed from a cured resin cast within the hollow of said hollow wall member means and connecting said inside wall to said outside wall at a location intermediate said bottom member means and said topside wall providing rigidity and support to said unitary structure, whereby a rather sturdy, stable, sign display element is formed from a thin plastic molding.

4,202,124

CARTRIDGE LOADER

Robert D. Switzer, 149 Highview Dr., Ft. Thomas, Ky. 41075

Filed May 15, 1978, Ser. No. 905,855

Int. Cl.² F42B *39/04*

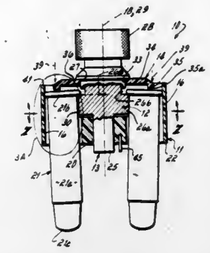
U.S. Cl. 42—89 **24 Claims**

1. An improved cartridge loader comprising

a generally star shaped latch rotatably carried within a casing, said latch cooperating with a plurality of cartridge bores defined by said casing and positioned circumferentially around said latch, said latch being selectively movable between a capture position at which cartridges are latched in temporarily stored relation with said loader and a release position at which cartridges temporarily stored with said loader are released therefrom, and

a semi-automatic rotation device connected with said latch, said device being structured so that the cartridges temporarily stored within said loader are selectively releasable

from that stored relation either by manually rotating said latch, or by exerting an external force axially against said



loader to cause rotation of said latch, from capture position to said release position.

4,202,125

FISHING ROD HOLDER WITH SIGNAL MEANS

Donald J. Kovacs, 366 N. Huron Dr., Au Gres, Mich. 48703

Filed Aug. 16, 1978, Ser. No. 934,209

Int. Cl.² A01K *97/12*

U.S. Cl. 43—17 **16 Claims**



1. A fishing rod holder comprising

a bracket,

a rod holding means including a rod holding member,

means for pivotally supporting said rod holding means on said bracket for movement about a generally horizontal axis,

a pair of spaced electrical contacts on said rod holding member,

a contact arm forming a third contact adapted to be normally engaged by said rod holding member at a point intermediate said spaced first and second contacts,

means yieldingly mounting said contact arm on said bracket,

a signal device,

and means providing a circuit between either of said pair of contacts and said signal device such that when the rod holding member is moved in one direction or another relative to the bracket a predetermined distance, a circuit is completed through said contact arm to energize said signal means.

4,202,126

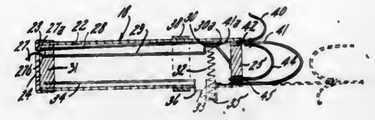
FISH STRIKE DETECTING APPARATUS

Edward Pietrenka, 315 S. Park, Westmont, Ill. 60559

Filed Sep. 20, 1978, Ser. No. 943,997

Int. Cl.² A01K *97/12*

U.S. Cl. 43—17 **15 Claims**



1. A strike detecting apparatus for use with a fishing rod and line assembly comprising means for engaging a portion of said fishing rod and line assembly that experiences movement upon a fish striking the line thereof, means for supporting a pair of relatively movable contact pieces, biasing means for urging said contact pieces toward each other to close said contacts, insulator means coupled to said engaging means for removable placement between said contact pieces, electrical indicator means, an electrical energizing circuit including a source of electrical energy coupled between said indicator means and said contact pieces, and said insulator means being removable from between said contact pieces in response to movement of said line and pole engaging means upon a strike of said fishing line to permit closure of said contact pieces and energizature of said electrical indicator means.

4,202,127

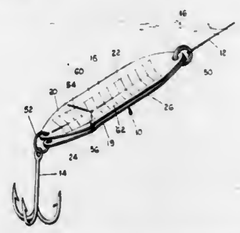
NOISE MAKING LURE

Larry L. Marek, 444 Benson, N.E., Grand Rapids, Mich. 49503

Filed May 16, 1977, Ser. No. 797,049

Int. Cl.² A01K *86/01*

U.S. Cl. 43—42.31 **8 Claims**



1. A noise making fishing lure comprising first and second sonorous plates mounted on top of each other and connected together loosely at front and rear ends of the plates, the plates being shaped with different surface contours on the surfaces opposing each other such that the flow of water over the lure as it is pulled through the water causes a relative vibration between the plates, the vibration causing the plates to rattle together so as to produce a distinct noise, the plates being formed and positioned such that a protrusion on one plate fits into a recessed portion in the other plate when the plates are connected together.

4,202,128

ADJUSTABLE FLOAT SINKER

Robin E. T. Hill; Alan W. Mann; Ean L. McDonald, and John L. Perdrix, all of 27 Gairlock St., Applecross, Western Australia, Australia

Filed Feb. 28, 1978, Ser. No. 882,160

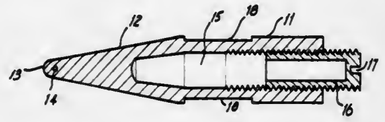
Claims priority, application Australia, Mar. 4, 1977, PC9288

Int. Cl.² A01K *93/00*

U.S. Cl. 43—43.14 **2 Claims**

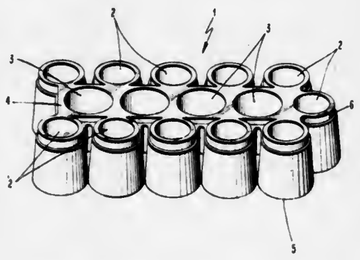
1. An adjustable fishing float-sinker assembly comprising a substantially cylindrical body having a solid first end tapered

to a rounded apex, said first end including means for connecting said body to a fishing line, said means for connecting comprising only a single opening in said first end, and a second end defining an opening, wherein said body defines a cavity open at its second end; a closure member free of any connection with a fishing line; means for threadingly connecting said closure member to said body for enclosing said cavity in a substantially water-tight manner wherein said body and closure member have a substantially cylindrical shape, in combination, and wherein said body and closure member are made of a plastic material; an o-ring seal positioned between said body and closure member for maintaining said cavity substantially water-tight; means for adjusting the position of said closure member with respect to said body between a first position, wherein said body and closure member displace a first volume, a second position, wherein said body and closure member displace a



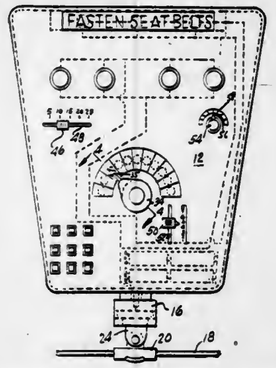
second volume, said second volume being less than said first volume, and intermediate positions between said first and second positions, wherein said body and closure member displace intermediate volumes; said body and closure member having a size, and made of a material having a density, such that the body and closure member have a specific gravity substantially equal to the specific gravity of water, and such that when said body and closure member is in said first position, the float-sinker assembly has a specific gravity less than that of the water in which it is to be used, when said body and closure member is in said second position, the float-sinker assembly has a specific gravity greater than that of the water in which it is to be used, and when said body and closure member is in a selected intermediate position, the float-sinker assembly has a specific gravity substantially equal to that of the water in which it is to be used.

4,202,129
INSECT-COMBATTING DEVICE
Jack Greenberg, Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.
Filed Dec. 6, 1977, Ser. No. 857,992
The portion of the term of this patent subsequent to Dec. 7, 1993, has been disclaimed.
Int. Cl.[2] A01N *9/36, 17/00*
U.S. Cl. 43—131 **10 Claims**



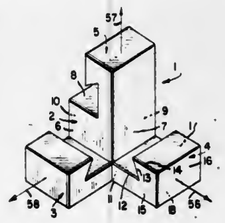
1. A device for combatting insects comprising a shaped solid body having a porous surface capable of gradually and continually releasing naled insecticide in an amount sufficient to provide an insecticidally active concentration of said naled over a prolonged period of time, said device comprising a synthetic resinous matrix material, from about 15 to about 35 weight percent of naled and a minor amount effective to retard spewing of the insecticide of finely divided silica particles and at least one C_{14} to C_{20} saturated aliphatic carboxylic acid or a salt or ester thereof, said device being formed from a mixture of said synthetic resin, naled, finely divided silica particles, C_{14} to C_{20} aliphatic saturated carboxylic acid or salt or ester thereof and a surface porosity control component that is non-reactive in the mixture and has a boiling point at or below the curing temperature to produce surface opening in communication with pores in said body by vaporization of said porosity control component to provide for release of naled gas at a rate effective to control insects in the vicinity of said body, but insufficient to form as spew on the body, said shaped body having a plurality of cavities which extend entirely through one dimension of said body, said cavities having substantially parallel axes.

4,202,130
AMUSEMENT DEVICE
Terry G. Smith, 1002 Figuroa St., Folsom, Calif. 95630
Filed May 31, 1978, Ser. No. 911,080
Int. Cl.[2] A63G *31/02*
U.S. Cl. 46—1 R **1 Claim**



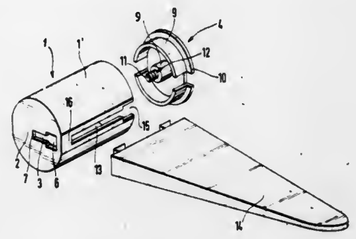
1. An amusement and safety device for detachable connection to an automobile safety belt for children riding in an automobile comprising a box, means secured to the safety belt for said child, means including a switch on said box to demountably engage said means secured to the safety belt, whereby said switch will be actuated by said engagement, said box containing electric batteries and circuitry including lights, said circuitry including said switch means, and an electric sign on said box illuminated by some of said lights when said switch is engaged, the surface of said box being provided with push buttons and a rotatable knob, and switch means operated by said rotatable knob to connect selected lights to said circuitry whereby the child may be amused by rotating said knob.

4,202,131
INTERCONNECTING BUILDING BLOCKS
Victor J. Poleri, 207 E. 15th St., New York, N.Y. 10003
Filed Feb. 10, 1978, Ser. No. 876,623
Int. Cl.[2] A63H *33/08*
U.S. Cl. 46—25 **5 Claims**



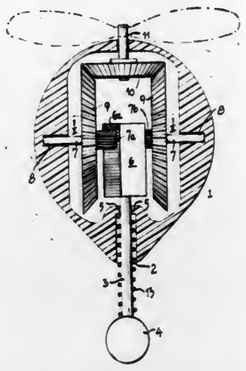
1. A block unit designed to interconnect with other blocks to form three-dimensional structures comprising a central hub and at least three identical attachment arms projecting from said central hub, said attachment arms extending outwardly along non-parallel axes projecting from said central hub, at least one of said axes projecting out of a plane defined by two other of said axes, each of said attachment arms comprising a first wall member projecting perpendicularly outward from said face to which it is attached, a second wall member attached to the outboard end of said first wall member, said second wall member being inclined inwardly toward said face to which said first wall member is attached, and a third wall member attached to the inboard end of said second wall member and directed outwardly and oriented parallel to said first wall member, said attachment arms so dimensioned to allow interconnection with an identical attachment means on another block thus allowing a three-dimensional multi-blocked structure to be assembled.

4,202,132
HOLLOW STRUCTURAL ELEMENT
Artur Fischer, Weinhalde 34, D-7244 Waldachatl 3 (Tumlingen, Fed. Rep. of Germany
Filed Jun. 6, 1978, Ser. No. 913,081
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1977, 2729264; Jan. 19, 1978, 2802149
Int. Cl.[2] A63H *33/00, 27/00, 33/10, 33/08*
U.S. Cl. 46—16 **18 Claims**



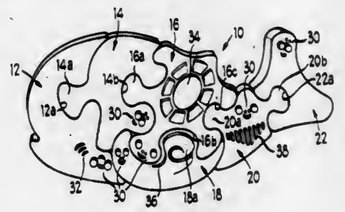
1. A hollow structural element, comprising a cylindrical hollow member having an axis, a circumferential wall and two ends spaced from one another in an axial direction, said hollow member having an end wall arranged to close one of said ends of said circumferential wall; a cover member arranged to close the other end of said circumferential wall of said hollow member; and means for connecting the hollow structural element with other structural elements, said means including an undercut projection provided in said cover member and arranged for inserting into an undercut groove of another structural element, and an undercut lateral slot provided in said end wall of said hollow member and arranged for interacting with an undercut projection of a further structural element so that the structural elements can be connected with each other while being located axially adjacent to one another, said undercut lateral slot having a first portion of an enlarged cross section which is located adjacent to said circumferential wall and dimensioned so that the projection of the further structural element passes through said enlarged portion, and a second portion of a reduced cross section which extends from said first portion toward said axis and is dimensioned so that the projection of the further structural element engages in said second portion, said second portion of said undercut lateral slot of said end wall extending outwardly beyond said axis by a distance which is substantially equal to half of a transverse dimension of said undercut projection, so that when such hollow structural elements are connected with one another by means of interaction of the undercut lateral slot of one of the structural elements with the undercut projection of the further structural element, the circumferential walls of the hollow members of the structural elements are in alignment with each other.

4,202,133
SPINNING TOP
Raphael Sahar, 2 King David St., Tiberias, Israel
Filed May 31, 1978, Ser. No. 911,177
Int. Cl.[2] A63H *1/06*
U.S. Cl. 46—67 **3 Claims**



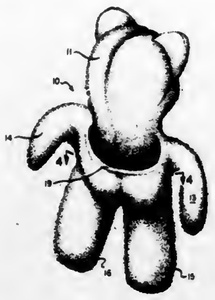
1. A spinning top comprising a hollow body having an inwardly extending bore in which slides a shaft the innermost end of which carries a Z-profiled member, the sidewardly extending portions of the said Z-profiled member being in frictional contact with oppositely disposed, co-directional axles seated rotationally in the wall of the said hollow body, a crown wheel being fixedly keyed on each of the said axles, both said crown wheels meshing with a pinion which is fixedly connected to the said hollow body.

4,202,134
WATER TOY
Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 1, 1977, Ser. No. 856,349
Int. Cl.[2] A63H *23/10*
U.S. Cl. 46—92 **19 Claims**



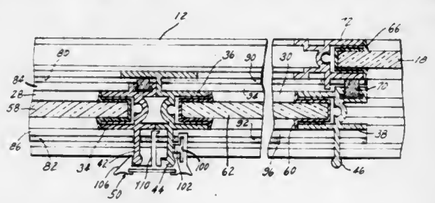
1. A water toy comprising:
a plurality of puzzle pieces formed of generally lightweight material;
each of said puzzle pieces includes an outer contoured surface shaped to removably interlock with the contoured surface portion of an adjacent puzzle piece;
means for defining the contoured surface of the puzzle pieces in the form and shape of a creature, said puzzle pieces being shaped to cumulatively form a predetermined outer profile such as that of a creature or the like when assembled with their contoured surfaces in proper interlocked relation.

4,202,135
DOLL
Ethel J. Siler, 4595 W. 4955 S., Kearns, Utah 84118
Filed Mar. 6, 1978, Ser. No. 883,357
Int. Cl.² A63H *3/14*
U.S. Cl. 46—154 1 Claim



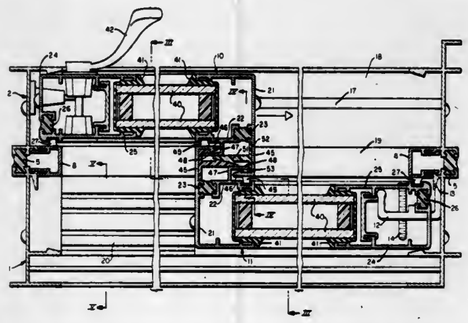
1. A doll which may be manipulated by the insertion of a users fingers therein, comprising
a head;
a upper torso body portion fixed to and movable with said head;
a pair of upper limb members hingedly connected to the upper torso body portion;
a pair of lower limb members, hingedly connected to a lower edge of the upper torso body portion;
a single piece of sheet fabric forming an upwardly opening leg pocket at the back of each lower limb member, a pouch extending over the open upper end of each leg pocket and upwardly adjacent a portion of the upper torso member above the lower limb members and a portion of the upper limb members, whereby manipulation of said lower limb members by the insertion of a users finger in said leg pockets thereof will simultaneously cause movement of said upper limbs thereof.

4,202,136
DUAL SLIDING SASH SECURITY WINDOW
Harry M. Riegelman, Diamond Bar, Calif., assignor to Rusco Industries, Inc., Fullerton, Calif.
Filed Mar. 9, 1979, Ser. No. 19,099
Int. Cl.² E05D *13/04*
U.S. Cl. 49—449 6 Claims



1. In combination:
a window structure including a pair of sashes adapted for horizontal sliding movement,
said sashes having respective stiles in abutment in the closes positions thereof,
said stiles having vertical ribs extending from the faces thereof on one side of said structure;
a plate carried by one of said stiles on its opposite face,
said plate being parallel to said opposite face and overlaying equal areas of said stiles;
and a latch mechanism carried by one of said stiles on the rib thereof,
said latch mechanism including a latch element spanning both ribs, said ribs having enlarged outer portions,
said latch element having one edge portion thereof slidable on said one stile,
said latch element being symmetrically contoured with respect to the plane of abutment of said stiles;
said latch element having a shoulder to engage the rib of said other stile;
and means biasing said latch element toward the position of engagement by said shoulder of said other rib.

4,202,137
SLIDING DOOR OR WINDOW
Robert P. Randall, Pittsburgh, Pa., assignor to Three Rivers Aluminum Company, Pittsburgh, Pa.
Filed Nov. 8, 1978, Ser. No. 958,709
Int. Cl.² E05D *15/08*
U.S. Cl. 49—458 5 Claims

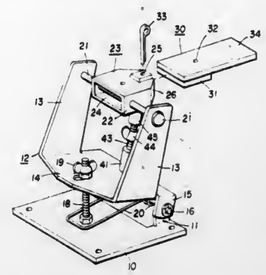


1. A pair of rectangular sash framing glass panes for normally closing an opening in a wall, one sash being slidable horizontally relative to the other to open said opening, said sash being disposed in parallel vertical planes with the right-hand end of one sash normally overlapping the left-hand end of the other sash, said overlapping ends including vertical sash rails, each rail being provided with horizontally spaced inner and outer vertical flanges extending toward the opposite end of the same sash, all of said flanges being disposed between said rails, the inner flanges of the two rails being spaced apart and disposed between said outer flanges in overlapping engagement therewith to interlock the two rails, and a pair of vertical weather-sealing strips disposed in the space between said inner flanges, each strip being connected to a sash rail with the strips extending toward each other and overlapping along a vertical plane diagonal to the sash, each strip being disposed between the inner flange connected to the same rail as that strip and the other strip, and the strips engaging each other in said plane to form a weather seal between said rails.

4,202,138
BEZEL GRINDING ATTACHMENT FOR A DOP STICK HOLDER
Edward E. Smith, New London, Iowa, assignor to Geode Industries, Inc., New London, Iowa
Filed Jun. 14, 1979, Ser. No. 48,476
Int. Cl.² B24B *11/00*
U.S. Cl. 51—229 3 Claims

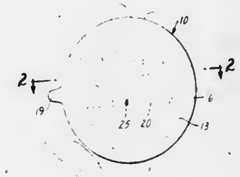
1. A cabochon bezel grinding attachment for use with a dop stick holder which includes a laterally extensive dop stick receiver and a carrying structure for the receiver having an underportion spaced below the receiver, the receiver having a rear portion hinged to the carrying structure about a horizontal axis, a forward portion, and a laterally extensive opening extending through the receiver in a direction from said forward to said rear portion thereof, said opening having a cross-sectional configuration defined by interior walls extending in said direction, and a transverse vertical bore through said forward

receiver portion and intersecting said opening thereof, the attachment comprising: a laterally extensive bezel table having rear and forward portions, the table rear portion having a cross-sectional configuration complementary with that of the receiver opening and being slidably and fittably receivable therein, the table rear portion being further provided with a transverse vertical bore therethrough alignable with said re-



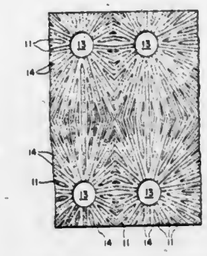
ceiver bore; fastening means for insertion through the receiver and table bores for removably securing the table in the receiver opening; and adjustable means for disposal between said forward portion of one of the receiver and the table on the one hand and said underportion of the carrying structure on the other hand effective both to support the bezel table forward portion upon said underportion and to adjust the inclination of the bezel table relative thereto about said axis.

4,202,139
CONFORMABLE HAND SANDING PAD
In S. Hong, Hugo Township, Washington County, and Glenn E. Roelofs, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Apr. 6, 1978, Ser. No. 893,989
Int. Cl.² B24D *15/04*
U.S. Cl. 51—393 5 Claims



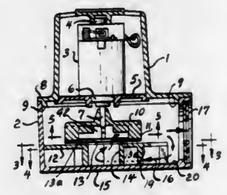
1. A hand-held sanding pad comprising
(1) a conformable, self-supporting pad at least about 1/32 inch thick having one major surface and an opposite major surface, said one major surface being capable of providing adhesive attachment for a sheet or pressure-sensitive adhesive-coated abrasive material during use yet permitting clean removal of said sheet after use, said pad being formed of a material which has a flexural rigidity of at least 500 mg. cm. and a Shore A durometer hardness value of less than 40;
(2) attached to said opposite major surface of said pad, handle means to maintain the pad in contact with the hand of the user during use, said handle means being provided by at least three segments of hook- and loop-type fastening material, with one segment of said fastening material being permanently attached to said opposite major surface and the other segments being temporarily engaged adjacent their ends to form a ring structure capable of accommodating at least one finger of the user and having on its outer surface a segment of material which is temporarily engaged with said attached segment to provide an attachable-detachable structure.

4,202,140
ABRASIVE SHEET
Lorenzo E. Alessio, Cairoli, Italy, assignor to Black & Decker Inc., Newark, Del.
Filed Sep. 25, 1978, Ser. No. 945,374
Claims priority, application Italy, Sep. 23, 1977, 22348 A77
Int. Cl.² B24D *11/00*
U.S. Cl. 51—395 2 Claims



1. An abrasive sheet for cutting a workpiece adapted for use with a sanding tool having suction means, the abrasive sheet comprising:
a base sheet having a plurality of apertures formed therein; and,
abrasive means secured to said base sheet for defining a plurality of channels thereon extending outwardly from each one of said apertures; and,
said abrasive means defining a plurality of channels communicating with each two mutually adjacent ones of said apertures.

4,202,141
TWO WAY SPARK PLUG CLEANER AND METHOD
Roy A. Fricke, River Forest, Ill.
Filed Nov. 8, 1978, Ser. No. 958,711
Int. Cl.² B24B *1/00, 3/34*
U.S. Cl. 51—412 11 Claims



1. A spark plug cleaner including in combination,
a closed hollow housing comprising a lower impeller housing and an upper motor housing, each of said housings having interfitting margins whereby said housings may be held frictionally and closely fitting relation to provide a closed but separable hollow housing,
a drive means mounted in said upper motor housing and having a vertical drive shaft extending downwardly into said lower impeller housing,
a multi-directional impeller mounted in said lower impeller housing and operatively connected to said vertical drive shaft, said impeller having an axial inlet opening downwardly therefrom and a plurality of vanes about the periphery thereof,
elastic spark plug holder means mounted in the side wall of

said lower impeller housing, said spark plug holder means adapted to receive and hold a spark plug in a horizontal position and in register with respect to the outer periphery of said impeller, and

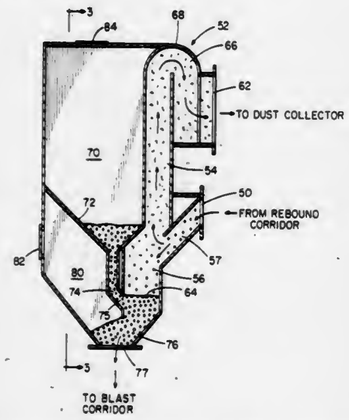
flow directing baffle means positioned between said impeller and the base of said lower impeller housing, such that upon the rotation of said multi-directional impeller by said drive means particulate is discharged radially outwardly against said mounted spark plug and said baffle means provides a path for predeterminely guiding the flow of air and spent particulate discharged by said impeller towards said axial inlet opening of said multi-directional impeller and into the eye of said rotating impeller for subsequent discharging of the flow of air and particulate by said impeller against the spark plug until the cleaning operation is completed.

4,202,142

ABRASIVE PARTICLE BLAST APPARATUS FOR SURFACE TREATMENT

Harvey G. Van Fossen, Mishawaka, Ind., assignor to Wheelabrator-Frye Inc., Hampton, N.H.

Filed Jul. 17, 1978, Ser. No. 925,116
Int. Cl.² B24C *3/06, 7/00*
U.S. Cl. 51—425 **8 Claims**



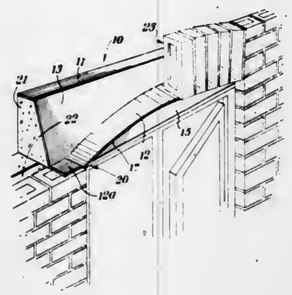
1. An apparatus for treatment of surfaces by projecting dry abrasive particles at high velocity onto the surface including a projecting means for projecting the abrasive particles, a feed means for feeding abrasive particles from a feed hoper to the projecting means, a means for returning the abrasive particles, dust and dirt from the surface to a level above the feed hopper, the improvement comprising separating means for treating the returned abrasive particles, dust and dirt for separation of abrasive particles from dust and dirt, means for recycle of the separated abrasive particles to the feed hopper and means automatically controlling the addition of abrasive particles to the recycled abrasive particles to provide for continuous projection of abrasive particles from the projecting means, said controlling means comprising a storage bin for holding a supply of abrasive particles, an inlet opening in the storage bin for replenishing the abrasive particles and an outlet opening at the bottom portion of the storage bin, a passage communicating the storage bin with the hopper comprising an upper substantially vertically disposed portion and a contiguous lower portion extending angularly downwardly from the vertically disposed portion with the vertically disposed portion having an inlet at its upper end in communication with the outlet of the storge bin and the angularly disposed portion having an outlet at its lower end at a level corresponding to the level of abrasive particles desired for insuring supply of abrasive particles for continuous projection from the projecting means whereby flow of abrasive particles from the outlet of the angularly disposed portion is blocked when recycled abrasive particles are at a level above the outlet and abrasive particles flow from the passage when the level of abrasive particles falls below the outlet.

4,202,143

COMBINED FORMWORK AND CAVITY TRAY

Brian Mear, and Gary Smith, both of 26A Bull Ring, Ludlow, Shropshire, England

Filed Jun. 12, 1978, Ser. No. 914,514
Int. Cl.² E04D *13/00*; E06B *1/04, 1/24*
U.S. Cl. 52—97 **12 Claims**



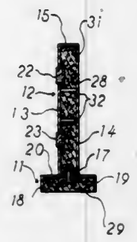
1. An element which constitutes a combined formwork and cavity tray for use in bridging an opening in a wall, said element comprising: a first web portion having an inner edge, a second web portion having an inner edge, a third web portion having two edges of which one is connected to the inner edge of the first web portion and of which the other is connected to the inner edge of the second web portion, said third web portion making, in any transverse section through the element, an included angle of more than 90° with each of said first and second web portions, said second web portion being curved in the vertical direction toward the plane containing an uppermost elongate flat surface of said first web portion, said second web portion comprising the top wall of a second box-section member whose transverse cross-sectional area increases from a minimum at each of its ends to a maximum intermediate said ends by virtue of the curvature of said second web portion, the first web portion and the bottom wall of said second box-section member lying on parallel planes.

4,202,144

CEMETERY MONUMENT

Norman B. Patterson, 4402 Phillip Ave., Billings, Mont. 59101

Filed Oct. 10, 1978, Ser. No. 949,959
Int. Cl.² E04H *13/00*
U.S. Cl. 52—103 **10 Claims**



1. A cemetery monument including a base and a main body section extending upwardly from said base; said body section including an outer shell formed of a plurality of textured corrosion-resistant metal panels, the edges of which are affixed to each other forming a substantially enclosed chamber, said

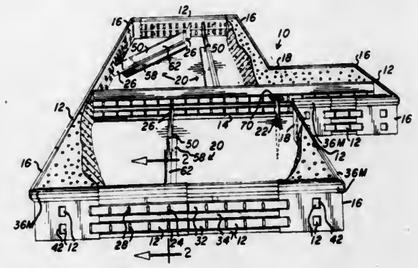
body section having at least one opening in the face portion thereof, said face portion having peripheral flanges around the opening therein extending into the interior of said body section generally perpendicular to said face portion, a text display member disposed within said opening with surfaces thereof adjacent to said peripheral flanges, means securing said text display member to said peripheral flanges including a plurality of pins disposed through openings in said peripheral flanges and extending into said text display member in a direction generally parallel to said face panel, and said chamber of said body section being substantially filled with concrete.

4,202,145

CAST-IN-PLACE CONCRETE SLAB POURING FORM

Alton R. Coulter; Lonnie G. Hubbard; Vincent P. Johnston, all of Sheridan, Wyo., and Michael H. Rich, Westminster, Colo., assignors to Leav-Er-Rite Mfg. Co. Incorporated, Sheridan, Wyo.

Filed Nov. 20, 1978, Ser. No. 961,998
Int. Cl.² E02D *27/00*
U.S. Cl. 52—169.1 **10 Claims**



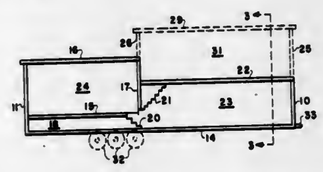
1. The concrete pouring form for slabs and the like which comprises: a plurality of elongate sheet metal wall sections each having a body containing two horizontal rows of vertical slots spaced one above another in vertically-aligned pairs; wall anchoring means having a vertically-spaced pair of downturned hooks positioned and adapted for hooked insertion into a selected pair of wall section slots cooperating therewith to support the latter in upright position resting upon one of its edges; and, corner-forming connectors having wings disposed in right angular relation to one another, at least one of said wings having a first vertically-spaced pair of horizontally-disposed tongues positioned and adapted to enter a selected pair of wall sections slots when placed thereagainst in face-to-face overlapping relation, said corner connectors, and at least a portion of said wall sections and wall-anchoring means cooperating in assembled relation to define an enclosure effective to receive and retain wet concrete poured therein.

4,202,146

TRANSPORTABLE MODULE FOR TRILEVEL DWELLING

William C. Adams, 2822 SE. 8th St., Ocala, Fla. 32670

Filed Mar. 1, 1979, Ser. No. 16,720
Int. Cl.² E04H *3/00*
U.S. Cl. 52—236.4 **7 Claims**



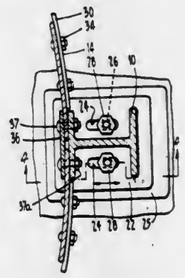
1. A transportable housing module adapted for use in the construction of a dwelling comprising a first and a second dwelling compartment positioned above a rectangular foundation floor extending the entire length and width of said module, exterior vertical side walls and end walls circumscribing the perimeter of said foundation floor, an interior wall parallel to said end walls and substantially centrally disposed with respect to the length of said foundation floor, a short staircase extending from said foundation floor in said first compartment to a second floor of said second compartment, a long staircase positioned adjacent said short staircase angled in the opposite direction therefrom and extending from said second floor to a third floor positioned at a higher elevation than said second floor and laterally displaced therefrom, and a first roof positioned atop the exterior walls bounding said second compartment at an elevation above said third floor, whereby a storage compartment is defined by said foundation floor, second floor, exterior walls and interior wall, and said third floor is adapted to support an assembly of structural components which define a third dwelling compartment.

4,202,147

SILO

Georg Krogh, 10 Sycamore St., Leeton, N.S.W., Australia

Filed Aug. 30, 1978, Ser. No. 938,231
Claims priority, application Australia, Sep. 5, 1977, PD1505
Int. Cl.² E04H *7/00*
U.S. Cl. 52—245 **6 Claims**



1. A circular storage silo comprising a plurality of spaced-apart vertical columns arranged in a circular fashion, wall members connected to said columns to form an enclosure, a support plate member for each column mounted on the surface of the ground, a slotted base plate for each column being slidably mounted on its associated support plate, means on the support plate engageable with the slots of the base plate to provide limited radial movement of said base plates on said support plates, each of said columns being mounted on and fixedly connected to a base plate wherein said columns can move radially outwardly when said wall members are subjected to perimetric tension.

4,202,148

METHOD OF MAKING THICK-WALLED REFRACTORY FIBER MODULES AND THE PRODUCT FORMED THEREBY

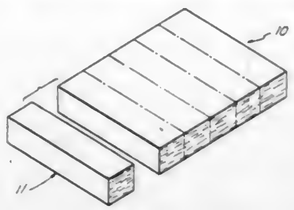
Carl E. Frahme, and Gary E. Wygant, both of Valencia, Calif., assignors to Industrial Insulations, Inc., City of Industry, Calif.

Filed Jun. 26, 1978, Ser. No. 919,230
Int. Cl.² E04B *1/38*; F27D *1/16*
U.S. Cl. 52—592 **16 Claims**

1. A lightweight dimensionally-stable, homogeneous, generally non-flexible refractory liner element for lining the wall of a high temperature chamber consisting of:

a multiplicity of layers of spun refractory fibers typically having a length of 3 to 6 inches accreted by vacuum deposition to a thickness of 3 to 8 inches from an aqueous slurry of said fibers and held bonded together by binder

material; and at least one corner of said element being deeply rabbeted ship-lap fashion from end-to-end and adapted to mate complementally with the similarly rab-



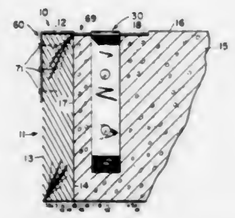
beted corner of another of said elements to form a lining for a high temperature chamber with the planes of said fiber layers lying in planes generally normal to the chamber wall.

4,202,149

CONSTRUCTION DEVICE

Norman A. Betrue, Sr., 3937 Feemster, Visalia, Calif. 93277

Filed May 12, 1978, Ser. No. 905,167
Int. Cl.² E04B *1/38*
U.S. Cl. 52—699 **10 Claims**



1. A construction device for use with a support in anchoring a work object on concrete or the like, the construction device comprising an anchor member having a leg portion for embedding in concrete; means borne by the anchor member for interconnecting the anchor member and a second object; and a fastening member having first and second projections so related as to be interchangably connectable to the interconnecting means for positioning in a first attitude, with the first projection secured on said support and the second projection connected to said interconnecting means supporting the anchor member for the pouring of concrete about the leg portion thereof, and a second attitude, with the first projection connected to the interconnecting means supported by the anchor member on said concrete and the second projection extending therefrom for securing to said work object.

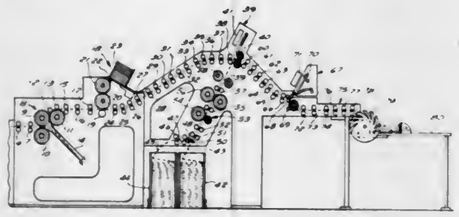
4,202,150

DEVICE FOR PRODUCING ENVELOPES IN A CONTINUOUS OPERATION

Nils E. Petersson, Nybro, Sweden, assignor to AB Sture Ljungdahl, Nybro, Sweden

Continuation of Ser. No. 742,840, Nov. 18, 1976, which is a continuation-in-part of Ser. No. 722,489, Sep. 13, 1976, abandoned, which is a continuation of Ser. No. 471,484, May 20, 1974, abandoned. This application Jun. 12, 1978, Ser. No. 914,950
Claims priority, application Sweden, May 25, 1973, 7307391
Int. Cl.² B65B *11/48*
U.S. Cl. 53—206 **5 Claims**

1. An apparatus for producing a folder in the form of an envelope with at least one enclosure, said envelope being made from an envelope blank having a first section, a second section, and a third section formed by a first crease and a second crease, respectively, comprising: first conveying means for conveying enclosures along a first rectilinear path; second conveying means for conveying envelope blanks along a second rectilinear path; said first and second paths intersecting at a common location; and an enveloping station located at said intersection of said first and second paths for folding said envelope blanks about said enclosures and about said first crease dividing said first and second sections, said first section having a first and a second strip of adhesive thereon, said enveloping station comprising a first rotating roller mounted below said first path, and a second rotating roller, said first and second rotating rollers being rotatably mounted in said enveloping station so as to receive therebetween said envelope blanks from said second conveying means, said first and second rotating rollers defining therebetween a first nip below the end portion of said first path for advancing said envelope blanks upwardly toward said end portion, said second roller having vacuum means for holding said first crease of each envelope blank fast thereto, and a third rotating roller rotatably mounted above said second rotating



roller at a point on the circumference of said second rotating roller remote from said first nip so as to define a second nip spaced circumferentially about said second roller from said first nip, said second nip lying in a plane containing said end portion of said first path, said first nip and second nip being spaced about the circumference of said second roller by more than 90 degrees but less than 180 degress in the direction of rotation of said second roller, said enveloping station further comprising a heating device for heating said first section when said first crease is held fast by said vacuum means, so that said first and second adhesive strips formed on said first section become activated and thereby glue the first and second sections together upon advancement of said envelope blank through said second nip, said heating device being mounted above said third roller, whereby prior to the folding and sealing of said first and second sections at least one enclosure is advanced to said second nip and thereby enclosed in said envelope blank between said first and second sections.

4,202,151

APPARATUS FOR PRODUCING CIGARETTE PACKS

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Pfuhl, Verden, Fed. Rep. of Germany

Division of Ser. No. 730,116, Oct. 6, 1976, Pat. No. 4,102,486. This application Apr. 20, 1978, Ser. No. 898,042
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1975, 2445256
Int. Cl.² B65B *7/04*
U.S. Cl. 53—378 **12 Claims**

1. An apparatus for folding the flaps of a sealable blank wrapped around a group of cigarettes in a tubular manner with the flaps projecting out beyond both ends of the group and including, at each end of the blank, an outer flap (**15**), side flaps (**17, 18**) connected to opposite sides of the outer flap, and an inner flap (**16**) adapted to be folded directly over the ends of the cigarettes in the group and having a sealing strip (**19**) on its outer edge adapted to be folded and compressively urged against the inside of the outer flap when the latter is in an upright, unfolded position, comprising:

(a) a rotatable turret (**33**),

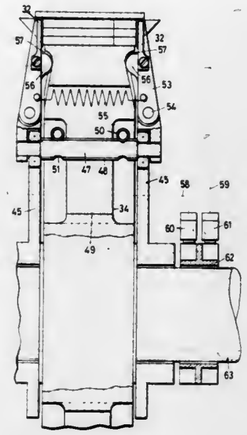
(b) a plurality of spaced rectangular pockets (**30**) radially disposed around the outer periphery of the turret,

(c) each pocket being open at both ends and having its axis parallel to the turret axis,

(d) a U-shaped abutment member (**31**) defining the outer and lateral side walls of each pocket and extending out beyond both opposite ends of a group of cigarettes wrapped in a tubular blank and disposed in said pocket,

(e) the outer flaps (**15**) and the side flaps (**17, 18**) bearing against the walls defined by the abutment member,

(f) a pair of radially disposed sealing shoes (**29**) slidably mounted on opposite sides of the turret adjacent the open



ends of each pocket and transversely movable relative to the pocket axis to individually fold an upright inner flap against the ends of the groups of cigarettes and to simultaneously fold the sealing strip attached to the outer edge of said inner flap and compressively urge said strip against the inside of an upright outer flap bearing against said abutment member, and

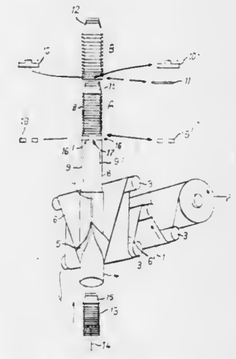
(g) means for radially moving said sealing shoes both towards and away from the pockets at predetermined times during the rotation of said turret.

4,202,152

WRAPPING PROCESS

Robert E. Coles, Leamington Spa, England, assignor to General Foods Limited, Banbury, England

Continuation-in-part of Ser. No. 795,355, May 9, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,112
Int. Cl.² B65B *9/12*
U.S. Cl. 53—451 **5 Claims**



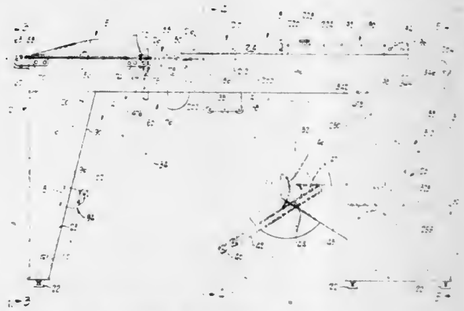
1. A continuous form-fill seal process for forming a package of a stack of nesting cups, some cups of which contain beverage making material, which process comprises forming a tube from an upwardly moving sheet of wrapping material, transversely heat-sealing a leading portion of said tube, loading vertically upwards a stack of nesting cups, some cups containing beverage making material, into the open end of said tube by means of a ram or like lifting device, flattening said tube below the lifted cups, partially transversely, heat-sealing the flattened tube below the cups to secure the stack of cups within the tube and to provide the tube with a remaining transverse open portion, removing the ram or like lifting device from the tube through the remaining open portion thereof, and thereafter transversely heat-sealing said open portion of said tube to form a hermetically sealed package.

4,202,153

METHOD AND APPARATUS FOR LOADING CONTAINERS HORIZONTALLY

Bernard Lerner, Hudson, and Dana J. Liebhart, Streetsboro, both of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Oct. 25, 1977, Ser. No. 845,114
Int. Cl.² B65B *43/36*
U.S. Cl. 53—459 **32 Claims**



1. A method of loading a container, comprising:

(a) providing a tubular web having a container portion connected to the web along a line of weakness, the container portion having a sealed end part and an opposite end part provided with a transverse opening;

(b) advancing the web in one direction along a path of travel to position the container portion at a loading station;

(c) opening the container portion while the container portion is connected to the web;

(d) placing a product to be loaded into the container portion onto a product carrier positioned at a first position;

(e) displacing the product carrier in a direction generally the same as said one direction into a second, extended position where the carrier extends into the opened container portion;

(f) pushing the product to be packaged from the carrier into the container portion; and,

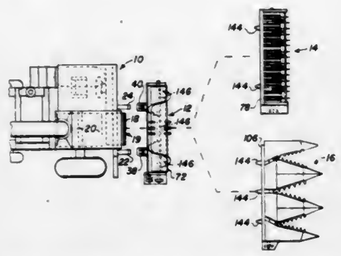
(g) restraining the web and separating the container portion from the restrained web with forces applied to the container portion by a selected one of the carrier and the product after the performance of step d and prior to the completion of step f.

4,202,154

CROP HEADER FOR A CROP HARVESTING MACHINE HAVING A CROP CONSOLIDATING COMPONENT WHICH DETACHABLY MOUNTS A PLURALITY OF INTERCHANGEABLE CROP GATHERING COMPONENTS

T. William Waldrop, New Holland, and Joe E. Shriver, East Earl, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 11, 1976, Ser. No. 713,565
Int. Cl.² A01D *47/00*
U.S. Cl. 56—2 **7 Claims**



2. A harvesting header for a mobile harvesting machine comprising:

a transversely elongated main frame attachable to the harvesting machine, said frame comprising opposite sides, a bottom wall extending between said opposite sides, and a rear wall having a crop discharge opening;

a transverse crop conveying means mounted on said main frame and extending between said opposite sides above the bottom wall for moving crop material along said floor and discharging it rearwardly through the discharge opening;

a first plurality of detachable mounting means spaced along said and across the width of the main frame generally below bottom wall;

a first harvesting attachment comprising a transversely elongated subframe assembly including first transversely extending rearwardly facing means and a second plurality of detachable mounting means spaced along said first rearwardly facing means and respectively cooperative with said first plurality of detachable mounting means to releasably connect the attachment to the main frame, said attachment further comprising means mounted on said transversely elongated subframe assembly and operative to remove crop material from the field as the harvesting machine advances and deliver the crop material to said crop conveying means when the attachment is mounted on the main frame, said first rearwardly facing means operatively disposed adjacent said main frame under conditions where said first harvesting attachment is connected to the main frame;

and a second harvesting attachment comprising a second transversely elongated subframe assembly including second transversely extending rearwardly facing means and a third plurality of detachable mounting means spaced along said second transversely extending rearwardly facing means and respectively cooperative with said first plurality of detachable mounting means to releasably connect the second harvesting attachment to the main frame, said second harvesting attachment further comprising a plurality of row units mounted on said second transversely elongated subframe assembly, each row unit being adapted to receive a row of row planted crop material as the machine advances and delivers the crop material to said crop conveying means when the second harvesting attachment is mounted on the main frame, said second rearwardly facing means operatively disposed adjacent said main frame transverse member under conditions where said second harvesting attachment is connected to the main frame; and

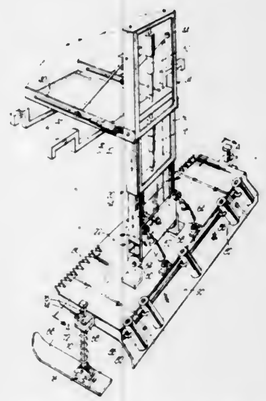
releasable locking means operatively associated with said first plurality of detachable mounting means for selectively locking either said second or third plurality of detachable mounting means thereto under conditions where said first or second harvesting attachment, respectively, is connected to said main frame.

4,202,155

AQUATIC WEED CUTTER, DE-ROOTER AND HARVESTER

Errol G. Stewart, 14 Wood St., Rockland, Ontario, Canada

Filed Jul. 3, 1978, Ser. No. 921,560
Claims priority, application Canada, Jul. 26, 1977, 282509
Int. Cl.² A01D *44/00*
U.S. Cl. 56—9 **11 Claims**



1. An aquatic weed cutter, de-rooter and harvester of modular construction permitting ready disassembly into modular components for ease of transport, comprising flotation means, a weed cutter and de-rooting head assembly carried by extensible framing to permit selective positioning of the head assembly with respect to the bed of a body of water, and wherein the head assembly has weed severing means provided along its forward edge and vortex generators along its rearward edge, and a vertically extensible containment chamber at least partially surrounding the head assembly, at working depth, to contain severed weeds and weed fragments.

4,202,156

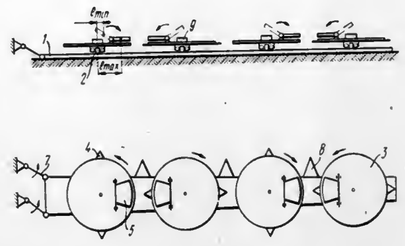
ROTARY MOWER

Anton V. Golyanovsky, proezd Solomennoi Storozhki, 8, kv. 12, Moscow, and Albert P. Kuznetsov, Dirizhabelnaya ultisa, 28, kv. 25, Dolgoprudny Moskovskaya oblast, both of U.S.S.R.

Filed Jun. 6, 1978, Ser. No. 913,070
Claims priority, application U.S.S.R., Jun. 10, 1977, 2493781[1]
Int. Cl.² A01D *35/264*
U.S. Cl. 56—13.6 **4 Claims**

1. In a rotary mower, a cutter-bar movable axially reciprocably in a horizontal plane, a plurality of rotatably driven cutters

mounted on said cutter-bar, means dynamically developing flywheel momentum on the cutters individually, and the last-



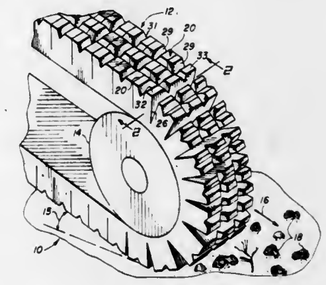
mentioned means comprising eccentric masses pivoted on the cutters.

4,202,157

SELECTIVE DOWN COTTON RETRIEVING BELT

William E. Rood, Jr., 1195 S. Idaho Rd., Apache Junction, Ariz. 85220

Filed Sep. 13, 1978, Ser. No. 941,914
Int. Cl.² A01D *45/18*
U.S. Cl. 56—28 **5 Claims**



1. A flexible cotton retrieving belt for use in a cotton retrieving system including an upper pulley and a lower pulley for supporting said belt, said belt comprising in combination:

a. a plurality of transverse slots disposed in spaced relationship along the outer surface of said belt for opening when said belt is flexed as said belt passes over said pulleys and closing when said belt straightens as said transverse slots move away from said pulleys; and

b. a plurality of island-like pads disposed along the outer surface of said belt, each of said island-like pads being substantially bisected by one of said transverse slots and separated from the others of said island-like pads by shallow valley-like gaps;

whereby, said island-like pads selectively close upon and grasp tufts and/or fibers of down cotton on or embedded in the ground as said belt passes around and away from said lower pulley.

4,202,158

CROP HARVESTING APPARATUS

John W. Edwards, P.O. Box 1151, Brandon, Fla. 33511

Filed Oct. 18, 1977, Ser. No. 843,177
Int. Cl.² A01D *46/00, 46/22*
U.S. Cl. 56—328 R **21 Claims**

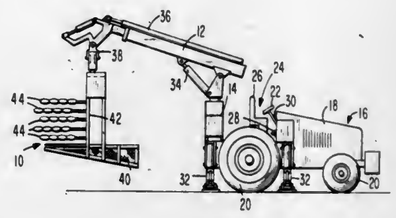
1. A crop harvesting apparatus comprising:

(a) a support plate;

(b) a plurality of crop-severing rods, each including:

(i) an elongated shaft member with a longitudinal axis and rotatably mounted on said support plate with its longitudinal axis extending substantially perpendicular to said support plate; and

(ii) a cover member formed of a plurality of discrete, separate sectional pieces, each sectional piece having a substantially circular cross-section with a diameter varying from a minimum diameter adjacent the ends of the sectional piece to a maximum diameter at substantially the longitudinal center of the sectional piece, the plurality of sectional pieces positioned on said shaft member in abutting end-to-end relationship to extend with an undulant diameter over at least a portion of the length of said shaft member for rotation therewith;



(c) drive means for rotating each crop-severing rod shaft member in a continuous uni-directional rotational movement about its longitudinal axis;

(d) a crop catcher including:

(i) a flexible body member capable of assuming a rolled position and an extended position; and

(ii) frame means mounting said flexible body member with said support plate; and

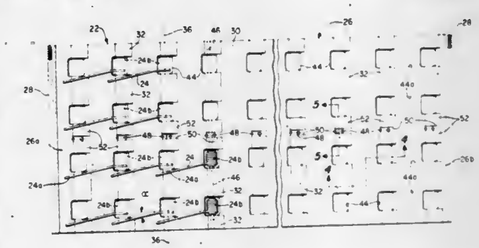
(e) control means for controlling movement of said flexible body member between its rolled position, adjacent said frame means, and its extended position, overlying an area of ground to catch crops severed from crop-bearing foliage by said crop-severing rods.

4,202,159

CONVEYOR FOR A COMBINE HARVESTER

John J. Young, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 811,404, Jun. 29, 1977, abandoned.
This application May 2, 1979, Ser. No. 35,170
Int. Cl.² A01D *43/02, 89/00*
U.S. Cl. 56—364 **18 Claims**



1. A flexible endless conveyor for a harvester pickup apron comprising in combination:

an elastomeric belt having a reinforced base and a plurality of integrally molded elastomeric cleats, raised from the surface of the base and oriented in a plurality of rows across the width of the belt for the full length of the belt with adjacent cleats of a row interrupted by a space and an opening in the base of the belt in the area defined by the space between adjacent cleats, each of said cleats having a bore therethrough having an axis parallel to the base of the belt, the bores of cleats in a row being aligned in a direction substantially orthogonal to the lenghtwise direction of the belt;

a rod mounted in each of the rows within the bores of the cleats in a row; and

a plurality of flexible tines mounted on the rods within the openings in the base of the belt between adjacent cleats of a row, said tines each having a coiled portion having a bore through which one of said rods extends.

4,202,160

CROP WORKING MACHINE

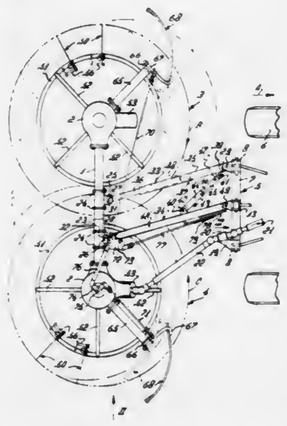
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Jun. 27, 1977, Ser. No. 810,614

Claims priority, application Netherlands, Jun. 29, 1976, 7607093

Int. Cl.³ A61D *76/00*

U.S. Cl. 56—366 **36 Claims**



1. A crop working machine comprising a frame and at least one rake member being rotatable about an upwardly extending axis and supported on said frame, driving means connected to rotate said rake member, said rake member including circular rim means and tine means mounted on said rim means whereby said tine means is pivotable from a lower crop engaging position to a raised inoperative position, a tine engaging device being mounted on said frame adjacent the path described by said tine means during rotation, said device being positionable to engage said tine means in the latter's operative position during rotation thereof and said tine means being guided by said device to an inoperative raised position.

4,202,161

APPARATUS FOR PRODUCING NOVELTY YARN

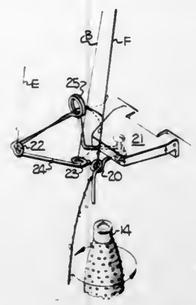
Martin B. Foil, Jr., Mount Pleasant, N.C., assignor to Tuscarora Yarns, Inc., Mount Pleasant, N.C.

Filed Jan. 22, 1979, Ser. No. 5,205

Int. Cl.³ D02G *3/34*

U.S. Cl. 57—12 **19 Claims**

1. In a spinning or twisting machine of the type having a rotatable spindle and delivery rolls for delivering a strand to the spindle for being wound to form a package, and said machine having a strand guide carried by a strand guide support and positioned for guiding the strand in its path of travel from the delivery rolls to the spindle, and wherein the strand is adapted to serve as a foundation strand in the production of a novelty yarn therefrom, the combination therewith of auxiliary strand guide means also carried by said support and adapted for guiding respective effect and binder strands onto the advancing foundation strand for becoming wound thereabout to produce a novelty yarn, said auxiliary strand guide means comprising a guide for the effect strand positioned upstream from said guide for the foundation strand and laterally offset from the path of travel of the foundation strand and adapted for guiding the effect strand onto the advancing foundation strand while allowing the effect strand to move in an oscillating manner along the advancing foundation strand and to become wound thereabout, and a guide for the binder strand positioned upstream from said foundation strand guide and



downstream from said effect strand guide and also being laterally offset from the path of travel of the advancing foundation strand and adapted for guiding the binder strand onto the advancing foundation and effect strands for binding the effect strand to the underlying foundation strand.

4,202,162

PROCESS AND APPARATUS FOR SPINNING TEXTILE FIBRES

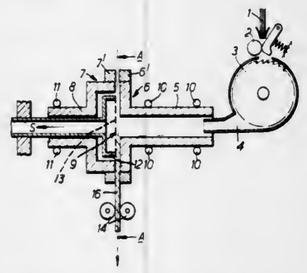
Louis Vignon, Geneva, Switzerland, assignor to Heberlein Hispano SA, Vernier, Switzerland

Filed Nov. 8, 1978, Ser. No. 959,190

Claims priority, application Switzerland, Nov. 9, 1977, 13652/77; Sep. 4, 1978, 9696/78

Int. Cl.³ D01H *1/12*

U.S. Cl. 57—58.89 **9 Claims**



1. A process for spinning textile fibres, in which the fibres are transported in a gas stream to a gas permeable collecting surface having a defined suction zone located between a pair of substantially parallel closely spaced rotary friction discs, at least part of the gas stream is caused to pass through the said gas permeable collecting surface, the fibres are angularly diverted from the direction of the gas stream flowing through the collecting surface, the fibres being fed into the gap between the discs, the discs are rotated in opposite directions and the fibres are mechanically twisted thereby, and drawn off in yarn form.

2. Apparatus for spinning textile fibres comprising a guide duct, means for feeding fibres in a gas stream through said duct, a gas permeable collecting surface with a suction zone located adjacent the exit from said duct, a twisting device comprising two closely spaced rotary friction discs and means for causing rotation of said discs in opposite directions, each disc having a central opening, the opening in one disc communicating with said guide duct while the opening in the other disc provides a gas exit opening for gas passing through said suction zone, the gap between said discs providing an exit for the fibres which are twisted thereby into the form of a yarn.

4,202,163

SPINNING PROCESS AND APPARATUS

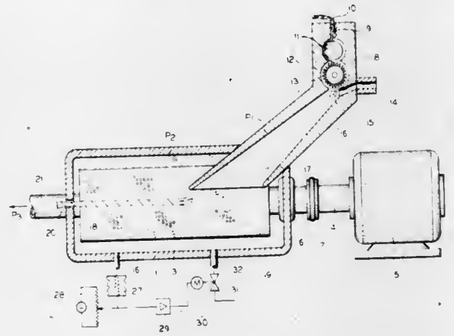
Herbert Turk, Remscheid; Herbert Schiminski, Huckeswagen, and Erich Lenk, Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 890,978

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714089; Jul. 20, 1977, 2732678

Int. Cl.² D01H *1/12*

U.S. Cl. 57—58.95 **30 Claims**



1. In a process for spinning fibers into a yarn by the steps of introducing a tow of fibers into a carding chamber having a rotating carding roller and discharging individual, separated fibers into a fiber feed channel, conveying the fibers in an airstream flowing through said channel and out of an elongated, narrow mouth of said channel extending parallel with and contiguous to a line of yarn formation in which said fibers are spun into a yarn on at least one air permeable surface moving substantially transversely to the line of yarn formation and through which air is drawn along the line of yarn formation by suction means, the improvement wherein an air pressure gradient is maintained so that the static air pressure decreases in cascade fashion such that

$$P_u > P_1 > P_2 > P_3 < P_0,$$

wherein

P_u is a superatmospheric pressure in the carding chamber,

P_1 is the air pressure in the channel,

P_2 is the air pressure in the free flight interval of the individual fibers between the mouth of the channel and the line of yarn formation, P_2 being equal to or less than P_0,

P_3 is the air pressure in the suction means, and

P_0 is the atmospheric air pressure.

7. In an apparatus for spinning of individual fibers into a yarn along a line of yarn formation including hollow, air permeable, rotating roller means containing suction means into which a current of air is drawn to form said line of yarn formation extending longitudinally along the roller means, fiber feed channel means for conveying a stream of said fibers through a channel mouth extending along and adjacent to said line of yarn formation, the improvement comprising carding means to receive a tow of fibers and separate it into the individual fibers, said carding means embodying a rotatably driven carding roller with projections on its circumference in a carding chamber communicating with said channel for discharge of separated fibers into the channel, a pressurizable casing forming a substantially airtight chamber about said carding means, tow passage means extending through said casing for feed of a tow of entangled fibers to said carding means, seal means to seal the tow passage means substantially against leakage of pressurized air, and air passage means in said carding means for flow of pressurized air from said casing through said carding means into said channel.

4,202,164

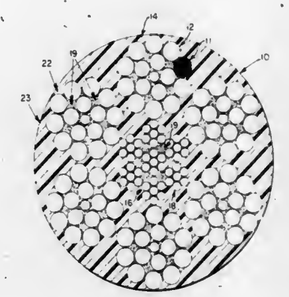
LUBRICATED PLASTIC IMPREGNATED ARAMID FIBER ROPE

Neville H. Simpson, and Fred E. Dykeman, both of Kenosha, Wis., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Nov. 6, 1978, Ser. No. 958,339

Int. Cl.² D07B *1/16, 5/00*; D02G *3/36*

U.S. Cl. 57—232 **2 Claims**



1. A rope comprising a central core, said central core being comprised of a plurality of aramid fiber strands laid around a central core strand, said strands being lubricated with a heavy, viscous lubricant, a plurality of aramid fiber outer strands laid around said central core, said strands being equally spaced from each other and lubricated with a heavy, viscous lubricant, and a flexible thermoplastic material filling the space between said central core and said outer strands and between adjacent outer strands to retain the lubricant in said strands and to keep said outer strands in a fixed position relative to each other,

said thermoplastic material extending outwardly to the outer periphery of said outer strands.

4,202,165

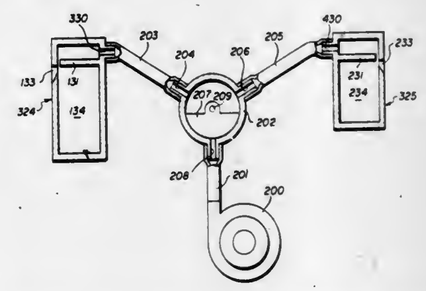
BELLOWLESS CUCKOO CLOCK

Christian M. J. Jauch, Louisville, Miss., assignor to Spartus Corporation, Chicago, Ill.

Filed Dec. 27, 1977, Ser. No. 864,255

Int. Cl.² G04B *21/08*

U.S. Cl. 368—272 **3 Claims**



1. In a cuckoo clock having a clock mechanism, a cuckoo whistle actuable to produce the cuckoo sound and having entry and exit openings, bellowless mechanical means for actuating said cuckoo whistle, and linking means connecting said bellowless mechanical means to said clock mechanism for automatically actuating the bellowless mechanical means at

preselected intervals determined by said clock mechanism, said bellowless mechanical means comprising:

an air blower;

a valve housing having an entry port communicating with said blower and an exit port communicating with the entry opening of said cuckoo whistle;

a shutter within said valve;

and means mounting said shutter for sequential movement within said housing from a first position in which said shutter closes said entry port to an intermediate position in which neither the entry port nor the exit port is closed by the shutter to a final position in which the exit port is closed by the shutter;

said linking means comprising means connected to said shutter for actuating said sequential movement by the shutter at said preselected intervals.

4,202,166

SOLID STATE WATCH MODULE CONSTRUCTION

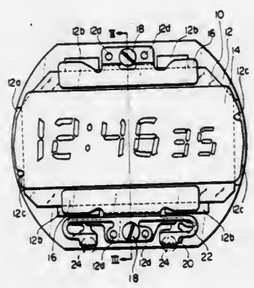
Katsuhiko Komiyama, Tokyo; Noriyuki Kasama, Hino; Keiji Tsukamoto, Tokyo, and Tomomi Murakami, Higashi-Yamato, all of Japan, assignors to Cltizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 727,500, Sep. 28, 1976, abandoned. This application Nov. 7, 1978, Ser. No. 958,580

Claims priority, application Japan, Oct. 1, 1975, 50-118599; Oct. 7, 1975, 50-121136; Oct. 13, 1975, 50-122489; Oct. 21, 1975, 50-125971

Int. Cl.² G04B *19/30*; G04C *3/00*

U.S. Cl. 368—82 **5 Claims**



1. A solid state watch module construction having a battery, comprising:

a ceramic substrate having an integrated circuit chip mounted on one side of said substrate at a centrat portion thereof and providing drive signals indicative of time information, a first plurality of electrical terminals formed on the one side of said substrate and electrically connected to said integrated circuit chip through printed circuit leads, and a second plurality of electrical terminals formed on another side of said substrate and electrically connected to said integrated circuit chip and said battery to receive electric power therefrom;

a battery supporting frame having a first recess formed on one side of said battery supporting frame at a central portion thereof to support said battery at said central portion to be in vertical alignment with said integrated circuit chip, a second recess formed on another side of said battery supporting frame to support said substrate at said another side thereof, and a third recess formed between said first and second recesses;

a metallic intermediate battery supporting plate received in the third recess of said battery supporting frame and overlying said another side of said substrate, said battery supporting plate serving as shock absorbing means to prevent said battery from being brought into direct contact with said substrate when said module construction is subject to external shocks;

an electro-optical display cell responsive to said drive signals to provide a display of said time information and having a third plurality of electrical terminals;

a cell suppporting frame having a substrate retaining recess formed at one side of said cell supporting frame to position said substrate relative to said display cell, said cell supporting frame being fixedly secured to said battery supporting frame to retain said substrate between said substrate receiving recesses of said battery supporting frame and said cell supporting frame, and said cell supporting frame having a cell receiving recess formed on another side of said cell supporting frame at a central portion thereof to receive said display cell at a position opposing to said battery with respect to said substrate;

first and second connector members made of electrical conductive rubber, and disposed between said display cell and said substrate said first and second connector members positioning said display cell with respect to said substrate within said cell receiving recess and making electrical contact between the first and third plurality of electrical terminals; and

first and second cell retaining plates rigidly secured to said cell supporting frame at the one side thereof to compress said display cell to said first and second connector members which are consequently held in pressured contact with said substrate to ensure electrical conductance between said first and third plurality of electrical terminals.

4,202,167

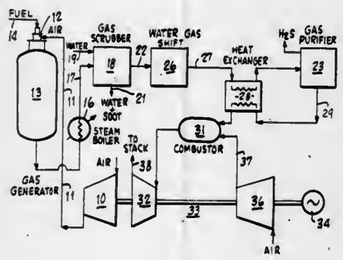
PROCESS FOR PRODUCING POWER

Robert M. Suggitt, Wappingers Falls; William N. Gilmer, Patterson, both of N.Y., and George N. Richter, San Marino, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,820

Int. Cl.² F02C *3/22*

U.S. Cl. 60—39.02 **5 Claims**



1. In a method for the generation of power wherein a nickel-containing carbonaceous or hydrocarbonaceous liquid or solid fuel is gasified by partial oxidation with oxygen-containing gas at an elevated temperature and pressure producing hot raw fuel gas comprising carbon monoxide and hydrogen admixed with nitrogen and carbon dioxide, the improvement which comprises cooling said hot raw fuel gas with the production of steam and expanding the so-produced steam in a heat engine with the production of power, passing said cooled raw fuel gas now containing nickel carbonyl in admixture with added steam or water vapor into contact with a water gas shift reaction catalyst at elevated pressure and a temperature above about 315° C. effecting decomposition of nickel carbonyl and removal of nickel from the fuel gas stream and also effecting conversion of at least a portion of said carbon monoxide and steam in said fuel gas to carbon dioxide and hydrogen, thereby producing a fuel gas enriched in hydrogen and carbon dioxide, and subjecting said hydrogen and carbon dioxide-enriched fuel gas to substantially complete combustion and expansion of the products of combustion in a heat engine with the generation of power.

4,202,168

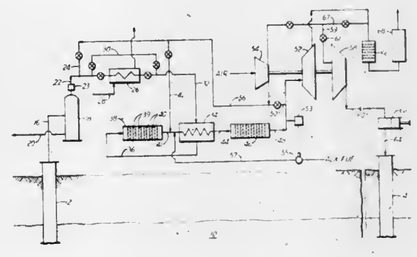
METHOD FOR THE RECOVERY OF POWER FROM LHV GAS

Willard P. Acheson, Pittsburgh, Pa.; Richard A. Morris, Missouri City, Tex.; Raymond J. Rennard, Pittsburgh, and Thiagarajan Viswanathan, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 791,850, Apr. 28, 1977, abandoned. This application Jul. 18, 1878, Ser. No. 925,703

Int. Cl.² F02C *3/22, 7/22*

U.S. Cl. 60—39.06 **24 Claims**



1. A method for the in-situ recovery of oil from a subsurface carbonaceous deposit comprising igniting the carbonaceous deposit to form a combustion front, delivering air into the carbonaceous deposit under pressure and displacing it through the combustion front to burn a portion of the carbonaceous deposit and drive oil and LHV gas ahead of the combustion front, delivering produced oil and LHV gas to the surface, mixing air with the LHV gas and passing the mixture in contact with an oxidation catalyst to oxidize combustibles in the LHV gas to produce hot combustion products, the amount of air mixed with the LHV gas being less than the stoichiometric equivalent of the combustibles in the LHV gas and limiting the maximum temperature reached on oxidation to the maximum operating temperature of the catalyst, generating power with the hot combustion products from the oxidation, and driving a compressor with power generated to compress the air delivered into the carbonaceous deposit.

4,202,169

SYSTEM FOR COMBUSTION OF GASES OF LOW HEATING VALUE

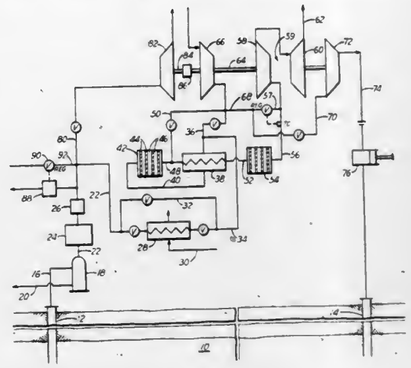
Willard P. Acheson, Pittsburgh, Pa.; Richard A. Morris, Missouri City, Tex., and Thiagarajan Viswanathan, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 791,850, Apr. 28, 1977, abandoned, and a continuation-in-part of Ser. No. 925,703, Jul. 18, 1978. This application Aug. 3, 1978, Ser. No. 930,557

Int. Cl.² F02C *3/22*; F02C *7/22*

U.S. Cl. 60—39.12 **16 Claims**

1. Apparatus for the recovery of power from LHV gas discharged from an in-situ combustion process comprising a gas turbine, an air compressor driven by the gas turbine, an external combustor for burning the LHV gas, said combustor comprising a first stage catalytic combustion chamber and a second stage catalytic combustion chamber, a heat exchanger between the first stage catalytic combustion chamber and the second stage catalytic combustion chamber connected to deliver products of combustion discharged from the first stage catalytic combustion chamber through the heat exchanger to the second stage catalytic combustion chamber, LHV gas conduit means to the heat exchanger for delivering the LHV gas from the in-situ combustion process to the heat exchanger, said heat exchanger being constructed and arranged for passing the LHV gas in indirect heat exchange with the products of combustion from the first stage catalytic combustion chamber, conduit means from the heat exchanger to the inlet of the first stage catalytic combustion chamber, said conduit means communicating through the heat exchanger with the LHV gas conduit means for delivery of LHV gas to the first stage catalytic combustion chamber, hot gas conduit means from the outlet of the second stage catalytic combustion chamber to the



gas turbine for delivery of hot products of combustion to the gas turbine, and air conduit means from the air compressor connected for supplying compressed air to the LHV gas before entrance to the first stage catalytic combustion chamber and to gas delivered to the second stage catalytic combustion chamber.

4,202,170

COMBUSTION CHAMBER FOR GAS TURBINES

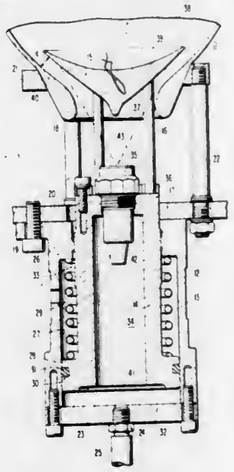
Franz-Josef Meyer, Marbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 29, 1977, Ser. No. 865,727

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659351

Int. Cl.² F02C *7/22, 9/14*

U.S. Cl. 60—39.23 **8 Claims**



1. A combustion chamber for gas turbines of the type having a variable inlet cross-section for primary air comprising:

(a) a turbine combustion chamber inlet means for admitting a supply of fuel and primary air to a turbine combustion chamber;

(b) a fuel injection nozzle means for injecting fuel through said inlet means;

(c) fuel supply means for supplying fuel to said nozzle means;

(d) inlet adjustment means exposed to fuel pressure in said supply means for adjusting the cross-sectional area of said inlet means so as to achieve a matching of primary air quantity to fuel quantity supplied to the combustion chamber in dependence upon said fuel pressure.

4,202,171

APPARATUS FOR DISPENSING FUEL FOR A GAS TURBINE ENGINE

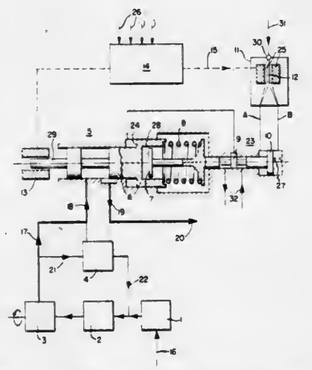
Wilhelm Jurisch, Nellingen; Christian Greune, Fürstenfeldbruck, and Karl Maier, Munich, all of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union GmbH, Fed. Rep. of Germany

Filed Jan. 19, 1978, Ser. No. 870,676

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1977, 270259

Int. Cl.² F02C 9/08

U.S. Cl. 60—39.28 R **11 Claims**



1. Fuel dispensing apparatus for dispensing fuel for a gas turbine engine comprising:

a fuel metering slide valve which directly controls the supply of fuel to a gas turbine engine in dependence on the position of a movable control slide piston of said metering slide valve,

a first servo-mechanism including an electro hydraulic converter responsive to electrical input signals to control the flow of a first servo-fluid supply,

a second servo-mechanism for controlling the flow of a second servo-fluid supply which acts on the control slide piston to control the position of said control slide piston, said second servo-mechanism being in turn controlled by the first servo-fluid supply from said first servo-mechanism,

and feedback signal means for supplying the second servo-mechanism with a feedback signal which is the function of the position of the control slide piston of the metering valve,

whereby high regulating speed of said control slide piston is obtained due to the servo-mechanism, while instabilities in the operation of the metering valve are limited by the feedback signal means,

wherein said second servo-mechanism includes a movable auxiliary control slide piston which controls the flow of the second servo-fluid supply to said control slide piston, and wherein the feedback signal means includes means for supplying a feedback signal which is proportional to the distance between, and the related velocities of, the control slide piston and the auxiliary control slide, piston, and

wherein said feedback signal means includes fluid in a common chamber contacted by respective facing pressure faces of said control slide piston and said auxiliary control slide piston.

4,202,172

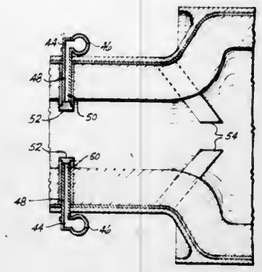
BOOST SURVIVABLE RAMJET ELEMENTS

Dietrich W. Brunner, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 1, 1976, Ser. No. 662,983

Int. Cl.² F02K 7/10

U.S. Cl. 60—245 **1 Claim**



1. In a rocket-ramjet projectile, having a solid boost propellant for use during the rocket phase, and a ramjet fuel disposed in a fuel tank within the projectile during the ramjet phase, the solid boost propellant disposed in a chamber, the chamber functioning as a combustor once the solid boost propellant is exhausted, the combustion comprising:

(a) injector means communicating with the ramjet fuel or injecting ramjet fuel into combustor after the solid boost propellant is exhausted;

(b) flameholding means mounted to the projectile in the rammed air stream for producing a stabilized flame front in the combustor during ramjet operation;

(c) a graphite slip-on cover associated with said injector means and said flameholding means for protecting said injecting means and flameholder means from high temperatures during the burning of the solid boost propellant, said graphite slip-on cover being removable after the substantial burnout of the solid boost propellant.

4,202,173

SECONDARY AIR SUPPLYING DEVICE OF AN INTERNAL COMBUSTION ENGINE

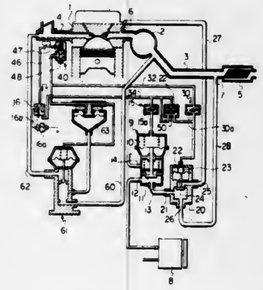
Nobuaki Wakita, and Kohei Igarashi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 8, 1978, Ser. No. 913,885

Claims priority, application Japan, Mar. 22, 1978, 53-31686

Int. Cl.² F01N 3/10

U.S. Cl. 60—290 **1 Claim**



1. A secondary air supplying device of an internal combustion engine having an exhaust manifold, and an exhaust passage provided with a catalyzer for purifying exhaust gas which flows therein, said device comprising:

first air injection means having a first air injection port in said exhaust passage upstream of the exhaust manifold of the engine;

second air injection means having a second air injection port in said exhaust passage upstream of said catalyzer;

an air pump for supplying secondary air;

a first vacuum pressure passage;

a second vacuum pressure passage;

a third vacuum pressure passage fluidly connected in parallel with said second vacuum pressure passage;

a first air changing means connected to said air pump and comprising a first pneumatic valve having a first diaphragm chamber connected to the intake manifold through said first vacuum pressure passage;

a second air changing means comprising a second pneumatic valve having a second diaphragm chamber and being adapted to selectively supply the secondary air to one of said first and second air injection ports;

a solenoid valve in said first vacuum pressure passage, said solenoid valve having an atmospheric air introduction port;

a thermo-switch for detecting the temperature of the engine;

said solenoid valve being actuated by said thermo-switch so that when the engine is operated in a cooled condition, atmospheric air is introduced into said first diaphragm chamber so as to release the secondary air into the atmosphere, and when the engine is operated in warming and warmed up conditions, intake manifold vacuum pressure is introduced into said first diaphragm chamber so as to supply the secondary air to said second air changing means;

said second diaphragm chamber being connected to the intake manifold by means of said second vacuum pressure passage and said third vacuum pressure;

a vacuum pressure changing switch in said second vacuum pressure passage, said vacuum pressure changing switch having an atmospheric air introduction port and a sensor for detecting the temperature of engine cooling water, so that when the engine is operated in a warming condition, atmospheric air is transmitted to said second diaphragm chamber so as to supply the secondary air to said first air injection port, and when the engine is operated in a warmed up condition, the intake manifold vacuum pressure is transmitted to said second diaphragm chamber, so as to supply the secondary air to said second air injection port;

a pressure delay valve by which vacuum pressure is maintained in said second diaphragm chamber during a predetermined time interval after the intake manifold vacuum pressure is reduced when the engine is in a high load operating condition, said pressure delay valve being in said second vacuum pressure passage; and

a vacuum pressure introduction valve through which vacuum pressure is temporarily transmitted to said second diaphragm chamber, so as to supply the secondary air to said second air injection port when the intake manifold vacuum pressure is abruptly increased, said vacuum pressure introduction valve being in said third vacuum pressure passage.

4,202,174

HYDRAULIC DRIVE

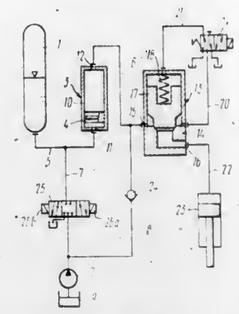
Anatoly S. Grigorenko, ulitsa Tovstukho, 1, kv. 21; Jury A. Moroz, ulitsa Fugenfirova, 11, kv. 91; German N. Kuznetsov, ulitsa Romanenko, 8, kv. 46; Vladimir I. Vimba, ulitsa 50 let VLKSM, 4-v, kv. 55; Vladimir V. Landyshev, ulitsa 50 let VLKSM, 14-a, kv. 22, all of Omsk; Jury A. Bocharov, 15 Parkovaya, 18, korpus 1, kv. 109, and Anatoly V. Safonov, Sevastopolsky prospekt, 51, korpus 1, kv. 11, both of Moscow, all of U.S.S.R.

Filed May 16, 1978, Ser. No. 906,621

Int. Cl.² F15B 1/02

U.S. Cl. 60—413 **3 Claims**

1. A hydraulic drive comprising a gas-hydraulic accumulator in the form of a container filled with a service fluid and gas for maintaining a preset pressure in said container, a reservoir holding a supply of service fluid, a pump for transferring the service fluid from said reservoir, a chamber for the service fluid whose volume is equal to at least the consumption of fluid by a working stroke of a device utilizing said drive, said chamber being divided by a piston into two spaces, a first pipeline for communicating said accumulator with one space of said chamber, a second pipeline adapted for communicating the other space of said chamber with the device utilizing said



drive, said second pipeline being provided with a closing device for cutting off the supply of fluid to the device, a distributing device for controlling the opening and closing of said closing device, a third pipeline for communicating said pump with said other space of the chamber, a nonreturn valve installed in said third pipeline, a fourth pipeline communicating with said first pipeline and with the pump and intended to supply the service fluid from the reservoir into the accumulator.

4,202,175

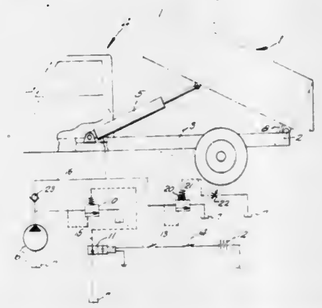
HYDRAULIC CONTROL SYSTEM FOR A DUMP TRUCK

John D. Hale, and Frank L. Hale, both of P.O. Box 11, Swisshome, Oreg. 97480

Continuation-in-part of Ser. No. 796,741, May 13, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 947,443

Int. Cl.² F15B 15/18

U.S. Cl. 60—477 **9 Claims**



1. A hydraulic dump body control system, said system comprising,

a pump,

a hydraulic lift cylinder coupled to a truck dump body and in communication with said pump,

a first relief valve of a remote pilot operated type in upstream communication with said pump,

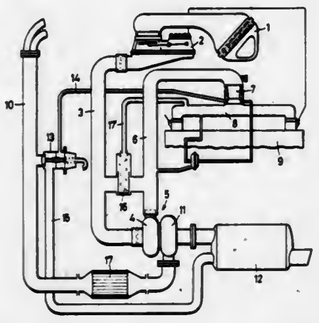
a directional control valve of a solenoid actuated type in piloting communication with said first relief valve piloting the last mentioned valve to a closed position for pressurization of said cylinder by said pump and alternatively piloting same open for unloading of pump output to a

reservoir, a control circuit for said directional control valve including an operator actuated switch,
a second relief valve also of a remote pilot operated type in fluid communication with said cylinder, and
a manually adjustable flow control valve in piloting communication with said second relief valve to permit manually controlled exhausting of fluid from said cylinder to a reservoir and hence lowering of the dump body in a controlled manner.

4,202,176
INTERNAL COMBUSTION ENGINE WITH AN EXHAUST GAS TURBOCHARGER FORMED BY AN EXHAUST GAS TURBINE AND BY A SUPERCHARGING BLOWER DRIVEN THEREBY

Hans Mezger, Freiberg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 739,027, Nov. 4, 1976, abandoned. This application May 24, 1978, Ser. No. 909,049
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2549934
Int. Cl.² F02B *37/00*
U.S. Cl. 60—600 **12 Claims**



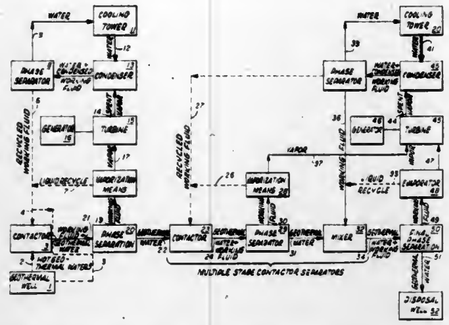
1. An internal combustion engine with an exhaust-gas line, an exhaust-gas turbo-charger including an exhaust-gas turbine in said exhaust-gas line and a supercharging blower driven by the exhaust-gas turbine, a catalyst in said exhaust-line, an auxiliary by-pass line branching off said exhaust-gas line in by-passing relationship to said exhaust-gas turbine and said catalyst, a control valve means responsive to the charging pressure of air supplied by the supercharging blower to the engine and located between the exhaust gas line and the by-pass line for controlling flow through said by-pass line, and means in communication with said charging pressure for opening said control valve when said charging pressure reaches a predetermined value so as to cause that portion of the exhaust gases which could result in thermal overloading of the catalyst to flow through said by-pass line and around said catalyst.

4,202,177
ENERGY PRODUCTION FOR COMPLEX GEOTHERMAL WATERS

Donald E. Garrett, 110 N. Bristol St., Ojai, Calif. 93023

Filed May 5, 1977, Ser. No. 794,080
Int. Cl.² F03G *7/00*; F01K *25/08*
U.S. Cl. 60—641 **34 Claims**

1. A method for utilizing geothermal fluid from a well as a source of energy to produce work, the method comprising the steps of:
effecting an initial contact within the confines of said well between the geothermal fluid and an immiscible working fluid for a sufficient residence period to effect a heat transfer from the geothermal fluid to the working fluid;
flowing the resultant geothermal fluid-working fluid mixture to the surface;
separating the heated working fluid from substantially all the geothermal fluid;

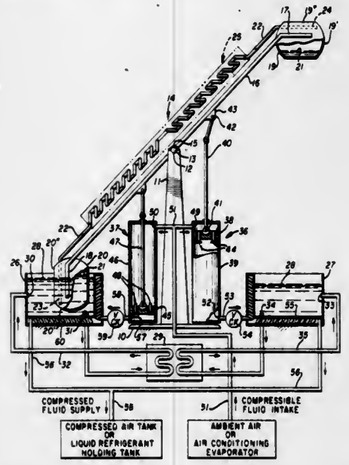


rapidly varporizing the working fluid and utilizing the resulting vapors to operate a mechanical working device to produce work.

4,202,178
LOW-BOILING LIQUID APPARATUS

Paul L. Peterman, Rte. 1, Box 161; S. F. Peterman, Rte. 2, Box 33, and Henry D. Waldrep, P.O. Box 372, all of Celina, Tex. 75009

Filed Jun. 23, 1978, Ser. No. 918,500
Int. Cl.² F03G *3/00*; F01K *25/00*
U.S. Cl. 60—675 **14 Claims**

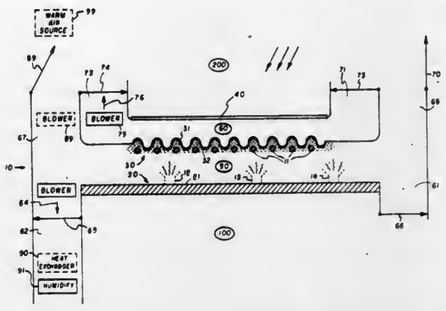


1. A thermodynamic motor powered fluid compression apparatus, comprising a centrally pivotable arm member, liquid holding tank means affixed to respective opposite end extremes of said arm member, a fluid communication means extending between said liquid holding tank means, with said tank means and fluid communication means comprising a closed system, a low-boiling liquid supply contained in said closed system, first and second water holding tank means into which respective ones of said liquid holding tank means are immersible by pivot action of said arm member; fluid compression means, drive means connected between said pivotable arm member and said fluid compression means, and heat exchanging means communicating with said fluid compression means and said water holding tank means whereby heat of compression is transferred into said water holding tank means.

4,202,179
SOLAR AIR CONDITIONING APPARATUS AND METHOD

Edwin F. Shelley, New Rochelle, N.Y., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Jun. 13, 1977, Ser. No. 805,919
Int. Cl.² F25B *27/00*
U.S. Cl. 62—2 **16 Claims**

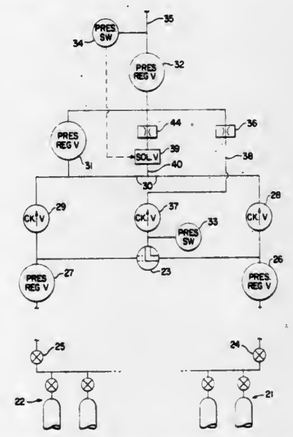


1. Apparatus for drying and/or cooling internal environment air using solar energy, comprising:
a central member having top and bottom surfaces, said top surface being radiation-absorbing;
a top member, which is substantially transmissive of solar radiation, disposed above the top surface of said central member and spaced therefrom so as to define a first air chamber as between said central and top members;
a bottom member disposed below the bottom surface of said central member and spaced therefrom so as to form a second chamber;
a desiccant disposed in said second chamber;
auxiliary heating elements disposed in contact with said desiccant and adapted to heat-dry said desiccant;
means for energizing said auxiliary heating elements when solar energy is insufficiently present; and
means for periodically circulating internal environment air through said second chamber.

4,202,180
LIQUEFIED GAS SUPPLY SYSTEM

Frank H. Cox, Avon Lake, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Oct. 13, 1978, Ser. No. 950,995
Int. Cl.² F17C *7/02*
U.S. Cl. 62—50 **13 Claims**

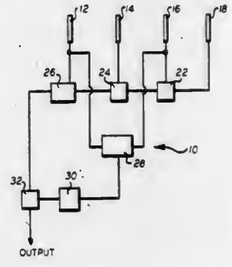


1. In a liquefied gas supply system having first and second supply banks and means for replacing spent banks with fresh supply banks and in which system the first and second supply banks alternate in the roles of "service" supply and "reserve" supply to a downstream line fed through a line pressure regulator, and resetting means is provided for effecting the exchange of such roles upon replacement of the supply bank which has most recently been acting as "service" supply, and in which system the bank acting as "service" supply tends to become relatively cold under moderate or relatively high flow demands and the bank acting as "reserve" supply tends to remain relatively warm, flow limiting means for limiting the flow rate from the acting "service" bank to a predetermined level not greatly exceeding the average flow demand of said downstream line to thereby limit the rate of absorption of heat-of-vaporization by the relatively cold acting "service" bank, and means for bleeding makeup gas from the relatively warm acting "reserve" bank so long as such predetermined level is not sufficient to meet demand in said downstream line.

4,202,181
FUEL CONSERVATION CONTROLLER FOR HEATING AND REFRIGERATION APPARATUS

Jeffrey W. Lamb, 172-41 Highland Ave., Jamaica Estates, N.Y. 11432

Continuation-in-part of Ser. No. 779,735, Mar. 21, 1977, Pat. No. 4,090,372. This application May 22, 1978, Ser. No. 908,109
Int. Cl.² F25B *15/00*
U.S. Cl. 62—141 **5 Claims**



1. A controller for reducing the energy consumption of a closed, variable capacity system of the type used for modifying the climate of an area remote from the system, said system including means for varying the energy input to the system for varying the capacity thereof, said controller comprising:
first parameter sensing means disposed for sensing a first parameter indicative of the actual capacity of the system at any given time and for providing a first tracking signal output indicative thereof;
second parameter sensing means disposed for sensing a second parameter indicative of the most energy efficient system capacity based on said second parameter and for providing a second tracking signal output indicative thereof;
third parameter sensing means for sensing a third parameter indicative of the most energy efficient system capacity based on said third parameter and for providing a third tracking signal output indicative thereof;
means operatively connected to said second and third tracking signal outputs for comparing said second and third tracking signals, selecting the one indicative of the most energy efficient system capacity and for providing a first control signal output indicative of said one tracking signal;
means operatively connected to said first tracking signal output and said first control signal output for comparing said first tracking signal indicative of said actual system capacity with said first control signal indicative of said most energy efficient system capacity and for providing a second control signal output indicative of the change in

energy input necessary to adjust said actual system capacity to said most energy efficient capacity; and

means operatively connected to said second control signal output and responsive to said second control signal for controlling said capacity varying means to effect said change.

4,202,182

MULTI-TUBE EVAPORATOR FOR A COOLER USED IN AN AUTOMOBILE

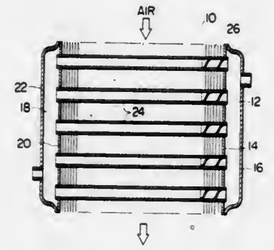
Kenichi Kawashima, Hitachi; Yosiaki Arima, Taga; Yoshihide Endo, Katsuta; Atsushi Suginuma; Akira Uenishi, both of Mito, and Seigo Miyamoto, Takahagi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 3, 1978, Ser. No. 902,497

Claims priority, application Japan, May 10, 1977, 52-53473

Int. Cl.[2] F25B *41/06*

U.S. Cl. 62—511 **5 Claims**



1. A multi-tube evaporator for a cooler used in an automobile having a refrigerant supply header, a refrigerant collector, a plurality of evaporating tubes connecting said refrigerant supply header and said refrigerant collector, and a plurality of fins associated with evaporating tubes characterized in that a columnar member is tightly inserted in said each evaporating tube at its inlet, the diameter of said columnar member being substantially equal to the inner diameter of said evaporating tube, and capillary means being engraved as a spiral groove on the surface of said columnar member for passing refrigerant from said refrigerant supply header into each evaporating tube by capillary action with a reduction in the pressure of the refrigerant as it passes therethrough, whereby the refigerant is uniformly distributed into the evaporating tubes.

4,202,183

GEAR COUPLING

Michael Fröhlich, Kirchheim-Teck, and Walter Stähle, Uhingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

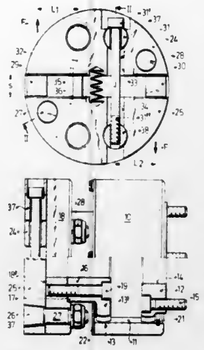
Filed Aug. 26, 1977, Ser. No. 828,226

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643784

Int. Cl.[2] F16C *3/00*

U.S. Cl. 64—1 C **4 Claims**

1. In a toothed coupling including a coupling bushing with internal teeth, a first ring gear with convex external teeth in mesh with a portion of the internal teeth of the bushing and a second ring gear with convex external teeth in mesh with another portion of the internal teeth of the bushing, a combination comprising a support disk secured to one of said ring gears, a pair of facing clamp jaws journalled for rotation on said support disk at diametrically opposed pivot points; connecting means disposed between the end portions of said jaws; and tensioning means engaging said jaws between said pivot points for substantially radially forcing said jaws against said connecting means, said tensioning means including aligned bores in said jaws, a rotary washer seated on one jaw in alignment with one of said bores, a rotary nut supported on the



other jaw in alignment with the other bore, and a tensioning screw passing through said washer and engaging said nut.

4,202,184

HOMOKINETIC UNIVERSAL JOINT ASSEMBLY

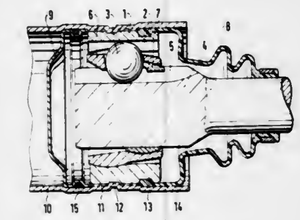
Werner Krude, Neunkirchen, and Alfons Jordan, Hennef, both of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Lohmar, Fed. Rep. of Germany

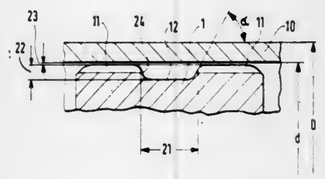
Filed Aug. 23, 1978, Ser. No. 935,876

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740226

Int. Cl.[2] F16D *3/84, 3/30*

U.S. Cl. 64—32 R **4 Claims**





1. A homokinetic universal joint assembly comprising: an inner joint member; an outer joint member having an outer peripheral portion; torque transmission means interposed between said inner and outer joint members to effect torque transmission therebetween; means supporting said torque transmission means in operative engagement between said inner and outer joint members; a tubular drive sleeve locked in engagement about said outer peripheral portion of said outer said joint member; a sealing boot affixed in sealing engagement between said inner and outer joint members, said sealing boot including a thickened portion at one end thereof; axial grooves formed in said outer peripheral portion of said outer joint member and extending generally axially of said joint assembly; at least one annular groove formed in said outer peripheral portion of said outer joint member extending circumferentially thereof transversely of said axial grooves; said tubular drive sleeve being shaped to conform with the configuration of said axial grooves and said at least one annular groove to lock said tubular drive sleeve in fixed engagement relative to said outer joint members; said axial grooves being uniformly distributed over said outer peripheral portion, said at least one angular groove having a depth which is greater than the depth of said axial grooves and being arranged at approximately the midpoint of said outer peripheral portion of said outer joint member over which said axial grooves extend; and an annular recess formed in said outer peripheral portion of said outer joint member receiving therein said thickened portion of said sealing boot, said tubular drive sleeve being formed to extend over said annular recess to fixedly mount said sealing boot on said joint assembly.

4,202,185

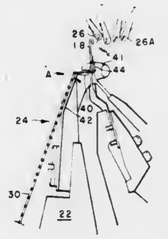
WARP KNITTING MACHINE

Bascum G. Lesley, Pickens, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 5, 1978, Ser. No. 948,787

Int. Cl.[2] D04B *23/00*

U.S. Cl. 66—203 **5 Claims**



1. A trick-sinker for a warp knitting machine comprising: a trick-sinker support member, a trick sinker band mounted on one side of said trick-sinker support and a plurality of thin plate members spaced from another to accommodate a knitting needle between adjacent plate members and connected to said trick-sinker support member on the side thereof away from said trick sinker band, each of said thin plate members having a sinker throat closely adjacent the top of said trick sinker band and opening towards said trick sinker band.

4,202,186

APPARATUS FOR DYEING A BUNDLE OF FIBERS SUCH AS A SLIVER OR TOP

Sadao Ohtake, Nishinomiya; Shuji Hayashida, Osaka; Hirotsugu Matsunaga, Yokkaichi, and Michinobu Kaimori, Suzuka, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

Division of Ser. No. 908,054, May 22, 1978, Pat. No. 4,172,704.

This application Dec. 21, 1978, Ser. No. 972,004

Claims priority, application Japan, May 25, 1977, 52-61548

Int. Cl.[2] D06B *23/00*

U.S. Cl. 68—3 R **9 Claims**

1. Apparatus for dyeing a bundle of fibers in a dyeing bath comprising:

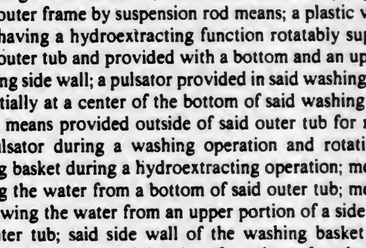
(a) a unit dyeing can formed by a main can and an auxiliary can separably mounted on said main can, filling means for filling a bundle of fibers into an upper portion of said dyeing can wherein said upper portion corresponds to said auxiliary can;

(b) pushing means for pushing a mass of said bundle of fibers contained in said auxiliary can into said main can to form a full packaged main can;

(c) separation means for separating said auxiliary can from said main can;

(d) arrangement means for arranging a plurality of said full packaged main cans in a predetermined positional relationship conforming to the layout of a plurality of main cans in said dyeing bath;

(e) supplying means for supplying said full packaged main cans, which have been previously arranged in said predetermined positional relationship, to said dyeing bath;



(f) dyeing means for dyeing said full packaged main cans; and

(g) take-out means for taking-out dyed bundles of fibers from said main cans, thereby resulting in an empty main can.

4,202,187

WASHING BASKET OF WASHING MACHINE CAPABLE OF FUNCTIONING AS HYDROEXTRACTOR

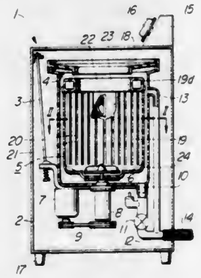
Soiti Hukuzawa, Hitachi; Mituyuki Togasi, Iwaki, and Toshiro Mori, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 6, 1978, Ser. No. 913,058

Claims priority, application Japan, Jun. 9, 1977, 52-67290

Int. Cl.[2] D06F *17/06, 23/04, 37/14*

U.S. Cl. 68—18 F **2 Claims**



1. A washing machine having a hydroextracting function comprising: an outer frame; an outer tub resiliently supported in said outer frame by suspension rod means; a plastic washing basket having a hydroextracting function rotatably supported in said outer tub and provided with a bottom and an upwardly extending side wall; a pulsator provided in said washing basket, substantially at a center of the bottom of said washing basket; driving means provided outside of said outer tub for rotating said pulsator during a washing operation and rotating said washing basket during a hydroextracting operation; means for draining the water from a bottom of said outer tub; means for overflowing the water from an upper portion of a side wall of said outer tub; said side wall of the washing basket having formed on an inner peripheral surface thereof a plurality of longitudinally extending protrusions, each of said protrusions having an arcuate cross-section projecting inwardly of said washing basket, and a plurality of longitudinally extending grooves, each of said grooves being formed between said longitudinally extending projections so that said protrusions and the grooves are alternatively disposed over the entire circumference of the inner peripheral surface of the side wall of said washing basket, wherein hydroextracting apertures are formed at least in bottoms of said grooves, the width of said protrusions being within a range of 20 mm to 50 mm, and the depth of said grooves being within a range of 5 mm to 10 mm.

and said washing basket further being provided with baffle plates at the bottom of said washing basket.

4,202,188

APPARATUS FOR APPLYING A LIQUID ON A MOVING WEB IN PATTERNS

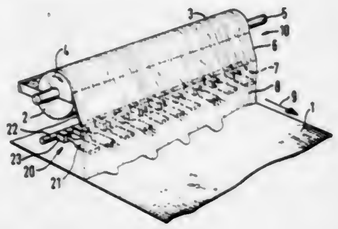
Heinz Grüber, Tönisvorst, Fed. Rep. of Germany, assignor to Eduard Kusters, Krefeld, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 918,947

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730891

Int. Cl.² D06B *1/04*

U.S. Cl. 68—205 R **9 Claims**



1. Apparatus for applying a liquid to a moving web in patterns, comprising:

(a) means for forming a liquid shroud which falls on the web and extends transversely over the web; and

(b) means, disposed between said means for forming the liquid shroud and the web, for displacing the falling shroud before it hits the web to cause non-uniform application of the liquid to the web, said means comprising at least one nozzle pointed toward the shroud for blowing a fluid medium against the shroud, said at least one nozzle supported such that its discharge direction is variable, in a plane parallel to the plane of the web.

4,202,189

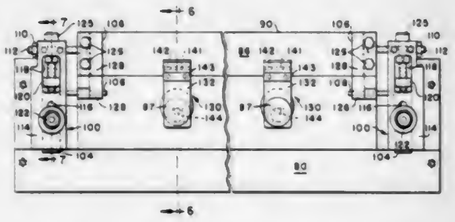
APPARATUS FOR THE APPLICATION OF LIQUIDS TO MOVING MATERIALS

Kenneth J. Addis, Inman, and John K. McCollough, Jr., Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 9, 1979, Ser. No. 28,715

Int. Cl.² D06B *1/02*

U.S. Cl. 68—205 R **10 Claims**



1. In an apparatus for applying liquids to moving material having means for conveying the material in a pre-determined path of travel, liquid applicator means having a row of outlets positioned above the path of travel of the material for continuously discharging a row of generally parallel streams of liquid downwardly toward the path of travel of the material, fluid discharge means positioned on one side of said row of outlets so that the discharge axes of said fluid discharge means intersect the discharge axes of said outlets, a liquid collection chamber mounted on the other side of said row of outlets, means supplying fluid to said fluid discharge means to direct liquid from said liquid application means into said liquid collection chamber and means mounting a long, thin liquid deflector blade in the path of travel of the liquid deflected by said fluid discharge means to said liquid collection chamber, said means mounting said deflector blade including a means to adjustably position said deflector blade relative to said row of outlets, a second means to apply tension to the end of said deflector blade and a third means to adjust selected portions of the outer edge of said deflector blade relative to other outer portions of said deflector blade.

4,202,190

APPARATUS FOR HIDE STRETCHING

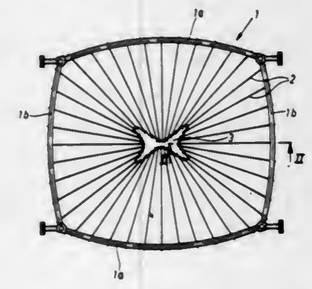
Antti K. Viljanmaa, 34800 Virrat, Finland

Filed Sep. 6, 1978, Ser. No. 939,977

Claims priority, application Finland, Sep. 6, 1977, 772643

Int. Cl.² C14B *1/26*; D06C *3/08*

U.S. Cl. 69—19.3 **9 Claims**



1. In a hide stretching apparatus, in particular for the tentering of wet hides for drying, of the type comprising in combination

a stretching frame having peripherally attached thereto and radially extending inwardly therefrom a plurality of guides, each of said guides having a first end affixed to said frame and a second end affixed to a center piece located centrally in said frame;

a like plurality of clamps, individual ones of said clamps being slidably attached to corresponding ones of said guides so as to be movable in an inward direction and an outward direction, respectively toward said second end and said first end of a corresponding one of said guides, each of said clamps being provided with a pair of jaws operable, by a lever provided each clamp, between an open position and a closed position, said jaws being so disposed and dimensioned as to be capable of grasping an edge of a hide when in said closed position and releasing said edge when in said open position, each of said clamps being further provided with a brake operable between a locked condition, wherein said brake engages with the corresponding one of said guides so as to prevent motion of said clamp along said corresponding one only in said inward direction, and an unlocked condition, wherein said brake is disengaged so as to allow said clamp to travel in both said inward direction and said outward direction; and

a hide changing table provided with a clamp displacement member for each of said clamps, said clamp displacement member being dimensioned and disposed so as to be capable of translating an individual one of said clamps along said corresponding one of said guides in both said inward direction and said outward direction under control of a detachment control and a stretching control;

the improvement comprising

a mechanical linkage between said lever and said brake so configured as to place said brake in said locked condition when said pair of jaws are moved by said lever into said closed position and to place said brake in said unlocked condition when said jaws are moved into said open position;

a first jaw of said pair of jaws being fixed relative to each of said clamps, a second jaw of said pair being attached to said first jaw through a pair of pivoting linkages; and

each said clamp displacement member is provided with a first gripping member which engages an inner edge of said individual one of said clamps to translate said individual one of said clamps in said outward direction, and a second gripping member which releasably engages an outer edge of said individual one of said clamps to impart a motion in said inward direction; said second gripping member being movably controlled relative to said clamp displacement member by said detachment control so as to be capable of engaging said outer edge only on command from said detachment control.

4,202,191

FAULT DETECTOR

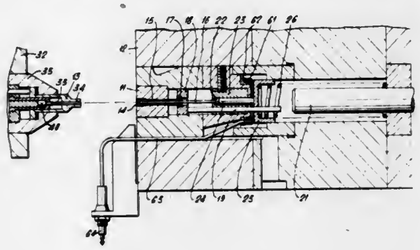
Edward A. Skinner, Welwyn Garden City, England, assignor to Avdel Limited, Hertfordshire, England

Filed Feb. 23, 1978, Ser. No. 880,707

Claims priority, application United Kingdom, Feb. 25, 1977, 8106/77

Int. Cl.² B21B *37/00*

U.S. Cl. 72—10 **10 Claims**



1. A fault detector for a metal-forming machine for producing a tubular workpiece which machine is of the type comprising

a fixed die which receives the workpiece;

a movable tool reciprocable in repeated cycles andmovable towards the die to act on the workpiece from the die;

which movable tool includes a metal-forming pin which is first advanced towards the die and into the workpiece, which machine includes means compressing the workpiece around the metal-forming pin so as to form a bore through the tubular workpiece, and which movable tool is subsequently retracted from the die in a direction opposite to the said direction of advance to provide for removal of the workpiece therefrom;

which fault detector comprises:

a detector pin mounted for axial movement along the axis of reciprocation of the said metal-forming pin and normally movable through the bore of the tubular workpiece, after the completion of the compression process, in the direction of retraction of the metal-forming pin; and

fault indicating means responsive to completion or noncompletion of normal movement of the detector pin for producing a signal indicating a fault if the detector pin has not moved normally through the workpiece bore as aforesaid.

4,202,192

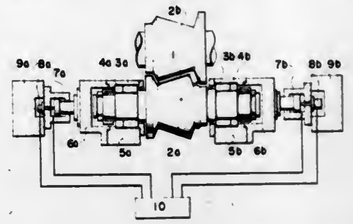
APPARATUS FOR CONTROLLING THE POSITION OF ROLL IN THE DIRECTION OF THE ROLL AXIS

Yoshikazu Haneda; Yoshun Yamamoto; Akira Matsufuji; Takashi Haji, all of Kitakyushu, and Koe Nakajima, Nakama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 21, 1978, Ser. No. 917,650

Int. Cl.² B21B *37/00, 31/18*

U.S. Cl. 72—21 **6 Claims**



1. An apparatus for controlling the position of at least one roll of a rolling mill in the direction of the roll axis for achieving a desired rolling thrust force in the axial direction, said rolling mill having bearing boxes supporting the roll and a rolling mill housing, said apparatus comprising at least two output means acting on said roll, one for moving the roll in one direction along the roll axis and the other for moving the roll in the opposite direction along the roll axis, output detecting means connected to said output means for detecting the output loads of the respective output means, position detecting means operatively connected with said roll for detecting the position of the roll in the direction of the roll axis, a first arithmetic means connected to said output detecting means for calculating the rolling thrust force in the axial direction of the roll from said detected output loads, a second arithmetic means connected to said first arithmetic means and said position detecting means for receiving inputs therefrom and for calculating the amount of movement of the roll necessary for achieving a desired rolling thrust force in the axial direction and connected to said output means for controlling the output means for moving the roll the desired amount.

4,202,193

APPARATUS FOR CONTROLLING THE CONCENTRATION AND STABILITY OF AN EMULSION

Walter A. Wilson, Pittsburgh, Pa., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Oct. 3, 1978, Ser. No. 948,626

Int. Cl.² B21B *27/10, 45/02*

U.S. Cl. 72—42 **13 Claims**

1. A lubricating system for supplying an oil-in-water emulsion lubricant to a metalworking operation comprising,

a reservoir for containing a supply of emulsion,

means for supplying fresh water to the reservoir,

oil delivery means for supplying oil to the reservoir,

means for mixing oil and water supplied to the reservoir to provide a uniform oil-in-water emulsion,

means for supplying emulsion from the reservoir to a metalworking operation and for returning used emulsion from the metalworking operation to the reservoir, and

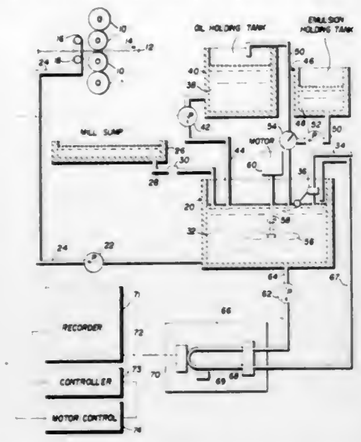
emulsion stability control means for controlling the stability of the emulsion in the system, the stability control means including, in combination,

a liquid density measuring cell operable to continuously measure the density of liquid therein and to generate an electric signal which is a function of the measured density,

circulating means including conduit means connecting the density measuring cell in the lubrication system for circulating a portion of the emulsion through the density measuring cell,

control means connected to said circulating means and operable to periodically interrupt the circulation of emulsion

through the density measuring cell while maintaining emulsion in the density measuring cell for a predetermined time sufficient to permit partial separation of the oil and water phases of the retained emulsion, the control means further including calculator means connected with and



operable to compare the signals from the density measuring cell at the beginning and end of the predetermined time to determine the stability of the emulsion, and

means responsive to the calculator means for dispensing an emulsifying agent for addition to the emulsion to maintain the desired stability.

4,202,194

INCLINED ROLLING STAND

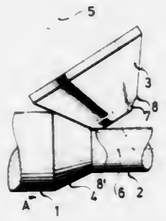
Hulbert den Hartog; Klaus Stann, both of Dortmund, and Lutz Stolze, Bonen, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Apr. 21, 1978, Ser. No. 898,817

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2718219

Int. Cl.² B21B *27/02*

U.S. Cl. 72—78 **3 Claims**



1. An inclined rolling stand for reducing a starting material to cylindrical form such as rods and pipes, which comprises in combination: a roll carrier adapted to be driven and to permit a central passage of the material to be rolled, said roll carrier also comprising three conical substantially identical and axially adjustable working rolls which are adapted to be driven and are inclined relative to the rolling axis at the same acute angle, said three working rolls being offset relative to each other around the rolling axis by 120°, each of said conical rolls being angularly displaced relative to an axial plane of said rolling axis through the conical roll so that the axis of said conical roll is at an angle to said axial plane, the smaller end of each conical roll being formed as a concave surface of revolution about the axis of said conical roll and curved in a plane through the axis of said roll to form a concave smoothing zone, said surface curvature conforming to the finished surface of the cylindrical form, so that said starting material is finished by said conical rolls.

4,202,195

SKEW ROLLING MILL ROLLER

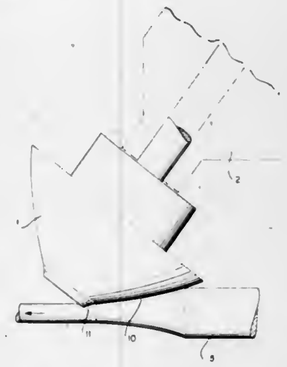
Eckhard Tuschy; Georg Wischmeyer, and Walter Steinkamp, all of Osnabruck, Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Guteboffnungshuette AG, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 926,091

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733401

Int. Cl.² B21B *27/02*

U.S. Cl. 72—78 **3 Claims**



1. In a skew rolling mill for cross section reduction of an elongated stock as it moves along a longitudinal axis without rotation about such axis, comprising:

a roller support means mounted for rotation about said longitudinal axis;

a plurality of tapered working rollers mounted within said roll support means and symmetrically about said longitudinal axis, each of said rollers being mounted for rotation about a secondary axis which intersects the elongated stock;

primary means for rotating said roll support means in a first direction; and

first intermediate means for rotating said rollers about said secondary axis and into the surface of said elongated stock for reducing the cross section of said stock,

the improvement comprising said tapered working rollers each including a first surface having the shape of a paraboloid for substantially equal or decreasing deformation in the cross section of the deformation taper of said stock.

4,202,196

METHOD OF MANUFACTURING STATOR CORE

Koichi Asai; Tohsuke Kawada, both of Chiryu; Yoshiyuki Iwaki, and Ryozo Kuroda, both of Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 923,400

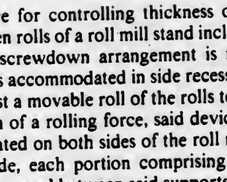
Int. Cl.² H02K *15/00*; B21D *11/06*

U.S. Cl. 72—137 **8 Claims**

1. A method of manufacturing a stator core, said method comprising:

spirally winding a magnetic strip having on one edge thereof alternate teeth and gaps to form a generally cylindrical spiral core member having a circumferential continuous portion, with said teeth and gaps of each convolution of said spiral core member being aligned axially thereof, with said aligned teeth extending radially inwardly from said circumferential continuous portion to form an inner substantially cylindrical surface defining a circular central opening, and with said aligned gaps extending radially outwardly from said central opening and said inner substantially cylindrical surface;

forcing a cylindrical tool, having a diameter larger than the diameter of said central opening, into said central opening, and thereby forcing said inner cylindrical surface radially outwardly to enlarge the diameter thereof, while allowing the outer periphery of said spiral core member to freely spread radially outwardly; and



compressing said spiral core member axially thereof, with said cylindrical tool maintained within said central opening, to form a core, and thereby imparting to said circumferential continuous portion a permanent strain sufficient to maintain the inner diameter of said core at a predetermined magnitude after the removal of said cylindrical tool.

4,202,197

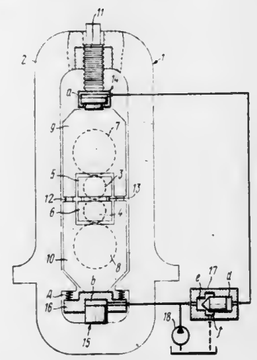
DEVICE FOR CONTROLLING THE THICKNESS OF STRIP STOCK BEING ROLLED

Vladimir N. Vydrin; Vladimir G. Dukmasov; Garifulla Davlyatshin, and Sergei L. Kuznetsov, all of Chelyabinsk, U.S.S.R., assignors to Chelyabinsky Politekhnichesky Institut, Chelyabinsk, U.S.S.R.

Filed Dec. 23, 1977, Ser. No. 864,012

Int. Cl.² B21B *37/12*

U.S. Cl. 72—245 **16 Claims**



1. A device for controlling thickness of strip stock being rolled between rolls of a roll mill stand including a roll housing on which a screwdown arrangement is mounted, mill rolls with supports accommodated in side recesses of said roll housing for at least a movable roll of the rolls to move in the direction of action of a rolling force, said device consisting of two portions situated on both sides of the roll mill stand and being similarly made, each portion comprising: a hydraulic dynamometer interposed between said supports of one of said work rolls and said roll mill stand housing to absorb the rolling force; at least one hydraulic cylinder provided between said supports of one of said rolls and said roll mill stand housing, a piston-end space of said hydraulic cylinder communicating with a source of power fluid under pressure to build up an adjusting force greater in magnitude than the rolling force, the difference between said forces being large enough for said movable roll and the supports to move in the course of rolling; elastic members to determine the position of said supports of said movable roll and to create a balancing force preventing said supports from being brought together and so positioned as to absorb the difference between the adjusting force and the rolling force, the adjusting force offering resistance to the rolling force and deforming said elastic members of the device, the ratio between a stiffness factor of said elastic members of the device and a stiffness factor of the roll mill stand being predetermined; a valve for regulating the pressure of power fluid effective in a piston-rod space of said hydraulic cylinder, comprising: a casing, a sliding spool accommodated in said casing to define a control chamber communicating with a chamber of said hydraulic dynamometer to form an enclosed fluid-filled space and a throttle chamber communicating with said piston-rod space of said hydraulic cylinder and with the source of power fluid to form an enclosed space for running power fluid.

4,202,198

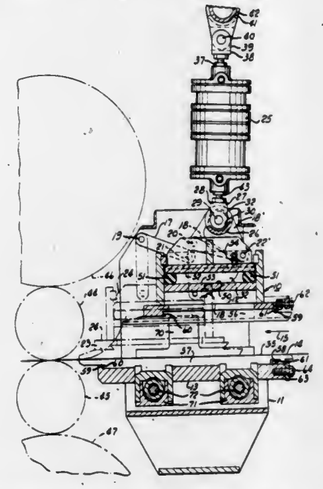
STRIP MILL ENTRY GUIDES AND METHOD OF CLAMPING WORKPIECE THEREIN

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Oct. 30, 1978, Ser. No. 956,176

Int. Cl.² B21B *37/16*

U.S. Cl. 72—250 **17 Claims**



1. A mill entry guide mechanism including a support frame with upper and lower platens positioned to receive an elongated workpiece therebetween and drive means movably supporting one of said platens from said frame for driven movement toward said other platen to clamp a workpiece therebetween, the improvement comprising second drive means disposed between said first drive means and said one platen to further drive said one platen into heavier clamping engagement with the workpiece after clamping engagement has been effected by said first drive means, and lock means extending between said second drive means and said frame and engageable to block said first drive means against forced retraction by said second drive means.

4,202,199

MANUFACTURE OF ALKYLPHENOL COMPOUNDS

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

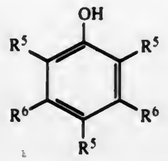
Filed Oct. 6, 1977, Ser. No. 839,775

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1976, 2650888

Int. Cl.² C07C 37/14

U.S. Cl. 568—793 11 Claims

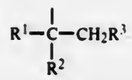
1. A process for the continuous manufacture of alkylphenol compounds of the formula



I.

where R^5 and R^6 are defined as follows:

(A) at least one R^5 is



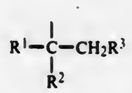
and one or two R^5 may also be hydrogen, alkyl of 1 to 9 carbon atoms, alkylphenyl of 7 to 12 carbon atoms, phenylalkyl of 7 to 12 carbon atoms or phenyl,

(i) R^1, R^2 and R^3 are identical or different and each is alkyl of 1 to 9 carbon atoms with the proviso that R^1 may also be alkylphenyl of 7 to 12 carbon atoms, phenylalkyl of 7 to 12 carbon atoms or phenyl and at least one of R^2 and R^3 may be hydrogen,

(B) R^6 may be identical or different and each is hydrogen, alkyl of 1 to 9 carbon atoms, alkylphenyl of 7 to 12 carbon atoms, phenylalkyl of 7 to 12 carbon atoms or phenyl, or

(C) one of the radicals R^5 and R^6 may also be $-OR^4$ where R^4 is hydrogen or alkyl of 1 to 9 carbon atoms,

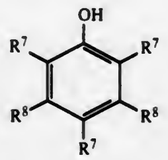
(ii) when the radicals R^6 are located in the ortho- or para-position to an $-OR^4$ radical, said R^6 radicals may also each be



wherein R^1, R^2 and R^3 are defined as described in part (A) above,

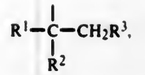
with the proviso that in the total of R^5 and R^6, at least one of said R^5 and R^6 radicals is selected from the group consisting of $-OR^4$, alkyl of 1 to 9 carbon atoms, alkylphenyl of 7 to 12 carbon atoms, phenylalkyl of 7 to 12 carbon atoms or phenyl, and R^1, R^2, R^3, R^4, R^5 and R^6 may also be substituted by alkyl of 1 to 3 carbon atoms, which comprises:

continuously reacting phenolic compounds of the formula

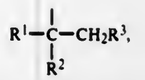


III

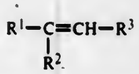
where the radicals R^7 and R^8 are each hydrogen when the corresponding radicals R^5 and R^6 in formula I are



and when the radicals R^5 and R^6 have meanings other than



then R^7 has the same meaning as that particular R^5 and R^8 has the same meaning as that particular R^6, with olefins of the formula



II.

where R^1, R^2 and R^3 are defined as in part (A) above, at temperatures of from 70° to 140° C. in the presence of an organic cation exchanger as a catalyst having a gel-like structure and possessing sulfonic acid groups, said exchanger having a particle size of from 10 to 200 micrometers and being suspended in the liquid reaction mixture.

4,202,200

APPARATUS FOR DETECTING EXPLOSIVE SUBSTANCES

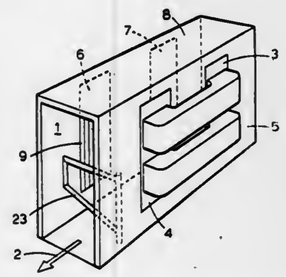
Allan H. Ellson, Harpenden, England, assignor to Pye (Electronic Products) Limited, Cambridge, England

Continuation of Ser. No. 810,665, Jun. 28, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,557

Claims priority, application United Kingdom, Jul. 1, 1976, 27447/76

Int. Cl.² G01N 31/00

U.S. Cl. 73—23 8 Claims



1. An apparatus for detecting the presence of explosives by screening subjects passing through a controlled access tunnel, comprising:

(a) a substantially open ended tunnel having a cross-section so that subjects can proceed in a single file through the tunnel, said tunnel comprising side walls and an entrance;

(b) a first pair of apertures, one of each of said apertures of said first pair being located in each respective said side wall of the tunnel, located at a first distance from said entrance to the tunnel;

(c) a second pair of apertures, one of each of said apertures of said second pair being located in each respective said side wall of the tunnel and located at a second distance greater than the first distance from the entrance to the tunnel;

(d) first air duct means extending between a first aperture of said first pair and a first aperture of said second pair;

(e) second air duct means extending between a second aperture of said first pair and second aperture of said second pair;

(f) means for inducing a circulatory flow of air through said first air duct means, across the tunnel between the apertures of said first pair, through said second air duct means and across the tunnel between the apertures of said second pair; and

(g) means for detecting the vapor of an explosive substance in the air in at least one of said duct means.

4,202,201

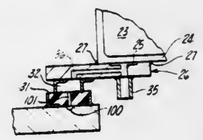
ISOLATION AND DUST SEALING DOOR ASSEMBLIES WITH INTEGRAL TESTING MEANS

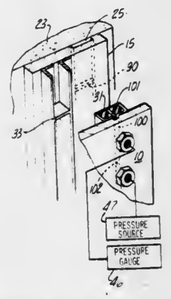
Andrew P. Johnson, 1620 Kensington Rd., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 711,219, Aug. 3, 1976, Pat. No. 4,114,424. This application Apr. 27, 1978, Ser. No. 900,564

Int. Cl.² G01M 3/32

U.S. Cl. 73—40 26 Claims





1. An isolation door assembly including in combination a door frame, a door coaming adapted to be attached to said door frame in a flat plane, means to attach said door coaming to said door frame in said flat plane in such a manner as to provide a continuous sealed coaming annulus there between, closeable means to admit pressure into said coaming annulus, a door hingedly mounted to said coaming, a sealing surface mounted about the periphery of said door, a complimentary sealing surface provided on said door coaming and adapted to provide a continuous sealed door annulus, closeable means to admit a test pressure into said door annulus, a sealing annulus means adapted to provide a continuous annulus underneath said sealing surface, means to permit pressure to enter said sealing annulus from said door annulus, a door locking assembly operatively mounted to said door having at least one shaft penetrating said door, means to seal said shaft, and means to test said shaft seal.

4,202,202

METHOD AND APPARATUS FOR DETECTING DEFLECT IN LIQUID METAL HANDLING INSTRUMENTS

Hideji Yagisawa, Mito, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

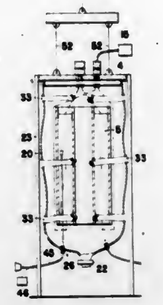
Filed Dec. 29, 1978, Ser. No. 974,518

Claims priority, application Japan, Jan. 12, 1978, 53-1542

Int. Cl.² G01M 3/04

U.S. Cl. 73—40 8 Claims

1. A method of detecting defects in a liquid metal handling instrument wherein said instrument has a conduit structure invisible from the outside of said instrument, comprising the steps of: disposing said conduit structure in a cylindrical vessel filled with an inert gas; sealing said vessel; filling said conduit structure with a liquid inactive to said liquid metal to thereby



permit said liquid to leak out of a defective spot of said conduit structure; and inserting a fiber scope into said vessel to thereby detect said defective spot of said conduit structure from which said liquid leaks.

4,202,203

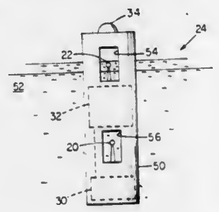
OSCILLATOR DETECTOR

Bronson M. Potter, R.F.D. 1, Mason, N.H. 03048

Continuation-in-part of Ser. No. 827,130, Aug. 24, 1977, abandoned. This application Dec. 26, 1978, Ser. No. 972,651

Int. Cl.² G01N 27/18

U.S. Cl. 73—61.1 R 14 Claims

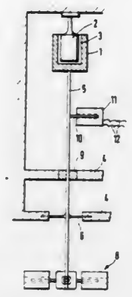


1. A detector for detecting an alien immiscible liquid in the presence of a desired liquid, e.g., for detecting oil pollution at a surface boundary of water, comprising a monitoring element exposed for heat transfer contact with said alien liquid when present, said monitoring element having an electrical characteristic that changes as a single-valued function of temperature, said monitoring element connected in and energized by an oscillatory electronic circuit, said oscillatory electronic circuit being arranged to heat said monitoring element to a temperature substantially above ambient temperature, the amount of heat conducted away from said monitoring element and thereby the instant level of temperature of the monitoring element above the temperature of the liquid being dependent upon the thermal absorptive properties of said liquid, the oscillation waveform of said oscillatory circuit being dependent upon the temperature-dependent electrical characteristic of said monitoring element, means to derive an output signal from said circuit dependent upon said waveform and indicating the thermal loss of said monitoring element to said surrounding liquid, and an alien liquid indicator circuit responsive to a predetermined change in said oscillation waveform for indicating the presence of said alien liquid, said predetermined change related to the difference in the specific heats of the alien and the desired liquids.

4,202,204
APPARATUS AND METHOD FOR MEASURING CHANGES IN CONDITIONS IN COAGULATING LIQUIDS

Hellmut Hartert, Kaiserslautern, Fed. Rep. of Germany, assignor to Dr. E. Fresenius Chem.-Pharm. Industrie KG, Oberursel, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,587
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741060
Int. Cl.² G01N *11/10, 33/16*
U.S. Cl. 73—64.1 **11 Claims**

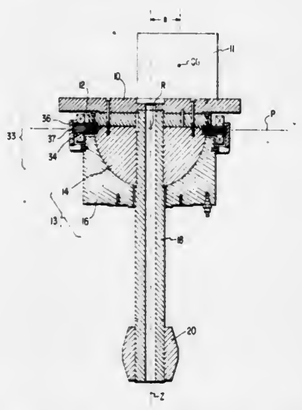


1. Method of measuring the changes of state in solidifying fluids particularly the changes occurring in the coagulation of blood, comprising the steps of mounting a measuring vessel containing an annular space on the upper end of an upright support in a measuring system, introducing a fluid into the annular space in the measuring vessel, impressing an excitation frequency on the support and providing the support with a forced oscillatory orbital movement in the resonance range of and different from the natural frequency of the measuring system, and measuring the amplitude of the support for determining the change in state of the solidifying fluid.

4,202,205
INTEGRAL TORQUER FOR MASS MEASUREMENT SYSTEM

David A. Carpenter, Parkton, Md., assignor to MRC Corporation, Hunt Valley, Md.

Filed May 26, 1978, Ser. No. 909,638
Int. Cl.² G01M *1/16*
U.S. Cl. 73—65 **10 Claims**

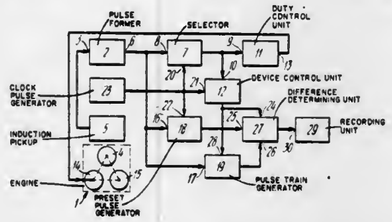


1. A mass properties measurement system, comprising:
a substantially planar test object support table;
bearing means for supporting said table for rotation about an axis of rotation substantially perpendicular to the plane of the support table;
means mounting said bearing means and support table to a static support to permit movement of said bearing means and support table about a pivot axis substantially perpendicular to and intersecting said axis of rotation;
means for measuring overturning forces imparted to the support table and bearing means by a test object mounted to the support table, said overturning forces tending to rotate the table and bearing means about said pivot axis; and
drive means for inducing rotational forces to said support table and bearing means to rotate said support table and bearing means at a predetermined rate of rotation while remaining substantially invisible to said measuring means, said drive means comprising an induction motor mounted to the mass properties measurement system and having substantially ring-shaped stator and rotor windings coupled to said static support and table, respectively, said windings lying in a plane which contains said pivot axis and is substantially perpendicular to said axis of rotation.

4,202,206
DEVICE FOR MEASURING POWER OUTPUT OF AN INTERNAL-COMBUSTION ENGINE

Ivan D. Bukhtiyarov; Viktor B. An; Alexei S. Demin, all of Novosibirskaya; Marat N. Farshatov, Tolyatti Kuibyshevskoi, and Valery A. Slepchuk, Novosibirsk, all of U.S.S.R., assignors to Spetsialnoe Opytnoe Proektno-Konstruktorsko-Tekhnologicheskoe Bjuro Sibirskogo Otdelenia Vsesojuznoi Akademii Selskokhozyaistvennykh Nauk Imeni v.i. Lenina, Novosibirskaya, U.S.S.R.

Filed Oct. 6, 1978, Ser. No. 949,097
Int. Cl.² G01M *15/00*
U.S. Cl. 73—116 **8 Claims**

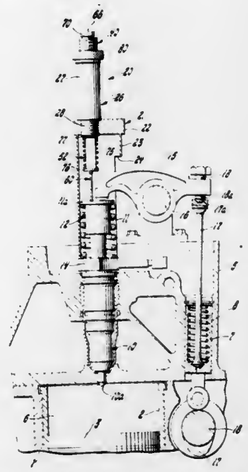


1. A device for measuring the power output of an internal-combustion engine, having an alternating-current generator with an output, an ignition system having an input and an output and coupled mechanically with said alternating-current generator, a shaft mechanically coupled with said alternating-current generator, and an ignition system which device comprises:
a pickup for taking up the speed of rotation of the shaft of said internal-combustion engine, having an output;
a pulse former having an input and an output, said input being connected to said output of said pickup taking up the speed of rotation of said shaft of said internal-combustion engine;
a selector for selecting the speed of said shaft of said internal-combustion engine, having a first input, a second input, and an output, said first input being coupled to said output of said pulse former;
a unit for controlling the duty of said internal-combustion engine having an input and an output, said input being coupled to said output of said selector, and said output being coupled to the input of said ingnition system;
a unit for controlling said device, having a first input, a second input, and an output, said first input being coupled to said output of the selector;
a unit for producing a preset number of electric pulses, having a first input, a second input, and an output, said first input being coupled to said output of said pulse former;
a clock pulse generator having an output connected to said second input of said selector, to said second input of said device control unit and to said second input of said unit for producing a preset number of electric pulses;
a unit for producing a train of electric pulses the number of which within each said train being proportional to the portions of the periods of the pulses generated by said pulse former, said portions lying within the time intervals defined by said device control unit, having a first input, a second input and an output, said first input being coupled to said output of said pulse former, and said second input being coupled to said output of said device control unit;
a unit for determining the difference of two adjacent pulse trains, having a first input, a second input, a third input and an output, said first input being coupled to said output of said device control unit, said second input being coupled to said output of said unit for producing a preset number of electric pulses and said third input being coupled to said output of said unit producing a train of electric pulses;
a measurement result recording unit having a first input, said first input being coupled to said output of said unit for determining the difference of two adjacent pulse trains.

4,202,207
UNIT INJECTOR TIMING GAGE

Gary W. Johnson, Bloomfield Hills, and Carl J. Robinson, Pontiac, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 24, 1979, Ser. No. 5,952
Int. Cl.² G01M *15/00*
U.S. Cl. 73—119 A **3 Claims**

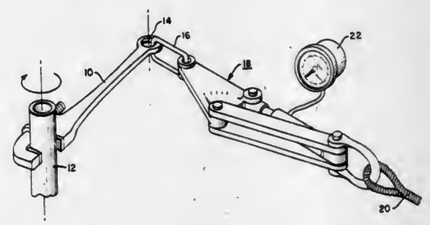


1. A timing gage for use in setting the height and therefore the timing of the follower, reciprocally journaled in the housing of a unit injector that is mounted in an engine whereby a rocker arm in the drive train therefor can actuate the follower, the timing gage including an electrically conductive gage base including a base with an aperture therethrough and a slotted sleeve depending therefrom which is adapted to loosely encircle the follower and have its free end abut against a fixed element of the engine; an electrically conductive contact base of hollow tubular configuration fixed at one end to said base; an electrically insulating sleeve means slidably positioned in said contact base; an electrically conductive battery holder means slidably positioned in said contact base and normally electrically insulated therefrom by said sleeve means, said battery holder means being adapted to receive an electrical battery and having one end thereof provided with a light socket means; a light bulb operatively positioned in said light socket means with a terminal end thereof adapted to engage a terminal of the battery; an electrical contact pin fixed to the opposite end of said battery holder means so as to have one end thereof extending axially downward therefrom through said aperture into said slotted sleeve for engagement with the follower of the unit injector, the opposite end of said contact pin being adapted to engage the other terminal of the battery, said battery holder means having an annular radially outward extending, axially adjustable flange means adjacent said one end thereof adapted to be in an abutting interference relation with the opposite end of said contact base upon axial movement of said battery holder means relative to said contact base whereby when said flange means abuts against said contact base an electrical circuit is completed from one terminal of the battery via said contact pin, the unit injector housing, said sleeve member, said gage base, said battery holder means, said light bulb to the opposite terminal of the battery, and a spring means electrically insulated from but operatively associated with said battery holder means and said gage base to normally bias said battery holder means in one axial direction relative to said contact base to normally move said flange toward abutment against said contact base.

4,202,208
HYDRAULIC TORQUE INDICATOR

Joseph H. Byrne, Jr., Houston, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 23, 1978, Ser. No. 953,736
Int. Cl.² B25B *23/14*
U.S. Cl. 73—139 **14 Claims**

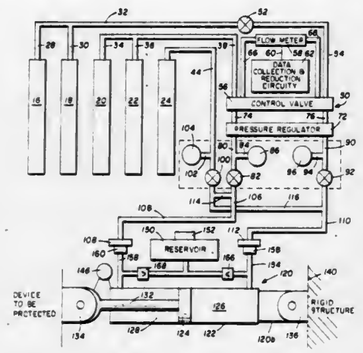


1. A torque indicator comprising a support member, a link arm having one end pivotally connected to said support member about a first pivot axis, fluid cylinder means having one end pivotally connected to said member about a second pivot axis which is parallel to but spaced from said first pivot axis, the other end of the fluid cylinder means being pivotally connected to said link arm intermediate its ends about a third pivot axis which is parallel to the first and second pivot axes, means for causing a pulling force equal to the force on a torque arm to exist between a point on said member and a point on the other end of said link opposite said first pivot axis, said point on the member being spaced from said first and second pivot axes so as to form a triangular configuration therewith, fluid interposed between a reciprocable piston in said cylinder means and an end of a cylinder in which it reciprocates such that the fluid will be pressurized when said pulling force exists between the point on the support member and the point on the other end of said link, means for varying the volume of said fluid to thereby vary the angular relationship between said fluid cylinder means and said link arm, and pressure-responsive means adapted for connection to the end of the cylinder containing said fluid.

4,202,209
SHOCK SUPPRESSOR VALVE TEST SYSTEM AND METHOD

Lloyd H. Holmes, Salt Lake City, Utah, assignor to E-Systems, Inc., Dallas, Tex.

Filed May 26, 1978, Ser. No. 910,009
Int. Cl.² G01M 19/00
U.S. Cl. 73—168 **21 Claims**



1. A portable test system for testing the operating characteristics of the flow responsive shut-off valves interconnecting fluid cavities of a shock suppressor mounted in place, comprising:

a first canister for housing a fluid under pressure, said fluid being forced through the shut-off valves of the shock suppressor during testing;

a second canister for collecting said fluid after passage through the shut-off valves of the shock suppressor;

means for releasably interconnecting said first and second canisters with the fluid cavities of the shock suppressor;

first manual valve means disposed within said means interconnecting said first and second canisters and the shock suppressor for controlling the flow rate of said fluid from said first canister to the shock suppressor; and

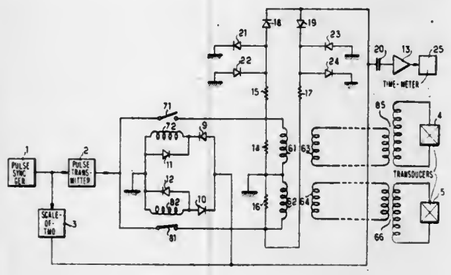
means connected to said means interconnecting said canisters and the shock suppressor for measuring the velocity of said fluid flowing to the shock suppressor, such that the measured velocity provides an indication of the required flow rate necessary to close the shut-off valves and lock the shock suppressor and thereby test the operating characteristics of the shut-off valves without removal of the shock suppressor from its housing and mountings.

4,202,210
ULTRASONIC FLOW METER FOR GASES

François Multon, Les Mureaux, and Gerard Allain, Andresy, both of France, assignors to Ultraflux, France

Filed Apr. 5, 1978, Ser. No. 893,738
Claims priority, application France, Jan. 6, 1978, 78 00845
Int. Cl.² G01F 1/66
U.S. Cl. 73—194 A **2 Claims**

1. An apparatus for measuring fluid flow in a passage, said apparatus comprising: first and second transducers respectively having first and second transmitting-receiving surface portions, coupled to the passage, said first and second surface portions being parallel and facing one another; pulse generator means generating recurrent pulses at a predetermined repetition frequency; an electric pulse transmitter coupled to said pulse generator means; square-wave signal generator means, coupled to said pulse generator means, for generating a square-wave signal having a frequency equal to half the said repetition frequency, said square-wave signal alternately having positive and negative half-periods; first switching means, controlled by the said square-wave signal, for coupling the said pulse transmitter to the first transducer during the said positive half-periods and to the second transducer during the said negative half-periods, whereby a first acoustic pulse is propagated across the fluid passage from the first transducer to the second transducer during each of said positive half-periods and a first electric pulse is generated at a first time when the said first acoustic pulse reaches the second transducer, while a second acoustic pulse is propagated across the fluid passage from the second transducer to the first transducer during each of said negative half-periods and a second electric pulse is generated at a second time when the said second acoustic pulse reaches the first transducer, the apparatus further comprising: electric pulse receiver means having an input and an output; further switching means, controlled by the said square-wave signal,

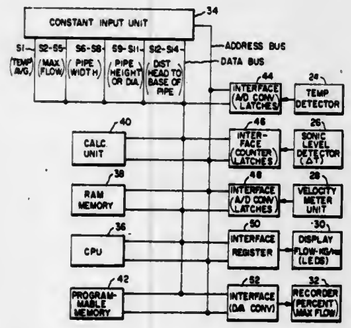


for coupling the second transducer to the input of the pulse receiver means during the positive half-periods and for coupling the first transducer to the input of the pulse receiver means during the negative half-periods; and means, connected to the output of the pulse receiver means, for measuring the time interval between the first and second times, wherein said first switching means comprise first and second electromagnetic relay means respectively having first and second control coils and first and second diodes connecting said respective control coils to the said square-wave signal generator means, said first and second diodes being connected in opposite directions to one another.

4,202,211
FLOW MEASURING SYSTEM

Jack A. Perry, Lewiston, N.Y., assignor to NP Industries, Inc., Niagara Falls, N.Y.

Filed Jan. 12, 1979, Ser. No. 3,074
Int. Cl.² G01F 1/00
U.S. Cl. 73—227 **5 Claims**



1. A system for measuring the volume of fluid flowing through a pipe without interfering with the flow of said fluid through said pipe, which system comprises

(a) means providing a first free space above said pipe which communicates with the interior thereof,

(b) means providing a second space at the bottom of said pipe which communicates with the interior thereof,

(c) said second space being separated from the interior of said pipe,

(d) means including an ultrasonic distance detector disposed in said first space out of contact with said pipe and the fluid therein,

(e) means including an ultrasonic velocity detector disposed in said second space out of contact with said pipe and said fluid therein,

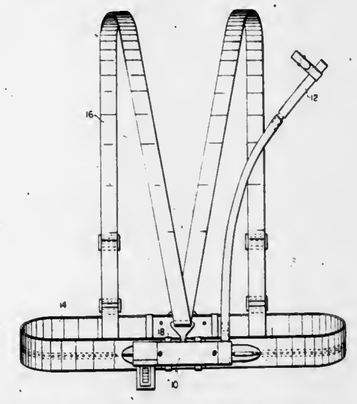
(f) means for providing signals representing the cross sectional profile of said pipe, and

(g) means for providing measurement of the flow through said pipe operated by said signals, said distance detector and said velocity detector.

4,202,212
IN-LINE RESPIRATING PUMP

Richard T. Allen, Easton, Md.; Rudolph H. Moyer, West Covina, Calif.; Donald J. Sibbett, Cucamonga, Calif.; Howard H. Anderson, Covina, Calif.; Glen R. Martner, Rosemead, Calif., and Don Willis, Garden Grove, Calif., assignors to Geomet, Incorporated, Gaithersburg, Md.

Filed May 1, 1978, Ser. No. 901,862
Int. Cl.² G01N 1/14
U.S. Cl. 73—421.5 R **8 Claims**



1. An in-line respirating pump adapted for support upon the thoracic cavity and comprising:

(A) An expandable belt including a cable adapted to encircle the thoracic cavity;

(B) A housing supported horizontally upon said belt, so as to define a horizontal piston chamber and;

i. a spring-urged piston reciprocally supported in said chamber and connected at one end to said cable, so as to move laterally upon thoracic expansion; and

ii. an air inlet valve and an air outlet valve defined in said chamber at one end of said piston, each valve being normally biased closed, said inlet valve being openable as said piston moves upon thoracic expansion and said outlet valve being openable, as said piston is returned to closed position as upon exhalation; and

(C) An air pollution sampler attached to said inlet valve.

4,202,213
DEVICE FOR AUTOMATICALLY LOCKING MOTOR VEHICLE WHEELS ON TO BALANCING MACHINES

Franco Toriselli, Reggio Emilia, Italy, assignor to S.I.C.E. Societa Italiana Costruzioni Elettromeccaniche S.p.A., Correggio, Italy

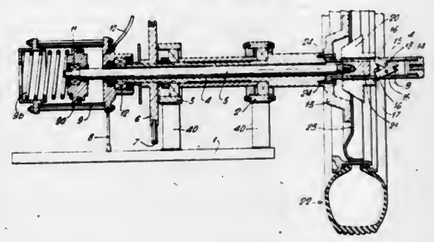
Filed Mar. 22, 1978, Ser. No. 888,869
Claims priority, application Italy, Mar. 29, 1977, 46841 A/77
Int. Cl.² G01M 1/06
U.S. Cl. 73—487 **4 Claims**

1. A device for automatically locking motor vehicles wheels on to the projecting end of a high speed rotating support shaft, which comprises:

(a) an axially hollow support shaft,

(b) a traction shaft therein inserted, which rotates rigidly with said support shaft,

(c) a stationary cylinder-piston unit at one end of said hollow support shaft, the piston of which is connected to one end of the traction shaft by bearing means mounting the shaft for rotation relative to the piston,

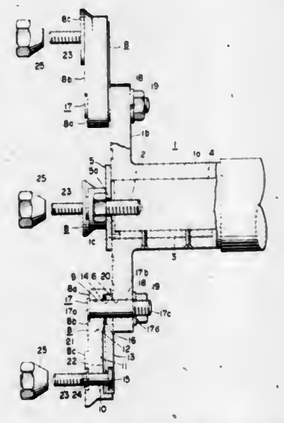


(d) the other end of the said traction shaft which projects from the support shaft comprising means for locking a wheel on said support shaft and comprising at least one pair of teeth or pawls which oscillate mutually and are symmetrically disposed about the longitudinal axis of the traction shaft, and which are disposed between and pivoted on the arms of a fork fixed to the free end of the traction shaft; between the facing edges of the engaging ends of said at least two pawls there being disposed a compression spring lying in front of the crosspiece of said fork.

4,202,214
WHEEL FIXING DEVICE FOR A WHEEL BALANCER

Yukiyoshi Hihara, Fujinomiya, Japan, assignor to Yasui Sangyo Co. Ltd., Fujinomiya, Japan

Filed Sep. 11, 1978, Ser. No. 940,896
Claims priority, application Japan, Jun. 23, 1978, 53-76132
Int. Cl.² G01M 1/16
U.S. Cl. 73—487 **10 Claims**



1. A wheel fixing device for a wheel balancer, comprising:

(a) a flange attached to the end of the main axle of the balancer, in which are a plurality of holes;

(b) a plurality of fixing arms of equal length, whose base ends are adapted to be pivotally coupled to said holes in said flange, and whose free ends are provided with means for attaching a vehicle wheel; and

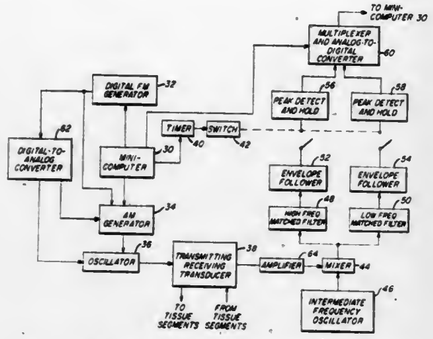
(c) locking means for locking each of said fixing arms and its pivotal coupling to said flange upon the attachment of a wheel by said attaching means.

4,202,215

SONIC PULSE-ECHO METHOD AND APPARATUS FOR DETERMINING ATTENUATION COEFFICIENTS

Charles R. Meyer, Pittsburgh, Pa., assignor to Kurt Orban Company, Inc., Wayne, N.J.

Filed Oct. 26, 1978, Ser. No. 954,767
Int. Cl.[2] G01N 29/00
U.S. Cl. 73—599 **44 Claims**



1. A method for determining the attenuation coefficient of a tissue segment comprising the steps of:

a. transmitting into said tissue segment a first ultrasonic pressure pulse such that the echo returning from a first boundary within said tissue segment is white;

b. transmitting into said tissue segment a second ultrasonic pressure pulse such that the echo returning from a second boundary within said tissue segment is white;

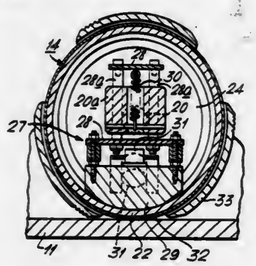
c. determining the attenuation coefficient of said tissue segment as a function of said transmitted pulses and the thickness of said tissue segment.

4,202,216

ULTRASONIC TESTING

Reginald B. Bull, Thatcham; Colin Duffill, Abingdon, and Ronald A. Usmar, Didcot, all of England, assignors to British Gas Corporation, London, England

Filed Aug. 11, 1978, Ser. No. 933,032
Claims priority, application United Kingdom, Aug. 23, 1977, 35354/77
Int. Cl.[2] G01N 29/04
U.S. Cl. 73—639 **10 Claims**



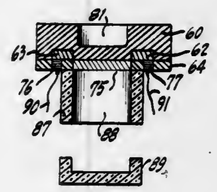
1. A wheel probe for insertion into the bore of a pipe for the purpose of ultrasonically inspecting the wall of the pipe, the wheel probe comprising a main wheel assembly comprising a solid annular rim made of a material through which sound will pass, and side members which together with the rim define a hollow chamber, at least one ultrasonic transducer located within the chamber and positioned therein for directing and receiving sound through the rim, first and second mounting members, the main wheel assembly being mounted for rotation about its central axis in the first mounting member which is itself mounted in the second mounting member for pivotal movement about a first axis which extends in a direction normal to the central axis of the main wheel assembly, and a guide wheel located on each side of the main wheel assembly, the guide wheels being movable bodily independently of the main wheel assembly and being mounted on the first mounting member for pivotal movement in unison about a second axis which is parallel to the central axis of the main wheel assembly, and being operable when one or both of the guide wheels is deflected to move the first mounting member and hence the main wheel assembly about said first axis which extends in a direction normal to the central axis of the main wheel assembly.

4,202,217

SEMICONDUCTOR TRANSDUCERS EMPLOYING FLAT BONDABLE SURFACES WITH BURIED CONTACT AREAS

Anthony D. Kurtz, Englewood, and Joseph R. Mallon, Franklin Lakes, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Dec. 12, 1977, Ser. No. 859,834
Int. Cl.[2] G01L 9/06
U.S. Cl. 73—727 **13 Claims**



1. A semiconductor pressure transducer, comprising:

(a) a semiconductor base member having a central depression on a bottom surface, said depression defining an active region which deflects upon application of a force to said member,

(b) at least one contact area diffused into a top surface of said base member and directed from said active region towards the periphery of said base member,

(c) a piezoresistive sensor located on said top surface of said base member and in contact with said contact area within said active region,

(d) an epitaxial semiconductor layer located on and extending from said top surface of said base member and surrounding said active region, said layer having at least one terminal aperture on a surface thereof in communication with said contact area closest to said periphery of said base member, and

(e) an annular housing, said housing having sidewalls of a predetermined thickness with the inner periphery of said sidewalls forming a central aperture relatively congruent to said central depression, said housing coupled to said epitaxial layer with the inner periphery of said sidewalls surrounding said central depression and with the outer periphery of said sidewalls adjacent said terminal aperture in said epitaxial layer to therefore completely mechanically isolate said terminal aperture from said active region by said thickness of said sidewalls.

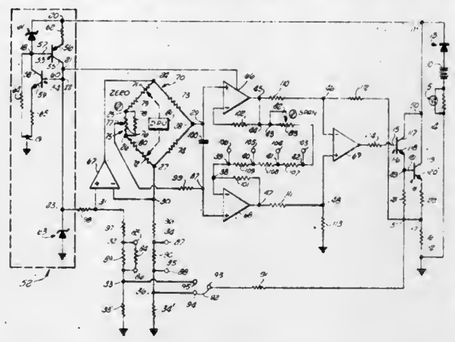
4,202,218

BRIDGE CIRCUIT

Edgar A. Romo, Costa Mesa, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 837,452, Sep. 28, 1977, abandoned. This application Jun. 28, 1978, Ser. No. 919,966
Int. Cl.[2] G01B 7/18; G01L 9/04
U.S. Cl. 73—766 **18 Claims**

1. A detector circuit comprising: a Wheatstone bridge having first, second, third and fourth corner junctions; a first leg connected between said fourth and first corner junctions; a second leg connected between said first and second corner junctions; a third leg connected between said second and third corner junctions; a fourth leg connected between said third and fourth corner junctions; a main differential amplifier having inverting and noninverting inputs, and an output; first means to supply a voltage to said main differential amplifier noninverting input regulated with respect to ground, said main



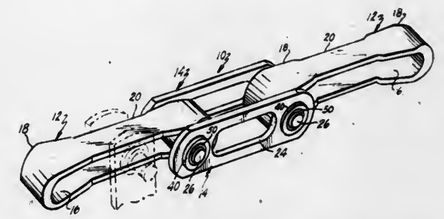
differential amplifier output being connected to said second corner junction, said fourth corner junction being connected to said main differential amplifier inverting input; second means providing resistance connected from said fourth corner junction to ground, the current from the output of said main differential amplifier being constant when the resistance of any of said legs changes; output means connected from said first and third corner junctions; and utilization means connected from said output means.

4,202,219

CHAIN PIN ASSEMBLY WITH CAPTIVE SECURING MEANS

Siegfried K. Weis, Byron Center, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Apr. 18, 1978, Ser. No. 897,401
Int. Cl.[2] G01F 3/08, 3/14
U.S. Cl. 74—254 **25 Claims**



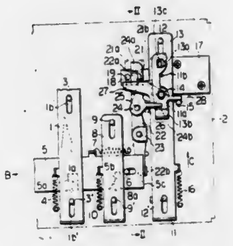
1. A chain assembly comprising at least one center link having a pivot pin receiving aperture therethrough adjacent each end, at least one pair of side links, said side links having apertures therethrough at each end and received one on each side of said center link with the corresponding ends of said side links overlapping one end of said center link such that said respective apertures are aligned; spacing means at each end of said center link and said side links for spacing said side links outwardly along a pivot pin; a pivot pin extending through said aligned apertures to allow pivotal movement of said side links with respect to said center link; said pivot pin including a pin body having a width, a length greater than the combined thickness of said side links, said center link and said spacing means, and first and second retaining means at spaced positions on said pin body for retaining said chain links therebetween; at least one of said retaining means including a collar having a width greater than said pin body and an aperture therethrough, one end of said pin body being slidably telescoped through said collar aperture; said one retaining means also including removable securing means secured to and extending outwardly from said pin body between said collar and said one end of said pin body and having an outside dimension; said collar including a recess in its surface adjacent said removable securing means, said recess being only slightly larger than said outside dimension of said securing means such that said collar is slidable over said removable securing means to receive said securing means therein when said chain is extended and said spacing means forces said side links apart and said collar is slid outwardly such that said collar abuts said securing means, said recess fitting closely over said removable securing means whereby said collar protects and prevents removal of said securing means and disassembly of said chain while said spacing means spaces said links apart and said collar is retained over said securing means with said removable securing means in said recess.

4,202,220

SOLENOID ACTUATED CONTROL SYSTEM

Sigeru Matsumoto, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 3, 1978, Ser. No. 893,245
Claims priority, application Japan, Apr. 4, 1977, 52/41958[U]
Int. Cl.[2] G05G 9/02, 1/02
U.S. Cl. 74—471 R **2 Claims**



1. A solenoid actuated control system comprising:

a plurality of instruments;

a solenoid device having a plunger longitudinally movable along an axis between a projected position and a retracted position and which is rotatable about the axis;

an actuator pin transversely extending with respect to said plunger and fixed thereto;

urging means for biasing said plunger longitudinally toward the projected position and also applying a torque to said plunger to bias it to a predetermined angular position in which said actuator pin is in operative alignment with one of said plurality of instruments; and

means for angularly moving said plunger, against the action of said urging means, toward another predetermined angular position in which said actuator pin is in operative alignment with another one of said plurality of instruments.

4,202,221

INDEXING APPARATUS

Daniel T. Thompson, Pacific Palisades, Calif., assignor to Thompson Bagel Machine Manufacturing Corp., Los Angeles, Calif.

Filed Oct. 6, 1978, Ser. No. 949,042
Int. Cl.[2] B23Q 17/00
U.S. Cl. 74—821 **12 Claims**

1. Indexing apparatus driven by a rotating drive shaft comprising:

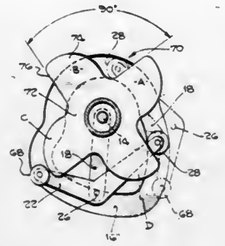
(a) a guide member having a camming surface disposed about the drive shaft;

(b) a rotated member mounted for rotation about an axis

passing longitudinally through the drive shaft, said rotated member being the output of the indexing apparatus and being adapted to operably connect to and drive apparatus driven thereby;

(c) a driving arm connected on one end to the drive shaft and extending radially therefrom for rotation therewith; and,

(d) an engaging arm rotatably connected to the other end of said driving arm for rotation between an engaged position



and a retracted position, said engaging arm having means for engaging and rotating said rotated member when said engaging arm is in said engaged position and for releasing said rotated member when said engaging arm is in said retracted position, said engaging arm further having cam follower means for engaging said camming surface to rotate said engaging arm between said positions as a function of said camming surface configuration.

4,202,222

METHOD FOR PREPARATION OF SPHERICAL HOB FOR GENERATION OF GEAR

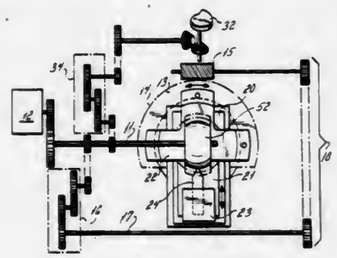
Masato Ainoura, 1253 Eguchi, Kita-Shiegeyasu-cho, Miyaki-gun, Saga-ken, Japan

Filed Jun. 19, 1978, Ser. No. 916,690

Claims priority, application Japan, Jun. 22, 1977, 52/74142

Int. Cl.³ B23F *17/00*

U.S. Cl. 76—101 A **4 Claims**



1. A method for the preparation of a spherical hob for generation of a gear, which comprises rotating a spherical hob blank about an axis passing through the center thereof and simultaneously rotating a cutting tool having a profile corresponding to a tooth space of an involute gear about the center of said hob blank and along the peripheral surface of said hob blank on a plane passing through said axis, thereby to form projections having a section in the form of an involute tooth profile spirally on the peripheral surface of the hob blank, then forming by cutting on the peripheral surface of the hob blank a plurality of equidistantly arranged spaces across said projections, thereby to divide said projections into a plurality of spirally continuous hob blades, each having an involute tooth profile, and finally forming reliefs on the side faces and the peripheral face of the hob blades so that as the blade faces of the hob blades are cut and sharpened the tooth profile of an imaginary gear generated by rotation of the hob about said axis is gradually displaced to attain an addendum to the tooth profile, whereby after cutting and sharpening of the hob blade faces after said faces have become dull from use in cutting gears in gear blanks, shifting of the hob toward a new gear blank by a distance corresponding to the magnitude of undercut of the peripheral relief results in cutting in the new gear blank of a gear generated in gear blanks before cutting and sharpening of the blade faces.

4,202,223

APPARATUS FOR REMOVING AN EXPOSED ROLL OF FILM FROM A CAMERA

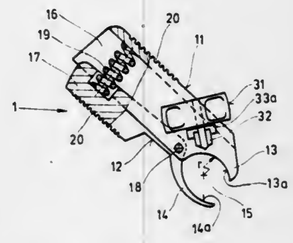
Wolfgang Kehrle, Hauptstrasse 78, Aulendorf, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,465

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709638

Int. Cl.³ B25B *9/00*; B25F *1/00*

U.S. Cl. 81—3 R **10 Claims**



1. An apparatus for removing a roll of film on a film spool having side flange portions from a camera comprising, a top tong arm having a top grip portion and a top handle portion, a bottom tong arm movably mounted on said top tong arm having a bottom grip portion and a bottom handle portion, said top and bottom grip portions defining a film roll engagement mouth which is openable and closeable by moving said bottom handle portion in respect to said top handle portion, said film engagement mouth being openable to admit a roll of film on a film spool and closeable to closely engage around the roll of film, at leat one of said top and bottom grip portions including spaced apart lateral guide faces respectively engageable with the film spool side flange portions for preventing lateral displacement of the film spool when the roll of film on the film spool is engaged in said film roll engagement mouth, and tensioning knob mounted for rotation on one of said top and bottom grip portions engageable with the film spool for rotating the film spool when the film is embraced between said top and bottom guide portions to tightly wind the film on the spool, said tensioning knob being pivotably connected to said one of said top and bottom tong arms to swing into and out of engagement with the film spool.

4,202,224

APPARATUS FOR ROTATING OF TRACK BUSHING BY COMBINED STATIC AND DYNAMIC TORQUE

James A. Hooker; Dean W. Martin, and Shellie O. Williamson, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 24, 1978, Ser. No. 909,148

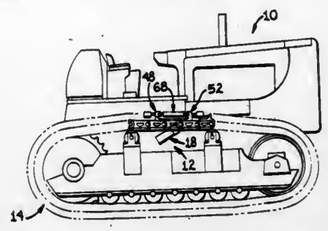
Int. Cl. B25B *9/00, 13/48*

U.S. Cl. 81—3 R **7 Claims**

1. Apparatus for rotating a track pin bushing, the track being of the type wherein links are connected on one end by track pins and on the other end by bushings, said apparatus comprising:

a first member securable to one of a pair of track links;

a second member securable to the other of that pair of track links;



exciter means interconnecting the first and second members for providing a vibratory motion therebetween; and

means for applying a rotational force to said bushing.

4,202,225

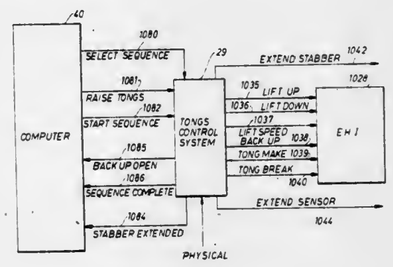
POWER TONGS CONTROL ARRANGEMENT

Loren B. Sheldon, 8226 Bairnsdale, Houston, Tex. 77070; James R. Tomashek, 114 E. Division St., Wood Dale, Ill. 60191, and Donald H. Ward, 418 Ridgewood, Glen Ellyn, Ill. 60137

Continuation of Ser. No. 777,926, Mar. 15, 1977, abandoned. This application Apr. 4, 1979, Ser. No. 26,820

Int. Cl.³ B25B *13/50*

U.S. Cl. 81—57.35 **22 Claims**



1. Apparatus for controlling a tongs arrangement having (a) a tongs lift, (b) means for controlling the lift speed, (c) a backup tong, and (d) a power driven tong, said apparatus comprising:

means for generating a signal to lift the backup and the power driven tong at a predetermined speed to a predetermined elevation;

means for generating a first feedback signal representative of the tongs being disposed at the predetermined elevation;

means responsive to the first feedback signal for generating a signal to close and lock the backup tong when it is lifted to the predetermined elevation;

means for generating a second feedback signal representative of the closure and locking of the backup tong; and,

means responsive to the second feedback signal for generating a signal to drive the power driven tong when the backup tong is closed and locked.

4,202,226

METHOD AND APPARATUS FOR MANUFACTURING PLASTIC LENSES

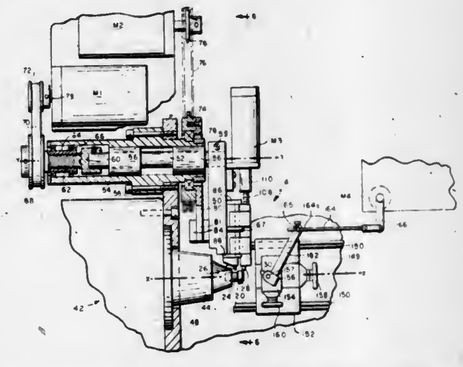
Ronald K. Becker, Arlington, and Donald R. Korb, Boston, both of Mass., assignors to SyntexLaboratories, Inc., Palo Alto, Calif.

Filed Feb. 6, 1978, Ser. No. 875,394

Int. Cl.³ B23B *5/40*

U.S. Cl. 82—12 **29 Claims**

1. Apparatus for forming lenses from blanks comprising means for supporting a blank for rotation about a predetermined axis, a turning tool and a facing tool, means mounting the turning tool and facing tool for rectilinear movement in unison parallel to the axis of rotation of the blank in predetermined axially spaced relation such that rectilinear movement of said tools moves the turning tool from the distal end of the blank to the proximal end thereof to generate a cylinder of predetermined diameter and moves the facing tool to a ready position adjacent the distal end of the blank simultaneously with arrival of the turning tool at the proximal end of the blank, means for then moving the facing tool a predetermined distance at right angles to the axis of rotation to generate a flat annular surface at right angles to the axis of rotation at said end, means for retracting the tools, a tool for generating a spherically concave base cut in the distal end of the blank of predetermined radius of curvature, means supporting said latter tool at the level of the axis of rotation for movement along said axis toward the distal end of the blank, means for oscillating said latter tool through an arc commencing outside the radius of the blank and terminating at the axis of rotation, means for moving the latter tool while oscillating toward the distal end of the blank to generate a spherically concave surface of predetermined depth relative to said annular surface bounded by a portion of the annular surface and means for retracting said latter tool at said predetermined depth.



21. Apparatus for forming lenses from blanks comprising means for supporting a blank for rotation about a predetermined axis and means for effecting rotation of the means supporting the blank, a turning tool and facing tool, a support mounting the tools, said support being movable rectilinearly parallel to said axis and for rotation in a plane perpendicular to said axis, motor means for rotating said suppport from an out-of-the-way retracted position to a position adjacent said axis, such that the tools supported thereby are in operative position, motor means for effecting rectilinear movement of the support to move one of the tools parallel to said axis at a predetermined radial distance therefrom to generate a cylindrical surface, motor means operable at the end of the turning operation to move the other tool radially inwardly a predetermined distance to generate a face cut, means operable at the end of the face cut to reverse the first motor means to retract the tools and means operable at the retracted position of the tools to effect operation of the second motor means to return the tools to their initial position.

4,202,227

MULTIPLE POSITION TOOL HOLDER

Helmut Thumm, Metzingen, Fed. Rep. of Germany, assignor to Sauter Feinmechanik GmbH, Fed. Rep. of Germany

Filed Sep. 14, 1978, Ser. No. 942,185

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741907

Int. Cl.³ B23B *29/28*

U.S. Cl. 82—36 A **4 Claims**

1. A positionable tool holder for supporting a plurality of tools and means for selectively repositioning the tool holder

for use in combination with a turning machine, comprising the combination of

a fixed mounting member;

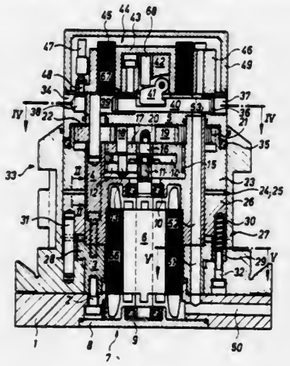
a tool carrier rotatable about a fixed axis relative to said mounting member;

means for releasably interconnecting said carrier and said mounting member, said means including

a plurality of teeth on said tool carrier, and

a toothed locking ring axially movable between a locking position in which the teeth on said ring engage the teeth on said carrier and an unlocked position in which the said teeth are disengaged;

an actuating member mounted for engagement with said locking ring, each of said actuating member and said



locking ring having means defining axially extending cam surfaces facing each other, said cam surfaces each including means for defining an axially sloping plane, an axially recessed seat and a driving shoulder;

spring means for urging the cam surfaces of said actuating member and said locking ring into engagement;

means for selectively coupling said carrier to said mounting member to prevent rotation thereof, said means including a movable bolt; and

a reversible rotary drive motor supported on said mounting member, said drive motor and said means for coupling being energizable together, when said drive motor is driven in a direction reverse to the direction of rotation of the tool carrier.

4,202,228

METHOD OF CUTTING SLABS FROM A BODY OF UNCURED, LIGHT-WEIGHT CONCRETE AND AN APPARATUS FOR CARRYING OUT THE METHOD

Rolf E. Göransson, Akarp, Sweden, assignor to Internationella Siporex AB, Malmo, Sweden

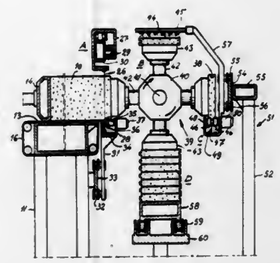
Filed Jun. 29, 1978, Ser. No. 920,337

Claims priority, application Sweden, Jun. 30, 1977, 7707610; Jun. 30, 1977, 7707611

Int. Cl.² B26D *7/06, 1/44*

U.S. Cl. 83—23 **16 Claims**

1. A method of cutting a slab from a body of uncured, light-weight concrete resting on a longitudinally extending support surface, comprising: moving a body of uncured light-weight concrete along the longitudinal reach of said support surface through a predetermined distance, said body having a front face perpendicular to said longitudinal reach; supporting said front face of said slab; cutting a slab from said body while supporting said front face; moving said slab away from said body along an extension of said longitudinal axis; and subsequently moving the slab along at least one arcuate movement



path in a plane perpendicular to said support surface and parallel to said longitudinal axis.

4,202,229

APPARATUS FOR TRANSVERSELY SEVERING OR TRANSVERSELY PERFORATING WEBS OF MATERIAL

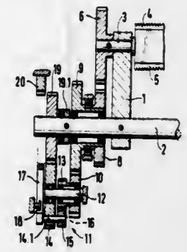
Richard Feldkämper, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,498

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2748826

Int. Cl.² B26F *1/08*; B31B *1/14*; B26D *7/00*

U.S. Cl. 83—304 **5 Claims**



1. Apparatus for transversely severing or transversely perforating webs of material, preferably paper webs in the production of paper sacks, comprising a grooved shaft mounted in the frame of the apparatus and at least one knife shaft which carries at least one knife, is rotatably mounted in revolving end plates eccentrically to the shaft thereof and is driven by way of a spur gear on the knife shaft from an intermediate gear freely rotatable in one of the end plates and a central gear which meshes with the intermediate gear, is coaxial with the end plates and is freely rotatable relatively thereto, characterised in that a gear (19) secured to the end plate shaft (2) engages at least one spur gear (14) mounted on a pin (12) fixed with respect to the frame or a shaft (12') mounted in the frame, a further spur gear (10) which is mounted or secured on the pin or shaft, respectively, meshing with a gear (9) connected to the central gear (8) by a tubular strut to form a gear set, that the gears (10, 14) mounted on the pin or secured on the shaft are coupled by variable speed gearing comprising a gear segment (16) which is connected to the gear (10) meshing with the gear set (8, 9) and which engages a countersegment (13) secured to a freely rotatable pin (15) eccentrically mounted on the other spur gear (14), the other end of the pin (15) carrying a slotted guide (17) sliding on a slide block (18) fixed with respect to the frame, that

the slide block (18) is disposed at a radial spacing from its medial plane of the fixed pin or shaft corresponding to half the eccentricity of the pin (15) mounted on the spur gear (14), that the radius of the pitch circles of the gear segments (13, 16) is likewise half said eccentricity, and that the knife (4, 5) projects into a cutting groove when the point of contact of the pitch circles of the gear segments (13, 16) passes through the centreline of the slide block (18).

4,202,230

ROTARY CUTTER

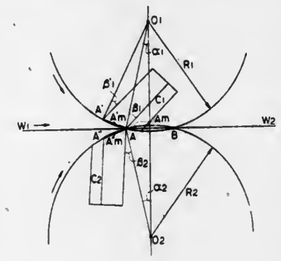
Akira Obinata, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 17, 1978, Ser. No. 925,337

Claims priority, application Japan, Jul. 15, 1977, 52-84696

Int. Cl.² B26D *1/40*; B23D *25/02*

U.S. Cl. 83—345 **1 Claim**



1. A rotary cutter for cutting from a web a sheet and simultaneously cutting rounded corners on the sheet, said cutter having a first blade and a second blade, said first blade fixedly mounted to a first rotatable shaft and said second blade fixedly mounted to a second rotatable shaft, said first and second rotatable shafts being parallel to each other and spaced apart, said first and second blades adapted to be brought into cutting engagement wth each other when said two shafts are rotated so as to cut from the web a sheet of desired length, the rotary cutter satisfying the following conditions:

(a) said first and second blades having the same blade contours with respect to a common curved edge line defining a plane;

(b) each blade at each position of engagement satisfying the relationship of $\beta \geqq \alpha$; and

$$R_1/R_2 = AA'/AA'' \qquad (c)$$

wherein:

β is the relief angle of each blade,

α is the nip angle of each blade,

R_1 is the radius of rotation of the first blade,

R_2 is the radius of rotation of the second blade,

AA' is the edge line length of the first blade, and

AA'' is the edge line length of the second blade.

4,202,231

DEVICE FOR CUTTING BUILDING PANELS

Ludwig Striebig, Grossmatte, CH 6014 Littau, Switzerland

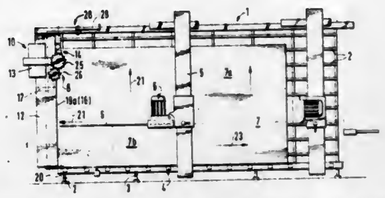
Filed May 24, 1978, Ser. No. 908,968

Claims priority, application Switzerland, May 26, 1977, 6516/77

Int. Cl.² B27B *5/06*; B26D *7/02*

U.S. Cl. 83—453 **14 Claims**

1. A device for cutting a panel comprising: a frame; a vertically extending grid defining a working surface for a panel to be cut while supported by said grid; horizontally extending carrier means adapted to have said panel resting edgewise thereon while being supported by said working surface during cutting of said panel; a power saw mounted on said frame for movement in said working surface; an elongated guide column secured to said frame; stop means on said guide column for bounding said working surface in one horizontal direction by abutting engagement with a vertically extending edge portion of said panel; said guide column being vertically extending



adjacent said edge portion when said edge portion is engaged by said stop means; and clamping means vertically movable on said guide column for clamping said edge portion to said column.

4,202,232

APPARATUS FOR TRIMMING STACKS OF PAPER SHEETS OR THE LIKE

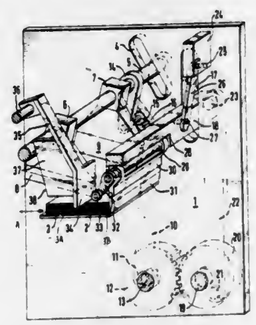
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Jun. 21, 1978, Ser. No. 917,522

Claims priority, application Switzerland, Jul. 2, 1977, 8122/77

Int. Cl.² B26D *5/08*

U.S. Cl. 83—519 **10 Claims**



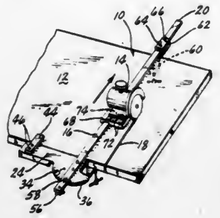
2. Apparatus for trimming the front, head and foot ends of a series of successive stacks of paper sheets or the like, comprising a single trimming station including means for supporting one stack of said series at a time; a first knife for trimming the front end of the stack on said supporting means; two additional knives for simultaneously trimming the head and foot ends of the stack on said supporting means; and means for cyclically operating said knives, including first means for moving said first knife into trimming engagement with the front end of the stack on said supporting means during a first portion of a cycle and second means for simultaneously moving said additional knives into trimming engagement with the respective ends of the same stack on said supporting means during a subsequent portion of the same cycle, including a holder for said first knife, said first knife being movable with respect to said holder in directions toward and away from said additional knives, said operating means further including third means for moving said first knife away from said additional knives upon completion of trimming of the front end of the stack on said supporting means so that said first knife is spaced apart from said additional knives during movement of said additional knives toward and during trimming engagement of said additional knives with the stack on said supporting means, including a mobile cam and follower means operatively connected with said first knife, said second means including means for moving said cam.

4,202,233

SAW GUIDE DEVICE

Keith J. Larson, 7108 Palm Dr., Urbandale, Iowa 50322

Filed Apr. 17, 1978, Ser. No. 896,805
Int. Cl.³ B27B *9/04*
U.S. Cl. 83—745 **5 Claims**



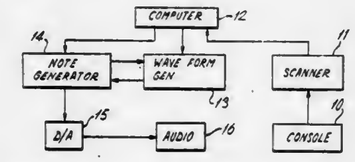
1. A tool guide comprising in combination,
a saw guide bar which is solid and rectangular in cross-section for extension across a work piece, said bar having a forward end and a rearward end,
an anchor plate attached near said rearward end of said guide bar to allow pivotal movement of said guide bar with respect to said plate;
clamping means on said plate to clamp said plate to a work piece, and to releaseably clamp said guide bar to predetermined fixed positions with respect to said anchor plate; and
a tool base pad having a groove therein adapted to slidably fit over said guide bar for lengthwise sliding along said bar and which can be lifted upwardly and off of said bar, said base pad being constructed of a material different than said guide bar and selected to reduce sliding friction between said guide bar and said base pad, and
pressure sensitive adhesive strip means on said pad to attach a powered hand tool thereto without altering the structural elements of such hand tool.

4,202,234

DIGITAL GENERATOR FOR MUSICAL NOTES

Peter J. Comerford, Ilkley, England, assignor to National Research Development Corporation, London, England

Filed Apr. 27, 1977, Ser. No. 791,428
Claims priority, application United Kingdom, Apr. 28, 1976, 17276/76
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **29 Claims**



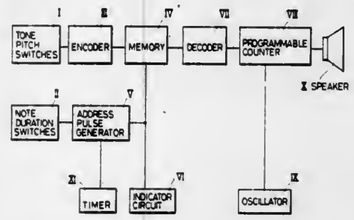
1. A digital generator for musical notes comprising means for producing selection signals each of which indicates the selection of a defined set of a plurality of harmonic structures, each structure being associated with at least one note in dependence on the pitch of the note, and means for producing further selection signals each of which indicates the selection of a note having a predetermined pitch and a predetermined harmonic structure within a selected one of said sets, digital computing means programmed to be responsive to each selection signal to produce harmonic data and control signals, storage data and control signals and sample-selection data and control signals, synthesising means responsive to the harmonic data and control signals for synthesising digital data representing reference waveforms, means responsive to the storage data and control signals for storing the reference waveform data and sampling means responsive to the sample-selection data and control signals for selectively sampling the stored reference waveform data to so derive further digital data representing the predetermined harmonic structure of the selected note that the structure is selected from one of the said defined sets in accordance with the pitch of the selected note, the rate of sampling being effective to determine the pitch of the note when the note is reproduced from the further digital data.

4,202,235

ELECTRONIC MUSICAL BOX

Yasushi Namiki, Higashi-Yamato; Akira Terashima, Hatano, and Naomi Yoshizawa, Hiratsuka, all of Japan, assignors to Pilot Man-Nen Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1978, Ser. No. 873,829
Claims priority, application Japan, Dec. 9, 1977, 52-147830
Int. Cl.³ G10H *5/00*; G04B *21/08*
U.S. Cl. 84—1.01 **9 Claims**



1. An electronic musical box comprising:
pulse generator means for generating a unitary pulse for a note whose duration is the shortest in a given musical score and generating integer numbers of unitary pulses for the other notes therein;
tone pitch signal generating means for generating coded tone pitch signals coded by a plurality of tone pitch switches so as to correspond to the tone pitches of the notes in said musical score;
memory means having a plurality of addresses and responsive to said pulse generator means for storing each of said coded tone pitch signals in a number of successive addresses of said memory, said number being equal to the number of unitary pulses generated by said pulse generator means; and
musical tone generating means for reading data stored in said memory means thereby obtaining musical tones from the outputs of said memory means at a desired time.

4,202,236

CHORD PATTERN GENERATOR

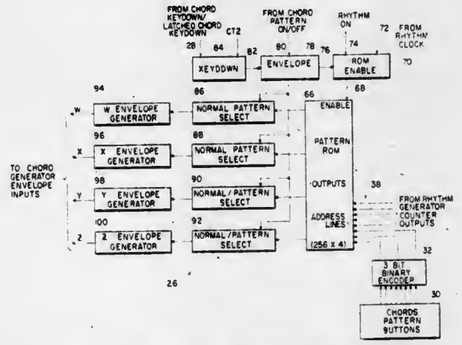
Brian N. Wilcox, and John W. Robinson, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed May 11, 1978, Ser. No. 904,741
Int. Cl.³ G10H *1/02, 5/06*
U.S. Cl. 84—1.03 **13 Claims**

1. A chord pattern generator for an electronic organ comprising:
a source of tone signals of diverse pitches,
output circuitry including acoustic transducer means,
a plurality of keyers each having outputs connected to said output circuitry,
keyboard controlled means for simultaneously connecting selected ones of said tone signals respectively to diverse said keyers such that only one said tone signal is connected to any one of said diverse keyers,
at least three selectively activated envelope control means individually connected respectively to said diverse keyers for causing said diverse keyers to key respective said tone signals to said output circuitry in respective envelopes having predetermined attack and decay characteristics,
a memory in which a plurality of note patterns are stored,

means for selecting one of said stored patterns, and
means for addressing said memory at a rhythmic rate to activate said three envelope control means in accordance with the selected pattern.

11. In an electronic organ having a source of tone signals of diverse pitches, output circuitry including an acoustic transducer, and a plurality of keyers each having outputs connected to the output circuitry, a method for generating patterns of tones corresponding to notes of a selected chord comprising:
selecting a plurality of said tone signals,
simultaneously connecting said selected tone signals respectively to diverse keyers such that only one tone signal is connected to any one of the keyers,



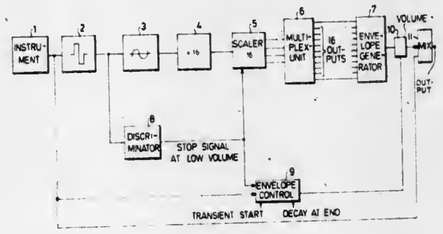
storing a plurality of note patterns in a memory,
selecting one of the stored note patterns,
providing at least three selectively activated envelope generators connected respectively to the keyers, and
addressing the memory at a rhythmic rate to activate the three envelope generators in accordance with the selected pattern to cause said keyers to key respective said selected tone signals to said output circuitry in respective envelopes having attack and decay characteristics pertaining to the respective envelope generators connected to the keyers.

4,202,237

DEVICE FOR PRODUCING SOUNDS, WHICH CAN BE COUPLED TO A MUSICAL INSTRUMENT

Bjarne C. Hakänsson, Täby, Sweden, assignor to Lindén & Linder AB, Stockholm, Sweden

Filed Mar. 14, 1978, Ser. No. 886,615
Claims priority, application Sweden, Apr. 14, 1977, 7704290
Int. Cl.³ G10H *5/06, 5/10*
U.S. Cl. 84—1.24 **4 Claims**



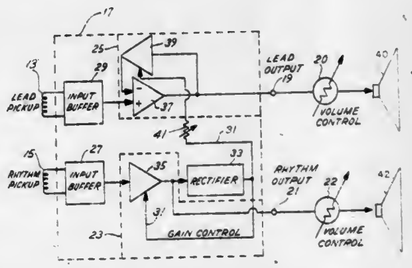
1. Device for producing sounds which can be coupled to a musical instrument characterized by means disposed to extract a fundamental frequency from a signal coming from said musical instrument; means for multiplying said fundamental frequency to obtain a frequency which is n times as high as the fundamental frequency, n being an integer; counting means with n outputs, coupled to the frequency n times as high as the fundamental in order to give off output signals at this higher frequency, sequentially and cyclically from the n outputs, each output giving off an output signal at the same frequency as said fundamental frequency extracted from the instrument signal, said n outputs each being coupled to an individual adjustable attenuation circuit, the output signals of said attenuation circuit being coupled together to create a composite signal.

4,202,238

COMPRESSOR-EXPANDER FOR A MUSICAL INSTRUMENT

Robert A. Moog, East Aurora, N.Y., assignor to Norlin Industries, Inc., Lincolnwood, Ill.

Filed Jun. 1, 1978, Ser. No. 911,476
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.27 **27 Claims**



1. Apparatus for controlling the output sound of a musical instrument according to the strength of sound produced by the musician, comprising:
transducer means for generating first and second audio signals in response to the playing of the instrument;
control signal means for producing a control signal whose magnitude is related to the strength of sound produced by the musician;
signal compressor means for receiving the first audio signal and generating a compressed output thereof, said compressor means responsive to said control signal for providing compression of said first audio signal according to said control magnitude; and
signal expander means for receiving the second audio signal in substantial time coincidence with receipt of said first audio signal by said signal compressor means and generating an expanded output of said second audio signal, said expander means responsive to said control signal for providing expansion of said second audio signal according to the control signal magnitude.

4,202,239

TONE GENERATOR KEYER CONTROL SYSTEM

James S. Southard, Union, and Daniel R. Mott, Dowagiac, both of Mich., assignors to C. G. Conn, Ltd., Oak Brook, Ill.

Filed Jan. 9, 1978, Ser. No. 867,908
Int. Cl.³ G10H *1/02, 5/00*
U.S. Cl. 84—1.26 **8 Claims**

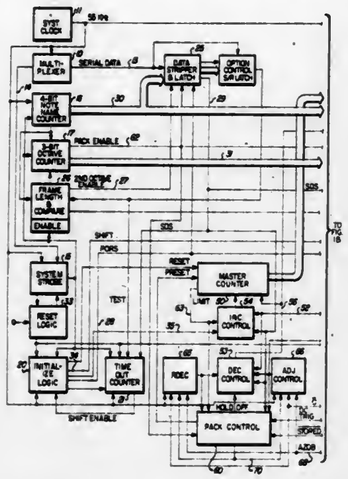
1. A method of providing a keyer control system for an electronic musical instrument including a plurality of tone generators each capable of producing tones, means for supplying input signals for said tone generators representative of different tones to be produced by said system, assignment circuit means coupled to said tone generators for enabling different tone generators to produce tones in response to said input signals, each tone generator producing a different tone according to the input signal applied thereto, and a keyer pedestal means coupled with each of said tone generators for controlling decay mode characteristics of the tone produced by the tone generator coupled therewith:
the method comprising the steps of forming a first count in a predetermined sequence of numbers having a total of

different numbers at least equal to the number of tone generators in the system,

assigning a different count of said predetermined sequence of said first count to a tone generator in one of the conditions of not producing a tone and producing a tone in a decay mode in order that each such tone generator is uniquely identifiable by virtue of the count assigned thereto,

causing a tone generator not producing a tone to produce a tone in response to the next new input signal representative of a new note as determined by the counts assigned to the tone generators not producing tones taken in the predetermined sequence of numbers, and

whenever all tone generators are in one of the conditions of producing a tone and producing a tone in a decay mode, causing the tone generator farthest into its decay mode of operation to produce a tone in response to the next new input signal representative of a new note as determined by the counts assigned to the tone generators in the decay mode taken in the predetermined sequence of numbers.

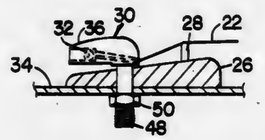


4,202,240

BRIDGE PIN

Gerald E. Smith, 1528 Waterhouse, Chattanooga, Tenn. 37412

Filed Jul. 13, 1978, Ser. No. 924,233
Int. Cl.² G10D 3/12
U.S. Cl. 84—297 R 10 Claims



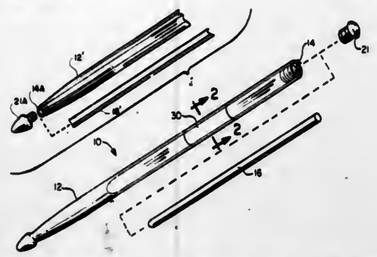
1. A bridge pin for securing an anchor of one longitudinally extending guitar string at the bridge of an acoustic guitar, said anchor being enlarged relative to the diameter of said string, said pin comprising an elongated mounting stem with a securing head thereon, said head having a string receiving channel extending in the longitudinal direction of said string, said channel comprising a first section opening at one end of the head and adapted to receive the anchor and string and a second section having a cross sectional dimension smaller than that of said first section, said second section opening at the opposite end of said head than said first section, said cross sectional dimension of said second section being such that the string but not the anchor is receivable therein.

4,202,241

DECORATIVE DRUMSTICK SYSTEM WITH DIFFERENT APPEARING INSERTS

Stephen J. Lucas, 2429 Frenchman St., New Orleans, La. 70119

Filed Jul. 3, 1978, Ser. No. 921,757
Int. Cl.² G10D 13/00
U.S. Cl. 84—422 S 5 Claims



1. A decorative drumstick system comprising: a. an outer, elongate drumstick body, at least in part, of transparent material and of a length and diameter to be held and controlled by and within a single human hand for controlled striking of, for example, a drum and other percussion sound instruments, said body being provided with an inner, cylindrical, elongated, longitudinal bore, under and visible through said transparent material said bore being of an at least similar diameter throughout, said bore being provided with an opening at at least one end portion, said opening being provided with a plurality of threads;

b. a number of different inner insert members each of substantially the same size as said bore but being of different decorative external appearance, each of said members being slidably and removably receivable on an individual basis into and from said bore, each of said members making a substantially close, tight, immovable fit with said bore when fully inserted and the open end closed off thereinto; and

c. a head removably connectable to the open end portion of said bore at said threads, said head being provided with a plurality of threads which register with and threadably connect said head to said drumstick body of said bore to close off the end of said bore, said head tightly retaining the selected, inserted one of said insert members within said bore when said head is tightly connected to said body at said threads; said drumstick body being substantially transparent, around at least a substantial portion of said bore, and said inner, selected inserted member being colored, said insert member being visible through said outer drumstick body when said insert member has been fully placed within said drumstick body; the same drumstick body being usable to give off different decorative appearances by inserting a selected one of said different insert members as desired and allowing for later changing by substituting a different one of said different insert members into said bore of said drumstick body.

4,202,242

WEDGE HEAD PIN FASTENER

Louis A. Champoux, Seattle; Joseph G. Falcioni, Tacoma, both of Wash., and Morton Mendels, Torrance, Calif., assignors to The Boeing Company, Seattle, Wash.

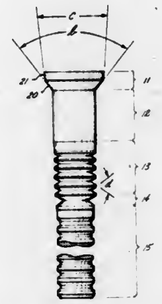
Continuation of Ser. No. 615,205, Apr. 10, 1975, abandoned, and a continuation of Ser. No. 400,334, Sep. 24, 1973, abandoned.
This application Feb. 23, 1977, Ser. No. 771,318
Int. Cl.² F16B 35/06
U.S. Cl. 85—7 13 Claims

7. A wedge head pin fastener for securing together a plurality of overlapped work members having an opening therethrough, said opening having first and second countersink surfaces, said second countersink surface extending axially inwardly from the intersection of said opening and an outer surface of said work members and having a taper angle of less

than 20°, said first countersink surface being disposed axially inwardly from said second countersink surface, said pin fastener comprising:

a head having an end face and first and second tapered sections for engagement with said first and second countersink surfaces, respectively, said first tapered section having a taper angle of from 70° to about 100° and being sufficiently large to substantially prevent pull-through of said pin fastener in said opening when engaged upon said first countersink surface, said second tapered section being axially adjacent said end face, having a taper angle of less than 20° but exceeding said taper angle of said second countersink surface, and being sized so that, upon forcible insertion of said pin fastener into said opening, said second countersink surface is diametrically enlarged and forms an interference fit with said second tapered section, whereby a structural joint is formed wherein said second countersink surface is pushed out to conform to the taper angle of said second tapered section so that effects of stresses are shifted to the interior of the structural joint, and;

a shank depending from said head, said shank having a securing portion thereon, said securing portion including a plurality of circumferential grooves and a plurality of circumferential rings formed intermediate said circumferential grooves, each said rings having an apex and each of said grooves having a base adjacent apexes and bases, being joined by substantially straight ring sides, adjacent ring sides of each of said rings forming a ring angle at their apexes of from 55° to 65°.

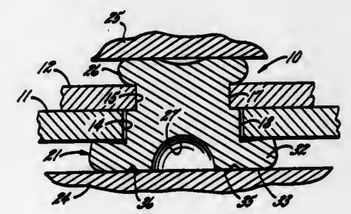


4,202,243

SELF-COMPENSATING RIVET

Robert F. Leonhardt, Roscoe, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Jul. 31, 1978, Ser. No. 929,215
Int. Cl.² F16B 5/04, 19/06
U.S. Cl. 85—37 10 Claims



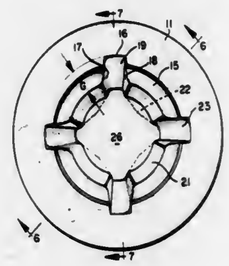
1. A self-compensating rivet in unstaked form and comprising first and second integral and coaxial shank portions and further comprising an integral and coaxial head said second shank portion being located between said first shank portion and said head and having a predetermined diameter greater than the diameter of said first shank portion and less than the diameter of said head, said head having a substantially flat annulus disposed in a radial plane and defining an anvil-engaging surface, the inner diameter of said flat annulus being no greater than the diameter of said second shank portion, the outer diameter of said flat annulus being greater than the diameter of said second shank portion, a counter-recess centered within said annulus and defined by inner and outer recesses, said outer recess having a diameter greater than the diameter of said inner recess and defining the inner diameter of said flat annulus.

4,202,244

RECESSED HEAD SCREW

Charles E. Gutshall, Rockford, Ill., assignor to Technofast, Inc., Willowbrook, Ill.

Filed Jul. 26, 1978, Ser. No. 928,108
Int. Cl.² F16B 23/00
U.S. Cl. 85—45 4 Claims



1. In a screw having a head provided with a cruciform recess comprising a plurality of radially extending slots, said recess being adapted to received a driving tool provided with flutes which engage said slots, the improvement wherein:

said recess comprises a generally frusto-conical central socket portion having sidewall concave sections interconnecting adjacent slots and a generally spherical bottom surface;

each of said slots comprises a pair of opposed sidewalls and a generally sloping bottom wall interconnecting said sidewalls, said opposed sidewalls being symmetrically inclined relative to the axis of said screw, said bottom wall of each of said seat joining a single one of said sidewalls in a concave camming surface extending along at least a portion of the depth of said slot;

whereby on insertion of said driving tool, a flute of said tool which enters a slot in said head is cammed between said concave surface and the opposite sidewall of said slot, creating a frictional engagement between said tool and said screw.

4,202,245

SHELL RELOADER WITH AUTOMATIC EJECTION

Larry W. McSpadden, P.O. Box 343, Mountain View, Ak. 72560

Filed Apr. 3, 1978, Ser. No. 892,651
Int. Cl.² F42B 33/10
U.S. Cl. 86—36 6 Claims

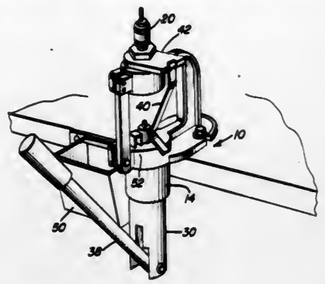
1. A cartridge shell press comprising

a frame member having a lateral access opening, an upper shell-receiving portion, and a lower ram-receiving portion, said frame member being adapted to receive a die assembly mounted on said frame adjacent said shell-receiving portion, and aligned to receive a shell member thrust upwardly in said shell-receiving portion;

vertically-movable ram means adapted for moving a shell member along a travel path towards the position of said die assembly and adapted for holding a shell member;

means for moving said ram means upwardly from an intermediate shell engagement position toward an upper die-engaging position and downwardly toward a lower shell ejection position; and

spring means extending laterally into the travel path of said shell member, said spring means being deflected outwardly by said ram means in said intermediate shell engagement position and adapted for spring return into said



travel path when said ram means is retracted to said lower ejection position, thereby providing positive ejection of a cartridge shell when retracted from the uppper die-engaging position to the lower ejection position.

4,202,246

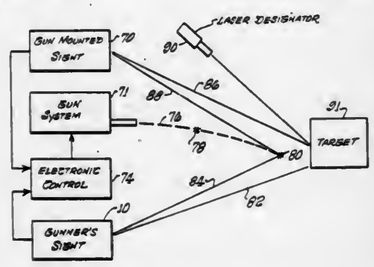
MULTIPLE CO-AXIAL OPTICAL SIGHT AND CLOSED LOOP GUN CONTROL SYSTEM

Charles W. Schertz, and Edward H. Ritter, both of Claremont, Calif., assignors to General Dynamics Pomona Division, Pomona, Calif.

Continuation-in-part of Ser. No. 469,280, May 13, 1974, abandoned, which is a division of Ser. No. 404,077, Oct. 5, 1973, Pat. No. 4,040,744. This application Jun. 23, 1975, Ser. No. 591,381

Int. Cl.² F41G *3/22*

U.S. Cl. 89—41 EA **14 Claims**



1. In a closed-loop gun control system, that improvement comprising:

an ammunition round having a delayed timed flash and an impact flash, said timed flash having an optical energy output that is invisible and different from said impact flash.

an optical energy detection system for detecting energy generated by the timed flash and the impact flash of said ammunition round, including,

optical sight means operably associated with said ammunition round for establishing a desired line of fire,

said optical sight means including optical energy detector means for determining the angular displacement and orientation of said timed flash and said impact flash from the desired line of fire.

4,202,247

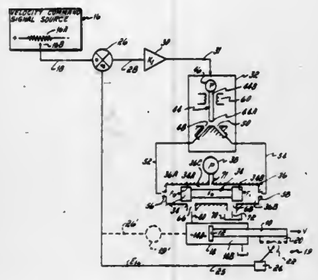
CLOSED LOOP ELECTRO-FLUIDIC CONTROL SYSTEM

Denes B. Hunkar, Cincinnati, and Hans Ortlepp, Loveland, both of Ohio, assignors to Hunkar Laboratories, Inc., Cincinnati, Ohio

Division of Ser. No. 737,031, Oct. 29, 1976, Pat. No. 4,132,152. This application Jun. 7, 1978, Ser. No. 913,301

Int. Cl.² F15B *13/16, 13/044*

U.S. Cl. 91—364 **7 Claims**



1. A closed loop electro-fluidic control system for controlling the velocity of a movable member induced by the application of pressurized fluid to said member, said system having a zero steady state error signal for nonzero steady state controlled velocities, comprising:

a source of analog d.c. electrical signals correlated to a desired velocity of said movable member,

velocity transducing means responsive to movement of said member for providing analog d.c. electrical signals correlated to the instantaneous actual velocity of said member,

nonintegrating circuit means responsive to said desired velocity and actual velocity signals for providing an analog d.c. velocity error signal correlated to the instantaneous difference between said desired and actual velocities of said movable member, said error signal being zero when said desired and actual velocity signals have equal nonzero magnitudes,

a valve having a first opening connected to a source of pressurized fluid, a second opening connected to provide fluid flow to said movable member in varying degrees, a third opening connected to a reservoir, a movable valve closure element, said valve closure element having first and second surfaces, said valve closure element being movable between first and second limits of travel when subjected to a differential fluidic force across said first and second surfaces to simultaneously vary in direct relationship the sizes of said first and third valve openings to extents dependent on the variable position of said valve closure element relative to said first and third openings,

an electro-fluidic transducer responsive to said analog d.c. velocity error signal for producing a differential fluidic force across said first and second surfaces correlated in magnitude to said error signal, said electro-fluidic transducer providing a zero magnitude differential fluidic force across said first and second surfaces of said valve closure element when said velocity error signal has zero magnitude under conditions where said desired and actual velocities have equal nonzero magnitudes,

said valve closure element having a predetermined position intermediate said first and second limits of travel wherein substantially no fluidic flow paths exist between said second opening and each of said first and third openings, and

said valve closure element and said electro-fluidic transducer having no interconnection therebetween to return said valve closure element to said predetermined position when said velocity error signal is zero, said valve closure element being subjected solely to forces from said electro-fluidic transducer and remaining displaced from said predetermined position in the absence of force applied thereto by said electro-fluidic transducer once displaced therefrom by forces applied by said electro-fluidic transducer in response to a nonzero error signal input to said electro-fluidic transducer which has subsequently returned to zero upon reaching steady state.

4,202,248

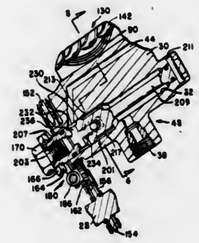
ROTARY VALVE

Jerome T. Ewald, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 31, 1978, Ser. No. 892,441

Int. Cl.² F15B *9/10*

U.S. Cl. 91—375 A **6 Claims**



1. In a vehicle having an integrated control mechanism for controlling the development of independent power assist to augment an operator input in the operation of a brake system and a steering system, a rotary valve mechanism for the steering system comprising:

a housing having a bore therein with a inlet connected to a source of fluid pressure, first and second operational ports, and an outlet connected to a reservoir;

a torsion bar with at least a portion thereof located in said bore, said torsion bar having a first end fixed to said housing and a second end, said torsion bar including an annular rib on the peripheral surface thereof, said rib engaging the wall of said bore to prevent communication of fluid from the inlet to the outlet along the wall of said bore, said torsion bar also including an axial bore and first and second radial bores, said first radial bore communicating said axial bore with said outlet and said second radial bore communicating said axial bore with said inlet and with said operational ports, said torsion bar further including a plurality of slots on the peripheral surface thereof, said fluid pressure being communicated from the inlet to the outlet on paths through said slots, said axial bore, and said first and second radial bores; and

an actuation member connected to said second end of the torsion bar, said actuation member responding to an operator steering input to rotate said torsion bar to restrict the communication of fluid pressure from the inlet to one of said first and second operational ports while opening the communication of fluid pressure from the outlet to the other of said first and second operational ports to develop a power assist for the steering system.

4,202,249

POWER STEERING MECHANISM CONTROL VALVE

Erich Jablonsky, Bobingen, and Dieter Elser, Essingen-Lauterburg, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

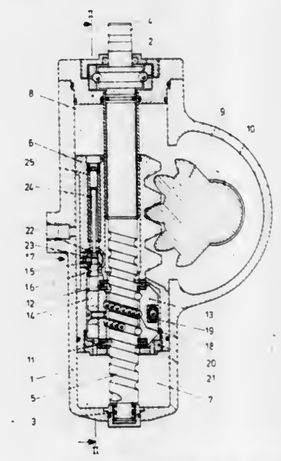
Filed Aug. 23, 1977, Ser. No. 826,989

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638981

Int. Cl.² F15B *13/04, 13/14*

U.S. Cl. 91—422 **17 Claims**

1. In a power steering mechanism of the kind having a housing with pressure chambers and a double acting piston member (6, 306, 406,(406) therebetween and having a manually operated steering spindle entering said piston with a worm thread on said steering spindle and a coacting worm nut member (13, 313, 413, (413) therearound carried by said piston member with relative rotation and also having a mechanically actuated control valve comprising a valve spool member (23, 323, 423, (423) carried by said piston member with mechanical actuator means (14, 314, 414, (414) carried by said worm nut member connecting to said valve spool member for shifting said valve spool member upon rotation of said steering spindle, wherein rotation of said steering spindle effects said relative rotation of said worm nut member to stress a flexure means (24, 30, 40, 50, 60) during shifting of said valve spool member by said actuator means to control pressure and exhaust flow means for operating said piston; and wherein said flexure means is stressed upon occurrence of said relative rotation by rotation of said steering



spindle; the improvement which comprises said flexure means comprising an elongated flexure rod (20, 30, 40, 50, 60) extending longitudinally of said piston and worm nut members and having an end secured to one (6, 306, 413,(413) of said members and an end movable with one of the other (13, 313, 406,(406) of said members, said movable flexure rod end moving when said valve spool member is being shifted by said relative rotation; said flexure rod being bendably stressed upon manual rotation of said steering spindle during said shifting of said valve spool member and said flexure rod having a predetermined flexing characteristic curve for force applied by said steering spindle and effecting steering resistance simulation during a steering operation and effecting entering of said valve spool subsequent to a steering operation; including adjusting means for adjusting the position of said flexure rod in order to adjust said valve spool member to a center or neutral position.

4,202,250

PROGRAMMED UNBALANCED LOAD VALVE SYSTEM

Kenneth W. Zeuner, Newtown, and Alonzo B. Jarman, Wrightstown, both of Pa., assignors to Control Concepts, Inc., Newtown, Pa.

Continuation-in-part of Ser. No. 578,006, May 16, 1975, Pat. No. 3,980,002. This application Sep. 13, 1976, Ser. No. 723,023

Int. Cl.² F15B *13/043*

U.S. Cl. 91—449 **6 Claims**

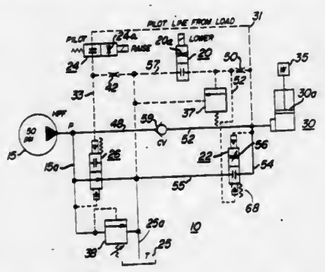
1. A programmed valve system in combination with an unbalanced load means and a fluid source having a raise and lower two stage valve assembly comprising

said raise two stage valve assembly comprising a raise first solenoid operated pilot stage, a raise second valve stage having a chamber and divided into inlet and outlet sections, a raise second valve stage orifice between the sec-

tions within which a raise second stage poppet reciprocates,

said lower two stage valve assembly comprising a lower first solenoid operated pilot stage, a lower second valve stage having a chamber and divided into inlet and outlet sections, a lower second valve stage orifice between the sections within which a lower second stage poppet reciprocates, said load means being coupled to said lower inlet section,

said raise and lower second stage poppets each having an outer substantially parabolic contour to provide a predetermined flow area between the respective orifice and parabolic contour, said first raise and lower pilot stages being respectively coupled to said raise and lower second stages only by fluid communication and whereby said respective raise and lower second stage poppets are controlled in closing with substantially linear flow rate change with poppet within orifice for minimized shock



when the respective pilot stage is actuated to the valve closed position,

means coupling said inlet section of said raise second valve stage to said fluid source, and

dashpot means for said lower second stage poppet and having a chamber and an unrestricted conduit coupled between said chamber and a dashpot opening formed on an outer surface of said dashpot means, said dashpot opening being closed only when engaged by said lower second stage poppet whereby said lower second stage poppet (1) when moving to said open state engages and closes said dashpot opening and pushes said dashpot means to compress fluid in said dashpot chamber thereby damping the rate of opening of said lower second stage poppet and (2) when moving to said closed state disengages from and opens said dashpot opening and said lower second stage poppet is free of and no longer damped by said dashpot means for a substantially rapid closing.

4,202,251

GENERATOR FOR FLOW RATE OF PRESSURIZED FLUID

Marcel Geirnaert, Ternat-Wambeek, Belgium, assignor to S.E.C.A. Société Anonyme Société d'Entreprises Commerciales et Aéronautiques, Belgium

Filed May 10, 1978, Ser. No. 904,374

Claims priority, application Belgium, May 12, 1977, 177519; May 9, 1978, 1187507

Int. Cl.² F01B *13/04*

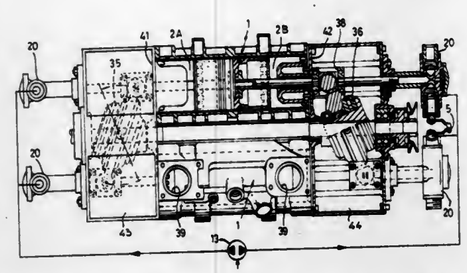
U.S. Cl. 91—472 **5 Claims**

1. Power generator comprising:

(a) body means having three chambers separated from each other by fixed fluid-tight partitions and having a central bore,

(b) shaft means rotatably mounted in the central bore of said body means with at least one end of said shaft means extending from the body means,

(c) at least two drive cylinders mounted in the central one of the chambers in said body means, each of said drive cylinders including two pistons slidably mounted in opposition with each piston having two opposite working faces, the piston rods attached to the corresponding ones of said pistons traversing a respective of said partitions through stationary fluid-tight joints for allowing the piston rods to move therethrough on a pure translational movement, and



(d) two swash plate means, each one being included in a respective lateral one of said chambers, each of said swash plate means being attached to the shaft means and having means for mechanical attachment of the piston rods from the corresponding pistons in said drive cylinders.

4,202,252

THROUGHPUT-ADJUSTABLE FLUID-DISPLACEMENT MACHINE

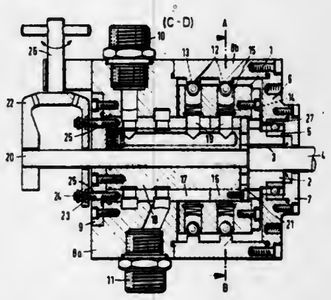
Bernd Scheufler, and Heinz Müller, both of Brunswick, Fed. Rep. of Germany, assignors to Feinmechanische Werke Mainz GmbH, Mainz, Fed. Rep. of Germany

Filed Apr. 12, 1978, Ser. No. 895,661

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716496

Int. Cl.² F01B *13/06*

U.S. Cl. 91—483 **9 Claims**



1. A fluid-displacement machine comprising a stator component; a rotor component mounted on said stator component for rotation about an axis relative thereto; two axially spaced circumferentially extending cam tracks both having a sinusoidal shape and being stationary relative to said stator component; means for bounding two sets of radially extending passages in said rotor component, said passages having respective open ends which always face a different one of said cam tracks for each of said sets; a plurality of pistons each accommodated for reciprocation, and bounding a chamber, in one of said passages of said two sets and each having a cam follower portion; means for so biasing each respective piston toward the respective cam track that said cam follower portion thereof follows, and reciprocates the respective piston in dependence on, the configuration of the respective cam track; high-pressure and low-pressure conduits; means for communicating said conduits with said chambers, including two control members each of which is interposed between said conduits and said chambers of one of said sets and each of which is mounted for angular displacement about said axis relative to said stator component; means for simultaneously angularly displacing said two control members in opposite directions relative to said

stator component and for arresting said control members in the respectively assumed positions thereof; each of said cam tracks having a plurality of raised portions uniformly distributed about its circumference; and the ratio of the number m of said passages in each of said sets to the common devisor T of m and of the number of said raised portions per cam track being m/I-5.

4,202,253

STRUCTURAL CELLULAR MATERIALS

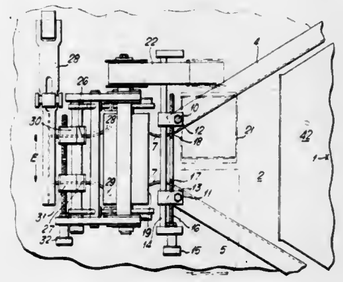
Peter John Thwaites, Eltisley, England, assignor to Dufaylite Developments Limited, England

Filed Dec. 4, 1978, Ser. No. 966,240

Claims priority, application United Kingdom, Dec. 8, 1977, 51070/77

Int. Cl.² B31D *3/02*

U.S. Cl. 93—1 H **16 Claims**



12. A method of treating an unexpanded structural honeycomb material formed of a permanently creasable cellulosic material to convert it to a self-sustaining open cellular state which comprises extending the material in its expansion direction and thereby opening it out to a first open cellular state, further extending the material in said expansion direction while compressing it across said expansion direction to an intermediately compressed state, thereafter engaging the material by driving means extending in driving relationship with the material across the expansion direction thereof to drive said material in the expansion direction and compressing the material across the expansion direction to a compressed closed state in which the cellulosic material is creased, and from which the honeycomb material is expandable, on release, to a second open cellular state, said compression to said compressed closed state being effected by passage of the material through a throat by said driving means.

4,202,254

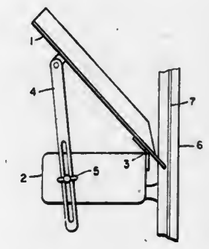
AIR VENT AUTO'S

Alvin L. Long, Civilian Gen. Del., Beale, A.F.B., Long Ranch, Yuba County, Calif. 95903

Filed Jul. 17, 1978, Ser. No. 925,430

Int. Cl.² B06J *1/20*

U.S. Cl. 98—2.12 **1 Claim**



1. A vehicle air deflector for use with a vehicle side door including a vertically movable window, a side view mirror, said side view mirror being mounted inside a ridgid mirror housing on the exterior of the door adjacent the front extremity of the window, a vertical hinge pivotally mounting a side portion of said air deflector against a side wall of said rigid mirror housing, an adjustable arm having one end pivotally mounted against the opposite side of said air deflector, the opposite end of said arm having an elongated slot to be engaged with a fixed threaded vertical pin on top of said mirror housing for regulating the angle of said air deflector with respect to said vehicle and a wing nut adjustably positioned along the threads of said vertical pin whereby said air deflector may be locked in position.

4,202,255

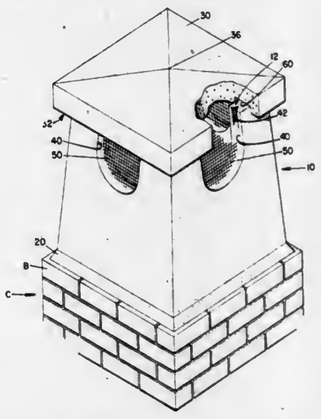
CHIMNEY CAP

Joseph R. McNamara, 90 Dana Ave., Worcester, Mass. 06104

Filed Oct. 23, 1978, Ser. No. 954,301

Int. Cl.² F24F *7/00*

U.S. Cl. 98—42 R **1 Claim**



1. A chimney cap which can be conveniently carried to the situs at the upper terminus of a chimney and readily secured thereto comprising, an upright hollow body having walls terminating in upper and lower planar edges, the lower planar edge of the body being secured to the upper terminus of the chimney, a roof seated upon the upper planar edge of the body, the width of the roof being the same as the width of the lower planar edge of the body, the underside of the roof being provided with recesses adjacent each respective corner and the upper planar edge of the body being appropriately complementally configured to snugly seat in said recesses, substantially arcuate recesses extending through the walls of the body adjacent each side thereof, the arcuate recesses communicating at each end thereof with inwardly extending veeshaped slots extending into the walls of the body, and screen members of a configuration adapted to be removably receivable snugly within the annular recesses in the body, the screens having at each side thereof an ear receivable in the respective veeshaped slots.

4,202,256

POPCORN STIRRER

Robert S. H. Brooks, 4419 Fulton St., Sherman Oaks, Calif. 91403

Filed Oct. 23, 1978, Ser. No. 953,560

Int. Cl.² B01F *7/16*; A47J *36/06*; A23L *1/18*

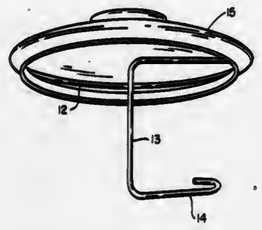
U.S. Cl. 99—323.5 **5 Claims**

1. A stirring rod for use with a heating vessel having a cover incorporating a flange portion internestable and slidable within the upwardly disposed circular periphery of said vessel and extending outwardly therefrom about said periphery to define

an annular groove of given radius internally disposed within said cover,

said cover further including a handle fixed thereto at an outwardly disposed surface thereof,

the rod comprising a resilient wire having a contractable substantially ring-shaped portion formed having a radius greater than said groove radius, the said ring portion being manually contractable for insertion and resilient retention within said groove,



a substantially straight portion present as a shaft connected to one end of said ring portion by a radially inwardly projecting extension, and

a hook-shaped portion connected to the opposite end of the straight portion so that rotation of said ring-shaped portion causes rotation of the hook portion to agitate material within the heating vessel to secure even heating of the material within the heating vessel.

4,202,257

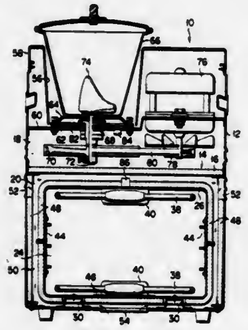
COOKING APPARATUS

Teruo Masuda, Itsukaichi; Nobuhiko Watanabe, Tachikawa; Takeo Abe, Akikawa; Matsuhiro Koike, Hachioji; Masayasu Morita, Fuchu; Yoshio Oguma, Kiyose; Yoshiharu Hamaguchi, Fussa; Motonobu Hirata, Chiba; Mamoru Saito, Koganei; Kunio Onoguchi, Sayama; Kazuyuki Yamaguchi, Oume, and Akira Hirose, Fuchu, all of Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,353

Int. Cl.[2] A23L *3/00*

U.S. Cl. 99—348 **5 Claims**



1. A cooking apparatus comprises an apparatus housing, partition means disposed in the apparatus housing to divide the apparatus housing into upper and lower chambers, an oven chamber defined in the interior of the lower chamber and having a baking heater, a vessel disposed on the upper chamber of the apparatus housing and having a shaft extending through the bottom wall of the vessel and an agitating and kneading blade fixed on the free end of the shaft inside the vessel, drive a mechanism disposed in the upper chamber and adapted to impart a rotation force to the shaft, and fermenting means disposed below the bottom of the vessel and having a fermenting heater for the vessel which heats the vessel to a fermenting temperature.

4,202,258

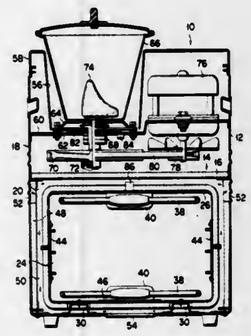
COOKING APPARATUS

Teruo Masuda, Tokyo, and Masayasu Morita, Fuchu, both of Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,355

Int. Cl.[2] A23L *3/00*

U.S. Cl. 99—348 **4 Claims**



1. A cooking apparatus comprising:

an apparatus housing, the apparatus housing having a kneading switch, fermenting switch and baking switch thereon;

partition means for separating the apparatus housing into upper and lower chambers;

an oven chamber defined in the lower chamber and having a baking heater therein;

a vessel having a shaft extending through the bottom of the vessel and a kneading blade fixed to the upper end of the shaft interior of the vessel;

fermenting means including a first fermenting heater for the vessel which is disposed below the bottom of the vessel to heat the interior of the vessel to a fermenting temperature, and a second fermenting heater for the oven which is disposed in the oven chamber and which, together with the first fermenting heater for the vessel, is turned ON to preheat the oven chamber;

a thermoswitch coupled to said second fermenting heater for the oven and adapted to sense heat from the second fermenting heater for the oven to effect a temperature control of the second fermenting heater for the oven;

a release switch disposed on the apparatus and housing and coupled to open the kneading switch, fermenting switch and baking switch;

an exclusive time setter, automatic time setter and baking temperature setter each having its own time limiting contact; and

a fermenting control circuit coupled at least to said exclusive time setter and being responsive to operation of said exclusive time setter and kneading switch to turn both of the fermenting heaters ON to cause the interior of the vessel and oven chamber to be heated to a temperature set by the thermoswitch over a time period set by the exclusive time setter.

4,202,259

CONVECTION OVEN

Leif A. T. Johansson, Huddinge, Sweden, assignor to Tipe Revent AB, Stockholm, Sweden

Filed Nov. 7, 1978, Ser. No. 958,331

Claims priority, application Sweden, Nov. 29, 1977, 7713504

Int. Cl.[2] A47J *37/00*

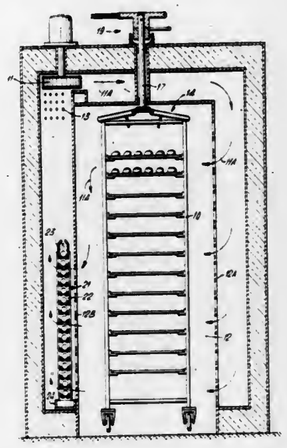
U.S. Cl. 99—352 **10 Claims**

1. A convection oven, comprising:

(a) means defining an oven chamber receptive of a load as a batch;

(b) means for circulating heated air in a closed path extending substantially horizontally through said oven chamber;

(c) a multiplicity of blocks disposed outside said oven chamber in a substantially vertical plane in said closed path, said plane being transverse to the direction of the air flow



through said oven chamber, the material of said blocks having a high thermal conductivity; and

(d) means for spreading water over said blocks only at the start of a baking cycle;

whereby during the remainder of the cycle said air flow effects reheating of the blocks for use with the next batch by direct engagement of said air flow with said blocks.

4,202,260

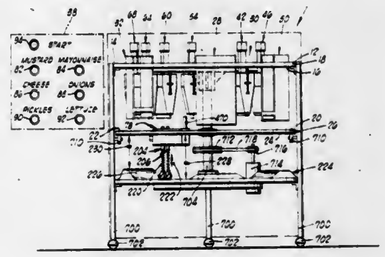
AUTOMATIC SANDWICH MAKING APPARATUS

Arland D. Weger, Box 382, Colbert, Okla. 74733

Filed Aug. 24, 1978, Ser. No. 936,647

Int. Cl.[2] A21C *9/04*; B32B *31/04*

U.S. Cl. 99—450.4 **30 Claims**



1. An apparatus for making sandwiches consisting of an upper breadpiece and a lower breadpiece and foodstuff disposed between the upper and lower breadpieces, comprising:

an upper support;

a lower support disposed near and spaced a distance from the upper support, the lower support having a sandwich station thereon;

a lower breadpiece dispenser connected to the upper support and having a portion for retaining lower breadpieces and a dispensing passageway formed through a portion thereof, a lower breadpiece being dispensable from the lower breadpiece dispenser;

a foodstuff dispenser connected to the upper support and spaced a distance from the lower breadpiece dispenser, having a portion for retaining foodstuff, the foodstuff being dispensable from the foodstuff dispenser;

an upper breadpiece dispenser connected to the upper support and spaced a distance from the foodstuff dispenser, having a portion for retaining upper breadpieces and a dispensing passageway formed through a portion thereof, an upper breadpiece being dispensable from the upper breadpiece dispenser;

a discharge assembly for moving the sandwich disposed on the sandwich station to a sandwich discharge position in a discharge station of the upper and the lower supports;

means for moving one of the upper support and the lower support to a lower breadpiece dispensing station and the lower breadpiece dispenser being disposed in a predetermined position relative to the sandwich station on the lower support in the lower breadpiece dispensing station for receiving a lower breadpiece dispensed from the lower breadpiece dispenser, and for moving one of the upper support and the lower support to a foodstuff dispensing station and the foodstuff dispenser being disposed in a predetermined position relative to the sandwich station on the lower support in the foodstuff dispensing station for dispensing the foodstuff from the foodstuff dispenser on a sandwich portion disposed on the sandwich station in the foodstuff dispensing station, and for moving one of the upper support and the lower support to an upper breadpiece dispensing station and the upper bread dispenser being disposed in a predetermined position relative to the sandwich station on the lower support in the upper breadpiece dispensing station for dispensing an upper breadpiece on a sandwich portion disposed on the sandwich station in the upper breadpiece dispensing station, and for moving one of the upper support and the lower support to the discharge station and the discharge assembly being disposed in a predetermined position relative to the sandwich station on the lower support in the discharge station for discharging a sandwich disposed on the sandwich station to the sandwich discharge position;

means for dispensing foodstuff from the foodstuff dispenser onto the sandwich portion disposed on the sandwich station in the foodstuff dispensing station of the upper and the lower supports; and

means for dispensing one of the upper and the lower breadpieces from the upper and the lower breadpiece dispensers onto the sandwich station, comprising:

means for dispensing one of the lower and upper breadpieces from the lower and upper breadpiece dispensers, comprising:

a pin member having opposite ends and extending through the lower support generally near the sandwich station, the pin member being movable to a dispensing position wherein a portion of the pin member generally near one end thereof extends into the dispensing passageway formed in the upper and the lower breadpiece dispensers, the pin member engaging one of the lower breadpieces in the lower breadpiece dispenser and moving the engaged lower breadpiece from the lower breadpiece dispenser onto the sandwich station as the sandwich station moves through the lower breadpiece dispensing station and the pin member engaging one of the upper breadpieces in the upper breadpiece dispenser and moving the engaged upper breadpiece from the upper breadpiece dispenser onto the sandwich station as the sandwich station moves through the upper breadpiece dispensing station;

a cam roller journally connected to the end of the pin member generally opposite the end portion of the pin member engagable with the lower breadpiece; and

a cam surface spaced a distance from the lower support for positioning the pin member, the cam roller rollingly engaging the cam surface during the movement of one of the upper and the lower supports, the cam surface being positioned to move the pin member to

the dispensing position via the engagement between the cam roller and the cam surface in the lower breadpiece dispensing station of the upper and the lower supports and the cam surface being positioned to move the pin to the dispensing position via the engagement between the cam roller and the cam surface in the upper breadpiece dispensing station of the upper and the lower supports.

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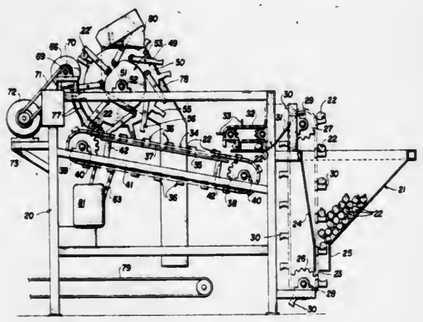
METHOD AND APPARATUS FOR TRIMMING ONIONS OR LIKE PRODUCE

William J. Lawson, Milton, Del., assignor to Magnuson Engineers, Inc., San Jose, Calif.

Filed Mar. 14, 1978, Ser. No. 886,470

Int. Cl.² A23N *15/08*

U.S. Cl. 99—636 **1 Claim**



1. A machine for trimming onions or like produce comprising:

a storage receptacle to receive onions;

means to convey onions one at a time from said storage receptacle;

an orientation device positioned to receive the onions from said convey means, said orientation device comprising:

a fixed inclined plate for receiving the onions; and

spaced pocket pusher elements and means for moving the elements up the inclined plate in succession, each element comprising a pair of planar flight sections positioned end-to-end across said plate with adjacent ends spaced apart and extending away from the direction of travel to form a V-configured pusher element to receive and cause an onion to roll upwardly on said plate and thereby orient the stem axis across the plate while centering the onion relative to the flight sections;

a trimming station comprising a pair of laterally spaced trimming blades for engaging an onion moving therebetween to trim protrusions from opposite ends thereof;

means to grip and pick up each onion from the pusher element comprising,

a vertically disposed rotating disc supported for rotation about a horizontal axis;

a plurality of circumferentially spaced rigidly mounted first gripping jaws supported on and extending radially from said disc;

a second gripping jaw for each rigidly mounted gripping jaw mounted on the disc for pivoting towards and away from said corresponding rigid gripping jaw and thereby form pairs of gripping jaws;

spring means for biasing each second gripping jaw towards the corresponding rigid gripping jaw;

a profiled cam fixed to said disc and positioned to engage said second gripping jaws in succession and cyclically cause said second jaws to close towards the corresponding rigid jaw of the pair and remain closed at a position to hold an onion therebetween;

means supporting and rotating said disc for first swinging the pairs of gripping jaws through the center of the space between a pair of flight sections while each second jaw is being moved towards the corresponding first jaw to grip the oriented onion and carry it between the trimming blades to trim the protrusions therefrom; and

said cam thereafter acting to move the second jaw from the first jaw to release the trimmed onion.

4,202,262

AGRICULTURAL BALER

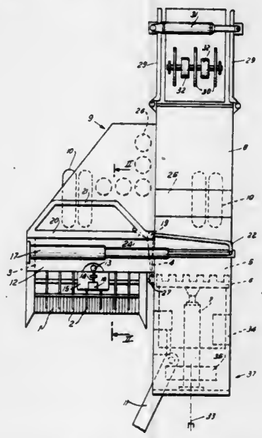
Helmut Claas, Harsewinkel; Gerhard Römer, Detmold, and Otger Weddeling, Stadtlohn, all of Fed. Rep. of Germany, assignors to Gebr. Claas Maschinenfabrik GmbH, Harsewinkel, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 884,594

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2710412

Int. Cl.² B30B *9/30*

U.S. Cl. 100—4 **12 Claims**



1. An agricultural baler for baling of vegetable matter, comprising means forming a precompressing chamber and a main compressing chamber communicating therewith; means for feeding vegetable matter into said precompressing chamber and for precompressing it therein to form a precompressed body; means for sensing when the vegetable matter in said precompressing chamber has been precompressed to a predetermined degree; means for expelling the precompressed bodies from said precompressing chamber into said main compressing chamber when said sensing means senses that said predetermined degree of precompression is reached, so that successive precompressed bodies expelled from said precompressing chamber are of at least substantially uniform size and density; and means operatively connecting said expelling means with said feeding means for temporarily shutting down the latter while said expelling means expel the precompressed bodies from said precompressing chamber into said main compressing chamber.

4,202,263

SCRAP SHEARING MACHINES

Heinrich Schulte, Witten-Herbede, Fed. Rep. of Germany, assignor to Lindemann Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany

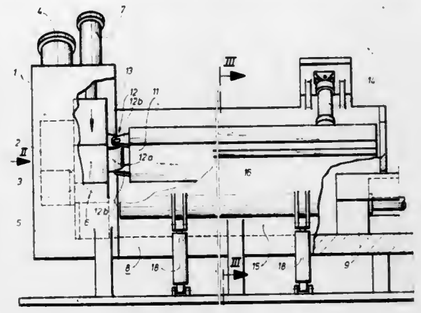
Filed Jun. 8, 1978, Ser. No. 913,543

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727436

Int. Cl.² B30B *9/32*

U.S. Cl. 100—95 **7 Claims**

1. A scrap shearer comprising a shear frame, a pair of relatively movable shearing blades mounted in said shear frame, a crusher mounted in said shear frame upstream of said shearing blades, a filling trough upstream of said shear frame, a feed device for feeding scrap along said trough towards said crusher, a press bar for precompacting said scrap in said trough to a predetermined size to enable said crusher and said shearing blades to accommodate said scrap, and a force transferring connection between said shear frame and said filling trough whereby said shear frame reinforces said filling trough, said



shearing blades, said crusher, and said press bar all being located in a common plane, said scrap shearer further including an end plate, first pivotal connection means connecting a first side of said end plate to said crusher, second pivotal connection means connecting a second side of said end plate to said press bar, said first side of said end plate being opposite said second side, and a ram arranged and acting between said second connection means and said shear frame.

4,202,264

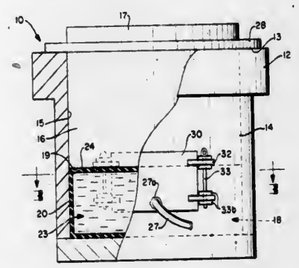
STRUCTURE FOR HYDRAULIC POWER APPARATUS

John M. Hausman, 2669 Wilbur Rd., Medina, Ohio 44256

Filed Feb. 5, 1979, Ser. No. 9,345

Int. Cl.² B30B *1/32*

U.S. Cl. 100—269 A **9 Claims**



1. In a hydraulic press, an improvement to the hydraulic power apparatus, devoid of fluid-sealing apparatus, comprising:

a ram pot, a ram, and an inflatable resilient pressure container;

said ram pot having smooth walled interior surfaces, said ram having smooth walled exterior surfaces and a bottom surface, said ram and said inflatable pressure container residing within said smooth walled interior surfaces of said ram pot, and restraining means for separating said ram and said inflatable pressure container when pressure is released from said container;

said ram pot having a shell including a container installation aperture and a container installation hatch positioned in said aperture and forming an operative portion of said smooth walled interior surfaces; and,

said inflatable pressure container having a feed line attached thereto and having fluid contained therein.

4,202,265

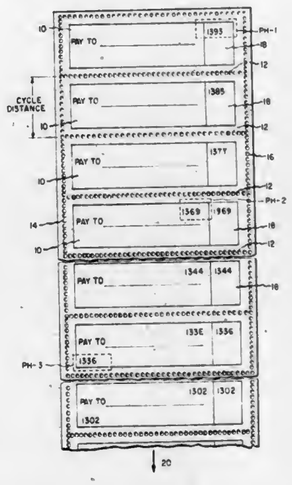
CONTROLLING THE OPERATION OF NUMBERING MACHINES

Ira Eglowstein, 47 Chaumont Dr., Williamsville, N.Y. 14221, and Peter E. Solender, Williamsville, N.Y., assignors to Ira Eglowstein, Williamsville, N.Y.

Filed Jan. 24, 1978, Ser. No. 871,778

Int. Cl.² B41L *49/02*

U.S. Cl. 101—72 **7 Claims**



1. In printing apparatus for printing a plurality of associated identification numbers and check digits on each of a succession of documents where the identification numbers and associated check digits on the same document are all alike but the associated identification numbers and check digits are changed on successive documents, said apparatus having a plurality of numbering devices which are simultaneously cyclically driven synchronously with the feeding of said documents into registration with said devices for printing said identification numbers, and a plurality of number printers each separately associated with a different one of said numbering devices for printing the check digits for the identification numbers associated therewith, a control system for said apparatus which enables the associated identification number numbering devices and check digit number printers to print on different ones of said successive documents, said control system comprising

means driven cyclically with different ones of said identification number numbering devices for providing a plurality of first timing signals each corresponding to a different one of said identification number numbering devices and synchronously with the printing of each of said successive identification numbers,

means for selecting one of said first timing signals as a lead timing signal,

means interfacing with a source of data words each of which data words represents a successive one of said check digits for storing a plurality of said data words in succession,

a plurality of channels each corresponding to a different one of said check digit number printers, each of said channels having a separate shift register for said data words in which said data words are stored in successive stages, and a control means for translating said data words into a signal for operating said check digit number printer corresponding to said channel to present for printing check digits represented by said data words,

means operated by said lead timing signal for reading out one at a time data words from said interfacing means simultaneously into all of said shift registers in said plurality of channels and advancing said registers to shift said data words to the next successive stages therein,

addressing means for reading out the words stored in se-

lected stages of said registers in different ones of said channels to said control means thereof, and

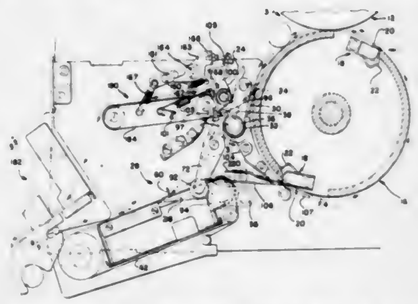
means for enabling each of said control means separately with the one of said first timing signals corresponding to the one of said identification number numbering devices associated with the check digit number printer operated by the one of said control means which is enabled.

4,202,266

STAGING MECHANISM FOR DUPLEXING COPY MACHINES

George J. Zahradnik, Wheaton, Ill., assignor to A. B. Dick Company, Niles, Ill.

Filed Dec. 7, 1977, Ser. No. 858,606
Int. Cl.² B41F 7/06, 21/04
U.S. Cl. 101—218 **17 Claims**



1. In an offset duplicator including a surface for receiving images transferrable to copy sheets, a carrier, drive means for moving the surface and carrier in unison, means for feeding the copy sheets between the surface and carrier, first and second grippers associated with the carrier for gripping edges of said sheets and for holding the sheets on the carrier, said feeding means feeding each sheet to the first gripper whereby the leading edge of each sheet is engaged by the first gripper for movement between the surface and carrier and for transfer of a first image to one side of each sheet, means for releasing said sheet from said first gripper, and means for re-feeding said sheets, trailing edge first, to said second gripper for movement again between said surface and carrier, and for transfer of a second image to the opposite side of each sheet, the improvement in said re-feeding means comprising a conveyor bed, conveyor means movable over said bed, and drive means for said conveyor means for directing said sheets along said bed in a direction away from said carrier and for reversing the direction of movement of said sheets back toward said carrier, said drive means for said conveyor means including camming means imparting reciprocating movement to said conveyor means, a shaft for supporting said camming means, a coaxially mounted shaft, additional camming means on said coaxially mounted shaft for controlling said feeding means for feeding each sheet to the first gripper, and means for adjusting said first mentioned shaft and said coaxially mounted shaft relative to each other.

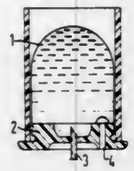
4,202,267

DEVICE FOR MONITORING THE INK SUPPLY IN INK-OPERATED PRINTERS

Joachim Heinzl; Hans Kern, and Fritz Giebler, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 21, 1977, Ser. No. 789,743
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617730
Int. Cl.² B41F 33/12, 33/02; G01F 23/26
U.S. Cl. 101—364 **15 Claims**

1. A device for monitoring the supply of electrically conductive printing liquid of an associated ink-operated printer, comprising a reservoir having an outlet at the bottom thereof for printing liquid, two monitoring electrodes positioned at the bottom portion of said reservoir and disposed in and wetted by the printing liquid, one of said electrodes being disposed in the reservoir bottom in the vicinity of said outlet, the other of said electrodes being so disposed with respect to the first electrode that the gap therebetween, normally filled by printing liquid, extends generally laterally along the bottom of said reservoir,



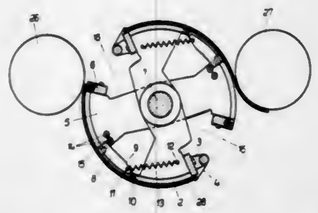
circuit means connected to said electrodes for monitoring the electrical resistance between said electrodes, which is responsive to changes in the amount of liquid in the reservoir, a display element, and means, responsive to a predetermined resistance value, cooperable with means for effecting disconnection of said associated ink-operated printer and actuation of said display element.

4,202,268

TRANSFER DRUM FOR PRINTING PRESSES WITH DEVICES FOR GRIPPING THE LEADING AND TRAILING EDGES OF A SHEET WHICH IS BEING IMPRINTED

Willi Becker, Bammental, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 525,612, Nov. 20, 1974, abandoned.
This application Jun. 25, 1976, Ser. No. 699,845
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1973, 2358223
Int. Cl.² B41F 13/44, 21/04
U.S. Cl. 101—409 **9 Claims**



1. Transfer drum for printing presses through which a sheet to be imprinted passes, comprising a shaft for rotatably mounting the transfer drum, a first and a second row of sheet-supporting elements disposed in comb-like fashion along the periphery of the drum, devices for gripping, respectively, the trailing and leading edges of a sheet, one of said rows of sheet-supporting elements being rotatably mounted directly on said shaft together with one of said gripping devices, and the other of said rows of sheet-supporting elements together with the other of said gripping devices being fixedly mounted directly on said shaft, said row of sheet-supporting elements together with said gripping devices, respectively, being rotatable as respective units relative to one another, each of said gripping devices comprising a gripper bar rigidly extending with a continuous sheet-supporting surface over substantially the entire width of the drum and being secured to each of the sheet-supporting elements of the respective row thereof in channels formed in said drum, said gripping devices being

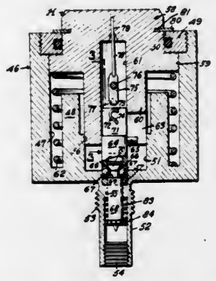
stationary at all times relative to the respective row of sheet-supporting elements.

4,202,269

FUZE MINE ANTI-PERSONNEL

Joseph R. Messineo, Paterson, and George F. Lehwald, South Orange, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 15, 1958, Ser. No. 767,490
Int. Cl.² F42B 23/10
U.S. Cl. 102—8 **3 Claims**



2. In an anti-personnel mine fuze, a body member having a cylindrical recess therein, an upstanding concentrical sleeve in said recess, a spring-loaded pressure plate slidable in said body and sleeve, firing mechanism for said fuze comprising a firing pin release having a socket in its lower portion and a cut away upper portion defining a planar vertical face, a track member secured to said planar face defining a pair of downwardly inclining parallel upper and lower tracks, a spring loaded firing pin slidable in said body and received in said socket in said firing pin release, detent means normally locking said firing pin in said socket, a spring held selector bar pivotally mounted in said pressure plate member and disposed normally above said track member and a pin fixed with the lower end of said bar adapted upon downward movement of said pressure plate member and said bar upon application of a predetermined personnel load thereon to rotate in a counter-clockwise manner and snap under said upper track on said track member in a clockwise direction whereby upon release of said personnel load on said plate, said firing pin release and said firing pin will be lifted to free said detent locking members therefrom and release said firing pin, but upon application of a load heavier than said personnel load on said plate, said selector bar will rotate to move said pin thereon completely around said track member in a clockwise manner to complete a non-functioning cycle and rearmament of said fuze.

4,202,270

STUB CASE OBTURATOR

Hans W. Luther, Kaarst, and Hartmut Marwitz, Duesseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 9, 1978, Ser. No. 876,201
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705278
Int. Cl.² F42B 9/26; B23P 11/00
U.S. Cl. 102—43 R **10 Claims**

1. A stub case which performs an obturating function on the barrel wall of a firearm, which comprises:

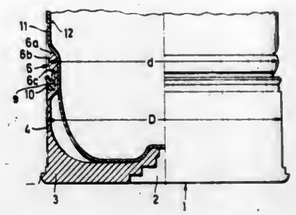
(a) a base;

(b) an annular wall extending from the perimeter of the base;

(c) means for throttling the streams of gas produced by detonation which flow back between the stub case and barrel wall;

(d) means for permitting said streams of gas to expand, depending from said throttling means;

(e) a packing ring fitted around the annular wall of the stub case; and



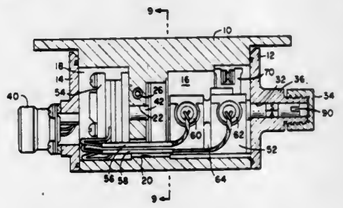
(f) means for directing said expanded streams of gas against the packing ring to cause said ring to expand so as to produce an obturating pressure against the barrel wall.

4,202,271

SAFE AND ARM DEVICE

John H. Day, Pacific Palisades, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 25, 1978, Ser. No. 927,781
Int. Cl.² F42C 15/24, 15/40
U.S. Cl. 102—247 **7 Claims**



1. A safe and arming device comprising a housing having an unbalanced rotor rotatably mounted by a rotor shaft in said housing; said shaft having spring biasing means biasing said rotor to a safe position, said rotor being unbalanced and rotatable to an arming position; latching means pivotably mounted in said housing and engaging said rotor when said rotor has been rotated to said arming position for latching said rotor in said arming position; and resafe means mounted in said housing and engageable with said latching means for rotating said latching means away from said rotor to unlatch said rotor and allow said spring means to bias said rotor into said safe position.

4,202,272

PNEUMATIC TRANSPORT APPARATUS AND METHOD OF PROPULSION

Constantin Teodorescu; Constantin Ceauselu, and Stefan Ardeleanu, all of Bucharest, Romania, assignors to Institutul National Pentru Creatie Stiintifica Si Tehnica, Bucharest, Romania

Filed Jun. 30, 1977, Ser. No. 811,679
Claims priority, application Romania, Jul. 14, 1976, 86971
Int. Cl.² B61B 1/00, 3/00, 13/10, 13/12
U.S. Cl. 104—91 **3 Claims**

1. A pneumatic transport system comprising:

a continuous profiled overhead rail defining a vehicle path extending over a plurality of entrainment stations;

a plurality of pneumatic transport tubes enclosing said rail at spaced intervals therealong between said entrainment stations;

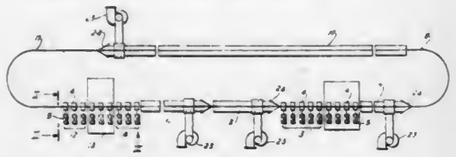
at least one vehicle suspended from said rail and displaceable therealong, said vehicle being dimensions to pass through said tubes generally spaced therefrom and provided with

suspending wheels rollingly supported upon said rail and lateral guide wheels flanking said rail;

means for generating a reduced pressure in said tubes to pneumatically displace said vehicle therethrough;

arrays of drive rollers provided at said stations and adjacent thereto, said drive rollers being disposed directly beneath said rail and spaced therefrom by a distance such that said vehicle rides on said drive rollers and is lifted thereby, disengaging said suspending wheels from said rail, said vehicle being guided along said rail by said guide wheels and supported by said drive rollers; and

means for driving said drive rollers to propel said vehicle through said stations into said tubes.



3. A method of operating a pneumatic transport system in which a vehicle suspended from an overhead rail is displaced and guided therealong through a plurality of entrainment stations and spaced-apart transport tubes disposed between said stations, said method comprising the steps of:

(a) pneumaticallly propelling said vehicle in said tubes substantially out of contact with the walls thereof; and

(b) at said stations along said rail, causing said vehicle to come to rest upon arrays of drive rollers disposed beneath said rail so that said vehicle is lifted and no longer suspended from said rail, said drive rollers supporting said vehicle and propelling same through said stations, said vehicle being continuously guided by said rail.

4,202,273

TRAVELLING OBJECT CONTROL SYSTEM UTILIZING POWER CONTROL

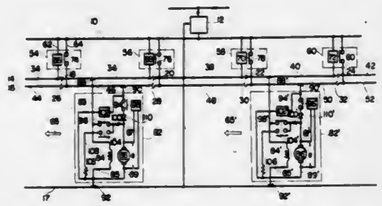
Kazumi Matsui, Yokohama; Takashi Takasue, Kawaguchi, and Masami Iwasaki, Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1977, Ser. No. 832,066

Claims priority, application Japan, Sep. 13, 1976, 51-108900; Nov. 2, 1976, 51-131284; May 10, 1977, 52-52685; May 10, 1977, 52-52686

Int. Cl.² B60M *1/10*

U.S. Cl. 104—298 **8 Claims**



1. An improved control system apparatus for controlling the operation of travelling objects through the power control of DC constant voltage feeding, employing feeding means disposed along a track for applying a DC constant voltage to first and second trolley wires, said first trolley wire having a plurality of means for insulating and sectioning disposed at intervals along a predetermined block section, being adapted to maintain continuous constant voltage feed, said second trolley wire having a plurality of insulating and sectioning means disposed at intervals along said predetermined block section, being responsive to feeding control by on-off switch means for control of the constant voltage feeding, and a negative feeder line consisting of a trolley wire; said improvement comprising: providing section control means for each of said block sections defined by said means for insulating and sectionalizing said first and second trolley wires respectively, to connect said feeding means to a section of said first trolley wire and to a section of said second trolley wire defined by the block section behind said first trolley wire section, said section control means being adapted to apply said voltage to said first trolley wire section in a direction of movement of travelling objects in the presence of an object load on said first trolley wire section to thereby block the blocking section with which said trolley wire section is associated; and DC motor means disposed on each of said travelling objects to impart motion thereto, by collecting power from said trolley wires, said DC motor means is supplied with current collected from said first trolley wire, and an armature coil of said DC motor is supplied with power collected from said second trolley wire, whereby each travelling object is caused to have a constant speed operation in that block section where said voltage is simultaneously applied to said first and second trolley wires, and brake means for detecting non-application of said voltage to said second trolley wire being adapted to apply a braking force to cause said travelling object to stop within said block section, when each travelling object enters that block section where said voltage is not applied to said second trolley wire.

4,202,274

REMOVAL APPARATUS FOR HANDLING DISCARDED END PORTIONS IN A MULTISTRAND CASTING PLANT

Siegfried Dangeleit, Krefeld, and Dieter Kothe, Moers, both of Fed. Rep. of Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,258

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637072

Int. Cl.² B61B *13/12*

U.S. Cl. 104—165 **7 Claims**



1. In apparatus for removing unwanted cut ends of the cast strands in a multi-strand casting plant, and having

(a) a plurality of cast strand paths;

(b) a wheeled vehicle in each cast strand path for receiving said cut ends;

(c) each said vehicle having a bearing surface positioned in its respective strand path downstream of cutters for receiving the cut ends, dropped from the strand path with each said bearing surface below the bottom edge of the strand path;

(d) a single discharge station positioned at one side of said bearing surfaces;

(e) a dual rail connecting said strand paths with said discharge station, said dual rail extending transversely of said strand paths; the improvement characterized by

(f) said dual rail being a single rail path;

(g) said wheeled vehicles positioned in said single rail path, with one vehicle for each strand path;

(h) a single power means in said rail path;

(i) said single power means connected to only one of said vehicles;

(j) said power connected vehicle pulling said other vehicles in one direction of travel on said rail;

(k) tractive connection means connecting said power connected vehicle with said other vehicles;

(l) said tractive connection means including

(1) a tie rod,

(2) each said tie rod pivotally connected at one end to one of said vehicles,

(3) each said tie rod is of a length to maintain said spacing distance as measured between the center of adjacent strand paths,

(4) each said tie rod and the adjacent connected vehicle having a clutch connection at the end thereof opposite said pivot connection, and

(5) each clutch connection allowing spacing between said vehicles in the pull direction equal to the distance between the center of adjacent strand paths, and in the push direction at a distance shorter than said spacing;

(m) said clutch connection comprising

(1) a hooked tie rod head at the end of said tie rod,

(2) a slotted guide on said adjacent vehicle for receiving said tie rod in sliding engagement, and

(3) each said slotted guide having cooperating means for engagement with said hooked tie rod head in said pulling direction of said power connected vehicle.

4,202,275

DEVICE FOR PROTECTING SELF-PROPELLED RAIL VEHICLES AGAINST SWAYING

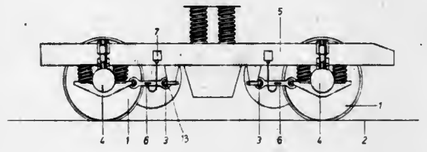
Friedhelm Bitterberg, Fuldatal II, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellshaft, Essen, Fed. Rep. of Germany

Filed Sep. 6, 1977, Ser. No. 830,462

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639737

Int. Cl.² G08B *21/00*

U.S. Cl. 105—61 **3 Claims**



1. A device for protecting self-propelled rail vehicles against swaying, which comprises in combination a measuring unit for ascertaining the torsional vibrations of the wheels of a driving wheel set with regard to each other, characterized in that between the wheel set bearings and the carriage frame in the longitudinal direction of the vehicle there is connected a reaction guide rod support and a measuring unit thereon immediately responsive to the torsional vibration reactions detected early in time below limit of slippage between the wheel set bearings and the carriage frame, and means to produce a corresponding control signal in response to said torsional vibration to the drive motor and thus control of the pulling force of the wheel set is adapted to be initiated for operation and travel in a safe range as to swaying and torsional vibrations.

4,202,276

SELF-STEERING WHEEL-SET FOR CONVERTIBLE RAILWAY VEHICLE

Kenneth A. Browne, Lexington; Alan R. Cripe, Richmond, both of Va., and Eugene Hindin, Bala Cynwyd, Pa., assignors to Bi-Modal Corporation, Greenwich, Conn.

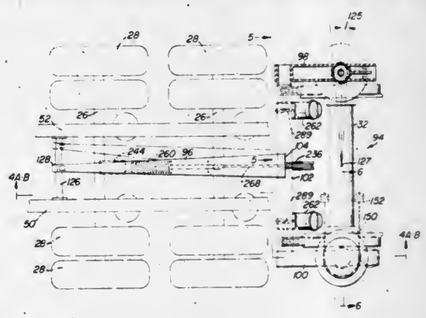
Division of Ser. No. 810,120, Jun. 27, 1977. This application Aug. 28, 1978, Ser. No. 937,145

Int. Cl.² B60F *1/04*; B61D *15/00*; B61F *5/36*; B62D *61/12*

U.S. Cl. 105—165 **9 Claims**

1. In a railway vehicle, longitudinal transversely spaced members secured therebeneath, an arcuate member joining them at a predetermined location and a rail wheel-set axle unit comprising a yoke including transversely spaced longitudinal members connected at their forward ends by a transverse member, an axle, means mounting said axle on said longitudinal yoke members behind said transverse yoke member and extending substantially parallel thereto, railway wheels mounted on said axles, air spring means supporting said vehicle on said rail wheelset axle unit, a longitudinal tongue fixedly secured at its rear end to said transverse yoke member substantially centrally thereof and means at the forward free end of said tongue slidably mounting the same on and capturing said arcuate member whereby said tongue acts as a tow bar, its slide connection to said arcuate member allows said rail wheel-set axle unit to follow the curvature of the rails and said rail wheel-set axle unit is free to rotate about a vertical axis at its center and said rail wheel-set axle unit is capable of limited lateral and longitudinal movement relative to the body, said air spring means acting to center said tongue and permit a limited amount of lateral and longitudinal movement.

7. In a railway vehicle, longitudinal transversely spaced members secured therebeneath, an arcuate member joining them at a predetermined location and a rail wheel-set axle unit



comprising a yoke including transversely spaced longitudinal members connected at their forward ends by a transverse member, an axle, means mounting said axle on said longitudinal yoke members behind said transverse yoke member and extending substantially parallel thereto, railway wheels mounted on said axles, means resiliently supporting said vehicle on said rail wheel-set axle unit permitting a limited amount of lateral and longitudinal movement, a longitudinal tongue fixedly secured at its rear end to said transverse yoke member substantially centrally thereof and means at the forward free end of said tongue slidably mounting the same on and capturing said arcuate member whereby said tongue acts as a tow bar, its slide connection to said arcuate member allows said rail wheel-set axle unit to follow the curvature of the rails, and said rail wheel-set axle unit is free to rotate about a vertical axis at its center and is capable of limited lateral and longitudinal movement relative to the body.

4,202,277

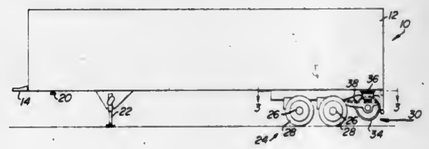
CONVERTIBLE RAIL-HIGHWAY SEMI-TRAILER

Kenneth A. Browne, Lexington; Alan R. Cripe, Richmond, both of Va., and Eugene Hindin, Valley Forge, Pa., assignors to Bi-Modal Corporation, Greenwich, Conn.

Filed Jun. 27, 1977, Ser. No. 810,120

Int. Cl.² B60F *1/04*; B61D *17/10*; B61H *1/00*; B62D *61/12*

U.S. Cl. 105—215 C **18 Claims**



1. In a vehicle convertible from highway to railroad mode of travel and vice versa including a body; a rail wheel-set axle unit, air spring means supporting said body on said rail wheel-

set axle unit adjacent the rear of the vehicle, a highway wheel-set axle unit, air spring means supporting said body on said highway wheel-set axle unit independently of, adjacent and in front of said rail wheel-set axle unit, a source of compressed air, valve and conduit means operatively interconnecting said source of compressed air with said air spring means of said rail wheel-set axle unit and of said highway wheel-set axle unit to selectively inflate and deflate said rail wheel-set axle unit air spring means and the highway wheel-set axle air spring means and thereby raise said rail wheel-set axle unit into an elevated inoperative position and lower said highway wheel-set axle unit into a ground-engaging position for the highway mode of travel and vice versa, means interconnecting said body and said rail wheel-set axle unit operative to lift and retain said rail wheel-set axle unit to its elevated stored inoperative position in the highway mode, and means interconnecting said body and said highway wheel-set axle unit independently of said body and rail wheel-set unit interconnecting means and operative to lift and retain said highway wheel-set axle unit to its elevated stored inoperative position in the rail mode wherein the rail wheels are in a track-engaging position, wherein said body includes transversely spaced longitudinal channels secured therebeneath on both sides of the longitudinal center of the vehicle and an arcuate member joining them at a predetermined location, said rail wheel-set axle unit comprising a yoke including transversely spaced longitudinal members connected at their forward ends by a transverse member, an axle, means mounting said axle on said longitudinal yoke members behind said transverse yoke member and extending substantially parallel thereto, railway wheels mounted on said axle a longitudinal tongue fixedly secured at its rear end to said transverse yoke member substantially centrally thereof and means at the forward free end of said tongue slidably mounting the same on and capturing said arcuate member whereby said tongue acts as a tow bar, its slide connection to said arcuate member allows the rail wheel-set axle unit to follow the curvature of the rails and said rail wheel-set axle unit is free to rotate about a vertical axis at its center and said rail wheel-set axle unit is capable of limited lateral and longitudinal movement relative to the body.

9. In a vehicle convertible from highway to railroad mode of travel and vice versa including a body; a rail wheel-set axle unit, air spring means supporting said body on said rail wheel-set axle unit adjacent the rear of the vehicle, a highway wheel-set axle unit, air spring means supporting said body on said highway wheel-set axle unit independently of, adjacent and in front of said rail wheel-set axle unit, a source of compressed air, valve and conduit means operatively interconnecting said source of compressed air with said air spring means of said rail wheel-set axle unit and of said highway wheel-set axle unit to selectively inflate and deflate said rail wheel-set axle unit air spring means and the highway wheel-set axle air spring means and thereby raise said rail wheel-set axle unit into an elevated inoperative position and lower said highway wheel-set axle unit into a ground-engaging position for the highway mode of travel and vice versa, means interconnecting said body and said rail wheel-set axle unit operative to lift and retain said rail wheel-set axle unit to its elevated stored inoperative position in the highway mode, and means interconnecting said body and said highway wheel-set axle unit independently of said body and rail wheel-set unit interconnecting means and operative to lift and retain said highway wheel-set axle unit to its elevated stored inoperative position in the rail mode wherein the rail wheels are in a track-engaging position, wherein said vehicle includes longitudinal side rails, a pair of spaced longitudinal channels at the rear portion of the vehicle, a kingpin supporting member at the front of the vehicle secured to said rails including a plate, a further plate mounted on said channels and secured to said side rails, floor boards extending the full length of the vehicle, cross members secured to said side rails, adhesive means securing said floor boards on said plates and a plurality of screws additionally securing said floor boards on said plates and on said cross members connected to said rails to transmit a substantial portion of the buff and draft loads to the vehicle.

10. In a vehicle convertible from highway to railroad mode of travel and vice versa including a body; a rail wheel-set axle unit, air spring means supporting said body on said rail wheel-set axle unit adjacent the rear of the vehicle, a highway wheel-set axle unit, air spring means supporting said body on said highway wheel-set axle unit independently of, adjacent and in front of said rail wheel-set axle unit, a source of compressed air, valve and conduit means operatively interconnecting said source of compressed air with said air spring means of said rail wheel-set axle unit and of said highway wheel-set axle unit to selectively inflate and deflate said rail wheel-set axle unit air spring means and the highway wheel-set axle air spring means and thereby raise said rail wheel-set axle unit into an elevated inoperative position and lower said highway wheel-set axle unit into a ground-engaging position for the highway mode of travel and vice versa, means interconnecting said body and said rail wheel-set axle unit operative to lift and retain said rail wheel-set axle unit to its elevated stored inoperative position in the highway mode, and means interconnecting said body and

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4,202,278

MOVABLE DISTRIBUTION CONTAINER

Gustav Wadenhed, Helsingborg, Sweden, assignor to Tradgardshallen i Helsingborg Planteringsvagen, Helsingborg, Sweden

Filed Feb. 21, 1978, Ser. No. 879,389
Claims priority, application Sweden, Feb. 23, 1977, 7702017
Int. Cl.² A47B *11/00*; A47F *5/10*
U.S. Cl. 108—102 **8 Claims**



1. A movable distribution container comprising a frame of generally right-angled parallelepipedic shape and a plurality of juxtaposed shelves supported by said frame, said frame comprising:

four vertically-extending members defining vertical corners of said frame;

first means for interconnecting two adjacent members to form a first side of said frame;

second means for interconnecting the other two members to form a second side of said frame;

third means for interconnecting said sides of said frame, said third means being adjustable to vary the distance between said first and said second sides; and

a plurality of wheels forming part of and supporting each side of said frame;

one of said shelves comprising:

first and second horizontally-extending members connected at substantially the same heights to said first and said second sides of said frame, respectively; and

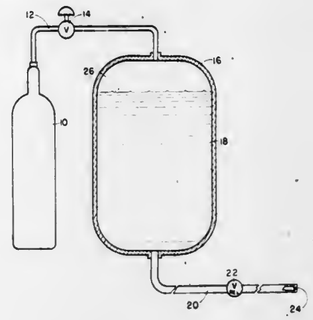
a first and a second series of members having distal ends connected to said first and said second horizontally-extending members, respectively, said series of members having inwardly-facing proximal ends that form a support surface, with the members of the series being interdigitally alternately spaced, the width of the support surface being changed when said third means is adjusted to vary the distance between said first and said second sides.

4,202,279

STICKY FOAM

Peter B. Rand, Albuquerque, N. Mex., assignor to The Unites States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 12, 1977, Ser. No. 832,488
Int. Cl.² E05G *5/02*; G08B *15/00, 15/02*
U.S. Cl. 109—34 **8 Claims**



1. System for impeding access to a space by attack with individual hand tools to gain entry to the space comprising in combination a reservoir portion containing a gas under pressure, a conduit portion communicating with said reservoir portion disposed to impede access to the space, sticky foam generating composition of high tenacity contained within the conduit portion, said reservoir and communicating conduit portion together forming a closed system with impervious walls normally maintaining said composition in substantially liquid condition under pressure, the tenacious sticky foam generating composition contained within the conduit comprising a tacky polymeric resin intermixed with a low boiling solvent and under pressure of said gas, rupture of a wall portion of said system effecting rapid exuding of composition through said rupture and formation of a sticky hand-tool-engulfing foam of high tenacity.

4,202,280

FURNACE FLUE APPARATUS FOR IMPROVED FLY ASH SEPARATION

Rolf Bereiter, Hinteregg, and Alexander Jachimowski, Andelfingen, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed Mar. 1, 1978, Ser. No. 882,403
Claims priority, application Switzerland, Mar. 7, 1977, 2821/77
Int. Cl.² F23G *5/00*
U.S. Cl. 110—216 **19 Claims**

1. An apparatus for separating fly ash particles from a flue gas flow in combustion furnaces with a multiple flue boiler, comprising:

a first vertical flue;

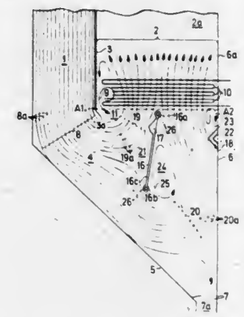
a second vertical flue;

a lower deflector section interconnecting said first and said second flues and adapted to conduct a flue gas flow from said first flue into said second flue;

a deflecting plate disposed in said deflector section having an incident surface in a confronting relationship with said flue gas flow, said deflecting plate being adapted to divide said flue gas flow into an inner first flow and an outer second flow to direct said inner first flow toward said second flue, and to produce radial centrifugal forces in said inner first flow sufficient to separate fly ash particles therefrom;

a first projection provided on said incident surface of said deflecting plate and adapted to modify passage of said inner first flow into said second flue;

a wall defining a boundary of said lower deflector section adjacent said second vertical flue and disposed in a spaced relationship to said deflecting plate and in a confronting relationship with said outer second flow, said wall being adapted to confine and direct said outer second flow toward said second flue and to produce radial centrifugal forces in said outer second flow sufficient to separate fly ash particles therefrom;



a second projection provided on said wall adapted to modify passage of said outer second flow into said second flue; and

hopper means in communication with said lower deflector section for receiving from said lower deflector section fly ash particles deposited therein by said outer second flow and said inner first flow;

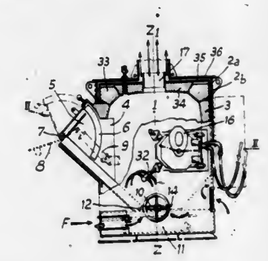
said first projection, said deflecting plate, said lower deflector boundary wall and said second projection being operable in combination to produce in said second flue a flow of flue gases having a substantially uniform cross-sectional velocity distribution and having a substantially uniform cross-sectional distribution of fly ash particles.

4,202,281

POLYVALENT INCINERATOR FOR SOLID AND/OR LIQUID WASTE

Jean-Claude L. Pillard, Marseilles, France, assignor to Entreprise Generale de Chauffage Industriel Pillard, Marseilles, France

Filed Apr. 26, 1978, Ser. No. 900,117
Claims priority, application France, Apr. 29, 1977, 77 13639
Int. Cl.² F23G *5/00*
U.S. Cl. 110—259 **8 Claims**



1. A polyvalent incinerator for solid and/or liquid waste comprising a vertical and cylindrical combustion chamber

provided with an opening for the evacuation of the ashes which is located in the bottom and which is fitted with a grate; with an opening for the loading of solid waste; with a chimney shaft which opens out at the upper end of said chamber; and with one single burner which opens out tangentially in said chamber, which burner comprises both means for supplying it with liquid fuel and means for intimately mixing pollutant liquid waste with said fuel inside said burner.

4,202,282

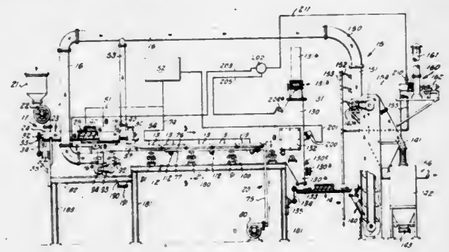
METHOD OF INCINERATION

Jim F. Hobbs, 618 Winchester Dr., Richardson, Tex. 75080, and Craig Smyser, 4013 Miramar, Dallas, Tex. 75202

Division of Ser. No. 627,651, Oct. 31, 1975, which is a continuation of Ser. No. 423,398, Dec. 10, 1973, abandoned, which is a continuation of Ser. No. 173,803, Aug. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 38,936, May 20, 1970, Pat. No. 3,648,630. This application Jun. 20, 1977, Ser. No. 808,177

Int. Cl.³ F23G *5/10*

U.S. Cl. 110—346 **7 Claims**



1. A method of thermally processing materials having volatile components comprising:

introducing said materials into a housing defining an elongated chamber having an inlet end and a discharge end;

moving the materials on a conveyor belt supported on rollers along said chamber from said inlet end to said discharge end;

directing infrared rays from said housing on said materials on said conveyor belt as said belt moves said materials along said chamber, said materials releasing gases and being dried as a result of heating from said infrared rays;

removing processed materials from said chamber at the discharge end of said chamber;

inducing a draft of air through said chamber in order to create a mixture of air and gases which flows over and generally parallel to said materials along said belt in order to provide a portion of the heat required for drying of said materials;

sensing the temperature within said chamber, and

varying the temperature of said draft in response to the sensed temperature in order to maintain a prescribed temperature for optimum processing of said materials.

4,202,283

PROCESS AND APPARATUS FOR DISTRIBUTING COLD AMMONIA

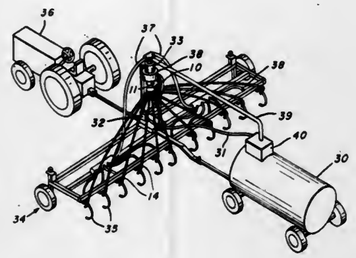
Robert A. Wiesboeck, Stone Mountain, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 11, 1977, Ser. No. 786,302

Int. Cl.³ A01C *23/02*

U.S. Cl. 111—6 **25 Claims**

1. A process of distributing cold liquid ammonia substantially free of gaseous ammonia at substantially ambient or atmospheric pressure comprising (1) directing an initial stream of the liquid ammonia downward by gravity flow against a splash plate having a flat surface, the plane of the flat surface being positioned in a generally horizontal direction and at a substantially orthogonal direction relative to the axis of the initial ammonia stream, the stream making contact with the flat surface within an enclosed chamber and in a manner such that a flow of liquid is formed on the flat surface to achieve effective distribution when tilting the flat surface by up to about 10 degrees from the horizontal position while maintaining the direction of the axis of the stream relative to the plane of the flat surface substantially constant, and (2) passing the liquid ammonia from the flat surface to a plurality of outlets to thereby cause a division of the cold, liquid ammonia, wherein



the axis of the initial stream of cold liquid ammonia is essentially vertical and wherein the length of the vertical stream is at least about 6 inches, and wherein the initial cold liquid ammonia stream is carried by a cylindrical conduit and the end of such conduit is in a plane essentially parallel to the plane of the flat surface and wherein the distance between the end of the cylindrical conduit and the flat surface is equal to between about ⅛ to about ½ of the average diameter of the cylindrical conduit.

4,202,284

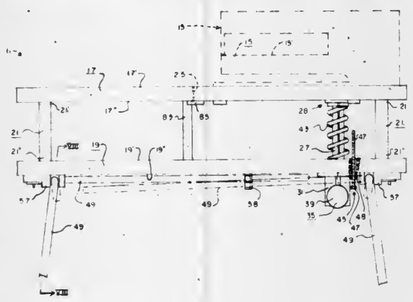
SEWING MACHINE TABLE

Joe T. Parsons, Sr., P.O. Box 445, Osceola, Ark. 72370

Filed Dec. 29, 1978, Ser. No. 974,344

Int. Cl.³ D05B *75/02*

U.S. Cl. 112—217.1 **8 Claims**



1. A table comprising:

(a) a top member having an opening therethrough;

(b) a secondary member disposed beneath said top member a spaced apart distance, said secondary member having an aperture therethrough;

(c) means for fixedly attaching said top member and said secondary member to one another;

(d) a platform member having a size and shape complementary with said opening in said top member for movement between a first position with the top surface of said platform member horizontally aligned with the top surface of said top member and numerous positions with the top surface of said platform member spaced beneath the top surface of said top member;

(e) lock means for locking said platform member in any of said first or numerous positions;

(f) spring means for urging said platform member to said first positions; and

(g) alignment means for maintaining said platform member in vertical alignment with said opening in said top member, said alignment means including a post member fixedly attached to the bottom surface of said platform member and depending downwardly therefrom, said alignment means including a collar member attached to the bottom surface of said secondary member, said collar member having an aperture therethrough, said apertures through said secondary member and said collar member being aligned with one another and being slightly larger in cross sectional area than said post member to slidably receive said post member, said post member and said aperture through said collar member being substantially square in cross sectional area.

4,202,285

PRESSER FOOT FOR CONCEALED SLIDE FASTENERS

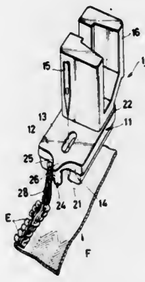
Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida-Kogyo K.K., Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,284

Claims priority, application Japan, Sep. 20, 1977, 52-126709

Int. Cl.³ D05B *29/00*

U.S. Cl. 112—235 **2 Claims**



1. A presser foot for sewing to garments or the like, the stringer tapes of a slide fastener in which a row of fastener elements is secured to a lengthwise section of a longitudinal folded edge portion of a corresponding stringer tape and a lengthwise section of said tape edge portion is free of fastener elements; which presser foot comprises: a plate member having a generally flat bottom surface which engages, at least in part, the stringer tape; a slot in said plate member extended therethrough for receiving a sewing needle that stitches through the stringer tape, a pair of longitudinal grooves in said plate member and opening at the bottom surface thereof, each groove having an orientation to guide through the presser foot a row of fastener elements secured to the corresponding stringer tape; a partition having a generally V-shaped transverse profile and extending longitudinally between said grooves and in central relation therewith, said partition being interrupted by said slot to define front and rear partition members spaced apart from each other by the distance across said slot, said partition members each having a bottom surface terminating short of the bottom surface of said plate, said front partition member having a surface disposed to engage the stringer tape along the fastener element section of the folded edge portion thereof to position the fastener tape in at least a partially unfolded attitude within one of said grooves, said front partition member having a lug projecting downwardly with the lowermost end thereof lieing substantially in surface registration with the bottom surface of the plate said lug extending laterally beyond both sides of said front partition member, said lug cooperating with the bottom surfaces of said partition members to maintain the stringer tape in guided relation with the presser foot for sewing along a predetermined line with respect to the folded edge portion of the stringer tape, said lug being disposed to engage the stringer tape to maintain the fastener element-free section thereof in a given alignment with respect to the corresponding groove for sewing along said line.

4,202,286

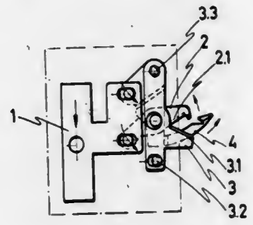
UNIVERSAL THREAD CUTTING DEVICE AND COMPLEMENTARY DEVICES APPLICABLE TO SEWING MACHINES

Alfonso Freire Costas, Vigo, Spain, assignor to Industrias P. Freire, S.A., Bouzas-Vigo, Spain

Filed Mar. 30, 1978, Ser. No. 891,844

Int. Cl.³ D05B *65/02*

U.S. Cl. 112—286 **17 Claims**



1. A system for achieving automatic synchronized thread cutting during a sewing operation on a sewing machine, said system comprising, in combination:

a thread cutting device adapted to be mounted on a sewing machine, said thread cutting device comprising:

a support plate adapted to be mounted on a sewing machine in place of common sliding elements thereof;

a fixed knife fixedly mounted on said support plate;

a member supported by said support plate for movement in first and second opposite rectilinear directions extending parallel to a direction of sewing of the sewing machine;

a movable knife pivoted to said member and to said fixed knife for pivoting movement with respect thereto between an open first position spaced from said fixed knife and a cutting second position against said fixed knife;

a thread collecting hook pivoted to said member for pivoting movement with respect thereto between a first position between said fixed and movable knives when said movable knife is in said open first position thereof, whereat said hook is positioned to gather a thread to be cut, and a second position adjacent said fixed knife when said movable knife is in said cutting second position thereof, whereat said hook positions a thread to be cut between said knives; and

actuating means, connected to said member, for moving said member in said first rectilinear direction, and thereby pivoting said movable knife and said hook to said respective first positions thereof, and for moving said member in said second rectilinear direction, and thereby pivoting said movable knife and said hook to said respective second positions thereof;

thread withdrawing means, adapted to be mounted on a presser-bar of the sewing machine, and operatively connected to said actuating means, for withdrawing a thread cut by said thread cutting device from beneath the presser-bar; and

thread tension releasing means, operatively connected to said actuating means, and adapted to be incorporated into a thread tensioning device of the sewing machine, for releasing tension on a thread which has been cut by said thread cutting device.

14. A thread cutting device adapted to be mounted on a sewing machine, said thread cutting device comprising:

a support plate adapted to be mounted on a sewing machine in place of common sliding elements thereof;

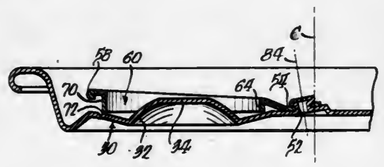
a fixed knife fixedly mounted on said support plate;
a member supported by said support plate for movement in first and second opposite rectilinear directions extending parallel to a direction of sewing of the sewing machine;
a movable knife pivoted to said member and to said fixed knife for pivoting movement with respect thereto between an open first position spaced from said fixed knife and a cutting second position against said fixed knife;
a thread collecting hook pivoted to said member for pivoting movement with respect thereto between a first position between said fixed and movable knives when said movable knife is in said open first position thereof, whereat said hook is positioned to gather a thread to be cut, and a second position adjacent said fixed knife when said movable knife is in said cutting second position thereof, whereat said hook positions a thread to be cut between said knives; and
actuating means, connected to said member, for moving said member in said first rectilinear direction, and thereby pivoting said movable knife and said hook to said respective first positions thereof, and for moving said member in said second rectilinear direction, and thereby pivoting said movable knife and said hook to said respective second positions thereof.

4,202,287

METHOD OF ATTACHING TAB TO END PANEL

Arthur P. Zundel, Mount Prospect, Ill., assignor to National Can Corporation, Chicago, Ill.

Division of Ser. No. 873,548, Jan. 30, 1978, Pat. No. 4,148,409, which is a continuation-in-part of Ser. No. 789,096, Apr. 20, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,078
Int. Cl.² B21D *51/44*
U.S. Cl. 113—121 C **7 Claims**



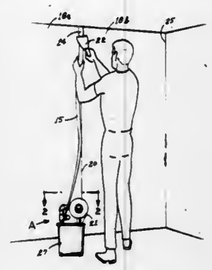
1. A method of attaching a metal tab with a connecting end having an opening to a metal end closure, said metal end closure having a weakened line located below said metal tab to define a substantially circular removable section and said tab having a flange extending from the periphery of the opening toward the removable section and located inside the weakened line, said flange having an outwardly directed portion on a free edge thereof directed away from said connecting end at a location remote from said connecting end, comprising the steps forming a hollow rivet in said end closure, positioning the said tab on said end closure with said opening surrounding said hollow rivet, deforming said hollow rivet to permanently secure said tab to said end closure and locate said outwardly directed portion outside an inner edge of said weakened line, reforming at least a portion of said end closure adjacent said rivet to stress the metal in said connecting end to cause said tab to be urged toward an adjacent surface of said end closure, and attaching the end closure to a container having pressurized contents so that said outer end of said outwardly directed portion is moved inside the inner edge of said weakened line.

4,202,288

DRY WALL TAPE DISPENSER

Edward Davy, Jr., 505 N. Parkhill St., West Frankfort, Ill. 62856

Filed Oct. 30, 1978, Ser. No. 955,947
Int. Cl.² B05C *11/00, 3/00*
U.S. Cl. 118—41 **23 Claims**



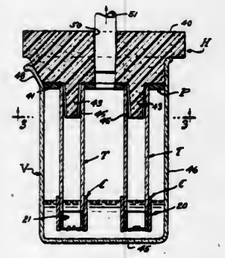
1. For use with a bucket-like container adapted for holding a body of tape coating fluid and having a bottom wall and side walls extending upward therefrom to a top opening, said side walls and bottom wall forming an inside bottom corner, apparatus for dispensing coated tape comprising support means for interengagement with portions of said container including an upper extension extending upwardly from said container including tape support means for supporting a roll of uncoated tape and for positioning said roll relative to said opening to facilitate unrolling of said tape from said roll into said opening, and a lower extension extending downwardly into said container adjacent one side wall, a guide carried by said lower extension proximate the said inside bottom corner of said container, means extending from said lower extension laterally toward and proximate said opposite side wall and spanning substantially the width of said container for stabilizing said apparatus within said container, said laterally extending means being immersible in said body of fluid, said guide being adapted for guiding tape to provide a length of said tape extending from said opening into said body of coating fluid to a point proximate the bottom of said container with said tape then extending from said guide to said opening to reach said opening in thoroughly coated condition, and scraper means proximate said opening including an edge for scraping of one face of the coated tape to wipe coating fluid from said face whereby the other face of said tape remains coated as said tape is pulled from said opening.

4,202,289

SPECIMEN PROCESSING APPARATUS FOR MICROSCOPY

Robert F. Bils, 816 Westmoreland Dr., Montebello, Calif. 90640

Filed Jul. 10, 1978, Ser. No. 923,099
Int. Cl.² C23C *13/08*
U.S. Cl. 118—50 **41 Claims**



1. A specimen processing apparatus useful in preparing tissue for miscroscopy and the like, and including; a shallow sieve cup comprised of an open ended tube member and a screen member extending coextensively across one end thereof, and an elongated handling tube removably press fitted into the other end of the open ended tube member of the sieve cup, whereby a specimen immersed in liquid entering through the said screen member is accessible thereafter by removal of said handling tube from the shallow sieve cup.

28. A specimen processing apparatus useful in preparing tissue for microscopy and the like, and including; a header for carrying the apparatus and having a multiplicity of connectors faced downwardly therefrom, a shallow sieve cup complementing each of said seive cups and each comprised of an open ended tube member and a screen member extending coextensively across one bottom end thereof, and an open ended elongated handling tube removably press fitted into the other end of the open ended tube member of each sieve cup and to each complementary connector of the header, whereby a multiplicity of specimens supported upon said screen members are transportable by means of said header through immersion in liquid entering through said screen members and are accessible thereafter by removal of said handling tubes from the shallow sieve cups.

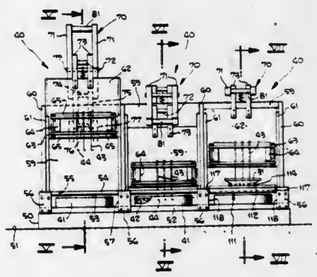
35. A specimen processing apparatus useful in preparing tissue for microscopy and the like, and including; a base holder for apparatus support and having a multiplicity of shallow recesses opening upwardly therein, a shallow sieve cup complementing each of said shallow recesses and removably received therein respectively, each of said sieve cups comprising an open ended tube member and a screen member extending coextensively across one bottom end thereof, a header for carrying the apparatus and having a multiplicity of connectors faced downwardly therefrom, and an open ended elongated handling tube removably press fitted into the other end of the open ended tube member of each sieve cup and to each complementary connector of the header, whereby a multiplicity of specimens supported upon said screen members are transportable by means of said header through immersion in liquid entering through said screen members and are accessible thereafter by removal of said handling tubes from the shallow sieve cups.

4,202,290

APPARATUS FOR DECORATING SURFACES OF CERAMIC WARE

David G. Hatfield, La Canada, Calif., assignor to Interpace Corporation, Parsippany, N.J.

Continuation of Ser. No. 786,189, Apr. 11, 1977, abandoned, which is a division of Ser. No. 660,489, Feb. 23, 1976, abandoned. This application Jun. 14, 1978, Ser. No. 915,408
Int. Cl.² B05C *1/02*
U.S. Cl. 118—211 **4 Claims**



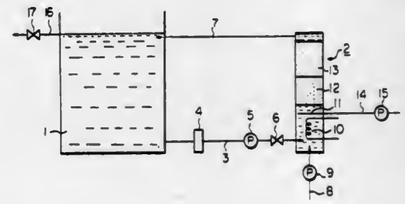
1. Means for decorating a surface area of a ceramic body in which the surface area may vary in elevation as a result of design and tolerances, the combination of:
a plurality of decorating members arranged to define a design for deposit on said surface area;
each decorating member having a support and guide rod provided with a fixed stop face;
means supporting and guiding said decorating members for vertical non-rotational movement of the members along parallel vertical paths above a receptacle adapted to contain colorant composition material;
means for removably positioning said ceramic body in registration with the design defined by said plurality of decorating members and above said receptacle;
said supporting and guiding means being reciprocally movable only in a vertical direction for movement of said decorating members along said parallel vertical paths with said stop face on each member in resting contact therewith without relative movement of said decorating members with respect to said supporting and guiding means, whereby said decorating members are adapted to pick up composition material from said receptacle and said decorating members are carried to a raised position located above the position of the positioning means for said ceramic body;
said supporting and guide means and said support and guide rods on said decorating members having means to provide during lowering of the supporting and guide means and upon gravitational contact of said decorating members with said surface area unrestricted free vertical downward movement of the supporting and guide means with respect to said decorating members during deposit of said composition material on said surface area, said stop face on each decorating member being displaceable into spaced relation with said supporting and guiding means to compensate for variations in the surface area.

4,202,291

METHOD FOR KEEPING AQUATIC ANIMALS ALIVE OVER LONG PERIOD OF TIME

Naoya Kominami; Hirokazu Fukumi; Naokuni Yamawaki, and Junji Nomura, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1977, Ser. No. 802,338
Claims priority, application Japan, Jun. 8, 1976, 51-66814
Int. Cl.² A01K *63/00*
U.S. Cl. 119—3 **20 Claims**



1. A method for keeping aquatic animals alive over a long period of time substantially without feeding them and in a high density in environmental water, comprising the steps of:
(A) placing aquatic animals in environmental water;
(B) controlling the temperature of said environmental water so that said temperature is maintained at the lowest possible temperature range in which said aquatic animals are able to exist;
(C) controlling ammonia compounds in said environmental water so that the total concentration thereof does not exceed 20 ppm;
(D) controlling water-soluble organic compounds in said environmental water so that the total concentration thereof does not exceed 150 ppm;
(E) controlling carbonic acid radical in said environmental water so that it does not exceed a concentration of 1000 ppm and;
(F) regulating molecular oxygen dissolved in the environmental water so that its concentration is maintained at 3 ppm or more, the concentrations of said ammonia compounds and water-soluble organic compounds in said

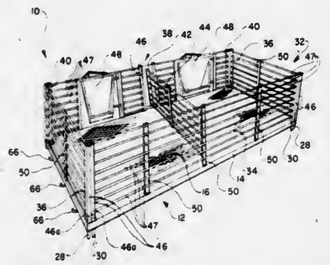
environmental water being controlled by bringing said environmental water into contact with a hypohalite so as to oxidize said ammonia compounds and said organic compounds therein while the hypohalite is converted to halide non-toxic to said aquatic animals.

4,202,292

MODULAR PIG CAGE ASSEMBLY

C. Gene Strickland, Spring Hope, N.C. 27882

Filed May 1, 1978, Ser. No. 901,590
Int. Cl.² A01K *1/02*
U.S. Cl. 119—20 **13 Claims**



1. A modular cage assembly for confining animals such as pigs and the like comprising: a floor section having an perforated metal floor; a plurality of vertically oriented stacking studs secured about the perimeter of said floor section at selected intervals, said stacking studs including upwardly projecting studs that project above the perforated floor and downwardly projections studs that project downwardly from the perforated floor; a plurality of detachable and independent rail panels having post means adapted to be supported about the perimeter of said floor section, said plurality of rail panels including at least two side rail panels and at least two end rail panels; stud receiving means formed in said post means at both the top and bottom thereof for receiving respective stacking studs projecting from said floor section, whereby individual rail panels are supported about the perimeter of said floor section by inserting upper projecting stacking studs into the studs receiving means formed in the bottom of said post means, and wherein modular cages may be stacked and disposed one above the other by situating a floor section over said detachable rail panels by inserting downwardly projecting stacking studs of a floor sections into the stud receiving means formed about the top of said post means such that certain floor sections are directly supported by underlying detachable rail panels.

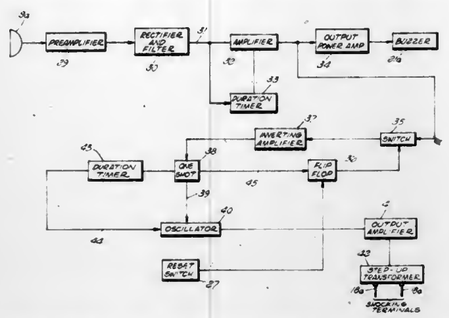
4,202,293

DOG TRAINING COLLARS AND METHODS

Gerald J. Gonda, and John Vancza, Jr., both of Tucson, Ariz., assignors to Tri-Tronics, Inc., Tucson, Ariz.

Filed Jan. 31, 1978, Ser. No. 874,033
Int. Cl.² A01K *15/00*
U.S. Cl. 119—29 **18 Claims**

1. A dog training device comprising:
a case adapted to be carried by a dog collar;
sound producing means carried by said case and adapted while the device is being worn by a dog to emit a sound intended to urge the dog to stop barking;
shocking means carried by said case and operable to electrically shock a dog wearing the device; and
control means operable to actuate said shocking means to shock the dog on an initial actuation of said sound producing means but not on subsequent actuations thereof, said control means including means for selectively resetting said shocking means, if necessary, to shock the dog on a next successive actuation of said sound producing means following each reset operation, but not on other actuations thereof.

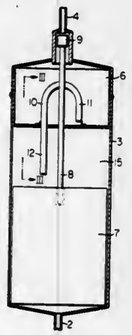


4,202,294

AUTOMATIC WATER SUPPLY SYSTEM FOR BREEDING OR RAISING ANIMALS

Nobuharu Kasai, 32, Aza Ipponyanagi, Oaza Tanuma, Onoemachi, Minamitsugaru-gun, Aomori-ken, Japan

Filed Mar. 29, 1978, Ser. No. 891,172
Claims priority, application Japan, Mar. 31, 1977, 52/37062
Int. Cl.² A01K *7/04*
U.S. Cl. 119—78 **3 Claims**



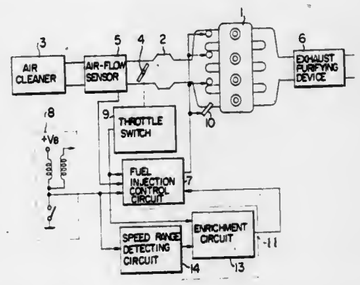
1. An automatic water supply system for raising animals which comprises:
(a) a water storage tank;
(b) a water supply pipe connected to said water storage tank;
(c) a self-supply water trough;
(d) a flow control container having:
(i) a control chamber forming the upper part of said container and being connected with said water supply pipe;
(ii) valve means located in said control chamber and controlling the communication between said water supply pipe and said control chamber;
(iii) a float chamber forming the lower part of said container;
(iv) a float in said float chamber, said float having a valve activating rod which extends upwardly therefrom and passes through the bottom of said control chamber and which is adapted to open and close said valve means, said valve means thereby responding to the water level in said float chamber, so as to regulate the inflow of water from said water storage tank through said water supply pipe into said control chamber; and
(v) an inverted J-shape siphon having an elongated rectangular or oval cross-section; said siphon connecting said control chamber and said float chamber, the open end of the short leg of said siphon being spaced above the bottom of said control chamber by a small predetermined distance, while the long leg of said siphon is extended through the bottom of said control chamber into said float chamber; and
(e) a water feed pipe, the lower end of which is placed in said self-supply water trough at a suitable distance above the bottom thereof and the upper end of which is connected to the bottom of said float chamber.

4,202,295

FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toshio Kondo, Anjo; Susumu Harada, Oobu; Nobuyuki Ito, Hekinan, and Nobuyuki Kobayashi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 6, 1977, Ser. No. 794,648
Claims priority, application Japan, Sep. 23, 1976, 51-114213
Int. Cl.² F02B *3/00*
U.S. Cl. 123—32 EH **1 Claim**



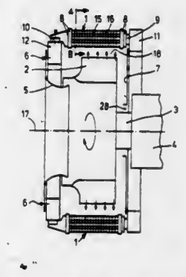
1. A fuel supply control system for an internal combustion engine, said engine having associated therewith an exhaust gas purifying device, said fuel supply control system comprising:
means for supplying fuel to said engine in accordance with operating conditions of said engine, said fuel supplying means including;
an air-flow sensor, positioned upstream of said throttle valve, for generating an air-flow signal which increases as the amount of air sucked into said engine increases;
an ignition device for generating an ignition signal at an interval which decreases as the rotational speed of said engine increases;
a fuel injector, positioned downstream of said throttle valve, for injecting fuel into said engine during the opening thereof, and;
an electronic injection controller, connected to said fuel injector, for controlling the opening period of said injector in response to said air-flow signal and said ignition signal;
means for generating a load detection signal when said engine is under the heavy load condition, said load signal generating means including;
a throttle switch, coupled to said throttle valve, for generating said load detection signal when said throttle valve is fully opened;
means for generating a speed detection signal when the rotational speed of said engine is higher than a predetermined speed, said speed detection signal generating means including;
a divider, connected to said ignition device, for generating a first pulse having a time width which decreases as said rotational speed increases;
a monostable multivibrator, connected to said divider, for generating a second pulse having a constant time width which corresponds to said predetermined speed in synchronization with said first pulse signal, and;
a comparator, connected to receive said first pulse and said second pulse, for comparing said time width of said first pulse with said constant time width of said second pulse;
means for generating an enrichment signal when at least one of said load detection signal and said speed detection signals is generated; and
means for supplying additional fuel into said engine when said enrichment signal is generated, whereby overheating of said purifying device is prevented.

4,202,296

COOLING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Manfred Nonnenmann, Schwieberdingen; Kurt Hauser, and Gebhard Schwarz, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. K.G., Stuttgart, Fed. Rep. of Germany

Filed Dec. 13, 1977, Ser. No. 860,089
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657840
Int. Cl.² F01P *5/06*
U.S. Cl. 123—41.48 **25 Claims**



1. In a quiet cooling system for internal combustion engines, the system including a radial impeller having a circumference and a rotational axis, a ring radiator disposed about the circumference of the radial impeller at a distance from the latter, the radiator having cooling water tubes which are to carry water, and cooling fins fastened to the tubes, wherein said cooling water tubes run substantially parallel to said rotational axis of said impeller and said fins are located parallel to flow direction of cooling air leaving said radial impeller, the improvement wherein said radial impeller is provided with a cover plate having a rounded portion and including an inlet nozzle which projects into said radial impeller, said inlet nozzle being shaped to define a gap between said radial impeller and said inlet nozzle so that the main flow receives an outwardly directed component and the air entering between said impeller and said nozzle is supplied at least nearly tangentially to said rounded portion of said cover plate, and wherein said inlet nozzle is connected to said cover plate of said radial impeller and turns with the latter.

4,202,297

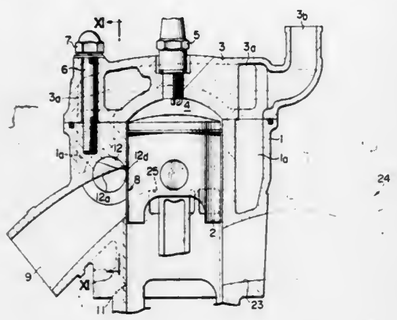
TWO-STROKE ENGINE HAVING VARIABLE EXHAUST PORT TIMING

Yuji Oku, and Yasuharu Tsuyama, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 19, 1978, Ser. No. 916,751
Claims priority, application Japan, Jun. 22, 1977, 52-82848[U]; Sep. 29, 1977, 52-131349[U]
Int. Cl.² F02B *75/02*
U.S. Cl. 123—65 PE **3 Claims**

1. Two-stroke internal combustion engine comprising cylinder means having cylinder wall means formed with exhaust port means and scavenging port means, piston means disposed in said cylinder means for movement so that the exhaust and scavenging port means are cyclically closed by said piston means, exhaust passage means communicating with said exhaust port means, scavenging passage means communicating

with said scavenging port means for passing fresh charge of intake gas into the cylinder means when the scavenging port means is opened by the piston means, exhaust port timing control means provided in said exhaust passage means adjacent to said exhaust port means, said exhaust port timing control means including rotary control member means having an axis extending transversely across the exhaust passage means at an upper portion thereof and having a general configuration in which diametrical dimension is gradually decreased from opposite ends towards an intermediate portion thereof to provide an external contour of an arcuate sectional configuration, said rotary control member means being comprised of two parts which are divided at said intermediate portion where the member means has the smallest diameter and being partially cut off to conform in configuration to the exhaust passage means and being movable between a retracted position wherein the cut off is aligned with the exhaust passage means and a projected position wherein an edge of the cut off is projected into the exhaust passage means.



4,202,298

FUEL PORTING FOR TWO CYCLE INTERNAL COMBUSTION ENGINE

Eyvind Boyesen, Kempton, Pa., assignor to Performance Industries, Inc., Kempton, Pa.

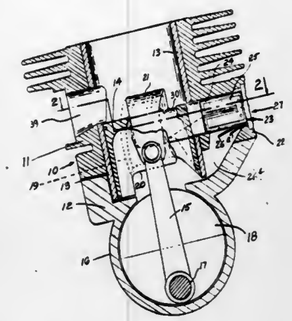
Continuation-in-part of Ser. No. 859,476, Dec. 12, 1977, and a continuation-in-part of Ser. No. 839,180, Oct. 4, 1977, which is a continuation-in-part of Ser. No. 674,102, Apr. 6, 1976, Pat. No. 4,062,331, which is a continuation-in-part of Ser. No. 586,138, Jun. 11, 1975, Pat. No. 4,051,820, which is a continuation-in-part of Ser. No. 375,065, Jun. 29, 1973, Pat. No. 3,905,340, which is a continuation-in-part of Ser. No. 282,734, Aug. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 361,407, May 18, 1973, abandoned. This application Sep. 12, 1978, Ser. No. 941,596

The portion of the term of this patent subsequent to Jul. 17, 1996, has been disclaimed.

Int. Cl.[2] F02B *33/00*

U.S. Cl. 123—73 R **9 Claims**

1. A variable speed, two-cycle, crankcase compression, internal combustion engine comprising a cylinder, a piston working in the cylinder, a crankcase, an intake port in the cylinder in fluid communication with the crankcase, an intake tract in fluid communication with the intake port, valve means disposed in the intake tract for controlling the flow of fluid therethrough, a transfer port in the cylinder, and a transfer passage, one end of which communicates with the transfer port and the other end of which communicates with the crankcase, below the piston, for conveying fluid from the crankcase to the transfer port, the communication of the intake port with the crankcase being independent of the transfer passage, and a region of the transfer passage intermediate its ends being in communication with the intake tract downstream of the valve means and providing for flow of fluid from the intake tract directly into the transfer passage.



4,202,299

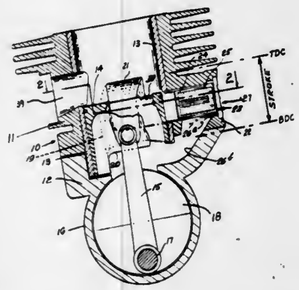
TWO CYCLE INTERNAL COMBUSTION ENGINE

Eyvind Boyesen, Kempton, Pa., assignor to Performance Industries, Inc., Kempton, Pa.

Division of Ser. No. 839,180, Oct. 4, 1977, Pat. No. 4,161,163, which is a continuation-in-part of Ser. No. 674,102, Apr. 6, 1976, Pat. No. 4,062,331, and Ser. No. 586,138, Jun. 11, 1975, Pat. No. 4,051,820, which is a continuation-in-part of Ser. No. 375,065, Jun. 29, 1973, Pat. No. 3,905,340, which is a continuation-in-part of Ser. No. 282,734, Aug. 22, 1972, abandoned, and Ser. No. 361,407, May 18, 1973, abandoned, Ser. No. 416,213, Nov. 15, 1973, Pat. No. 4,000,723, which is a division of, said Ser. No. 375,065, and Ser. No. 416,215, Nov. 15, 1973, Pat. No. 3,905,341, which is a division of, said Ser. No. 375,065, Jun. 29, 1973. This application Oct. 10, 1978, Ser. No. 949,863

Int. Cl.[2] F02B *33/04*

U.S. Cl. 123—73 A **4 Claims**



1. A variable speed, two-cycle, crankcase compression internal combustion engine comprising a cylinder, a piston working in the cylinder, a crankcase having a crank space below the cylinder, a combustion chamber above the piston and a fuel flow space immediately below the piston but above the crank space even in bottom dead center position of the piston, fuel intake porting and passage means for supplying fuel to the engine and including fuel intake porting in the cylinder wall confronting the bottom dead center position of the piston and being of sufficient axial dimension to supply fuel to said fuel space immediately below the piston throughout at least a substantial part of the upward stroke of the piston and further including a fuel tract approaching the cylinder in the region of said intake porting above said fuel space, a fuel transfer system having transfer porting through the cylinder wall above the piston in bottom dead center position and comprising passage means having uninterrupted communication with said fuel

space, a fuel supply passage having communication with said fuel space below the piston independently of the intake porting in the cylinder wall throughout the cycle of the engine, the communication of the transfer passage means and of the fuel supply passage with said fuel space being independent of each other, and reed valve means controlling the fuel supply to said intake porting and to said fuel supply passage.

4,202,300

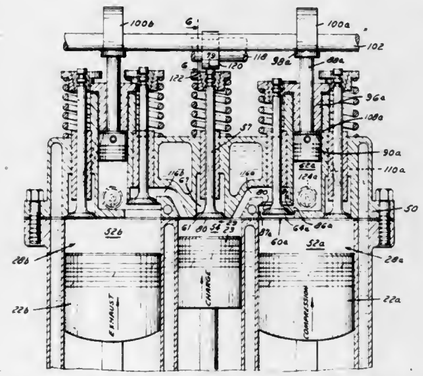
INTERNAL COMBUSTION ENGINE

Frank Skay, 35 Rex Park, Canada Creek Ranch, Atlanta, Mich. 49709

Filed Feb. 22, 1978, Ser. No. 880,287

Int. Cl.[2] F02D *39/02*; F02B *33/00*

U.S. Cl. 123—75 B **62 Claims**



1. An internal combustion engine comprising: a pair of four cycle power cylinders, means for delivering an air/fuel mixture to each of the power cylinders, a variable volume charge chamber for each power cylinder communicating therewith, a two cycle charge cylinder for alternately supplying an air/fuel mixture to the charge chambers, means for delivering an air/fuel mixture to the charge cylinder, and valve means between the charge cylinder and charge chambers for controlling flow therebetween and for substantially segregating the air/fuel mixture delivered from the charge cylinder to the charge chamber from the air/fuel mixture within the power cylinder when the valve means permits communication between the charge chamber and the charge cylinder.

4,202,301

OXYGEN SENSOR CONTROL SYSTEM

Jack Early, Perth Amboy; John J. Mooney, Wyckoff, and Carl D. Keith, Summit, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Aug. 31, 1977, Ser. No. 829,555

Int. Cl.[2] F02D *3/00*

U.S. Cl. 123—119 EC **8 Claims**

1. In an internal combustion engine the improvement comprising:

an exhaust reduction and oxidation catalyst,

an air-to-fuel ratio control means to control the air-to-fuel ratio of the engine, said control means having a first state and a second state,

an oxygen sensor responsive to the level of oxygen in the exhaust upstream of said catalyst to provide an oxygen level signal, said oxygen sensor having a steep operating curve through the exhaust condition point that represents operation at a stoichiometric air to fuel ratio,

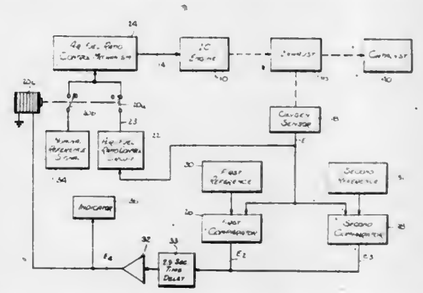
said control means, when in said first state, being responsive to said oxygen level signal, said signal biasing said control means in a direction tending to provide a predetermined average air-to-fuel ratio,

first comparator means responsive to said oxygen level signal to provide a first error signal when said oxygen level signal is greater than a first predetermined level,

second comparator means responsive to said oxygen level signal to provide a second error signal when said oxygen level signal is less than a second predetermined level,

one of said first and second predetermined levels representing combustion at substantially above said predetermined ratio and the other of said predetermined levels representing combustion at substantially under said predetermined ratio,

time delay means responsive to both of said error signals to provide a switching signal when either of said error signals persists for longer than a predetermined time period,



means to provide a predetermined reference signal simulating an input to said control means consistent with operation of said control means at approximately said predetermined average air-to-fuel ratio,

said control means, when in said second state, being responsive to said predetermined reference signal, and

switching means responsive to said switching signal to switch said air-to-fuel ratio control means from said first state to said second state when said switching signal is provided,

said oxygen level signal being uncoupled from said control means when said control means is in said second state and said predetermined reference signal being uncoupled from said control means when said control means is in said first state.

4,202,302

AUTOMATIC CHOKE ARRANGEMENT

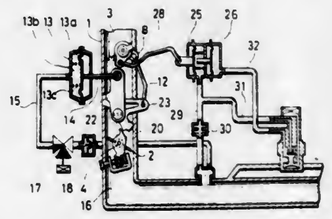
Tetsuomi Tamura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 20, 1978, Ser. No. 971,212

Claims priority, application Japan, Jul. 28, 1978, 53-092170

Int. Cl.[2] F02M *1/10*

U.S. Cl. 123—119 F **13 Claims**



1. An automatic choke comprising:

a choke valve;

a choke lever connected to said choke valve through a choke shaft for opening and closing said choke valve;

a choke return diaphragm having a negative pressure chamber located on one side of said diaphragm;

link means connecting said diaphragm to said choke lever

for rotation of the choke lever in response to movement of the diaphragm;

a spring engaging said choke lever to urge said choke valve in a direction to close the choke valve;

a temperature sensing valve in a conduit connecting said negative pressure chamber of said choke return diaphragm with a suction pipe downstream of a throttle valve, said temperature sensing valve comprising, means for connecting said negative pressure chamber to atmosphere when the temperature sensed is lower than a preset value, so that the spring urges the choke valve closed, and means for connecting said negative pressure chamber with said suction pipe when the temperature sensed is higher than the preset value, so that a negative pressure in the suction pipe is introduced into said negative pressure chamber to move said diaphragm and choke lever against the action of the spring to a position to open the choke valve; and,

check valve means located in the conduit between said temperature sensing valve and said suction pipe for preventing loss of a negative pressure in said negative pressure chamber through said suction pipe.

4,202,303

FUEL SYSTEMS FOR COMPRESSION IGNITION ENGINES

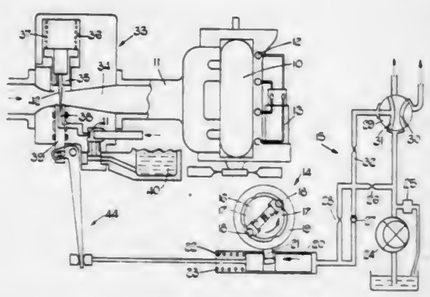
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 23, 1978, Ser. No. 889,298

Claims priority, application United Kingdom, Mar. 26, 1977, 12791/77

Int. Cl.² F02M *45/00*

U.S. Cl. 123—139 AQ **9 Claims**



1. A fuel system for supplying a high quality liquid fuel and a fuel of lower quality to a compression ignition engine having combustion spaces, comprising: a plurality of fuel injection nozzles for directing the high quality liquid fuel directly to the combustion spaces of the engine respectively, a fuel pumping apparatus connected to said injection nozzles for supplying the high quality fuel to the injection nozzles in turn and in timed relationship with the engine, said fuel pumping apparatus including a control means for adjusting the quantity of high quality fuel supplied to the combustion spaces and timing means for adjusting the timing of delivery of said fuel, said timing means being operatively connected to the engine so as to be responsive to the speed of the associated engine and the quantity of said fuel supplied to the engine, whereby with increasing engine speed the timing is advanced and for a given speed, the timing of delivery is retarded as the quantity of fuel delivered increases, an adjustable throttle disposed in a conduit conveying air to the combustion spaces of the engine, means for adjusting the size of said throttle in accordance with the air flow through the conduit, a fuel jet disposed to allow low quality fuel to flow into the stream of air passing through said conduit a tapered needle adjustably mounted in said fuel jet, said needle being operatively connected to said throttle and said jet being adjustably mounted and operatively connected to said timing means, whereby the relative position of said needle and said jet is in part determined by the means which adjust the size of said throttle and in part by said timing means, and conduit means through which the low quality fuel is supplied to said jet.

4,202,304

INTERFERENCE PROTECTED ELECTRONIC IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

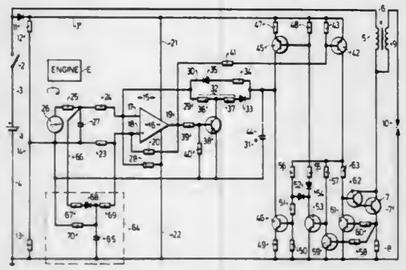
Werner Jundt, Ludwigsburg, and Bernd Bodig, Leinfelden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,617

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729505

Int. Cl.² F02P *9/00*

U.S. Cl. 123—148 E **9 Claims**



1. Ignition system for an internal combustion engine (E) having

a signal generator (**26**) adapted to be coupled to the engine and providing an a-c signal in synchronism with the angular position of the shaft of the engine upon rotation of the engine, said signal having leading and trailing flanks;

an ignition coil (**5, 6, 9**);

a controlled switch (**7**) in series with the primary (**5**) of the ignition coil which, upon closing, permits current to flow through the coil to store electromagnetic energy therein and, upon opening , causes induction of a high voltage pulse in the secondary (**9**) to generate an ignition pulse;

a threshold switch (**15**) sensing when the leading and trailing flanks of the a-c signal pass respective threshold values (**U2, U3**);

connection means (**41, 42**) connected to the threshold switch and controlling closing and opening of the controlled switch (**7**);

and comprising, in accordance with the invention,

means (**64, 64'**) to positively associate a predetermined threshold value of the trailing flank with the response of the threshold switch (**15**) including

a supervisory circuit connected to and providing a supervisory bias voltage to the threshold switch (**15**) to bias the threshold switch to respond to the trailing flank of the signal from the signal generator (**26**) at predetermined angular positions of the shaft of the engine even in the presence of noise and disturbance voltages of the signal derived from the signal generator; and

a circuit branch (**66**) connecting the signal generator (**26**) and the supervisory circuit (**64, 64'**) furnishing said bias voltage to thereby associate supply of the bias voltage with a predetermined angular position of the shaft of the engine and hence associate the instant of time that the trailing flank of the signal passes the respective threshold value (U3) with a predetermined angular position of the shaft of the engine.

4,202,305

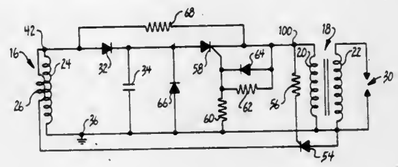
CAPACITOR DISCHARGE IGNITION SYSTEM WITH TIMING STABILIZATION ARRANGEMENT

Ronald J. Wolf, Zanesville, Ind., assignor to Wabash, Inc., Wabash, Ind.

Filed Jul. 25, 1978, Ser. No. 927,773

Int. Cl.² F02P *3/06*

U.S. Cl. 123—148 CC **6 Claims**



1. In a capacitor discharge ignition system for use with a rotating permanent magnet including two poles that is rotated over a path in synchronism with the operation of an engine, the combination of:

means positioned adjacent the path of the permanent magnet for generating a charging supply and for generating a triggering signal in response to induced voltages and currents resulting from the rotating permanent magnet, said generating means comprising a control winding having induced therein a voltage and current of a first polarity to generate said charging supply in response to the passage of a first pole of the magnet and having induced therein a voltage and current of opposite polarity to said first polarity to generate said triggering signal in response to passage of the second pole of said magnet;

storage means connected to said generating means and being charged in response to said charging supply;

ignition coil means for generating an ignition voltage;

means responsive to said triggering signal for controlling the discharge of said storage means into said ignition coil means; and

means responsive to said rotating permanent magnet for stabilizing said triggering signal over a wide range of engine speeds, said stabilizing means being effective during the generation of said triggering signal and being inoperative during the generation of said charging supply, said stabilizing means comprising a stabilizing winding, one end of said stabilizing winding being connected to one end of said control winding, said connected coil ends of said stabilizing winding and said control winding being the winding ends having induced voltages of common polarity, said stabilizing means further comprising circuit means operative during the passage of said second magnet pole for connecting said stabilizing winding across said control winding such that said stabilizing winding and said control winding are in a series loop.

4,202,306

MULTI-POINT SPARK IGNITION ENGINE PROVIDED WITH EXHAUST RECIRCULATION CIRCUIT

Yasuo Nakajima, Yokosuka; Yoshimasa Hayashi, Yokohama, and Tooru Yoshimura, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 776,486, Mar. 10, 1977, Pat. No. 4,133,330. This application Oct. 24, 1978, Ser. No. 954,182

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.² F02P *1/00*; F02M *7/00*

U.S. Cl. 123—148 C **13 Claims**

1. An engine system comprising:

an internal combustion engine of the reciprocating piston type having an intake valve and an exhaust valve for each combustion chamber thereof;

an air-fuel proportioning means for supplying a combustible mixture of air and a hydrocarbon fuel to said engine;

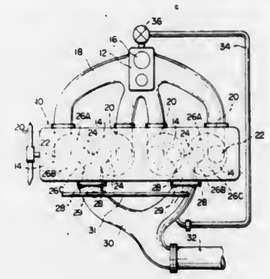
an exhaust recirculation means for recirculating a portion of the exhaust gas from the exhaust line of said engine to each combustion chamber together with said combustible mixture at a controlled volumetric flow rate relative to the volume of air admitted into each combustion chamber;

means for supplying secondary air to the exhaust line of said engine; and

at least two spark plugs which produce sparks substantially simultaneously for each combustion chamber;

said intake and exhaust valves being constructed and arranged such that a substantial overlap of the opening periods of said exhaust valve and said intake valve takes place, so that a substantial portion of the combustion gas is left unexhausted from each combustion chamber;

said combustion chamber being defined between the top face of the piston and the bottom face of a cylinder head by a



surface of revolution on the longitudinal axis of the cylinder bore;

the number of said at least two spark plugs being determined on the basis of a total volume of the recirculated exhaust gas and the unexhausted combustion gas relative to the volume of air supplied to each combustion chamber, said number being two when said total volume is about 50% of the volume of said air at the maximum and three when said total volume is about 60% at the maximum;

the spark gaps of said at least two spark plugs being arranged distant from each other in each combustion chamber such that, when the entire area of each combustion chamber in plan view is divided into a plurality of sectors which are in the same number as said at least two spark plugs and of approximately the same area, each of said sectors contains one of said spark gaps.

4,202,307

IGNITION PLUG

Yoshio Imamura, 12-8 Higashi-Cho, Fujinomiya-Shi, Shizuoka-Ken, Japan

Filed Nov. 2, 1978, Ser. No. 957,157

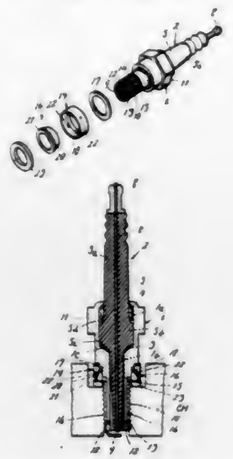
Claims priority, application Japan, Nov. 5, 1977, 52-132753

Int. Cl.² F02P *23/00*

U.S. Cl. 123—169 V **5 Claims**

1. An ignition plug for an internal combustion engine comprising a hollow cylindrical main body adapted to be mounted in the cylinder head of said engine and having jet orifices in communication with the hollow interior of said main body and air intake means in communication with said jet orifices; a tubular anode member including an insulation body extending through said main body and having a vertical through-opening and a center electrode extending through said vertical through-opening in the insulation body; and a check-valve assembly mounted about said main body and including a ring-shaped valve housing having a tapered valve seat on the inner

surface, a ring-shaped valve body reciprocally received in said valve housing and having a matingly tapered outer surface and



an annular seal for sealing said valve housing to said main body.

4,202,308

INTERNAL COMBUSTION ENGINE SYSTEM

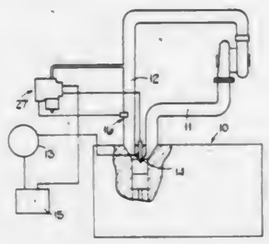
Barrie C. Skinner, Isleworth, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 28, 1978, Ser. No. 919,977

Claims priority, application United Kingdom, Jul. 13, 1977, 29364/77

Int. Cl.² F02N *17/00*; F02M *31/00*

U.S. Cl. 123—179 G **12 Claims**



1. An internal combustion engine including a starting aid system, the starting aid system comprising a starting aid device mounted on an air inlet manifold of the engine and including a fuel inlet, a fuel outlet to which in use fuel can flow from the fuel inlet to be admitted to said inlet manifold and means for vapourising and igniting the fuel flowing through the fuel outlet, a fuel supply device including a fuel chamber having an air inlet connected to said inlet manifold, a fuel inlet adapted to be connected to a fuel source, a fuel outlet connected to the fuel inlet of the starting aid device and valve means arranged to control communication between the air inlet, the fuel inlet and the fuel chamber, the valve means in a first position permitting communication between the fuel inlet and the fuel chamber but closing communication between the air inlet and the fuel chamber, and in a second position permitting communication between the air inlet and the fuel chamber so that air pressure in said inlet manifold is communicated to the fuel chamber but closing communication between the fuel inlet and the fuel chamber, and further valve means arranged to control communication between the fuel chamber of the fuel supply device and the fuel outlet of the starting aid device such that communication therebetween is permitted when the first mentioned valve means in its second position.

4,202,309

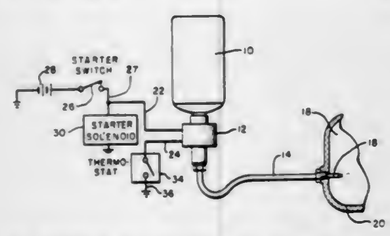
AUTOMATIC STARTING FLUID DISPENSER

James W. Burke, Rte. 2, Box 476, Long Grove, Ill. 60047

Filed Jul. 20, 1978, Ser. No. 926,413

Int. Cl.² F02M *1/16*

U.S. Cl. 123—180 R **19 Claims**



1. An apparatus for automatically injecting a pressurized starting fluid from a valved cannister into an air intake passage of an internal combustion engine provided with starter means, said apparatus comprising:

an injector mounted in the air intake passage to inject starting fluid into the passage;

an electrically activated valve actuator having an intake bore coupled to the valved cannister and an exit bore coupled to the injector, said valve actuator, when actuated, operating to continuously pass starting fluid from the valved cannister, through the intake and exit bores, to the injector;

reservoir means in fluid communication with the injector for temporarily storing a predetermined volume of starting fluid during the period when the valve actuator is activated, and for supplying said predetermined volume of starting fluid to the injector immediately following deactivation of the valve actuator;

means for automatically activating the valve actuator during operation of the starter means, such that the valve actuator is automatically controlled to cause starting fluid to be injected into the air intake passage during and immediately following operation of the starter means.

4,202,310

ANTI-CORROSIVE POLYMERIC COATING

Fermin Zorrilla, 6210 Maynada St., Coral Gables, Fla. 33146, and Agustin M. Alonso, 5471 W. 10th Ave., Hialeah, Fla. 33012

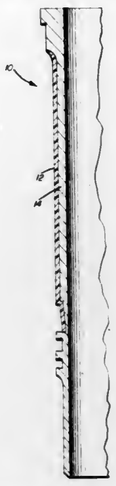
Filed Oct. 12, 1977, Ser. No. 841,476

Int. Cl.² F02F *1/12*

U.S. Cl. 123—191 A **5 Claims**

1. In an internal combustion engine having a liquid coolant normally in contact with a liner of a cylinder, an improved liner comprising:

a rigid, thermally resistant, brittle coating which adheres to metallic surfaces, directly disposed on the liner over at least those surface portions thereof which would normally contact the liquid coolant, the coating consisting of a single layer of polymeric material selected from the group consisting of polystyrene, polymerized polyester resin, polyurethane, and polymerized epoxy resin, polymerized to form a hardened coating which conforms and adheres to said surface portions of the liner, wherein the coating is unreactive to a coolant liquid selected from the group consisting of water, ethylene glycol, and mixtures thereof, and wherein the coating has a thickness of about ½ to 1



micron so as to permit relatively unimpeded heat exchange therethrough.

4,202,311

MEANS FOR RESILIENTLY CONNECTING AN OIL PAN TO AN ENGINE BODY

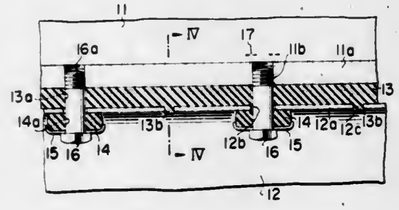
Hiroshi Moriyoshi, Aki, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 26, 1978, Ser. No. 928,302

Claims priority, application Japan, Jul. 27, 1977, 52-101008[U]; Aug. 20, 1977, 52-111172[U]

Int. Cl.² F02F *7/00*

U.S. Cl. 123—195 C **6 Claims**



1. Internal combustion engine including an engine body having a lower end defined by a periphery, an oil pan having a periphery connected with the periphery of the engine body by means of a plurality of connecting bolts inserted through the oil pan into the engine body with bolt heads located beneath the oil pan, first resilient means disposed between the engine body and the oil pan and extending along said peripheries, individual second resilient means disposed about each bolt between the oil pan and a respective individual depressing plate means, the first resilient means, the oil pan, the second resilient means, and the depressing plate means being disposed between the engine body and the heads of the connecting bolts and having compressive pressure applied thereto by the connecting bolts, said second resilient means having coefficient of elasticity 2 to 4 times as great as that of the first resilient means so that compressive deformation of the second resilient means under load on the oil pan can be decreased and the depressing plate means having an upwardly bent edge, so that said second resilient means is held in position by said edge.

4,202,312

IGNITION DEVICE FOR ROTARY PISTON ENGINE

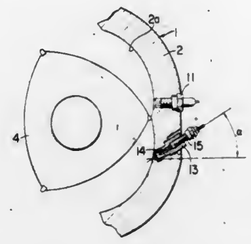
Kouichi Mori, Okazaki; Toshihiko Igashira, Toyokawa, and Shunzo Yamaguchi, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 15, 1978, Ser. No. 887,033

Claims priority, application Japan, Mar. 17, 1977, 52-29451

Int. Cl.² F02B *53/12*

U.S. Cl. 123—210 **8 Claims**



1. An ignition device for a rotary piston engine having a rotor for defining a combustion and operation chamber with an engine housing and an attachment mounting bore formed in said engine housing to communicate with said operation chamber, comprising:

a glow plug for igniting air-fuel mixture in said operation chamber; and

an attachment means detachably mounted in said mounting bore, that end of said attachment means which is farther from said operation chamber having a mounting portion to mount said glow plug thereon, that side of said attachment means which faces said operation chamber having a cavity for defining an ignition port for said glow plug, that end of said attachment means which faces said operation chamber having a communicating port having a smaller aperture area than a cross-sectional area of said ignition port a longitudinal axis of said attachment means being on a plane perpendicular to an axis of rotation of said rotor, and also being slanted to a normal line drawn at the position of opening to an inner wall of said engine housing, toward the direction of rotation of said rotor;

whereby said glow plug ignites said air-fuel mixture through said communicating port.

4,202,313

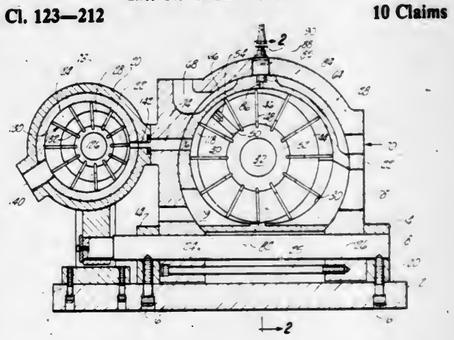
ROTARY ENGINE

Oscar E. Rosaen, 51 Roslyn Rd., Grosse Pointe, Mich. 48236

Filed Aug. 29, 1977, Ser. No. 828,299

Int. Cl.² F02B *53/08*

U.S. Cl. 123—212 **10 Claims**



1. An internal combustion engine comprising:

an annular open ended housing,

a wall portion in said housing which forms an ellipsoidal chamber,
a rotatably mounted drive shaft which extends transversely through said chamber,
a substantially cylindrical rotor disposed within said chamber and secured to said shaft, said rotor having a plurality of circumferentially equidistantly spaced vane members radially slidably disposed in said rotor,
means for urging said vane members radially outwardly so that said vane members sealingly engage selected sections of said wall portion,
fuel supply means for supplying fuel to said chamber,
fuel ignition means for igniting said fuel,
cooling fin members fixed to said rotor and extending substantially entirely exteriorly of said housing so that substantially all of the area of said cooling fin members is in constant fluid communication with a cooling fluid, and
wherein said cooling fin members comprise a first rotating plate and a second rotating plate fixedly secured to opposite sides of said rotor and rotatable therewith, and each of said plates having angularly spaced apart cooling fins secured thereto, said first and second plates cooperating to substantially enclose the ends of said annular housing therebetween.

4,202,314

DEVICE FOR INJECTION OF MEDICINAL PREPARATIONS

Boris A. Smirnov, ulitsa Borisa Galushkina, 17, kv.26, Moscow; Valery P. Busygin, Zheleznodorozhny proezd, 13, kv. 25, Moskovskaya Oblast, Krasnogorsk; Lidia S. Komina, Yaroslavskoe shosse, 127, kv. 30, Moscow; Vyacheslav N. Mochalov, Prospekt Mira, 122, kv. 174, Moscow; Lev V. Shagalov, Malaya Schukinskaya ulitsa, 15, kv. 89, Moscow, and Evgeny A. Gruzdev, ulitsa Gabricheskogo, 4, kv. 49, Moscow, all of U.S.S.R.

Filed Nov. 20, 1978, Ser. No. 962,204
Int. Cl.² A61M 5/00
U.S. Cl. 128—218 F **1 Claim**



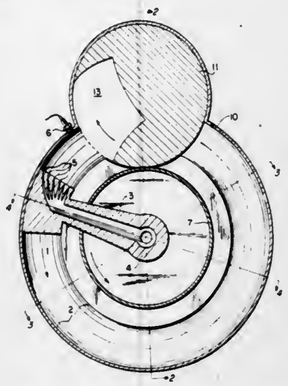
1. A device for administration of medicinal preparations comprising:
a changeable isolated capsule;
a main piston installed coaxially inside said isolated capsule, and confining a chamber for a first medicinal preparation and having a channel to pass a second medicinal preparation;
a movably installed partition closing the channel for the second medicinal preparation on the side facing the chamber holding the first medicinal preparation;
an additional piston installed in the channel of said main piston, confining the chamber for the second medicinal preparation;
an injection needle installed inside said changeable isolated capsule fixed on said additional piston, passing through said partition and having an aperture in the zone of said partition;
a housing upon which the changeable isolated capsule is installed;
a drive of the pistons, installed in said housing;
a spring-loaded pusher of said drive of the pistons, interacting with said main piston;
an additional spring-loaded pusher of said drive of the pistons, interacting with said additional piston and arranged coaxially with said spring-loaded pusher;
a stopping member, in said housing for the spring-loaded pusher; and
an additional stopping member installed in the housing for said additional spring-loaded pusher.

4,202,315

SINGLE CYCLE ROTARY ENGINE WITH CONSTANT FUEL FEEDING

Jacques Lutrat, 58, rue de Lorraine, Beaune, France (21200)

Continuation-in-part of Ser. No. 655,361, Mar. 10, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,121
Int. Cl.² F02B 53/00
U.S. Cl. 123—249 **10 Claims**



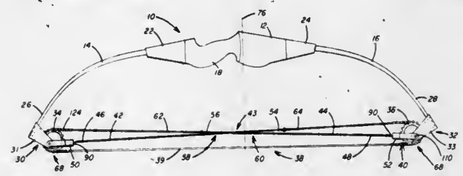
1. A rotary engine of the internal combustion type having constant fuel feeding comprising:
(A) a housing defining an outer annular chamber having an outer wall and an inner wall and adapted for explosion and expulsion of fuel, said annular chamber further including:
i. an ignition mechanism;
ii. an expulsion port peripherally spaced from said ignition mechanism;
iii. an open neck guide extending radially inward from said chamber;
(B) a hollow drive shaft extending transversely through said housing;
(C) a rotating cylindrical drum supported upon said drive shaft within said housing and defining an inner core thereof, said cylindrical drum sealingly engaging the inner wall of said annular chamber and said open neck guide;
(D) a piston rod attached to said drive shaft and extending radially through said cylindrical drum and said open neck guide, such that its outer end defines a rotatable piston head engaging the outer and inner walls of said annular chamber during a rotation through its circular cycle and including a fuel and air passage extending centrally through said rod and through a posterior side of said piston head;
(E) a moving seal interposed between said ignition mechanism and said expulsion port, said moving seal being of the rotary type mounted upon a shaft supported in said housing and rotatingly engageable with said cyclindrical drum, said moving seal including a complementary recess engaging said piston head during a rotation of its circular cycle intermediate said expulsion port and said ignition point; and
(F) a source of pressurization and an unobstructed means continuously feeding separately fuel and air through said hollow shaft and said piston rod and piston head and into said chamber.

4,202,316

COMPOUND BOW

Alex J. Barna, 1216 Crawford St., Duquesne, Pa. 15110

Filed Jul. 3, 1978, Ser. No. 921,314
Int. Cl.² F41B 5/00
U.S. Cl. 124—24 R **13 Claims**



1. A compound bow for propelling an arrow comprising,
handle means for gripping the bow,
a first limb and a second limb connected to opposite ends of said handle means and being operable to store energy to propel an arrow,
said first and second limbs and said handle means having a longitudinal axis extending the length of the bow,
a first pulley and a second pulley,
a first mounting assembly for rotatably and eccentrically positioning said first pulley on said free end portion of said first limb,
a second mounting assembly for rotatably and eccentrically positioning said second pulley on said free end portion of said second limb,
continuous cable means for flexing said first and second limbs,
said continuous cable means having a first end portion attached to said first mounting assembly and a second end portion attached to said second mounting assembly,
said continuous cable means including a flexible portion and a rigid portion,
said flexible portion being reeved about said first and second pulleys and extending therebetween to receive an arrow,
said flexible and rigid portions being aligned with said longitudinal axis,
said rigid portions including a pair of overlying rigid sections, and
said pair of overlying rigid sections each having an intermediate portion deflected laterally from said longitudinal axis to prevent contact between said continuous cable means rigid portion, and an arrow when an arrow is released from the bow.

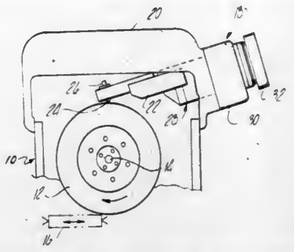
4,202,317

GRINDING WHEEL DRESSER

Anthony Kushigian, P.O. Box 768, Hendersonville, N.C. 28739

Filed Mar. 31, 1978, Ser. No. 892,208
Int. Cl.² B24B 53/02
U.S. Cl. 125—11 H **5 Claims**

1. A grinding wheel dresser comprising a housing, an arbor carried by said housing for rotation with respect to said housing about an axis, an arm pivotly mounted on said arbor for rotation about an axis extending generally transverse to said axis of rotation of said arbor, having a free end extending beyond said arbor, and being constructed and arranged when rotated to move a dressing tool carried by said arm adjacent said free end thereof in a path generally transverse to said axis of rotation of said arbor, a pair of abutments on said arm located on opposite sides of said axis of rotation of said arm, a pair of cylinders each within said arbor, a fluid actuated piston slidably received in each of said cylinders, a plunger operatively associated with each piston and one of said abutments on said arm and constructed and arranged to rotate said arm with



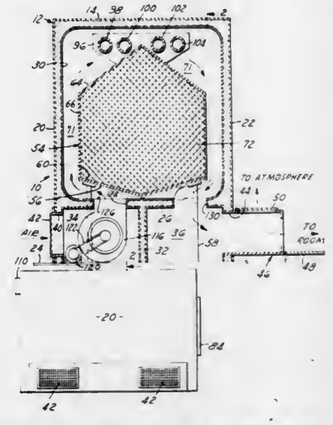
respect to said arbor when fluid is admitted under pressure to one of said cylinders so as to move the dressing tool carried by said arm along an arcuate path generally transverse to said axis of said arbor, said axis of rotation of said arm lying between and extending generally transverse to the paths of reciprocal movement of said pistons and plungers.

4,202,318

HEATING APPARATUS

Thomas C. DePodesta, 24145 Colonial Dr., Woodhaven, Mich. 48183, and Milton Moss, 30730 Hunter Dr., Farmington Hills, Mich. 48024

Filed Mar. 29, 1978, Ser. No. 891,424
Int. Cl.² F24H 3/02
U.S. Cl. 126—110 R **15 Claims**



1. A heating apparatus comprising an insulated elongated housing having a top wall, a front wall, a back wall and a pair of side walls, a bottom wall spaced above ground level and connected to portions of said front, back and side walls intermediate the ends thereof and defining therewith and with said top wall a normally closed heating chamber, a hollow substantially closed elongated metal casing forming a fuel combustion chamber and fixedly mounted within said heating chamber for burning combustible solid fuels and/or gas or liquid fuels, said casing and said combustion chamber having a longitudinally extending axis which is perpendicular to said front and back walls of said housing, said combustion chamber casing extending lengthwise in said housing from said back wall to said front wall of said housing and abutting same, said combustion chamber casing being spaced from said top and side walls and from portions of said bottom wall to define an air circulating passageway in said heating chamber which surrounds said combustion chamber casing, said air circulating passageway extending from said back wall to said front wall of the housing, said combustion chamber being divided into a solid fuel burning zone and into a gas or liquid fuel burning zone, an insulated charge door carried by said front wall and through which solid

fuels are introduced into the interior of said combustion chamber, a gas or liquid fuel burner assembly carried by said back wall for introducing fuel and air into said gas or liquid fuel burning zone of said combustion chamber, a smoke exhaust tube system located in said heating chamber, means connecting said exhaust tube system to the interior of said combustion chamber, said exhaust tube system extending through said back wall and removing from the combustion chamber smoke resulting from the combustion of the fuels therein, a vertically extending barrier located below and outside of said normally closed heating chamber, the upper edge of said barrier being connected to said bottom wall and extending parallel to said side walls, said barrier also being connected to said front and back walls, an air intake zone at one side of said barrier and an air exit zone at the other side of said barrier, said air intake zone and said air exit zone being located below and outside of said normally closed heating chamber, air supply blower means in said air intake zone, an air inlet passage provided in said bottom wall between said air intake zone and one end of said air circulating passageway located in said heating chamber, said blower means having its discharge side located adjacent said air inlet passage, an air return passage in said bottom wall between the other end of said air circulating passageway and said air exit zone, said blower means transmitting air from said air intake zone into said heating chamber and directing the air through said air circulating passageway across said combustion chamber casing to pick up the heat radiating therefrom, with the heated air exiting said air circulating passageway through said air return passage which discharges into said air exit zone from where the heated air may be directed to atmosphere or to an air supply system.

4,202,319

BUILDING ROOF WITH SOLAR COLLECTOR

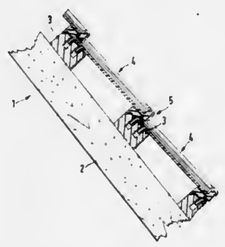
Siegfried Vinz, Neuwiesenrebenstr. 44, D-7505 Ettlingen, Fed. Rep. of Germany

Filed Sep. 23, 1977, Ser. No. 835,963

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1976, 2642732

Int. Cl.² F24J *3/02*

U.S. Cl. 126—432 **17 Claims**



1. A building roof which includes a support structure, roof tiles, and roof battens disposed on the support structure for mounting the roof tiles, the roof tiles including a cavity and a solar collector means arranged in the cavity adapted to be traversed by a heat carrier medium, characterized in that the solar collector means further includes inlet means and outlet means for conveying the heat carrier medium to and from the solar collector means, channel means are provided in each roof batten for delivering the heat carrier medium to the inlet means and receiving the heat carrier medium from the outlet means of the solar collector means, said channel means including a portion extending parallel to the inlet means and outlet means of the solar collector means, each roof tile having a supporting area for supporting the same at the roof batten, and in that the inlet means and outlet means for the solar collector means are disposed in the supporting area and are adapted to be joined with the channel means of the roof battens.

4,202,320

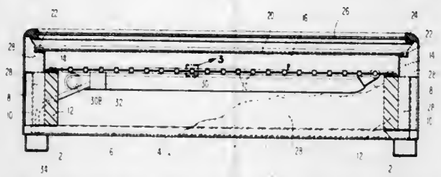
SOLAR ENERGY COLLECTOR ASSEMBLY

John C. Bowen, Huntingdon Valley, Pa., assignor to Ametek, Inc., Paoli, Pa.

Continuation-in-part of Ser. No. 654,407, Feb. 2, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 847,250

Int. Cl.² F24J *3/02*

U.S. Cl. 126—447 **13 Claims**



1. In a solar energy collector assembly consisting of a housing having side and bottom sections, a solar energy collector member overlying said bottom section, a first inner transparent sheet overlying said member, and a second outer transparent sheet overlying said first transparent sheet, said second sheet being attached to said side housing sections and forming with said side and bottom sections an enclosure for said assembly, the improvement wherein said first transparent sheet and said energy collector member are thermally insulated from and spaced from the side and bottom housing sections and the second transparent sheet, a plurality of low thermal conductivity projections extending from said housing inwardly, said collector member and said first inner transparent sheet contacting and being supported by said projections at spaced locations about the periphery thereof, the space to the side and below said collector member and surrounding said projections being filled with thermal insulation material.

4,202,321

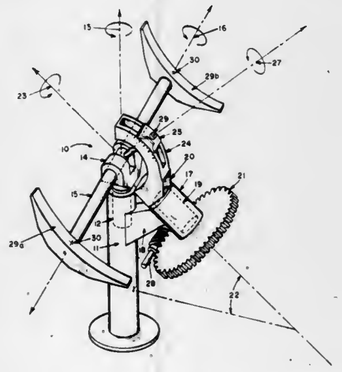
SOLAR TRACKING DEVICE

William M. Volna, 3501 Coolidge St., N.E., Minneapolis, Minn. 55418

Filed May 30, 1978, Ser. No. 910,669

Int. Cl.² F24J *3/02*

U.S. Cl. 126—425 **13 Claims**



1. An apparatus for tracking the relative position of the sun from a location latitudinally and longitudinally fixed within the earth's temperate zones, comprising

(a) a base having a support axis member affixed thereto;

(b) means for aligning said support axis member along a first line which is vertical relative to the center of the earth;

(c) a movable polar axis member attached to said base;

(d) means for aligning said polar axis member in parallel relationship to the earth's celestial pole and along a second line passing through said first line;

(e) a rotatable shaft member having its axis of rotation passing through the intersection of said first and second lines, said shaft member being pivotable in a horizontal plane about said intersection;

(f) a sector arm attached to said polar axis member and axially rotatable therewith, said sector arm having a curved portion defined by a constant radius from the point of intersection of said first and second lines;

(g) a pointing spindle rigidly attached to said rotatable shaft member in radial alignment from said intersection of said first and second lines, and movably connected to said sector arm curved portion;

(h) constant speed drive means, coupled to said polar axis member, for turning said polar axis member about said second line; whereby said turning movement of the polar axis member is transformed through the sector arm and pointing spindle to cause the rotatable shaft member to pivot and rotate in synchronism with the relative movement of the sun.

4,202,322

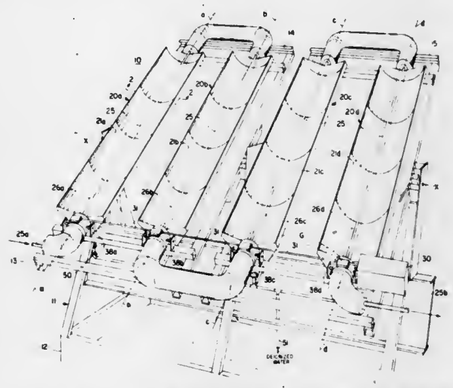
SOLAR ENERGY COLLECTOR AND HEAT EXCHANGER

Manuel M. Delgado, La Mirada, and Harold N. Riise, La Canada, both of Calif., assignors to Del Manufacturing Company, Monterey Park, Calif.

Filed May 11, 1977, Ser. No. 795,947

Int. Cl.² F24J *3/02*

U.S. Cl. 126—425 **21 Claims**



1. A solar energy collection system comprising an elongated collector dimensioned to concentrate solar flux into a concentrated linear region;

a fixed receiver tube extending along said region;

means mounting said collector for rotation about an axis located in said region;

means for powering the rotation of said collector to keep solar image on the receiver tube;

means supplying said receiver tube with a source of heat exchange medium;

outlet means for receiving the heat exchange medium after passage through said receiver tube; and

transparent means encircling said receiver tube for isolating said receiver tube from air currents in the region of said collector and receiver tube: wherein said means for powering said collector is operative to drive said collector through a 360 degree rotation.

4,202,323

DRUG ACTIVATION BY RADIATION

Jack Zweig, 145 Vaneck Dr., New Rochelle, N.Y. 10804; William McLaughlin, 3901 Albemarle St., NW., Washington, D.C. 20016, and Matthew L. Herz, 20 Swanson Rd., Framingham, Mass. 01701

Filed Apr. 28, 1978, Ser. No. 900,897

Int. Cl.² A61K *29/00*; A61B *10/00*

U.S. Cl. 128—1.1 **12 Claims**

1. A method of selectively causing drug activation in a localized area within a living body which comprises administering to said body a substituted aminotriarylacetonitrile capable of undergoing radiation induced cleavage to form a substituted aminotriarylmethyl component and a free cyanide component, said nitrile being soluble in the body serum so that it is capable of passing by the administration thereof to said body, and then subjecting a localized area to radiation capable of causing cleavage of said cyanide species from said nitrile in said localized area, said cyanide ion and/or carbocation acting as a radiation sensitizer in said localized area.

4,202,324

EQUINE VAGINAL SPECULUM

W. Evans Allson, Rte. 1, Brownsboro, Ala. 35741

Filed Mar. 30, 1978, Ser. No. 891,524

Int. Cl.² A61B *17/02*

U.S. Cl. 128—20 **5 Claims**



1. An instrument for vaginal inspection of a standing animal comprising:

a generally straight, elongated blade having a curve-shaped cross section normal to the length of the blade;

an elongated generally straight arm extending generally at a right angle from an end of said blade;

an elongated generally straight shaft extending from said arm generally parallel to and spaced from and directly under said blade;

a weight;

means for supporting said weight on said shaft, means for adjusting the distance between said weight and said arm along the line defined by the axis of said shaft,

the combination of said shaft and weight being configured with an overall width approximately no greater than the width of said blade, whereby the shaft and weight may readily extend between the legs of a standing animal; and

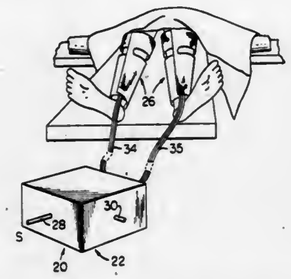
the combination of said blade, arm, and weight being freely suspendable from the vagina of a standing animal;

whereby, when said elongated blade is inserted vaginally and generally horizontally in a standing animal, said weight member will freely cause a generally downward force to be applied to the underside of the blade at points of engagement of the blade along the length of the blade with the animal.

4,202,325
COMPRESSION DEVICE WITH IMPROVED FASTENING SLEEVE

Frank K. Villari, Oak Park; Norbert W. Ellmann, Lake Zurich, and Larry D. Annis, Elgin, all of Ill., assignors to The Kendall Company, Boston, Mass.

Filed Jan. 12, 1979, Ser. No. 2,824
Int. Cl.[2] A61H 1/00
U.S. Cl. 128—24 R 7 Claims

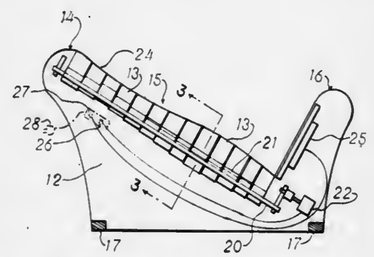


1. A device for applying compressive pressures against a patient's limb from a source of pressurized fluid, comprising:
an elongated pressure sleeve for enclosing a length of the patient's limb, said sleeve having a pair of side edges, a pair of end edges connecting the side edges, and fluid pressure chamber means, said sleeve having fastening means for securing the sleeve around the patient's limb comprising a fastening cover sheet of knitted fabric having a napped outer surface defining a substantial major portion of the entire outer surface of the sleeve, and elongated fastening strip means extending along one of said side edges of a surface of the sleeve, said fastening strip means being releasably engagable to said cover sheet to secure the sleeve about the patient's limb; and
means for intermittently inflating and deflating said pressure chamber means.

4,202,326
MUSCLE MANIPULATING APPARATUS

Gary W. Van Gerpen, 833 Eleventh Ave., Helena, Mont. 59601

Filed Aug. 1, 1978, Ser. No. 929,923
Int. Cl.[2] A61H 1/00
U.S. Cl. 128—33 7 Claims

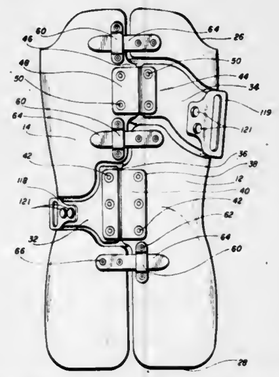


1. Muscle manipulating apparatus including a frame having spaced end members disposed substantially parallel to each other, a plurality of crossmembers extending between said end members, each of said crossmembers having a recess in the undersurface thereof, said crossmembers being disposed in a parallel relationship adjoining each other to form a substantially continuous surface, each of said crossmembers being supported for movement in a longitudinal plane through said crossmember which is substantially perpendicular to its portion of said continuous surface, means for sequentially moving each of said crossmembers including a rotatable cam shaft positioned behind said crossmembers and in direct contact with said recesses in the undersurface of said crossmembers, said cam shaft being disposed substantially perpendicular to the longitudinal axes of said crossmembers, said cam shaft having a plurality of cam surfaces equal in number to that of said crossmembers, each of said cam surfaces being disposed adjacent to one of said crossmembers and engageable therewith, and drive means for rotating said cam shaft and said cam surface thereon to provide cyclical movement of said crossmembers.

4,202,327
DYNAMIC ORTHOTIC DEVICE

John J. Glancy, 6280 Dean Rd., Indianapolis, Ind. 46220

Filed May 24, 1978, Ser. No. 908,967
Int. Cl.[2] A61F 5/02
U.S. Cl. 128—78 8 Claims



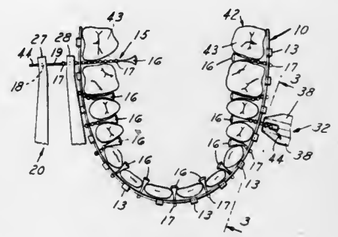
1. A dynamic orthosis device adapted for application to the torso of a human patient with an abnormal curvature of the spine comprising:
substantially rigid torso-enveloping shell means split vertically at anterior and posterior positions to form first and second shell segments;
connecting means for gradually drawing said shell segments together and for securing said shell segments in any of a plurality of positions relative to one another,
alignment means for restricting said shells to horizontal relative movement while they are gradually drawn together,
at least one portion of a shell segment being cut-away and pressure pad means being positioned in the cut-away portion and pivotally attached to the other shell segment;
elastic strap means secured at one end to the shell means and operatively associated with each pressure pad means; and
means for adjustably securing the elastic strap means to the shell means adjacent the other end of the strap means such that it exerts an adjustably predetermined dynamic force on its associated pressure pad means;
whereby the elastic means causes the pressure pad means to apply adjustable predetermined dynamic forces to the patient's torso in order to correct abnormal curvatures of the patient's spine.

4,202,328
METHOD AND MEANS FOR FIXATION AND IMMOBILIZATION OF THE JAWS

Ghassan A. Sukkarie, 32037 Concord Dr., Madison Heights, Mich. 48071

Filed Nov. 23, 1977, Ser. No. 854,272
Int. Cl.[2] A61F 5/04
U.S. Cl. 128—89 A 10 Claims

1. An oral surgery treatment assembly for the immobilization of a patient's jaws, comprising in combination:
(a) a pair of elongated arch bars which each have a plurality of openings therethrough, with each of said openings having a plurality of slits formed around the outer periphery thereof, and each arch bar having a plurality of outwardly extended hooks, and each arch bar being suitable for mounting around the periphery of one jaw of a patient;
(b) a plurality of arch wires, which each have a retainer member on a first end and a plurality of beads spaced along the length of the wire, for insertion in the mouth of a patient, and for disposal adjacent one or more teeth on each jaw in a patient's mouth, and wherein a second end of

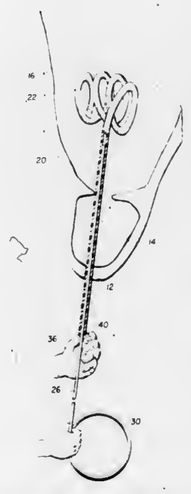


each of the arch wires is inserted through one of said plurality of openings through one of the arch bars, and retained in engagement therewith by one of the beads on the arch wire passing through one of said openings, which expand due to said slits to allow passage of a bead, and being seated against the outer face of the arch bar and an adjacent bead being seated against the inner face of the arch bar; and,
(c) a retainer member is mounted between adjacent opposed pairs of hooks on said jaws for fixing said pair of arch bars together and immobilizing the jaws.

4,202,329
METHOD AND APPARATUS FOR INDUCING IMMUNOLOGICAL AND RESISTANT RESPONSE IN MAMMARY GLANDS

William M. Kortum, 180 Ely Rd., Petaluma, Calif. 94952

Filed May 5, 1978, Ser. No. 903,343
Int. Cl.[2] A61F 5/46; A01J 3/00, 5/00
U.S. Cl. 128—130 7 Claims

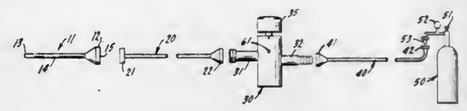


1. A method for inhibiting bacterial infection without significantly degrading milk quality in the udder of a host susceptible to bacterial infection which comprises:
introducing into at least one gland cistern of said udder a non-toxic nonspecific antigenic device of a sufficient size to be restrained from entering the teat cistern of said udder.

4,202,330
LIFE SUPPORT SYSTEM AND VALVE FOR USE THEREWITH

Daniel S. Jariabka, 1998 Big Oak La., Northbrook, Ill. 60062

Filed Jun. 26, 1978, Ser. No. 919,072
Int. Cl.[2] A61M 16/00
U.S. Cl. 128—204.18 3 Claims



1. In a life support system for use in performing an emergency tracheostomy on a patient, including a manually operable, small, portable valve connected between a first conduit means and a second conduit means where said first conduit means is further connected to insertion means for being inserted into the throat region of the patient and for passing gas therethrough and where said second conduit means is further connected to a supply of oxygen; the improvement comprising:
said valve including a housing having an interior surface defining a chamber therein oriented about a longitudinal axis and having an open end communicating with the exterior of said housing and a closed end opposite said open end;
said housing defining a first port for providing communication between said chamber and said first conduit for alternately passing oxygen flow to said patient and passing expiration air flow from said patient;
said housing further defining a second port for providing communication between said chamber and said second conduit for passing oxygen from said oxygen supply to said chamber, said second port being spaced from said first port at the interior surface of said chamber by a predetermined amount along the longitudinal axis of the chamber between said first port and said chamber closed end;
said housing further defining a patient expiration air exhaust channel communicating between the exterior of said housing and said chamber and terminating in an exhaust aperture in said chamber located between said chamber open end and said first port;
said housing further defining an oxygen drain channel communicating between the exterior of said housing and said chamber and terminating in a drain aperture in said chamber located between the closed end of said chamber and said second port;
a plunger slidably disposed within said chamber for movement between a patient air expiration position and a patient oxygen supply position, said plunger including spaced-apart first and second seal means for sealing between said plunger and the interior surface of said chamber, said first and second seal means defining them a central flow passageway in said valve, said second seal means being disposed between said first seal means and the closed end of said chamber for defining an end flow passageway in said valve adjacent said central flow passageway;
spring means disposed within said chamber at the closed end thereof for urging said plunger outwardly through said open end of said chamber to said patient oxygen supply position;
stop means mounted in said housing for limiting at least the outward movement of said plunger under the influence of said spring;
said predetermined port spacing amount being sufficient to accommodate the simultaneous location of (1) said first seal means between said exhaust channel aperture and said

chamber open end and (2) said second seal means between the first and second ports when the plunger is biased to the patient air expiration position whereby oxygen flowing into said valve second port and accumulating in said closed end of said chamber can leak out of said end flow passageway through said oxygen drain channel and whereby the expiration of air from the patient can flow sequentially through said insertion means, through said first conduit and first port, through said central passageway, and out of said valve through said exhaust channel; and

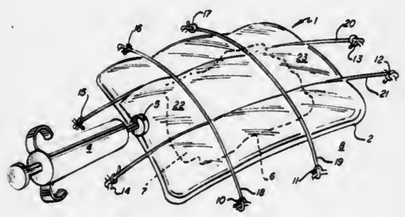
said predetermined port spacing amount being also sufficient, when said plunger is pressed inwardly to said patient oxygen supply position, to accommodate the simultaneous location of (1) said first seal means between said exhaust channel and said first port and (2) said second seal means between said second port and said oxygen drain channel whereby oxygen from said oxygen supply can flow sequentially through said second conduit and second port, through said central passageway, out of said valve through said first port, through said first conduit, and finally through said insertion means into said patient.

4,202,331

SKIN GRAFT PRESSURE PAD

William S. Yale, 215 E. Chicago, Chicago, Ill. 60611

Filed Aug. 3, 1977, Ser. No. 821,621
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—155 19 Claims



1. A skin graft pressure pad comprising in operative combination:

(a) means defining an enclosure for a liquid mass comprising a soft, easily deformable, transparent plastic bag and having a property of low adherence to tissue or serous fluids on at least one skin graft contact surface thereof;

(b) said enclosure means being pliable, freely conformable to variations in surface contour, and non-freestanding;

(c) at least one substantially transparent liquid disposed in said enclosure in an amount to at least partially fill said enclosure to permit said free surface conformability;

(d) the volume of said enclosure and amount of said liquid being selectable to provide mass sufficient to enhance growth-promoting contact between grafted tissue and underlying tissue without substantial tissue necrosis;

(e) means for removably securing said enclosure containing said liquid in contact with said graft tissue; and

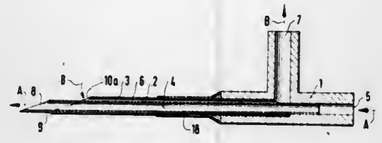
(f) said securing means being adapted to retain said pad in a predetermined position in direct continuous contact with said graft tissue to permit said liquid to transmit substantially uniform, growth-promoting pressure to said graft tissue without inducing substantial tissue necrosis.

4,202,332

DOUBLE LUMEN CATHETER

Bernd Tersteegen, and Günter Van Endert, both of Kreuzstrasse 19, D-4000, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,181
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703087
Int. Cl.[2] A61M *5/00, 25/00*
U.S. Cl. 128—214.4 9 Claims



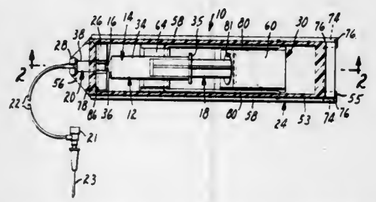
1. A double lumen catheter for use in haemodialysis, which comprises ducts for blood streams flowing into and respectively out of the body, an inner cannula providing an inner duct, an outer cannula surrounding the inner cannula and providing between the inner cannula and the outer cannula an outer duct, said outer cannula including a smooth and continuous outer surface defined by an imperforate wall, a front end of at least the inner cannula being inclined obliquely to the longitudinal cannula axis and sharply ground to facilitate puncture of a blood vessel, the front end of the inner cannula projecting beyond a front end of the outer cannula and defining an axially open passage of said inner duct, the cross-section of the catheter changing progressively from the outer diameter of the inner cannula to the outer diameter of the outer cannula, the outer duct when in an operative state having at its front end an axially open passage of cross-sectional area equal to the cross-sectional area of the outer duct, so that the total cross-section of the outer duct is available to a blood stream entering or leaving the outer duct.

4,202,333

FLUID DISPENSING DEVICE

Gary A. Thill, St. Paul, Minn., and Jerome E. Strand, St. Joseph Township, St. Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 8, 1978, Ser. No. 958,678
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—218 A 4 Claims



1. A fluid dispensing device adapted for engaging a fluid-filled syringe to dispense fluid from the syringe at a slow, steady rate, said syringe being of the type comprising an elongate housing including a tubular wall having an open end and an end wall having an outlet opening at the end of the tubular wall opposite its open ends, and a plunger having one end portion positioned within and sealing against the inner surface of said tubular wall and an opposite end portion projecting from the open end of said tubular wall, with the fluid being within said tubular wall between said end wall and said plunger, said device comprising:

a metering assembly including a first part having an outer wall and a transverse wall defining chambers within said first part on opposite sides of said transverse wall, said transverse wall having an orifice communicating between said chambers; a capillary tube extending through said transverse wall and a second part having a through opening and a portion sealably and movably mounted within the outer wall of said first part for movement relative to said first part between a purging position with said portion spaced from said orifice so that fluid can flow between said chambers through said orifice, and a metering position with said portion blocking said orifice so that fluid can pass said transverse wall only through said capillary tube;

means adapted for releasably attaching one of said parts of the metering assembly to the housing of a said syringe with the outlet opening of the syringe communicating with the chamber adjacent said one part;

a hose attached to the other of said parts of the metering assembly with the bore of the hose communicating with the through opening of said other part;

a frame comprising support means adapted for engaging and supporting said metering assembly only when the parts of said metering assembly are in their metering position;

spring means adapted for applying a uniform force against the plunger of the syringe to cause fluid within said syringe to flow through said metering assembly into said hose; and

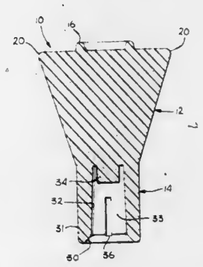
activating means for moving said spring means between a disengaged position spaced from the plunger of a said syringe attached to said metering assembly to afford insertion or removal of the syringe and said metering assembly, and an engaged position engaged with said plunger to apply said uniform force, said activating means including securing means for securing the syringe and the metering assembly in said support means when said activating means positions said spring means in said engaged position.

4,202,334

CAP AND STOPPER

Edward E. Elson, Anaheim, Calif., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Feb. 28, 1978, Ser. No. 882,233
Int. Cl.[2] A61J *1/00*
U.S. Cl. 128—272 7 Claims



1. A device for sealing a sample within a syringe comprising a cap means and stopper means of unitary construction:

said cap means having an interior frustoconical wall and an exterior cylindrical wall, a closed end and a mouth, said interior wall configured to engage an exterior wall of said syringe as said syringe and cap means are joined together;

said cap means being provided with a first means for allowing air to escape from the cap during insertion of said syringe into said cap means;

said cap means being further provided with a second means for forming a seal with an interior wall of the syringe as the syringe approaches the closed end of said cap means; and

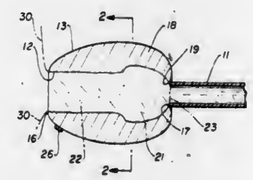
said stopper means having a base integrally joined to said cap means and a plurality of generally flat surfaces extending radially outward on said stopper means adjacent said base, said stopper means configured such that the syringe is substantially prevented from rolling about its axis on a flat surface when said device is joined thereto, and wherein the cross-sectional area of said stopper means adjacent said base is greater than the cross-sectional area of said cap means.

4,202,335

EXTERNAL CATHETER DRAINAGE DEVICE

Lawrence W. Gold, 1286 Larch Ave., Moraga, Calif. 94556

Filed Feb. 23, 1978, Ser. No. 880,693
Int. Cl.[2] A61F *5/44*
U.S. Cl. 128—295 9 Claims



1. An external catheter drainage device dimensioned to fit over and surround the penile glans of the user and to extend over the penile shaft of the user, and a drainage tube therefor; said device comprising:

a pair of elongated inner and outer coterminous impervious members extending substantially over the full length of said device and joined at their opposite ends to define a continuous air chamber therebetween over the length of said device, said members being joined at one end directly at and to one end of said tube with said air chamber contiguous to and extending longitudinally from said tube end and with said tube in registration with the interior of said inner member;

said inner member being formed of a thin flexible sheet having a thinness and flexibility such as to lay in substantially continuous contact with the exterior contours of the penile glans and shaft and being dimensioned together with said air chamber to surround and closely conform to the peripheral shape of the penile glans and shaft; and

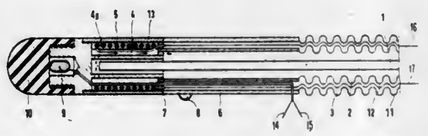
said chamber being formed for pressurizing to thereby apply a substantially uniform encapsulating pressure on the exterior of the penile glans and shaft and to anchor said tube end in substantial abutment and in registration with the urethral meatus.

4,202,336

CAUTERIZING PROBES FOR CRYOSURGERY

Hans van Gerven, Tübingen, Fed. Rep. of Germany, assignor to Erbe Elektromedizin KG, Tübingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 793,778, May 5, 1977, abandoned. This application Jan. 3, 1978, Ser. No. 866,705
Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621553; Aug. 10, 1977, 2736113
Int. Cl.[2] A61B *17/36*
U.S. Cl. 128—303.1 10 Claims



1. A surgical probe comprising a hollow tubular shaft having a metal tube portion forming an outer wall of the probe, said metal tube portion having an end region forming the end of said shaft and defining a cooling section of said probe, channels being provided within the shaft leading to and from said cooling section for circulation of a cooling medium, a tip connected

to the extremity of said end region of said metal tube shaft portion and containing a thermal sensor and an electrical heating winding mounted in said cooling section of said shaft for thawing frozen tissues, and connecting means in said shaft associated with said heating winding for its energization by an external source of electricity, said probe having the improvement wherein:

the probe is provided with a coating (7) at least on the outer surface of said cooling section (4) thereof consisting of elastic synthetic material that is stable up to 200° C. and has the property of preventing the sticking of flesh to the probe even during cauterization;

material with good heat-conducting properties in contact with and close to the inner surface of said end region of said metal tube portion of said shaft which defines said cooling section (4);

the heating winding (5) is embedded in said heat-conducting material, makes firm contact with said metal tube portion therethrough and is of sufficient rating to be capable of raising said metal tube portion to a temperature of at least 190° C. at a power of at least 100 watts for not less than a few seconds, so that after a cryosurgical operation, a cauterization of flesh tissues in the region of tissues previously frozen can thereby be carried out, and;

said channels connect with a cooling cavity in said cooling section which is adjacent to said tip.

4,202,337

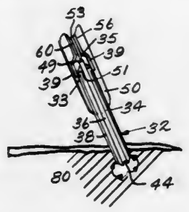
BIPOLAR ELECTROSURGICAL KNIFE

John J. Hren; David E. Clark; David A. Jenkins; Paul F. Johnson, III, all of Gainesville, and Howead E. Degler, Jr., St. Petersburg, all of Fla., assignors to Concept, Inc., Clearwater, Fla.

Continuation-in-part of Ser. No. 695,649, Jun. 14, 1976, abandoned. This application Jun. 14, 1977, Ser. No. 806,529

Int. Cl.² A61B *17/36*; A61N *3/02*

U.S. Cl. 128—303.14 **19 Claims**



1. An electrosurgical instrument of the type adapted to be selectively connected to a source of energy such as a high frequency electrical current for use in cutting, coagulating or otherwise treating human tissue or the like comprising an insulative handle and blade assembly mounted in said handle and extending therefrom, said blade assembly comprising an insulation member having an alumina composition of at least 96% purity, a linearly shaped active center electrode mounted to said insulation member, a plurality of return electrodes symmetrically mounted to said insulation member spaced apart from said center electrode and each other, a portion of said center electrode extending beyond said insulation member, said center electrode portion and sides of said insulation member forming a blade assembly having a beveled edge, means for connecting said electrodes to an energy source means so that an output circuit of a source of energy comprising a high frequency electrical current is completed through body tissue, said energy source means comprising means to selectively generate and conduct wave forms to said electrodes for performance of the desired electrical function.

4,202,338

DEVICE FOR REMOVING EXCRESCENCES AND POLYPS

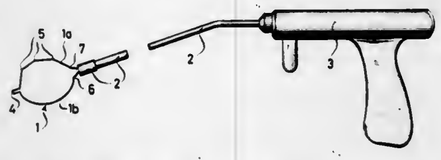
Ehrenfried Bitrolf, Bretten-Ruit, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlengen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,502

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 7735281[U]

Int. Cl.² A61B *17/32*; A61N *3/00*

U.S. Cl. 128—303.15 **6 Claims**



1. A device for removing excrescenses and polyps in a body cavity, comprising:

(a) a tubular guide having proximal and distal ends,

(b) a resilient wire loop for fitting around an excrescense or polyp, at the distal end of the guide and of generally oval configuration in an expanded position thereof,

(c) an actuating handle at the proximal end of the guide connected to said loop, for moving said loop between said expanded position and a position in which said loop is retracted in the distal end of the guide, and

(d) means for connecting said loop to a voltage source,

(e) said loop having, as considered in its expanded position,

(i) a small bulge at one end,

(ii) two opposed sides extending from said bulge towards said distal end of the guide, of which one side is of generally arcuate form,

(iii) an inwardly kinked proximal portion in said one of said two sides, in front of the distal end of the guide, and

(iv) at least two outwardly pointing kinks in the the other of said two sides.

4,202,339

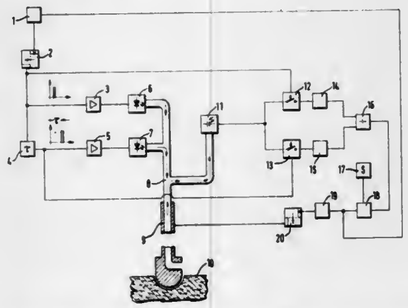
CARDIAC PACEMAKER

Alexander Wirtzfeld, No. 26b, Haupstrasse, 8191 Thanning, and Thomas Bock, Munich, both of Fed. Rep. of Germany, assignors to Alexander Wirtzfeld, Thanning, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 970,894

Int. Cl.² A61N *1/36*

U.S. Cl. 128—419 PG **9 Claims**



1. A cardiac pacemaker including means for conforming the stimulation frequency to the bodily stressing conditions of the wearer of the pacemaker in using a blood parameter as measuring value for the influencing of the frequency of stimulation, said cardiac pacemaker comprising a measuring pole implanted in the heart of the wearer of the pacemaker for measuring the oxygen saturation of the blood, the measuring value thereby resulting serving as measuring parameter for the influencing of the frequency of stimulation.

4,202,340

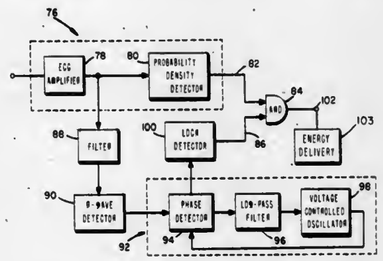
METHOD AND APPARATUS FOR MONITORING HEART ACTIVITY, DETECTING ABNORMALITIES, AND CARDIOVERTING A MALFUNCTIONING HEART

Alois A. Langer, Pittsburgh; Marlin S. Heilman, Gibsonia, both of Pa.; Morton M. Mower, Baltimore, Md., and Mieczyslaw Mirowski, 2405 Velvet Valley Way, Owings Mills, Md. 21117, assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Division of Ser. No. 620,025, Sep. 30, 1975, abandoned. This application Feb. 15, 1978, Ser. No. 878,005

Int. Cl.² A61N *1/36*

U.S. Cl. 128—419 D **16 Claims**



1. A method for electronically monitoring the operation of a heart and for enabling the detection of abnormalities in cardiac function, the method comprising the steps of: sensing at least one cardiac parameter indicative of the operation of the heart being monitored; operating on the sensed cardiac parameter and generating a probability density function therefrom; and monitoring said probability density function by comparing the shape thereof with the shape of a probability density function indicative of normal cardiac function; wherein differences in shape between the normal probability density function and the probability density function generated from the heat being monitored, indicate abnormal cardiac function of the heart being monitored.

4,202,341

CARDIAC PACEMAKER CIRCUIT WITH VARIABLE OPERATION

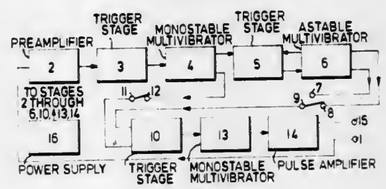
Reinhard Blaser, Berlin, Fed. Rep. of Germany, assignor to Biotronik Mess- und Therapiegeräte GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Mar. 14, 1978, Ser. No. 886,396

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712616; Mar. 19, 1977, 2712617

Int. Cl.² A61N *1/36*

U.S. Cl. 128—419 PG **26 Claims**



1. An artificial cardiac pacemaker circuit connected to operate selectively in either one of two different modes of operation, comprising:

electrode means implantable in the heart of a patient for receiving heart signals produced thereby and supplying heart stimulation pulse signals thereto;

a first pulse generator having an input connected to said electrode means for generating a pulse having a predetermined duration in response to each signal appearing at said electrode means; and

a second pulse generator including

an input connected to the output of said first pulse generator,

an output connected to said electrode means for supplying heart stimulation pulses thereto,

means defining a first signal path connected to actuate a signal at said output of said second pulse generator in response to the start of each output pulse produced by said first pulse generator, and to actuate a signal at said output of said second pulse generator at the end of a given interval during which no output pulse is produced by said first generator, the given interval being longer than the duration of each output pulse produced by said first generator,

means defining a second signal path connected to provide in response to each output pulse produced by said first pulse generator, a signal having a duration corresponding to the duration of said output pulse,

connection means connected between at least one of said signal paths and said output of said second pulse generator and connectable for establishing a selected one of a first connection configuration in which each signal appearing in said first signal path generates a heart stimulation pulse at said output of said second pulse generator, and a second connection configuration, and

signal responsive means connected to said connection means when said connection means is connected in said second connection configuration for preventing the appearance of a heart stimulation pulse at said output of said second pulse generator during the time when a signal is present in said second signal path.

4,202,342

PROGRAMMABLE PACER WITH VARIABLE AMPLIFIER SENSITIVITY AND PACING RATE

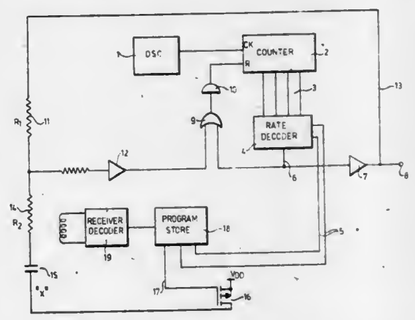
John W. Keller, Jr., Miami, Fla., assignor to Biotronik Mess- und Therapiegerate GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 917,142

Claims priority, application United Kingdom, Aug. 19, 1977, 34917/77

Int. Cl.² A61N *1/36*

U.S. Cl. 128—419 PG **2 Claims**



1. In a programmable pacer system having a remote source of pacer function programming signals, an implantable cardiac pacer having programmably variable input amplifier sensitivity comprising:

pulse generating means for periodically issuing stimulating pulses;

an input amplifier for sensing signals at the heart and for resetting said generating means in response to a sensed signal, wherein the improvement comprises local memory means producing an output signal, responsive to signals

from said remote source, a potential dividing network provided with an intermediate tap, means connecting said intermediate tap to the input of said amplifier, means connecting one extremity of said network to sense signals at the heart, and means connected to apply to the other extremity of said network a potential controlled by the output signal of said memory means for controlling the sensitivity of said input amplifier.

4,202,343

JOGGER'S BRASSIERE

David L. Ichelson, 155 Birch St., Redwood City, Calif. 94062

Filed May 15, 1978, Ser. No. 905,409

Int. Cl.[2] A41C *3/02*

U.S. Cl. 128—438 **3 Claims**



1. A brassiere for firmly holding the breasts during running, jumping or similar activities comprising:

a body encircling band having breast cup portions having undersurfaces under the breasts,

elastic shoulder straps secured to the breast cup portions, running over the wearer's shoulder, and anchored at the wearer's back, and

elastic midriff straps secured by sewing to the undersurfaces of said breast cup portions and extending from said band into said cup portions and extending down and attachable to a waist encircling garment, the midriff straps being used to exert pressure on the breast cup portions to urge the breasts downwardly, said straps having clips the waist encircling garment, the bands having snubbers and adjustment clips to allow tightening and loosening of the downward pressure on the breast cup portions.

4,202,344

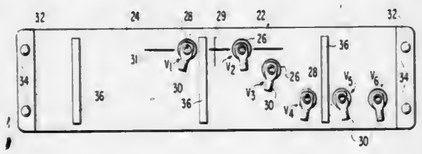
ELECTROCARDIOGRAPH ELECTRODES AND ASSOCIATED ASSEMBLIES

Harold Mills, 1049 Hillcrest Rd., Beverly Hills, Calif. 90210, and Herbert Stein, 238 S. McCarty Dr., Beverly Hills, Calif. 90212

Continuation-in-part of Ser. No. 729,797, Oct. 5, 1976, Pat. No. 4,121,575. This application Jul. 18, 1977, Ser. No. 816,643

Int. Cl.[2] A61B *5/04*

U.S. Cl. 128—644 **26 Claims**



1. An ECG electrode assembly comprising:

an elongated strip of stretchable nonconductive material having a plurality of apertures arranged in a predetermined pattern with the proportional spacing of the apertures corresponding to the proportional spacing of precordial positions for ECG monitoring;

means for resisting a reduction in the width of said strip as a result of the elongation of the strip under tension;

a plurality of electrodes each removably carried by said strip in one of said plurality of apertures, each of said electrodes comprising:

a hollow member having a portion made of an electrically conductive material, said member being flared at one end to engage the skin of the patient and being open at the other end so that an electrolyte can be inserted into the hollow of said member to establish a low resistance electrical connection between the skin of the patient and the conductive portion of said member;

a connector means electrically connected to the conductive portion of said member for establishing an electrical connection with the lead of an ECG machine without interfering with the insertion of electrolyte when connected to the lead of an ECG machine; and,

means carried by said member for removably retaining said electrode in an aperture in said strip;

means removably attached to each end of said strip for maintaining said strip in position and under tension when manually stretched across the chest of a patient, each of said means comprising a mass of aprticulate material within a flexible container.

4,202,345

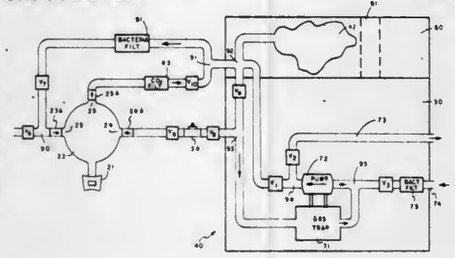
APPARATUS FOR DELIVERING AND RECEIVING RADIOACTIVE GAS

Ralph Farella, Scarsdale, N.Y.; Barry Dansky, Fairfield, Conn., and Leonard Epifano, Rye, N.Y., assignors to Medi-Ray, Inc., Tuckahoe, N.Y.

Filed Dec. 9, 1977, Ser. No. 859,028

Int. Cl.[2] A61B *6/00*

U.S. Cl. 128—654 **8 Claims**



1. Apparatus for delivering and receiving gas to and from a patient comprising, in combination:

restrictive breathing chamber means adapted for coupling to the patient's breathing organs;

an inflatable receptacle;

means including a first check valve for coupling said breathing chamber means to said inflatable gas receptacle so as to allow flow only toward said inflatable gas receptacle;

active gas input means, also coupled to said breathing chamber means;

first and second auxiliary tubes;

a gas filter;

first means for coupling said first auxiliary tube from said inflatable receptacle through said gas filter to an ambient air environment;

second means for coupling said second auxiliary tube from said inflatable receptacle to an ambient air environment; and

gas pump means switchably coupled in conjunction with said first and second coupling means between said first and second auxiliary tubes and operative to selectively cause gas flow from said inflatable receptacle through said first coupling means and said first auxiliary tube toward said ambient environment and from said ambient environment through said second coupling means and said second auxiliary tube toward said inflatable receptacle.

4,202,346

CATHETER FOR THE EXAMINATION OR TREATMENT OF A BLOOD VESSEL AND APPARATUS FOR THE UTILIZATION OF THIS CATHETER

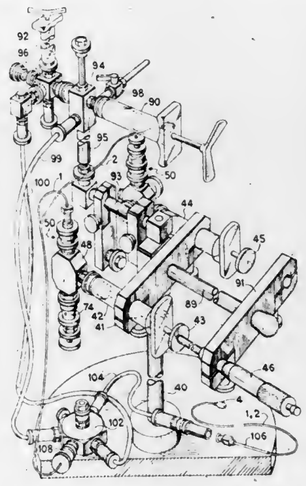
Pierre M. Granier, Nogent-sur-Marne, France, assignor to Soclete d'Etudes et d'Applications Technologiques-Serat, Geneve, France

Filed Aug. 8, 1977, Ser. No. 822,942

Claims priority, application France, Aug. 10, 1976, 76 24403

Int. Cl.[2] A61B *6/00*

U.S. Cl. 128—658 **20 Claims**



14. An apparatus for obturating a blood vessel comprising in combination:

a catheter comprising an inflatable balloon of expansible material, at least one flexible capillary tube having a uniform diameter which opens at one end thereof into the inflatable balloon, an end member mounted on the tube, an outer connecting socket, and means for clamping an end of the tube opposed to said one end in a sealed manner between the end member and the outer connecting socket, a hypodermic needle for the insertion of the catheter in the blood vessel,

a head receiving said connecting socket which socket is removable from the head,

at least two syringes disposed in parallel relation, one syringe for supplying a fluid product and the other for supplying a rapidly solidifiable viscous product, each of the syringes communicating with the head,

means for clamping the socket in the head in a sealed manner and for evacuating the space therebetween.

4,202,347

METHOD AND APPARATUS FOR DETERMINING BLOOD PRESSURE

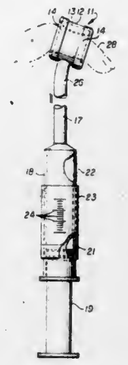
Alvin H. Sacks, 12682 Roble Veneno, Los Altos Hills, Calif. 94022

Continuation-in-part of Ser. No. 750,077, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 584,102, Jun. 5, 1975, abandoned. This application Oct. 11, 1977, Ser. No. 841,241

Int. Cl.[2] A61B *5/02*

U.S. Cl. 128—677 **25 Claims**

1. A device for determining systolic and diastolic blood pressures without the use of a manometer comprising an inelastic cuff to encircle a portion of the subject's body, a inflatable diaphragm on the inside of said cuff inflatable by fluid which is gaseous to affect blood flow through said portion, a tubular member having a first and a second end, duct means communicating from said first end of said tubular member to the interior of said diaphragm, a plunger, the inner end of said plunger fitting through said second end of said tubular member and engaging the internal wall of said member in a fluid-tight manner, whereby depressing said plunger pressurizes said diaphragm to cut off blood flow through said portion of the subject's body, pressure responsive zero-indicating means indicating when said diaphragm firmly engages said portion of the subject's body without affecting blood flow through said portion, and indicia means cooperable with said inner end of



said plunger to indicate on said indicia means a zero position in response to said zero-indicating means, said indicia means providing a reading of volume change of fluid caused by said plunger at different positions of said plunger within said tubular member, the position of said plunger in said tubular member determining the pressure in said device in accordance with the Perfect Gas Law and thus usable for determining said pressure at the onset and cessation of Korotkoff phenomena.

4,202,348

KOROTKOV SOUND SENSOR

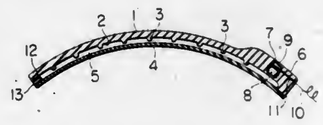
Akira Abe, Takatsuki; Shoji Kimura, Kameoka, and Yuzo Kuwabara, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 19, 1977, Ser. No. 826,245

Claims priority, application Japan, Sep. 10, 1976, 51/122034[U]

Int. Cl.[2] A61B *5/02*

U.S. Cl. 128—680 **4 Claims**



1. A Korotkov sound sensor for an electronic syphgmomanometer comprising:

a curved housing body of elastic material having a hollow therein, said housing body having a length and a width forming a substantially rectangular shape, said hollow having a length and width, said housing body including a top portion, and lengthwise and widthwise sidewalls depending from said top portion, said body including an external microphone support portion which is thicker than the remainder of said body and which has a through hole therein, said lengthwise sidewalls flaring outwardly of said body and causing widthwise expansion of said hollow when external pressure is applied to said top portion;

an expansible thin film, adapted to be placed adjacent an artery of an individual, attached to the depending sidewalls of the curved housing body and forming a curved air chamber in the hollow between the thin film and the body;

a plurality of spaced projections formed on said housing body in said hollow along the lengthwise direction of said body for preventing said thin film from contacting the bottom of said hollow, each said projection having a length which is less than the width of said hollow; and,

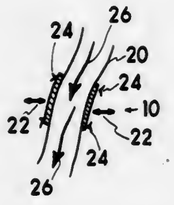
a microphone mounted in said through hole in direct communication with said air chamber for detecting Korotkov sounds transmitted through the thin film and the air chamber.

4,202,349

RADIOPAQUE VESSEL MARKERS

James W. Jones, 4108 James Dr., Metairie, La. 70003

Filed Apr. 24, 1978, Ser. No. 899,292
Int. Cl.² A61B *19/00*
U.S. Cl. 128—689 **25 Claims**



1. A radiopaque vessel marker comprising:

a. radiopaque marker means adapted for surgical attachment to a portion of an interior blood vessel for indicating the pulsatile flow of blood through the vessel said means providing spaced portions for indicating relative movement with respect to one another during such pulsitile blood flow, said marker means being of a substantially radiopaque material; and

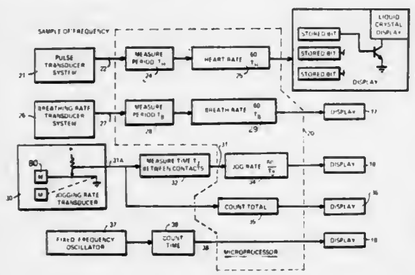
b. means associated with said marker means for attaching said marker means to the interior blood vessel.

4,202,350

DEVICE FOR MEASURING PULSE, BREATHING AND RUNNING RATE FOR JOGGERS

Charles A. Walton, 20 E. Main St. #33, Los Gatos, Calif. 95030

Filed May 15, 1978, Ser. No. 905,774
Int. Cl.² A61B *5/02*
U.S. Cl. 128—690 **3 Claims**



2. A device for measuring body conditions of the wearer, comprising in combination:

means for sensing movement of the skin due to pulse cycles in a wrist, comprising a capacitor having two plates, with one plate adapted to be mounted stationarily on the wrist and the other plate adapted to be mounted adjacent the wrist for movement with the skin as the pulse cycles vary the contour of the wrist;

means for attaching said skin movement sensing means on the wrist;

means for generating a first signal responsive to a change in capacitance of said capacitor, comprising a variable frequency oscillator having a tank circuit, said capacitor being connected in said tank circuit whereby the change in capacitance changes the oscillator output frequency to produce said first signal as an indication of pulse cycling;

means for determining the pulse cyclic rate from said first signal comprising means for sampling said first signal periodically within a pulse cycle, and means for comparing each sample of said first signal with the next sampled first signal to thereby detect cyclic changes in the frequency of said first signal representative of pulse cycling, and for generating output signals indicating a change in the progression of the frequency changes in the first signal; and

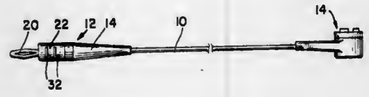
means responsive to said output signals for indicating the pulse cyclic rate to the wearer.

4,202,351

IDENTIFICATION MEANS FOR ELECTROCARDIOGRAPHIC MONITORING INSTRUMENTS OR THE LIKE

Barton A. Biche, Binghamton, N.Y., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jul. 31, 1978, Ser. No. 929,586
Int. Cl.² A61B *5/04*
U.S. Cl. 128—696 **26 Claims**



1. Identification means for application to or in combination with the ends of lead wires for electrocardiographic monitoring instruments or the like, comprising:

a terminal body member secured at one end of a lead wire and having a peripheral recess extending substantially thereabout; and

an identification member having identifying means corresponding to one of a plurality of commonly recorded anatomical positions, said identification member being sized to be positionable over at least a portion of said terminal body member including said peripheral recess and having an interior lip snap fit within said recess to retain the identification member onto the terminal body member and prevent unintentional removal therefrom.

4,202,352

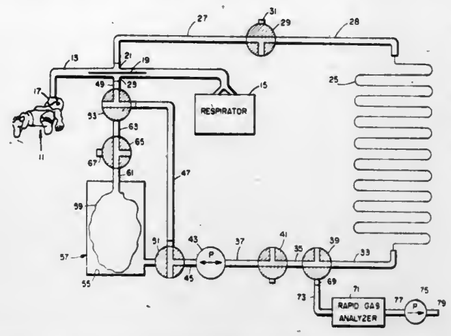
APPARATUS FOR MEASUREMENT OF EXPIRED GAS CONCENTRATION IN INFANTS

John J. Osborn, Tiburon, Calif., assignor to Research Development Corporation, San Francisco, Calif.

Filed Apr. 6, 1978, Ser. No. 894,170
Int. Cl.² A61B *5/08*
U.S. Cl. 128—719 **10 Claims**

1. In an apparatus for measuring expired gas concentrations of a patient, an airway adapted to be placed in communication with the patient's respiratory system, pump means having its intake connected to said airway for drawing a predetermined volume of gas therefrom to be sampled, a captive bag assembly having an outer chamber and a captive bag within said outer chamber, the interior of said captive bag defining an inner chamber, the exhause of said pump means being connected to one of said chambers and the other of said chambers being

connected to said airway whereby the captive bag assembly replenishes the gas to the airway in the same predetermined



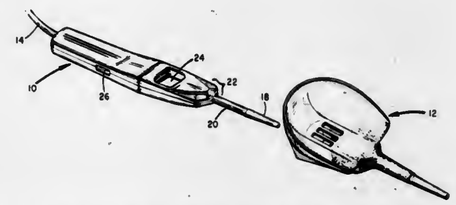
volume and simultaneously with the operation of said pump means to draw gas therefrom.

4,202,353

TEMPERATURE AND RESPIRATION SENSING PROBE

Leon C. Hirsch, Westport; Paul O. Rawson, Easton, and Louis E. Nagy, Killingworth, all of Conn., assignors to United States Surgical Corporation, Stamford, Conn.

Continuation of Ser. No. 771,012, Feb. 22, 1977, abandoned.
This application Mar. 5, 1979, Ser. No. 17,098
Int. Cl.² A61B *5/00*
U.S. Cl. 128—724 **8 Claims**



1. A probe for use in sensing temperature and respiration comprising, an elongate housing portion having a rectangular cross-section, said housing having located therein a channel having first and second inlet apertures located in top and bottom surfaces, respectively, of said rectangular cross-section housing, said top and bottom surfaces being on the longer sides of said rectangular cross-section, said channel extending transversely through the entire housing from top to bottom, a tubular rod portion mounted on one end of said elongate housing, said housing and said tubular rod portion being constructed and arranged so as to be symmetrical about their longitudinal axis, temperature sensing means mounted on the end of said tubular rod distal to said housing for insertion into the mouth, respiration sensing means mounted inside said housing and in communication with said channel, wherein one of said first and second inlet apertures is positioned on said housing to be in the path of nasal airflow when said probe is inserted in the mouth.

4,202,354

ELECTROENCEPHALOGRAPH

Leland B. Smith, Englewood, Colo.; Robert A. McIntyre, Skokie, and Raymond M. Pawlak, Addison, both of Ill., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 9, 1978, Ser. No. 914,062
Int. Cl.² A61B *5/04*
U.S. Cl. 128—731 **4 Claims**

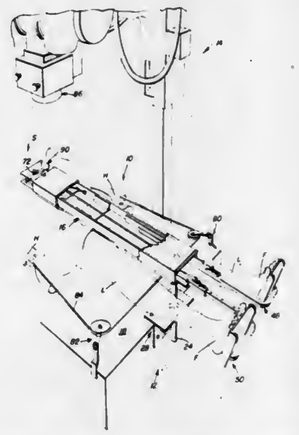
1. In an EEG system, a plurality of patient electrodes, a differential amplifier having first and second inputs, means for selectively connecting a selected one of said electrodes to said first input and simultaneously connecting a selected one of said electrodes to said second input during each of successive time periods which recur in repetitive time position frames, means for reversing the polarity of the output of said differential amplifier during successive ones of said time periods in a time position frame, recording means having a plurality of input channels corresponding to said successive time periods, successive ones of said input channels being arranged to respond to oppositely polarized input signals by producing traces in the same direction, and demultiplexing means for sequentially connecting said reversed polarity amplifier output to said plurality of recording input channels.

4,202,355

X-RAY GRID ORTHOMETER

Cecil W. Loeffler, 912 E. Acacia, Hemet, Calif. 92343

Filed Aug. 14, 1978, Ser. No. 933,785
Int. Cl.² A61B *5/10*
U.S. Cl. 128—774 **14 Claims**



1. An X-ray grid orthometer, comprising, in combination:

(a) frame means mountable on a support for adjusting to the length of the legs of a subject being measured for leg imbalance;

(b) indicator means mountable on the support and mounted on the frame means for registering balance and imbalance of the legs of a subject, wherein the frame means includes a linear slide bearing arranged substantially horizontally over a horizontal surface of the support, the slide bearing being pivotally mountable on the support for swinging movement about a substantially vertical axis to enable centering of said frame with respect to said support.

4,202,356

TOBACCO SMOKE FILTER MATERIAL

George A. Digenis, and Manvendra B. Shambhu, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Jul. 8, 1976, Ser. No. 703,319
Int. Cl.² A24B *15/02*; A24D *1/06*; C08F *8/00, 8/18*
U.S. Cl. 131—10.9 **9 Claims**

1. A tobacco smoke filter comprising an imidazole-containing polymer wherein the imidazole has an acyl functional group, said imidazole being chemically bound to said polymer.

4,202,357

REORDERING EXPANDED TOBACCO BY WATER MIST

Roger Z. de la Burde, Powhatan; Patrick E. Aument, Hopewell, and Francis V. Utsch, Chester, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,359
Int. Cl.[2] A24B *3/04, 3/12, 3/18*
U.S. Cl. 131—140 R 7 Claims

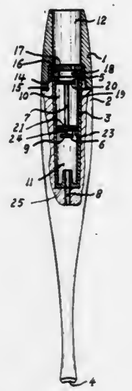
1. A process for reordering expanded tobacco comprising spraying the expanded tobacco with a fine water mist characterized by an average droplet size of less than about 120 microns diameter.

4,202,358

FILTER FOR CIGARETTES WITH TWO CHAMBERS

Dimitrios Drapaniotis, Menelaou 15-17, Ilioupolis, Athens, Greece

Filed Jul. 27, 1978, Ser. No. 928,378
Claims priority, application Greece, Apr. 4, 1978, 60479
Int. Cl.[2] A24F *13/04*
U.S. Cl. 131—187 2 Claims



1. A filter for removing cigarette smoke particles comprising:
- a housing having an inlet and an outlet;
- a first diaphragm positioned adjacent said housing inlet;
- a second diaphragm positioned midway along the length of said housing and dividing said filter into first and second chambers;
- at least one smoke particle condensing surface means being positioned within each of said first and second chambers;
- a longitudinal extending rod-like member, said rod-like member being connected at one end to said at least one smoke particle condensing surface means in said first chamber, and wherein a distal end portion of said rod like member supports said second diaphragm;
- wherein said smoke particles condensing surface means provide additional surfaces upon which said particles condense after passing through at least said first diaphragm.

4,202,359

NOVEL MESH FABRIC AND WIG AND HAIR-PIECE MADE THEREFROM

John D. Clifton, 50 Elgin Crescent, London W 11, England, and Victor W. Titow, Soke Poges, England, assignors to John David Clifton, London, England

Division of Ser. No. 842,328, Oct. 14, 1977. This application Jan. 22, 1979, Ser. No. 5,575
Claims priority, application United Kingdom, 43129/76, 14987/77
Int. Cl.[2] A41G *3/00*
U.S. Cl. 132—5 10 Claims

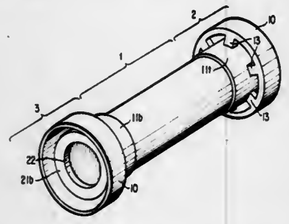
1. A process for the production or a wig or hair-piece which comprises taking an impression of the area of the scalp to be covered, forming a male mould from the impression, applying to the male mould a mesh fabric formed from filaments or yarns of a synthetic material having a mean diameter of not greater than 0.11 mm, a breaking load of not less than 0.45 lbs, and a stiffness of at least 3:1 as determined by the loop test, the fabric having a stable mesh structure, a mesh size equal to at least twice the size of the mean diameter of the filament and a bursting strength of not less than 20 p.s.i., shaping the fabric to the male mould under elevated temperature, and if desired elevated pressure to obtain a first moulded shape, if necessary applying to the surface of the first moulded shape a solution or emulsion of a hardenable polymer and hardening the polymer to fix the first moulded shape, knotting one or more natural or synthetic hairs to some or all of the cross-bars of each mesh of the moulded net fabric, applying a coating of the or another solution or emulsion of a hardenable polymer to at least the knots of the hair from the concave surface of the moulded shape, finishing the free edge of the mesh fabric by providing thereon a band of a non-mesh material, and if desired trimming the margin to the line of knotted hair.

4,202,360

HAIR CURLING ROLLER

Walter Henry J., Wilton, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,809
Int. Cl.[2] A45D *2/00*
U.S. Cl. 132—40 15 Claims



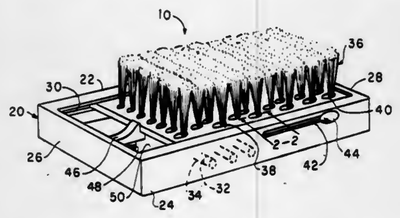
1. A hair curling roller comprising:
a. a tubular high heat conducting member with first and second ends and a flocked outer surface;
b. a top radial flanged end having a top base means engaging the flocked outer surface of the first end of said tubular member; and
c. a bottom radial flanged end having a bottom base means engaging the flocked outer surface of the second end of said tubular member.

4,202,361

POCKET BRUSH

John E. Bills, 667 Osceola Ave., Apt. C, Winter Park, Fla. 32789

Filed Apr. 26, 1978, Ser. No. 900,165
Int. Cl.[2] A45D *24/10*
U.S. Cl. 132—123 3 Claims



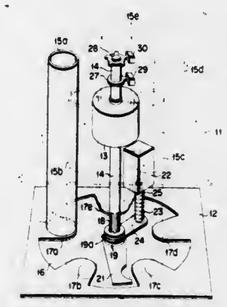
1. In a brush employing parallelogramming action for folding a plurality of free-end tufts having connection to a casing permitting at least a portion of each tuft to pivot at the base of the tuft relative to the casing, and means for pivoting at least a portion of each tuft, the improvement comprising: the means for pivoting including a plate having a plurality of perforations with respective upper and lower edges, each perforation directly receiving therein a respective tuft intermediate said connection to the casing and free-end of the tuft; means slidably connecting the plate and casing in location operatively extending the free ends of the tufts from the plate at a first slidable position and retracting the free ends of the tufts at a second slidable position, and means affording selection of tuft stiffness for brushing including said perforations being inclined outwardly in the plate in the direction of the second slidable position, the plate having proportion causing catercornered clamping of each of the tufts between a said upper edge and a lower edge of a perforation at the first slidable position.

4,202,362

COIN-DELIVERING DEVICE

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,028
Claims priority, application Japan, Aug. 26, 1977, 52-102396
Int. Cl.[2] G07D *1/00*
U.S. Cl. 133—4 A 9 Claims



1. A coin-delivering device which comprises a plurality of coin holders having coin outlets arranged at intervals in a circumferential direction; a plurality of coin receptacles set at substantially corresponding intervals in a circumferential direction below the coin outlets of the coin holders at a prescribed spacing from the coin holders to receive individual coins from the holders; a coin-flipping arm fitted to a rotary shaft, said coin flipping arm being vertically movable relative to said rotary shaft and rotatable therewith to deliver a said individual coin placed on any of the coin receptacles by the rotation of said rotary shaft; and control means for controlling the vertical movement of the coin-flipping arm along the rotary shaft, said control means being selectively operated in accordance with the rotational angle of the coin-flipping arm relative to the coin outlets of the respective coin holders in order to selectively deliver one or more coins in a predetermined manner.

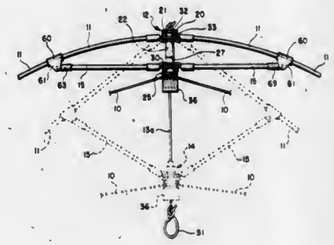
4,202,363

UMBRELLA TYPE COLLAPSIBLE SHELTER

Paul J. Watts, Sandy; Lynn D. Crawford, and Philip T. Nichols, both of Salt Lake City, all of Utah, assignors to American Ecosystems, Inc., Salt Lake City, Utah

Filed Oct. 10, 1978, Ser. No. 950,028
Int. Cl.[2] A45F *1/04*
U.S. Cl. 135—2 9 Claims

1. In a collapsible shelter of the umbrella-tent type wherein the shelter includes a foldable frame and a cover of sheet material affixed to the frame, with said frame comprising an elongate erecting guide; a plurality of support members for supporting said cover when said frame is erected; a first hub mounted on said erecting guide; first pivotal connecting means for pivotally connecting mutually respective ends of said support members to said first hub, so that when the shelter is erected, the support members extend outwardly and downwardly from said first hub, and when the shelter is collapsed, the support members extend downardly as a bundle, with the support members being in proximate side-by-side relationship; a second hub mounted on said erecting guide below said first hub, said first and second hubs being adjustable between a collapsed position in which said first and second hubs are located remote from each other, and an erected position, in which the first and second hubs are proximate each other; a plurality of rib members, equal in number to the number of support members; second pivotal connecting means for pivotally connecting mutually respective ends of said rib members to the second hub; means for pivotally connecting the other mutually respective ends of said rib members to corresponding support members, such that when the shelter is erected, said rib members extend substantially radially outwardly from said erecting guide and when the shelter is collapsed, said rib members extend downwardly, substantially within said bundle of collapsed, support members, the improvement comprising:
- providing a cylindrical bore through said first hub from the upper end to the lower end thereof, with said erecting guide passing longitudinally through said bore in said first hub;
- at least one of said first and second pivotal connecting means is adapted to allow rotational movement of the respective hub associated therewith about the longitudinal axis of said guide member; and



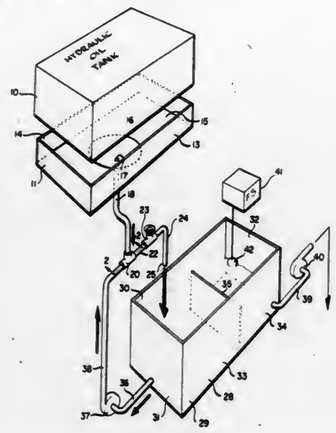
means are provided for releasably connecting and holding said first and second hubs together as a rigid unit when said first and second hubs are located proximate each other in the erected position, thereby avoiding untimely collapse of said shelter by inadvertent, undesired movement of said first and second hubs to a position separate and apart from each other, said means for releasably connecting said first and second hubs together as a rigid unit comprising:
- one of said first and second hubs having a counterbore in the end thereof facing the other hub, said counterbore being eccentric with the bore which extends through said first hub, and, therefore, eccentric with respect to the erecting member positioned within said bore; and
- the other hub having an upstanding cylindrical portion forming its end which faces the hub having the counterbore, said upstanding cylindrical portion being adapted for sliding engagement within said counterbore, said upstanding-cylindrical portion also being eccentric with respect to the erecting guide which, in turn, extends from the free end of said upstanding cylindrical portion and through the bore in the mutually opposite hub,
- whereby, when said upstanding cylindrical portion is engaged in said counterbore and one of the hubs is rotated by about one-quarter to three eighths of a turn about the longitudinal axis of said erecting guide, said first and second hubs are bound together with said erecting guide as a rigid unit.

4,202,364

METHOD FOR SEPARATING FLUIDS BY MEANS OF PRESSURE DIFFERENTIAL

Graydon L. Karr, 2237 Swainwood Dr., Glenview, Ill. 60025

Filed Nov. 29, 1978, Ser. No. 964,740
Int. Cl.² H01M *4/20, 4/70*
U.S. Cl. 137—13 **1 Claim**



1. The method of removing tramp oil from a tramp oil collecting station in a system according to the steps of:
providing a tramp oil collection trough means for receiving a fluid to be removed;
providing a tramp oil drain line means in said trough means;
providing an ejection means in said drain line means;
creating a pressure differential between the air pressure in said trough means and the drain line pressure with said ejection means, whereby the pressure is reduced in said drain line and tramp oil in said trough means will enter said drain line;
passing tramp oil collected in said trough means through said drain lines; and,
providing a tramp oil collection tank for receiving tramp oil which passes through said drain line;
whereby tramp oil collected in said trough will be pulled through said drain line into said collection tank by a higher pressure stream from said collection tank which is passed through said ejection means.

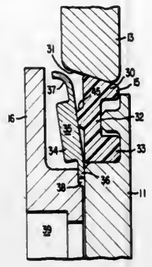
4,202,365

FIRE TESTED BUTTERFLY VALVE

Tadashi Aoki, Ohmiya, Japan; Jerry D. MacAfee, Northborough, and James F. Donnelly, Leicester, both of Mass., assignors to Jamesbury Corporation, Worcester, Mass.

Filed Jan. 4, 1978, Ser. No. 866,814
Int. Cl.² F16K *5/06*
U.S. Cl. 137—72 **5 Claims**

1. A butterfly valve comprising:
a housing defining a fluid flow channel;
a shaft;
a butterfly valve disc mounted on said shaft for rotation within said channel to control fluid flow therethrough;
an annular resilient seat member circumscribing said channel to sealingly cooperate with the edge of said disc when said disc is perpendicular to said channel;
an annular, flexible metal seat member adjacent said resilient seat member;
means positioned between said resilient seat and said metal seat resisting biasing of said metal seat into contact with said disc and to hold said metal seat in a flexed position normally out of contact with said edge of said disc but which will melt upon exposure to fire thereby permitting said metal seat to flex and contact said disc edge and establish a secondary, metal-to-metal, fire resistant seal; and



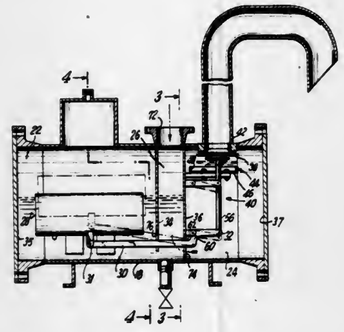
an insert ring wherein said housing and said insert ring form a groove positioned along an outer portion of said metal seat, within which said outer portion of said metal seat is fixed.

4,202,366

AUTOMATIC FLOATING ROOF DRAIN VALVE

Bhinyo Kamvachirapitag, Sriracha, Thailand, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 3, 1978, Ser. No. 957,542
Int. Cl.² B65D *87/18*
U.S. Cl. 137—172 **10 Claims**



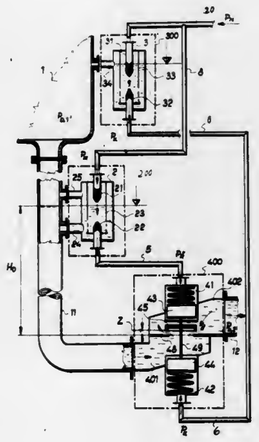
1. A valve system for use with a floating roof of a storage tank having a roof drain outlet, comprising, in combination: a valve body operably connected with the floating roof for automatically closing the roof drain outlet; said body having an inlet passage means and outlet means and including first and second compartments, wherein said inlet passage means is for receiving fluid flow from said roof drain outlet; valve means in said first compartment for opening and closing said outlet means; float means having predetermined buoyancy disposed in said second compartment, for controlling the opening and closing of said valve means, said float means being constructed and arranged to be buoyant in water and sink in oil; partition means separating said inlet passage means from said first and second compartments for preventing premature closing of said valve means; and linkage means connecting said valve means with said float means for controlling the opening and closing of said valve body outlet.

4,202,367

CIRCUIT ARRANGEMENT FOR REGULATING THE LEVEL OF LIQUID IN VESSELS

Zdenek Roth, Pilsen, and Josef Altmann, Domazlice, both of Czechoslovakia, assignors to Skoda, oborovy podnik, Pilsen, Czechoslovakia

Filed Nov. 13, 1978, Ser. No. 960,020
Claims priority, application Czechoslovakia, Nov. 24, 1977, 7773/77
Int. Cl.² G05D *9/04*
U.S. Cl. 137—187 **4 Claims**



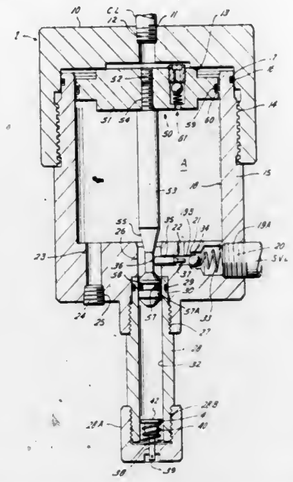
1. A circuit arrangement for the regulation of the liquid level in vessels, comprising in combination a draining vessel with a draining conduit connected thereto, a fluid level pick-up device, a compensating pick-up device, a working element, a feeding conduit from a source of a pressure liquid, a signal conduit and a compensation conduit, each of the fluid level pick-up device and the compensation pick-up device comprising a chamber with an upper part and a lower part, an upper transmission nozzle with its mouth directed downwards fixed in the upper part of said chamber, and a lower receiving nozzle with its mouth directed upwards fixed in the lower part of said chamber, the mouths of the upper and lower nozzles being spaced vertically from each other, the working element comprising an upper space and a lower space, a passage for liquid between said upper and lower space, valve means for the adjustment of the resistance against the passage of liquid through the working element in dependence upon the respective pressures acting on the upper space and the lower space thereof, means connecting the upper space of the fluid level pick-up device to the draining conduit above the regulated liquid level therein, means connecting the lower space of the fluid level pick-up to the draining conduit below the regulated liquid level therein, means connecting the upper space of the compensation pick-up device to the draining vessel above the level of the regulated liquid in the draining vessel, conduit means connecting the transmission nozzles of both the fluid level pick-up device and of the fluid compensation pick-up device to a source of pressure liquid, the compensation conduit connecting the receiving nozzle of the compensation pick-up device to the lower space of the working element, and the signal conduit connecting the receiving nozzle of the fluid level pick-up device to the upper space of the working element.

4,202,368

SAFETY VALVE OR BLOWOUT PREVENTER FOR USE IN A FLUID TRANSMISSION CONDUIT

Neil H. Akkerman, and Kip B. Goans, both of New Orleans, La., assignors to Baker CAC, Inc., Belle Chasse, La.

Filed Mar. 13, 1978, Ser. No. 886,204
Int. Cl.² F16K *17/20*
U.S. Cl. 137—498 **6 Claims**



1. A blowout preventer for use in a control conduit for a safety valve, said safety valve being manipulatable between opened and closed position upon variation of pressure within said control conduit, said blowout preventer comprising: a housing; piston means carried within said housing; first valve means for metering flow of fluid in first direction within said control conduit; and second valve means being maintained in opened position by said piston means when fluid flow through said first valve means is within a predeterminable rate in said first direction within said control conduit, said second valve means being manipulatable to closed position by said piston means when an excess of said predeterminable rate of fluid flow in said first direction within said control conduit is metered through said first valve means.

4,202,369

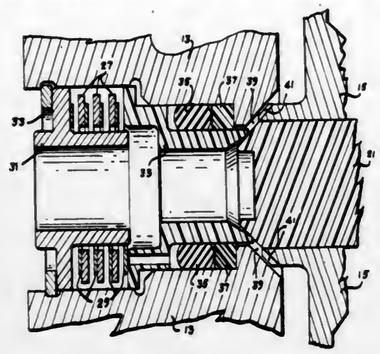
GAS RELIEF VALVE DESIGN FOR LOW TEMPERATURE

Joseph T. Viravec, Renton, and Maurice A. Hoyt, Redmond, both of Wash., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 15, 1978, Ser. No. 916,024
Int. Cl.² F16K *31/12*
U.S. Cl. 137—508 **1 Claim**

1. In a gas relief valve for use in passing pressurized gas at low temperatures and high rates into a container, said gas relief valve having a spring biased valve stem with a soft seal portion on the top thereof and a slidable seal for engagement with said soft seal, said gas passing between said seat and said seal and through an annular region when the pressure is above a predetermined valve, said valve contacting said container and sealing the annular region when the pressure falls below the predetermined level, the improvement comprising a series of slots across the end of said valve stem where it makes contact with the container, said slots allowing trapped gas in the annular region to escape into said container and thereby prevent pres-

sure from increasing in the annular region and adversely affecting the operation of the relief valve by changing the seat/seal



contact force and causing the valve to operate at less than its proper design cracking pressure.

4,202,370

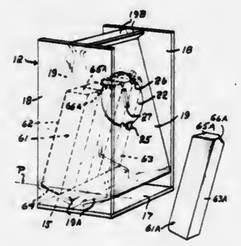
APPARATUS FOR USE IN GENERATING LIQUID CONCENTRATION GRADIENTS HYDROSTATICALLY

John E. Joyce, 22 Nelson Rd., South Weymouth, Mass. 02190

Division of Ser. No. 701,173, Jun. 30, 1976, Pat. No. 4,074,687. This application Jan. 12, 1978, Ser. No. 868,853

Int. Cl.[2] G05D *11/03*

U.S. Cl. 137—585 **4 Claims**



1. An insert for a chamber for a liquid concentration gradient, said chamber having a bottom, end walls and side walls which are inclined inwardly and upwardly towards each other to provide a narrow entrance and which include downwardly and inwardly inclined lower portions joining said bottom, one side wall having a porthole and a removable plug sealing said porthole, said insert including a series of sections, each section including first and second parallel walls, the first wall for engagement with the other side wall, a lower end to seat against the downwardly inclined lower portion of said other side wall and an upper end to engage with the side wall having the porthole a selected distance above a plane inclusive of the junctions of the side walls with their lower portions, each section dimensioned for entry through the porthole and to be placed in position in the chamber, the entrance sections when thus installed extending from one end wall of the chamber to the other.

4,202,371

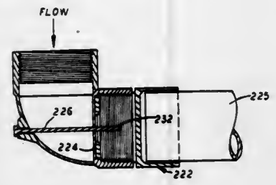
SYSTEM FOR POLLUTION SUPPRESSION

Edward T. Armstrong, Butler, N.J., assignor to TII Corporation (Telecommunications Industries, Inc.), Lindenhurst, N.Y.

Division of Ser. No. 531,095, Dec. 9, 1974, Pat. No. 3,998,714, which is a continuation-in-part of Ser. No. 355,738, Apr. 30, 1973, Pat. No. 3,853,764, which is a continuation-in-part of Ser. No. 100,333, Dec. 21, 1970, Pat. No. 3,730,881, which is a continuation-in-part of Ser. No. 813,382, Feb. 28, 1969, Pat. No. 3,549,528, which is a continuation-in-part of Ser. No. 362,118, Apr. 23, 1964, abandoned. This application Sep. 24, 1975, Ser. No. 616,487

Int. Cl.[2] F16K *19/00*

U.S. Cl. 137—604 **12 Claims**



1. An apparatus for the treatment of a fluid by a treating fluid, comprising;

a flow pipe for a fluid having a Reynolds number of at least 3,000, said flow pipe having a flat plate orifice located therein, a vena contracta portion located in said fluid in said flow pipe at a distance of from 0.25 to 0.5 pipe diameters downstream from said flat plate orifice, the internal diameter of said flat plate orifice ranging from about 0.7 to about 0.9 of the internal diameter of said pipe,

a thin injection nozzle means for introducing a treating fluid into said flow pipe, said injection nozzle extending through said flat plate orifice and coaxially located in said pipe, said thin nozzle having a thin tip, said treating fluid flowing through said nozzle tip, said nozzle tip located in said vena contracta portion so that said treating fluid is dispersed into said fluid, said nozzle tip being located at about 0.25 to about 0.5 pipe diameters downstream from said flat plate orifice so that said fluid is thoroughly treated with said treating fluid.

4,202,372

ARTICULATED FLUID CONDUIT WITH AUXILIARY SUPPORT

Harold M. Gibbons, Long Beach, Calif., assignor to FMC Corporation, San Jose, Calif.

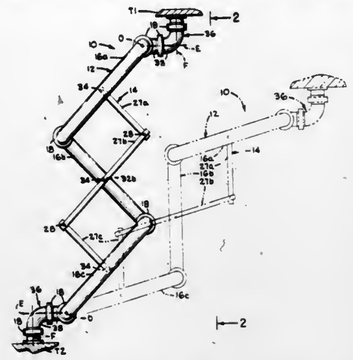
Filed Dec. 1, 1976, Ser. No. 746,454

Int. Cl.[2] B67D *5/04*; F16L *27/02*

U.S. Cl. 137—615 **8 Claims**

1. An expandable and contractable fluid conduit assembly for extension between relatively movable terminals comprising in combination: a first branch of a lazy tong including a plurality of fluid-conducting rigid pipe sections arrayed in end-to-end relation, a plurality of annular fluid-conducting swivel joints having rigid relatively rotatable portions respectively connected between said pipe sections to define an articulated pipe operable to convey fluid from one end to the other; a second branch of a lazy tong including a plurality of rigid elongated support sections, means pivotally connecting said support sections in end-to-end relation to define an articulated support member, said two branches criss-crossing at intersections of each pipe section and support section of the branches, means pivotally connecting said respective branch sections at said intersections, and a three-axis swivel connected to each end of the fluid-conducting pipe for respective connection to

the flow terminals, whereby said assembly may partake of universal movement about the three axes of each swivel, and



expansion and contraction, upon occurrence of relative movement between said terminals.

4,202,373

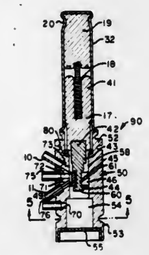
FOUR WAY VALVE

David P. Hargraves, Webster Groves; Jude A. Pauli, Florissant, and Steven E. Williams, St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 7, 1977, Ser. No. 840,299

Int. Cl.[2] F16K *11/06, 31/06*

U.S. Cl. 137—625.29 **10 Claims**



1. A four way valve assembly, comprising:

a valve housing having a cavity in it, said housing having an inlet, an outlet and a pair of working lines connected to it and communicating with said cavity;

a main valve member movably mounted in said cavity and adapted to connect the outlet and inlet of said valve selectively to said working lines, said valve member having ends which cooperate with said housing to define a pair of opposed chambers in said housing;

a pilot body mounted to said valve housing, said pilot body having an axial opening in it, and at least four radial openings extending through it, said radial openings communicating with said axial opening;

a plurality of fluid connectors connected between the radial openings in said pilot body and said valve housing, one of said connectors extending between said inlet and one radial opening, a second of said connectors extending between said outlet and the second of said radial openings, the third and fourth of said connectors extending between respective ones of said opposed chambers in said housing and said third and fourth openings; and

a solenoid actuated mechanism mounted to a first end of said pilot body, said solenoid actuated mechanism including a plunger movably mounted in said body, and a pilot slide mounted to said plunger and movable therewith, said pilot slide having a cavity formed in it for interconnecting one of said third and said fourth connectors with said inlet and said outlet connectors to operatively connect opposed ones of said chambers with high pressure fluid, said plunger having a slot formed in it, said slot being sized to receive a portion of said plunger in a loose fit, said high pressure fluid maintaining said pilot slide in a selected position with respect to said connectors and properly positioned with respect to said plunger.

4,202,374

FLUID SWITCH WITH REFLECTED SHOCK WAVE

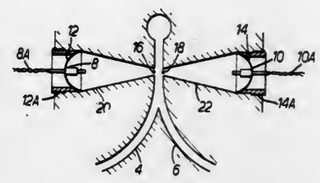
Denis V. Butler, Fareham, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Feb. 24, 1978, Ser. No. 880,867

Claims priority, application United Kingdom, Mar. 2, 1977, 8858/77

Int. Cl.[2] F15C *1/04*

U.S. Cl. 137—827 **2 Claims**



1. A fluid switch device in which shockwave energy is utilized to switch the path of a fluid comprising, a fluid input channel means for guiding fluid flow from a fluid source; a first fluid output channel means connected with said fluid input channel means for guiding fluid flow from said fluid input channel means; a second fluid output channel means connected with said fluid input channel means for guiding fluid flow from said fluid input channel means; switching means for selectively directing fluid flow from said fluid input channel means to one of said first and second fluid output channel means, said switching means comprising, a reflector means for reflecting a shockwave, said reflector means comprising a conical surface of revolution having a parabolic base, said surface of revolution defining an opening at its apex, said opening in fluid communication with said fluid input channel means upstream of said first and second fluid output channel means; and means for propagating a shockwave comprising an electrical discharge source, said electrical discharge source positioned in said conical surface of revolution between said parabolic base and said opening, wherein said shockwave is reflectable by said reflector means toward said opening.

4,202,375

PROCESS AND APPARATUS FOR ACHIEVING A UNIFORM FLOW PROFILE

Werner Hoerauf, Ludwigshafen; Hans Pirzer, Frankenthal; Ernst Guenther, Ludwigshafen; Eckart Neumann, Frankenthal, and Ernst Dietrich, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 667,881, Mar. 18, 1976, abandoned. This application Dec. 12, 1977, Ser. No. 859,459

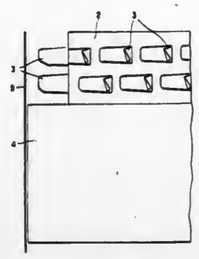
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1975, 2514129

Int. Cl.[2] F15D *1/02*

U.S. Cl. 138—39 **4 Claims**

1. Apparatus for achieving a uniform flow profile of a very viscous fluid when flowing through a tube comprising in combination a flow tube, at least two discs arranged at axial intervals within said flow tube transversely to the direction of flow, each disc consisting of a plurality of ring-shaped bands of increasing diameter, the bands being arranged freely of one another and concentrically at intervals on a grid supporting means of said tube to provide correspondingly concentric open

spaces therebetween over the entire cross-section of the tube, with the walls of the bands running parallel to the direction of flow, and the bands of the separate discs being staggered with respect to each other as viewed in the direction of flow and



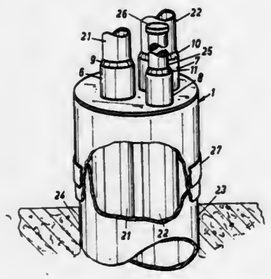
being provided with wall cut-outs which project into the annular spaces between the individual ring-shaped bands and are arranged with a three-dimensional twist to the left or right of and parallel to the direction of flow.

4,202,376

CLOSING CAP ON WELL CASINGS IN WELL OPENINGS

Bror I. Forsell, Göthenburg, Sweden, assignor to RP Rorprodukter AB, Göthenburg, Sweden

Filed Sep. 13, 1978, Ser. No. 942,116
Claims priority, application Sweden, Oct. 26, 1977, 7712037
Int. Cl.² F16L 55/00
U.S. Cl. 138—89 **1 Claim**



1. An improved closing cap of elastic material to be mounted on and seal the upper end of a well casing, arranged in a well opening, said closing cap comprising a number of sleeves projecting vertically from the upper part of said cap to allow tubes, pipes, conduits, and similar means to pass through said sleeves from a pump provided at the lower part of said well opening, said upper end comprising a steel plate with openings molded therein; and a hose clip to tighten a cap wall portion; the improvement comprising

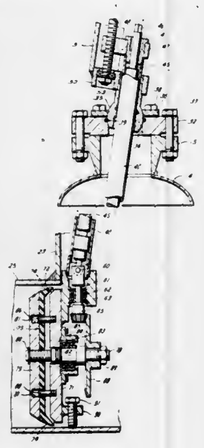
a lower portion of said cap having a first diameter sized to receive a first diameter well casing, the upper portion of said cap being formed with a second diameter smaller than said first diameter and sized to receive a second diameter well casing, an annular shoulder formed on the wall of the cap between said first and second diameters and close to the centre of said cap, said shoulder allowing the lower portion of said cap to be arranged in a sealing position on the first diameter well casing with said first diameter encircling the first diameter well casing and said annular shoulder engaging the upper end of the first diameter well casing in sealing relationship or with said upper portion of said cap arranged in sealing position on the second diameter well casing with said second diameter portion engaging the periphery of the second diameter well casing and a shoulder formed at the upper edge of said upper portion in sealing engagement with the upper edge of the second diameter well casing; said closing cap further comprising a tapering, inwardly bent section on the upper free annular edge portion of each one of said sleeves, said section reducing the internal diameter of this sleeve portion in comparison with the internal diameter of the rest of said sleeve, said free annular edge portions of each one of said sleeves being adapted to be deflected upon passing of the tube, pipe or the like therethrough and for sealing engagement therewith.

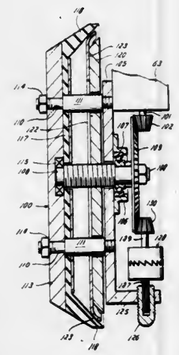
4,202,377

PIPE CLEANING AND PLUGGING APPARATUS

George W. Harrison, Alvin, Tex., assignor to Team, Inc., Alvin, Tex.

Continuation of Ser. No. 685,351, May 11, 1976, abandoned. This application Nov. 3, 1978, Ser. No. 957,409
Int. Cl.² F16L 55/12
U.S. Cl. 138—94 **4 Claims**





1. An apparatus for plugging a fluid carrying pipeline through a side opening therein, the combination comprising:

a drive shaft assembly adapted for having the lower end thereof inserted into said pipeline through said side opening;

a plug assembly attached to said lower end of said drive shaft assembly,

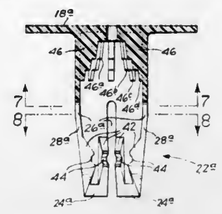
said plug assembly including an annular seal having a circumferential lip portion arranged for sealing engagement with the inside surface of said pipeline upon radially outward deflection thereof.

4,202,378

REBAR SAFETY CAP

Lyman F. Bush, 1217-122nd St. Ct. E., Tacoma, Wash. 98445, and Dennis R. Weaver, 4614 Ray Nash Dr. N.W., Gig Harbor, Wash. 98335

Continuation-in-part of Ser. No. 695,001, Jun. 11, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,437
Int. Cl.² B65D 59/06
U.S. Cl. 138—96 R **1 Claim**



1. A safety cap for use on the projecting ends of rebar comprising:

(a) an integrated, hollow cylindrical body of resiliently deformable plastic material, closed at one end and open at the other,

(b) the open end of the body being slotted longitudinally at circumferentially spaced intervals to provide a plurality of longitudinally elongated resiliently expandable fingers, and

(c) gripping ribs projecting radially inward from the fingers intermediate the ends of said fingers and defining a rebar entrance opening of reduced diameter with respect to the inwardly adjacent bore of the hollow body, the inner surfaces of the ribs diverging angularly outward to the outer ends of the fingers for guiding rebar into said entrance opening,

(d) a plurality of longitudinally extending, circumferentially spaced, abutment ribs extending radially inwardly within and adjacent the closed end of the hollow body, the ribs being tapered and notched to provide longitudinally spaced rebar abutment shoulders of progressively decreasing diameter toward the closed end of the body, for abutting the rebar both radially and axially and

(e) a flat overhanging impact head of substantial extent and generally circular contour extending radially outward from the closed end of the body.

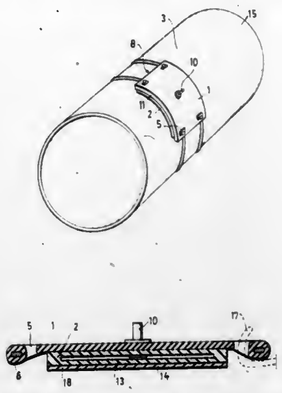
4,202,379

SEALING ARRANGEMENT

Manfred Vetter, Burg Langendorf, 5352 Zülpich, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,748
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1977, 2745506
Int. Cl.² F16L 55/16
U.S. Cl. 138—99 **16 Claims**

1. In a sealing arrangement of the type which is laid against the leaking surface of a pipe, conduit, vessel or the like, in combination, an inflatable pad to be laid against the leaking surface to be sealed; and a flexible counterpressure pad joined to the inflatable pad at the side of the inflatable pad which faces away from the leaking surface to be sealed, the flexible counterpressure pad having edge regions provided with connectors to which can be connected holding belts or cables wrapped around such pipe or the like, whereby when the inflatable pad is laid against a leaking surface both the inflatable pad and also the counterpressure pad can conform to the leaking surface prior to inflation of the inflatable pad, the counterpressure pad having two spaced edge regions provided with reinforcements, the reinforcements extending transverse to the direction in which the counter-pressure pad tends to be stretched when held in place by holding belts or the like wrapped around a pipe or the like, and further including cords of reinforcing material accommodated within the material of the counter-



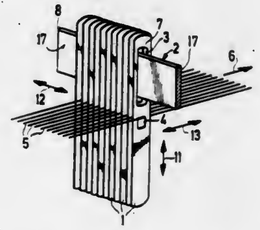
pressure pad extending transverse to the transverse reinforcements and slung around the transverse reinforcements.

4,202,380

DROP PLATE FOR AN ELECTRICAL STOP MOTION OF A WEAVING MACHINE

Hartmann Bader, Bad Liebenzell, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 12, 1978, Ser. No. 914,769
Claims priority, application Switzerland, Jun. 15, 1977, 7342/77
Int. Cl.² D03D 51/32
U.S. Cl. 139—368 **12 Claims**



1. A drop plate for a stop motion of a weaving machine, said drop plate having an aperture for passage of a search bar therethrough, a metallic zone around said aperture for effecting an electrical contact with the search bar, and a strip of vibration-damping material extending over the entire length of the drop plate.

4,202,381

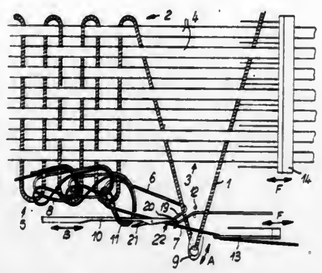
RIBBON FABRIC, METHOD FOR THE MANUFACTURE THEREOF AND RIBBON LOOM FOR CARRYING OUT THE METHOD

Robert R. Bucher, Frick, Switzerland, assignor to Jakob Muller, Forschungs und Finanz AG, Frick, Switzerland

Filed Jul. 5, 1977, Ser. No. 812,861
Claims priority, application Switzerland, Jul. 8, 1976, 8795/76
Int. Cl.² D03D 5/00
U.S. Cl. 139—383 R **21 Claims**

1. A ribbon fabric having weft thread loops inserted from one side of a warp thread shed, a first auxiliary thread drawn

through the weft thread loops and forming stitches, and a second auxiliary thread located externally of the weft thread



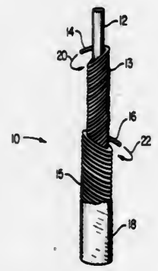
loops knitted with each n-th stitch of the first auxiliary thread in order to secure the latter.

4,202,382

DRYER FELTS

William T. Westhead, Waycross, Ga., assignor to Scapa Dryers, Inc., Waycross, Ga.

Filed Jun. 13, 1978, Ser. No. 915,238
Int. Cl.² D03D *23/00*
U.S. Cl. 139—383 A **55 Claims**



1. A dryer felt comprising a plurality of warp yarns and a plurality of weft yarns interwoven according to a selected weave pattern, at least one of said yarns comprising a core fiber, a first sheath formed by wrapping a second fiber around said core fiber in a first direction wherein said wrapping of said second fiber forms a close fitting covering entirely around said core fiber, a second sheath formed by wrapping a third fiber around said first sheath in a direction different from said first direction wherein said wrapping of said third fiber forms a close fitting covering entirely around said first sheath, and a covering formed by coating said second sheath with a resin.

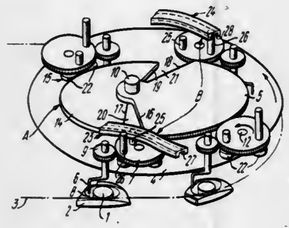
4,202,383

APPARATUS FOR WINDING A WEFT THREAD ONTO SPOOLS OF CARRIERS IN TRAVELLING-WAVE LOOMS

Alexandr L. Galperin, ulitsa Moldagulovoi, 10, korpus 3, kv. 166; Albert S. Serebryannikov, ulitsa Krasikova, 11, kv. 63; Eduard A. Onikov, ulitsa Panferova, 5, korpus 2, kv. 106; Alexandr A. Zabotin, Belyaevo-Bogorodskoe, kvartal 45, korpus 26, kv. 87, all of Moscow; Evgeny D. Loschilin, Kashirskoe shosse, 36, kv. 87, Domodedovo Moskovskoi oblasti, all of U.S.S.R., and Nicola Santucci, Viale del Industria 32, Schio (Vicenza), Italy

Filed Sep. 11, 1978, Ser. No. 941,237
Int. Cl.² D03D *47/26*
U.S. Cl. 139—436 **6 Claims**

1. An apparatus for winding a weft thread onto spools of carriers in travelling-wave looms, comprising: a disk rotatable in a horizontal plane; a means for rotating said disk; winding members rotating around their axles, intended for winding of the weft thread onto spools of carriers and mounted on said disk; satellite gears constantly meshed with said winding members and mounted so as to be rotatable around their axles on said disk; a stationarytoothed sector arranged coaxially with said disk; said satellite gears engaging said toothed sector for rotating together with said winding members, when displaced by said disk, around this toothed sector, whereby, along the entire line of interaction of the toothed sector with the satellite gears, a zone of winding of the weft thread is formed; a device for retaining said winding members in a preset position after the satellite gears disengage from said toothed sector including a stationary fixing sector installed diametrically opposite said toothed sector and lugs mounted on said satellite gears and cooperating, when the latter are shifted by said disk, with the periphery of the fixing sector; a device for gradual starting of



the winding members and stopping them in a predetermined position including two cams, one of which is intended for gradual starting of said satellite gears with the winding members and is stationary above the portion wherein the satellite gears change over from the fixing sector to said toothed sector and the other cam is intended for gradual stopping of said satellite gears with the winding members and is stationary above the portion wherein the satellite gears change over from said toothed sector to the fixing sector, and a plurality of pairs of pins according to the number of said winding members, each pair being mounted on each said satellite gear, one pin of the pair being adapted to cooperate with the cam for starting at the beginning of winding of the weft thread, and the other pin of the pair being adapted to cooperate with the cam for stopping at the end of winding of the weft thread onto the spools of the carriers.

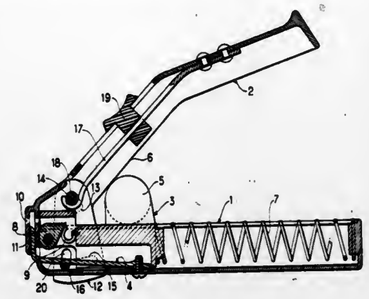
4,202,384

AUTOMATIC DEVICE FOR INSTALLING SELF-LOCKING STRAPS

René Aubert, Pont-A-Mousson, France, assignor to Societe d'Usinage des Tubes pour l'Electricite S.U.T.E., Pont-A-Mousson, France

Filed Jan. 18, 1979, Ser. No. 4,511
Claims priority, application France, Feb. 1, 1978, 78 02735
Int. Cl.² B21F *9/02*
U.S. Cl. 140—123.6 **12 Claims**

1. An automatic device for installing self-locking binder straps, said device comprising: two handles, means for assembling said handles so as to allow rotation of said handles relative to each other; a moving component carried by one of said handles and gripping the end of the strap in such a way that the relative movement of the handles tightens the strap; a cutter blade carried by one of said handles for cutting operation when the strap is tightened to a predetermined extent; the improvement wherein said moving component is biased to a first position by resilient return means, said moving component which slides on a first handle has a cam portion in contact with the adjacent edge of the second handle so that said handles when moving towards each other moves said moving component in translation in opposition to said resilient return means, the second handle has an actuating component for the cutter blade which is fixed to the first handle such that said actuating component operates automatically when said moving component has reached a position which corresponds to the predeter-



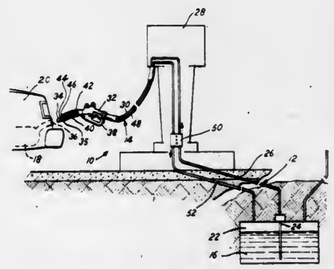
mined tightening of the collar due simply to the second handle bearing on the cam portion of said moving component.

4,202,385

LIQUID DISPENSING, VAPOR RECOVERY SYSTEM

Frederick L. Voelz, Orland Park, and Roy G. Jewell, Country Club Hills, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Feb. 14, 1978, Ser. No. 877,645
Int. Cl.² B65B *31/00*
U.S. Cl. 141—59 **11 Claims**



1. An improved hybrid liquid dispensing, vapor recovery system for utilization in association with a liquid source and a liquid receiver, said system comprising, in combination:

a liquid dispensing subsystem having a liquid dispensing line for intermittently delivering liquid from said liquid source through said dispensing line to said liquid receiver; and

a vapor recovery subsystem including,

a collector means for collecting vapor from said liquid receiver, said collector means mounted in association with said dispensing subsystem for collecting vapor whenever said dispensing subsystem delivers liquid to said liquid receiver,

a recovery line in vapor communication with a vapor space of said liquid source and with said collector means,

means mounted on a first shaft transverse to a passageway in vapor communication with said recovery line for impelling the vapor in said recovery line toward said liquid source, and

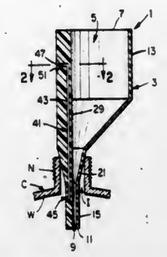
means for driving said impelling means, said driving means operably connected by means of a magnetic coupling to said impelling means and mounted on a second shaft in a passageway in communication with said dispensing line for generating kinetic energy from the flow of liquid in said dispensing line.

4,202,386

OVERFILL PREVENTIVE FUNNEL

Brian A. Orr, 1780 Dean Park Rd., Sidney, British Columbia, Canada

Filed May 3, 1978, Ser. No. 902,561
Claims priority, application Canada, Apr. 4, 1978, 300401
Int. Cl.² B65B *39/04*
U.S. Cl. 141—300 **6 Claims**



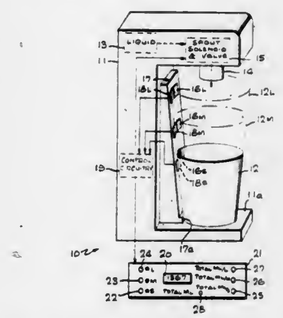
1. A funnel having: a large bowl with a large liquid inlet at one end; a spout projecting from the other end of the bowl with a small liquid outlet at its free end; means located on the spout end of the funnel for making a substantially air-tight connection with the inlet of a container to be filled; first and second separate vent means formed in the wall of said spout and said bowl by-passing the connecting means; said first vent means having a first opening in the outer surface of the wall of the spout and a second opening in the interior surface of said bowl; the second vent means having a first opening in the outer wall of said spout free to atmosphere and a second opening on the exterior wall of said bowl, the first opening of the first vent means being located nearer to the free end of the spout than the first opening of the second vent means and the second opening of the second vent means being arranged for manual control to selectively occlude the same.

4,202,387

FLUID DISPENSING CONTROL SYSTEM

Douglas J. Upton, 18740 Devonshire, Northridge, Calif. 91324

Filed Aug. 10, 1977, Ser. No. 823,228
Int. Cl.² B65B *3/04*
U.S. Cl. 141—360 **16 Claims**



1. A fluid dispensing control system comprising:

a fluid dispenser having a housing and electrically operated valve means, mounted in said housing, for dispensing a fluid into a container;

sensor means for providing a selected one of a set of signals respectively indicative of the sizes of containers to be filled by said dispenser;

valve control timer means, connected to said sensor means and to said valve means and responsive to said selected one signal, for opening said valve means for the period of

time requisite to fill a container of the size indicated by said selected one signal;

said sensor means comprises a set of light sources and associated photosensors mounted on said housing in respective locations such that when a container is positioned to be filled by said fluid dispenser, said positioned container will reflect light from said sources into a particular subset of said photosensors indicative of the size of said container; and

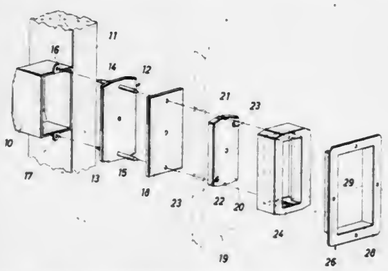
circuit means, responsive to the outputs of said photosensors, for providing said selected one signal indicative of the size of the positioned container.

4,202,388

APPARATUS AND METHOD FOR CUTTING ACCESS OPENINGS FOR ELECTRICAL OUTLET BOXES IN WALL OR CEILING COVERING PANELS

James H. Wieting, 12914 Memorial Dr., Houston, Tex. 77079

Filed Oct. 31, 1978, Ser. No. 956,183
Int. Cl.[2] B27C *1/00*; G01B *5/14*
U.S. Cl. 144—323 **6 Claims**



1. Apparatus for guiding a cutter as it cuts an opening in a wall or ceiling covering panel to receive an electrical outlet or switch box comprising locator means for mounting on the box for extending through the portion of the panel to be cut away in a pre-determined position relative to the box, cutter spacer means for attaching to the panel in a pre-determined position relative to the locator means, cutter guide locator means for positioning on the cutter spacer means, cutter guide means for positioning on the cutter guide locator means, means for attaching the cutter guide means to the panel when positioned on the cutter guide locator means to allow the cutter guide locator means to be removed from its position on the cutter spacer means to provide space between the cutter spacer means and the cutter guide means for a cutter as it cuts an opening in the panel to receive the box while being guided by the cutter guide means and held by the cutter spacer means to a pre-determined depth of cut.

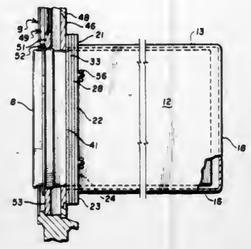
4,202,389

AIR CONDITIONER COVER ASSEMBLY

Marguerite Ewald, 402 N. Wenona St., Bay City, Mich. 48706

Filed Mar. 26, 1979, Ser. No. 23,639
Int. Cl.[2] A47B *81/00*
U.S. Cl. 150—52 R **10 Claims**

1. A cover assembly for an air conditioning unit of the type which has a portion adapted to project outwardly from a chamber wall opening, said assembly comprising a cover member having an imperforate outer end wall and imperforate peripheral side, top and bottom walls forming a complete outer enclosure for the projecting portion of such a unit, said side, top and bottom walls having inner edges providing a cover-supporting flange surrounding such an air conditioning unit close to such a chamber wall, an intermediate adapter frame dimensioned to surround such unit and having inner and outer support surfaces adapted to face respectively toward and away from such chamber wall when assembled, the outer adapter frame surface being sized to fit the supporting flange of the cover member, and the inner adapter surface being adapted to fit around such a chamber wall opening, first fastening means for securing the intermediate adapter frame in relatively fixed and sealed engagement against such chamber wall around the



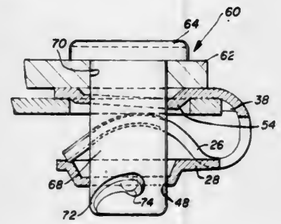
chamber wall opening, and cooperating fastening means on the cover member and intermediate adapter frame for convenient selectively-removable sealing connection of the cover member to the adapter frame.

4,202,390

SLIP-ON RECEPTACLE

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Apr. 26, 1978, Ser. No. 900,142
Int. Cl.[2] F16B *37/04*
U.S. Cl. 151—41.75 **11 Claims**



1. A slip-on receptacle adapted to be inserted on one of two members to be fastened in alignment with a hole therein and to receive and engage with a stud coupled with the other of the two members so as to fasten the two members together comprising:

a base portion with an opening therein;

at least one resilient mounting leg extending from the base into overlying and spaced relationship with respect thereto so as to receive the one member therebetween to mount the receptacle thereon in position with the opening in the base aligned with the opening in the one member;

a resilient receptacle leg extending from the base into overlying relationship with respect thereto and being spaced from the base a predetermined distance to permit the one member to be inserted therebetween;

the receptacle leg having an opening therein and stud engagement means fixed on said receptacle leg in position for alignment with the opening in the one member and the base when the receptacle is mounted on the one member to receive the stud coupled with the other member and interengaged therewith to hold the members together; and

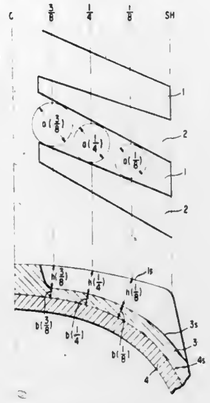
the receptacle leg and each mounting leg adapted to act independently with the resilient mounting leg accommodating dimensional width variations of the one member and the receptacle leg and stud engagement means being a fixed distance from the side of the one member engaged by the base independent of the width dimension of the one member to provide for a stud grip length that does not change as a function of the width of the one member.

4,202,391

TIRE FOR CONSTRUCTION VEHICLES

Toshiyuki Shibayama, Toyonaka, and Kenji Nakakura, Nishinomiya, both of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Mar. 13, 1978, Ser. No. 885,632
Claims priority, application Japan, Mar. 12, 1977, 52-27351
Int. Cl.[2] B60C *11/06*
U.S. Cl. 152—209 D **3 Claims**



1. A bias ply tire for high-speed construction vehicles of a standard size of 16.00–25 or larger and a wide base size of 20.5–25 or larger including a lug type, a semi-lug type and a block type with a ratio of 60–75 percent of an area of contact portion of a tread to an area of said tread wherein the size of said projecting portion of said tread is under the conditions defined by the following formulas:

$1.0 \leqq K \leqq 1.3$ at $\frac{1}{8}$ point

$1.0 \leqq K \leqq 1.6$ at $\frac{1}{4}$ point

Said "k" designating a quotient of "a", diameter of a maximum circle to be drawn within the width of said projecting portion, by "h" designating height of grooves in said tread at a center of each of said circle along a line perpendicular to a surface of an undertread at a center of each of said circle, and "$\frac{1}{8}$" and "$\frac{1}{4}$" points designating a dividing point respectively $\frac{1}{8}$ and $\frac{1}{4}$ of the width of a flat projection of said tread from an end of said tread.

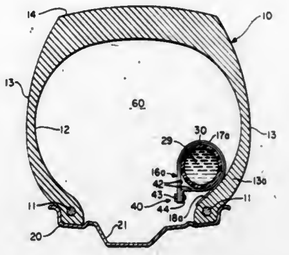
4,202,392

PNEUMATIC TIRE AND FLUID RESERVOIR ASSEMBLY

Mark H. Mineur, and Robert L. Toth, both of Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 17, 1978, Ser. No. 887,691
Int. Cl.[2] B60C *17/00*
U.S. Cl. 152—330 L **22 Claims**

1. A fluid reservoir adapted for cooperation with a pneumatic tire, said reservoir comprising a hollow body for containing a fluid under pressure; a first valve means connecting the interior and exterior of said body for charging and pressurizing of said body; and a second valve means connecting the interior and exterior of said body, said second valve means including a hollow housing, pressure responsive means set in said housing, temperature responsive means in said housing and contained by said pressure responsive means, said temperature responsive means being responsive at a predetermined temperature, said temperature responsive means contributing to the support of said pressure responsive means at temperatures less than said predetermined temperature; said second valve means being normally closed and said second valve means being set to open to release said fluid contained within said body upon co-existence of both a predetermined pressure



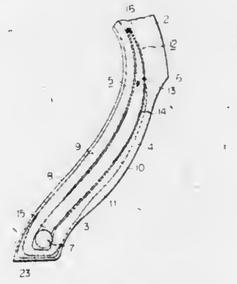
differential between the interior and exterior of said body and an ambient temperature of at least a predetermined temperature.

4,202,393

RUN FLAT TIRE FOR MOTORCYCLES

Ryo Ikeda; Yoichi Nogami, and Teruo Koizumi, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1978, Ser. No. 928,162
Claims priority, application Japan, Aug. 1, 1977, 52/92452
Int. Cl.[2] B60C *17/00*
U.S. Cl. 152—330 RF **8 Claims**



1. A run flat tire for motorcycles, comprising:

(A) a tread portion having two shoulder-shaped edges thereof;

(B) a pair of bead portions in each of which an annular bead core is embedded,

(C) a pair of sidewall portions each extending from one of the shoulder-shaped edges of said tread portion to one of said bead portions,

(D) a carcass composed of (a) a main portion thereof extending from one of said bead cores to the other one thereof and embedded in the inside surface layer of said bead portions, sidewall portions, and tread portion and (b) two end portions thereof, each turned up around the bead core and, then, extending into the outside surface layer of said sidewall portion, said carcass ply containing at least one tire cord fabric, and

(E) a pair of sidewall-reinforcing layers, each comprising:

(1) an elastic filler extending from an end location adjacent said bead core to the other end location in said tread portion and embedded in said bead portion, sidewall portion and tread portion, said elastic filler having an elastic modulus of from 40 to 75 kg/cm, at an elongation of 100% and a Shore hardness of from 70 to 90, and

(2) at least one reinforcing ply extending along one side surface of said elastic filler toward said tread portion, turned up around the end of said elastic filler in said

tread portion and then further extending along the other side surface of said elastic filler toward said bead portion, said reinforcing ply containing at least one tire cord fabric.

4,202,394

RECAPPED PNEUMATIC TIRE

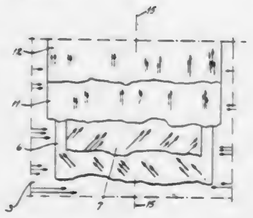
Sjirk van der Burg, Embourg, Belgium, assignor to Uniroyal Aktiengesellschaft, Aachen, Fed. Rep. of Germany

Continuation of Ser. No. 746,035, Nov. 29, 1976, Pat. No. 4,135,565. This application Oct. 23, 1978, Ser. No. 953,385

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1975, 2556930

Int. Cl.[2] B60C 9/18, 9/20

U.S. Cl. 152—361 R **10 Claims**



1. A recapped pneumatic tire construction comprising a used tire body having a radial carcass and a first circumferential reinforcement belt formed with steel cords at angles between 10° and 30°, a stripped circumferential recapping surface at the periphery of said used tire body, a second reinforcement belt wound under a predetermined tension around said recapping surface for at least one full winding in spiral arrangement to provide overlapping end portions, said second reinforcement belt comprising spaced, unconnected marginal strips overlapping the marginal edges of said first reinforcement belt and being unvulcanized and including heat shrinkable rubberized textile cord elements having a predetermined shrinkage at vulcanization temperatures, said textile cord elements being oriented parallel to the equatorial plane of the tire, and an unvulcanized trend strip applied around said recapping surface over said second reinforcement belt.

4,202,395

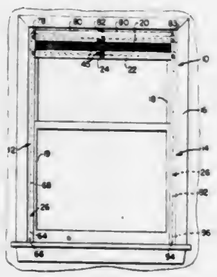
ADJUSTABLE SHADE CONSTRUCTION

Richard A. Heck, West Bloomfield, and David J. Dekker, Birmingham, all of Mich., assignors to Sundberg-Ferar, Inc., Southfield, Mich.

Filed Sep. 11, 1978, Ser. No. 941,547

Int. Cl.[2] E06B 3/94

U.S. Cl. 160—84 R **20 Claims**



1. In an adjustable shade or screen construction mountable upon a supporting structure, the combination comprising

a pair of spaced apart, independently manually adjustably movable shade bars,

a pair of rollers rotatably disposed in each end of said shade bars, in planes parallel to the direction of movement of said shade bars,

a shade or screen member secured to and disposed intermediate said shade bars.

said shade or screen member being relatively flexible, compactable and expandible between said shade bars,

a parallelogram cord system secured to said supporting structure and engaging said shade bars about selected portions of said rollers,

and means mounted on said shade bars releasably engageable with portions of said cord system to adjustably secure said shade bars on said cord system;

whereby said shade bars are movable independently and adjustably toward and away from each other upon said cord system.

4,202,396

MOTOR VEHICLES AND SUNSHIELDS

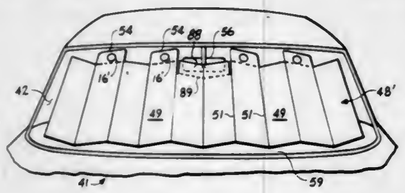
Abraham Levy, P.O. Box 17212, Tel Aviv, Israel (69690)

Continuation-in-part of Ser. No. 409,920, Oct. 26, 1973. This application Jun. 5, 1978, Ser. No. 912,653

Claims priority, application Israel, Jun. 20, 1973, 5668; Jun. 20, 1973, 5669; Jun. 28, 1978, 5672; Jun. 28, 1973, 5673; Jul. 9, 1973, 5679; Jul. 20, 1973, 42796

Int. Cl.[2] E06B 9/24

U.S. Cl. 160—107 **26 Claims**



1. In a motor vehicle, the improvement comprising in combination:

a window having an outside, an inside, an upper margin and a lower margin;

a foldable sunshield having a plurality of planar rectangular elements fabricated from substantially rigid sheet material and jointed to each other along longitudinal edges thereof, said sunshield having a compressed position for storage in a package and a stretched position at the inside of said window wherein the planar rectangular elements extend along and away from the lower margin of the window and said longitudinal edges extend at right angles to the lower margin of the window; and

means for releasably retaining the sunshield at the window against the force of gravity while said longitudinal edges extend at right angles to the lower margin of the window.

4,202,397

METHOD OF CONTINUOUSLY CASTING MOLTEN METAL

Joseph W. Hlinka; Bruce C. Whitmore, and Mustafa R. Ozgu, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 20, 1975, Ser. No. 542,480

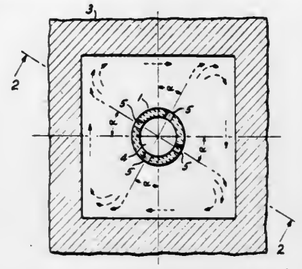
Int. Cl.[2] B22D 11/10

U.S. Cl. 164—82 **2 Claims**

1. A process for the continuous casting of moten metal into billets or blooms comprising:

introducing a submergible nozzle having a central longitudinal axis into a vertically oriented rectangular open-ended continuous casting mold, said submergible nozzle being provided with at least four nozzle outlets radially disposed from said central longitudinal axis and said open-ended continuous casting mold being dimensioned such that, in horizontal cross section, the ratio of the lengths of one opposed pair of mold walls to the lengths of the other opposed pair of mold walls is approximately between one to one and one to two;

introducing molten metal into said nozzle and through said nozzle outlets to establish at least four cooperating fixed streams of molten metal below the surface of a pool of molten metal continuously maintained in said mold with at least one stream being directed toward each mold wall, each nozzle being designed such that each of said streams is directed in a substantially straight line obliquely toward



a mold wall and each nozzle outlet being angled from between 15°–43° with respect to a plane perpendicular to the mold wall to be impinged by the stream flowing from a particular nozzle and passing through the midpoint of the length of the mold wall to be impinged so that each of the streams strikes a mold wall in that portion of the mold wall between the midpoint of the length of the mold and wall adjacent corner, whereby the streams cooperate to produce a non-interfering unidirectional circulatory flow of molten metal circumferentially along the perimeter of said mold in the upper portion of said molten metal pool.

4,202,398

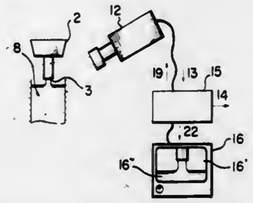
MOLTEN METAL SURFACE LEVEL DETECTION SYSTEM

Kozo Osugi, Tokyo, Japan, assignor to Furukawa Metals Co. Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,643

Int. Cl.[2] B22D 11/16

U.S. Cl. 164—150 **1 Claim**



1. An apparatus for detecting the level of poured molten metal in the liquid phase to eliminate false signals caused by flames and other signal-noise producing factors, comprising in combintion:

(a) an ITV camera which can be placed at some distance from the liquid level to be detected so as to photograph the level of said liquid metal surface including signal circuit means (13) for supplying an input signal;

(b) a reference frequency oscillator with first and second output sides;

(c) a signal generator (18) coupled to said first side of the reference frequency oscillator (17), said signal generator (18) being connected to the camera (12) for generating horizontal and vertical synchronizing signals (19) supplied to said camera (12);

(d) an image screen (16') connected to a picture element divider circuit (20), said picture element divider circuit (20) being coupled to said second output side, and serving to divide said screen (16') into a plurality of rectangular picture elements each being a defined zone along a first and a second axis normal to each other, said screen (16') having an input end receiving said input signal (13) from said signal circuit means;

(e) an amplifier clamping circuit (27) connected to said input signal end (13), a comparator circuit (28) including reference supply means connected to said clamping circuit (27), a discriminator (29) for supplying gate pulses connected to said comparator circuit (28) so that a gate pulse is supplied each time that an element correction to the aforementioned picture elements is scanned so that a plurality of scanning elements are sampled and the level of each element is compared with a reference provided by said reference supply means to provide an output either less than said reference or equal or more than said reference;

(f) a memory (30) connected to said discriminator (29) to temporarily store the output of the discriminator (29);

(g) a dynamic controller (31) coupled to said memory (30) said dynamic controller (31) generating and providing a sampling pulse to the memory (30) so that the output of the discriminator (29) is fed only at predetermined time periods to said memory (30); and,

(h) an output level control circuit (32) connected to said memory for controlling the level of the molten liquid when the number of scanned elements having a value equal to or more than said reference exceeds a predetermined number so as to eliminate random signals caused by flame and other noise making materials causing only a random output equal or greater than said reference.

4,202,399

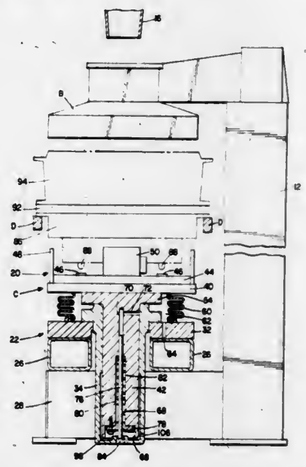
SUPPORT TABLE FOR FOUNDRY SAND MOLDING APPARATUS

Edward D. Abraham, Brecksville, Ohio, and Rodney L. Hartung, Muscatine, Iowa, assignors to Carver Foundry Products, Muscatine, Iowa

Filed Mar. 20, 1978, Ser. No. 888,380

Int. Cl.[2] B22C 15/30

U.S. Cl. 164—203 **6 Claims**



1. A foundry sand molding apparatus comprising a vertically movable upper table structure, said upper table structure adapted to support a flask thereon, a base structure including a support portion for engaging said upper table structure in the lower position of said upper table structure and means for guiding said upper table structure for vertical movement along the vertical axis of said upper table structure, air motor menas

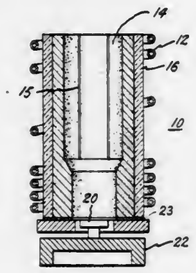
for elevating said upper table structure vertically from the lowermost position to a sand supply position whereat sand is supplied to the flask, means including said motor means for lowering said upper table structure from said supply position to a preset position slightly elevated above said support portion, vibrator means mounted on said upper table structure for vibrating the same and the flask when said upper table structure is slightly elevated above said lowermost position and out of contact with said support portion, and said air motor means being further operative to elevate said upper table structure from said preset position to a sand squeezing position, spring means for acting between said base structure and said upper table structure for applying an upward force to said upper table structure to aid said air motor means in positioning said upper table structure to said preset position slightly elevated above said lowermost position and means for causing said spring means to apply said upward force in response to downward movement of said upper table structure into a position adjacent said preset position.

4,202,400

DIRECTIONAL SOLIDIFICATION FURNACE

Michael F. X. Gigliotti, Jr., Scotia, and Thomas F. Sawyer, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,892
Int. Cl.² B22D *27/02*
U.S. Cl. 164—251 **5 Claims**



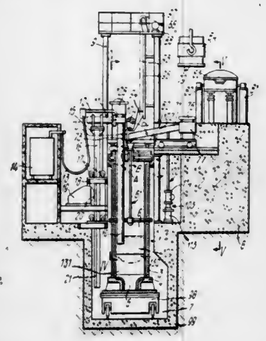
1. In a directional solidification furnace in which molten metal is passed through a temperature gradient to initiate solidification, which furnace comprises in combination a susceptor in the general shape of a vertically-disposed hollow cylinder, said susceptor being made of a refractory electrically conducting material, means disposed around and electrically insulated from said susceptor fo applying electromagnetic flux density thereto non-uniformly along the length thereof with the region of highest flux density being near the lower end of said susceptor, and cooling means disposed below the bottom end of said susceptor, the improvement wherein the wall of said susceptor has at least one elongated slot passing completely through the thickness of said wall, initiating at the top of said wall, and extending longitudinally therealong to terminate intermediate the top and bottom ends of said susceptor at a distance above said bottom end, which leaves said lower end of said susceptor wall intact in said region of highest flux density.

4,202,401

APPARATUS FOR ELECTROSLAG CASTING OF HEAVY INGOTS

Jury V. Latash, ulitsa Artema, 55, kv. 23; Alexei E. Voronin, ulitsa Prazhskaya, 3, kv. 426; Vladimir A. Nikolaev, ulitsa Vernadskogo, 61, kv. 75, all of Kiev; Boris B. Pelts, ulitsa Lesnaya, 63/43, kv. 57, Moscow; Lev A. Volokhonsky, ulitsa Mostnaya, 50-a, kv. 7, Moscow; Vladimir D. Artemiev, Leningradsky prospekt, 14, kv. 78, Moscow; Mikhail I. Vlasov, prospekt Mira, 124, korpus 10, kv. 277, Moscow; Alexandr I. Chernyak, ulitsa Verkhnyaya Khokhlovka, 39/47, kv. 53, Moscow; Alexandr A. Nikulin, ulitsa Znamenskaya, 35, kv. 112, Moscow; Vladimir S. Dub, ulitsa Festivalnaya, 14, korpus 3, kv. 372, Moscow; Yakov M. Vasiliev, ulitsa admirala Makarova, 14, kv. 44, Moscow; Iosif N. Stul, Sevastopolsky prospekt, 81, kv. 5, Moscow; Vitaly P. Mukha, ulitsa 1 Mekhanicheskaya, 7, kv. 22, Novosibirsk; Gennady I. Orlov; Kim M. Khasin, both of ulitsa Bljukhera, 7, kv., Novosibirsk; Jury A. Naryshkin, ulitsa Bljukhera, 7, kv. 53, Novosibirsk; Valentin I Belsky, ulitsa Zorge, 70, kv. 6, Novosibirsk; Ilya L. Veligura, ulitsa B. Khmelnitskogo, 15, kv. 21, Kramatorsk; Vladimir E. Bogdashich, ulitsa Shkidinova, 55, kv. 34, Kramatorsk; Vladimir A. Lisitsin, ulitsa Shkolnaya, 3, kv. 44, Kramatorsk; Alexandr V. Mischenko, ulitsa Kurchenko, 15, kv. 9, Kramatorsk; Jury A. Kovalenko, ulitsa Parkovaya, 27, kv. 38, Kramatorsk; Vladimir V. Babin, ulitsa Krasny Kazanets, 9, korpus 2, kv. 136, Moscow; Igor A. Svitenko, Teply stan, 5 mikroraion, korpus 61, kv. 149, Moscow; Vladimir I. Antonov, ulitsa Petukhova, 26, kv. 47, Novosibirsk, and Volemir D. Smolyarenko, Kutuzovsky prospekt, 19, kv. 136, Moscow, all of U.S.S.R.

Filed Feb. 22, 1978, Ser. No. 880,062
Int. Cl.² B22D *27/02*
U.S. Cl. 164—252 **9 Claims**



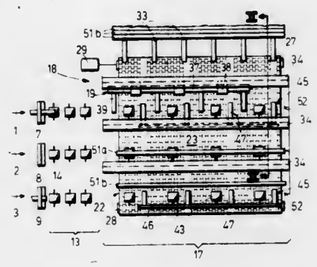
1. An apparatus for the electroslag casting of heavy ingots comprising: a bottom plate; a mould mounted on said bottom plate and provided with cooled walls which define in conjunction with said bottom plate a melting chamber, the cooled walls extending substantially continuously to the top of the melting chamber; a roof removably mounted on said mould so as to close the melting chamber; means for sealing the junction between said roof and said mould; a gas exhaust pipe; input funnels for feeding slag and alloying admixtures, said roof having openings formed therein for sealingly receiving the gas exhaust pipe and the input funnels for feeding slag and alloying admixtures to the melting chamber; a liquid metal pouring system incorporating a metal conduit removably mounted in an opening in said roof along the symmetry axis of said mould and provided with a funnel disposed in the upper portion of said metal conduit; an inclined chute mounted above said funnel of said metal conduit for movement in the horizontal plane; non-consumable electrodes arranged in apertures of said roof around the circumference of the melting chamber for vertical movement; sealing means for sealing the junctions between said roof and said nonconsumable electrodes; a power source electrically connected to said non-consumable electrodes; first manifold means positioned in the region of the mounting of the metal conduit to the roof for blowing a neutral gas into the mounting region, and second manifold means surrounding a discharge end of said inclined chute for blowing a neutral gas into a region between the discharge end and the funnel.

4,202,402

TRANSFER DEVICE FOR BILLETS AND BLOOMS OF A MULTISTRAND CONTINUOUS CASTING INSTALLATION FOR METALS

Adalbert Röhrig, Wädenswil, Switzerland, assignor to Concast AG, Zürich, Switzerland

Filed Sep. 19, 1977, Ser. No. 834,578
Claims priority, application Switzerland, Oct. 7, 1976, 12688/76
Int. Cl.² B22D *11/08*
U.S. Cl. 164—263 **2 Claims**



1. A transfer or outfeed device for castings, in particular billets or blooms of a multistrand continuous casting installation for metals, especially steel, comprising:

means, defining cutting stations arranged within cutting paths for the continuously cast strands, for cutting-to-length such cast strands;

means for removing dummy bars out of transfer lines of the cast strands;

storage means for storing the dummy bars;

transverse transport means, being arranged below the transfer lines, for transporting the cut-to-length hot cast strands;

said means for removing the dummy bars out of the transfer lines being arranged within the cutting paths of the hot strands and having said storage means arranged approximately parallel to said transfer lines;

said storage means and said transverse transport means being partially arranged within the cutting paths of the hot strands;

pivotal lever means, provided for each strand, for depositing each cut-to-length hot strand upon the transverse transport means;

said pivotal lever means each having a free end and, in a starting position of each said pivotal lever means, said free end thereof possesses a respective approximately horizontal support surface and, in a pivotal position thereof, a respective tilting surface for each cut-to-length hot strand, said tilting surface being directed upwardly at an inclination.

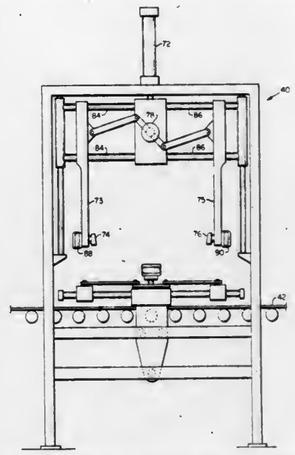
4,202,403

ROLLOVER CLOSER

Charles R. Miller, Bedford, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 21, 1978, Ser. No. 898,586
Int. Cl.² B22C *17/08*
U.S. Cl. 164—409 **1 Claim**

1. Mold making apparatus including a conveyor belt, placement means for placing a flaskless cope on the belt with the pattern-side up, control means for periodically moving the belt longitudinally a given distance, said placement means adapted for thereafter placing a flaskless drag on the belt, with the pattern-side up, behind the cope, a rollover closer positioned at a location along the conveyor belt, said rollover closer including centering means to center a cope from side-to-side, and longitudinally, about an indexing point on the belt, lifting means to thereafter lift the cope and rotate it 180°, holding it centered above the indexing point, the control means adapted for thereafter moving the belt to bring a drag into the rollover closer, said centering means adapted for then centering the drag from side-to-side and longitudinally about said indexing



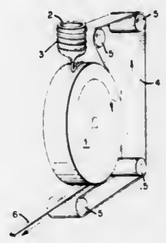
point on the belt, so that the drag is directly beneath the cope, said lifting means adapted for then lowering the cope onto the drag, thereby forming a finished mold ready for pouring, the centering means including moveable closer arms that contact the cope or drag on all four sides, to move the cope or drag so as to be centered with respect to said indexing point, motor means for moving the arms, the arms each being made up of a pair of pivotally connceted links, with one end of one of the links being connected to the motor means, and gripping pads for engagement with either the cope or drag connected to one end of the other link, so that actuation of the motor means moves the gripping pads into and out of engagement with either the cope or drag.

4,202,404

CHILL ROLL CASTING OF AMORPHOUS METAL STRIP

Charles E. Carlson, Succasunna, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 2, 1979, Ser. No. 453
Int. Cl.² B22D *11/00*
U.S. Cl. 164—423 **8 Claims**



1. In an apparatus for the production of continuous metal

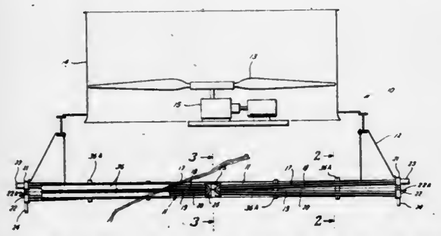
strip by depositing molten metal onto the peripheral surface of a rapidly rotating annular chill roll, said apparatus including an annular chill roll adpated for rapid rotation around its longitudinal axis having a flat peripheral casting surface, and means for depositing molten metal onto said casting surface for rapid solidification thereon to form a continuous metal filament, the improvement which comprises provision of an elastomeric, flexible belt being carried in frictional engagement with said casting surface in an arcuate portion of at least 120° around said chill roll beginning at a point upstream from the point where the filament would be flung away from the casting surface by action of centrifugal force, adapted to urge said solidified filament into contact with said casting surface, said belt being supported by at least three guide wheels, said belt being wider than the filament, so that it overlaps the marginal portions of the filament, and direct contact between the casting surface and the belt is established immediately adjacent to the marginal portions of the filament.

4,202,405

AIR COOLED CONDENSER

William F. Berg, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 291,673, Sep. 25, 1972, abandoned. This application Jun. 26, 1974, Ser. No. 483,145
Int. Cl.² F28B *1/06*
U.S. Cl. 165—110 **3 Claims**



1. An air cooled condenser for condensing steam or other substantially single component vapor at a pressure near or below atmospheric, comprising a generally upright housing which is open at its upper and lower ends to permit air flow upwardly therethrough, at least one tube bundle mounted generally horizontally within the housing, each having vertically successive, generally horizontal rows of tubes arranged in the direction of air flow therepast, whereby the tubes of the lowermost and uppermost rows are respectively the first and last to be contacted by the air, and the tubes of the rows adjacent to those of each of the first and last to be contacted are the second and next to last to be contacted, respectively, an inlet header adapted to receive the vapor at one end of the bundle and connecting with the tubes of the uppermost row and the row adjacent thereto, a common outlet header at said one end of the bundle connecting directly with the tubes at the lowermost row and the row adjacent thereto for receiving condensate and uncondensed vapor therefrom, means at the other end of the bundle connecting the tubes of said lowermost and uppermost rows to one another and the tubes of said adjacent row to one another, and means for reversing the direction of air flow past the rows of tubes.

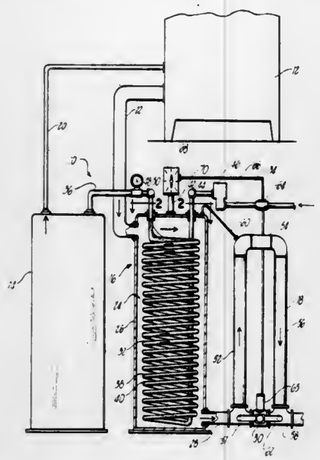
4,202,406

HEAT EXCHANGE SYSTEM

Alfred J. Avery, 113 E. Thackery, Flint, Mich. 48505

Filed Jun. 29, 1978, Ser. No. 920,353
Int. Cl.² F24H *3/00*
U.S. Cl. 165—47 **9 Claims**

1. A heat exchanger system comprising
a fluid
a heat exchange tank having an outer housing which encloses an inner chamber and having a coil of tubing disposed in said chamber, said tubing having an inlet portion and an outlet portion both of which extend exteriorly of said tank, and said housing having inlet and outlet portions which communicate with said chamber,
a fluid trap communicating with the outlet of said heat exchange tank housing to receive fluid from the chamber and elevate it to a height sufficient to provide adequate fluid pressure in the chamber to maintain the fluid in the chamber at substantially the same height as the top of said coil,



a fluid supply tank having means for heating the fluid disposed therein and communicating with the outlet of said coil,
means for extracting and utilizing the fluid from said fluid heater supply tank,
a first pipe communicating with said last-mentioned means to transfer the used fluid from said last-mentioned means to the inlet of said heat exchanger tank housing, and
means for providing fluid from an external source and introducing it into the inlet of said coil.

4,202,407

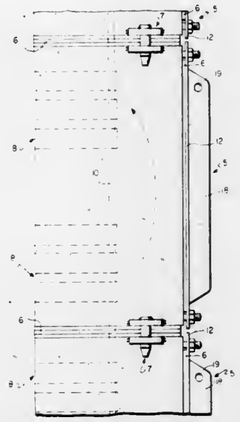
APPARATUS FOR COOLING GASES FROM COKE PLANTS

Friedhelm Woltowitz, Hattingen, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,042
Int. Cl.² F28F *9/26*
U.S. Cl. 165—76 **8 Claims**

1. A heat exchange apparatus, particularly for use in cooling gas from coke plants, said apparatus comprising:
a base housing section having a hollow interior, an open upper end, and gas connection means opening into said interior;
a head housing section having a hollow interior, an open lower end, and gas connection means opening into said interior;
a plurality of separate hollow intermediate housing sections stacked one above the other, in a gas-tight but readily removable manner, between said base housing section and said head housing section, said head housing section, said intermediate housing sections and said base housing section being joined to each other in a pressure-tight manner solely by the weight of upper of said sections resting on lower of said sections, said intermediate housing sections having open upper and lower ends, such that the interiors of said intermediate housing sections are in alignment and

in open communication with said interiors of said base housing section and said head housing section;
plug-in alignment means on said head housing section, said intermediate housing sections and said base housing section providing an accurate vertical alignment of said sections when said sections are stacked one above the other;
each said intermediate housing section having extending transversely and substantially horizontally across the interior thereof at least one group of a plurality of heat exchange tubes, the interiors of said tubes being isolated from the interiors of said intermediate housing sections;
heat exchange fluid connection means connected to the uppermost and lowermost of said groups of tubes for the passage therethrough of heat exchange fluid;



each said intermediate housing section comprising a pair of spaced side walls, a pair of spaced tube plates having opposite ends attached to said side walls, said tubes extending between said tube plates, with opposite ends of said tubes extending through said tube plates, said side walls each having portions extending beyond said tube plates, and end walls attached in a pressure-tight and detachable manner to said opposite ends of said side walls, said end walls, said tube plates and said portions of said side walls together forming vertically extending ducts at said opposite ends of said tubes; and
said ducts comprising connecting means for connecting adjacent ends of adjacent of said groups of tubes such that said heat exchange fluid passes through said tubes of said intermediate housing sections in a substantially sinusoidal manner.

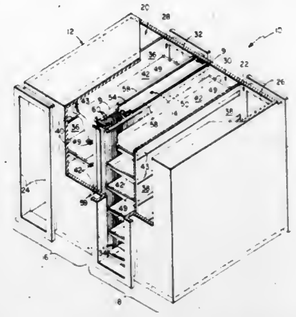
4,202,408

JET TYPE HEAT EXCHANGER

Robert S. Temple, P.O. Box 562, West Acton, Mass. 01720

Filed Mar. 6, 1978, Ser. No. 883,875
Int. Cl.² F28F *13/12*
U.S. Cl. 165—109 **18 Claims**

1. A heat exchanger including a heat transfer sheet dividing an enclosure into a hot side and a cold side each having a jet nozzle for directing a jet of fluid generally perpendicularly against the respective side of said sheet, said exchanger being characterized in that:
said heat transfer sheet comprises a thin pleated sheet of thermally conductive material, the pleats having generally planar sides which diverge and form interior angles of not more than about 10° and the tips of the pleats lying in planes generally perpendicular to the direction of flow of the jets of fluid; and,
each of said nozzles is positioned relative to said sheet such that fluid of the jet from the nozzle is directed between



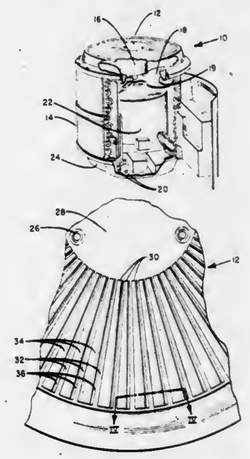
and impinges of an acute angle on the generally facing planar side of a pleat of the sheet.

4,202,409

ONE PIECE TOP COVER WITH STAMPED OPEN LOUVERS AND MOTOR MOUNT

Peter L. Cann, Canastota; Richmond S. Hayes, Jr., Fayetteville, and Lester N. Miller, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 23, 1978, Ser. No. 889,582
Int. Cl.² F24H *13/14*
U.S. Cl. 165—122 **13 Claims**



1. A heat exchange assembly for use with an air conditioning system which comprises
a heat exchange unit defining an opening for the passage of heat transfer media
a heat exchanger mounted within the unit in heat exchange relation with the heat transfer media
a cover adapted to overlay at least a portion of the opening, the cover having an end portion extending about the periphery thereof and a solid center portion, said cover further comprises generally radially extending fixed segments located intermediate said end portion and said center portion and connecting said end portion to said center portion, at least some of said segments having a louver section formed by displacing a portion of the segment from the plane of the segments, said louver section defining a slot with adjacent segments for the passage of heat transfer media therethrough: and

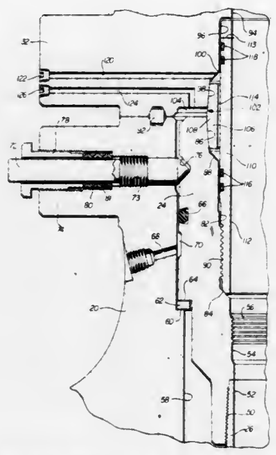
means juxtaposed to the cover for circulating the heat transfer media through the slots in the cover.

4,202,410

SEAL TESTING ARRANGEMENT FOR WELLHEADS

Herbert O. Quebe, Shreveport, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Feb. 28, 1979, Ser. No. 15,990
Int. Cl.[2] E21B *33/03*
U.S. Cl. 166—88 **11 Claims**



9. In a wellhead assembly of the type having a tubing head, a tubing hanger supported in the tubing head, a hollow flanged member mounted on the tubing head at a location to form a joint with the tubing hanger, and a seal ring providing a seal at said joint, a seal testing arrangement comprising:

a sleeve mounted within said tubing hanger and flanged member at a location spaced inwardly of said joint between the hanger and flanged member;

means providing spaced apart seals of said sleeve with said flanged member and with said tubing hanger respectively above and below said joint to define a substantially fluid-tight chamber inwardly of said joint and adjacent thereto; and

a test passage extending in said flanged member from the exterior thereof to said chamber to direct pressurized test fluid to the chamber for the purpose of testing said seal ring for leakage from the inside of said joint.

4,202,411

ACID SOLUBLE COATING FOR WELL SCREENS

Keith W. Sharp, Sugarland, Tex., and Derry D. Sparlin, Lafayette, La., assignors to Baker International Corporation, Orange, Calif.

Filed May 24, 1978, Ser. No. 909,318
Int. Cl.[2] E21B *43/08*; B05D *7/22*
U.S. Cl. 166—244 C **9 Claims**

6. A method of coating a well liner comprising an elongate tubular member having a plurality of passageways disposed longitudinally and circumferentially of, and extending from the outer surface to the inner surface of the tubular member, said method comprising the steps of: (1) contacting said well liner with a coating amount of an impermeable inorganic matrix substantially filling said passageways and upon said inner and outer surfaces, said inorganic matrix comprising the reaction product of a first reactant consisting essentially of magnesium oxide and a second reactant consisting essentially of magnesium chloride, in a solvent therefor; and (2) drying said well liner by exposure to atmosphere.

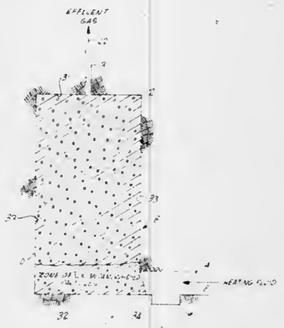
9. A well liner comprising an elongate tubular member having a plurality of passageways disposed longitudinally and circumferentially of, and extending from the outer surface to the inner surface of, the tubular member, and an impermeable inorganic matrix coated upon said inner and outer surfaces, said inorganic matrix comprising the reaction product of a first reactant consisting essentially of magnesium oxide and a second reactant consisting essentially of magnesium chloride, in a solvent therefor.

4,202,412

THERMALLY METAMORPHOSING OIL SHALE TO INHIBIT LEACHING

Arnold M. Ruskin, Claremont, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 29, 1978, Ser. No. 920,237
Int. Cl.[2] E21B *43/24*; E21C *41/10*
U.S. Cl. 166—256 **33 Claims**



7. A method for recovering liquid and gaseous values from a fragmented permeable mass of particles containing oil shale in an in situ oil shale retort comprising the steps of:

establishing a processing zone having a temperature greater than 1400° F. in the fragmented permeable mass;

advancing the processing zone only part way through the fragmented mass by introducing a retort inlet mixture through a first fluid flow path to the fragmented mass on the trailing side of the processing zone and withdrawing off gas through a second fluid flow path from the fragmented mass on the advancing side of the processing zone, thereby forming water-insoluble metamorphic minerals by thermally metamorphosing particles containing oil shale;

thereafter stopping introduction of the retort inlet mixture to the fragmented mass, thereby leaving at least a portion of the fragmented mass containing non-metamorphosed particles on the advancing side of the processing zone; and

subsequently introducing sufficient heating fluid through such a fluid flow path to the fragmented mass containing non-metamorphosed particles while withdrawing effluent gas from the fragmented mass through the other such flow path for heating at least a portion of such non-metamorphosed particles to a sufficiently high temperature for forming water-insoluble metamorphic minerals at at least the surfaces of such particles.

4,202,413

WELL CEMENTING PROCESS USING PRESHEARED WATER SWELLABLE CLAYS

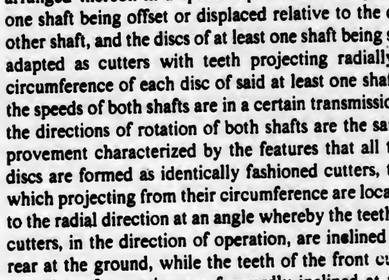
Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 15, 1978, Ser. No. 960,803
Int. Cl.[2] E21B *33/14*
U.S. Cl. 166—292 **4 Claims**

4. A method of cementing a well comprising:

(a) forming an aqueous suspension of water swellable clay in water, said water swellable clay being present in said water in an amount to provide a concentration of water swellable clay when mixed into a cement slurry within the range of 0.1 to 3.0 weight percent based on cement;

(b) subjecting said suspension to vigorous shearing action for at least 0.5 hour to preshear said aqueous suspension of water swellable clay;



(c) thereafter mixing said presheared aqueous suspension of water swellable clay with cement to form said cement slurry;

(d) positioning said cement slurry in said well; and

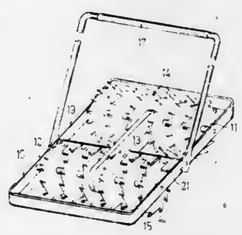
(e) maintaining said slurry in said well to allow said slurry to set.

4,202,414

LAWN CULTIVATING MACHINE

Hans vom Braucke, Vlotho; Manfred vom Braucke, and Walter Schuring, both of Bielefeld, all of Fed. Rep. of Germany, assignors to Bielefelder Kuchenmaschinen-u. Transport-Geratefabrik vom Braucke GmbH, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 888,132
Int. Cl.[2] B62D *51/04*; A01B *45/04*
U.S. Cl. 172—42 **8 Claims**



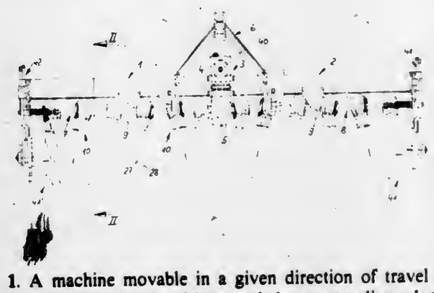
6. In a lawn cultivating machine of the type comprising two parallel cutter shafts which are mounted on a common frame and interconnected by a transmission gear and rotatable about their axes, each of which shafts has a plurality of circular discs arranged thereon in a spaced apart relationship, the discs of one shaft being offset or displaced relative to the discs of the other shaft, and the discs of at least one shaft being structurally adapted as cutters with teeth projecting radially from the circumference of each disc of said at least one shaft, whereby the speeds of both shafts are in a certain transmission ratio and the directions of rotation of both shafts are the same, the improvement characterized by the features that all the circular discs are formed as identically fashioned cutters, the teeth of which projecting from their circumference are located relative to the radial direction at an angle whereby the teeth of the rear cutters, in the direction of operation, are inclined toward the rear at the ground, while the teeth of the front cutters in the direction of operation are forwardly inclined at the ground, wherein at least one of the two cutter shafts is provided with a scraper plate which is pivotally mounted on a shaft on the frame, between the cutter shafts and parallel thereto, and which is retained by a spring in an end position, said plate being provided with slots and the teeth of the cutters engaging in the slots of the plate.

4,202,415

SOIL CULTIVATING MACHINE

Bruno Barlage, Riesenbeck, Fed. Rep. of Germany, assignor to H. Niemeyer Söhne GmbH & Co. KG, Riesenbeck, Fed. Rep. of Germany

Filed Dec. 5, 1978, Ser. No. 966,727
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1978, 2835635
Int. Cl.[2] A01B *71/00*
U.S. Cl. 172—125 **3 Claims**



1. A machine movable in a given direction of travel for cultivating the soil comprising a main beam extending substantially horizontally and transversely with respect to the direction of travel of the machine, and a tool shaft mounted parallel to spaced below the main beam, wherein the main beam and the tool shaft each comprise of two portions and a gear box mounted between the portions of the main beam and the tool shaft, and comprising an upper gear box portion and a lower gear box portion wherein the upper gear box portion includes a driving shaft extending in the direction of travel of the machine and a generally vertically driven shaft extending into the lower gear box portion, and driven by the driving shaft and wherein the lower gear box portion includes an upper, hollow, driven shaft receptive of the driven shaft of the upper gear box portion and a horizontal, hollow, driven shaft aligned transversely with the tool shaft portions and drivably receptive of the inner end portions of the tool shaft portions.

4,202,416

METHOD AND APPARATUS FOR SINKING A CASED BOREHOLE FOR PRODUCING CASED PILE FOUNDATIONS

Kurt Blaschke, Saarbrücken-Dudweiler, and Josef Roob, St. Wendel, both of Fed. Rep. of Germany, assignors to Stahl- und Apparatebau Hans Leffer GmbH, Saarbrücken-Dudweiler, Fed. Rep. of Germany

Filed Aug. 7, 1978, Ser. No. 931,723
Int. Cl.[2] E21B *3/08, 3/10*
U.S. Cl. 175—94 **5 Claims**

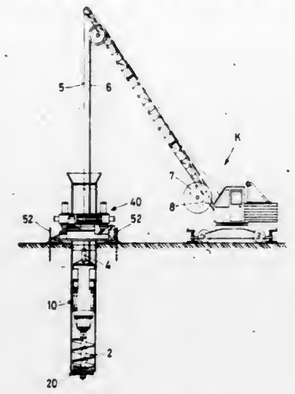
1. Apparatus for sinking a cased borehole, comprising:

(a) a crane provided with a support cable,

(b) a drilling appliance suspended from the cable to be lowered into a borehole, said drilling appliance being provided with a controllable clamping means for supporting the torque of a drive motor for a drilling tool on a drop tube, said clamping means being guided axially over a limited working stroke in a non-rotary manner on a housing supporting the drive motor, drilling tool, and power and control lines introduced into the drilling appliance from above,

(c) an auger with a preceding rotary cutter head thereon as the drilling tool being provided with a double wing-shaped bit support with diametrically located swinging wings provided with drilling bits, said wings, in a working position being swung radially outwards and limited by a stop, cutting with their bits being free of the bit support

and on reversing the direction of rotation, swinging back into their inner inoperative position, each swinging wing being provided on its radially outermost side face with a return strip inclined upwards in the drilling direction, which strips are located inside the inner diameter of the drop tube used in the inoperative position of the swinging wings, when the latter are swung inwards, and



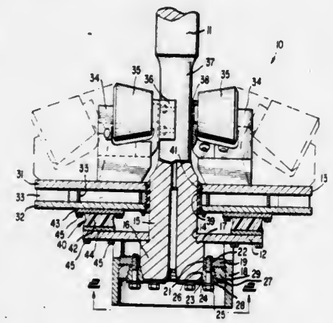
(d) a tube extraction maching located on the ground with a hydraulically actuated clamping collar guided in parallel by at least two double-acting lifting cylinders supported on a machine frame and which can be raised and lowered, vertical guides for anchoring bolts or tubes able to be driven into the ground being provided on the machine frame or on pressure shoes located on the ground, whereby the tube extraction machine is secured in a non-rotary manner above the ground.

4,202,417

RAISE DRILL WITH ELASTOMERIC LOAD ABSORBING MEANS

George A. Alther, Midland, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation of Ser. No. 833,040, Sep. 14, 1977. This application Nov. 16, 1978, Ser. No. 961,038
Int. Cl.² E21C 23/00
U.S. Cl. 175—320 4 Claims



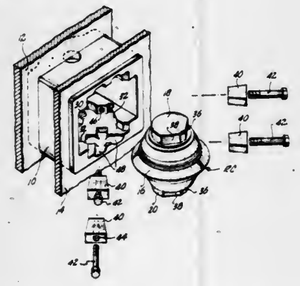
1. A raise drill for enlarging the diameter of a pilot hole comprising,
- a drive stem having means at one end thereof for connecting to a drill string,
- a bit body including a base having a plurality of rolling cutters mounted thereon, said base having a central opening for enabling the lower end of the drive stem to extend therethrough,
- flexible elastomeric means interconnected between said drive stem and said bit body for absorbing the impact and dynamic loads therebetween and transferring the vertical thrust and the torque loads from the drive stem to the bit body, and
- a thrust plate connected to the bottom end of said drive stem, and thrust plate being contiguous to said bit body base, and said flexible means being interconnected between said thrust plate and said bit body base, said flexible means comprising an annular element extending around the central opening of said bit body base and the central bore of said thrust plate.

4,202,418

ROLLER CUTTER MOUNTS

Bruce A. Waddell, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed May 1, 1978, Ser. No. 901,561
Int. Cl.² E21B 9/12
U.S. Cl. 175—361 7 Claims



1. In an earth boring cutterhead having rear mounted roller cutters, the mounting improvement comprising:
- frame means defining a cutter well for receiving a roller cutter of a type comprising at least one rotating cutterwheel and a stator, said cutter well having a rearwardly directed portal and a forwardly directed window, wherein a peripheral portion of the cutterwheel projects through said window and extends forwardly of the cutterhead when the roller cutter is secured within said cutter well;
- said frame means having integral abutments along the margins of said window for restraining forewardly movement of said roller cutters with respect to said cutter well;
- said portal being of a size sufficient to permit passage of a corresponding roller cutter for mounting on and for removal from said cutter well;
- said frame means also defining at least one generally forwardly directed load carrying surface; and
- means for securing said roller cutter within said cutter well, comprising a load transfer block insertable from the rear of said cutter well into a load transferring position between said stator and said load carrying surface once said roller cutter has been placed within said cutter well, so that thrust loads imposed on said roller cutter during boring are transmitted from the stator to the load transfer block and from the load transfer block directly to said frame means, and means for retaining the load transfer block in place.

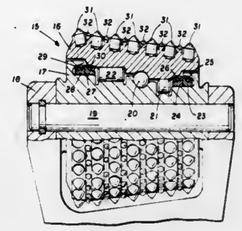
4,202,419

ROLLER CUTTER WITH MAJOR AND MINOR INSERT ROWS

Thomas F. Youngblood, DeSoto, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 11, 1979, Ser. No. 2,646
Int. Cl.² E21B 9/35
U.S. Cl. 175—374 6 Claims

1. A multiformation earth boring apparatus, comprising:
- a bit body;
- a rolling cutter member rotatably mounted on said bit body, said rolling cutter member having a surface;
- a multiplicity of individual major inserts;
- a corresponding multiplicity of sockets for receiving said major inserts;
- a multiplicity of major annular rows extending around said rolling cutter member, said major annular rows comprising said major inserts mounted in said rolling cutter member and projecting from said surface a substantial distance;
- a multiplicity of individual minor inserts;



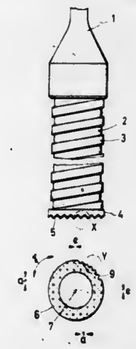
- a corresponding multiplicity of sockets for receiving said minor inserts; and
- a minor annular row extending around said rolling cutter member, said minor annular row comprising said minor inserts mounted in said rolling cutter member and projecting from said surface a lesser distance than said substantial distance that said major inserts project from said surface, said minor annular row of minor inserts located between said major annular rows of major inserts.

4,202,420

ROCK DRILL WITH HARD METAL DRILLING HEAD

Wolfgang Peetz, Blitzenreute; Siegfried Klaissle, Unterankenreute, and Bernhard Moser, Altshausen, all of Fed. Rep. of Germany, assignors to Hawera Probst GmbH & Co., Ravensburg, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,269
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735368
Int. Cl.² E21C 13/08
U.S. Cl. 175—395 20 Claims



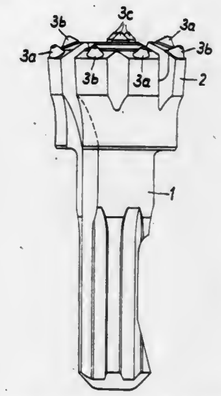
1. A rock drill for rotary blow drilling which includes: a chucking shank, a drill shank, a drilling head at least partly consisting of hard metal, one end of said drill shank being connected to said chucking shank while the other end of said drill shank has connected thereto said drilling head, said drilling head consisting of a solid formed piece having the outer end face thereof provided with pyramidal cutting bodies forming a single integral piece with said formed piece and tapering with increasing distance from said drill shank, the base surfaces of said pyramidal cutting bodies being diamond-shaped and having a corner angle of about 45°.

4,202,421

IMPACT BIT HAVING CIRCUMFERENTIAL INSERTS OF DIFFERING COMBINATION

Klaus Pinck, Feucht, Fed. Rep. of Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Oct. 17, 1978, Ser. No. 952,052
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749613
Int. Cl.² E21C 13/06
U.S. Cl. 175—410 3 Claims



1. A hammer drill bit including an axis, a shaft and a crown having an outer periphery; a plurality of hard metal circumferential studs carried by the crown and distributed along said periphery essentially on a single circle; each circumferential stud having an axis inclined at an acute angle with respect to the bit axis and a conical cutting tip oriented obliquely away from the bit axis; the improvement wherein the acute angles of the axes of said circumferential studs viewed consecutively along said circle alternate between a relatively large magnitude and a relatively small magnitude differing by 10° to 25° from one another.

4,202,422

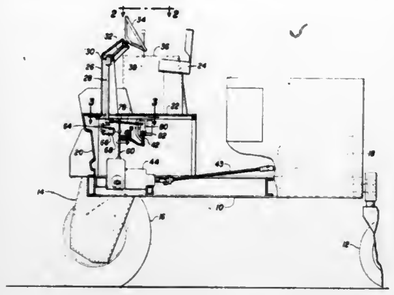
SAFETY LOCK FOR AGRICULTURAL WINDROWER OR THE LIKE

Kenneth W. McLean, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 23, 1978, Ser. No. 936,161
Int. Cl.² B62D 11/02; B60R 21/14
U.S. Cl. 180—6.48 8 Claims

1. In a self-propelled harvesting machine adapted to cut and arrange forage crops in swaths or windrows comprising a mobile frame, having a pair of drive wheels at opposite sides, an engine connected to a pair of hydrostatic units respectively connected to said drive wheels, a steering wheel on a rotatable shaft for manual manipulation in opposite directions from a neutral position, linkage means connected between said shaft and hydrostatic units and operable when rotated to vary the relative speeds of said drive wheels and thereby steer the machine in desired directions, and a speed control lever movably mounted about one axis for manual manipulation in opposite forward speed and reverse speed directions from a neutral position and interconnected to said linkage means for equally varying the speed and direction of rotation of said drive wheels, said lever also being movable about another axis transverse to said one axis only when in said neutral position; the improvement comprising safety means including similar members respectively movable with said linkage means simulta-

neously, locking members, means responsive to movement of said speed control lever in one direction about said another axis to project said locking members respectively into locking



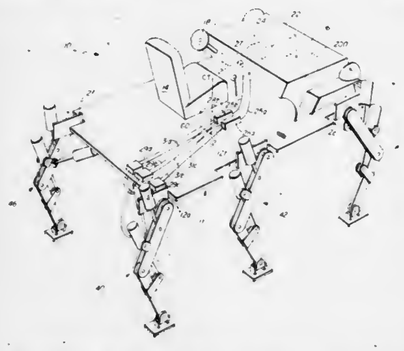
engagement with said similar members, said engagement locking said linkage means only when said steering wheel is in said neutral position, and means for biasing said speed control lever in said one direction.

4,202,423

LAND VEHICLE WITH ARTICULATED LEGS

Jose M. Soto, P.O. Box 783, S. Lancaster, Mass. 01561

Filed Apr. 20, 1978, Ser. No. 898,457
Int. Cl.[2] B62D *57/02*
U.S. Cl. 180—8 D **24 Claims**



1. A vehicle particularly for movement over a non-uniform surface which comprises:

(a) a housing through which a longitudinal axis Y, a transverse axis X and a vertical axis Z pass the axes being mutually perpendicular, one to the other, the horizontal plane of the vehicle being parallel with the X and Y axes when the vehicle is balanced;

(b) a plurality of articulated legs secured to and extending downwardly from said housing, each of the legs comprising at least two links, an upper link and a lower link,

the upper link pivotally joined to the housing at one end and pivotally joined at its other end to the upper end of the lower link, the longitudinal axes of the links intersecting and defining an angle,

drive means secured to the legs to effect movement of the links through angle A and movement of the upper link through angles B and C; one side of the angle B coincident with the longitudinal axis of the upper link and the other side parallel to the X axis, one side of the angle C coincident with the longitudinal axis of upper link the other side parallel to the Y axis, the movement through the angles B and C resulting in a substantially cone-shaped region, the apex of the cone being at the one end of the upper link;

(c) angle sensors to monitor the angles of each of the legs and to provide outputs corresponding to the same;

(d) a level sensor to monitor the horizontal plane of the vehicle in reference to the X and Y axes and to provide outputs corresponding to the position of the housing in relation to the X and Y axes;

(e) control means secured to the vehicle to effect forward, rearward, sideward and rotary motion of the vehicle, said control means providing signals which result in the movement of the legs;

(f) a power source secured to the housing and in communication with the drive means and responsive to a computer; and,

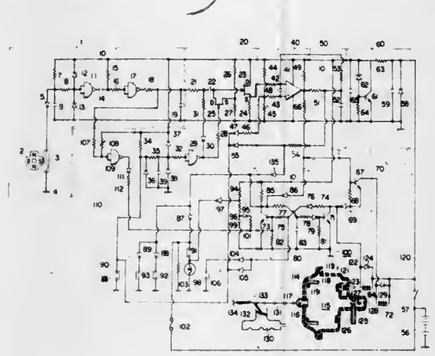
(g) a computer secured to the housing and responsive to the signals from the angle sensors, level sensor and the control means, the computer in communication with the power source and the drive means which computer through the control means effects the desired movement of the legs in response to the signals from the control means and level sensor.

4,202,424

AUTOMOBILE SPEED CONTROL SYSTEM

Naoji Sakakibara, Chiryu, and Shoji Kawata, Okazaki, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 24, 1978, Ser. No. 889,692
Claims priority, application Japan, Mar. 24, 1977, 52-32498
Int. Cl.[2] B05K *31/00*
U.S. Cl. 180—176 **6 Claims**



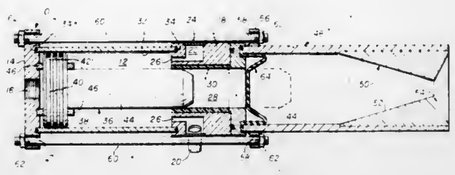
1. Automobile speed control system for automatically controlling the speed of an automobile and comprising speed control selector means for setting and cancelling a desired speed, an actual speed signal generator circuit which generates a first electrical signal indicating actual automobile speed, circuit means providing a second electrical signal which indicates desired automobile speed, circuit means providing a negative feedback signal, comparator circuit mean combining said first, second and negative feedback signals to provide an error signal, and a means to convert the error signal to provide an error signal, and a means to convert the error signal to mechanical movement of a throttle valve, characterized in that the circuit means providing the negative feedback signal comprises delay circuit means for receiving the error signal from the comparator circuit means and supplying the delayed error signal as the negative feedback signal to the comparator circuit means, and in that said speed selecting control means comprises switch means for resetting the level of the feedback signal to a level corresponding to the released, closed position of the throttle valve upon setting or cancelling a desired speed.

4,202,425

ACOUSTIC IMPULSE GENERATOR

William H. Hambrick, Sr., P.O. Box 1628, Conroe, Tex. 77301, and Charles L. Raybon, 5836 W. Flower St., Phoenix, Ariz. 85033

Filed Mar. 14, 1978, Ser. No. 886,440
Int. Cl.[2] G01V *1/38*
U.S. Cl. 181—120 **14 Claims**



1. An acoustic impulse generator comprising a housing forming a gas chamber having an inlet end with a passage communicating with the gas chamber for receiving a charge of gas and an outlet end with a passage communicating with the gas chamber for exhausting gas therefrom,

a passageway in said generator,

a piston means slidably disposed for reciprocal movement within said passageway,

a firing chamber attached to said gas chamber adjacent the exit of said passageway thereof and being characterized by an outlet orifice in communication with a liquid environment, and,

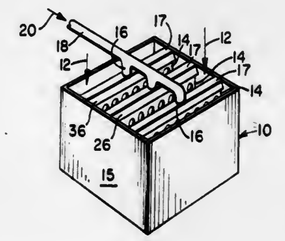
a diaphragm means affixed to said generator proximate said passageway so that said piston means travels through said passageway into direct contact with the said diaphragm means and thereafter into said firing chamber thereby expelling liquid through the orifice and producing an acoustic impulse.

4,202,426

EXHAUST GAS SPLITTER CONSTRUCTION

Fred V. H. Judd, 4876 Victor St., Jacksonville, Fla. 32207

Filed Dec. 5, 1978, Ser. No. 966,577
Int. Cl.[2] F01N *1/24*
U.S. Cl. 181—257 **11 Claims**



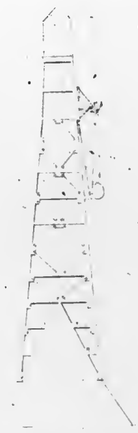
1. In a sound absorbing device for noisy exhaust gas flow having dust particles suspended therein, and having sound absorbing fiber mounted exposed to said exhaust gas flow for large area surface contact of said fiber with the exhaust gas flow, the improvement comprising means for flowing relatively dust-free gas as a boundary layer of said gas adjacent to said exposed fiber surfaces inhibiting dust deposition from said exhaust gas upon and between the fibers to maintain the sound absorbing efficiency of said fiber.

4,202,427

DERRICK ESCAPE SYSTEM

Charles A. Sada, Garden Grove, Calif., and William F. McKamie, Missouri City, Tex., assignors to Santa Fe International Corporation, Orange, Calif.

Filed May 22, 1978, Ser. No. 908,547
Int. Cl.[2] A62B *1/02*
U.S. Cl. 182—2 **101 Claims**



1. An escape system for personnel on the derrick of a drilling rig comprising:

(a) a structural member pivotally secured to a portion of said drilling rig;

(b) a personnel carrier being secured to said structural men. ber for supporting the personnel thereon, the personnel carrier having access means for allowing personnel to move from the drilling rig onto the personnel carrier;

(c) said structural member being releasably secured adjacent to said drilling rig;

(d) release means integrated with said structural member and said drilling rig for releasing said structure member from said drilling rig; and

(e) means for allowing said structural member with said personnel carrier to pivot away from said drilling rig displacing said personnel carrier with personnel thereon a sufficient distance from said drilling rig to avoid injury of the personnel.

4,202,428

LADDER

Ronald P. Hickman, Waltham Abbey, England, assignor to Inventec International Limited, Guernsey, Channel Islands

Continuation of Ser. No. 719,957, Sep. 2, 1976, which is a division of Ser. No. 558,120, Mar. 13, 1975. This application Aug. 31, 1977, Ser. No. 829,445
Claims priority, application United Kingdom, Mar. 14, 1974, 11457/74; Apr. 11, 1974, 16263/74
Int. Cl.[2] E06C *1/383*
U.S. Cl. 182—22 **33 Claims**

1. A foldable and extendable ladder having at least two ladder sections, each section comprising:

a central elongate support member and two outer elongate members arranged one on each side of, and substantially parallel to, the central member; a series of rungs disposed at spaced intervals on each side of the central member and foldably connected to the central member and one of the outer members, each rung being arranged to fold between an operative position, in which it extends generally at right angles to the longitudinal direction of each member to which it is connected, and a storage position in which the rung lies substantially parallel to the central member with the outer member to which it is connected extending

parallel to and in close juxtaposition with the central member;

wherein the ladder sections each have a front face and a rear face and are adapted to be moved relatively to one another between an aligned position one behind the other and a number of extended, partially overlapping parallel positions, the central support members having slidably



cooperating parts to provide captive location of one central support member behind the other during their relative movement,

whereby the rungs of each ladder section are capable of being in either the operative or storage positions in the relatively aligned and extended positions of the central support members.

4,202,429

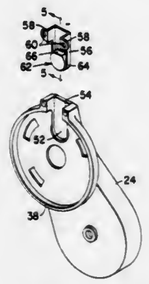
MOUNTING FOR A STATIONARY PAD OF A DISC BRAKE STRUCTURE

James P. Lob, Oconomowoc, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jun. 12, 1978, Ser. No. 914,563

Int. Cl.² F16D *65/02*

U.S. Cl. 188—71.1 **6 Claims**



1. In a drive train including a chain case, a drive shaft extending into the chain case and having a brake disc mounted thereon for rotation therewith adjacent the chain case, a stationary brake puck located in a recessed pocket defined by the chain case and opening toward the brake disc for selected engagement therewith and a puck housing releasably secured for the chain case and carrying an actuating means and a shiftable brake puck located for selected engagement with the brake disc at a location aligned with and on the opposite side of the brake disc from that adapted for engagement by the stationary brake puck, the improvement residing in an improved mounting for the stationary brake puck comprising: said pocket having an entrance located in an outer peripheral location of the chain case; a puck carrier received in and removable from the pocket radially relative to said disc through said entrance and having an end located at said entrance; said stationary brake puck being received in an end of the carrier remote from said peripheral location; and fastening means releasably holding the puck carrier in said pocket and the puck housing in place on said case, whereby the carrier and the housing may be simultaneously released from said case by removal of said fastening means when replacement of the one or the other or both of the stationary and shiftable brake pucks is desired.

4,202,430

BRAKE ACTUATING MECHANISMS

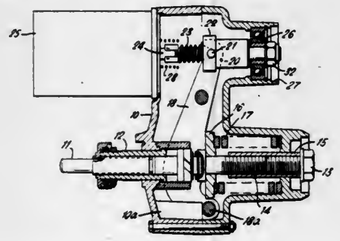
Roger C. Stevens, Whitton, England, assignor to Twiflex Couplings Limited, Middlesex, England

Filed Mar. 2, 1978, Ser. No. 882,671

Claims priority, application United Kingdom, Mar. 3, 1977, 9101/77

Int. Cl.² F16D *65/34*

U.S. Cl. 188—171 **7 Claims**



1. A brake actuating mechanism comprising a drive motor, a linearly movable brake applying member, spring means to force the member in a brake actuating direction to apply the brake, a lead screw driveably connected to the motor, a nut having a ball screw located on the lead screw to provide a rotary to linear/linear to rotary drive connection, means to connect the nut to the brake applying member, means for connecting a source of electric power to the motor to turn the motor in one direction and thereby draw the nut along the lead screw to move the brake applying member in a brake releasing direction, means for connecting a further electric power source to the motor to lock the motor electrically against rotation and means to switch the motor from the first power source to the further power source when the brake applying member has moved to a brake released position.

4,202,431

PASSAGE STRUCTURE OF LOCK-UP TORQUE CONVERTER

Takahiro Yamamori, Tokyo, and Kunio Ohtsuka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 14, 1979, Ser. No. 20,400

Claims priority, application Japan, Apr. 4, 1978, 53-38852

Int. Cl.² F16D *33/00*

U.S. Cl. 192—3.29 **8 Claims**

1. In a lock-up torque converter

an input member;

a converter cover driven by said input member;

a pump impeller secured to said converter cover and forming therewith a chamber;

an output shaft;

a turbine runner within said chamber connected to said output shaft;

a clutch piston mounted within said chamber;

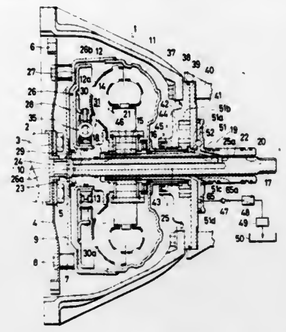
a stationary sleeve rotatably receiving said output shaft and forming therewith an annular space;

a pump;

a pump cover for said pump radially extending from said stationary sleeve;

a pump driving sleeve secured to said pump impeller and operatively connected to said pump to drive the latter, said pump drive sleeve surrounding a portion of said stationary sleeve and forming therewith a passage communicating with the inside of said pump impeller;

a control valve;



said output shaft having an axial passage and a radial passage communicating with said axial passage;

a spacer mounted within said annular space to divide the latter into a first annular chamber communicating with the inside of said turbine runner and into a second annular chamber communicating with said radial passage of said output shaft and with said control valve.

4,202,432

CLUTCH DISK FOR USE IN AUTOMOBILE

Fukutaro Komori, Tokyo, Japan, assignor to Komori Seisakusho Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1977, Ser. No. 859,479

Int. Cl.² F16D *69/02*

U.S. Cl. 192—107 M **17 Claims**



1. In a clutch disk for use in an automobile, the improvement wherein a plurality of supporting plates are separately fastened to the periphery of a plate, and masses of organic friction material and masses of sintered metal friction material are alternately fixed to both surfaces of said supporting plates for forming the frictional sliding surface of said clutch disk.

4,202,433

TOOL PROTECTION ARRANGEMENT FOR HYDRAULIC PRESSES

Horst Baltschun, Rülzheim, Fed. Rep. of Germany, assignor to SMG Süddeutsche Maschinenbau-Gesellschaft mbH, Fed. Rep. of Germany

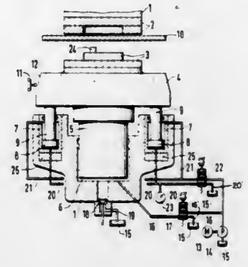
Filed Mar. 21, 1978, Ser. No. 888,749

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712472

Int. Cl.² B26D *7/24*

U.S. Cl. 192—129 A **10 Claims**

2. An arrangement for protecting a set of tools in a hydraulic press against an overloading by an object present in a tool space of the hydraulic press, the arrangement comprising a displacement switch means for monitoring at least a portion of a path of movement of a press ram in a working stroke direction and for providing an output signal indicative of a predetermined press ram movement, a control means for providing an output signal during a movement of the press ram, and a control circuit for evaluating a sequence of the output signals of the displacement switch means and the control means in such a manner that a false signal is generated when the control means provides an output signal prior to the output signal of the displacement switch means, characterized in that at least one fast stroke cylinder piston means and at least one working



stroke pressure means are provided for causing a displacement of the press ram in the working stroke direction, the control means is arranged in a path of force of at least one component of the hydraulic press, the control means includes a signal transducer operating virtually stationarily as a function of pressure, the hydraulic press includes a lower frame member at which is arranged the at least one fast stroke cylinder piston means, the fast stroke cylinder piston means constituting the at least one component of the hydraulic press, and in that the signal transducer is arranged between a cylinder of the fast stroke cylinder piston means and a portion of the lower frame member of the hydraulic press.

4,202,434

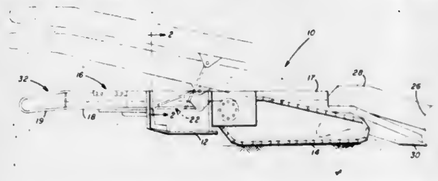
STABILIZER ASSEMBLY FOR A MINING MACHINE CONVEYOR

Charles R. Herron, Russell, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Continuation of Ser. No. 782,181, Mar. 28, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,016

Int. Cl.² B65G *21/00*

U.S. Cl. 198—316 **10 Claims**



1. A conveyor stabilizer for an underground mining machine comprising,

a mining machine body portion,

a conveyor assembly having a forward end portion and a rearward end portion,

said conveyor assembly extending longitudinally above said mining machine body portion with said forward end portion being pivotally connected to said mining machine body portion,

a stabilizing member positioned between said conveyor assembly and said body portion, said stabilizing member having a first end portion and a second end portion,

pivot means for pivotally connecting said first end portion of said stabilizing member to said conveyor assembly,

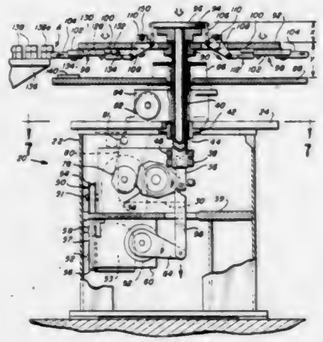
restraining means to restrain lateral movement of said stabilizing member,
said restraining means including a body portion positioned longitudinally on said mining machine body portion and extending in underlying relation with said conveyor assembly,
said restraining means body portion having a pair of spaced, parallel vertically extending sidewalls,
said stabilizing member second end portion being adapted for longitudinal movement on said restraining means,
said stabilizing member having lateral edges positioned between and closely adjacent to said pair of spaced, parallel vertically extending sidewalls respectively of said restraining means,
said pair of spaced, parallel vertically extending sidewalls extending a distance upwardly and oppositely of said stabilizing member lateral edges to restrain said stabilizing member from moving laterally and to permit said stabilizing member to move longitudinally between said sidewalls, and
said stabilizing member being supported by said restraining means on said mining machine body portion to restrain said conveyor assembly from lateral swaying movement above said mining machine body portion and thereby rigidify said conveyor assembly.

4,202,435

AUTOMATIC RECIPROCATING, INDEXING AND PICKING ASSEMBLY APPARATUS

Josef Mang, Palos Hills, and Robert W. Waters, Waukegan, both of Ill., assignors to Emerson Electric Co., Chicago, Ill.

Filed Aug. 30, 1978, Ser. No. 938,085
Int. Cl.[2] B23Q 7/02
U.S. Cl. 198—339 **6 Claims**



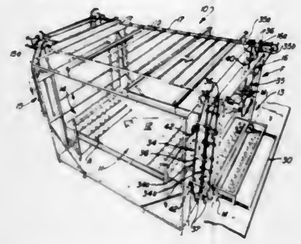
4. In a motor-driven, automatic, reciprocating, indexing, and picking assembly device of the type wherein vertically reciprocating plates driven by cam-actuated oscillator means effect both the vertical displacement and the horizontal extension and retraction of associated parts pick-up units, the improvement comprising: a motor driven first reducer means characterized as driving a first oscillator means, a second reducer means operable to drive a second oscillator means, and an adjustable positive drive means drivably connecting said first and second reducer means, whereby adjustment of said positive drive means effects substantial synchronization of the outputs of the said first and second oscillator devices.

4,202,436

APPARATUS FOR HANDLING A PLURALITY OF ARTICLES

Paul J. Kristapovich, and Ronald M. Schiltz, both of Lake Mills, Wis., assignors to Crepaco, Inc., Lake Mills, Wis.

Filed Feb. 5, 1979, Ser. No. 9,356
Int. Cl.[2] B65G 37/00
U.S. Cl. 198—472 **16 Claims**



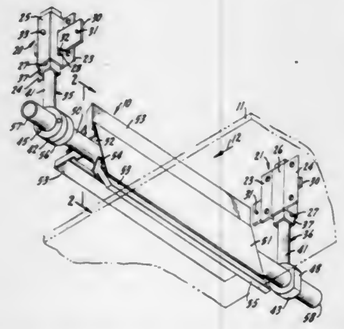
1. An apparatus for use in combination with a supporting surface for handling a plurality of articles segregated into groups, each group having the articles thereof arranged in a predetermined pattern, said apparatus comprising a framework having an infeed section and a discharge section, said sections being adapted to be disposed respectively adjacent spaced first and second peripheral segments of the surface; a plurality of frame elements movably carried on said framework; first means movably mounted on said framework for successively positioning groups of articles at a station provided on said infeed section; second means movably mounted on said framework and operable in timed sequence with said first means for positioning a frame element in substantially encompassing relation with a group of articles disposed at said station; third means movably mounted on said framework and operable in timed sequence with said second means for simultaneously moving a group of articles and encompassing frame element from said station, across said surface and to said discharge section; fourth means mounted on said framework for effecting separation at said discharge section of a group of articles from an encompassing frame element; and fifth means movably mounted on said framework and coacting with said second means for returning a separated frame element to said station and encompassing another group of articles.

4,202,437

SCRAPER ASSEMBLY FOR A CONVEYOR BELT

James R. Gordon, 301 W. Boling St., Benton, Ill. 62812

Continuation of Ser. No. 840,107, Oct. 6, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,923
Int. Cl.[2] B65G 45/00
U.S. Cl. 198—497 **15 Claims**



1. A scraper assembly for a conveyor belt comprising:

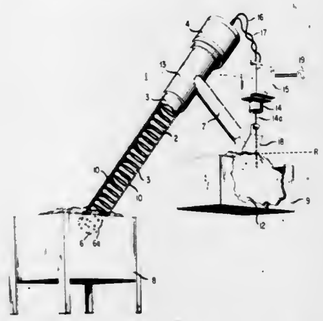
a pair of slide housings mounted adjacent opposite sides of the conveyor belt, each slide housing having a slideway, the two slideways being aligned parallel to each other in a plane transverse to the plane of the conveyor belt;
a pair of support slides, each slidably mounted in one of the slideways, each support slide including a shaft support collar;
releasable slide mounting means for securing each support slide in fixed position in its slideway;
a scraper shaft, having its opposite ends projecting through and supported by the shaft support collars, extending across the conveyor belt in spaced relation thereto;
a scraper core, affixed to the scraper shaft, extending across the conveyor belt, and including a longitudinal blade-mounting channel;
a scraper blade, having a scraper edge surface and a mounting element, the mounting element fitting in sliding interlocking engagement into the blade-mounting channel in the scraper core to mount the blade on the core with the scraper edge surface in engagement with the full width of the conveyor belt;
an annular flange affixed to one end of the scraper shaft;
and adjustable flange mounting means for securing the annular flange to one of the shaft support collars to maintain the shaft in fixed axial position and in one of a plurality of fixed angular orientations, adjustment of the angular orientation of the shaft being effective to compensate for a substantial range of wear on the scraper edge surface of the blade.

4,202,438

FLEXIBLE CONVEYOR SYSTEM

James V. Rotilio, 329 Hackensack St., Carlstadt, N.J. 07072

Filed Jul. 25, 1977, Ser. No. 818,445
Int. Cl.[2] B65G 43/08, 33/26
U.S. Cl. 198—524 **4 Claims**



2. The subcombination comprising a portable flight constructed and arranged for use with a conveyor system comprising a rotatable helical spring for moving granular, pulverized or fluid material from a first position to a second position,
said portable flight comprising at least one semicircular disk, and
means for securing said portable flight in fixed relation between adjacent coils of said helical spring,
wherein said last-named means comprises said portable flight constructed from a pair of parallel semicircular disks connected together at their external peripheries by a semicircular wall, forming between them a shallow semicircular cup which fits over one of the rungs of said spring, and means for bolting said cup to said rung.

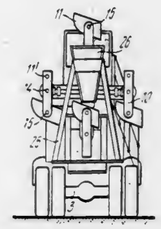
3. A conveyor system for moving granular, pulverized or fluid material from a first position to a second position, which comprises in combination:
an elongated flexible tube including means for receiving said material at one of said positions and means for expelling said material at or near the other said position,
a flexible helical spring enclosed in said tube and extending coaxially along the length of said tube,
means for driving said helical coil to rotate about its longitudinal axis relative to the inner surface of said tube,
said flexible helical spring including a plurality of portable flights including substantially plane members inserted between adjacent coils of said helical spring at spaced-apart positions along the length thereof, for continuously picking up said material at said receiving means and delivering said material to said expelling means when said spring is driven to rotate about its axis,
means for controlling said driving means which comprises in combination:
electromechanical switching means having an "on" position and "off" position connected to said driving means,
an elongated flexible lever connected at one end to said switching means whereby deflection of said flexible lever in one direction moves said switching means from "on" to "off" position, and deflection of said lever in the opposite direction moves said lever from "off" to "on" position,
means mechanically coupled to said lever and disposed adjacent said expelling means for contact with and deflection by a pile of said material collected out of said expelling means for deflecting said lever at a preselected level of said collected material, whereby to turn said switching means to "off" position when said material is above said preselected level, and turn said switching means to "on" position when said material is below said preselected level,
wherein said means mechanically coupled to said lever comprises a deflecting ring disposed in a plane substantially transverse to the principal vertical axis of said pile of material, said plane being substantially tangential to said pile of material at a preselected level of said pile whereby at least a portion of said ring is contacted and deflected by said pile at said preselected level.

4,202,439

THROWER OF TRANSPORTED MATERIALS

Bronislav M. Klimkovsky, ulitsa Universitetskaya, 2, korpus 1, kv. 12; Boris A. Azikov, ulitsa Poligonnaya, 22, kv. 68, both of Dnepropetrovsk; Mikhail U. Zemtsov, Delegatskaya ulitsa 9, kv. 110, Moscow; Sergei A. Kusch, prospekt Ilicha, 17, kv. 27, and Nikolai P. Nalivkin, prospekt Ilicha, 17, kv. 21, both of Dnepropetrovsk, all of U.S.S.R.

Filed Jul. 12, 1978, Ser. No. 924,087
Int. Cl.[2] B65G 31/04
U.S. Cl. 198—642 **3 Claims**



1. A thrower of transported materials, comprising: a rotatable rotor; at least one container adapted to receive and unload the said material, pivotally connected with said rotor; at least one intermediate connecting rod pivotally interconnecting said rotor and said container respectively, the axes of the rotation of said rotor and of the pivots of said connecting rod being parallel, the distance between the said axes of the rotation of the pivots of said connecting rod equalling one half of the distance between the axis of the rotation of said rotor and the axis of the rotation of the pivot of said connecting rod; a drive

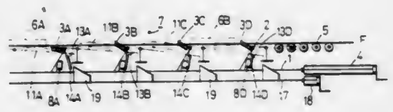
for rotating in the same direction said rotor and said connecting rod at a relative angular speed and for rotating said container at a speed which is twice the speed of the rotation of said rotor.

4,202,440

APPARATUS FOR ACCUMULATING MATERIALS ON A SHUTTLE CONVEYOR

Akira Niki, Kariya, Japan, assignor to Nagoya Kiko Kabushiki Kaisha, Japan

Filed Apr. 28, 1978, Ser. No. 900,915
Int. Cl.² B65G *25/00*
U.S. Cl. 198—718 **6 Claims**



1. An apparatus for accumulating materials on a shuttle conveyer having a plurality of rollers defining a carrying surface on which said materials are conveyed, said apparatus comprising:

a moving body supported on shuttle conveyer frame; cylinder means for reciprocating said moving body along a path of travel of said materials;

a plurality of dogs provided on said moving body and spaced apart from one another along said path of travel at a distance corresponding to the distance of each intermittent travel of said materials, said dogs being each vertically rotatable between a lowered position and a raised position in which each said dog projects above said carrying surface to engage one of said materials upon forward movement of said moving body;

a plurality of means provided on said moving body for magnetically maintaining said dogs in said raised position, but allowing said dogs to rotate into said lowered position upon contact with said materials during backward movement of said moving body; and

a plurality of means vertically rotatably supported on said frame for detecting any of said materials in a particular location on said carrying surface, each of said detecting means having one end projecting above said carrying surface ahead of one of said dogs and another end engageable with another of said dogs immediately behind said one dog when no material is detected by said one end to move said other dog into said raised position, said one end being lowered below said carrying surface upon arrival of any said material in said location to prevent said other end from contacting said other dog.

4,202,441

MODULAR COMPARTMENTALIZED CONVEYOR BELT SYSTEM

Ronald D. Bourgeois, 38 Ellison Park, Waltham, Mass. 02154

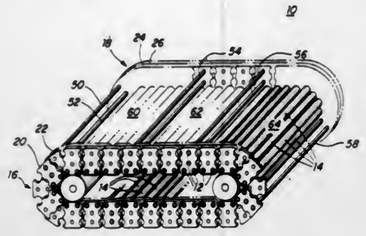
Filed Oct. 3, 1978, Ser. No. 948,153
Int. Cl.² B65G *17/00, 17/24*
U.S. Cl. 198—779 **3 Claims**

1. A modular compartmentalized conveyor belt system comprising:

a plurality of spaced roller bearing pin.

a plurality of rollers mounted on said pins;

first and second spaced sets of raised link members, each said set arranged in first and second rows for coupling adjacent pairs of said pins, said link members in each row disposed in close overlapping relationship with those in the other row; each of said link members including two horizontally spaced holes for receiving adjacent pins and at least one



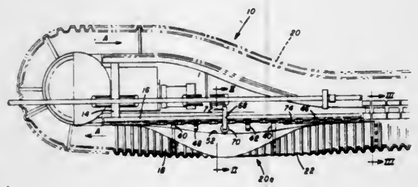
hole vertically spaced from said horizontally spaced holes for receiving a flight pin; each of said links in each of said rows meeting with adjacent link members in its row approximately midway of a link member in the other row and each of said link members having at each edge a flight pin recess which cooperates with that of an adjacent link member in the same row for accommodating a flight pin received in a vertical spaced hole in a link member of the other row.

4,202,442

CONVEYOR

Joseph S. David, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 10, 1977, Ser. No. 823,320
Int. Cl.² B65G *15/08*
U.S. Cl. 198—820 **9 Claims**



1. In a conveying apparatus wherein an elongated endles conveying element includes an endless flexible pan and a plurality of bracket means spaced longitudinally of the pan and supported by an endless guide means for support of the pan for orbital travel with respect to the guide means within an endless path including an elongated discharge path portion wherein a discharge means cooperates with the conveying element to move the pan to a material discharge orientation displaced from a material containing orientation thereof, and wherein an elongated flexible drive element is coextensive with at least the discharge path portion and is cooperable with the conveying element and with a motive means to drive the conveying element in its traverse of the discharge path portion and further wherein said bracket means provide a driving connection between said drive element and said pan for such driving of said conveying element and said bracket means include means

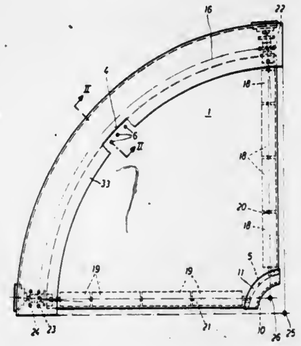
continuously cooperable with said guide means and said pan for maintaining support of said conveying element with respect to said guide means throughout such orbital travel while permitting such pan to assume such material discharge orientation during its traverse of the discharge path portion the improvement comprising: other support means, than the first mentioned said bracket means spaced longitudinally along said drive means and intermediate said first bracket means; said other support means being engageable with said flexible drive element and said conveying element for support of said pan only when said pan is in such material containing orientation.

4,202,443

CONVEYOR BELT CURVE

Werner Bührer, Thalwil, Switzerland, assignor to Transver AG, Wadenswil, Switzerland

Filed Nov. 8, 1978, Ser. No. 958,728
Claims priority, application Switzerland, Nov. 22, 1977, 14273/77
Int. Cl.² B65G *15/02, 21/16*
U.S. Cl. 198—831 **7 Claims**



1. A conveyor belt-curved portion comprising:

an endless conveyor belt;

two rows of rolls for deflecting said endless conveyor belt;

each row of rolls comprising a plurality of substantially cylindrical rolls;

drive means embodying a driven chain equipped with entrainment members fixed at the chain for driving said conveyor belt;

said driven chain having an upper chain run and a lower chain run;

guide rails for guiding the upper and lower chain runs of the chain therein;

said guide rails determining the curvature of the curved portion of the conveyor belt; and

said entrainment members containing rolls rollingly supported at the guide rails;

the chain comprises a multiplicity of chain links disposed in spaced relationship from one another;

each of the chain links having a shaft upon which there is seated a respective roll of the entrainment members, in order to bear by means of its outer surface at one of the guide rails;

a respective elastomeric tension spring provided for each roll of each entrainment member;

said tension spring having opposed ends;

one end of the tension spring bearing at the shaft carrying the related roll and the other end at the conveyor belt.

4,202,444

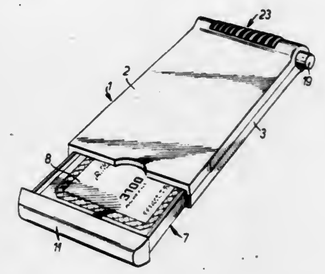
Patent Not Issued For This Number

4,202,445

SECURITY WALLET OR CONTAINER

Charles B. A. Porter, Sheristone, 4 Priory Way, Tetbury, Gloucestershire, England

Filed Oct. 31, 1978, Ser. No. 957,004
Int. Cl.² A45C *11/00*; E05G *3/00*; G08B *19/00*
U.S. Cl. 206—37 **10 Claims**



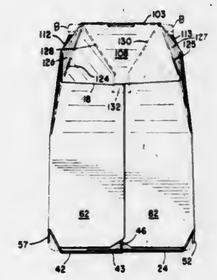
1. A security wallet or container suitable for carrying credit cards and comprising a hollow body, a receptacle for the cards in the form of a drawer slidably received in the body, a latch mechanism including a latch member operative to latch the drawer in the closed position, a locking mechanism operative to lock the wallet or container with the drawer in the latched position, and a defacing mechanism operative to deface the contained cards in the event of forcible opening of the wallet or container when latched without following the normal unlocking procedure, the latch member being associated with the defacing mechanism in such manner that movement of the latch member with the drawer in the event of the latter being forcibly opened while latched serves to actuate the defacing mechanism.

4,202,446

BOTTLE PACKAGE

Robert L. Sutherland, Campbell Hall, N.Y., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Nov. 13, 1978, Ser. No. 959,489
Int. Cl.² B65D *65/12, 65/22*
U.S. Cl. 206—147 **4 Claims**



1. A carrier package comprising an assembly of articles, in the form of bottles, arranged in a double row and in trans-

versely aligned pairs, enclosed in a tubular carton formed from a single blank of paperboard or similar foldable sheet material, said carton having a top wall panel, integrally hinged sidewall forming panels depending from side edges of said top wall panel and extending along the oppositely disposed outer side faces of the article assembly, bottom wall forming panels integrally hinged to the bottom edges of said sidewall panels and extending inwardly toward each other with overlapped margins, which margins of said bottom wall forming panels have interengaging cooperating means securing the panels together and forming a tightly wrapped package, end wall forming panels integrally hinged to the ends of said sidewall panels and disposed in end closing relation at opposite ends of the tubular carton, the uppermost portions of said end wall panels being slanted inwardly of the articles and being connected to the sidewall panels by inwardly folded triangular web formations which lie on the inner faces of upper portions of said sidewall panels, said end wall panels having inner marginal portions in overlapping relation, locking panels hinged to the opposite end edges of said top wall forming panel and folded downwardly therefrom into overlying relation with top marginal portions of said end wall panels, and latch means on said locking panels which are interengaged with cooperating means on the overlapping marginal portions of said end wall panels securing said panels in end closing position

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4,202,447

COLLATING AND BUNDLING BELT LOOPS

Louis W. Breck, Jr., El Paso, Tex., assignor to Billy The Kid Inc., El Paso, Tex.

Continuation of Ser. No. 741,044, Nov. 11, 1976, abandoned. This application Dec. 7, 1977, Ser. No. 858,095

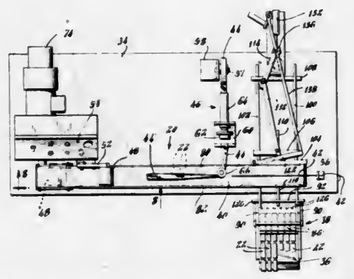
Int. Cl.[2] B65D *85/67*

U.S. Cl. 206—389 **5 Claims**

1. As an article of manufacture, a bundle of collated belt loops comprising:

a core,

a plurality of groups of separated, substantially rectangular, flat and coplanar fabric belt loops each belt loop in any



one of said groups being of similar color and shading as any other belt loop in the same group, and at least one of said belt groups being of a different shade or color than another one of said groups, and

means wound about said core for holding each group of belt loops to said core and maintaining them in spaced relation in the order collated, whereby the means can be unwound to present the belt loop groups in order.

4,202,448

EQUIPMENT FOR TRANSPORTING AND/OR STORING TEXTILE BOBBINS

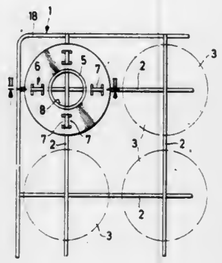
Erwin Jaeger, Herzogenrath, and Wilhelm Tiefels, Stolberg, both of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jun. 23, 1978, Ser. No. 918,572

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2728968

Int. Cl.[2] B65D *71/00*

U.S. Cl. 206—392 **5 Claims**



1. A one piece carrier device for support of spools on a grid-work of crossed support bars, said carrier device comprising a flat, plate-like tray adapted to rest on the support bars at an intersection of two of said bars, an upper spool guide extending upwardly from the tray, a lower spool guide extending downwardly from the tray, a central axial bore extending through said tray and said upper and lower spool guides, said lower spool guide having pairs of elongated vertical slots arranged to receive said intersecting bars, resilient gripping devices comprising pairs of resilient jaws downwardly depending from said tray at positions outboard from said axial bore, said jaws being adapted to resiliently grip said support rods at positions equidistantly spaced from said axial bore.

4,202,449

PROTECTING DEVICE FOR EDGES

Anders Bendt, Nordlige Bjergevej 5, DK - 8270 Hojbjerg, Denmark

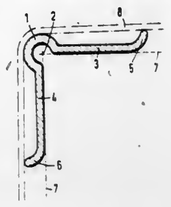
Filed Feb. 13, 1978, Ser. No. 877,507

Claims priority, application Denmark, Feb. 24, 1977, 802/77

Int. Cl.[2] B65D *81/02, 85/30*

U.S. Cl. 206—453 **1 Claim**

1. A protecting device for edges with annular, generally right angular cross section, said device comprising an angular shaped elongated extruded plastic rod having a uniform cross section along its entire length and a substantially constant material thickness across its width, the vertex of the rod angle having an outward protruding acruate shape covering substantially threequarters of a circle, and each of the sides of the rod angle having at a distance from the vertex circle at least one wave shaped outward protrusion with a height equal to or



exceeding that of the arcuate shaped vertex of the rod angle, said vertex circle being connected with said wave shaped outward protrusion by substantially flat portions of said rod which are adapted to abut areas adjacent edges to be protected such that loads applied to said rod are transmitted to said flat areas and not to said edges.

4,202,450

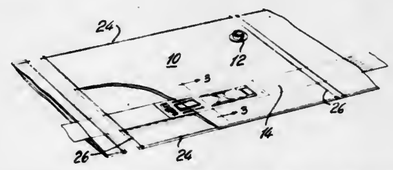
FLEXIBLE WALL POUCH WITH LABEL

Bryan G. Howell, Montreal, and Gordon H. Ringrose, Pointe Claire, both of Canada, assignors to Twinpak Ltd., Dorval, Canada

Filed Feb. 6, 1979, Ser. No. 9,789

Int. Cl.[2] B65D *75/28*

U.S. Cl. 206—459 **3 Claims**



1. A flexible transparent pouch having at least a double wall, a heat sealed bond at the extremities thereof, a strip of flexible material having a label extending between the bonds and located between a pair of films making up the double wall, the strip being connected to the extremities of the pouch at the heat sealed bonds.

4,202,451

HANGER FOR HANGING FABRIC

Milton Berkowitz, 500 E. 85th St., New York, N.Y. 10028

Division of Ser. No. 668,928, Mar. 22, 1976. This application Mar. 23, 1978, Ser. No. 889,528

Int. Cl.[2] B65D *85/16*

U.S. Cl. 206—526 **14 Claims**

1. A package for use in transporting fabric, comprising:

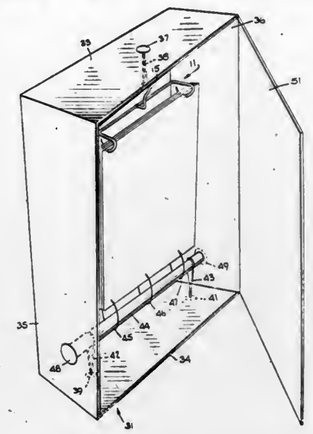
means for enclosing the fabric;

hanger means adapted to pierce and support the fabric in a substantially vertical disposition;

means for supporting said hanger means, said means for supporting being connected to said means for enclosing and said hanger means being detachable from said means for supporting;

means for variably tensioning the fabric; and

means, connected to said means for enclosing, for restraining lateral movement of the fabric and for distributing tension to the fabric so that the fabric is not crushed or bent



during transportation or movement of the fabric, and so that the fabric is not damaged by the tension.

4,202,452

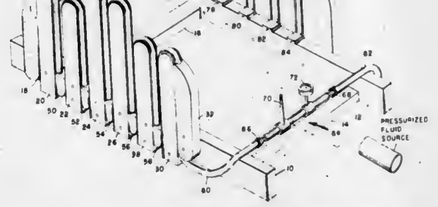
SUPPORTING RACK FOR BREAKABLE ARTICLES

Joseph R. McCormick, P.O. Box 846, Orange, Tex. 77630

Filed May 9, 1978, Ser. No. 904,310

Int. Cl.[2] B65D *85/48*

U.S. Cl. 211—41 **12 Claims**



1. Apparatus for supporting flat sheet-like breakable articles comprising:

a base;

a plurality of elongated members affixed in upstanding relationship to said base and being arranged in two parallel rows of equal number in spaced apart relationship, the spaces between said members in one row cooperating with the spaces between said members in the other row to receive said flat sheet-like articles;

expandable tubing arranged in a continuous serpentine manner on the facing surfaces of the interstices of adjacent ones of said elongated members, whereby said continuous tubing cooperates with said spaces to define lines of contact between said continuous tubing and said flat sheet-like articles which is substantially the height of said elongated members; and

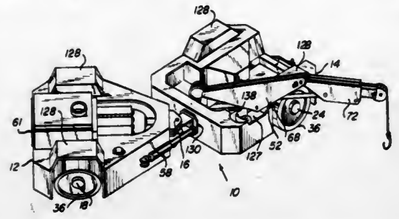
manifold means connected to the ends of said tubing and having an inlet for receiving fluid from a pressurized fluid source, whereby said tubing is expanded so as to be brought into contact with substantially the entire line of contact between said upstanding elongated members and said flat sheet-like articles.

4,202,453

ARTICULATED MINE SERVICE VEHICLE

Ted W. Wilkes, Jr., and Darel L. Wentworth, both of Lander, Wyo., assignors to Timberline, Inc., Lander, Wyo.

Filed Jan. 5, 1978, Ser. No. 867,126
Int. Cl.[2] B66C 23/06
U.S. Cl. 212—55 5 Claims



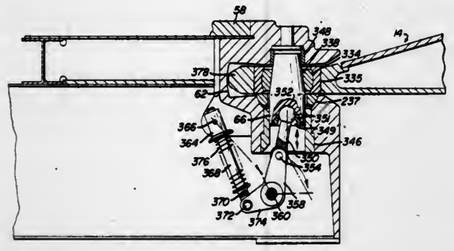
1. An articulated mine service vehicle comprising:
a power unit fabricated of steel plate;
an engine mounted in said unit;
hydraulic pump means operatively connected to said engine;
a first pair of drive wheels directly secured to said unit on opposite sides thereof;
a utility unit fabricated of steel plate and having front, rear, bottom and side walls, which walls substantially define a right parallelepiped;
a second pair of drive wheels directly secured to said utility unit on opposite sides thereof;
a hydraulic motor operatively connected to each wheel;
hydraulic brake means operatively connected to each power wheel;
a pneumatic tire mounted on each power wheel;
an articulated joint having a pivot axis and a roll axis, said joint being rigidly secured to said power unit so that its pivot axis is substantially vertical when the vehicle is level, and secured by bearing means to said utility unit so that the utility unit can rotate relative to the power unit around said roll axis;
hydraulic steering cylinders for causing one unit to pivot with respect to the other unit about the pivot axis of said joint;
a crane having a mast, said mast having a pivot axis;
a main boom pivotally mounted on said mast;
hydraulic means for raising, lowering the main boom;
a jib boom pivotally mounted on said main boom;
hydraulic means for raising and lowering the jib boom;
an extension boom reciprocally mounted in said jib boom, one end of said extension boom projecting beyond said jib boom;
hydraulic means for extending and retracting said extension boom;
a hydraulic powered winch mounted on said mast;
a weighted hook;
cable means for connecting the weighted hook to the winch, said hook hanging from said one end of the extension boom;
means for mounting the mast of said crane in said utility unit so that said mast can pivot about its pivot axis, so that said pivot axis of said mast is substantially vertical when said utility unit is level, and so that said pivot axis substantially intersects the centerline of said utility unit, said mast being located within the utility unit substantially as close to the articulated joint as possible;
hydraulic powered pivot means for causing the mast of the crane to pivot about is pivot axis;
a pair of hydraulic outriggers located substantially at the intersection of the front and side walls of said utility unit, remote from said articulated joint;
an operator's compartment in the utility unit;
first hydraulic power transmission means for applying hydraulic fluid under pressure from the hydraulic pump means to the hydraulic motors operatively connected to said drive wheels and to the brake means for each power wheel;
second hydraulic power transmission means for applying hydraulic fluid under pressure from the hydraulic pump means to the hydraulic steering cylinders;
third hydraulic power transmission means for applying hydraulic fluid under pressure from the hydraulic pump means to the hydraulic means of the crane, to the winch, and to the outriggers;
control means for controlling the engine;
control means for controlling the first, second and third hydraulic power transmission means, said control means being located in the operator's compartment.

4,202,454

COUPLER TO CONNECT CONVERTIBLE RAIL-HIGHWAY VEHICLES END TO END

Kenneth A. Browne, Lexington; Alan R. Cripe, Richmond, both of Va., and Eugene Hindin, Valley Forge, Pa., assignors to Bi-Modal Corporation, Greenwich, Conn.

Division of Ser. No. 810,120, Jun. 27, 1977. This application Aug. 28, 1978, Ser. No. 937,479
Int. Cl.[2] B60F 5/14; B61D 15/00; B61G 1/02, 5/00
U.S. Cl. 213—86 4 Claims



1. A coupler to releasably connect vehicles end to end including a rear sill structure having a female slot opening therethrough, a male member extending from the front of a rear vehicle of lesser dimensions than said female slot and adapted to enter the slot of a forward vehicle, and means for releasably locking said male member in said female member, said releasable locking means including a vertical hole through said male member, a bushing in said vertical hole through said male member whose outer surface is spherical, and a spherical seat recessed in said rear sill structure upon which said male member rests to thereby provide limited rolling and pitching action between the coupled vehicles, a vertical locking pin, said spherical seat, said vertical hole and said vertical locking pin having the same vertical axis, and linkage means interconnected between said locking pin and said rear sill structure to selectively bias and extend said locking pin through said vertical hole to effect coupling and to retract said locking pin from said vertical hole to effect uncoupling.

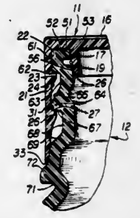
4. A coupler to releasably connect vehicles end to end including a rear sill structure having a female slot opening therethrough, a male member extending from the front of a rear vehicle adapted to enter the slot of a forward vehicle, and means for releasably locking said male member in said female member, said releasable locking means including a vertical hole through said male member, a bushing in said vertical hole whose outer surface is spherical, and a spherical seat recessed in said rear sill structure upon which said male member rests to thereby provide limited rolling and pitching action between the coupled vehicles, a vertical locking pin, said spherical seat, said vertical holes and said vertical locking pin having the same vertical axis, and linkage means interconnected between said locking pin and said rear sill structure to selectively bias and extend said locking pin through said vertical hole to effect coupling and to retract said locking pin from said vertical hole to effect uncoupling, said linking means forming an over-center toggle.

4,202,455

MOLDED PLASTIC CONTAINER FOR USE WITH A CAP HAVING INNER AND OUTER SKIRTS

George W. Faulstich, San Carlos, Calif., assignor to Three Sisters Ranch Enterprises, San Carlos, Calif.

Continuation-in-part of Ser. No. 852,189, Nov. 16, 1977, Pat. No. 4,162,736, and a continuation-in-part of Ser. No. 885,619, Mar. 13, 1978, Pat. No. 4,166,552. This application Mar. 1, 1979, Ser. No. 16,502
Int. Cl.[2] B65D 1/40
U.S. Cl. 215—31 1 Claim



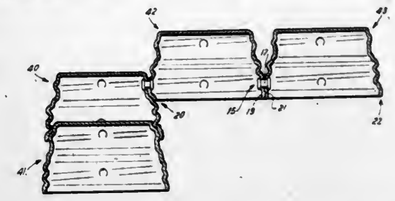
1. A container formed of thin-walled molded plastic material for use with a cap having a top disk, an inner skirt depending from said top disk having a substantially vertical outer wall and an outer skirt depending from said top disk, said container having a neck, said neck having a horizontal inwardly turned flange having a substantially flat top surface, the interior surface of said neck having a substantially vertical short first internal sealing surface below the inner edge of said flat top surface, an outward extending first groove below said first internal sealing surface, a second very smooth vertically extended internal sealing surface below said first groove, said first groove separating said first and second vertical internal sealing surfaces, said second internal sealing surface being of slightly lesser diameter than said first internal sealing surface, said first and second internal sealing surfaces being dimensioned so that said vertical outer wall of said inner skirt will seal against both of said first and second internal sealing surfaces, a second outward extending groove below said second internal sealing surface, and a lower internal vertical surface below said second groove of slightly lesser diameter than said second internal sealing surface, the exterior surface of said neck having a first external vertical surface extending below the outer edge of said flat top surface, the lower edge of said first external vertical surface being at an elevation intermediate the elevations of the top and bottom edges of said second internal sealing surface, said first external vertical surface terminating at its lower edge in a horizontal inwardly extending first shoulder, a second external vertical surface below said first shoulder of substantially lesser diameter than said first external vertical surface, an external bead below said second external vertical surface having an outwardly-downwardly slanted upper surface and and a second horizontal inwardly extending shoulder, a third external vertical surface below said external bead and an outward-downward sloping breast below said lower internal vertical surface, a bumper ring below said beast spaced substantially below said lower internal vertical surface, said bumper ring slanting downwardly outwardly to a maximum diameter substantially greater than the portion of said neck above said bumper ring and having an external bead forming a substantially horizontal shoulder, said neck terminating in an outward-downward slanted portion of said container of larger size than said neck.

4,202,456

TOY UTILIZING USED, DISCARDABLE ITEMS SUCH AS BOTTLE CAPS AND BEVERAGE CANS

David Silber, 1320 53rd St., Brooklyn, N.Y. 11219

Filed Feb. 27, 1978, Ser. No. 881,784
Int. Cl.[2] B65D 51/24
U.S. Cl. 215—228 8 Claims



1. A twist-on bottle cap for use as a toy in constructing an assembly of a plurality of identical such bottle caps attached to each other to form various shapes, and comprising a tapped body portion adapted for normal attachment to a threaded bottle top, a top portion adapted to be securely received within the body portion of an identical bottle cap, and a plurality of punch-outs positioned at spaced intervals around the periphery of said bottle cap.

4,202,457

FOLDABLE ELECTRICAL OUTLET BOX

Hakki M. Tansi, Woodbury, N.Y., assignor to Eagle Electric Mgf. Co., Inc., Long Island City, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,862
Int. Cl.[2] H02G 3/08; B65D 7/24
U.S. Cl. 220—3.3 33 Claims

1. A substantially planar molded synthetic plastic material blank adapted for erection into an electrical outlet box of the type in which electrical devices such as switches, electrical receptacles, convenience outlets and the like are mounted, said blank comprising:
(a) a substantially planar, synthetic plastic material, foldable member having
(i) a generally planar base panel having a pair of opposite longitudinal edges and a pair of opposite transverse edges,
(ii) a first pair of generally planar side panels each having an inner edge located at and connected to a respective one of said longitudinal edges to thereby form a respective common edge therewith,
(iii) a second pair of generally planar side panels each having an inner edge located at and connected to a respective one of said transverse edges to thereby form a respective common edge therewith, and
(iv) each pair of said first and said second pairs of side panels extending transversely away from said longitudinal and said transverse edges, respectively, along a pair of directions which are substantially orthogonal to one another to thereby form a generally cross-shaped configuration;

(b) living hinge means of one-piece with said foldable member and being located lengthwise along each of said common edges, and being operative for facilitating folding of said side panels relative to said base panel about respective axes along which each of said common edges extends between a generally flattened position in which said side panels lie generally in the same plane as the plane of said base panel, and a folded erect position in which said side panels lie in respective planes each generally orthogonal to the plane of said base panel;

(c) access means of one-piece with said foldable member, and operative for facilitating insertion of an electrical cable into the interior of the electrical outlet box when said panels have been folded to said folded erect position;

(d) flange means of one-piece with said foldable member, and operative for facilitating mounting of an electrical device into the interior of the electrical outlet box;

(e) engaging means of one-piece with said side panels, and operative for engaging a side panel of said first pair to a side panel of said second pair when said panels have been folded to said folded erect position, said engaging means including

(i) a pair of tabs each projecting from an opposite lateral edge of one of said pairs of side panels, each tab having a nail-receiving opening, and

(ii) a pair of slots each immediately adjacent an opposite lateral edge of the other of said pairs of side panels, each slot being dimensioned for receiving each corresponding tab when said panels are in said folded position; and

(f) means for securing the electrical outlet box in said folded position to a building structural member, and also for maintaining the structural integrity of the box in said folded position, including

(i) a pair of mounting nails each being insertable through a respective nail-receiving tab opening for attachment to the building structural member to thereby fix the relative orientations of said panels in said folded position and to concomitantly prevent said panels from moving out of their relative orientations in said folded position,

whereby the foldable member is folded in situ at the building structural member and the structural integrity of the folded box is maintained by the mounting nails.

4,202,458

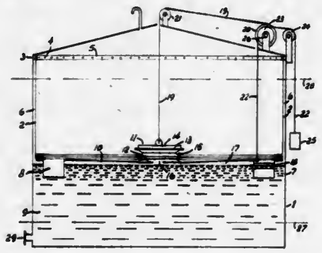
DEVICE TO CONTROL EVAPORATION LOSSES FROM LIQUID HOLDING STORAGE TANKS

Arnold Gunther, 29 Lorelei Rd., West Orange, N.J. 07052

Continuation-in-part of Ser. No. 871,806, Jan. 24, 1978, abandoned. This application Dec. 13, 1978, Ser. No. 969,176

Int. Cl.² B65D *89/04, 89/16*

U.S. Cl. 220—85 B **2 Claims**



1. A device to control evaporation losses from liquid holding storage tanks comprising, in combination,

a. a liquid holding storage tanks,

b. a cylindrical, open top, closed bottom, thin walled, collapsible container, loosely fitting into said tank and occupying substantially said tank volume, the top portion of said container being fastened and sealed to the upper portion of said tank's shell, the bottom of said container floating on the liquid contained in said tank,

c. a variable capacity container capable of expanding and contracting in the vertical direction and having its weight supported by counterweighing means,

d. a chain riding over a sprocket, fastened by one of its ends to the bottom of said collapsible container and by the other end to said counterweighing means, a drum which rotates about the same axis as the said sprocket, a cable with one of its ends wrapped around said drum and by its other end fastened to said variable capacity container,

e. connecting means between said variable capacity container and the annular gap comprised between said tank's shell and said collapsible container.

4,202,459

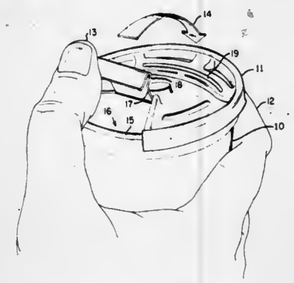
DISPOSABLE CUP COVER

Lawrence T. DeParales, 1 Gates Rd., Marshfield, Mass. 02050, and Edward P. Billitzer, 24 Water St., East Weymouth, Mass. 02189

Filed Aug. 25, 1978, Ser. No. 936,796

Int. Cl.² A47G *19/22*

U.S. Cl. 220—90.4 **1 Claim**



1. A disposable cup cover comprising,

a flat plastic disc having in combination,

a perimeter extending downwardly for engaging the edge of a cup,

a pie shaped segment disengagable from the cup cover whereby an edge of the cup is exposed for drinking purposes,

an arcuate recess in said disc for receiving the perimeter of the pie shaped segment whereby the cover segment is disengagably held in open position during drinking

a pair of reinforcing ribs adjacent the radial edges of said segment for frictionally holding said segment in a virtually liquid sealing position when closed.

4,202,460

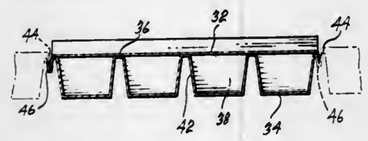
SECTIONAL FLOATING COVER

Fernand A. Imbeault, 112 St. Paul St. West, 5th Floor, Montreal, Canada (H2Y 1Z3)

Filed Apr. 13, 1978, Ser. No. 895,928

Int. Cl.² B65D *21/02*

U.S. Cl. 220—218 **11 Claims**



1. A sectional floating cover for storage tanks and similar vessels, comprising a plurality of buoyant, rigid chamber units secured together, in longitudinal rows with the chamber units in end-to-end relation in each row to form a continuous, rigid deck floating on the surface of the liquid in the storage tank, each chamber unit being rectangular in plan view and having straight longitudinal edges and straight end edges, each chamber unit consisting of an upper, flat rectangular sheet, a lower corrugated sheet coextensive with said upper flat sheet and joined to said upper flat sheet, said corrugated sheet forming a plurality of uniform upwardly opening corrugations alternating with uniform downwardly opening corrugations, said corrugations solely extending longitudinally of said upper flat sheet, the upper ridge of each corrugation abutting against, and secured to, the upper flat sheet, the marginal portions of said corrugated sheet parallel to said corrugations, forming a gas- and liquid-tight joint with the corresponding longitudinal edges of the upper flat sheet, flat sheet strips longitudinally extending across and secured in gas- and liquid-tight manner to the ends of said corrugations and to the corresponding end edges of said upper flat sheet, said sheet strips having a width greater than the thickness of the chamber unit to form edge portions freely protruding from the chamber unit, the assembly of said upper flat sheet, said flat strips and the upwardly opening corrugations closed by said upper flat sheet constituting a plurality of separate buoyant cells in each chamber unit, first connecting means formed along and co-extensive with the longitudinal edges of each chamber unit and connecting chamber units of adjacent rows one to another, each first connecting means consisting of a gas and liquid-tight and rigid beaded seam in which the contiguous longitudinal edges of said last-named chamber units are lapped, folded and pressed together, and second connecting means rigidly joining said edge portions of the sheet strips of adjacent chamber units of any given row, said first and second connecting means resisting shear stress between connected adjacent chamber units.

4,202,461

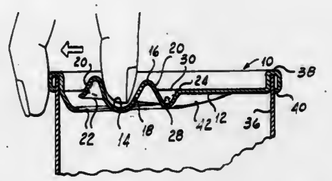
POP-OPEN CONTAINER LID

Nori Sinoto, 345 W. 58th St., New York, N.Y. 10019

Filed Jan. 11, 1979, Ser. No. 2,668

Int. Cl.² B65D *41/32*

U.S. Cl. 220—268 **11 Claims**



1. A pop-open container lid comprising a generally planar sheet formed with a first wall disposed at an angle with respect to said sheet to provide a surface against which pressure may be exerted in a direction generally parallel to said sheet, a second wall disposed at an angle with respect to said sheet, said second wall being frangible along a line, and means connecting upper ends of said walls to cause said second wall to break along said line in response to pressure exerted on said first wall generally in the direction of said sheet, a portion of said sheet adjacent to said second wall and remote from said second wall being free of obstacles over a space sufficient to render said second wall accessible to a digit of a user to permit the user's digit to engage said wall and to exert said pressure thereon in the direction of said second wall.

4,202,462

CONTAINERS HAVING LOCKING STRUCTURE

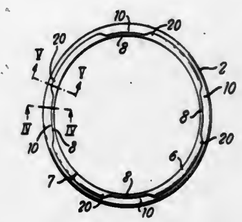
William I. Imber, St. Albans, England, assignor to Metal Box Limited, Reading, England

Filed Jan. 16, 1979, Ser. No. 3,937

Claims priority, application United Kingdom, Feb. 1, 1978, 4071/78

Int. Cl.² B65D *41/00, 41/04*

U.S. Cl. 220—293 **7 Claims**



1. A container comprising a metal container body having an access aperture with a curled rim and a cap for closing the access aperture, the cap being formed with a plurality of projections projecting radially and the curled rim of the container body having recesses therein, wherein portions of the curled rim are radially flattened so as to provide said recesses and to leave, adjacent said recesses, rim portions under which the projections on the cap can engage, the recesses being arranged to permit passage of the cap projections therethrough upon bringing the cap axially up to the access aperture, and the cap projections being arranged to engage under said rim portions adjacent the recesses when the cap is then turned, so as to secure the cap on the container body.

4,202,463

STOPPERS FOR PRESSURE CONTAINERS

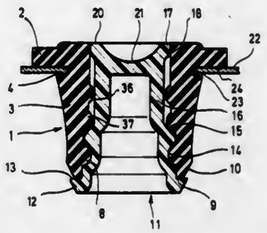
Joachim Mogler, Eppingen, Fed. Rep. of Germany, assignor to Datograf Apparatebau GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,539

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1978, 2806759; May 13, 1978, 2821051

Int. Cl.² B65D *51/16*

U.S. Cl. 220—307 **13 Claims**



1. A stopper for a pressure container which has a generally circular edge defining an opening of said container, said stopper comprising a hole fitting of resilient material with a substantially cylindrical inner bore and an inner core of substantially the same height as the hole fitting for insertion in said bore to seal thereagainst; said hole fitting having an annular external groove for receiving said generally circular edge of said container and having a main body below said groove and a flange above said groove for abutment with said container adjacent said edge, said main body converging conically to a lower secton; said inner core being upwardly insertable into said bore to seal therewith and having a flange to limit insertion, said inner core when inserted in said bore being downwardly ejectable from said hole fitting and said inner core

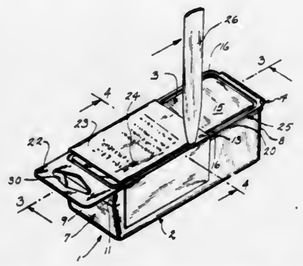
having a middle section which on insertion of said core is adjacent said main body at an upper section of said main body of larger external diameter than said opening, said middle section of said core having an external diameter which is less than the internal diameter of said inner bore at said upper section of said hole fitting.

4,202,464

RECLOSEABLE CONTAINER

Thomas J. Mohs, and Richard C. Engel, Jr., both of Madison, Wis., assignors to Placon Corporation, Madison, Wis.

Filed Feb. 22, 1978, Ser. No. 880,215
Int. Cl.² B65D 51/00
U.S. Cl. 220—339 **9 Claims**



1. A reclosable container of thin flexible thermoformed plastic material comprising a rectangular container base having a generally flat bottom and planar sidewalls and front and rear end walls joining the sidewalls, a lid integrally hinged to the rear end wall and movable between open and closed positions to provide a top portion for closing and strengthening the container base, the lid having a peripheral generally V-shaped groove extending downwardly from the plane of the lid and defined by inner and outer walls joined along the bottom of the groove providing a lateral stiffening member for the lid and the container base, the outer groove wall being shaped and engaging the top inner portions of the sidewalls and end walls when the lid is in its closed position to support them against inward flexing and bending and provide a sturdy container construction, the lid having a horizontal flange in the plane of the lid overlying the top edges of the sidewalls without extending outward substantially beyond the plane of the sidewalls providing a junction with the sidewalls substantially within the plane of the sidewalls to permit a label to be applied to the lid and at least one sidewall without substantial separation of the label from the plane of the sidewall to lockingly seal the container.

4,202,465

DIVIDED FOOD CONTAINER

Edwin C. McLaren, Apple Valley, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 21, 1978, Ser. No. 927,176
Int. Cl.² B65D 5/26, 5/56
U.S. Cl. 220—468 **3 Claims**

1. A compartmentalized container for packaging, storing and heating foods comprising:

a paperboard tray formed from a one piece foldable blank having a rectangular base, said base including first and second base members and a central divider wall being of inverted V-shaped configuration, with one side of said central divider wall being hingedly connected to the transverse side of said first base member adjacent thereto, and with the other side of said central divider wall being hingedly connected to the transverse side of said second base member adjacent thereto, with said central divider functioning to define a pair of discrete food compartments on said base;

a tubular side wall, said side wall including hingedly connected first and second opposed side wall members and first and second opposed end wall members;

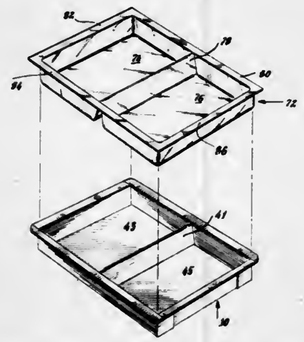
said first end wall member being hingedly connected to the other transverse side of said first base member, said second end wall member being hingedly connected to the other transverse side of said second base member, said opposed side wall members being hingedly connected to the opposed longitudinal edges of said first base member;

said tray further including a horizontally disposed flange member hingedly connected to the top edge of said tubular side wall and extending perpendicularly therefrom; and

a leak proof liner for said paperboard tray preformed from a semi-rigid blister of thermoformable material conforming generally to the interior of said paperboard tray, said blister being sealed to said tray along the flange member.

3. For use in combination with a leak proof liner, preformed from a semi-rigid blister of thermoformable material,

a blank for forming a compartmentalized food container comprising a substantially rectangular base, said base including first and second base members of substantially equal width and separated in the longitudinal direction by first and second divider members, with said second divider member being substantially identical in width to said second base member and hingedly connected thereto, with said first divider member being narrower in 'its' length then said second divider member and hingedly



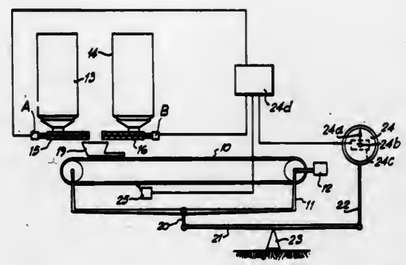
connected along one transverse edge thereto, said first divider member being hingedly connected along the other transverse edge thereof to said first base member, with the opposed longitudinally extending side edges of said first divider member being transversely spaced from the longitudinal sides of said rectangular base, and with said first base member adjacent the opposed longitudinally extending side edges of said first divider member extending to said second divider member, there being a pair of L-shaped cut lines running between said opposed longitudinally extending side edges of said first divider member and said first base member and extending between said first base member and said second divider member to the opposed longitudinal sides of said rectangular base, said cut lines aiding in the erection of said container, said blank further including a pair of opposed end wall members respectively hingedly connected to the opposed transverse sides of said base members; and a pair of opposed side wall members respectively hingedly connected to the opposed longitudinal sides of said first base member, said side wall members extending to a point intermediate the length of said second base member along the longitudinal sides thereof, said blank further including a first pair of opposed flange members respectively hingedly connected to the opposed end wall members, and a second pair of opposed flange members respectively hingedly connected to the opposed side wall members.

4,202,466

METHOD OF AND APPARATUS FOR DISPENSING PREDETERMINED PROPORTIONS OF TWO OR MORE MATERIALS

Kenneth Cook, Stockport, England, assignor to Henry Simon Limited, Stockport, England

Continuation-in-part of Ser. No. 485,945, Jul. 3, 1974, abandoned. This application Jan. 26, 1976, Ser. No. 652,047
Claims priority, application United Kingdom, Jul. 19, 1973, 34336/73
Int. Cl.² G01G 19/22
U.S. Cl. 222—1 **7 Claims**



1. A method of dispensing at least two different materials in predetermined proportions in composite supply comprising the steps of dispensing one of said materials while gravimetrically sensing the rate of supply of said material, automatically establishing a steady rate of supply of said material corresponding to the required predetermined proportion of that material, subsequently dispensing another of said materials to join said material already being dispensed while gravimetrically sensing the rate of combined supply of said materials, automatically establishing said combined supply at a steady rate whereby said materials are being dispensed in accordance with the required predetermined proportions thereof, continuing said procedure if further materials are to be included until all of the materials are being dispensed in the required predetermined proportions in composite supply, the foregoing steps being carried out at reduced speed until dispensing of the composite supply in the required proportions is attained, and then the speed of dispensing of all materials being increased while maintaining said proportions, thereafter monitoring said composite supply and, in the event of a variation in said composite supply in excess of specified tolerances, automatically arresting dispensing of at least one of said materials in order to discover the source of said variation and correcting same to re-establish said predetermined proportions in the composite supply.

4,202,467

VOLUMETRIC VALVE WITH INDEPENDENT DISPLAY AND RESETTING

Pierre L. Rutten, Nimes, and Francois H. Danel, Uriage, both of France, assignors to Compagnie Nationale d'Amenagement de la Region du Bas-Rhone et du Languedoc and Assistance Industrielle Dauphinoise S.A., France

Filed Nov. 1, 1977, Ser. No. 847,610
Claims priority, application France, Nov. 5, 1976, 76 34224
Int. Cl.² F16K 31/14
U.S. Cl. 222—20 **7 Claims**

1. A volumetric valve for automatically supplying a determined and adjustable volume of liquid comprising:

a valve head;

a turbine rotated by the liquid which passes through the valve;

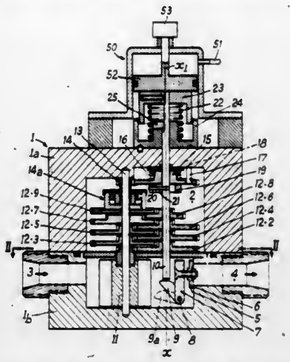
a gear train rotated by said turbine;

a rotary knob which enables to adjust and display said determined volume;

a cam rotated by the last pinion of said gear train, which cam automatically controls the closing of said valve head when said last pinion has rotated by a given angle;

a spiral spring which is driven in rotation by said cam;

and a sliding push rod which may be displaced in translation and which simultaneously opens said valve head, disengages said cam from said gear train and enables said cam to be brought back in its initial position by said spiral spring so that the volumetric valve is reset for a new cycle in which the same determined volume of liquid is supplied again.

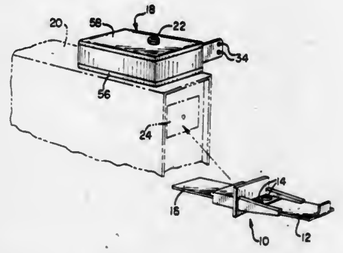


4,202,468

TICKET DISPENSER FOR ASSOCIATION WITH VENDING MACHINES

David R. Anderson, Rte. 4 Box 419, Delavan, Wis. 60115; Frank Kostka, and Frank J. Kostka, both of 121 Southcote Rd., Riverside, Ill. 60546

Filed Aug. 21, 1978, Ser. No. 935,655
Int. Cl.² B65H 3/44
U.S. Cl. 221—93 **5 Claims**



1. In a machine of the type providing for the vending of goods or services upon the insertion of a check into the machine, said machine including vending actuating means operable only upon the insertion of checks of a predetermined value, a supply of tickets, a ticket delivery position, ticket dispensing means associated with the machine whereby a ticket is dispensed by the machine in addition to said vending, and a housing for said ticket dispensing means, the improvement wherein said ticket dispensing means incldue first pawl means for feeding said tickets one at a time to said delivery position, a drive for said first pawl means, means operatively connecting said drive to said actuating means whereby said first pawl means will feed a ticket of the delivery position only when checks of said predetermined value have been inserted in said machine, said drive reciprocating said first pawl means from a starting position to a driving position and then back to the starting position, said driving position being adjacent said delivery position, said feeding occurring during movement from the driving position to the starting position, and second pawl means located rearwardly of said starting position locking said

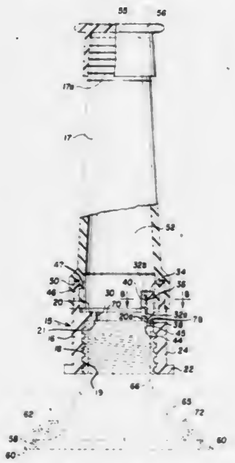
strip against reverse movement as said first pawl means moves from the starting position to the driving position, said housing defining an opening at said delivery position whereby tickets are driven one at a time through said opening, each ticket being adapted to be torn away from said strip, said first pawl means being located at said delivery position rearwardly of said opening during tearing away of a ticket and operating to hold said strip against movement as each ticket is torn away, opposed plates mounted within said housing, said ticket strip being movable between said plates, one of said plates defining a baffle for directing said ticket strip outwardly of the housing, said ticket strip being directed over the edge of the other plate, and wherein said tickets are adapted to be removed one at a time from the strip by pulling the strip into engagement with said edge, said baffle defining a curved strip engaging surface directing the strip at substantially a right angle to the direction of movement of the strip during movement of said first pawl means from the driving position to the starting position.

4,202,469

BLADE HOLDER AND NOZZLE ASSEMBLY

Michael W. Brandt, 1604 Park Blvd., Plano, Tex. 75074

Filed May 22, 1978, Ser. No. 908,161
Int. Cl.² B67B 7/26
U.S. Cl. 222—91 **5 Claims**



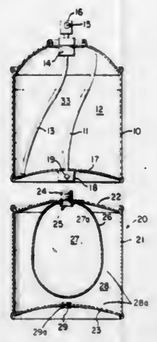
1. A Blade holder and nozzle assembly connectable to a flexible container spout closure element such that when the blade holder and nozzle assembly is connected to the flexible closure a circular opening is formed in the flexible closure and surfaces on the blade holder and nozzle assembly and on the flexible closure are urged into sealing relation, the assembly comprising: a hollow tubular body having a nozzle portion and a body portion, said body portion having an internally threaded bore in one end thereof; a shoulder inside said hollow tubular body portion intermediate opposite ends thereof, said shoulder having a central passage formed therein and having an elongated opening extending therethrough, said elongated opening being spaced outwardly from a central axis of said bore; a single, thin flat cutting blade having a pointed end and a single cutting edge; means to secure said cutting blade in said elongated opening such that as the body is threadedly secured to the spout, the cutting blade pierces the upper surface of the spout and as the body is rotated the blade cuts a circular opening in the upper end of the spout and such that the upper end of the spout adjacent the periphery of the circular opening is urged into sealing engagement with said shoulder; and a hollow cylindrical projection extending from said shoulder; said nozzle portion of said tubular body having an annular slot into which said cylindrical projection extends to secure said body portion and said nozzle portion together, said shoulder separating said nozzle from said threaded bore.

4,202,470

PRESSURIZED DISPENSERS FOR DISPENSING PRODUCTS UTILIZING A PRESSURE TRANSFER FLUID

Minoru Fujii, 5601 - 52nd Ave. S., Seattle, Wash. 98118

Continuation-in-part of Ser. No. 775,098, Mar. 7, 1977, abandoned. This application Feb. 27, 1978, Ser. No. 880,619
Int. Cl.² B65D 83/14
U.S. Cl. 222—130 **8 Claims**



1. A pressurized dispenser for dispensing a liquid or semi-solid product without release of the propellant dispensing the product to the surrounding environment, comprising:
container means having a valved opening holding a product to be dispensed,
a flexible wall in the container means forming a sealed compartment holding a compressible and liquefiable propellant therein liquefiable under the influence of temperature, pressure or both, out of contact with the product to be dispensed, and
means for introducing a transfer fluid under pressure into the container means, the transfer fluid in contact with the flexible wall of the compartment holding the liquefiable propellant and with the product to be dispensed, the liquefiable propellant exerting sufficient pressure on the product to be dispensed through the transfer fluid to force the product out of the container means through the valved opening when the valve is opened, wherein the container means includes a first container including the valved opening holding the product to be dispensed separate from a second container adapted to be used with the first container holding the transfer fluid and the liquefiable propellant.

4,202,471

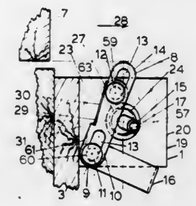
FLUID DISPENSING ANTI-BURGLAR BOOBY TRAP DEVICE

Charles R. Fegley, 1606 Frush Valley Rd., Laureldale, Pa. 19605

Continuation-in-part of Ser. No. 677,686, Apr. 16, 1976, Pat. No. 4,090,644. This application Mar. 8, 1978, Ser. No. 884,611
The portion of the term of this patent subsequent to May 23, 1995, has been disclaimed.
Int. Cl.² B65D 83/14; B67D 5/32
U.S. Cl. 222—153 **8 Claims**

1. A fluid-dispensing anti-burglary booby trap device for attachment to a first surface such as a wall wherein said device is associated with a second surface such as a door and arranged such that movement of said second surface will cause said device to dispense a fluid such as tear gas in the event unauthorized movement of said surface is attempted, the device comprising:
(a) a body member;

(b) a container of pressurized fluid supported in said body member, said container having a fluid-dispensing element adapted to release fluid under pressure when actuated;
(c) a passageway in said fluid-dispensing element for directing fluid from said container;
(d) means for actuating said fluid-dispensing element, said dispensing element actuating means mounted for movement and associated with said fluid-dispensing element and said second surface, said dispensing element actuating means actuating said fluid-dispensing element when it is moved by said second surface thereby causing fluid discharge;
(e) means for movably positioning said dispensing element actuating means whereby said dispensing element actuating means may be moved between an inactuatable position and an actuatable position, said dispensing element actuating means in said inactuatable position permitting movement of said second surface without causing movement of said dispensing element actuating means, said dispensing element actuating means when in said actuatable position being in position to be moved upon movement of said second surface;
(f) mounting means associated with said body member for fastening said body member to said first surface, said body member arranged on said first surface relative to said second surface whereby movement of said second surface from a first position to a second position will engage with and move said dispensing element actuating means when said dispensing element actuating means is in said actuatable position, said dispensing element actuating means including means for retaining said dispensing element actuating means in engagement with said fluid-dispensing element when said dispensing element actuating means is moved by said second surface, said retaining means including a spring biased projection attached to and moved by said dispensing element actuating means wherein said spring biased projection engages said body member upon movement of said dispensing element actuating means to retain said dispensing element in said discharge position.



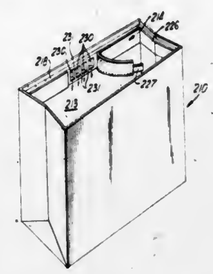
4,202,472

DISPENSER FOR INSECTICIDE OR THE LIKE

Feng Lin, 455 Ocean Ave., Brooklyn, N.Y. 11226

Division of Ser. No. 723,784, Sep. 16, 1976, Pat. No. 4,105,144. This application May 23, 1978, Ser. No. 908,823
Int. Cl.² B65D 47/10
U.S. Cl. 222—187 **6 Claims**

1. A dispensing device for dispensing materials along a wall of a container including:
at least one elongated member to hold said materials, said elongated member including a first elongated substantially U-shaped base member having a flat surface, said flat surface being attached along at least a portion of said wall, and arms extending outwardly from said flat surface to define a channel, each of said arms terminating in an outer end;
a plurality of transverse cross members attached to said base member and extending between said arms to subdivide said channel into a plurality of separate compartments;



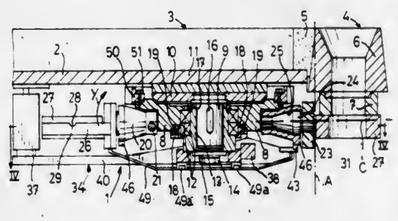
a cover strip removably attached to the outer ends of said arms and said cross members to enclose said compartments; and
a pull tab attached to said cover strip to permit said cover strip to be pulled away from the outer ends of said arms to expose at least one of said compartments.

4,202,473

REVOLVING SLIDE GATE MECHANISM

Stanislav Szadkowski, Brussels, Belgium; Daniel Amory, Dunkerque, France, and Jean M. Thomas, Xhoris, Belgium, assignors to Vesuvius International Corporation, Wilmington, Del.

Filed Nov. 2, 1978, Ser. No. 956,939
Claims priority, application United Kingdom, Nov. 15, 1977, 47515/77
Int. Cl.² B22D 41/08
U.S. Cl. 222—598 **26 Claims**



1. A rotary slide gate mechanism for use on a pour vessel to control flow of molten metal through an outlet in the vessel shell, said mechanism comprising:
a moving frame able to rotate in a plane substantially parallel to the outlet in the vessel shell, around a central shaft fixed to the vessel shell;
at least two refractory plate supporting frames on the periphery of said rotary moving frame and connected thereto by means of a connection allowing each supporting frame to swivel on the one end in a rotation plane extending radially in respect to said central shaft, and on the other end around a rotation axis which is perpendicu-

lar to the axis of the rotation of said supporting frame in said radially extending rotation plane;

a number of interchangeable refractory insert plates, each plate being supported by one supporting frame in such a manner that said refractory insert plates are able to swivel around an axis which is substantially parallel to the axis of a rotation of said supporting frame in said radially extending rotation plane, whereby the lateral edges of two adjacent refractory insert plates form with respect to each other a substantially tight seal and whereby at least one of said refractory insert plates has an aperture which may be brought in alignment with the outlet in the vessel shell;

a pushing system for urging said refractory plate supporting frames, when they are in the vicinity of the outlet in the vessel shell, towards said outlet, said pushing system comprising lever means and force supplying means, removed from the heat radiating area of said outlet, acting on said lever means;

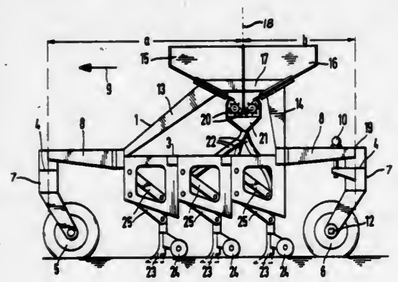
a system for imparting a rotary movement to the rotary moving frame of the mechanism; whereby the refractory insert plates may be moved in very close cooperating contact with a perforated refractory plate for the outlet in the vessel shell, so as to control the flow of metal therethrough.

4,202,474

MACHINE FOR SPREADING FERTILIZER AND SEED

Heinz Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany, assignor to Amazonen-Werke, Hasbergen, Fed. Rep. of Germany

Filed Dec. 22, 1976, Ser. No. 753,408
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1975, 2559341
Int. Cl.[2] A01B 73/00
U.S. Cl. 222—609 10 Claims



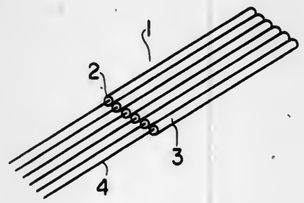
1. A machine for spreading fertilizer and seed movable in a working direction for said spreading and in a transport direction which is at right angles to the working direction, wherein the width of said machine with respect to its working direction of travel is greater than its length with respect thereto, said machine comprising at least two individual machine units having lateral and transverse sides and assembled together in lateral relationship to each other by laterally located and extending hitch elements on each of said machine units, each of said machine units having a chassis borne at three support points disposed in a triangular array by wheels during movement in the working direction and movement in the transport direction, additional hitch elements on the transverse side towards the working direction of each machine unit, said additional hitch elements being spaced a distance c from each other on the front transverse side of each machine unit and the laterally located hitch elements on each of the machine units being spaced the distance c from each other, said wheels each being a swivally mounted wheel swivable about a vertical axis, at least one said swivel wheel on each machine unit being lockable in the working direction and in the transport direction, said assembled together machine units being pivotable with respect to each other about a pivot axis parallel to the working direction by means of said hitch elements on the lateral sides of said machine units, and being pivotable about a second pivot axis running horizontally and transversely to said working direction.

4,202,475

METHOD AND APPARATUS FOR CUTTING OPTICAL FIBERS

Masataka Hirai, Mito, and Koichiro Matsuno, Yokohama, both of Japan, assignors to Nippon Telegraph and Telephone Public Corp., Tokyo; Sumitomo Electric Industries, Ltd., Osaka, both of, Japan and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Jul. 28, 1978, Ser. No. 929,056
Claims priority, application Japan, Aug. 1, 1977, 52/92324
Int. Cl.[2] B26F 3/00
U.S. Cl. 225—2 6 Claims



1. A method of cutting at least one uncoated optical fiber using a leaf spring having a fixing portion at each end and a resilient material provided on the upper surface between said fixing portions, said method comprising the steps of:

(a) placing each said uncoated optical fiber on said resilient material in alignment with said two fixing portions;

(b) clamping each said uncoated optical fiber at each of said fixing portions;

(c) scoring the outer surface of each said uncoated optical fiber at a cutting point; and,

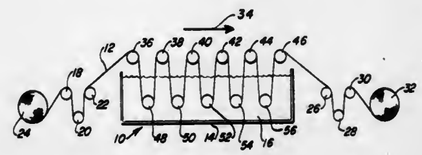
(d) arcuately flexing said leaf spring outwardly in the direction of said resilient material so as to impart a tension along the axial direction of each said uncoated optical fiber, whereby said cutting occurs at said cutting point.

4,202,476

WEB TENSIONING APPARATUS FOR A HOSTILE FLUID BATH

John R. Martin, c/o Martin Automatics Inc., 1661 Northbrook Ct., Rockford, Ill. 61103

Filed Dec. 22, 1978, Ser. No. 972,256
Int. Cl.[2] B65H 17/42, 17/22, 23/16
U.S. Cl. 226—119 8 Claims



1. A web tensioning apparatus for maintaining tension in a web as it travels through a fluid bath comprising, in combination:

at least two rotatable web-driving rollers mounted adjacent the fluid bath, the rotatable web-driving rollers substantially parallel to each other and spaced transversely to their axes of rotation along the fluid bath;

first drive means, operably connected to one of the rotatable web-driving rollers, for driving the one rotatable web-driving roller at a pre-selected surface velocity;

at least one second drive means, operably connected to the others of the web-driving rollers, the second drive means operable in a first mode for driving the others of the web-driving rollers at a surface velocity greater than the pre-selected surface velocity and operable in a second mode for driving the others of the web-driving rollers at a surface velocity less than the pre-selected surface velocity;

at least one rotatable idler roller within the fluid bath, the idler rollers generally parallel to the web-driving rollers and positioned so that the web alternately passes across a web-driving roller and an idler roller, the idler rollers suspended from the web and substantially free to move toward and away from the web driving rollers;

means for sensing the positions of each of the idler rollers to sense (1) whether any of the idler rollers has moved toward the web-driving rollers past a first sensing position, and (2) whether any of the idler rollers has moved away from the web-driving rollers past a second sensing position; and,

control means for responding to the sensing means and controlling the mode of the second drive means so that (1) when the sensing means senses that any of the idler rollers has moved toward the web-driving rollers past the first sensing position, the second drive means operably connected to the web-driving roller which is adjacent the idler roller that has moved, in a direction away from the web-driving roller to which said first drive means is operably connected, is placed in the one mode of said first mode and said second mode which moves the idler roller away from the web-driving rollers, and (2) when the sensing means senses that any of the idler rollers has moved away from the web-driving rollers past the second sensing position, the second drive means operably connected to the web-driving roller adjacent the idler roller that has moved away from the web-driving rollers, in a direction away from the web-driving rollers to which the first drive means is operably connected, is placed in the other mode of said first mode and said second mode.

4,202,477

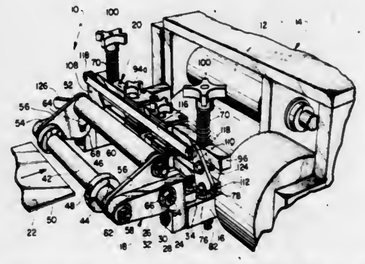
Patent Not Issued For This Number

4,202,478

STOCK CHECK AND LEAD-IN ROLL ASSEMBLY

Bernard Kula, Woonsocket, R.I., assignor to Cooper-Weymouth, Peterson, Inc., Esmond, R.I.

Filed Nov. 13, 1978, Ser. No. 960,847
Int. Cl.[2] B65H 23/10, 23/26
U.S. Cl. 226—189 11 Claims



1. A lead-in apparatus for positioning sheet stock for feed along a straight generally horizontally oriented feed plane to a device such as a press or the like, including a stock brake assembly positioned forwardly of said device, said stock brake assembly comprising upper and lower stock checks disposed respectively above and below said feed plane with said lower stock check restricted from movement towards or away from said feed plane, said upper stock check in turn supported by an upper stock check bar positioned above said feed plane for movement towards and away therefrom such that stock may be braked by opposed contact with said stock checks, spring means for normally urging said upper bar towards said feed plane to a closed stock check attitude, levers positioned on laterally opposite sides of said feed plane, said levers pivotally supported at one point thereof, follower rolls disposed on said levers at a position above said pivot points and adapted to contact said upper stock check bar whereupon pivotal movement of said levers so as to move said followers radially upward forces said upper bar and accordingly said upper stock checks to an open stock check position against the action of said spring means.

9. A lead-in apparatus for positioning sheet stock for feed along a straight generally horizontally orientated feed plane to a device such as a press or the like, including a lead-in roll assembly positioned forwardly of said device, said roll assembly comprising a lower roll positioned transversely beneath said feed plane wherein stock passing through said lead-in assembly is supported by said lower roll, an upper roll transversely positioned above said feed plane downstream from said lower roll and supported at opposite ends thereof within a bracket, said bracket in turn supported for pivotal movement about the axis of said lower roll such that said upper roll is movable towards and away from said feed plane so as to vary

the thickness of stock which may be passed straight through said roll assembly within said feed plane such that the lower surface of said upper roll contacts the upper stock surface as it moves therepast, and means for fixing the position of said bracket with respect to said frame.

4,202,479

SURGICAL INSTRUMENT FOR SUTURING TUBULAR ORGANS WITH U-SHAPED STAPLES

Mikhail M. Razgulov, and Tamara A. Razgulova, both of ulitsa Mashinostroitelei, 32, kv. 80, Podolsk Moskovskoi oblasti, U.S.S.R.

Filed Feb. 12, 1979, Ser. No. 11,697
Int. Cl.² A61B 17/12
U.S. Cl. 227—8 **7 Claims**



7. An attachment to said staple body of a surgical instrument, comprising:

a strip;

a means for holding said strip to said staple body;

an operative end of said strip having a radial projection to the outer surface of which said supporting semibush is positively locked, provided with two rows of said depression;

a pivot;

a lever movably mounted on said pivot at the centre of said supporting semibush at the supporting operative end of said strip;

a first end of said lever shaped as a segment having on its inner surface said curvilinear grooves, and on its outer surface, a number of teeth for an involute meshing with said actuating lever;

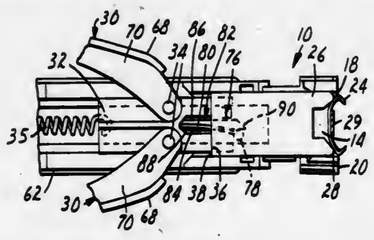
a second end of said lever adapted for said staple semiring and said segment to return into the initial position after the suturing has been over.

4,202,480

STAPLER INCLUDING MEANS FOR PREVENTING DOUBLE FEEDING OF STAPLES

Leland W. Annett, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 26, 1979, Ser. No. 14,911
Int. Cl.² B25C 5/02
U.S. Cl. 227—8 **9 Claims**



7. In a medical stapler comprising:

a housing having an anvil portion adapted to engage the central portion of a staple to afford closing of the staple about the anvil portion;

a ram mounted on said housing for sliding movement from a load position spaced from the anvil portion to an eject position adjacent the anvil portion, said ram having an end portion adapted to close a said staple between said ram and said anvil portion around said anvil portion during movement of said ram to its eject position; and

drive means adapted to be manually activated for moving said ram from its load to its eject position, the improvement wherein:

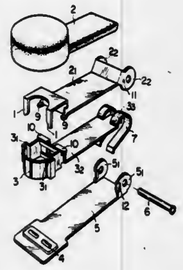
said stapler includes means for producing a click when the ram is moved fully to its eject position to provide both a tactile and an audible indication of the closing of a said staple around said anvil portion.

4,202,481

STAPLER FOR BROAD CENTER BEAM STAPLES

Jun Yanagida, 723-140, Kashiay, Kannamie-cho, Tagata-gun Shizuoka-ken; Souichiro Ishikawa, 2-27-12, Kasuga-cho, Nerima-ku, Tokyo-to, and Kazutada Nakazawa, 5-26-19, Kamisaginomiya Nakano-ku, Tokyo-to, all of Japan

Filed Aug. 10, 1978, Ser. No. 932,554
Claims priority, application Japan, Aug. 24, 1977, 52/112222[U]
Int. Cl.² B25C 5/02
U.S. Cl. 227—145 **2 Claims**



1. A stapling machine comprising in combination:

(a) a base plate having a wire staple receiving recess on one end part thereof, a pair of upright flanged portions at both sides on the opposite end part thereof, and a pivot pin passing through said upright flanged portions;

(b) wire staple holding means in a generally cylindrical configuration, the transverse cross-sectional shape thereof conforming to the shape of an ornamental wire staple having a broadened center beam section which is wider than the staple points at both side thereof, said means being provided with a pair of grooves to permit passage of the staple points, and a leaf spring, one end of which is connected with said wire staple holding means, and the other end of which is partially bent in a U-shape to provide a repulsive spring force and partially formed into a hook shape to be engaged with said pivot pin;

(c) a pressure applying member including a wire staple extruding member formed in a fork shape to freely slide into and out of said grooves formed in said wire staple holding means and a pair of upright flanged portions at both sides of the other end thereof forming bearings to receive said pivot pin therethrough to be pivotally connected with the upright flanged portions of said base plate; and

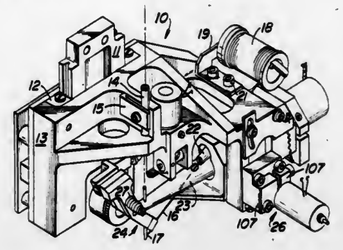
(d) a magnet to attract and hold in position the wire staple placed in said wire staple holding means.

4,202,482

SOLENOID ACTUATED WIRE FEED AND TEARING APPARATUS

Moshe E. Sade, Horsham; Albert Soffa, Wynnewood; Dan Vilenski, Hatboro, and William Wing, Horsham, all of Pa., assignors to Kulicke & Soffa Industries, Inc., Horsham, Pa.

Filed Nov. 22, 1978, Ser. No. 963,163
Int. Cl.² B23K 19/04
U.S. Cl. 228—4.5 **12 Claims**



1. A solenoid actuated wire clamping apparatus for feeding a fine wire to a bonding tool and tearing the fine wire after being bonded by the bonding tool of the type employed with wedge bonding machines, comprising:

(a) a bonding head housing having two depending support arms,

(b) a bonding tool holder mounting block pivotally mounted between said arms of said housing,

(c) a pair of axially aligned hollow transducer pivot screws extending through said arms of said housing for pivotally supporting said mounting block,

(d) an actuating rod extending through each said hollow pivot screw,

(e) first and second solenoids mounted outboard on said housing,

(f) each said solenoid being adapted to engage one of said actuating rods,

(g) a wire clamp pivotally mounted on said bonding tool holder mounting block,

(h) a bonding tool holder having a bonding tool mounted therein rigidly mounted in said bonding tool holder mounting block for positioning said bonding tool in front of said wire clamp,

(i) first lever means mounted on said bonding tool holder mounting block for movement by said first solenoid through an actuating rod for articulating said wire clamp to a plurality of predetermined positions, and

(j) second lever means mounted on said bonding tool holder mounting block for movement by said second solenoid through an actuating rod for opening and closing said wire clamp whereby, said wire clamp may be actuated by said solenoids with a minimum of impact and shock force imparted to the working face of the bonding tool.

4,202,483

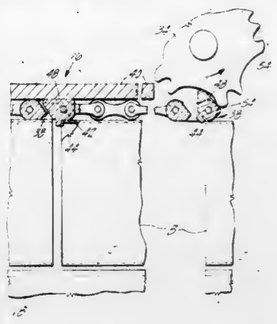
CAN BODY CONVEYOR WITH ANTI-ROTATION MECHANISM

Frederick S. Sillars, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Jul. 10, 1978, Ser. No. 923,337
Int. Cl.² B23K 1/16
U.S. Cl. 228—43 **9 Claims**

1. Conveyor mechanism for successively advancing workpieces along a path to expose pre-determined portions thereof to a molten solder applicator, the mechanism comprising: a drive chain; a chain guide cooperative therewith, and a plurality of spaced lugs each having one flat side pivotally carried by the chain and respectively responsive to engagement with the chain guide to grip a portion of the respective workpieces to hold them against rotation and to move them along said path, whereby said pre-determined portions are uniformly exposed to solder from said applicator, said flat sides being disposed on a side of the chain which is remote from the pre-determined portions of the workpiece to be soldered, said flat side further engaging said chain guide.

2. In a machine for soldering the side-seam joints of successive can bodies including a molten solder applicator and means extending at least to the applicator for slidably supporting the



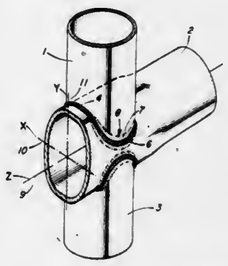
can bodies in axial arrangement and a conveyor mechanism comprising a plurality of spaced body gripping lugs, each one of which releasably engages a portion of the bodies to push them along the supporting means toward the applicator, and guide means disposed adjacent to the conveyor mechanism remote from said can body supporting means for engaging the lugs and causing the lugs to constrain movement of the bodies about their axes.

4,202,484

COMPRESSION PRESTRESSED WELD JOINTS

Marvin L. Peterson, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Nov. 20, 1978, Ser. No. 962,500
Int. Cl.² B23K 31/02; F16L 13/02
U.S. Cl. 228—173 A **5 Claims**



1. A method for forming a compressively stressed weld joint joining a first tubular member to a second tubular member comprising sequentially:

(a) imparting stress into at least one of the tubular members such that release thereof will compressively stress the weld joint,

(b) welding the first tubular member to the second tubular member, and

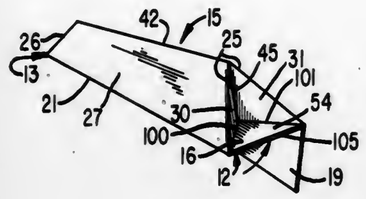
(c) releasing the stress imparted in step (a) such that the weld of step (b) is in compressive stress.

4,202,485

CONTAINER AND BLANK THEREFOR

Edwin A. Fremion, West Alexandria, Ohio, assignor to Dyna Con Packaging Inc., Hamilton, Ohio

Filed Jun. 9, 1978, Ser. No. 914,148
Int. Cl.[2] B65D 5/10
U.S. Cl. 229—22 18 Claims



1. A blank for forming a container of triangular section, comprising:

(a) a rectangular first outer panel free of fold lines and having a first side edge,

(b) a second outer panel connected to said first outer panel along a first fold line on the side of said first outer panel opposite said first side edge,

(c) a third outer panel connected to said second outer panel along a second fold line on the side of said second outer panel opposite said first outer panel, and having a second side edge on the side of said third outer panel opposite said second outer panel,

(d) neither of said second and third outer panels extending beyond said first panel at either end,

(e) a first pair of chevron fold lines starting at the ends of said first fold line and said second side edge at one end of said blank and converging toward and meeting at said second fold line to define a first pair of triangular end panels formed from portions of said second and third outer panels at said one end of said blank, said triangular end panels being foldably connected by said chevron fold lines to the remainders of said second and third outer panels, and foldably connected to one another along the segment of said second fold line between said one end of said blank and the intersection of said second fold line with said chevron fold lines, and

(f) a second pair of chevron fold lines starting at the ends of said first fold line and said second side edge at the other end of said blank opposite said one end, said second pair of chevron fold lines converging toward and meeting at said second fold line to define a second pair of triangular end panels formed from portions of said second and third outer panels at said other end of said blank, said second pair of triangular end panels being foldably connected by said second pair of chevron fold lines to the remainders of said second and third outer panels, and foldably connected to one another along the segment of said second fold line between said other end of said blank and the intersection of said second fold line with said second pair of chevron fold lines,

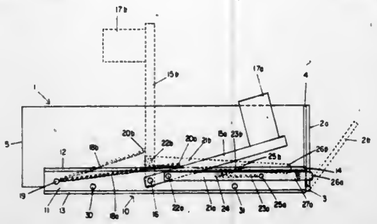
(g) said panels and fold lines being proportioned and spaced whereby, upon folding of said blank along said fold lines with said first side edge of said first outer panel substantially engaging said second edge of said third panel, said panels define a container of triangular section with said triangular end panels closing the opposite ends thereof and the end edges thereof seated on said first panel.

4,202,486

AUTOMATICALLY SIGNALING MAILBOX

Wilbur M. Tipsword, 1603 Monroe Ave., Charleston, Ill. 61920

Filed Mar. 14, 1979, Ser. No. 20,417
Int. Cl.[2] A47G 29/12
U.S. Cl. 232—35 1 Claim



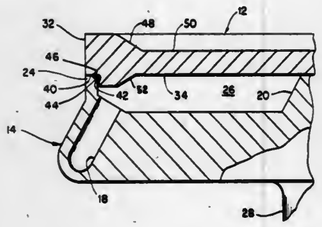
1. An automatic, self-contained signaling device directly attachable to mailbox having a bottom-hinged door, said device comprising a U-shaped channel member, a signal flag support rod having a signal flag attached to the upper end thereof and the lower end thereof pivotally attached to said channel member, means, anchored on the side of said signal rod pivot opposite said door of said mailbox, for biasing said signal rod toward an upright position, trigger means for said signal flag, said trigger means including a trigger rod element one end of which is pivotally connected to said signal flag rod between said signal rod pivot and said flag and the other end of which extends toward the door of said box and, adjacent said door, bends inwardly toward said box to terminate in a finger element, said finger element being shaped to be adapted to extend between the flanges of said channel member and engage the edge of said door of said box when said door is in the closed position, said trigger means also including means for biasing said trigger rod element toward said channel so as to cause said finger element to slide between said flanges of said channel member when said signal flag support rod is rotated toward said door, said finger element being latchable within the flanges of said channel member by the said two biasing means and being releaseable from said latched position by said door of said box when said door is opened, and means for connecting said device to said box.

4,202,487

LIPOPROTEIN ROTOR LID

John R. Edwards, Mountainview, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 22, 1978, Ser. No. 879,939
Int. Cl.[2] B04B 7/02, 7/08
U.S. Cl. 233—1 A 4 Claims



1. A centrifuge rotor apparatus comprising:

a lower rotor portion having a plurality of cavities for receipt of sample carrying containers;

a lid having a flat and solid contiguous central area;

means projected from the bottom surface of said lid for connecting said lid to said lower rotor portion;

a rim area portion on said lid around the periphery of said flat central area;

means on said rim portion of said lid responsive to centrifugally induced forces during rotation of said rotor for deflecting said rim portion of said lid toward said lower rotor portion, said central area of said lid being thinner than said rim portion to enhance deflection of said central area for establishing sealing engagement between said rim portion and the perimeter area of said lower rotor portion during centrifugation; and

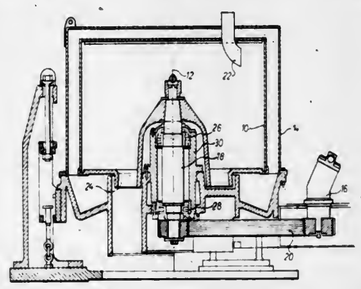
an annular recess located in the top surface of said lower rotor portion, said recess being located radially between a central hub and a raised perimeter area of said lower rotor portion, said annular recess accommodating said deflection of said central area during rotation of said rotor.

4,202,488

PENDULUM SUSPENDED HYDRAULICALLY DRIVEN BASKET CENTRIFUGES

Joseph F. Jackson, Halifax, and Edward M. Cooper, Huddersfield, both of England, assignors to Thomas Broadbent & Sons Limited, West Yorkshire, England

Filed Jun. 21, 1978, Ser. No. 917,755
Claims priority, application United Kingdom, Jun. 30, 1977, 27325/77
Int. Cl.[2] B04B 9/06
U.S. Cl. 233—24 9 Claims



1. In a pendulum suspended, hydraulically driven basket centrifuge having a centrifuge basket, a main spindle, a cylindrical spindle casing, means journalling said main spindle for rotation within said spindle casing about a vertical axis, said means including at least two bearing assemblies disposed at upper and lower positions on said spindle, respectively, means mounting said basket on the upper end of said main spindle, and a hydraulic motor adapted to rotate said main spindle, and hence the basket, about said vertical axis, the improvement in which said hydraulic motor, said spindle casing, said bearing assemblies and said main spindle are constructed as a cartridge unit which can be removed from the basket as a complete sub-assembly, and in which a rotary seal is disposed between the spindle and the inner periphery of the cylindrical casing at a position between the upper and lower bearing assemblies, the annular chamber so formed between the rotary seal and the upper bearing assembly being drained to atmosphere.

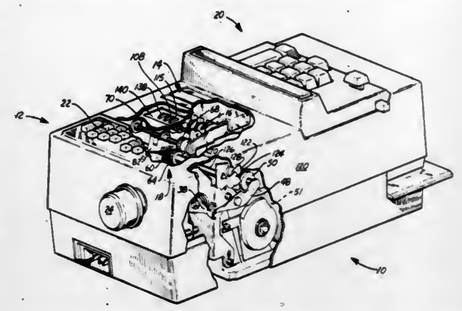
4,202,489

REGISTER RESETTING INTERFACE

Keith E. Schubert, West Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 26, 1979, Ser. No. 6,617
Int. Cl.[2] G07G 1/00
U.S. Cl. 235—101 12 Claims

1. In a postage meter comprising a printing mechanism for dispensing postage and a register mechanism for recording the value of the postage dispensed, the register mechanism including a plurality of numeral wheels, the improvement comprising user accessible resetting means for resetting the register mechanism, a user releasable combination lock engaging the resetting means and linkage means interconnecting the resetting means and the register mechanism, the linkage means including gearing means in continuous engagement with one numeral wheel of the register mechanism and drive means in intermittent engagement with the gearing means, the drive means engaging the gearing means during a resetting cycle to rotate the one numeral wheel in one direction thereby incrementing the total postage value available for printing, the drive means being disengaged from the gearing means to permit rotation of the numeral wheel in an opposite direction to record the dispensing of postage during a printing cycle and optional resetting means for use only by authorized official personnel, the optional resetting means including a thumb wheel, the thumb wheel being in driving engagement with the gearing means and lock means for accessing the thumb wheel, whereby the register may be reset either by the user or official personnel.

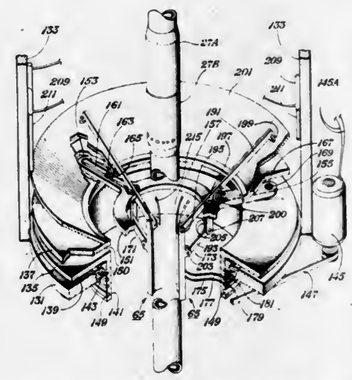


4,202,490

DRILL PIPE IDENTIFICATION METHOD AND SYSTEM

Walter A. Gunkel, and Robert W. Lybecker, both of San Antonio, Tex., assignors to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 756,164, Jan. 3, 1977, abandoned. This application Jun. 23, 1978, Ser. No. 918,640
Int. Cl.[2] G06K 7/08; E21B 47/00, 11/00
U.S. Cl. 235—449 33 Claims



1. A method of identifying drill pipe sections during the handling thereof by a drilling system employed for drilling a borehole into the earth formations, said drill pipe sections having formed thereon identification numbers capable of being detected with a detecting means comprising a magnetic field detector, said method comprising the steps of:

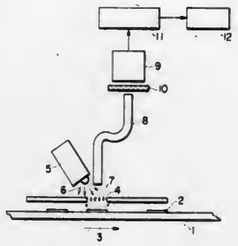
forming distinctive identifying numbers about the circumference of the selected drill pipe sections,

said numbers having a magnetic permeability differing from that of the drill pipe section where the numbers are located,

locating a detecting means comprising a magnetic field detector next to said drill pipe sections during the handling thereof by said drilling system,

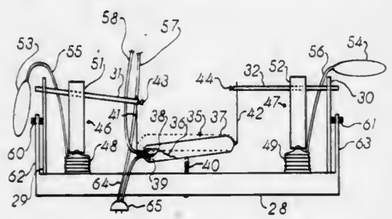
rotating said detecting means around the pipe,
operating said detecting means to detect the numbers on said drill pipe sections, and
recording the numbers detected.

4,202,491
DATA CARD
Atsushi Suzuki, Hachioji, Japan, assignor to Hitachi, Ltd., Japan
Filed Sep. 26, 1977, Ser. No. 836,616
Int. Cl.[2] G06K *19/06, 7/10;* H03F *1/22;* G11B *1/00*
U.S. Cl. 235—491 17 Claims



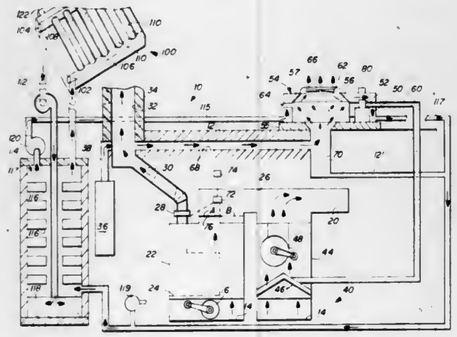
1. A data card wherein data are recorded with a powdery infrared-infrared fluorescent material, said infrared-infrared fluorescent material being at least one member selected from the group consisting of a fluorescent material containing neodymium; a fluorescent material containing neodymium and ytterbium; a fluorescent material containing ytterbium and erbium; and a fluorescent material containing neodymium, ytterbium and erbium.

4,202,492
AIR CIRCULATION SYSTEM
Larry A. Rose, P.O. Box 15, Darby, Mont. 59829
Filed Aug. 31, 1978, Ser. No. 938,462
Int. Cl.[2] F24F *7/00*
U.S. Cl. 236—49 10 Claims



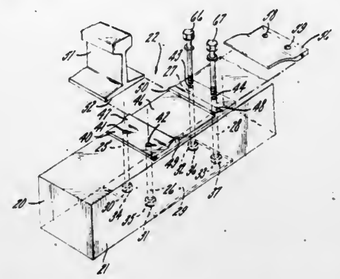
1. An air circulation system including an enclosure, air circulating means for conveying ambient temperature air into said enclosure, means for actuating said air circulating means including a supporting frame, an upwardly extending support member adjacent each end of said supporting frame, a pair of rods each having one end affixed adjacent the end of one of said support members with their free ends extending toward and spaced from one another, a mercury switch suspended between the free ends of said rods, rod deflection means disposed along the length of each of said rods, each of said rod deflection means including an expandable fluid chamber mounted on said supporting frame and operatively connected to one of said rods, a sensing element operatively connected to each of said rod deflection means, one of said sensing elements being located outside of said enclosure and the other sensing element positioned inside said enclosure, each of said sensing elements including a sealed hollow bulb connected by tubing to one of said expandable fluid chambers to form a closed atmosphere therewith, and means for electrically connecting said mercury switch with said air circulating means.

4,202,493
HEATING SYSTEM HAVING SOLAR ASSIST
Antonino Franchina, 5219 Botsford St., Sterling Heights, Mich. 48077
Continuation-in-part of Ser. No. 871,493, Jan. 23, 1978, Pat. No. 4,141,490. This application Dec. 11, 1978, Ser. No. 968,437
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.[2] G05D *23/00*
U.S. Cl. 237—2 B 8 Claims



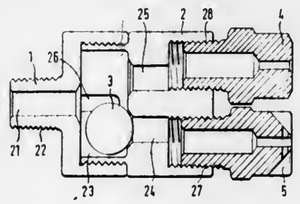
1. A heating system for a building comprising:
a hot-air duct;
a cold-air return;
a gas furnace having an inlet communicating with said cold-air return and an outlet communicating with said hot-air duct, said furnace having a combustion chamber for heating the air passing thereby from said cold-air return to said hot-air duct;
an exhaust stack for exhausting the hot gases from said combustion chamber;
a heat pump comprising a condenser with an inlet communicating with said cold-air return and an outlet communicating with said hot-air duct, said condenser heating the air passing thereby from said cold-air return to said hot-air duct, said heat pump having an evaporator located externally of said building for drawing heat from the air passing thereby;
a fan for passing air by said evaporator;
a first conduit means communicating with the heat stack to a first chamber surrounding said evaporator so that heat from the heat exhausted by said furnace may be drawn from the air via said evaporator and utilized to provide heat for said building, said furnace and said heat pump respectively communicating said cold-air return to said hot-air duct, said hot-air duct having baffle means movable from a first position permitting communication of said furnace and said heat pump with said hot-air duct, to a second position wherein said baffle permits communication from said furnace to said hot-air duct while permitting communication of air through said heat pump to said hot-air duct;
a solar panel for heating air passed therethrough having a cold air inlet and a solar warmed air outlet; and
a second conduit means communicating the solar warmed air to a second chamber surrounding said evaporator so that heat from the solar warmed air may be drawn from the solar warmed air via said evaporator and utilized to provide heat for said building.

4,202,494
RAIL MOUNTING METHOD AND APPARATUS
James A. Rumell, 6643 Winnock, Lakewood Village Apts., Indianapolis, Ind. 46220
Filed Jun. 6, 1977, Ser. No. 803,590
Int. Cl.[2] B27K *3/10, 3/15;* E01B *3/02*
U.S. Cl. 238—83 12 Claims



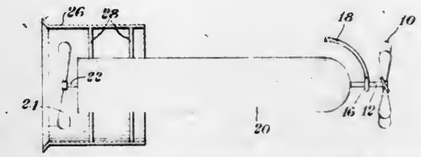
1. A method of extending the life of wooden railroad ties comprising the steps of providing a mold having a cavity for receiving the tie, supporting the tie within the cavity and closing the cavity with the respective planar surfaces of the tie spaced from associated walls of the cavity, providing a source of polypropylene at a temperature sufficiently high to allow said polypropylene to flow, injecting said polypropylene into the cavity under pressure so as to cause said polypropylene to fill any voids and cracks in the tie to form a thin protective layer on all planar surfaces of the tie, the thickness of the protective layer being defined by the spacing between the planar surfaces of the tie and the respective walls of the cavity, cooling the polypropylene to cure the protective coating, and removing the treated tie from the mold.

4,202,495
MULTIPLE NOZZLE HEAD
Josef Kranzle, Auerstrasse 42a, 7918 Illertissen, Fed. Rep. of Germany
Filed Aug. 8, 1978, Ser. No. 932,012
Claims priority, application Fed. Rep. of Germany, May 3, 1978, 2819345
Int. Cl.[2] B05B *1/16*
U.S. Cl. 239—1 11 Claims



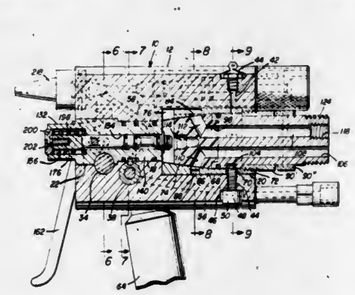
1. A method for contactless changing over of a multiple nozzle head, from nozzle to nozzle, the head containing an internal chamber, a central inlet on one side of said internal chamber and at least two outlet passageways on the opposite side of said internal chamber, said outlet passageways being arranged for connection of outlet nozzles thereto, at least one freely movable sealing element in said internal chamber and shiftable to close off at least one of said outlet passageways, the method including constructing the head in two parts with an inlet part carrying said central inlet for connection to a fluid supply line and an outlet part carrying said outlet passageways and said freely movable sealing element disposed between said parts in said internal chamber, securing said inlet part to said outlet part sealingly and releasably such that said inlet part is exchangeable, arranging said inlet centrally with respect to said outlet passageways, and moving the apparatus which carries the multiple nozzle head to swing the nozzle head upwardly and therewith move the sealing element into a neutral position for opening of more than one of said nozzles.

4,202,496
SNOW MAKING SYSTEM
James B. VanderKelen, Midland, and James L. Dilworth, Petoskey, both of Mich., assignors to Snow Machines, Inc., Midland, Mich.
Filed Nov. 6, 1978, Ser. No. 958,033
Int. Cl.[2] F25C *3/04*
U.S. Cl. 239—14 1 Claim



1. In a snowmaking apparatus comprising a multibladed atomizing fan and a water supply source rearwardly of the blades of said fan, said water supply source providing during operation a multiplicity of water jets onto the blades of said fan, and a power supply attached by a shaft to said atomizing fan, the improvement which comprises, including a ducted fan positioned rearward of said atomizing fan, said ducted fan during operation blowing ambient air toward said atomizing fan and wherein the blades of said ducted fan are attached to a shaft extending rearwardly of the same power supply driving said atomizing fan during operation, said shaft being on the same axis as the shaft having the atomizing fan affixed thereto, and the shroud of said ducted fan having an internal diameter of from one to about three times the diameter of the atomizing fan blades and the front end of said shroud being positioned from about two inches to about seven feet behind the blades of said atomizing fan and the rearward end of said shroud at least enclosing the blades of said ducted fan.

4,202,497
SPRAY GUN
Gary C. Ten Pas, R.R.#1, Oostburg, Wis. 53070
Filed May 5, 1978, Ser. No. 903,159
Int. Cl.[2] B05B *15/02*
U.S. Cl. 239—112 8 Claims



1. A device for mixing and dispensing fluent materials, said device including a body defining an elongated dispensing chamber therein opening, at one end, outwardly to the exterior of said body, said body further defining a pair of material receiving chambers therein for receiving different fluent materials under pressure into said body, said body defining a pair of material flow passage means therein communicating said material receiving chambers and said dispensing chamber, a pair of

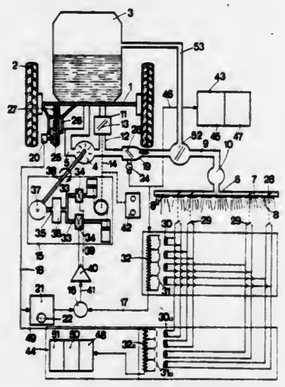
control valves in said body for controlling the flow of material through said material flow passage means from said material receiving chambers into said dispensing chamber, a pair of flow valve means in said material receiving chambers each including a material inlet passage and a material outlet passage for return of unused material from the corresponding inlet passage to the source of supply of said material from which the latter flows under pressure to said inlet passage, said control valves including means for selectively communicating and terminating communication between the corresponding receiving chamber and said dispensing chamber through the corresponding material flow passage means, said flow valve means each including means for selectively communicating the corresponding inlet passage with the corresponding outlet passage through the corresponding receiving chamber, communicating the corresponding inlet passage with the corresponding outlet passage independent of the corresponding receiving chamber and communicating the corresponding inlet passage with the corresponding receiving chamber, said flow passage means including discharge ends opening into said dispensing chamber in directions convergent toward said chamber from opposite sides thereof and inclined at an obtuse angle opening toward said one chamber end, air inlet means operative to admit air under pressure into the other end of said dispensing chamber, and throttle means within said chamber upstream from said discharge ends operative to variably throttle air flow through said dispensing chamber toward said discharge ends and to restrict the flow of air in said chamber past said throttle means to individual peripherally spaced convolution segment flow paths for effecting a swirling uniting of said individual flow paths downstream from said throttle means in substantial registry with said discharge ends.

4,202,498

LIQUID DISTRIBUTING APPARATUS AND IN PARTICULAR A FERTILIZER OR INSECTICIDE SPRAYER

Maurice C. J. Lestradet, 291, Avenue du Marechal-Delattre-de-Tassigny, 51230 Fere-Champenoise, France

Filed Aug. 22, 1977, Ser. No. 826,815
Claims priority, application France, Aug. 31, 1976, 76 26203
Int. Cl.[2] B05B 9/06
U.S. Cl. 239—156 **2 Claims**



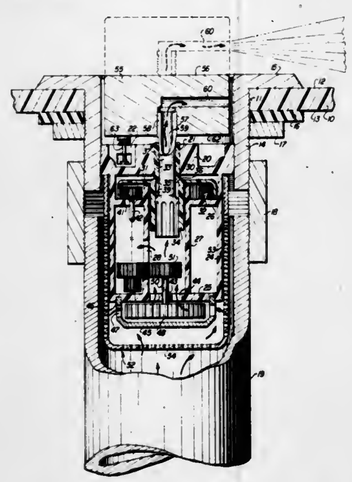
1. A mobile liquid distributing apparatus comprising a quasi-constant flow supply device, a variable flow distributing device, liquid transfer means interconnecting said two devices, a flow regulating means included in said transfer means, a regulation device acting on said regulating means and comprising comparison means, means for measuring magnitude which is a characteristic of the flow of liquid in said transfer means and emitting a first signal, means for measuring the speed of the apparatus and emitting a reference signal, means for transforming between the speed measuring means and said comparison means, said comparison means being connected to receive said first signal and said reference signal through said transforming means, said means measuring the characteristic magnitude comprising a flow measuring means, and said transforming means comprising means applying a coefficient of proportionality, said variable flow distributing device comprising ejecting means arranged in a plurality of sections, some of said sections being capable of being put out of service, dividing means provided between the flow measuring means, and the comparison means for reducing the first signal in accordance with the number of said sections in service, said dividing means comprising means for selectively putting said ejecting means sections in service, switches coupled with said means for putting said ejecting means sections in service, a resistor having sections, relays having coils and armatures, said armatures being combined with said resistor sections in parallel, and means for supplying current to said coils through said switches.

4,202,499

SWIMMING POOL CLEANER

Lester R. Mathews, 9810 N. 37th St., Phoenix, Ariz. 85028

Filed Oct. 20, 1977, Ser. No. 843,870
Int. Cl.[2] B05B 3/06
U.S. Cl. 239—206 **1 Claim**



1. For installation in a swimming pool having a floor formed with a circular opening, a pop-up cleaner comprising the following elements, substantially all of which are of plastic:
(a) a nipple secured in position in said opening and depending from said floor and having a bore communicating with a source of water under pressure;
(b) a disk secured in position in said bore and constituting the upper end of a gear housing;
(c) said gear housing including a cylindrical wall, a bottom wall, a top wall and a central duct;
(d) a rotor rotatably mounted in said top wall depending from said top wall and including an internally toothed ring gear;
(e) a tube axially movable in said rotor and communicating with said water under pressure;
(f) means for establishing a driving relation between said rotor and said tube;
(g) a jet block positioned in the bore of said nipple above the top wall of said gear housing having a cylindrical surface and formed with an L-shaped passage opening onto said cylindrical surface and communicating with said tube;
(h) means for limiting axial movement of said tube relative to said rotor;
(i) a turbine casing secured to said bottom wall of the gear housing and including a cylindrical wall formed with water inlets communicating with said water under pressure;

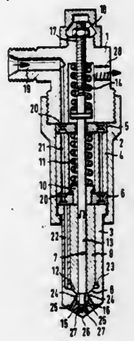
(j) an impeller within said casing and drivably mounted on a shaft journaled in said bottom wall;
(k) a gear drivably mounted on the other end of said shaft;
(l) a reduction gear train having one end connected to said gear and the other end to said ring gear;
(m) said source of water under pressure communicating with the space about said turbine casing, whereby water pressure rotates the jet block through a full 360 degrees, delivers a jet stream from the open end of the passage in the jet block, and elevates said jet block into a position in which the jet stream is above the surface of the pool floor; and
(n) a compression spring interposed between said jet block and the top wall of said gear housing for normally maintaining said jet block and said top wall spaced apart and preventing jamming when said jet block and said rotor are lowered under gravity action when said water under pressure is discontinued.

4,202,500

MULTI-HOLE INJECTION NOZZLE

Hubert Kelczek, Nuremberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Mar. 7, 1978, Ser. No. 884,268
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2710138
Int. Cl.[2] F02M 45/08
U.S. Cl. 239—533.3 **24 Claims**



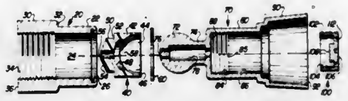
1. A multi-hole injection nozzle for air-compressing, direct-injection internal combustion engines, in particular internal combustion engines employing the method of wall deposition of the fuel comprising essentially a nozzle body and two nozzle needles held by springs in positions where the nozzle holes in the nozzle body are closed with the springs being designed so that initially while a low fuel pressure exists one nozzle needle opens whereas the second nozzle needle is lifted off its seat only at an increased fuel pressure, characterized in that one nozzle needle (9) is formed as a hollow needle and in that the second needle (13) is axially slidable in its axial bore (7) and in that the hollow needle (9) is capable of closing one or a plurality of nozzle holes (25) situated at a distance from the tip (26) of the injection nozzle and in that the second nozzle needle (13) is capable of closing one or a plurality of nozzle holes (27) situated close to the tip (26) and having different cross sectional areas.

4,202,501

CONSTANT VOLUME AERATED SHOWERHEAD APPARATUS

Kenneth H. Haynes, 1241-H E. Chestnut St., Santa Ana, Calif. 92701

Filed Mar. 23, 1978, Ser. No. 889,228
Int. Cl.[2] B05B 1/18, 1/30
U.S. Cl. 239—570 **8 Claims**



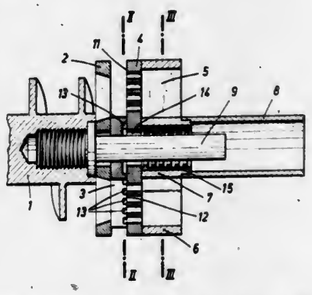
1. Showerhead apparatus for providing a substantially constant output flow of water over a wide range of input water supply pressures, comprising, in combination:
housing means, including
a first portion,
means for securing the first portion to a supply of water, and
a first bore in the housing means;
control washer means disposed in the first bore and deformable in response to the pressure of the supply of water through the control washer means, including
a second bore through which the water flows,
a conical face tapering away from the second bore on which the flow of water impinges from the first bore of the housing means, and
a first concave portion communicating with the second bore remote from the conical face into which the water flows from the second bore;
a metering orifice communicating with the first concave portion for receiving the flow of water from the second bore of the deformable control washer means,
a third bore communicating with the metering orifice and coaxially aligned with the metering orifice for receiving the flow of water from the metering orifice, and
a fourth bore through which the water flows out of the apparatus.

4,202,502

CUTTING TOOL ASSEMBLY FOR MEAT MINCER

Friedrich Laska, Linz, Austria, assignor to Imperial Chemical Industries Limited, London, England

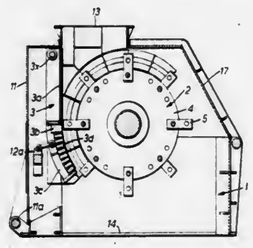
Filed Oct. 2, 1978, Ser. No. 947,408
Claims priority, application Austria, Oct. 6, 1977, 7119/77
Int. Cl.[2] B02C 18/36
U.S. Cl. 241—82.5 **2 Claims**



1. In a meat grinder, which comprises a perforated disc member having an end face, a knife member coaxial with the disc member and having a plurality of cutting blades each having an end face disposed closely adjacent the end face of the perforated disc member, each cutting blade having a shearing edge arranged to cooperate with the end face of the perfo-

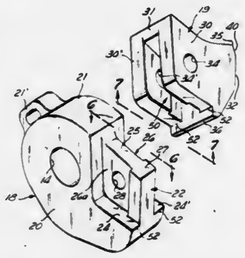
rated disc member, a drive means for rotating one of the members relative to the other member, and a waste discharge device having an entrance, the improvement of each cutting blade end face defining a plurality of waste discharge grooves, each waste discharge groove having an inlet point at the shearing edge of the blade and extending from the inlet point towards the entrance of the waste discharge device, the inlet points of the grooves defining circular paths coaxial with the disc and knife members, and each groove extending in a direction deviating from the circular paths.

4,202,503
HAMMER MILL
Derek Parkinson, and Jack Goose, Wakefield, both of England, assignors to Dresser Europe S.A., Brussels, Belgium
Filed May 8, 1978, Ser. No. 903,525
Claims priority, application United Kingdom, May 9, 1977, 19429/77
Int. Cl.² B02C *13/04*
U.S. Cl. 241—194 **5 Claims**



1. A hammer mill comprising a housing including a main part and a door pivoted to the main part for movement between open and closed positions, a rotor mounted in the main housing part, a breaker and screening assembly comprising breaker and screening parts mounted on the door to cooperate with the rotor in the closed position of the door and to provide access to the breaker and screening parts from outside the housing in the open position of the door, means to displace the breaker and screening assembly relative to the door to adjust the working clearance between the breaker and screening assembly and the rotor and means to pivot the door between the open and closed positions.

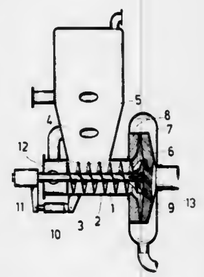
4,202,504
TWO-PIECE HAMMERS FOR HAMMER MILLS
Wallace C. Cameron, San Pedro, Calif., assignor to Copper Alloys Corp., Beverly Hills, Calif.
Filed Jul. 14, 1978, Ser. No. 924,500
Int. Cl.² B02C *13/20*
U.S. Cl. 241—194 **21 Claims**



1. A two piece hammer for use in a rotary hammer mill assembly comprising:

(a) a reusable hammer shank element having a portion adapted to receive a hammer tip element and
(b) a separate replaceable hammer tip element having striking face portion,
said hammer shank element and hammer tip element each having an interlocking portion wherein the interlocking portion of said hammer shank element comprises a plurality of substantially parallel planar impact receiving surfaces having a combined surface area greater than fifty per cent (50%) of the surface area of said hammer striking face portion, said hammer shank element being further provided with a flared portion, said interlocking portion of said hammer tip element comprising a groove portion having complemental surfaces to those of said flared portion for slidable interlocking of said flared and grooved portions along lines of juncture substantially perpendicular to the axis of rotation of said rotary hammer mill whereby to resist the thrust of centrifugal forces imposed by the rotation of said rotary hammer mill.

4,202,505
REFINER
Erkki Ruuskanen, Kenraalintie 5 B 17, 37620 Valkeakoski 2, Finland
Filed Dec. 12, 1978, Ser. No. 970,398
Claims priority, application Finland, Jan. 12, 1978, 780101
Int. Cl.² B02C *7/14*
U.S. Cl. 241—247 **3 Claims**

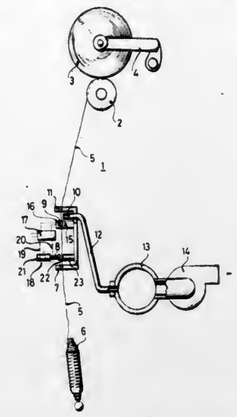


1. Improvement in a refiner, including feed means feeding material to be ground, such as wood chips or paper pulp for instance, into a gap between grinding disks, a tubular jacket housing, a feed screw rotating about an axis defined by its shaft, said jacket having in a top confining wall an aperture for feeding in of material from a container located thereabove and into said jacket, said refiner having at least one rotating grinding disk, said feed screw being connected by a coupling to the rotating disk and derives its rotary motion from the rotary motion of the grinding disk, the improvement comprising said feed screw being axially loadable with the aid of a pressure cylinder against the grinding disk and can be distanced therefrom.

4,202,506
DEVICE FOR MONITORING THREAD TRAVEL
Joachim Rohner, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany
Continuation of Ser. No. 792,865, May 2, 1977, abandoned. This application Jul. 26, 1978, Ser. No. 927,964
Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619430
Int. Cl.² B65H *63/02*
U.S. Cl. 242—36 **5 Claims**

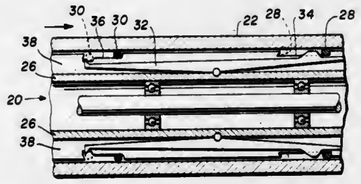
1. Device for monitoring thread travel in a winding device of a textile machine having, disposed in the travel path of the thread from a thread supply, a thread guiding member for a take-up coil, comprising a thread monitoring device disposed

in the thread travel path upstream of the thread guiding member, said thread monitoring device having means for producing a noise signal when a thread is travelling along the path, a high-speed thread clamping device disposed adjacent the thread travel path upstream of said monitoring device along



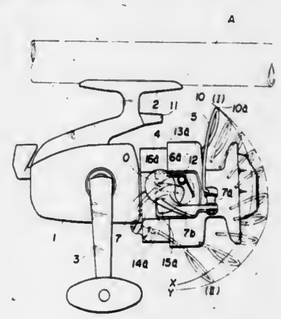
the path, means responsive to a discontinuance of the noise signal for actuating said high-speed thead clamping device to grip a thread present in the travel path, and means adjacent and downstream of said monitoring device along the path for gripping an oncoming thread end from the thread supply present in the path.

4,202,507
CHUCK ASSEMBLY
Don E. Fisher, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 29, 1978, Ser. No. 974,651
Int. Cl.² B65H *54/54*
U.S. Cl. 242—46.2 **8 Claims**



1. A chuck for supporting a replaceable element having a cylindrical inner surface, comprising, in combination:
a. an elongated support member having a supported inboard end at one end thereof and a free outboard end at the other end thereof, said support member having a maximum dimension transverse to said axis smaller than the diameter of said cylindrical inner surface whereby said replaceable element can be placed telescopingly on said support member;
b. inboard resilient means mounted on said support member for movement therealong from a first position to a second position nearer said inboard end than said first position, said inboard means having dimensions selected such that when said replaceable element is telescopingly placed on said support member said inboard means is compressed between said surface and said support member and is moved to said second position;
c. outboard resilient means mounted on said support member for movement therealong from a third position nearer said outboard end than said first position to a fourth position between said first and said third positions, said outboard means normally resting in a fifth position in a relatively unexpanded condition smaller than the diameter of said cylindrical inner surface; and
d. actuating means for moving said outboard means from said fifth position to said third position and for expanding said outboard means into compression against said surface, whereby said outboard means moves from said fifth position to said third position and subsequently toward said fourth position while said inboard means moves toward said second position.

4,202,508
SPINNING TYPE FISHING REEL
Takuo Ishida, Sennan, and Masuo Ban, Sakai, both of Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan
Filed Mar. 31, 1978, Ser. No. 892,319
Claims priority, application Japan, Apr. 19, 1977, 52-45258; Jun. 7, 1977, 52-67510
Int. Cl.² A01K *89/01*
U.S. Cl. 242—84.2 G **11 Claims**



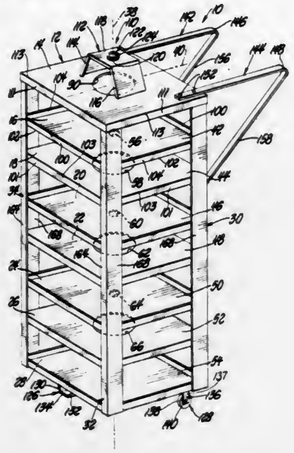
1. A spinning type fishing reel comprising: a mounting leg for fixing a reel to a fishing rod; a reel body having a projecting handle; means for rotatably mounting a rotary frame to the front of said reel body; means for mounting a spool at the front of said reel body so that said spool is movable longitudinally of said reel body; and means for radially pivotably supporting the bail arm of a semicircular shape to said rotary frame so that said bail arm is swingable in a given range with respect to said rotary frame, said bail arm having an intermediate portion passing across the front of said spool and being turned over in a swinging motion between two positions during its swinging movement, one position being where a fishing line is wound on said spool under guidance of said bail arm and the other position being said fishing line is released from said spool; said means for pivotably supporting said bail arm including:
at least one support for supporting said bail arm to said rotary frame, said one support being fixed to one end of said bail arm and having at least one stud about which said bail arm rotates to move relative to said rotary frame;
a bearing provided at said rotary frame to support said stud rotatably, said bearing having a slot which is elongated longitudinally of said reel body for bearing said stud therein; and,
means responsive to pivotal movement of said support about said stud for causing said stud to move longitudinally along said slot, whereby when said bail arm is turned over, said stud is moved along said bearing slot forwardly of said reel to allow the intermediate portion of said bail arm to be shifted forwardly with respect to said spool.

4,202,509

COIL-CARRYING VEHICLE AND METHOD OF USING SAME

Gerald H. Horn, 6831 N. Frostwood Pkwy., Peoria, Ill. 61614

Filed Nov. 30, 1978, Ser. No. 965,120
Int. Cl.² B65H *75/40, 49/00*
U.S. Cl. 242—86.5 R **10 Claims**



1. A vehicle for carrying coils for thread-like material each of the coils having loops which define holes, said vehicle comprising:

frame means for supporting said coils in spaced relationship, and

means secured to said frame means for moving said frame means to a desired location, said frame means having a major axis and a minor axis, said frame means including a plurality of interconnected horizontal and vertical frame members defining a plurality of compartments spaced in a line along said major axis and interconnected by passages which place immediately adjacent compartments in fluid communication with each other, said passages being formed through the horizontal frame members common to adjacent compartments along the major axis of said frame means and wherein said passages are substantially aligned with the holes defined by loops of the coils along said major axis, said coils of material being disposed in their respective compartments interiorly the frame means.

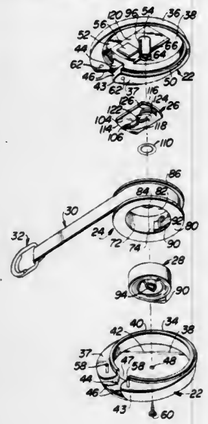
4,202,510

RETRACTABLE PET LEASH

Walter F. Stanish, 118 Rochelle Ave., Philadelphia, Pa. 19128

Filed Dec. 4, 1978, Ser. No. 965,767
Int. Cl.² B65H *75/48*
U.S. Cl. 242—107.4 R **6 Claims**

1. A leash for animals comprising a housing sufficiently small to be held within a user's palm, a rotatable reel disposed within said housing, releasable latch means coupled to said reel, biasing means applying a biasing force to said reel and flexible tape means, said housing including a pair of opposed sidewalls, one of said sidewalls having a shaft projecting inward therefrom for securement to the other sidewall, said reel comprising a central hub having an opening through which said shaft extends and a pair of circular flanges projecting outward from said hub, one of said flanges including a plurality of substantially rectangular radially extending slots, each of which opens to the periphery of said flange, said tape means being secured to and wound on said hub and having a free end to which a clip is secured, said biasing means comprising a helical spring located within the opening in said central hub and connected between said reel and said shaft, said latch means comprising a resilient band, a latch plate having an elongated opening through which said shaft extends, a ledge disposed adjacent said opening, an elongated finger mounted on said plate parallel to said one flange and actuator means mounted on said plate projecting through an opening in one of said sidewalls, said resilient band being disposed about said shaft and said ledge, said finger being an elongated member arranged for reciprocal movement parallel to said one flange between a locked position and a released position, said band automatically moving said finger to said locked position wherein said finger is radially extended fully into a slot in said flange, said finger being movable to said released position by movement of said actuator parallel to said flange against the action of said resilient band,



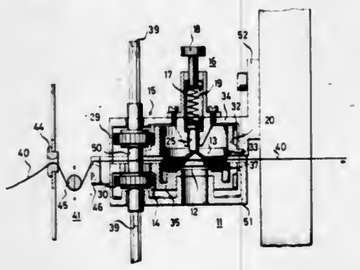
whereupon said finger is retracted fully from said slot, when said latch means is in said released position said reel being rotatable in one direction to permit said tape to be unwound from the reel and extended out of the housing by the application of tension thereon which exceeds said biasing force, said reel being rotatable in the opposite direction when said latch means is in said released position to rewind the tape on the reel when the biasing force exceeds the tension on said tape, said reel being precluded from rotating in either direction when said latch means is in said locked position, whereupon the length of tape extended from the housing remains constant.

4,202,511

THREAD BRAKING DEVICE

Gerhard Koslowski, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,030
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758334; Jul. 10, 1978, 2830205
Int. Cl.² B65A *59/24*
U.S. Cl. 242—150 R **3 Claims**



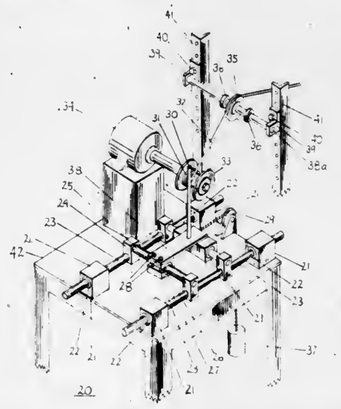
1. Thread breaking device comprising a rotatably driven lower dish and upper dish having confronting surfaces for frictionally engaging a thread passing therebetween, a device for applying a load to the upper dish so as to urge said confronting surfaces toward each other and vary tension applied to the thread, rotary drive means for rotating said lower dish, a guidance housing surrounding and driving said upper dish, and rotary drive means for rotating said guidance housing.

4,202,512

LEVEL LAYER WINDING METHOD AND APPARATUS

Thomas F. Nicholson, Jr., 3440 Belair Rd., Baltimore, Md. 21213

Continuation of Ser. No. 232,363, Mar. 7, 1972, abandoned. This application Jul. 11, 1977, Ser. No. 814,655
Int. Cl.² B65H *57/00, 57/28*
U.S. Cl. 242—157.1 **8 Claims**



1. A method for controlling wire or like filamentary materials while winding in successive level layers on to rotatively driven spools or reels, comprising the steps of;

urging a rigid convex filament guide means, having a cross-sectional radius slightly larger than that of the radius of the material being wound, perpendicularly toward the axis of rotation of said spool engaging the guide means with a wound coil of wire on the side of the wire opposite a previously wound coil of wire,

moving said guide means back and forth in a path parallel to the axis and substantially between the ends of said driven spool, responsive to engagement with the newly wound wire,

resisting said back and forth movement of said guide means in response to wire winding in tight level layer alignment, and,

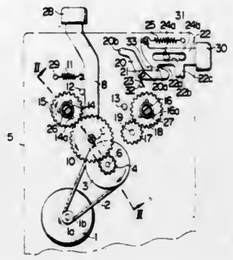
adjusting the amount of resistance to said back and forth movement of said guide means in cooperation with said perpendicularly urging step to hold each successive wire being wound against a previously wound wire of an underlying layer or against the initially unwound core and laterally against adjacent wound coils in the layer being wound so that said guide means will exert pressure against the wire being wound on said spool in directions longitudinally of and perpendicularly to the axis of rotation of the spool.

4,202,513

TAPE END DETECTOR FOR REEL DRIVEN CASSETTE TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jun. 2, 1978, Ser. No. 912,083
Claims priority, application Japan, Jun. 8, 1977, 52-74334
Int. Cl.² G11B *15/22, 15/30*
U.S. Cl. 242—189 **6 Claims**



1. A tape end detector for a reel driven cassette tape recorder, comprising a drive shaft mounted for rotation on a stationary baseplate a drive gear mounted on the drive shaft; a take-up gear mounted on a tape take-up shaft; a rewind gear connected to a drive tape rewind shaft; a support arm pivotally mounted for manual or driven movement between first, second, and third positions; a transmission gear rotatably mounted on the support arm so as to mesh with the drive gear and said take-up gear in said first position; the take-up gear rotating the tape take-up shaft in response to the transmission of a drive from the drive gear through said transmission gear; the transmission gear being arranged to revolve around the drive gear when the take-up gear stops rotation due to a tape end being reached and, in response to a drive from the drive gear, to cause said driven movement of the support arm to said second position to thereby provide an indication of the tape end being reached; a constraining member for maintaining a record/playback operating member in an operative position; said support arm in said second position directly engaging and actuating said constraining member to move said operating member to an inoperative position to shut off said tape recorder; said support arm in said second position being out of driving engagement with said take-up gear and said rewind gear; movement of said support arm to said third position causing said transmission gear to be moved into driving engagement with said rewind gear to rotate said tape rewind shaft, said support arm in said third position also operating to hold said constraining member in an inoperative position, and means for normally urging the support arm to said first position in which the transmission gear is in meshing engagement with the take-up gear.

4,202,514

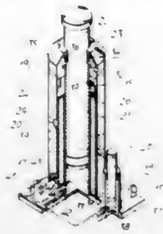
HYDRAULIC JACK DEVICE

Cheng-Kuan Chen, 48, Kuang Ming Rd., Chia-Yi City, Taiwan

Filed Dec. 18, 1978, Ser. No. 970,205
Int. Cl.² B66F *3/24*
U.S. Cl. 254—93 H **4 Claims**

1. An improved hydraulic jack device comprising mainly a jack body, a base seat, a plunger pump and an oil passage device; wherein the jack body further comprising mainly an outer cylinder, an inner cylinder and a ram, the characteristic thereof being that the said outer cylinder is made of transparent or semi-transparent plastic material or the like, and is a cylindrical pipe with a hollow wall of rectangular cross section, and disposed thereon are an oil injection hole, an oil passage hole, a soft tube nozzle and a U shape notch, the said oil injection hole is connected to the oil releasing hole of the inner cylinder by means of an oil tube, the said oil passage hole communicates with the inner cylinder by means of an oil pas-

sage pipe and through a check valve, the said soft tube nozzle being communicable with the cylinder of the plunger pump through a check valve, and to the soft tube nozzle is connected



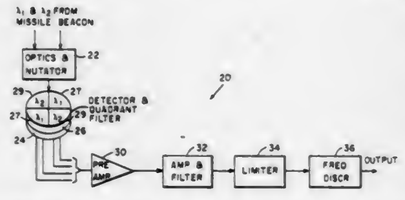
a soft tube device disposed in the hollow wall space of the outer cylinder; further, calibration is marked at a region of the outer cylinder at a suitable height.

4,202,515

TWO TONE TRACKER

Richard F. Maxwell, Jr., Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 5, 1978, Ser. No. 922,011
Int. Cl.[2] F42B *15/02*
U.S. Cl. 244—3.11 **6 Claims**



1. A tracking system for line-of-sight missile tracking comprising: a photoemissive beacon having first and second optical emitters disposed within a missile housing, said emitters being adapted for emitting respective first and second optical wavelength signals; tracking means remotely located from said beacon and having optically sensitive detector means responsive to said optical wavelengths for providing electrical output signals in response to impinging optical signals, amplifier means responsive to said detector means output for amplifying said electrical signals, and discriminator means responsive to said amplified signals for providing an output signal indicative of deviation of said missile from the line-of-sight of the target.

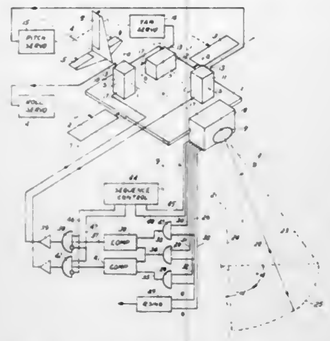
4,202,516

ELECTRONIC TRIPOD TECHNIQUE

Earl H. Benser, Bloomington, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1978, Ser. No. 921,140
Int. Cl.[2] F42B *15/00*
U.S. Cl. 244—3.15 **2 Claims**

1. In a vehicle for travel at a distance above the earth's surface having roll and pitch rate gyros for stabilizing the vehicle about its roll and pitch axes, each gyro having a torque motor for applying a torque to the gyro about its output axis, apparatus for aligning said gyros to the local vertical, said apparatus comprising: means for measuring the slant range to ground in a direction depressed by a constant acute angle from the plane of the roll and pitch axes of the vehicle; means for producing an azimuthal scanning of said direction about an axis parallel to the yaw axis of the vehicle and over an angular range of $\pm a$, where a is an acute angle measured from the plane of the roll and yaw axes of the vehicle; means for continuously deriving a roll error signal proportional to the difference between the slant ranges at the two extremes of the scanning range; means for applying said roll error signal to the torque motor of the roll gyro for rotating the vehicle about its roll axis until said roll error signal is zero; means for continuously deriving a pitch error signal proportional to the differ-



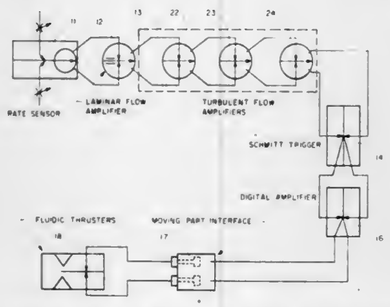
ence between the range at one extreme of said sweep and the range at the center of the sweep; and means operative after said roll error signal has been reduced to zero to apply the pitch error signal to the torque motor of said pitch gyro for rotating said vehicle about its pitch axis until the pitch error signal is zero.

4,202,517

FLUIDIC INTERFACE MEANS

Robert W. Young, Montgomery Township, Montgomery County, and Leonard D. Dansbury, Levittown, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 20, 1977, Ser. No. 817,884
Int. Cl.[2] F15C *1/12*; F41G *7/00*; F42B *15/02*
U.S. Cl. 244—3.22 **2 Claims**



1. An interface device having dual pistons for providing a fluidic interface between low flow fluidic circuitry and high pressure high flow fluidic thrusters having two alternately actuated control ports and operated by ram air such as in homing tactical missiles comprising:

a thruster control system including a scoop for admitting ram air into said system and a stagnation plenum for distributing ram air to said fluidic thrusters;

low flow fluidic circuitry in said thruster control system including a rate sensor;

a fluidic digital amplifier interposed between said fluidic circuitry and said interface device and having alternate ports for directing low pressure flow to said interface device pistons.

said thrusters requiring a differential pressure and/or flow to change their thrusting direction that substantially exceeds the low flow output of said fluidic circuitry;

a pressure regulator in said thruster control system positioned to receive ram air and adapted to provide a constant low pressure flow input to said fluidic circuitry,

said interface device including a block having a piston shaft disposed opposite each of said control ports and respective ports of said digital amplifier,

the ends of said piston shafts blocking or exposing the appropriate one of said control ports thereby controlling the suction pressure at said ports so that said thrusters are made to generate their own flow control from ram air on the side having the blocked port,

said pistons having heads whose outer and inner surfaces are exposed oppositely to the flow from said digital amplifier ports generated by said fluidic circuitry so that when one piston shaft blocks its respective control port the other piston is driven oppositely to expose the other of said control ports,

said block having passages communicating between the interior of one piston chamber and the exterior of the other piston chamber to effect reciprocal motion of said pistons and assure interlocking operation thereof,

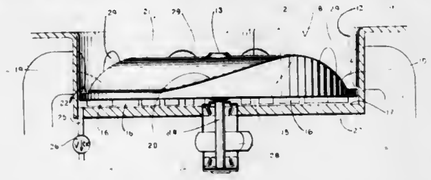
said fluidic circuitry including means for increasing the output of said rate sensor, and said interface device causing said thrusters to provide a desired corrective power jet for control of the roll, pitch and yaw rates of said missile.

4,202,518

AIR-BORNE SUPPORT AND LIFT MECHANISM ADAPTED TO AIRCRAFT

J. Kellogg Burnham, Av. Republicas 153 Bis, Mexico City 13, Mexico, and Mario H. Gottfried, Jr., Las Flores 278, Los Reyes, Mexico City 21,, Mexico

Filed Oct. 27, 1977, Ser. No. 845,933
Int. Cl.[2] B64C *21/00, 23/02*
U.S. Cl. 244—12.1 **19 Claims**



19. An apparatus for producing lift for a flying vehicle comprising a top deck of a flying vehicle having one or more shallow cylindrical wells inset thereinto, said well having a cylindrical wall and a sealed floor, a disc in each well adapted and powered for rotating therein with restricted clearance from said cylindrical wall and from the sealed floor of said well, said disc being generally parallel to the top deck surrounding said well, said disc adapted to rotate at a speed creating a reduced air pressure thereabove; a grid assembly of vertical passages is mounted above said disc in said well and means for moving at least a portion of said grid closer to the top of said disc or withdrawn an appreciable distance therefrom under the control of an operator.

4,202,519

AIRFOIL LEADING EDGE SLAT APPARATUS

John J. Fletcher, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

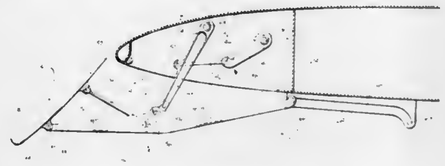
Filed Sep. 8, 1978, Ser. No. 940,708
Int. Cl.[2] B64C *3/50*
U.S. Cl. 244—214 **21 Claims**

1. In an airfoil having a forward leading edge and a rear trailing edge, a leading edge slat apparatus deployable from an under surface of said airfoil, said leading edge slat apparatus comprising:

a. a slat member having a forward end and a rear end, and having a first stowed position in said airfoil with said forward end positioned forward of said rear end, said slat member being movable from said first stowed position downwardly and forwardly to a second deployed position, and being moveable rotatably so that said rear end moves upwardly relative to said forward end, with said forward end still being positioned forwardly of said rear end,

b. a main actuating member having a forward end pivotally connected to said slat member at a first connecting location, and a rear end operatively connected to said airfoil,

c. a positioning arm having a pivot end operatively connected to said airfoil for forward and rearward rotational



movement about a first mounting location, and a swing end with second and third spaced connecting locations thereon, said actuating member being pivotally connected to said positioning arm at said second connecting location,

d. a tilting link having a first end pivotally connected to the positioning arm at said third connecting location, and a second end pivotally connected to said slat member at a fourth connecting location spaced from said first connecting location on said slat member,

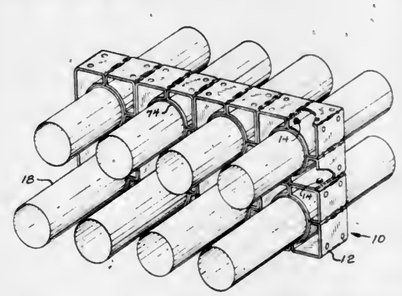
e. said first, second, third and fourth connecting locations being so arranged relative to each other that when said slat member is being moved from the stowed position to the deployed position, said tilting link coacts with said positioning arm and said main actuating member to rotate the rear end of the slat member upwardly relative to the forward end of the slat member.

4,202,520

MODULAR SUPPORT ASSEMBLY FOR TUBES

John F. Loos, and James C. Petty, both of San Diego, Calif., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 24, 1978, Ser. No. 927,707
Int. Cl.[2] F16L *3/22*
U.S. Cl. 248—68 CB **5 Claims**



1. A modular support assembly apparatus for supporting a plurality of elongated tubes in spaced vertical and/or horizontal relationship to each other which comprises a plurality hollow, molded, modular elements having apertures in the wall portions thereof, wherein said apertures are aligned with identical apertures in another adjacently positioned modular support element, said adjacent elements being adapted to rigidly attach to one another by fastening means transversing said

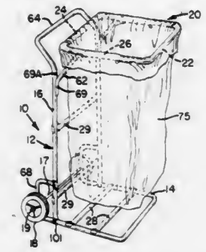
apertures, each said modular support element having four flat rigid external planar surfaces positioned to form three right angles and a concave cylindrical external wall surface portion connecting two of said four planar surfaces having its concave shape formed to engage not more than one-quarter of the circumference of said elongated tube supported thereby.

4,202,521

COMBINATION BAG HOLDER AND DOLLY

Frank M. Harding, 1303 Brush Hill Cir., Naperville, Ill. 60540

Filed Nov. 24, 1978, Ser. No. 963,302
Int. Cl.[2] A63B *55/08*; B65B *67/04*
U.S. Cl. 248—98 **7 Claims**



1. A combination bag holder and dolly of the type in which a dolly frame comprising a platform section and an upstanding section are mounted on a pair of dolly wheels, and in which a bag holding frame is rigidly supported above the platform section on the upstanding section of the frame;

the improvement in which the bag holder frame is adapted to accommodate bags of different cross sectional areas, and comprises a horizontally movable U-shaped member, the legs of which are secured to spaced supports on said upstanding section, and a pivoted U-shaped portion pivoted to said spaced supports and movable between a horizontal position and an inclined position whereby the open end of a bag may be interiorly mounted within said bag holding frame and have its open edges folded over the frame while the pivoted section is in its inclined position and then stretched to a taut, open position as the pivoted section is moved toward a horizontal position, and means for securing said horizontally movable U-shaped member to said spaced supports in a number of positions to adjust to the cross sectional area of the particular bag being mounted on said bag holding frame.

4,202,522

INJECTION MOLDING APPARATUS FOR ACCOMMODATING VARIOUS SIZES OF MOLDING DIE INSERTS

Walter E. Hanas, Roslyn, and Ronald R. Sutko, Levittown, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

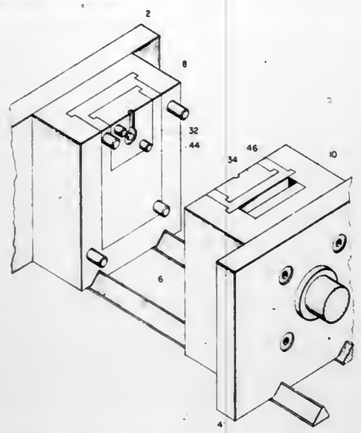
Division of Ser. No. 807,227, Jun. 16, 1977, Pat. No. 4,158,910.
This application Sep. 11, 1978, Ser. No. 941,327
Int. Cl.[2] B29C *1/00*; B29F *1/00*
U.S. Cl. 249—102 **4 Claims**

1. An injection molding die insert support apparatus comprising

a die insert support frame having at least one surface face,

a recess in said face,

a plurality of die inserts having different size mold cavities with a first one of said die inserts having a large mold cavity and being sized to mate with said recess in said support frame and a second one of said die inserts having a smaller mold cavity than the mold cavity of the first insert and said second one of said die inserts being smaller than said recess and



an adaptor for adapting said second one of said die inserts to mate with said recess.

4,202,523

BORON NITRIDE/ELASTOMERIC POLYMER COMPOSITION FOR COATING STEEL CASTING DIES

Schrade F. Radtke, New Canaan, Conn., assignor to International Lead Zinc Research Organization, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 814,536, Jul. 11, 1977, abandoned. This application Dec. 6, 1977, Ser. No. 857,939
Int. Cl.[2] B22C *3/00*
U.S. Cl. 249—115 **15 Claims**



1. A method for treating the surface of a steel casting die for molten metals which comprises:

(a) preparing a uniform dispersion consisting essentially of boron nitride powder, at least one elastomeric polymer having a high-polymer an a low-polymer fraction, and an organic solvent or diluent for the polymer;

(b) applying the dispersion as a film on the die surface which contacts the molten metal; and

(c) allowing the film to dry to form a thermally insulating, lubricating and protective coating on the die surface.

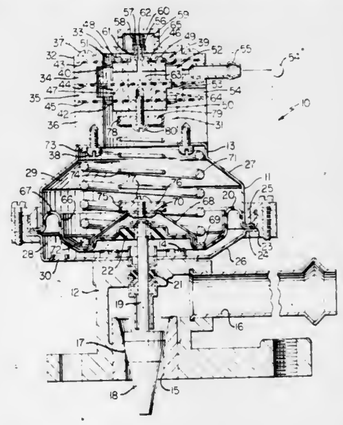
4,202,524

VALVE POSITIONER AND METHOD OF MAKING THE SAME

Harold G. Brakebill, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 22, 1978, Ser. No. 908,537
Int. Cl.[2] F16K *31/12*; F02M *25/06*
U.S. Cl. 251—28 **2 Claims**

1. In a self-contained valve positioner having a single valve positioner housing including an actuator portion and having a pneumatically operated actuator means therein carrying a main valve member to position said main valve member relative to a main valve seat in a valve unit in relation to the magnitude of a single pneumatic signal directed to said valve positioner and being utilized as the fluid source therein for pneumatically operating said actuator means includes a main flexible diaphragm operatively interconnected to said main valve member and movable in relation to a pressure differential across the main flexible diaphragm, the improvement wherein said single valve positioner housing includes a pilot valve portion and wherein said pilot valve portion has pilot valve relay means disposed therein, said relay means of said pilot valve portion having a plurality of flexible diaphragms, one of said relay means diaphragms and said main flexible diaphragm being spaced from each other to define a chamber therebetween, said relay means having passage means to direct at least a portion of said signal to said chamber to pneumatically move said valve



member, said relay means receive said pneumatic signal and cause said signal to operate said actuator means in a manner to progressively open said valve member as said signal being directed to said valve positioner progressively increases from a first value to a second value and thereafter to progressively close said valve member as said signal being directed to said valve positioner progressively increases from said second value to a third value, biasing means in said chamber biasing said valve member to a closed position when said signal is said first value, tension spring means in said chamber having opposed ends operatively interconnected to said main flexible diaphragm and one of said relay means diaphragms biasing said relay means to a position allowing said pnematic signal to communicate with said first chamber to open said valve member as said signal progressively increases from said first value to said second value, valve means biased to open by said relay means to reduce the pressure differential across said main flexible diaphragm when said signal increases to said third value to allow said valve to close by said biasing means.

4,202,525

WATER CONTROL DEVICE FOR FLUSH VALVES

Louis E. Gorabe, Hayward; James E. Hobbs, Pleasanton, both of Calif., assignor to Chemworld Corporation, Hayward, Calif.

Filed Feb. 6, 1978, Ser. No. 875,204
Int. Cl. F16K/D *31/145*; E03K/D *3/06*
U.S. Cl. 251—40 **8 Claims**

1. In a flush valve having inlet and outlet water passages:

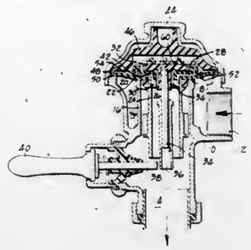
an upstanding barrel portion in said flush valve having a main valve seat around the top end thereof,

a flexible diaphragm having a central opening therein surrounded by a main valve seating portion,

a cylindrical hollow guide member depending from said diaphragm and extending through said barrel portion,

a relief valve seatable across the diaphragm opening and having an operating stem depending through said guide member,

an internal cover member positioned above said relief valve and spaced therefrom,



means for operating said relief valve to cause said diaphragm to open from said main valve seat and permit water flow through said flush valve,

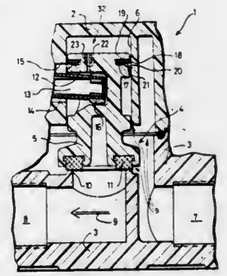
and free floating water control means positioned immediately above said relief valve and in between said relief valve and said cover member whereby the height to which the relief valve can rise is reduced and the water flow cycle is shortened.

4,202,526

VALVE

Fritz Müller, D 7118 Ingelfingen-Criesbach, Fed. Rep. of Germany; Jürgen Kenner, and Wolfgang Schädlich, both of Weissbach, Fed. Rep. of Germany, assignors to Fritz Müller, Ingelfingen-Criesbach, Fed. Rep. of Germany

Filed Oct. 4, 1977, Ser. No. 839,184
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645802
Int. Cl.[2] F16K *31/143*
U.S. Cl. 251—51 **18 Claims**



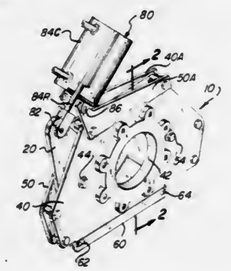
1. A fluid valve comprising a casing having an inlet and an outlet opening separated by a valve seat and defining an internal cylinder in fluid communication therewith, a piston located in said cylinder defining therewith an enclosed space, restricted passage means extending from said enclosed space for draining fluid therefore, and means for moving said piston toward and away from said valve seat whereby one of its ends engages and disengages with said valve seat and its other end simultaneously changing the volume of said enclosed space, the wall of the piston being at least in part spaced from the wall of said cylinder to permit passage of fluid therebetween and a unidirectional seal carried by said piston adjacent its other end and engaging the wall of said cylinder comprising a substantially annular deformable gasket arranged in a groove formed in the wall of said piston, said groove having a first wall furthest from said valve seat and a second wall closest to said

valve seat, said first wall being planar and said second wall being provided with a recess adjacent its outer peripheral edge, said gasket having at least one planar surface conforming to and adjacent said planar wall of said groove and being deformable on movement of said piston toward said valve seat to abut against the first wall of the groove and in cooperation with the wall of said cylinder to seal said cylinder from said inlet and outlet openings and on movement away from said valve seat to abut against the second wall of the groove and in cooperation with the cylinder wall to be deformed into said recess to provide a passage between said cylinder and said gasket for said fluid.

4,202,527
SCISSOR-TYPE VALVE

Frank B. Price, and Mathieu J. Vertenstein, both of Denver, Colo., assignors to Silver Engineering Works, Inc., Denver, Colo.

Filed Nov. 16, 1977, Ser. No. 851,884
Int. Cl.² F16K *31/124*
U.S. Cl. 251—58 **8 Claims**



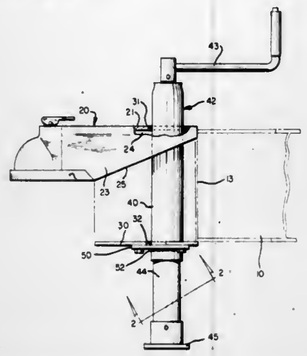
1. In a flow control valve for continuously controlling the size of a stream of fluid containing filterable solids and directing a column thereof into the center of a centrifuge; an upstream blade and a downstream blade mounted one atop the other in superimposed relation for parallel rotational movement, said blades having opposed means movable therewith in scissor-like relation to one another, said opposed means including concave edge portions cooperating in intersecting relation to define a fluid flow passage therethrough, said fluid flow passage remaining essentially the same shape while varying in size upon relative movement of said blades toward and away from one another, and said fluid flow passage being of a shape effective to cause a stream of fluid issuing therefrom to assume and maintain an essentially columnar form irrespective of the size of said passage; blade-supporting means in the form of a plate mounting said blades for pivotal movement about independent axes arranged in spaced parallel relation to one another, said supporting means having an opening therein registering with the flow passage and so sized relative to the latter as to not interfere with the flow therethrough even when fully open; and, blade-actuating means operatively connected to one of said blades link means interconnecting said blades and cooperating with said blade actuating means to effect simultaneously movement thereof so as to maintain the center of the flow passage essentially stationary, said blade-actuating means being located externally of the fluid flow passage in substantially isolated relation to the fluid flow therethrough.

5. The flow control valve as set forth in claim 1 in which: the blade-actuating means comprises a double-acting piston servomotor pivotally connected between the blade-supporting means and one of the blades and wherein said link means comprises a rigid link operatively linking said one blade to the other of said blades for simultaneous movement in opposite directions in response to actuation of said servomotor.

4,202,528
COUPLER AND JACK ASSEMBLY

Alan D. Foster, Adrian, Mich., assignor to Dayton-Walther Corporation, Dayton, Ohio

Filed Mar. 20, 1978, Ser. No. 888,231
Int. Cl.² B60S *9/02*
U.S. Cl. 254—86 R **1 Claim**



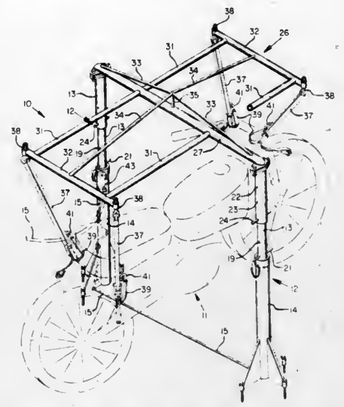
1. A jack assembly for use with a moble home or the like for connection to the tongue portion of the home, in which the tongue portion is provided with vertically spaced upper and lower plate members each having a jack-receiving opening therein, comprising: a screw type jack having a tubular body, a jack support plate telescoped on said body adjacent a lower end thereof, an underlying annular weld securing said support plate to an outer surface of said body, said body having an upper portion adapted to be received through the openings in said tongue portion with an upper end thereof extending above the upper plate member, and free of any load supporting connection with said upper plate member and with said jack support plate positioned in immediate underlying relation to the adjacent lower surface of the lower plate member, and means for securing said jack support plate to the lower plate member for retaining said jack in place, whereby the entire tongue weight of the mobile home is transferred directly to said jack support plate in compression and to said tubular jack body through said annular weld, in compression.

4,202,529
SMALL VEHICLE LIFT

William L. Fitting, 167 Humboldt, Brisbane, Calif. 94005, assignor to William L. Fitting, Brisbane and David A. Bostrom, Daly City, both of, Calif.

Filed Feb. 1, 1978, Ser. No. 874,142
Int. Cl.² B66F *7/12*
U.S. Cl. 254—89 H **5 Claims**

1. A small vehicle lift, comprising:
- a pair of upright supports, spaced apart to accommodate a small vehicle therebetween, each upright support including an upper portion comprising a piston ram and a lower portion including a fluid actuated cylinder, said upper portion being telescopically received and reciprocable in the lower portion, said upper portions being adapted to be extended upwardly from the lower portions in response to the introduction of fluid pressure into the fluid actuated cylinders;
- means for mounting the lower upright support portions on a floor;
- frame means connected to both upper support portions, including forward and rearward portions and a cross member directly connecting the tops of the upper support portions, said forward and rearward portions extending forward and rearward generally perpendicularly to the cross member;
- means depending from the forward and rearward portions for connecting to and suspending the vehicle from its front and rear; and

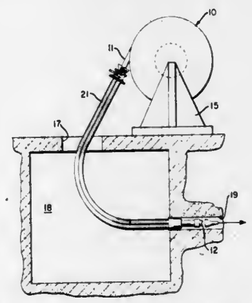


- means associated with the telescoping connection between the upper and lower support portions for locking the upper support portions in the upward extended position.

4,202,530
METHOD FOR PULLING CABLE USING A TEAR-AWAY FEEDER TUBE

Allen C. Conti, 5294 E. 117th St., Garfield Heights, Ohio 44125

Filed Dec. 5, 1978, Ser. No. 966,678
Int. Cl.² B65H *59/00*
U.S. Cl. 254—134.3 FT **9 Claims**
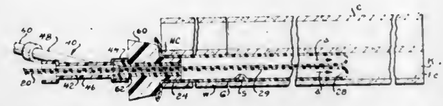


1. A method for pulling cable by a leading end through a length of conduit, the trailing end of the cable having connector means forming a substantial enlargement to the diameter of the cable, said method including the steps of:
- selecting a length of flexible feeder tube having a weakened longitudinal side wall segment thereof,
- coupling one end of the feeder tube with one end of the conduit,
- pulling the leading end of the cable with a pull-line coupled thereto through the flexible feeder tube and thence along the conduit,
- terminating such pulling of the cable before the connector means at the trailing end thereof contact the feeder tube,
- removing the feeder tube from the cable by severing the feeder tube along the weakened longitudinal side wall segment, and
- positioning the connector means at the trailing end of the cable into a desired location relative to the conduit.

4,202,531
PNEUMATIC RODDING OF CONDUIT USING EVERTED FLEXIBLE TUBING

James C. Hamrick, Kings Mountain, N.C., assignor to Thomas Industries of Tennessee Inc., Matthews, N.C.

Filed Oct. 2, 1978, Ser. No. 947,531
Int. Cl.² A61M *25/00*
U.S. Cl. 254—134.4 **18 Claims**



1. A method of rodding open-ended conduit to facilitate passing of line through the conduit, said method
- utilizing tubing of air-tight, imperforate thin-walled plastic film which is non-elastic but sufficiently flexible that the tubing conforms to a shape against which it engages and may be supplied flat and wound in roll form;
- the tubing having a circumference no less than that of the conduit interior wall;
- and the steps of the method comprising
- drawing an end portion of the flat tubing off a supplied roll thereof, collapsing said tubing end portion through the bore of a closure member for the conduit which includes a tapered annular plug of resilient material having an entrant end sized to be snugly received within the near end of the conduit,
- then everting said tubing end portion fed through the closure member bore to form an annular pocket forwardly of the closure member which communicates with the bore of the closure member;
- inserting the closure member with its annular plug into the near end of the conduit to close said conduit near end and immovably fix said end portion of the tubing in said near end of the conduit; and
- blowing air through the bore of the closure member about the collapsed tubing to develope a pressure within the everted tubing end portion sufficient to displace the pocket portion to the far end of the conduit while pulling more tubing into the conduit through the bore of the closure member from the roll supply;
- the everted portion of the tubing between its fixed end and the displacing pocket increasing lengthwise in the direction of the far end of the conduit and opening up under the force of the air being blown into the pocket so as to engage and be conformed to the interior wall of the conduit and any impediments such as water or soil present in the conduit,
- said impediments and interior wall of the conduit affording shape and backup support to the flexible tubing as it opens in response to developing pressure in the tubing such that the tubing does not burst under the pressure developed in the tubing and forms a continuous air-tight liner extending lengthwise of the conduit to which a line may be attached for drawing through the conduit.

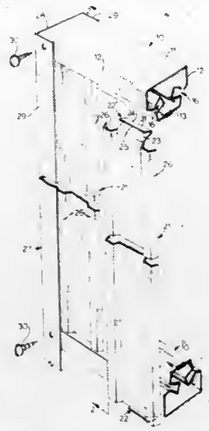
4,202,532
JOINTED STRUCTURE, COMBINATION OF MEMBERS THEREFOR, AND METHOD OF DISASSEMBLY THEREOF

Roy H. Mills, Toronto, Canada, assignor to Westeel-Rosco Limited Westeel-Rosco Limitée, Toronto, Canada

Filed Dec. 23, 1977, Ser. No. 863,863
Claims priority, application Canada, Nov. 22, 1977, 291516
Int. Cl.² E04H *17/16*
U.S. Cl. 256—24 **8 Claims**

1. In combination, a first member having a recess bounded by a bottom wall, a first side wall, and a second side wall, and a second member presenting a resiliently deformable V-shaped

lip one limb of which is presented by the second member and the other limb of which has a free edge, the lip being adapted by resilient deformation of said other limb of the lip towards said one limb of the lip to enter the recess in the first member and to attain a position therein in which the lip is in contact



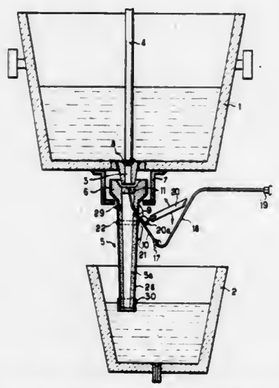
with the bottom wall of the recess with a space provided between said other limb of the lip and the bottom wall of the recess, and with said one limb in bearing contact with the first side wall and the free edge of said other limb in biting engagement with the second side wall at a spaced distance from the bottom wall.

4,202,533

METHOD AND A DEVICE FOR UNCHOKING THE CASTING OUTLET OF A METALLURGICAL VESSEL

Jean-Charles Daussan; Gérard Daussan, both of Metz, and André Daussan, Longeville-les-Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Filed Oct. 3, 1978, Ser. No. 948,762
Claims priority, application France, Aug. 24, 1978, 78 24555
Int. Cl.[2] B22D *11/10, 32/00*
U.S. Cl. 266—45 **9 Claims**



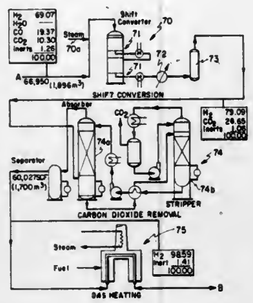
1. A device for unchoking the casting outlet of a metallurgical vessel, said casting outlet being fitted with a vertical casting tube, wherein said device comprises an opening formed in the lateral wall of the casting tube, a feed pipe for supplying oxygen or a suitable gas which is intended to be introduced into the casting tube through the lateral opening aforesaid, means for guiding said feed pipe towards said casting outlet and stopping means for sealing-off the lateral opening aforesaid after said feed pipe is removed.

4,202,534

METHOD AND APPARATUS FOR PRODUCING METALLIZED IRON ORE

William L. Davis, Jr., Salt Lake City, Utah, assignor to HICAP Engineering & Development Corp., Salt Lake City, Utah

Filed Apr. 24, 1978, Ser. No. 899,318
Int. Cl.[2] C22B *1/10*
U.S. Cl. 266—172 **34 Claims**



1. Direct reduction apparatus operating under pressure producing metallized iron ore from selected feed stock comprising,

iron ore heater means for providing controlled heating of a select size of iron ore therein to dry that ore and to raise the temperature thereof sufficiently to supply thereto part of the endothermic heat of reduction required to metallize said ore in a downstream reactor;

means for pressuring to the pressure of a first pressurized fluidized bed ore reactor system said dried and heated iron ore and moving said dried and heated iron ore;

a first pressurized fluidized bed ore reactor system arranged to receive said dried and heated ore and consisting of a housing wherein is arranged an ore bed that moves counter-currently to a flow of reducing gas therethrough, that opposite flow being at a rate such as to produce up to a ninety-five percent (95%) metallization of that ore;

(a flow of) reducing gas (at the) pressurized to the pressure of said first reactor system (pressure) and passed into said first reactor system having hydrogen (H_2) and carbon monoxide (CO) gases as major constituents thereof, which reducing gas prior to its entry to said first reactor system is heated appropriately to supply part of the endothermic heat of reduction required to metallize iron ore;

scrubber means for scrubbing off-gas from said first reactor system, removing water and solids therefrom;

shift conversion and stripping means for converting carbon monoxide (CO) in said off-gas to carbon dioxide (CO_2) and for removing carbon dioxide (CO_2) therefrom leaving hydrogen gas (H_2) and inerts only;

means for heating said hydrogen gas (H_2) and inerts to supply thereto part of the endothermic heat of reduction required to metallize iron ore;

a second pressurized fluidized bed ore reactor system like the described first reactor system metallizing, to the same percentage a bed of iron ore therein that is constructed like the bed of the first reactor system, and is arranged to receive and pass counter-currently to the moving ore therein, inlet pressure of said second reactor system being that of said converted, stripped and heated off-gas producing thereby metallized iron ore as a product therefrom;

scrubber means arranged to receive off-gas from said second reactor system for scrubbing that off-gas to remove water and solids therefrom; and

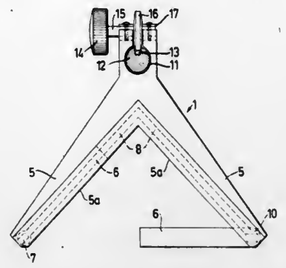
means for beneficially using said scrubbed off-gas from said second reactor system.

4,202,535

CONTROL DEVICE FOR CUTTING TORCH

Allan Eriksson, Fack 108, Malå, Sweden (S-930 70)

Filed Nov. 16, 1977, Ser. No. 852,007
Claims priority, application Sweden, Nov. 16, 1976, 7612787
Int. Cl.[2] B23K *7/10*
U.S. Cl. 266—56 **7 Claims**



1. A guide assembly for controlling the movement of a cutting torch relative to a workpiece positioned adjacent thereto, and comprising:

a stand assembly releasably attached to said workpiece and including a first end portion formed by a pair of substantially rectangularly-shaped leg members extending along and confronting opposite side portions of said workpiece, with said leg members including confronting end portions engaging one another and further engaging a second end portion extending substantially away from said workpiece, with said second end portion including an aperture extending longitudinally therethrough;

said leg members each including a groove formed in a surface portion confronting said workpiece, with a separate magnet assembly pivotally attached to each leg member and positionable within a respective groove formed in each leg member, wherein each magnet assembly forms a magnetic connection between confronting surface portions of said workpiece and one of the grooves for releasably attaching said stand assembly to said workpiece;

a beam assembly including a portion extending through said aperture to support said beam relative to said workpiece;

a support assembly having a first part rigidly engaging a portion of said beam and having a second part supported on said first part and rotatably about an axis of symmetry extending through said support assembly;

link means for engagably supporting said cutting torch in a position adjacent to said workpiece;

angle setting guide means mounted on said second part of said support assembly for selectively rotating said link means through a vertical plane formed by said axis of symmetry extending through said support assembly, to position said cutting torch at a predetermined angle relative to said workpiece.

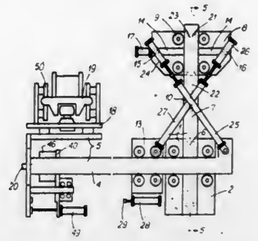
4,202,536

AUTOMATED INSTALLATION FOR PUNCHING AND CLEANING OF CONVERTER TUYERES

Lech Demidowicz, Maja, and Mieczyslaw Sztuka, Jagiellonska, both of Poland, assignors to Kombinat Gorniczo-Hutniczy Miedzihuta Miedzi "Legnica", Legnica, Poland

Filed Jun. 5, 1978, Ser. No. 912,297
Claims priority, application Poland, Jun. 7, 1977, 198745
Int. Cl.[2] F27D *23/02*
U.S. Cl. 266—135 **12 Claims**

1. An automated apparatus for punching and cleaning the converter tuyeres to be used particularly in non-ferrous pyrometallurgy, said apparatus being provided with a travel unit mounted to a converter housing enabling displacement of a punching unit with respect to the tuyeres and punching of the tuyeres at converter means, said punching unit employing an axially shiftable punching rod mounted in a supporting guide for introducing the working end of the rod into the tuyeres, the opposite end of the punching rod mounted, being in a car, said car being mounted on a rail and being movable along said rail by means of a driving unit, said driving unit including: at least one power cylinder situated transversely relative to the axis of the rail, provided with a piston rod and on the extended end of



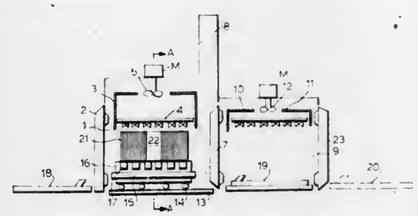
said piston rod there being mounted a carriage, upon which at least one pair of pull rods is mounted, one of these pull rods being coupled in an articulated fashion with the rail on the side of the above mentioned power cylinder opposite to said punching unit, and the other pull rod being coupled with the car of the punching unit, wherein the punching rod is mounted.

4,202,537

APPARATUS FOR ANNEALING STRIP COILS

Yoshiaki Kawasoko, Chigasaki; Iwane Chiba, Soka; Noboru Yamazaki; Toshimi Chiyonobu, both of Fukuyama, and Masao Shikuma, Kamakura, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 753,907, Dec. 23, 1976, abandoned. This application May 12, 1978, Ser. No. 905,547
Claims priority, application Japan, Dec. 25, 1975, 50-153930
Int. Cl.[2] C21D *9/00*
U.S. Cl. 266—252 **4 Claims**



1. Apparatus for annealing strip coils, comprising

A. a single heating chamber comprising

i. an inner cover,

ii. means for circulating heated gases within said heating chamber,

iii. a first passageway located at one end of said heating chamber,

iv. a movable door for opening and closing said first passageway,

v. a second passageway located at an end opposite to said first end for moving said coils out of said heating chamber,

vi: means for raising the temperature in said heating chamber to thereby heat the gases therein and uniformly heat said coils in said heating chamber, and

vii. means for moving said coils to be anealed in and out of said heating chamber;

B. a single chamber located adjacent to said heating chamber comprising

i. an inner cover,

ii. means for circulating cooled gases within said cooling chamber,

iii. a first passageway disposed connected to said second passageway of said heating chamber for moving said heated coils into said cooling chamber from said heating chamber,

iv. a second passageway located at an end opposite to said first passageway for moving cooled coils out of said cooling chamber,

v. movable door for opening and closing said second passageway,

vi. means for cooling said gases within said cooling chamber thereby to uniformly cool said coils in said cooling chamber, and

vii means for moving said coils in and out of said cooling chamber; and

C. movable door means for concurrently opening or closing said second passageway of said heating chamber and said first passageway of said cooling chamber.

4,202,538

CASTING VESSEL HAVING BASIC LINING AND USAGE THEREOF

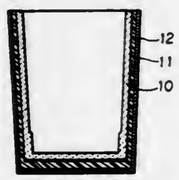
Noburo Shimada, Tokyo; Akira Miyamoto, Kawasaki; Motonobu Kobayashi, Yokohama; Akio Kuribayashi, Tokyo; Takeharu Toyoda, Yokohama; Morihiro Kimura, Tokyo; Hiroshi Kyoden, Okayama; Toshisuke Hoshino, and Jiro Watanabe, both of Bizen, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,818

Claims priority, application Japan, Mar. 2, 1977, 52-21470

Int. Cl.[2] C21B *9/06*

U.S. Cl. 266—275 **7 Claims**



1. A casting vessel comprising:

an iron shell forming an exterior of said casting vessel;

a backing positioned on an interior surface of said iron shell, said backing comprised of a cushion material having a thickness of between 7 mm and 50 mm, said cushion material having a compressive characteristic of more than 10% for a pressure of 10 kg/cm^2;

a basic lining positioned on said backing, said basic lining having a thickness of between 70 mm and 300 mm, said casting vessel being constructed such that the thickness of said backing is not more than 50% of the thickness of said basic lining.

4,202,539

ENGINE WORK STAND

Robert S. Polastri, Branford, and Harry L. Ruzicka, Jr., Easton, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Nov. 15, 1978, Ser. No. 960,910

Int. Cl.[2] B23Q *1/04*

U.S. Cl. 269—70 **3 Claims**

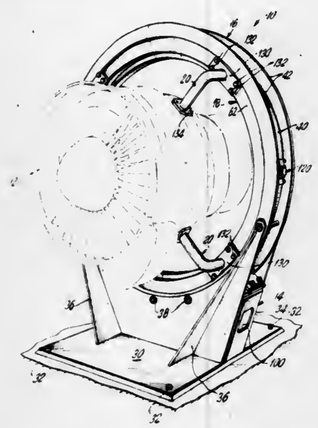
1. A build stand for rotatably mounting an engine thereon comprising:

a base;

an outer structural ring fixed to and supported by the base, in a substantially vertical plane, said ring being constructed of a rolled channel member, having a U-shaped cross section including base portion and arm portions;

bearing means secured to the outer ring and disposed on the radially inward surface of said outer ring;

an inner structural ring concentrically mounted within the outer ring for rotation on said bearings, said ring being constructed of a rolled channel member having a U-shaped cross section including a base portion and arm portions, said base portion positioned radially inward of said arm portion;



a plurality of axially extending support arms fixed to said inner ring and having means to receive and secure the engine in a generally horizontal disposition such that its longitudinal axis is generally aligned with the longitudinal axis of the concentric rings, and the center of gravity of the engine is disposed substantially within the plane of said rings.

4,202,540

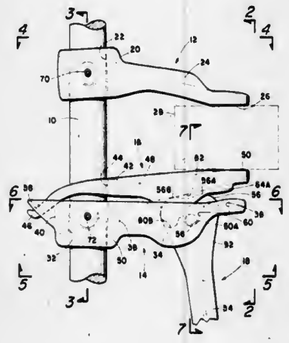
BAR-TYPE CLAMP

Lawrence M. Neff, 10031 E. 52nd St., Tulsa, Okla. 74145

Filed Oct. 30, 1978, Ser. No. 956,197

Int. Cl.[2] B25B *1/02*

U.S. Cl. 269—166 **9 Claims**



1. A clamp comprising:

an elongated bar;

a backup member having a body portion with an opening therein receiving said bar, and an arm integrally extending from the body into a plane generally perpendicular to the axis of the opening in the body portion, the dimension of the opening being such that force exerted adjacent the outer end of the arm portion engages the body portion with said bar in non-sliding relationship;

a base member having a body portion with an opening

therein slidably receiving said bar, and having an arm portion integrally extending from the body in a plane generally perpendicular to the axis of the opening in the body portion, the dimension of the opening being such that force exerted adjacent the outer end of the arm portion engages the body portion with said bar in non-sliding relationship, an integral extension portion extending from the body portion in the direction opposite the arm portion;

an intermediate member having a body portion having an opening therein receiving said bar and an integral arm portion extending generally parallel said base portion arm and displaceable relative to said base member arm portion in the direction towards said backup member, the body portion having an integral extension portion extending in the direction opposite the arm portion;

means of pivotally interconnecting said base member extension portion with said intermediate member extension portion; and

an actuating member pivotally received at the outer end of said base member arm, the actuating member having a body portion and a handle portion integrally extending therefrom, the body portion having a cam surface engaging said intermediate member arm, whereby an object to be clamped may be positioned between said backup member arm portion and said intermediate member arm portion, and the handle of the actuating member pivoted to cause the cam surface to push said intermediate member away from said base member arm portion to forcibly engage an object positioned between said backup member arm and said intermediate member.

4,202,541

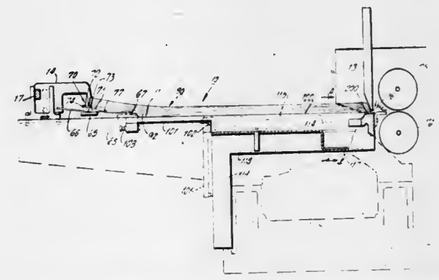
SUCTION FEED TABLE

Alexander Leskiw, Whitestone, and Seth Graubert, Rockville Centre, both of N.Y., assignors to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed May 31, 1978, Ser. No. 911,184

Int. Cl.[2] B65H *3/64*

U.S. Cl. 271—132 **6 Claims**



1. In equipment for successively feeding the bottom sheet from a stack of sheets along a generally horizontal feed path to additional apparatus positioned forward of said equipment; first means defining a generally horizontal support for said stack; guide means for maintaining the stack in position transverse to said path, rear gauge means at the rear of said stack, front gauge means positioned above said support to define a space between the lower end of said front gauge means and said support equal to slightly more than the thickness of one sheet and less than the thickness of two sheets, a carriage, means for recreciprocating said carriage parallel to said feed path, a mechanical feeder carried by said carriage, said mechanical feeder including feeder means operatively positioned at the rear of said stack when said carriage is in its most rearward position and operatively disposed to engage the trailing edge of said bottom sheet and drive the latter forward as said carriage moves forward from said most rearward position, second means for applying a suction assist force to draw the bottom of the stack downward; said suction assist force acting at said front gauge and for a substantial distance to the rear thereof; said second means for applying a suction assist force including a first portion acting from said front gauge rearward to a second portion of said second means; said first portion being derived from relatively high velocity air flow moving along the bottom of said stack rearward from the front gauge through a relatively shallow front portion of a chamber means; said chamber means constituting a portion of said second means disposed below said horizontal support and extending rearward from said front gauge; said second portion being derived from relatively high velocity air flow moving along the bottom of said stack forward from the rear of said stack through a relatively shallow rear portion of said chamber means; said front portion being relatively short and said rear portion being relatively long.

4,202,542

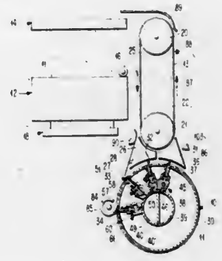
APPARATUS FOR HANDLING FLEXIBLE SHEET MATERIAL OF DIFFERENT SIZES

Gerald B. Lammers, and Robert T. Ritchie, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1977, Ser. No. 856,552

Int. Cl.[2] B65H *5/12*

U.S. Cl. 271—276 **22 Claims**



18. An apparatus for supporting rectangular shaped, flexible sheets of various sizes thereon including:

transporting means having a surface for transporting the sheet;

a first vacuum chamber having a first controlled vacuum;

a second vaccum chamber having a second controlled vacuum;

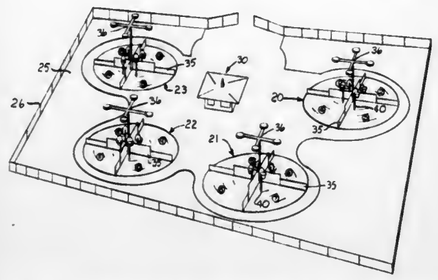
first connecting means to continuously connect said first vacuum chamber to a first area of said surface of said transporting means for attaching the leading portion of the sheet to said surface of said transporting means;

first control means to selectively control the portion of the first area of said surface of said transporting means to which the first controlled vacuum from said first vacuum chamber is applied through said first connecting means in accordance with one of the dimensions of the sheet;

second connecting means to continuously connect said second vacuum chamber to at least one other area of said surface of said transporting means spaced from the first area of said surface of said transporting means in the direction of the other of the dimensions of the sheet;

and second control means to selectively control the portion of the other area of said surface of said transporting means to which the second controlled vacuum from said second vacuum chamber is applied through said second connecting means for attaching the trailing portion of the sheet to said surface of said transporting means in accordance with at least the one dimension of the sheet.

4,202,543
RECREATIONAL BASKETBALL COURT FACILITY
Andrew P. Collins, 3926 Dover, Durham, N.C. 27705
Filed Sep. 1, 1977, Ser. No. 829,987
Int. Cl.² A63J 3/00; A63B 63/00
U.S. Cl. 272—3 1 Claim

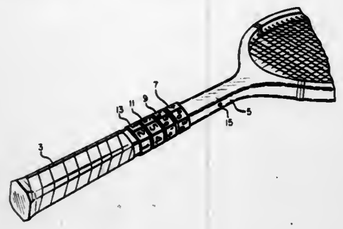


1. A commercial basketball recreational facility comprising:
(a) An array of basketball courts grouped in spaced-apart sets on a common land area, each set of courts having a plural number of courts and each court having a goal-backboard support means and appropriate fencing shared with adjacent courts on either side thereof; and
(b) a set of elevated unique goal-backboard structures for the array of courts with one such unique structure being supported in each court on each said support means at an elevation appropriate to the game of basketball and including among the set of said unique goal-backboard structures at least one such unique goal-backboard structure having movable elements limiting the time in which the player may successfully pass the ball through the goal, at least one such unique goal-backboard structure having means for providing a sensory effect upon successful passage of the ball through the goal, at least one such unique goal-backboard structure having a barrier affixed to the backboard and arranged by shape and position to require a particular type shot for successful passage of the ball through the basket, at least one such unique goal-backboard structure having a goal of unique shape as compared to goals of other said goal-backboard structures and at least one such unique goal-backboard structure having means to rotate selected portions of such unique goal-backboard structure about a selected fixed axis so as to make successful passage of the ball through the goal associated therewith dependent on the rotative position of such selected portions.

4,202,544
TENNIS SCOREKEEPING DEVICE AND METHOD OF USING
Jewett E. Popma, 100 SW Leonard St., Lake Oswego, Oreg. 97034
Filed Nov. 18, 1977, Ser. No. 852,796
Int. Cl.² A63B 49/00
U.S. Cl. 273—73 R 2 Claims

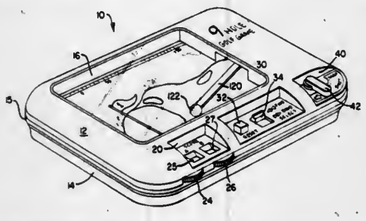
1. In combination, a game playing instrument having an elongate handle and a game score indicator on the handle wherein the improvement comprises:
a plurality of separate player identifying stretchable bands, at least partly elastic, and removeably mounted by compression of the elastic on the instrument's handle;
the bands including means for indicating scores of at least two separate players simultaneously;
reference means on the playing instrument for aligning the bands therewith to indicate the score of the game;
and separate means on the handle for indicating the games won and lost by each player.

2. The method of keeping the game score of two players on the throat of a playing instrument having thereon a plurality of expansable and compressible elastic bands, each of the bands having thereon a plurality of score indicators including an indicator for the score zero, and a band reference indicator fixed to the playing instrument, comprising the steps of:
(A) slipping the bands over the throat of the playing instrument;
(B) aligning the zero indicator on each of the bands on the throat with the band reference indicator;
(C) expanding the band after a score is made;



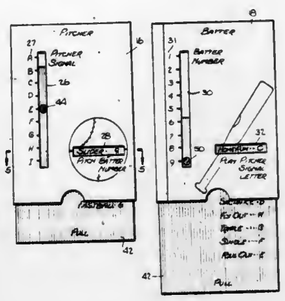
(D) rotating the band relative to the band reference indicator;
(E) aligning a score indicator on the rotating band with a score indicator on the non-rotating band simultaneous with alignment of the score indicator on the rotated band with the band reference indicator;
(F) compressing the rotated band on the throat.

4,202,545
GOLF GAME DEVICE
Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 4, 1979, Ser. No. 920
Int. Cl.² A63F 7/06
U.S. Cl. 273—87 R 11 Claims



1. A golf game device comprising:
a support structure;
a program tape mounted for movement traversely across said support structure and having depicted thereon various golf game scenes including green tee off spots, green scoring holes, and traps of various types;
actuating mechanism for moving said program tape;
a replica of a golf ball mounted for movement across the path of said program tape;
trigger mechanism associated with the golf ball replica and operable by a player of the game device for effecting the movement of said golf ball replica across the tape path;
an indicator means associated with the program tape for signalling a score as simulated by the positioning of the golf ball replica over a green scoring hole on said program tape.

4,202,546
GAME
Howard M. Bromberg, Bronx, N.Y., assignor to The Flexi Group, Inc., New York, N.Y.
Filed Jul. 5, 1978, Ser. No. 921,891
Int. Cl.² A63F 9/00
U.S. Cl. 273—93 R 16 Claims



1. A game comprising:
(a) an envelope provided with a first face having window means therein and a second face having window means therein;
(b) sets of indicia in cooperative relation to said window means on said first and second faces;
(c) a support means mounted within said envelope provided with sets of indicia including marker means visible within said window means on said first and second faces;
(d) said support means moveable to one position wherein said marker means appears in said window means in said first face adjacent an indicium associated with said window means to reveal an indicium in said window means in said first face; and
(e) said support means moveable to another position wherein said marker means in said window means in said second face is positioned adjacent the indicium associated with said window means corresponding to the indicium appearing in said window means in said first face thereby revealing in said window means in said second face an action as well as an indicium to which said marker in said window means in said first face is to be moved.

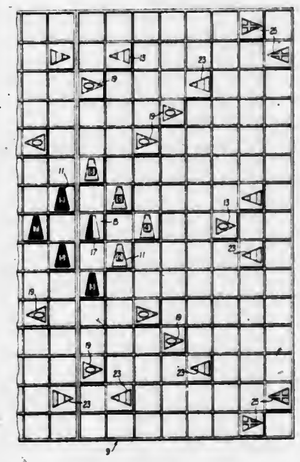
9. A game including, in combination:
(a) at least two envelopes, each envelope provided with a first face having window means therein and a second face having window means therein;
(b) sets of indicia in cooperative relation to said window means on said first and second faces;
(c) a support means mounted within each of said envelopes provided with sets of indicia visible within said window means in said first and second faces;
(d) said support means moveable within one of said envelopes to one position wherein said marker means appears in said window means in said first face adjacent an indicium associated with said window means to reveal an indicium in said window means in said first face; and
(e) said support means moveable within another of said envelopes to a position wherein said marker means in said window means in said second face of said another envelope is positioned adjacent the indicium on said another envelope associated with said window means corresponding to the indicium appearing in said window means in said first face of said one envelope thereby revealing in said window means in said second face of said another envelope an action as well as an indicium to which said marker in said window means in said first face of said one envelope is to be moved.

4,202,547
MOVABLE GOLF GREEN APPARATUS
Thomas L. Mueller, 1018 Price Rd., Tempe, Ariz. 85281
Continuation-in-part of Ser. No. 815,936, Jul. 15, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,336
Int. Cl.² A63B 69/36
U.S. Cl. 273—181 A 25 Claims



16. Movable golf green apparatus for providing a variety of distances and orientations of a golf green to a user, comprising, in combination:
golf green means;
wheel means secured to the golf green means;
motor means for moving the wheel means and the golf green means; and
control means for actuating the motor means to move the wheel means and the golf green means over a variety of distances and for rotating the golf green means for providing a variety of orientations of the golf green apparatus to a user.

4,202,548
INTERNATIONAL CODE FLAG EDUCATIONAL GAME
M. Robert Reitz, P.O. Box 1543, Annapolis, Md. 21404
Filed Jun. 30, 1978, Ser. No. 920,982
Int. Cl.² A63F 3/00
U.S. Cl. 273—272 3 Claims



1. An educational game apparatus for teaching International Code Flags comprising:
(a) a plurality of tiles, each tile having an International Code Flag insignia on a surface thereof, said plurality of tiles containing substantially all letters of the alphabet and wherein each tile has a predetermined score value determined by the number of different colors thereon;

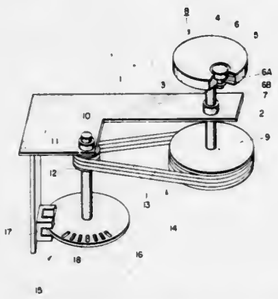
(b) a game board having means for dividing the board into a plurality of areas on which the tiles are placed to form words,
(c) said game board includes areas having supplemental values in the form of both International Code Flag number pennants and numbered nautical buoys thereon;
(d) wherein the tiles are played by one or more persons to form words.

4,202,549

DEVICE FOR MANUALLY CONTROLLING MOVEMENT OF PICKUP ARM IN AUTOMATIC RECORD PLAYER

Atsushi Takeuchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 18, 1978, Ser. No. 943,644
Claims priority, application Japan, Sep. 22, 1977, 52-114387; Sep. 22, 1977, 52-128155[U]
Int. Cl.² G11B *3/00*
U.S. Cl. 274—9 RA **12 Claims**



1. A device for manually controlling movement of a pickup arm in an automatic record player, comprising:
manually operative manipulation means selectively movable in opposite directions;
means for transmitting movement of said manipulation means;
means for detecting the amount and direction of the movement of said manipulation means transmitted by said movement transmitting means and for generating detection signals representative of the detected movement in both amount and direction;
circuit means receiving said detection signals and generating a driving signal in response to the detection signals received; and
means responsive to said driving signal for driving said pickup arm in accordance with this driving signal in a direction and by an amount proportionally to the movement of said manipulation means whereby said pickup arm will move proportionally and follow faithfully all movements of said manipulation means.
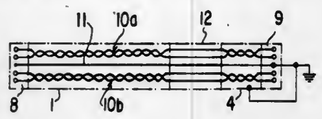
4,202,550

STEREO LEAD WIRES AND ARRANGEMENTS THEREOF FOR CONNECTING PICK-UP DEVICE TO AMPLIFIER

Mitsuyoshi Morinaga, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1978, Ser. No. 896,040
Claims priority, application Japan, Apr. 20, 1977, 52-50054[U]; Apr. 20, 1977, 52-50055[U]
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **6 Claims**

1. Improved lead wires for use with a stereo record playback system where at least a pair of left channel wires and at least a pair of right channel wires extend from a connector for pick-up device through an electrically conductive tone arm to a stereo amplifier, said lead wires comprising
a ground wire and said left and right channel wires, said ground wire being disposed between said left channel wires and said right channel wires to provide electrical isolation therebetween, said ground wire and left and right channel wires being bonded together at least in a portion of said tone arm as a single unit so that said electrical isolation is implemented at least within said tone arm



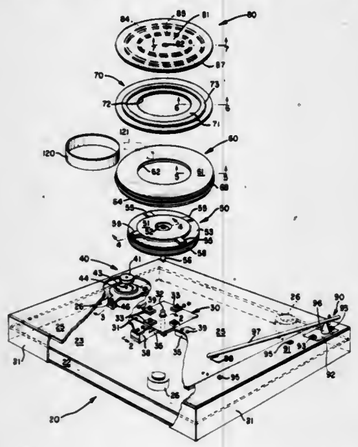
without the addition of undue weight to the arm and said ground wire being grounded to said tone arm at the stereo amplifier end thereof and spaced from said tone arm at the connector end thereof to thereby establish an open circuit between said ground wire and said tone arm at said connector end thereof.

4,202,551

ACOUSTIC DAMPENING ASSEMBLY FOR RECORD PLAYER TURNTABLE

Tom A. Darnall, Jr., Buckhannon, W. Va. 26201

Filed May 11, 1978, Ser. No. 904,788
Int. Cl.² G11B *3/60*
U.S. Cl. 274—39 R **26 Claims**



11. In a turntable having a base, a mounting support plate, a platter support plate, a two-stage platter assembly comprising an inner platter and an outer platter, and a spindle, the improvement comprising an acoustic dampening assembly for isolating, blocking, and decoupling all collision course vibrations and for preventing synergistic combinations thereof, said acoustic dampening assembly comprising, in combination:
A. a mat assembly, comprising at least one mat which prevents air from entering between said at least one mat and a flexible record placed thereupon;
B. a plurality of decoupling devices which comprise:
(1) at least one layer of energy absorbing material on resonant-prone surfaces that are exposed to outside vibrations, said resonant-prone surfaces comprising bottom and top surfaces of said upper platter and top surfaces of said lower platter,
(2) circumannular compressors, tensionally attached to peripheral surfaces of said inner platter and said outer platter, which absorb and dampen any vibrations and resonances that are absorbed or picked up by said platter assembly, and

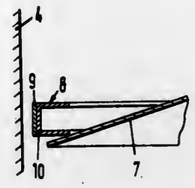
(3) sandwich cushions between said inner platter and said outer platter; and
C. a stub-like spindle as said spindle, having a top which is below the upper surface of said outer platter.

4,202,552

HEAT SHIELD AND APPARATUS COMPRISING SAME

Gilles G. Hirs, Bensberg-Herkenrath, Fed. Rep. of Germany, assignor to B.V. Neratoom, The Hague, Netherlands

Filed Jan. 27, 1978, Ser. No. 872,878
Claims priority, application Netherlands, Feb. 11, 1977, 7701481
Int. Cl.² F04B *39/00*; F16J *15/54*
U.S. Cl. 277—26 **2 Claims**



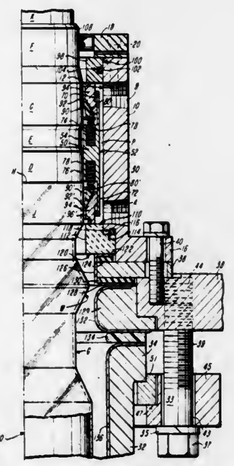
1. A heat shield for mounting in closely-spaced relation to a circumscribing wall, the heat shield comprising a frusto-conical plate having a circular circumference and two concentric annular parts having different coefficients of thermal expansion, the parts being united to form a unitary element of which one part, having the lower coefficient of expansion, is arranged outside the other part so that decreased spacing between the heat shield and a circumscribing wall can be achieved during operation at elevated temperature, said two annular parts being formed as a bimetallic ring placed on said plate, said ring being cut through in one position.

4,202,553

SEAL CARTRIDGE FOR AGITATOR SHAFT OF A CHEMICAL REACTOR

Donald E. Kropp, Ft. Thomas, Ky., assignor to Ceramic Coating Company, Newport, Ky.

Filed Nov. 3, 1978, Ser. No. 957,529
Int. Cl.² F16J *15/34*
U.S. Cl. 277—41 **22 Claims**



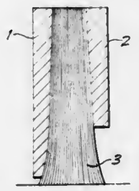
1. A removable seal cartridge assembly for the upper end adjacent portion of an agitator shaft which projects outwardly from the drive nozzle of a chemical reactor vessel, which comprises:
(a) an agitator shaft;
(b) a drive means movable between a first position in axial alignment with said agitator shaft and a second position which provides free unobstructed access to the upper end of the agitator shaft;
(c) means for selectively and releasably interconnecting the agitator shaft in driven relationship with said drive means;
(d) an elongated housing releasably secured to a reactor vessel and having upper and lower ends with an axial bore therethrough, said agitator shaft extending through said bore into said reactor vessel with said housing being positioned below said releasably interconnecting means;
(e) an elongated cylindrical seal cage in said housing, said seal cage having inner and outer surfaces and upper and lower ends wherein the outer surfaces are disposed in laterally spaced relationship with respect to the inner surface of the housing and wherein the inner surface of the cage provides a slip fit with respect to the outer surface of the agitator shaft;
(f) means releasably anchoring said seal cage to the agitator shaft for rotation therewith; and
(g) means in said housing for supporting said seal cage for common removal with said housing whenever said housing is moved axially upward to the space occupied by said drive means in said first position subsequent to moving said drive means to said second position.

4,202,554

BRUSH SEALS

Leonard S. Snell, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed May 16, 1979, Ser. No. 39,605
Claims priority, application United Kingdom, May 17, 1978, 20230/78
Int. Cl.² F16J *15/44*
U.S. Cl. 277—53 **4 Claims**



1. A brush seal comprising a plurality of tightly-packed bristles sandwiched in a space between a pair of axially-spaced annular side-plates and having free ends projecting in the plane of the seal from a circumferential edge of the side-plate pair, the bristles and the space between the side-plates being dimensioned in relation to each other so that the cross-sectional area of bristle material at any radius substantially completely fills the cross-sectional area of the space between the side-plates at that radius.

4,202,555

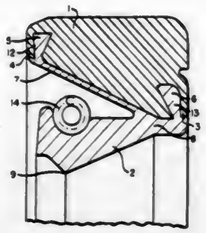
SEALING RING

Bernd Becker, Leimen; Hans Forch, Birkenau; Adam Helfrich, Wald-Michelbach, and Gottfried Jung, Fürth, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,467
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2807022
Int. Cl.² F16J *15/32*
U.S. Cl. 277—153 **11 Claims**

1. A sealing ring comprising a reinforcing ring composed of thermoplastic material having at least one annular groove therein; and a lip ring concentrically nested in the reinforcing

ring and having a circular bead for each annular groove having the same profile and set therein, wherein each bead has a profile which in the projecting portion is enlarged in the manner of a wedge extending essentially radially outwardly, the nominal diameter on which each bead is disposed being smaller than the nominal diameter of the associated groove.

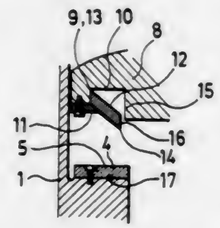


4,202,556

SEALING MEANS

Mamoru Makishima, Aichi, and Koyu Yamasaki, Obu, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Jun. 5, 1978, Ser. No. 912,214
Claims priority, application Japan, Jun. 10, 1977, 52-74860[U]
Int. Cl.² F16J *15/08*
U.S. Cl. 277—190 **9 Claims**



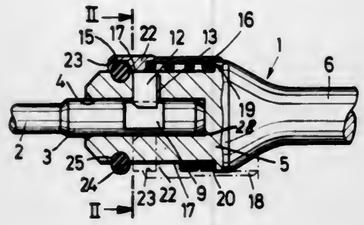
1. A sealing structure comprising: first and second rigid members spaced apart and comprising first and second surfaces, respectively, facing each other, said first surface on said first member being planar; a gasket formed as a closed ring with an outer perimeter generally axially displaced from an inner perimeter, whereby said gasket has a truncated, tapered shape and comprises first and second axially displaced sealing ends, each of said ends comprising a sharp edge formed as a closed loop in a plane substantially at each of said first and second sealing ends, respectively, said second surface on said second member comprising a groove facing said first member, said first end of said gasket being held in said groove; and a wall extending generally axially adjacent said second sealing end to receive an end region of said second sealing end when said first and second members are pressed against said ends of said gasket.

4,202,557

DRILLING DEVICE

August Haussmann, Oberzell; Siegfried Klaissle, Linsenberg; Hermann Hugger; Bernhard Moser, both of Altshausen; Walter Müller, Weingarten; Wolfgang Peetz, Blitzenreute, Biegenburg; Anton Scheuch, Ravensburg, and Gerhard Schwarz, Blitzenreute, all of Fed. Rep. of Germany, assignors to Hawera Probst GmbH & Co., Ravensburg, Fed. Rep. of Germany

Continuation of Ser. No. 797,504, May 16, 1977, abandoned.
This application Nov. 13, 1978, Ser. No. 959,525
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621809
Int. Cl.² B23B *31/06, 31/10*
U.S. Cl. 279—19.5 **14 Claims**



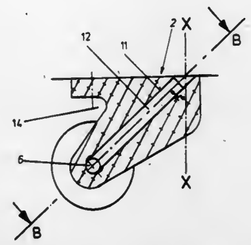
1. A drilling device for a drill which includes in combination: a driving head drivingly connectable to a drilling machine and having an axial bore for detachably receiving a drill shank, said driving head also having a transverse bore leading from the periphery of said driving head into said axial bore, a dual function drive transmitting member said drill having said drill shank thereof insertable into said driving head and provided with a continuous recess having a segment-shaped cross section and a bottom surface convex in radial section relative to the drill axis and in a radial cross section having a chord form for engagement with said drive transmitting member, said drive transmitting member including a diametrical line of a cross section of said axial bore and also including a stepped edge on one side of the diametrical line, said recess being on said one side of said diametrical line with said stepped edge engaging against the bottom surface of the recess, said drive transmitting member being movable in said transverse bore into a first position representing the drive transmitting position for transmitting driving movement directly onto a drill when such drill has been inserted into said axial bore and said drive transmitting member also being movable into a second position in which said drive transmitting member is out of said drive transmitting position, and adjustable means movable on said driving head selectively into a locking position for locking said drive transmitting member in said first position and into a release position for releasing said drive transmitting member out of its first position and to allow movement of said drive transmitting member into said second position, said recess in the axial direction of said drill shank being limited by at least one cross face extending perpendicularly to the axis of said drill; spring means continuously urging said adjustable means into its locking position, said adjustable means including a sleeve surrounding said driving head, and said spring means being a coil spring arranged between said sleeve and said driving head, said coil spring being coaxial with said sleeve and said drive head.

4,202,558

SUPPORT BODY FOR ROLLERS OF SKATING DEVICES

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Aschfeld; Manfred Krug, Schweinfurt, and Horst Martin, Gochsheim, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,742
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1977, 7709615
Int. Cl.² A63C *17/02*
U.S. Cl. 280—11.28 **13 Claims**



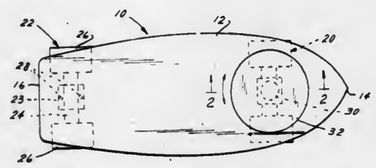
1. A support member for each roller shaft of a skating device which includes a mounting plate and two of said roller shafts and rollers thereon, each of said support members being formed of plastic material and comprising an upper part securable to said mounting plate, a lower part to which is secured one of said roller shafts, and a pin which has one end rigidly joined to said roller shaft, extends through said support member between said upper and lower parts, and is stiffer than said support member, said support member comprising an injection molded member in which said joined pin and roller shaft are molded.

4,202,559

SKATEBOARD

John Piazza, Jr., 53 Bertha Pl., Staten Island, N.Y. 10301

Filed Aug. 10, 1978, Ser. No. 932,428
Int. Cl.² B62B *11/00*
U.S. Cl. 280—87.04 R **12 Claims**



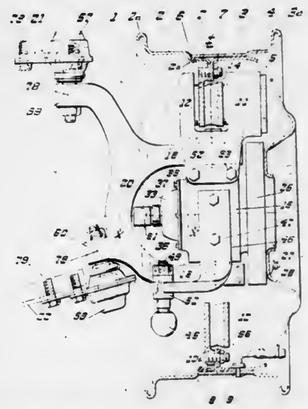
1. A skateboard comprising:
(A) a rigid elongated board having front and rear portions;
(B) first and second wheel assemblies;
(C) means for fixedly mounting said second wheel assembly below said second portion;
(D) a steering platform;
(E) means, secured to said first portion, linking said platform above said first portion and said first wheel assembly below said first portion for pivotal movement as a unit relative to said board;
(F) means for limiting the angle through which said platform/first wheel assembly unit is pivotable; and
(G) means for biasing said platform/first wheel assembly unit to a given orientation;
said first portion defining an aperture extending vertically therethrough, and said linking means, said limiting means, and said biasing means constituting a single unit substantially completely disposed within said aperture, said single unit comprising a bearing collar fixedly mounted in said aperture and having an aperture extending through the sidewall thereof, a hollow bearing coaxially extending through said collar and having a transversely extending slot in the sidewall thereof, and a spiral spring coaxially disposed substantially within said bearing, the upper surface of said bearing and one end portion of said spring being operatively secured to said platform for pivotal movement therewith, the bottom surface of said bearing being operatively secured to said first wheel assembly for pivotal movement therewith, and the other end portion of said spring extending through said bearing slot and said collar aperture and being operatively secured to said board to preclude lateral movement thereof.

4,202,560

SPEEDOMETER DRIVE GEAR ASSEMBLY FOR A CENTERLINE STEERING WHEEL ASSEMBLY

Melvin R. Inbody, Findlay, Ohio, assignor to The Centerline Steering Safety Axle Corporation, Findlay, Ohio

Division of Ser. No. 836,673, Sep. 26, 1977, Pat. No. 4,159,832, which is a continuation of Ser. No. 638,069, Dec. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 492,438, Jul. 29, 1974, Pat. No. 3,963,260. This application Oct. 10, 1978, Ser. No. 949,683
Int. Cl.² G01P *3/02*
U.S. Cl. 280—96.3 **5 Claims**



1. A speedometer drive gear assembly for a surface vehicle having a hub, means for supporting the hub on the vehicle, a wheel spindle journalled is said hub, a wheel secured to the spindle for rotation with the spindle, comprising: a hubcap anchored to said hub, an input speedometer drive shaft fixed at one end to the end of said wheel spindle and journalled in said hubcap for rotation with and along the axis of said wheel spindle, and means for interconnecting said speedometer drive shaft with a flexible speedometer drive cable.

4,202,561

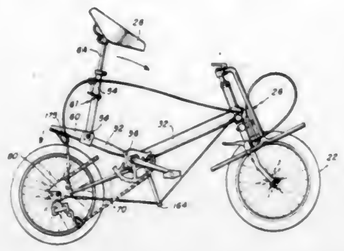
COLLAPSIBLE BICYCLE

Edward H. Yonkers, 83 Eldredge St., Newton, Mass. 02150

Continuation-in-part of Ser. No. 823,708, Aug. 11, 1977, abandoned. This application Jun. 1, 1978, Ser. No. 911,375
Int. Cl.² B62K *15/00*
U.S. Cl. 280—278 **32 Claims**

1. A wheeled vehicle comprising
a head tube and a down tube connected together,
a bottom bracket assembly connected to the rear end of the down tube,
a seat tube having its lower end pivotally mounted on the bottom bracket assembly,

a chain stay having its forward end also pivotally mounted on the bottom bracket assembly,



and means including a cable assembly and having cable means on each side of the vehicle interconnecting the head tube with the seat tube and with the chain stay.

4,202,562

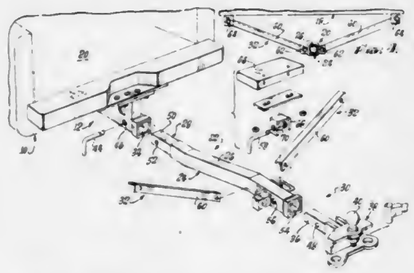
TRAILER HITCH

Conrad L. Sorenson, 1232 N. Euclid Ave., Upland, Calif. 91786

Filed May 15, 1978, Ser. No. 905,847

Int. Cl.[2] B60D 1/00

U.S. Cl. 280—415 R **16 Claims**



1. An auxiliary towing hitch extension for attaching a trailer having a front towing hitch to a towing vehicle having a rear towing hitch and a removable body which overhangs the rear end of said vehicle a substantial distance, comprising:

said vehicle hitch having a rearwardly opening coupling socket and said trailer hitch having a downwardly opening coupling socket for a coupling ball,

a removable tow bar having normally front and rear ends,

front coupling means at the front end of said tow bar for releasable coupling engagement with said vehicle hitch,

said front tow bar coupling means comprising a longitudinally extending coupling tongue at the front end of said tow bar for insertion into said vehicle coupling socket, and means for releasably securing said tongue in the latter socket, and

rear coupling means at the rear end of said tow bar for releasable coupling engagement with said trailer hitch,

said rear tow bar coupling means comprising a rearwardly opening longitudinal coupling socket at the rear end of said tow bar, a coupling element including a coupling tongue removably engaged within said tow bar coupling socket and adapted for engagement in said vehicle coupling socket when said tow bar is not used and an upstanding coupling ball at the rear end of said coupling element tongue for removable engagement in said trailer coupling socket, and means for releasably securing said coupling element to said tow bar.

4,202,563

INDEPENDENT WHEEL SUSPENSION FOR MOTOR VEHICLES, ESPECIALLY FOR PASSENGER MOTOR VEHICLES

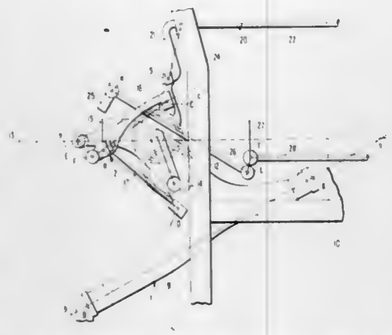
Peter Tattermusch, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,614

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642939

Int. Cl.[2] B62D 7/20

U.S. Cl. 280—675 **53 Claims**



1. An independent wheel suspension for suspending a vehicle wheel at a frame of a motor vehicle, comprising:

a wheel carrier means for rotatably supporting a vehicle wheel,

first and second wheel guide means for guidingly connecting the wheel carrier means to the frame, said second wheel guide means including a coupler means and a rod means, said rod means being pivotably connected to the frame,

said wheel carrier means being pivotably connected to both of said wheel guide means and having a fixed pivot axis with respect to said first wheel guide means, said fixed pivot axis being determined by a first pivotal connection point at the wheel carrier means and the first guide means and a second pivotal connection point at the coupler means and the first guide means.

4,202,564

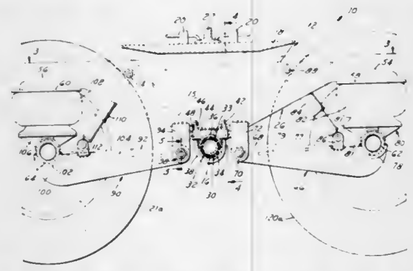
TANDEM AXLE SUSPENSION SYSTEM

Don S. Strader, Marietta, Ga., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Sep. 7, 1978, Ser. No. 940,182

Int. Cl.[2] B60G 5/04

U.S. Cl. 280—678 **22 Claims**



10. In an axle suspension system of the type which includes an axle, axle support means extending laterally of said axle, hanger means adapted to be coupled to a vehicle frame and a bushing assembly for pivotally securing said axle support means to said hanger means, the improvement wherein said bushing assembly comprises a pair of polygonal openings in said hanger means spaced from each on a common axis generally parallel to said axle, an eye on said axle support means received in said hanger means between said openings, mounting blocks having polygonal cross sections received in said openings and central bores aligned on an axis offset from said common axis of said openings, bushing means telescopically received in said eye and including bushing rod ends projecting through said block bores, and means coupled to said rod ends selectively for loosening said blocks in said openings such that said blocks may be rotated within said openings eccentrically about said common axis for step-wise adjustment of axle alignment and for clamping said blocks within said openings such that said polygonal block cross sections cooperate with said polygonal openings inherently to resist rotation within said openings.

4,202,565

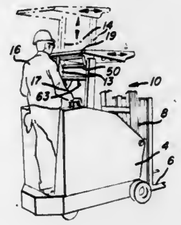
RETRACTABLE OVERHEAD GUARD

Duane L. Mosch, Muscatine, Iowa, assignor to HON Industries Inc., Muscatine, Iowa

Filed Jun. 2, 1978, Ser. No. 911,787

Int. Cl.[2] B60J 7/24

U.S. Cl. 280—756 **11 Claims**



1. In a vehicle including a lifting mechanism and having a position for a riding operator, a retractable overhead guard assembly including: generally vertically extending support means having a lower portion secured to said vehicle, and an upper portion selectively extensible upwardly and retractable downwardly relative to said lower portion; an operator guard supported on said upper portion for vertical adjustment therewith as said upper portion is extended and retracted relative to said lower portion; and sliding support means connecting said guard to said upper portion including channel means and channel cooperating roller means for sliding cooperation with said channel means, for generally horizontal selective sliding movement of said guard relative to said upper portion between a first position superposed to said operator position for protecting an operator thereat, and a second position displaced from said first position whereby said upper portion and said guard may be retracted adjacent such an operator.

4,202,566

HEAT-SENSITIVE RECORDING OR COPYING MATERIAL

Horst Kosche, Düren, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

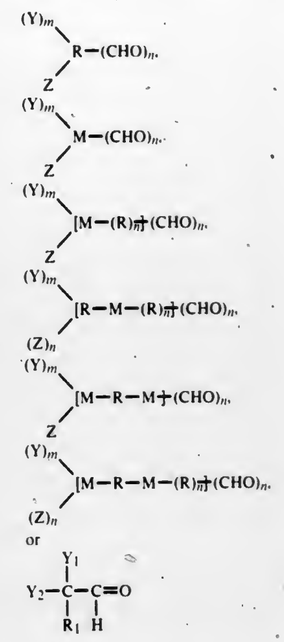
Filed May 24, 1978, Ser. No. 908,888

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724295; Jul. 1, 1977, 2729739

Int. Cl.[2] B41M 5/18, 5/22

U.S. Cl. 282—27.5 **16 Claims**

1. In a heat sensitive recording or copying material which contains, in its color reactant system; a color-producing acceptor as the developer for the color-forming agent, the improvement wherein the developer contains at least one member which is the reaction product of an electronegatively substituted aldehyde and an aliphatic organic compound containing hydroxyl groups, such that the aldehyde moiety is bonded to the radical of said aliphatic organic compound via at least one oxygen atom, said electronegatively substituted aldehyde being an electronegatively substituted mono- or polyaldehyde, wherein at least one such electronegative substituent is halo or cyano and interacts electromerically with at least one aldehyde group thereof, said aldehyde having the formula



wherein

R is a substituted or unsubstituted, saturated or unsaturated aliphatic radical,

M is a substituted or unsubstituted aromatic, aromatic-cycloaliphatic, aromatic-heterocyclic or heterocyclic radical with aromatic properties,

Y is halo or cyano,

Z is hydrogen or an acid group,

m and n are independently an integer of 1 to 6,

Y_1 is hydrogen or halogen,

Y_2 is halogen, and

R_1 is hydrogen, carboxyl, alkyl of 1 to 3 carbon atoms, halogenoalkyl of 1 to 3 carbon atoms, phenyl, benzyl or halogenobenzyl.

4,202,567

COUPLING INCLUDING A TUBULAR COUPLING MEMBER TO BE COUPLED TO A FLANGE

Arthur L. Paddington, Whitstable, England, assignor to David Brown-Vosper (Offshore) Limited, Portchester, England

Filed Aug. 3, 1978, Ser. No. 930,743

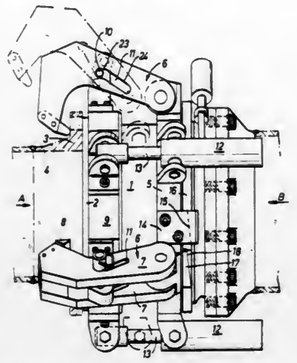
Claims priority, application United Kingdom, Aug. 3, 1977, 32635/77

Int. Cl.[2] F16L 23/00

U.S. Cl. 285—18 **4 Claims**

1. A coupling comprising a tubular coupling member to be coupled to a flange and having a surface against which a flange can rest, a first ring slidable externally on the tubular coupling member, a plurality of hooks pivotably carried by the ring, co-operating cam surfaces formed on or carried by the tubular coupling member and the hooks, moving means for moving the first ring away from the said surface during which motion the action of the cam surfaces is to bring the hooks into positions in which they retain a flange resting against the said surface and urge the flange against the said surface, a second ring rotatable on said tubular coupling member, cam surfaces formed on or carried by said first and second rings and rotating

means for rotating said second ring for bringing said cam surfaces formed on or carried by said first and second rings into co-operation to prevent motion of said first ring towards said surface, said second ring being rotatable to bring the cam



surfaces formed on or carried by the first and second rings into co-operation only when said first ring is at the distance from said surface of said tubular coupling member in which the hooks are in engagement with a flange resting against said surface of said tubular coupling member.

4,202,568

TUBE JOINT

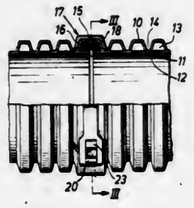
Torsten E. T. Ström, Fristad, Sweden, assignor to AB Gustavsberg, Fristad, Sweden

Continuation of Ser. No. 725,451, Sep. 22, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,418

Claims priority, application Sweden, Sep. 25, 1975, 7510733; Feb. 4, 1976, 7601178

Int. Cl.² F16L *23/00, 47/00*

U.S. Cl. 285—336 **15 Claims**



1. A combination tube joint consisting essentially of a joint including two aligned adjacent extruded nometallic tubes each having a corrugated outer wall and a reversibly corrugated inner wall, said corrugations extending along the entire length of said tubes, the roots of the corrugations of the inner wall and the outer wall being joined, an annular space formed by the inner and outer walls of each tube at the end of said tube and opening in a plane passing transversely through the crest of the outer wall, an annular intermediary sealing ring disposed within said space in each tube and extending between the aligned adjacent ends of the tubes, and a lock ring applied around the tube ends and engaging the corrugated outer wall of each tube to press by cam action the tube ends against the intermediary sealing ring from opposite sides of said sealing ring when tightened about the tube ends.

4,202,569

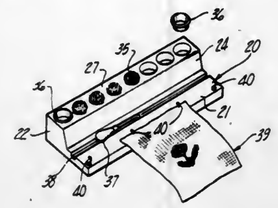
CRAFT BOARD

Frieda P. Thuringer, 2755 Hillcrest Dr., Wellsville, N.Y. 14895

Filed Mar. 23, 1978, Ser. No. 889,280

Int. Cl.² D04G *3/02*

U.S. Cl. 289—18.1 **6 Claims**



1. A craft board including a horizontal support member and a tapered vertical storage member depending therefrom, a plurality of fastening means fixedly connected to the top of the horizontal support member in a spaced relationship, and means to store the work materials within the vertical storage member, wherein the horizontal support member has a longitudinal recess provided therein between the front of said craft board and said vertical storage member, and said vertical storage member has recesses within the top thereof of a circular cross section, and further including attaching means in the form of suction cups secured to the bottom of said craft board for the purpose of securing the craft board to a substantially flat surface during the craft work.

4,202,570

DOOR LOCK FOR SLIDING DOORS

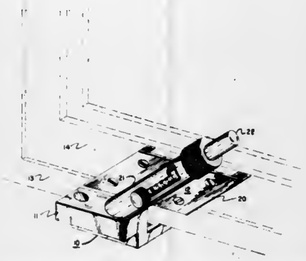
Robert J. Riggins, 1503 Rand St., Boise, Id. 83705

Filed May 5, 1975, Ser. No. 574,492

The portion of the term of this patent subsequent to Jul. 13, 1994, has been disclaimed.

Int. Cl.² E05C *5/00*

U.S. Cl. 292—60 **2 Claims**



1. A latch for sliding panel structures which include a fixed casement and a panel slidably mounted in said casement, comprising:

a catch comprising a flanged portion and a striker plate portion issuing from one of the terminal ends of said flange, the uppermost terminal side of said striker plate portion including at least one hole being bored at an acute angle; and

a bolt assembly including a mounting plate, a hollow cylindrical barrel jointed at an acuted angle to said striker plate, a bolt slidably carried within said barrel, said mounting plate being fastened to said sliding panel, and said catch being mounted to said casement suitably for said bolt to be engageable with said acutely oriented hole of said catch, means urging said bolt in the direction of said catch, and means determining travel of said bolt in said barrel, said means determining the travel of said bolt is provided by a

slot having a major portion thereof disposed in alignment with the rectilinear axis of said barrel, and an operating knob connected to said rod by means of a stem which is disposed through said slot.

4,202,571

LOCKING MEANS FOR AUTOMOBILE REAR DOORS

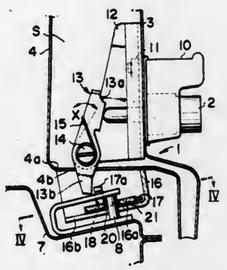
Tsutomu Nishikoori, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 14, 1978, Ser. No. 924,557

Claims priority, application Japan, Jul. 18, 1977, 52-96044[U]

Int. Cl.² E05C *3/24*

U.S. Cl. 292—216 **4 Claims**



1. In an automobile including a car body formed with a rear opening, and a rear door provided for closing said opening in the car body and being comprised of outer and inner panels which are secured together with a space therebetween; locking means for the rear door which comprises striker means provided on the car body, latch lever means mounted on the door and movable between a locking position wherein it engages with the striker means and an unlocking position wherein it is disengaged from the striker means, bias means for biasing the latch lever means toward the unlocking position, claw lever means mounted on the door and adapted to engage with the latch lever means for releasably holding the latch lever means in the locking position, unlocking lever means pivotably mounted on said door and have an operating portion adapted to engage with an engagement portions of said claw lever means, push button type actuating means mounted on said outer panel of the door for actuating, when depressed, the unlocking lever means so as to let it drive the claw lever means in a direction of releasing the latch lever means whereby the latch lever means is moved under the action of the bias means to the unlocking position, the improvement comprises the fact that said unlocking lever means is carried in the space of the door by said outer panel at an area close to said actuating means, said claw lever means and said latch lever means being carried by said inner panel, said unlocking lever means being carried by said outer panel having said operating portion located entirely forward of said claw lever means engagement portion and adapted to engage therewith upon a rearward movement to drive said claw lever means in the direction of releasing the latch lever means, whereby even when the outer panel is deformed in a crash the unlocking lever means is not moved into driving engagement with the engagement portion of the claw lever means.

4,202,572

LATCH FOR ESCAPE DOOR

William M. Green, 27830 Orchard Lake Rd., Farmington, Mich. 48024

Filed Apr. 24, 1978, Ser. No. 898,815

Int. Cl.² E05C *7/00*

U.S. Cl. 292—217 **1 Claim**

1. A latch assembly particularly adapted for escape doors and the like, comprising,

a catch member,

means supporting said catch member for rotating movement about a first axis between a locking position and an unlocking position,

a toggle linkage for causing said catch member to be moved between said positions and comprising first and second linkage members arranged in generally end-to-end relationship,

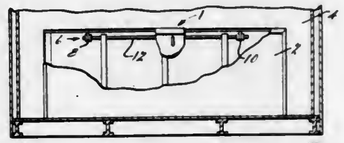
first pivot means pivotably connecting the respective confronting end portions of said linkage members to one another,

second pivot means pivotably connecting one end of said first linkage member to said catch member,

third pivot means pivotably connecting one end of said second linkage member,

said first, second and third pivot means defining pivotal axes arranged parallel to one another and parallel to said first axis,

said second and third pivot means being located along a common imaginary plane arranged generally parallel to said first and pivotal axis,



an operating arm arranged at a generally right angle to said imaginary plane and connected to said toggle linkage,

said operating arm being linearly reciprocably movable solely under the influence of a manual force applied thereto between a first extended position wherein said toggle linkage members are disposed in a first over-center position with first pivot means being located on one side of said imaginary plane and said catch member disposed in said locking position, and

a second retracted position wherein said toggle linkage members are disposed in a second over-center position with said first pivot means being located on the opposite side of said imaginary plane and said catch member disposed in said unlocking position,

said operating arm being the sole means for causing said toggle linkage members to move between said first extended position and said second retracted position.

4,202,573

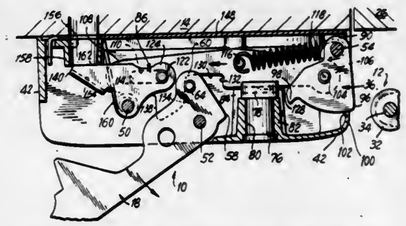
SAFETY CLOSURE SYSTEM

Irving L. Berkowitz, Binghamton, and John J. Bourgeois, Kirkwood, both of N.Y., assignors to Kason Hardware Corporation, Binghamton, N.Y.

Filed Jul. 11, 1977, Ser. No. 814,408

Int. Cl.² E05C *3/16*

U.S. Cl. 292—223 **2 Claims**



1. A safety method of unlocking a door to an enclosure from within the enclosure, said door carrying a latch assembly having a movable keeper latch member normally influenced by unlocking movement of a latch handle and adapted to releasably engage and be captively held by a substantially stationary

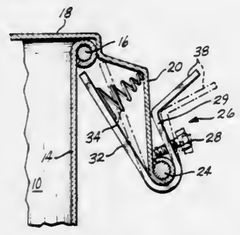
striker member when in a locked condition, the method comprising the steps of: urging a safety actuating member from a locked position to an unlocking position, translating said movement of said actuating member into arcuate movement of a lever member which is normally biased in a locking direction opposite with respect to that of said arcuate movement, said biasing normally inhibiting said lever member arcuate movement during times when said actuating member is not in said unlocking position, said step of translating further causing movement of a link member interconnecting said lever and said movable keeper latch member from a locking position to an unlocking position; said step of translating yet further causing arcuate movement of said keeper latch member from substantially interfering locking relationship with respect to said striker member and permitting ingress to and egress from an enclosure normally closed by a door carrying said keeper latch member without requiring unlocking movement of said latch handle, said step of translating still further being capable of causing movement of internal interfering surfaces of said link member from an interfering locking position with respect to a locking cam member influenced by a locking cylinder to non-interfering positions.

4,202,574

REFUSE CONTAINER LID LOCK

William L. Redmayne, 4902 N. Lexington, Tacoma, Wash. 98407

Filed Jan. 15, 1979, Ser. No. 3,289
Int. Cl.³ E05C *3/14, 3/22, 19/16*
U.S. Cl. 292—228 **2 Claims**



1. In combination with a cylindrical refuse container having a cylindrical, vertical wall terminating in an upper, circular bead and a telescopically fitting and removable cover having a cylindrical, vertical cover terminating in a lower circular bead, a substantially U-shaped bracket having an inner curved wall surface slidingly interfitting the outer wall of the circular bead of the removable cover, having an inner leg, and having an outer leg extending outwardly and having its outer and portion substantially at right angles to said outer leg and functioning as a fingerengagable portion; means for maintaining said inner curved surface in detachable sliding engagement and in contact with said outer surface of said circular bead of the removable cover; and compression spring means, having one end portion thereof connected with said inner leg and having the other end portion thereof reacting against the vertical wall of the removable cover, urging the inner leg of the U-shaped bracket into engaging position with and below the bead of the refuse container.

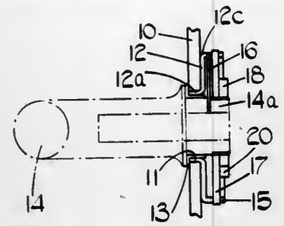
4,202,575

DOOR HANDLE MECHANISMS

Laurence H. J. Bates, Birmingham, England, assignor to G. & S. Allgood (Holdings) Limited, London, England

Filed Oct. 20, 1977, Ser. No. 844,090
Claims priority, application United Kingdom, Oct. 22, 1976, 44043/76
Int. Cl.³ E05C *13/00*
U.S. Cl. 292—347 **6 Claims**

1. A door handle mechanism comprising a mounting plate intended for securement, in use, to a door, means defining a non-circular aperture through said mounting plate, a housing disposed at one side of the mounting plate, the housing having non-circular formations thereon engaging in said non-circular aperture non-rotatably to mount the housing relative to the mounting plate and to define a further non-circular aperture through said housing, a washer non-rotatably engaged in said further aperture and having a circular internal bore therethrough, a handle having a part projecting through said circu-



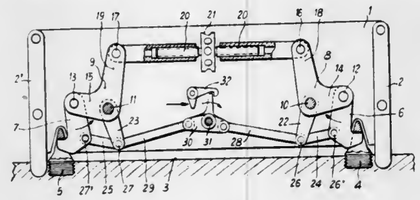
lar bore into said housing and being rotatable therein, a torsion spring having first and second ends, the first end being located in the housing and the second end being located in said part of the handle, a stop plate non-rotatably carried by said part of the handle and cooperating with the housing to limit rotation of the handle and also serving to enclose said torsion spring within the housing, and means for securing the stop plate onto said part of the handle.

4,202,576

DEVICE FOR LOCKING TO FIXED SUPPORTS LOADS CARRIED UNDER AIRCRAFT

Jean H. Hasquenoph, Lagny, and Pierre F. Coutin, Paris, both of France, assignors to R. Alkan & Cie, France

Filed Oct. 6, 1978, Ser. No. 949,484
Claims priority, application France, Dec. 30, 1977, 77 39818
Int. Cl.³ B64D *1/02*
U.S. Cl. 294—83 R **3 Claims**



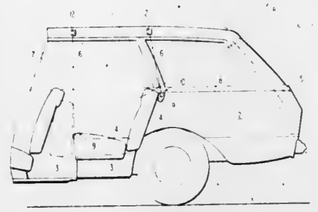
1. In a suspension device for carrying a load under an aircraft comprising a pair of pivoting suspension hooks adapted to engage suspension members disposed at the upper part of the load and fixed supports adapted to be engaged by the load to wedge same, a device for locking said load which comprises:
- a pair of bell-crank levers each pivoted to a fixed point of the suspension device, each one of said suspension hooks being pivoted at a first arm of one of said bell-crank levers,
- a screw-type stretching device having an end pivoted to a second arm of one bell-crank lever of said pair of bell-crank levers and an opposite end pivoted to a second arm of the other bell-crank lever of said pair of bell-crank levers,
- a pair of connecting links each pivoted at one end about the fixed pivot point of one of said bell-crank levers,
- a link pivotally connecting each suspension hook to the corresponding connecting link, so as to constitute a parallel motion with the suspension hook, the first arm of the bell-crank lever and the connecting link,
- a pair of connecting rods, each connecting rod connecting the connecting link associated to one suspension hook to one end of a central rocker,
- and a detent positioning device preventing said rocker to pivot in a direction allowing a pivotal opening movement of the suspension hooks,
- so that by action on said stretching device is obtained a simultaneous, substantially rectilinear upward movement of translation of each suspension hook causing the load to engage said suspension members while the efforts exerted on each hook are equally distributed.

4,202,577

MOTOR VEHICLE PROVIDED WITH A HATCH-BACK DOOR CLOSING OFF A STORAGE SPACE

Werner Breitschwerdt, Stuttgart; Rudolf Andres, Sindelfingen; Werner Heiss, Doffingen, and Wolfgang Fussnegger, Gartringen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,364
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739741
Int. Cl.³ B60R *7/00*
U.S. Cl. 296—24 R **10 Claims**



1. A motor vehicle provided with a hatch-back door closing off a storage space, and first means adapted to separate the storage space from a passenger space, characterized in that the first means includes a first retractable blind means adapted to be fastened in an extended position within a roof area of the motor vehicle, means are provided for covering off a stored item in the storage space including a second retractable blind means having a free end fastened within an area of the hatch-back door, the first and second blind means each have an axis of rotation which extends at least approximately in a transverse direction of the motor vehicle, and in that means are operatively connected with the first blind means for preventing the first blind means when not fully extended from being further pulled out by one of a strong deceleration or a striking by items stored in the storage space.

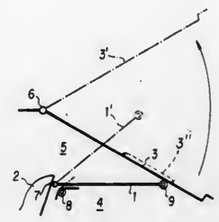
4,202,578

DEVICE FOR AUTOMATIC LIFTING OF THE REAR PANEL OF AN AUTOMOBILE EQUIPPED WITH A TAILGATE

Lucien Roullier, Paris, and Dominique Pastourel, Boissy, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 18, 1978, Ser. No. 943,187
Claims priority, application France, Sep. 16, 1977, 77 28104
Int. Cl.³ B60R *5/04*
U.S. Cl. 296—37.16 **8 Claims**

1. A device for access to the luggage compartment located in the rear of an automobile comprising:
- a rear tailgate hingedly connected to an upper part of the rear of said automobile for movement to an upper, open position and to a lower, closed position balanced by an appropriate compensation system;
- a panel provided with front and rear edge portions and lateral sides defining a plane, said panel being mounted horizontally between a rear seat of said automobile and said tailgate with said rear edge portion engaging said tailgate in said lower, closed position;
- elastic means for automatically raising said panel while pivoting on the front edge thereof located away from said tailgate, said panel being lowered automatically against the action of said elastic means upon closing of said tailgate;



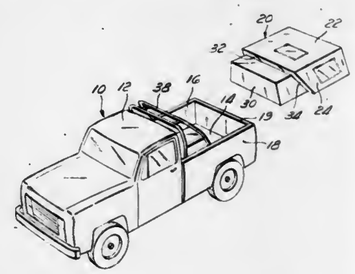
- at least one lateral strut mounted on at least one side of said vehicle; and
- said elastic means comprising at least one torsion spring mounted near at least one side of said panel, said at least one spring having two ends, one end of which is supported on said lateral strut, and another end of which is supported against said panel and in engagement therewith.

4,202,579

CAMPER SHELL STRUCTURE

Donald R. Berggren, 2717 Arlene Ct., Simi Valley, Calif. 93065

Filed Jul. 21, 1978, Ser. No. 927,170
Int. Cl.³ B60P *3/32*
U.S. Cl. 296—156 **2 Claims**



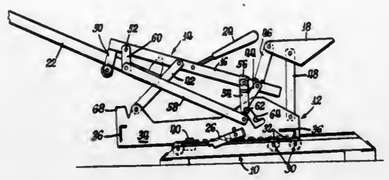
1. In combination with a land vehicle, said land vehicle having a cab section and a load carrying section located aft of said cab section, said load carrying section comprising a planar horizontal bed having raised vertical side walls, a roll bar assembly attached to said vehicle and located within said load carrying section and directly adjacent said cab section, a camper shell located within said load carrying section, the improvement comprising:
- said camper shell having a top, a front wall, a back wall and side walls, the major part of each said side wall of said camper shell being located substantially in the same plane as the respective said raised vertical side wall of said load carrying section, a portion of each said side wall of said camper shell being inwardly recessed in the area directly adjacent said front wall, said roll bar assembly located within said recessed area.

4,202,580

SEQUENCING LOCK FOR RECLINER

Carl B. Johnson, Pontiac, Ill., assignor to Pontiac Furniture Industries, Inc., Pontiac, Ill.

Filed Nov. 13, 1978, Ser. No. 959,465
Int. Cl.[2] A47C 1/02
U.S. Cl. 297—84 **3 Claims**



1. In a reclining chair having a body support including a seat and a backrest, said body support being movably mounted upon a base for adjustment thereon between an upright sitting position and a reclining position, a footrest movable from a retracted position to an extended position to support the extended legs of the occupant, and means actuated by the occupant independently of the adjustment of the body support to move said footrest between said retracted and extended positions:

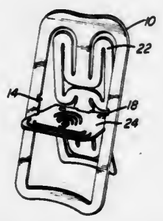
the improvement comprising a locking member connected both to the footrest and to the body support so as to have a first mode of movement relative to the base in response to extension and retraction of the footrest and a second mode of movement relative to the base in response to the movement of the body support between the sitting and reclining positions, and a connection between said member and said base substantially limiting the movement of said locking member in each said mode to a given path relative to the base, each of said two resulting paths permitting one mode of movement while preventing the other and converging at a point on both paths corresponding to the extended position of the footrest, the arrangement thereby requiring the extension of the footrest as a preliminary to recline of the body support, and the righting of the body support as a preliminary to retraction of the footrest.

4,202,581

SUPPORT MEANS FOR PORTABLE FURNITURE

Gregg Fleishman, 6071 Hargis St., Los Angeles, Calif. 90034

Filed Jan. 4, 1978, Ser. No. 866,837
Int. Cl.[2] A47C 7/00
U.S. Cl. 297—440 **10 Claims**



1. A collapsible chair assembly comprised of:

a seat member;

a generally planar, one-piece support member made of flexible material having a back portion and a tab portion adapted to be unfolded away from the plane of said back portion to define a bifurcated structure;

said seat member having first mounting means adapted to be engaged with corresponding second mounting means positioned on the back and tab portion of the support member and adapted to maintain said back and tab portions in a spaced configuration;

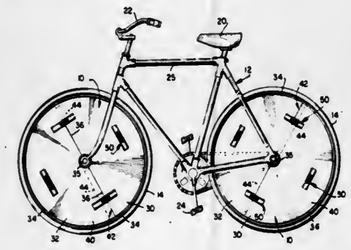
said corresponding second mounting means releasably engaging and supporting said seat member by and between said back and tab portions.

4,202,582

CYCLE SAFETY DISC

Irving E. Seltman, 806 A Round Pond Rd., Lake Ronkonkoma, N.Y. 11779

Filed Sep. 27, 1978, Ser. No. 946,142
Int. Cl.[2] B60B 7/00
U.S. Cl. 301—37 SA **4 Claims**



1. A safety disc assembly for a bicycle having a wheel with an axle, rim, and a plurality of radially extending spokes between the axle and rim, said safety disc assembly comprising:

A. a first and second wheel disc, each said wheel disc adapted to be mounted on a bicycle wheel intermediate said rim and said axle on oppositely disposed sides of the spokes,

B. said first and second wheel disc each including a pair of co-acting disc members, each one of said disc members including a contoured outer perimeter and a contoured inner perimeter with a terminal wall extending therebetween, said contoured perimeters adapted to extend in spaced relationship to the rim and to the axle, respectively,

C. alignment means for permitting abutting engagement between each pair of said disc members on said first and second wheel disc so as to permit said disc members to be assembled on the wheel without the removal thereof,

D. said alignment means includes:

(1) a lip extending outwardly from said terminal wall on each one of said disc members,

(2) said lips are adapted to extend in overlapping engagement with a portion of the other said disc member in the assembled position of each said wheel disc,

(3) each said wheel disc includes one of said lips that extend between said inner perimeter and said outer perimeter,

(4) each one of said lips includes a free end, an inner end and an outer end, and

(5) said inner end of each one of said lips of said disc members is in overlapping relationship with a portion of a corresponding said disc member and said lip is continuous along its length thereof,

E. coupling means for removably retaining said first and second wheel discs in assembled relationship to each other on opposite sides of the spokes on the wheel,

F. said coupling means including:

(1) at least two pair of apertures in each one of said wheel discs,

(2) a pair of fasteners, each said fastener adapted to extend through one pair of said apertures, and the spokes for removably securing said first and second wheel discs to each other on opposite sides of the spokes,

(3) each said fastener including a base with a pair of prongs adapted to extend through a respective one of said pairs of apertures,

(4) a holding clamp associated with each said fastener, for retaining said prongs in removably fixed relationship with respect to said wheel discs, and

(5) at least one of said pair of apertures formed in a respective pair of said disc members adjacent said terminal wall thereof such that said base and said holding clamp extend across said disc members so as to retain said lips in overlapping relationship during use of the bicycle, and

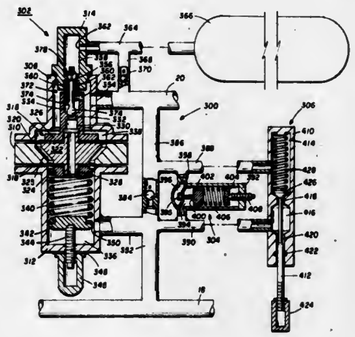
G. said disc member each includes oppositely disposed side walls intermediate said contoured perimeters and said outer end of said lip coincides with one of said side walls.

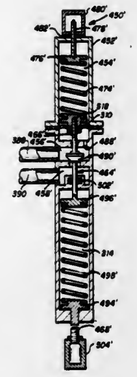
4,202,583

BRAKE CONTROL APPARATUS FOR RAILWAY CARS

William R. King, 1909 Sunshine Sq., Longview, Tex. 75601

Continuation-in-part of Ser. No. 775,379, Mar. 7, 1977, Pat. No. 4,143,923. This application Sep. 5, 1978, Ser. No. 939,651
Int. Cl.[2] B60T 8/18
U.S. Cl. 303—22 R **6 Claims**





1. For railway cars having sprung and unsprung portions, a brake control apparatus interposed between a pressurized brake pressure supply line with a train brake valve therein and a pressurized brake cylinder line connected to the brakes of the railway car for transmitting a pressure drop signal responsive to operation of the train brake valve, said apparatus comprising:

structure defining a first chamber having a port connected to the brake pressure supply line for receiving the pressure drop signal from the train brake valve;

structure defining a second chamber having a port connected to the brake cylinder line for transmitting a predetermined pressure drop signal to the railway car brakes;

valve means for selectively connecting the first and second chambers;

diaphragm means movably abutting the second chamber and connected to the valve means for biasing said valve means open responsive to the pressure in the brake cylinder line;

means for applying to said diaphragm means a predetermined bias to urge said valve means closed;

a strut mounted for translation responsive to the relative positioning of the sprung and unsprung portions of the railway car;

a spring coupled between the strut and valve means for applying to said valve means a predetermined bias proportional to the inward translation of said strut to urge said valve means open, and for isolating vibration of said strut from said valve means; and

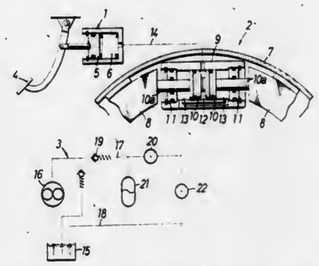
check valve means interconnecting the first and second chambers and responsive to pressure differential for equalizing said chambers upon a pressure rise in the brake pressure supply line.

4,202,584

ANTI-SKID BRAKE CONTROL DEVICE AND ASSOCIATED METHOD

Makoto Sato, Kamifukuoka; Hiroshi Takamatsu, Ohimachi; Yoshitaka Miyagawa, Kawagoe, and Etsuo Fujii, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 762,782, Jan. 25, 1977, Pat. No. 4,129,342. This application Jan. 20, 1978, Ser. No. 871,187
Claims priority, application Japan, Jan. 29, 1976, 51-8682; Feb. 2, 1976, 51-10195; Feb. 16, 1976, 51-15607
Int. Cl.[2] B60T 8/08
U.S. Cl. 303—105 **2 Claims**



1. In a brake system for use with wheeled vehicles including a brake fluid pressure producing unit, an anti-skid brake control device comprising:

an oil-hydraulic brake mechanism associated with a vehicle wheel and including an operating member, a first hydraulic chamber defined on one side of said operating member for hydraulically driving the latter, and a second hydraulic chamber defined on the opposite side of said operating member to apply thereon an oil-hydraulic pressure counteracting the oil-hydraulic pressure applied to said operating member on said one side thereof, said first hydraulic chamber being held in fluid communication with said brake fluid pressure producing unit;

a source of fluid pressure;

a high-pressure fluid line extending between said second hydraulic chamber in said brake mechanism and said source of fluid pressure;

an oil reservoir;

a low-pressure fluid line extending between said second hydraulic chamber in said brake mechanism and said oil reservoir;

fluid control valve means inserted in said high-pressure and low-pressure fluid lines; and

command system means connected with said fluid control valve means for effecting a repeated braking process in which the braking torque as applied to the wheel begins to decrease when the angular deceleration of the wheel exceeds a predetermined threshold valve, then begins to increase when the angular wheel deceleration decreasing

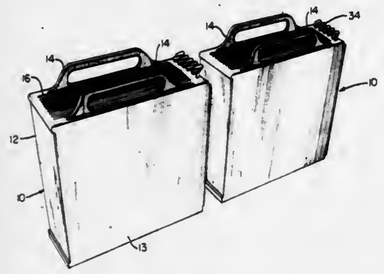
with decrease in the braking torque is reduced below said predetermined threshold value, is subsequently held at a definite level during the period of time that the angular acceleration of the wheel arising upon disappearance of the angular wheel deceleration is held above a predetermined threshold value, and finally begins again to rise when the angular acceleration of the wheel falls below its said predetermined threshold value.

4,202,585

PORTABLE STORAGE MODULES FOR FLOPPY DISKS AND THE LIKE

Cary R. Lawler, Broomfield, Colo., assignor to The A-Team, Inc., Broomfield, Colo.

Filed Jul. 19, 1978, Ser. No. 925,940
Int. Cl.² A47B 81/06
U.S. Cl. 312—15 **14 Claims**



1. In a storage container for a plurality of thin, flat recording disks wherein said storage container is a multi-sided enclosure having slotted compartments in one side thereof, each compartment provided with an entrance adapted to permit insertion of a disk into said compartment and provided with ejector means in each compartment being responsive to depression of a push rod and the like to eject a disk therefrom, the improvement comprising:

a plurality of storage modules interconnected to define a slotted compartment between each adjacent pair of modules, each module comprising a generally rectangular panel having opposite flat surfaces, upstanding ribs on one of said surfaces extending substantially continuously along the perimeter of said rectangular panel except at the entrance and forming spacing members between the surfaces of said rectangular panel and a guide rib in spaced-apart parallel relation to one of said upstanding ribs, said one of said upstanding ribs and said guide rib including nubs thereon and forming a channel for movement of said push rod between said parallel ribs and their associated said nubs in directions parallel to the plane of said modular panel, and grooves on the opposite surface of each module adapted to mate with said ribs in the one surface of an adjacent module to form a slotted compartment between said modules;

selector tab means at the end of each said push rod projecting externally of said container unit and adapted to be depressed to actuate said ejector means to advance a selected disk therefrom; and

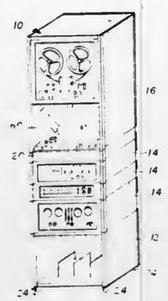
positioning means on said container adapted for positioning one container with respect to another container, said positioning means including a pair of upstanding shoulders on one side of said container defining a recessed area therebetween and a ribbed portion on the opposite side of said container formed by relieved corner portions of opposite aligned edges of said modules whereby the recessed portion of each container is adapted to nest with the ribbed portion of another container.

4,202,586

STACKABLE FURNITURE MODULES HAVING REPLACEABLE PANELS

Terry R. Oplinger, 34177 Whittaker, Mt. Clemens, Mich. 48043

Filed Sep. 28, 1978, Ser. No. 946,577
Int. Cl.² A47B 87/00
U.S. Cl. 312—107 **3 Claims**



1. Stackable furniture modules having identical size as to width and depth adapted for mounting of electronic components therein comprising:

a lower module supported by casters having an open front, closed side, back, and bottom members, a first pair of vertical corner members affixed to the front end of the side members, a transverse support member across the top of the front extending between first corner members, an open top having a first upper recess along the inner surface of the top edge removing half of the thickness of the side member, defining a nesting dimension, said first recess extending below the top edge a distance, including means in the bottom member of said lower module for defining a record storage space;

an intermediate module having closed sides, bottom, and partially closed back, a second pair of vertical corner members affixed to the front end of the sides, a pair of vertical grooves on the inside edge of the second corner members spaced back from the front edge of the sides, one per second corner member, a slidable front panel having thin vertical projections along both ends to slidingly engage said pair of vertical grooves, a recess along the top inside edge of the panel to nestingly receive the front edge of the bottom member of a nesting unit, a second open top having a second upper recess along the inner surface of the top edge removing half the material from the sides, to equal said nesting dimension, said second upper recess extending below the top edge a distance, a first bottom recess along the outer surface of the bottom of the sides removing material to establish a size slightly less than said nesting dimension defining an insertable nesting dimension permitting the bottom of the intermediate unit to be slidingly nested into the nesting dimension of the lower unit, the recess extending up the side members, a distance less than the depth of said first and second upper recesses, the pair of vertical corner members extending from the top edge of the sides to the beginning of said first bottom recess, establishing said nesting dimension, said slidable front panel adaptable to mounting electronic components in a customized manner;

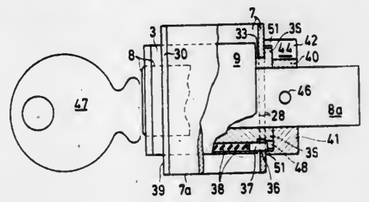
a record player with closed front, side, and rear walls, and a closed bottom wall, a pair of third vertical corner members affixed to the front edge of the side walls, a third recess cut along the inner surface of the top edge of the side walls to define said nesting dimension, a horizontal groove is disposed along the inner surface of the side walls spaced below the nesting recess to slidingly receive a sliding upper wall, the top edge of the rear wall is spaced below the bottom surface of the sliding upper wall, a portion of the rear wall cut away, and a third bottom recess along the outer surface of the bottom of the side walls extending up the side walls a distance less than the depth of the recess for said nesting dimension, said recess defining an outer dimension for the third bottom recess less than said nesting dimension establishing the insertable nesting dimension to allow the record player module to be slidingly nested atop any unit having said nesting dimension.

4,202,587

CONTAINER WITH REPLACEABLE SECURITY LOCK FOR STORAGE OF INFORMATION CARRIERS

Jakob Wieland, Oberweningen, Switzerland, assignor to Bauer Kassenfabrik AG, Switzerland

Filed Mar. 17, 1978, Ser. No. 887,970
Claims priority, application Switzerland, Mar. 30, 1977, 3986/77
Int. Cl.² E05B 65/46
U.S. Cl. 312—219 **7 Claims**



1. A security receptacle, particularly office furniture for storing secret information, with a demountable lock, the receptacle having a stationary portion and a movable portion, the receptacle comprising the combination of

a lock having a stator and a rotor, said rotor being movable only by a key belonging to said lock;

means in the stationary portion of the receptacle for receiving said stator, said means including a flat mounting base fixedly attached to said stationary portion, said base having means defining an opening for receiving said stator, said stator having a free-standing collar protruding therefrom, said stator being mountable by insertion of said collar through said opening and rotation of said stator through a predetermined angle;

a releasable catch element for said stator having a blocking position in which said element engages said stationary portion to prevent reverse rotation and removal of said stator, and a release position, said catch element being accessible only from within said receptacle; and

a securing member fixedly attached to and movable with said rotor, said securing member comprising a protective wing covering and preventing access to said catch element in both the locked and unlocked key-removal positions of said rotor, said wing being movable to an uncovering position only by rotation of said rotor with its key to a position between the locked and unlocked positions thereof, whereby said lock is demountable from said stationary portion without damage only by using its key.

4,202,588

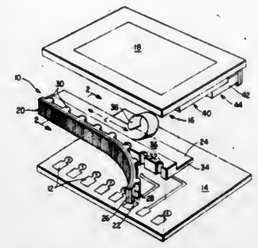
ELECTRICAL CONNECTOR AND SUPPORT MEANS THEREFOR

Chris A. Dalamangas, Union; Thomas P. Piccirillo, North Plainfield, and Donald P. Seip, Bridgewater, all of N.J., assignors to Technical Wire Products, Cranford, N.J.

Filed Nov. 29, 1978, Ser. No. 964,638
Int. Cl.² H01R 13/48
U.S. Cl. 339—59 M **12 Claims**

1. A support means for supporting a layered elastomeric electrical connector in operable position between two surfaces having electrically conducted areas thereon, the layered elastomeric electrical connector consisting essentially of a plurality of mutually parallel layers of alternately conductive and non-conductive elastomers, the layers arranged generally perpendicularly to said surfaces, the support means comprising:

(a) the first member of flexible elastomer having a first side fixed to one side of said layered elastomeric connector and



a second side opposite the first side comprising a plurality of engaging elements, and

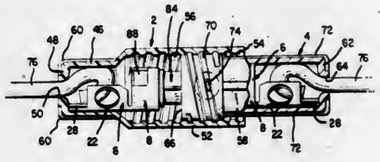
(b) a second member more rigid than the first member, the second member slidably interlocked with the plurality of engaging elements of the first member.

4,202,589

FUSE HOLDER

Robert P. Reavis, Jr., Statesville; Melvin A. Soderstrom, Advance; Vasantrai A. Vachhani, Kernersville, and Richard L. Hughes, Clemmons, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 25, 1978, Ser. No. 945,660
Int. Cl.² H01R 11/20
U.S. Cl. 339—97 R **7 Claims**



1. In a fuse holder having first and second telescoping housing sections threadably secured together and containing a wire terminating electrical terminal having a resilient socket portion for pluggable connection to a fuse, the improvement comprising:

each said terminal having a sleeve portion connected to said socket portion by a web of said terminal,

said sleeve portion having a wire receiving, longitudinal open seam defined between wire gripping and insulation slicing jaws,

said seam including an enlarged open portion which communicates with one open end of said sleeve portion and which is spaced from said socket portion to define a wire receiving entry to said seam, so that an insulated wire, inserted into said entry and disposed longitudinally within said sleeve, includes a portion thereof looped back upon itself and pulled into and along said seam for slicing penetration of said jaws into the wire insulation and into engagement on the conductor portion of said wire,

each said terminal including an integral tab projecting outwardly from said sleeve portion and engaged on an end of a corresponding housing section to define a space between said housing section and said sleeve portion which receives said looped back portion of a corresponding wire.

4,202,590

INTERLOCK ARRANGEMENT FOR AN ELECTRICAL TERMINAL ENCLOSURE

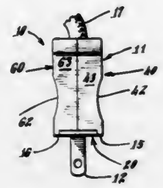
Ernest G. Hoffman, Middlefield, Conn., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Continuation of Ser. No. 868,217, Jan. 9, 1978, abandoned, which is a continuation of Ser. No. 772,672, Feb. 28, 1977, Pat. No. 4,067,634, which is a continuation of Ser. No. 609,797, Sep. 2, 1975, Pat. No. 4,010,999. This application Jan. 29, 1979, Ser. No. 7,061

The portion of the term of this patent subsequent to Mar. 8, 1994, has been disclaimed.

Int. Cl.[2] H01R *13/58*

U.S. Cl. 339—107 **23 Claims**



1. An interlock arrangement for a unitary molded enclosure for electrical terminals having portions thereof which are in fixed relationship to said terminals and at least one movable wall portion joined by a web hinge to the remainder of the enclosure, comprising

an enclosure formed of electrical insulating material having an interior chamber for housing electrical terminals, and having portions thereof which are in fixed relationship to said terminals and at least one movable wall portion;

an intergral web hinge joining one edge of said movable wall portion to an adjoining surface of a fixed portion of said enclosure to permit pivotal movement of said movable wall portion on said web hinge to an open position which provides access to the interior chamber of said enclosure;

locking means for releasably interlocking the movable wall portion to the enclosure when said movable wall portion is in a closed position, to relieve stress on the web hinge and to lock it against displacement both outwardly away from said enclosure and transverse to said outward direction;

said locking means including a plurality of interengaging locking members adjacent the web hinge, one integral with the movable wall portion and one integral with an adjacent fixed portion of the enclosure; and

said interengaging locking members engaging one another at a location inwardly of the web hinge when the movable wall portion is closed, and substantially in the transverse plane of said web hinge, to directly oppose any outward force on said web hinge.

4,202,591

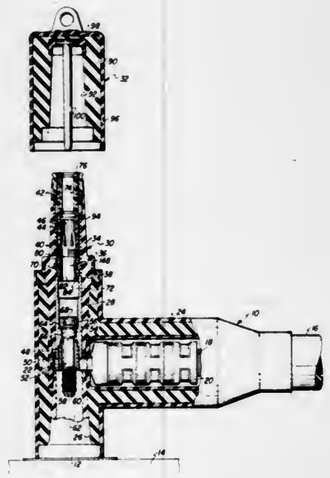
APPARATUS FOR THE REMOTE GROUNDING, CONNECTION AND DISCONNECTION OF HIGH VOLTAGE ELECTRICAL CIRCUITS

Alan D. Borgstrom, Hackettstown, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,544

Int. Cl.[2] H01R *13/52*

U.S. Cl. 339—111 **17 Claims**



1. Apparatus for enabling operation of a high voltage electrical connector from a remote location by the use of an insulated tool, such as a hot-stick, to effect selective grounding, and selective connection and disconnection of the connector and a terminal of an electrical apparatus, the connector having a terminal contact affixed to the conductor of a high voltage cable for electrically connecting the conductor to the terminal, said apparatus comprising:

a generally tubular housing extending axially between opposite ends;

means for joining the housing to the terminal contact;

a female contact element carried by the housing adjacent one of the opposite ends thereof and including an axial opening therein for receiving a complementary male contact element;

a threaded fastener carried by the housing adjacent the other of the opposite ends for securing the terminal contact to the terminal of the electrical apparatus, the threaded fastener having a wrenching configuration aligned with the axial opening in the female contact element;

a fault-closing means carried by the housing for enabling the closing of a ground connection to the female contact element under a fault-closing condition, the fault-closing means having an aperture passing axially therethrough and aligned with the opening in the female contact element and with the wrenching configuration of the threaded fastener to establish an open passage to the wrenching configuration through the female contact element and the fault-closing means; and

a tool including

a sleeve of conductive material receivable within the opening of the female contact element for making an electrical connection therewith;

a rod extending axially through the sleeve and having opposite ends, the rod being movable rotationally and axially relative to the sleeve;

a further wrenching configuration on the rod at one of the opposite ends, the further wrenching configuration being complementary to the wrenching configuration of the threaded fastener for engagement therewith; and

a coupling means on the rod at the other of the opposite ends for selectively coupling the rod to the insulated tool, whereby axial movement of the rod will pass the rod axially through the open passage and engage the complementary wrenching configurations, and rotation of the rod will selectively engage and disengage the threaded fastener and the terminal of the electrical apparatus.

4,202,592

SEALED ELECTRICAL CONNECTORS

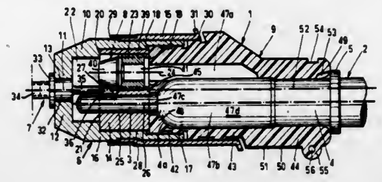
Nöel Rullier, Clamart, and Michel Benel, Fontenay-aux-Roses, both of France, assignors to Societe Anonyme dite: Ela Medical, France

Filed Apr. 21, 1978, Ser. No. 898,780

Claims priority, application France, May 6, 1977, 77 13816

Int. Cl.[2] A61N *1/36*; H01R *13/54*

U.S. Cl. 339—116 R **12 Claims**



1. A sealed electrical connector, especially for use with an implantable cardiac stimulator, comprising an electrically insulated pin having a stripped end, a receptacle receiving said end of said pin, means for conducting electricity from said pin, mechanical means for locking said pin with respect to said receptacle, said mechanical locking means comprising a screw engaging in a tapped hole in said receptacle, the axis of said tapped hole being parallel to an axis along which said pin slides with respect to said connector, and means for sealing the connection between said pin and said receptacle, said sealing means having an opening through which said pin is engaged in said connector and also serving to seal said mechanical locking means without requiring separate sealing means, said mechanical locking means being accessible solely through said opening through which said pin is engaged in said connector.

4,202,593

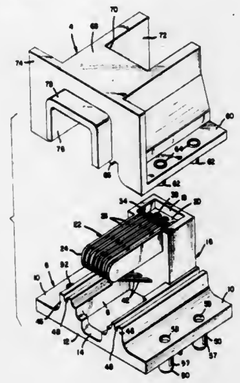
JACK

Lynn W. Abernethy, Advance, and Elvert S. Watts, Walkertown, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 20, 1979, Ser. No. 31,791

Int. Cl.[2] H01R *13/54, 13/64*

U.S. Cl. 339—125 R **6 Claims**



1. In a jack having a housing containing a plurality of resilient contacts communicating with a cavity of the housing into which an electrical jack is plugged to connect electrically with the contacts, the improvement comprising:

said housing including a base portion providing an interior platform having grooves in which lengths of said contacts are supportred,

free ends of said contacts projecting into a space between said platform and a bottom wall of said base,

said contacts having terminal portions projecting from said bottom wall together with expansible sleeves integral with said bottom wall,

a cover secured to said base having a jack receiving opening communicating with said space.

4,202,594

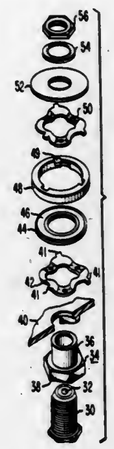
RF CONNECTOR ASSEMBLY INCLUDING MOUNTING APPARATUS FOR A WASHER-LIKE CAPACITOR

Clyde F. Coleman, Crawfordsville, and Myron C. Stewart, Coatesville, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,782

Int. Cl.[2] H01R *3/06*

U.S. Cl. 339—147 R **9 Claims**



1. In an RF connector assembly having an inner conductor and a coaxial tube-like outer conductor and adapted for receiving a washer-like capacitor, said capacitor having a conductive electrode on each of the opposing major flat surfaces thereof, one of said electrodes being electrically connected to said outer conductor and the other of said electrodes being adapted for electrical connection to a utilization device, said capacitor being fitted over said outer conductor for providing DC and low frequency isolation between said outer conductor and said utilization device, the improvement comprising:

holder means fitted over said outer conductor and adapted for receiving said washer-like capacitor.

4,202,595

ELECTRICAL CONNECTOR

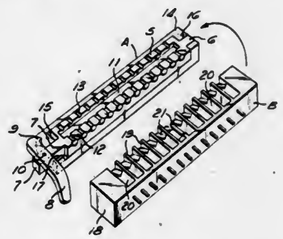
Hiromasa Inouye, Musashino; Tomonari Otsuki, and Tsukasa Saito, both of Tokyo, all of Japan, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jun. 12, 1978, Ser. No. 914,597

Claims priority, application Japan, Jun. 14, 1977, 52-76677

Int. Cl.[2] H01R *13/36*

U.S. Cl. 339—174 **8 Claims**



1. An electrical connector for removable connection with a plurality of spaced conductors in a flat strip, said connector comprising: housing means; a plurality of contact means in said housing means, said contact means each including a resilient

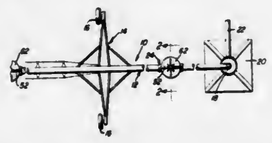
contact portion which has a beveled surface; and conductor supporting means movable relative to said housing means between an insertion position in which spaced conductors are to be located onto said conductor supporting means and a clamping position in which said spaced conductors are forced against said beveled surfaces of said contact means, said contact means and said conductor supporting means defining a plurality of conductor receiving passageways, with said beveled surfaces of said plurality of contact means being disposed in said passageways for varying the width of said passageways and for exerting resilient forces against said conductors, said passageways extending generally perpendicular to the direction of said relative movement between said conductor supporting means and said housing means and perpendicular to a plane passing through the beveled surfaces of said contact means, whereby said relative movement of said supporting means from said insertion position to said clamping position decreases the size of each of said passageways and thereby increases the resilient forces between said conductors and the beveled surfaces of said contact means.

4,202,596

CENTER PIVOT IRRIGATION SYSTEM WITH SLINGER-TYPE SPRINKLER MEANS

Leland F. Knudsen, 303 S. 17th St., Norfolk, Nebr. 68701

Filed Dec. 27, 1977, Ser. No. 864,261
Int. Cl.² B05B 3/12
U.S. Cl. 239—177 **7 Claims**



1. A mobile irrigation system including an elongated horizontal water conduit assembly including support means spaced therealong adapted to be engaged with and to be advanced over the ground for support of said assembly from the ground and lateral advancement thereover, one end of said assembly being adapted for communication with a source of water under low pressure, a plurality of discharge pipes supported from said assembly at points spaced therealong and opening upwardly and outwardly from the interior of said conduit assembly, a plurality of motor driven generally horizontal and centrally apertured discs journalled from said assembly and upwardly through whose central apertures said discharge pipes project for discharging low pressure water outwardly onto the upper surfaces of said discs outwardly of said central apertures, said discs including upstanding water slinger vanes spaced thereabout for engaging and angularly accelerating the water discharged onto said discs, said vanes including outer end portions from which the accelerated water may be discharged at high velocity, said conduit assembly including a plurality of pipe saddles mounted thereon upwardly through which said discharge pipes project, each of said saddles supporting a motor therefrom above said conduit assembly, each of said motors including a downwardly directed rotary output shaft, said discs being mounted on said output shafts for rotation therewith.

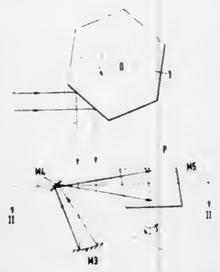
4,202,597

OPTICAL SCANNING SYSTEM WITH COMPENSATION FOR UNWANTED IMAGE ROTATION DURING SCANNING

William T. Moore, London, England, assignor to The Rank Organisation Limited, London, England

Filed Dec. 30, 1977, Ser. No. 865,781
Claims priority, application United Kingdom, Jan. 7, 1977, 537/77
Int. Cl.² G02B 27/17
U.S. Cl. 350—6.6 **5 Claims**

1. An optical scanning system comprising an azimuth scanning element having a plurality of plane reflecting faces driven in rotation successively to receive a beam of radiation representing a scene being scanned, optical coupling means including a concave mirror receiving the beam from the azimuth scanning element, and an elevation scanning element comprising an oscillating plane mirror receiving the beam from the optical coupling means, said oscillating plane mirror being positioned at substantially the same optical path length from the concave mirror as the azimuth scanning element, wherein the axis of the concave mirror is slightly inclined to the axis of



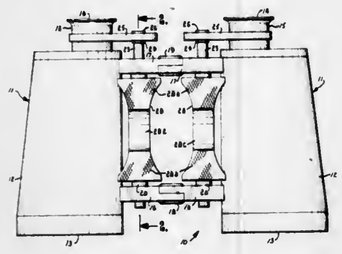
the beam incident thereon, whereby the image produced by said concave mirror is rotated during scanning in a manner such that said image is seen by the oscillating plane mirror as a curved image, and wherein the axis of oscillation of the oscillating plane mirror is inclined at a small angle to the plane of said plane mirror to scan said curved image, said small angle being selected to produce an image rotation during scanning which is substantially equal and opposite to the image rotation produced during scanning by the slightly inclined axis concave mirror.

4,202,598

BINOCULARS WITH INDIVIDUAL QUICK FOCUSING EYEPIECES

Albert R. Jenkins, 10267 Houser, Lenexa, Kans. 66215

Filed Oct. 10, 1978, Ser. No. 950,007
Int. Cl.² G02B 23/00, 7/06
U.S. Cl. 350—36 **8 Claims**



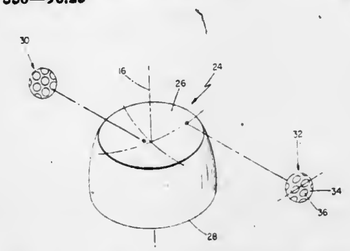
1. A binocular device comprising:
a pair of telescopes each having a body portion and an associated optical element, said body portions being coupled together in a manner permitting adjustment of the distance between said optical elements to adjust the interpupillary spacing;
means mounting said optical elements for movement generally toward and away from the respective body portions to optically adjust said elements; and
an adjustment mechanism operable to effect individual movement of each optical element relative to the corresponding body portion separately and independently of the other optical element, thereby permitting each of said optical elements to be optically adjusted in an independent manner;
wherein said adjustment mechanism includes a lever for each optical element, said levers being disposed between and in proximity to the respective body portions at locations accessible to the fingers when said body portions are held in the hands, said levers being engageable by the fingers to effect individual movement of the respective optical elements relative to the corresponding body portions.

4,202,599

NONUNIFORM IMAGING

Christopher H. Tosswill, Sturbridge, Mass., assignor to Galileo Electro-Optics Corporation, Sturbridge, Mass.

Continuation-in-part of Ser. No. 706,457, Jul. 19, 1976, Pat. No. 4,099,833, which is a continuation of Ser. No. 449,520, Mar. 8, 1974, abandoned. This application Feb. 27, 1978, Ser. No. 881,399
Int. Cl.² G02B 5/16
U.S. Cl. 350—96.25 **2 Claims**



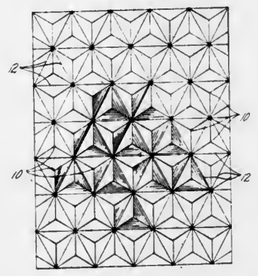
1. A fiber optic device for nonuniformly magnifying or diminishing an image, said device comprising a segment of a heat-drawn tapered bundle of optical fibers, said fibers terminating at each of two end surfaces and varying in cross-sectional area between said end surfaces, the relative amount of said variation in fiber cross-sectional area between said end surfaces being nonuniform among said fibers, one of said end surfaces cut along a surface intersecting the tapered portion of said bundle and being in other than a plane normal to the longitudinal axis of said bundle, and said device having been deformed to change the shape of said end surfaces to be planar and parallel to each other and perpendicular to the longitudinal axis of the bundle.

4,202,600

DICED RETROREFLECTIVE SHEETING

Thomas F. Burke, Wayland, and Donald H. Walker, Winchester, both of Mass., assignors to Avery International Corporation, San Marino, Calif.

Filed Apr. 24, 1978, Ser. No. 899,311
Int. Cl.² G02B 5/122
U.S. Cl. 350—103 **14 Claims**



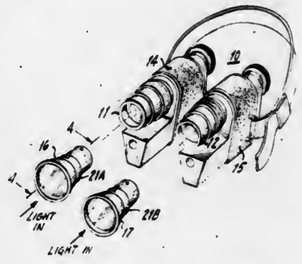
1. In cube-corner retroreflective sheeting comprising a carrier sheet having a layer of cube corner retroreflective prisms disposed over one of its surfaces, the improvement wherein:
the sheeting comprises a plurality of zones of prisms, the prisms being disposed in an ordered array within each zone, the arrays of prisms in adjacent zones having differing azimuthal orientation, whereby adjacent zones have differing retroreflective brightness at high angles of incidence of an incident light beam, and
the zones of prisms have a size such that they are not visually resolvable by the unaided human eye at a minimum expected viewing distance, whereby the sheeting presents an appearance of uniform brightness to the eye when viewed at a high angle of incidence by retroreflected light from a distance of at least the minimum expected viewing distance.

4,202,601

TRAINING AID FOR USE WITH NIGHT VISION APPARATUS

James H. Burbo, and Louis P. Hartman, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 26, 1978, Ser. No. 900,100
Int. Cl.² G02C 7/12; G02B 5/30
U.S. Cl. 350—159 **14 Claims**



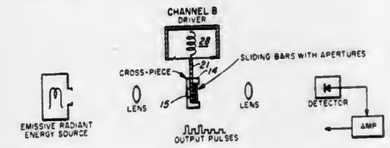
1. In a night vision device of the type employing image intensification between an input and an output port, with said output port adapted to direct an image to the eye of a user, in combination therewith apparatus for controlling the amount of ambient light reaching said output port to enable a user to employ said night vision device in daylight conditions to aid in training the user in operation of said device under conditions prevalent in nightime operations, comprising:
a housing having an internal hollow located between a light input port and a light output port, and means for coupling said housing to said input port of said night vision device,
a variable density filter located in said hollow of said housing and capable when varied of reducing the ambient light reaching said output port according to said variation to thereby enable a user to accurately simulate nightime conditions during typical daylight conditions according to said density filter.

4,202,602

MULTI-ANGULAR RADIANT ENERGY MODULATOR

Ismael Torres, 1800 Piedmont St., Oxnard, Calif. 93030

Filed Dec. 3, 1973, Ser. No. 421,014
Int. Cl.² G05D 25/00; F01B 25/02
U.S. Cl. 350—272 **7 Claims**



1. An electro-mechanical radiant energy source modulator comprising:
(a) a radiant energy source;
(b) a modulation means having a central aperture mounted in

the path of a radiant energy beam from said source by which said radiant energy beam is to be modulated as it passes therethrough;

(c) a plurality of beam modulating means mounted radially about said central aperture;

(d) a plurality of driver means equal in number to said beam modulating means, a respective driver means connected to each one of said plurality of beam modulating means;

(e) said driver means each being excited by sepatate respective input signals to cause each said beam modulating means to obstruct or permit said radiant energy beam to pass through said central aperture, the overall pulse shape of said radiant energy allowed to pass through said central aperture being governed by a combination of the overall action of all of said beam modulating means in response to each of said input signal operated driver means; and

(f) each said beam modulating means comprising a sliding bar having an aperture therein, the center of each respective sliding bar aperture being normally aligned with said central aperture when the respective driver means connected to the beam modulating means is not excited.

4,202,603

REMOTELY CONTROLLED MIRRORS

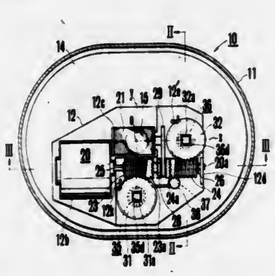
Shizuya Miyauchi, Shizuoka, Japan, assignor to Koito Manufacturing Company Limited, Tokyo, Japan

Filed May 11, 1978, Ser. No. 904,754

Claims priority, application Japan, May 31, 1977, 52-63516; May 15, 1978, 53-32883[U]

Int. Cl.² G02B 7/18

U.S. Cl. 350—289 **16 Claims**



1. A remotely controlled mirror comprising a stationary base plate contained in a mirror housing; a back plate provided at the back of a mirror and provided with a supporting mechanism that can tilt in any direction with respect to said base plate; a pair of threaded rods with one ends rotatably and tiltably connected to said base plate; spring means with one end thereof being supported by said base plate and engaging with the threads of said threaded rods while the other end being free, thereby controlling axial movements thereof; means for limiting the axial movement of the spring means that is caused by the rotation of the threaded rods engaging with the spring member; a pair of worm wheels respectively having openings for receiving the other ends of said threaded rods; a pair of worms meshing said worm wheels respectively; and a source of drive for selectively rotating said worms; the openings of said worm wheels and the other ends of said threaded rods being constructed such that it is possible to transmit a torque there between but absorb stresses caused by the inclination of said mirror and acting between said worms and said worm wheels, and said threaded rods being rotated and moved in the axial direction with respect to said spring means by the torque applied thereto from said source of drive through said worm wheels.

4,202,604

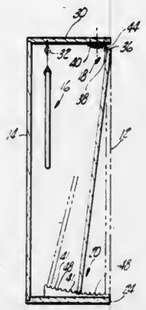
DECORATIVE OPTICAL DEVICE

Lenore S. Kent, 28057 S. Harwich Dr., Farmington Hills, Mich. 48018, and John D. Straub, 20030 Tireman, Detroit, Mich. 48228

Filed Sep. 6, 1977, Ser. No. 830,431

Int. Cl.² G02B 5/08

U.S. Cl. 350—291 **6 Claims**



1. A visual display device comprising;

(a) a first reflective surface, said first reflective surface being a one-way mirror,

(b) a second reflective surface spaced from said first reflective surface, said second reflective surface being a two-way mirror;

(c) an illumination means disposed between the first and second reflective surfaces, the illumination of the illumination means being reflected off of the reflective surfaces, and

(d) means for incrementally rotating at least one of the reflective surfaces comprising;

1. a hinge, connected to one of the first and second reflective surfaces, the one reflective surface associated therewith being movable in a horizontal plane thereabout,

2. a vertically extending shaft interconnected to the hinge, the one reflective surface being rotatable in a vertical plane therearound, and

3. a grooved upstanding member, the grooves being dimensioned to seat the bottom of the one reflective surface therewithin and to inhibit movement of the seated reflective surface.

4,202,605

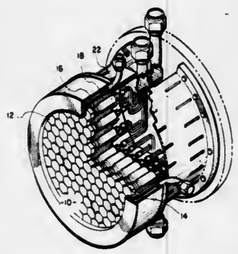
ACTIVE SEGMENTED MIRROR

Theodore A. Heinz, Moorpark, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 5, 1979, Ser. No. 27,208

Int. Cl.² G02B 7/18

U.S. Cl. 350—292 **11 Claims**



1. An active segmented mirror for making static and dynamic wavefront corrections, comprises:

a plurality of mirror element assemblies, wherein each of said assembly further comprises:

a mirror surface;

a cooled mirror substrate, for supporting said mirror surface;

a complaint joint, connecting said mirror substrate with a support structure for permitting tip, tilt and planar translation;

a strut connecting said mirror substrate with an actuator assembly for providing coolant passages;

an actuator assembly, connected through said strut to said mirror substrate for driving said mirror element; and a support structure for mating said mirror element assemblies.

4,202,606

LIQUID CRYSTAL DISPLAY HAVING INTEGRATED BRIDGE CONTACTS

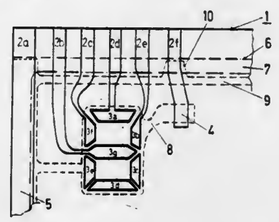
Peter Wild, Wettingen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Nov. 15, 1977, Ser. No. 851,779

Claims priority, application Switzerland, Dec. 9, 1976, 15488/76

Int. Cl.² G02F 1/13

U.S. Cl. 350—336 **4 Claims**



1. In a liquid crystal display for displaying plural display characters, said display having front and rear glass plates separated by a cell sealing bar, with a liquid crystal layer provided between said plates and retained therebetween by said sealing bar to form a liquid crystal cell, the rear cell plate having a plurality of common electrodes formed thereon, each common electrode corresponding to a respective display character, the front cell plate having plural display electrode segments formed thereon corresponding to respective display characters, said front cell plate having plural contact points for making electrical connection to respective display segments and a contact point for making electrical connection to said common electrodes on said rear cell plate by means of a plate interconnection formed in a predetermined portion of said cell, wherein for a particular application selected of said contact points are to be interconnected, the improvement comprising:

said rear cell plate having formed thereon a conductive bridge connection path having portions thereof overlapped by the orthogonal projection of said selected contact points on said rear cell plate;

said sealing bar contacting all said contact points and disposed between at least said overlapped portions of said bridge connection path on the rear cell plate and said selected contact points on said front cell plate;

said cell sealing bar having a selected unidirectional conductivity presenting high conductivity in a direction perpendicular to said cell plates and low lateral conductivity in a direction parallel to said plates;

said sealing bar contacting the overlapped portions of the selected front cell plate contact points and said bridge connection path such that said selected contact points are electrically interconnected through said sealing bar and said bridge connection path.

4,202,607

MIRROR WITH INFORMATION DISPLAY

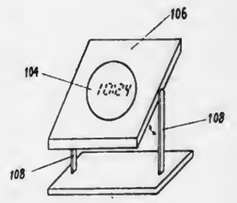
Isamu Washizuka, Kyoto; Satoshi Teramura, Kashiwara, and Masanori Matsuishi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

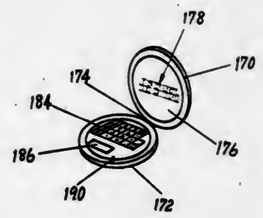
Continuation of Ser. No. 667,620, Mar. 17, 1976, abandoned. This application Feb. 9, 1978, Ser. No. 876,244

Claims priority, application Japan, Mar. 17, 1975, 50-32652; Apr. 15, 1975, 50-46229; May 23, 1975, 50-62730; Jun. 3, 1975, 50-75678; Aug. 7, 1975, 50-109852

Int. Cl.² G02F 1/13

U.S. Cl. 350—338 **18 Claims**





1. A selectively operable mirror and digital information display combination, comprising:

a front glass window having a reflection film on the rear surface thereof to form a mirror of a predetermined height;

a digital information display behind the front glass window for displaying characters of predetermined heights through the front glass window, said digital information display including a liquid crystal display unit of the reflection type, said reflection film being removed at a position where said liquid crystal display unit is attached;

said predetermined height of said mirror being at least several times higher than the height of said characters; and

a mode selection switch provided for enabling said digit information display to operate said combination in a display mode and disabling said digit information display to operate said combination in a mirror mode.

4,202,608

INSTRUMENT HAVING A LIQUID CRYSTAL DISPLAY

Meinolph Kaufmann, Fislisbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 10, 1978, Ser. No. 895,130

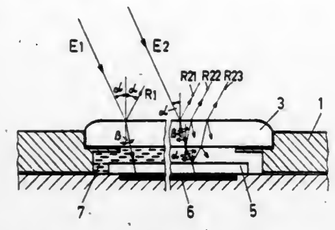
Claims priority, application Switzerland, Jul. 26, 1977, 9211/77

Int. Cl.² G02F 1/13

U.S. Cl. 350—339 R **6 Claims**

1. In an instrument having a liquid crystal display disposed behind a glass cover and separated from said glass cover by a hollow space filled with an immersion medium, the improvement comprising:

said immersion medium containing a substance imparting thixotropic properties to said medium, said substance



having a refractive index approximately equal to the refractive index of the immersion medium.

4,202,609

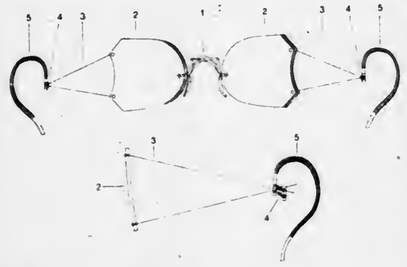
EYEGLASSES

Donald M. Reese, P.O. Box 10, Darwin, Calif. 93522

Filed Feb. 21, 1978, Ser. No. 879,459

Int. Cl.² G02C *5/14*

U.S. Cl. 351—111 **13 Claims**



1. An improved eyeglasses and support combination which comprises:

a first transparent member and a second transparent member attached to the first transparent member, the combined first and second transparent members being configured to be disposed in front of a person's eyes in a desired plane substantially parallel with a plane defined by the front surface of the person's eyes;

a first pair of suspension lines attached at two spaced apart points to the first transparent member;

a second pair of suspension lines attached at two spaced apart points to the second transparent member;

first and second earpiece members, each earpiece member being configured to be positioned over and behind a respective ear of the person and attached to a respective pair of suspension lines, and

means for fastening the first and second pair of suspension lines to the respective earpiece members to adjustably position the combined first and second transparent members in said desired plane, a result of said combination being that the combined first and second transparent members are held to occupy said desired plane and are forced to return thereto after an inadvertent dislocation.

4,202,610

MOTION PICTURE CAMERA WITH FADE-IN AND FADE-OUT EFFECTS DURING LONG-TERM EXPOSURE

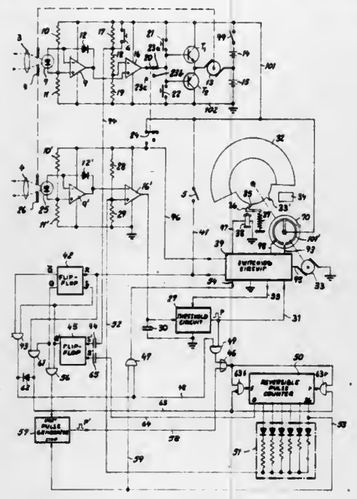
Gerd Kittag, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Sep. 20, 1978, Ser. No. 943,988

Claims priority, application Switzerland, Sep. 22, 1977, 11588/77

Int. Cl.² G03B *9/58, 19/18*

U.S. Cl. 352—91 C **14 Claims**



1. In a motion-picture camera provided with a picture-taking objective for illuminating successive frames of a film moving past an image gate in line with said objective, a shutter movable into and out of a blocking position obstructing said image gate, drive means for intermittently transporting the film past said image gate while moving said shutter into its blocking position during advances of the film from one frame to the next, timing means operable to arrest said drive means in an unblocking position of said shutter for a variable exposure period forming part of a shutter cycle, and photometric means operable to control said timing means for varying the duration of said exposure period generally inversely with the intensity of illumination traversing said image gate, said timing means including a storage capacitor and a threshold circuit connected across said storage capacitor for integrating an electrical output variable of said photometric means to emit a pulse terminating said exposure period upon attainment of a capacitor charge corresponding to a reference level established by said threshold circuit,

the combination therewith of fading-control means adapted to be operatively coupled with said timing means for changing the exposure of successive frames between a predetermined maximum value and a predetermined minimum value, said fading-control means comprising a signal generator connectable to said threshold circuit for progressively modifying said reference level to alter said exposure period by discrete increments during successive shutter cycles.

4,202,611

PROJECTOR APPARATUS AND CONTROL ARRANGEMENT

Robert R. Parker, Wheeling, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 8, 1979, Ser. No. 2,055

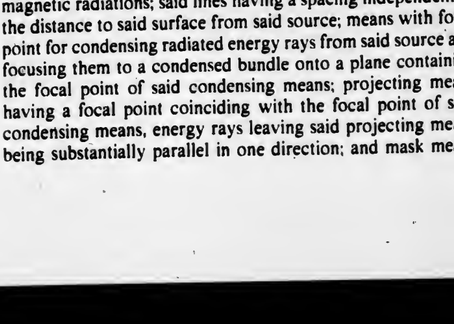
Int. Cl.² G03B *1/00;* H04Q *1/32*

U.S. Cl. 352—179 **31 Claims**

1. A control arrangement for projector apparatus, the projector apparatus including a selective drive control arrangement operable in at least two drive modes and a stop mode, and a selectively operable projector illumination source arrangement, the control arrangement comprising:

a signal generator within said projector apparatus for generating a predetermined waveform;

remote control means responsive to said signal generator and interconnected to said projector apparatus over a first signal generator conductor, a second drive signal control path conductor, and a third illumination source signal control path conductor, said remote control means comprising manually operable remote controls and remote control signal means responsive to said manually operably remote controls and said signal generator for selectively outputting a predetermined control signal in response to operation of each of said manually operable remote controls, said manually operable remote controls comprising



a first predetermined number of remote illumination source controls, and a second predetermined number of remote drive controls, said control signal means outputting a predetermined signal having individually detectable characteristics on said second drive signal control path conductor in response to operation of each of said remote drive controls and outputting a predetermined signal having individually detectable characteristics on said third illumination source signal control path conductor in response to operation of each of said remote illumination source controls; and

means within said projection apparatus and responsive to said predetermined signals on said second drive signal control path conductor and said third illumination source signal control path conductor for controlling the mode of operation of said selective drive control arrangement and said projector illumination source arrangement.

4,202,612

ARRANGEMENT FOR SENSING THE GEOMETRIC CHARACTERISTICS OF AN OBJECT

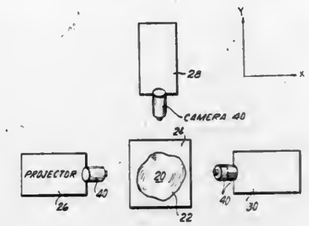
Paul L. Di Matteo, Melville; Joseph A. Ross, Fort Salonga; Howard K. Stern, Greenlawn, and Lawrence Waszak, Coram, all of N.Y., assignors to Solid Photography Inc., Melville, N.Y.

Continuation of Ser. No. 755,036, Dec. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 608,265, Aug. 27, 1975, abandoned. This application Jun. 6, 1978, Ser. No. 912,959

Int. Cl.² G03B *21/26, 21/20;* G01C *11/12;* G01B *11/24*

U.S. Cl. 353—28 **15 Claims**

1. An arrangement for projecting a plurality of parallel lines onto a surface comprising in combination: a source of electromagnetic radiations; said lines having a spacing independent of the distance to said surface from said source; means with focal point for condensing radiated energy rays from said source and focusing them to a condensed bundle onto a plane containing the focal point of said condensing means; projecting means having a focal point coinciding with the focal point of said condensing means, energy rays leaving said projecting means being substantially parallel in one direction; and mask means between said condenser means and the focal point thereof, said mask means carrying lines parallel to each other and to be projected onto said surface; planes containing said energy rays between said projecting means and said surface being parallel to each other, lines on said mask means being projected by said projecting means as parallel elements spaced from each other independent of distance of points on said surface from said



mask means; the spacing between any two lines, being constant along the distance between said projecting means and said surface and independent of the magnitude of said distance; an observer with an eye in a plane parallel to said planes containing said energy rays and looking toward said projecting means seeing light coming from a line source parallel to said plane; the location of the line source being different for each plane.

4,202,613

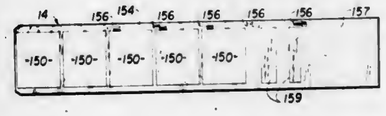
FILM STRIP HANDLING APPARATUS AND METHOD

James O. Haning, Palo Alto; Bram Kool, Saratoga; Jules G. Moritz, Los Altos Hills, and Robert Mizrahi, El Cerrito, all of Calif., assignors to Microform Data Systems, Inc., Mountain View, Calif.

Continuation of Ser. No. 785,981, Apr. 8, 1977, abandoned, which is a division of Ser. No. 646,133, Jan. 2, 1976, Pat. No. 4,053,215, which is a division of Ser. No. 536,510, Dec. 26, 1974, Pat. No. 3,963,336, which is a division of Ser. No. 313,902, Dec. 11, 1972, Pat. No. 3,909,122, which is a division of Ser. No. 101,224, Dec. 24, 1970, Pat. No. 3,743,400. This application Sep. 5, 1978, Ser. No. 939,593

Int. Cl.² G03B *21/00*

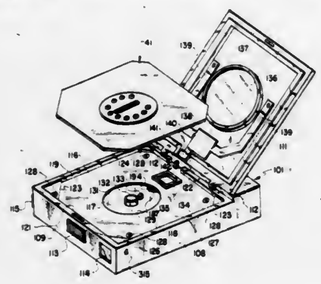
U.S. Cl. 353—120 **2 Claims**



1. A record medium comprising: a film strip having a central region, a side margin between the central region and one side edge of the film strip, and a plurality of segments disposed in end-to-end relationship in the central region, each segment having a number of image frames, said film strip having a code area for each segment, respectively, each code area being in the side margin and having a number of code regions extending laterally of the side margin, there being a first code region near the respective segment, a second code region near the side edge of the film strip, and a number of third regions between the first and second regions, each of said first and second regions having a code band, the code band of the first region having an end laterally aligned with the end of the code band of the second region with the code bands of the first and second bands being on opposite sides of a line passing through said aligned ends of the code bands, each third code region being capable of receiving a code band, having a length equal to the sum of the lengths of the code bands in the first and second regions, each code band being capable of being sensed as the film strip moves with respect to a predetermined reference.

there being at least one code band at a third code region of each code area, respectively.

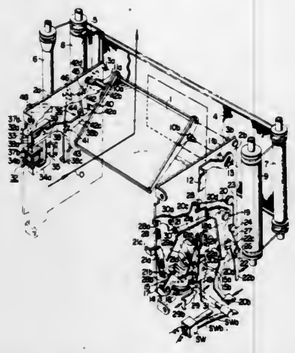
4,202,614
PHOTOGRAPHIC CAMERAS
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 774,715, Mar. 7, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,076
Int. Cl.² G03B *1/00*
U.S. Cl. 354—121 **18 Claims**



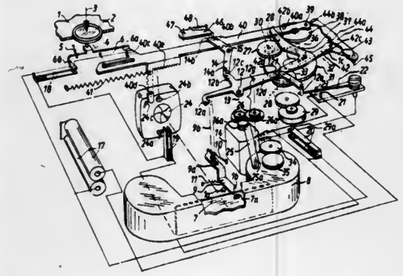
1. A camera adapted to receive a film cartridge assembly, the assembly including a generally flat casing enclosing a film disk and having an obverse wall including an exposure window, said camera comprising:
a. film advancing means for imparting rotational movement to a film disk within a film cartridge assembly received by said camera to bring successive exposure areas of the film disk into alignment with the exposure window;
b. a film support member adapted to enter the exposure window of the received film cartridge assembly;
c. a pressure member adapted to engage the received film cartridge assembly;
d. adjusting means for selectively adjusting said pressure member relative to said film support member to:
(1) a first condition in which said pressure member and said film support member cooperate to cause the film disk to be held with the film disk exposure area aligned with the exposure window located in a predetermined film exposure plane, and to
(2) a second condition in which the film disk is released from holding influence effected through the cooperation of said pressure member and said film support member; and
e. interlock means operatively associated with said film advancing means and said adjusting means for disabling said film advancing means while said pressure member is in said first condition.

4,202,615
SINGLE LENS REFLEX CAMERA WITH ELECTRICAL SHUTTER
Kazuyuki Nemoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan
Filed Dec. 4, 1978, Ser. No. 966,359
Claims priority, application Japan, Dec. 28, 1977, 52/159976
Int. Cl.² G03B *19/12, 9/08, 9/64*
U.S. Cl. 354—152 **10 Claims**

1. A single lens reflex camera with electrical shutter comprising a power supply which is used to operate said camera electrically, an electromagnet assembly coupled to said power supply and assuming a first condition whenever the supply voltage of said power supply is above a given level which is required for a normal operation of said camera and a second condition when the supply voltage is below said given level, a movable reflecting mirror and means responsive to a shutter release operation for moving said mirror in a first direction and for operating a shutter of the camera at the termination of the movement of said reflecting mirror in said first direction, and a mirror blocking mechanism controlled by the electromagnet assembly for permitting movement of the movable reflecting mirror in said first direction when the electromagnet assembly assumes said first condition and for blocking the movable reflecting mirror in the course of its movement in said first direction when the electromagnet assembly assumes said second condition, thereby providing an alarm that the supply voltage is reduced, said mirror blocking mechanism comprising a mirror blocking member having a blocking piece engageable with the movable reflecting member, and a detent control member having an attractive portion which is adapted to be held attracted to the electromagnet assembly and a hook engageable with the mirror blocking member when said attractive portion is displaced from said electromagnet assembly.



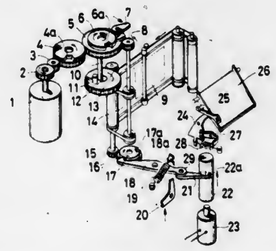
4,202,616
FILM-TRANSPORT SYSTEM FOR PHOTOGRAPHIC STILL CAMERA
Otto Stemme, Munich; Rolf Schröder, Baldham; Peter Lermann, Narring, and Horst Karl, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany
Filed Sep. 5, 1978, Ser. No. 939,374
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1977, 2739930
Int. Cl.² G03B *1/18, 17/26, 1/00*
U.S. Cl. 354—173 **24 Claims**



6. In a photographic still camera, a film-transport system transporting film of the type whose frames are provided with perforations, including a shutter unit having a triggerable set state and a triggered unset state; an electric film-transport and shutter-setting motor; motor-control switch means having a motor-energize state and a motor-deenergize state; and a control mechanism establishing at least one of said states, the control mechanism including a perforation feeler mounted for entry into and retraction from film perforations, a control member mounted for movement in a first direction from a first

to a second position and in an opposite second direction back to the first position, drive spring means urging the control member in the first direction, a user-activated trigger mechanism serving when unactivated to prevent movement of the control member in the first direction, the trigger mechanism when activated not preventing such movement, and a motion-transmitting structure responding to the reaching of the second position by coupling the motor to the control member in a sense causing the latter to be returned by the motor back to the first position.

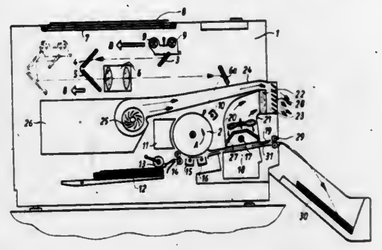
4,202,617
SHUTTER RELEASE SECURITY DEVICE IN MOTOR DRIVE CAMERA
Fumio Urano, Omiya; Akihiro Arai, Urawa; Takumi Kobayashi, and Junji Umetsu, both of Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 17, 1978, Ser. No. 906,804
Claims priority, application Japan, May 31, 1977, 52-63547
Int. Cl.² G03B *17/38*
U.S. Cl. 354—268 **4 Claims**



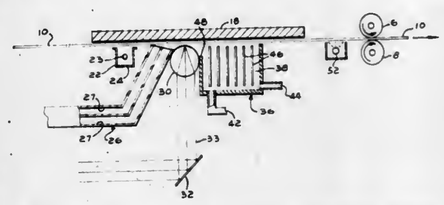
1. In a camera having a manually operable shutter release member, a mirror, a mirror locking releasing member for releasing said mirror to carry out shutter release and a motor drive means for directly operating said mirror locking releasing member, the improvement comprising:
a shutter release security device for preventing shutter release during film winding, said security device comprising an operation locking member movable between a first position, said locking member preventing movement of said mirror locking releasing member whenever said locking member is in its first position, and a second position, in which it is disengaged from said mirror locking releasing member to permit operation of the latter by said motor drive unit, and a control means for maintaining said operation locking member in its first position during film winding and moving said operation locking member to its second position at the completion of film winding.

4,202,618
ELECTROSTATIC COPYING MACHINE HAVING FLASH-DISCHARGE-LAMP FIXING UNIT
Fritz Waschk, Unterhaching; Heinz Webersik, Munich, and Rudolf Schinagl, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany
Filed Dec. 30, 1977, Ser. No. 866,658
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750485
Int. Cl.² G03G *15/00*; G03B *27/52*
U.S. Cl. 355—3 FU **4 Claims**

1. An improved electrostatic copying machine of the type provided with a fixing station comprising a reflector and means including a flash lamp located within the reflector for fusing a toner image on a copying medium by applying thereto at least one brief high-energy flash of radiant energy to raise the temperature of the toner to its melting point, the improvement comprising means defining a cooling-air passage in the machine, the cooling-air passage including the space surrounding the reflector and flash lamp; and filter means provided in the cooling-air passage downstream of the reflector and flash lamp for removing from cooling air flowing through the cooling-air passage contaminants picked up in the vicinity of the reflector and flash lamp, said cooling-air passage being a first cooling-air passage, furthermore comprising means defining a second cooling-air passage extending through a different part of the interior of the copying machine, means establishing the flow of a first stream of cooling air through the first cooling-air passage and filter means and the flow of a second stream of cooling air through the second cooling-air passage of greater volumetric flow rate than the first stream of cooling air, and means at the downstream ends of the first and second cooling-air passages for effecting the discharge of cooling air from the cooling-air passage to the exterior of the copying machine and preliminary to such discharge the mixing together of the first and second streams of cooling air, to thereby dilute the first stream of cooling air by mixing the latter into the higher-volumetric-flow-rate second stream of cooling air prior to discharge.



4,202,619
ELECTROPHOTOGRAPHIC APPARATUS
John D. Plumadore, 83 Woodside Ter., Westfield, Mass. 01085
Filed Aug. 31, 1978, Ser. No. 938,695
Int. Cl.² G03G *15/00, 15/10*
U.S. Cl. 355—3 P **16 Claims**



1. Electrophotographic apparatus comprising means for advancing a film strip having a photoconductive layer along a given path, means for electrostatically charging said photoconductive layer, an optical system for imaging and exposing the charge on said layer with monochromatic light, said optical system including a short focal length optical gate having a longitudinal axis disposed transversely of said path for surface engagement with the film strip being moved thereby, means for wetting the contiguous surface of the film and optical gate with a hydrocarbon based optical liquid during exposure of said film and a toning head for applying an electrophoretic liquid to the electrically imaged film for developing a visual image thereon.

4,202,620

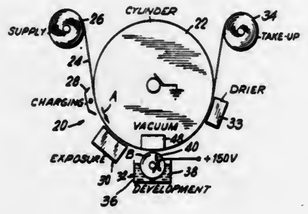
APPARATUS FOR LIQUID DEVELOPMENT OF LATENT ELECTROSTATIC IMAGES

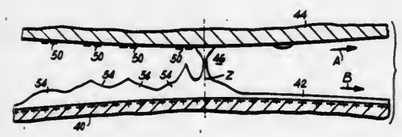
Irving L. Klavan, Teaneck; Peter J. Calabrese, Maywood; Theron R. Finch, Northvale; Arthur Greenberg, Teaneck, all of N.J., and Robert P. McElroy, Spring Valley, N.Y., assignors to Philip A. Hunt Chemical Corp., Palisades Park, N.J.

Continuation-in-part of Ser. No. 676,463, Apr. 13, 1976, abandoned. This application Jun. 29, 1978, Ser. No. 916,041

Int. Cl.² G03G *15/10*

U.S. Cl. 355—10 **21 Claims**





1. An apparatus for developing a latent electrostatic image, said apparatus comprising:

(A) a member having a smooth surface capable of having an electrostatically charged image applied thereto,

(B) means to apply a latent electrostatic charge image to said surface of said member,

(C) a development zone,

(D) means to move said surface of said member with said image thereon to and past the development zone, and

(E) means to provide a liquid developer with a smooth surface at the development zone,

(i) said liquid developer constantly having a continuous surface at the development zone spaced below the image-carrying surface of said member at the development zone,

(ii) the space between the image-carrying surface of said member and the surface of the liquid developer at the develoment zone being between 4.5 and 40 mils,

(iii) the surface of the liquid developer at the development zone being no higher than the imagecarrying surface of the member at the development zone,

(iv) the liquid developer having a viscosity of 0.5 to 50 centipoises, a surface tension of 20 to 75 dynes/cm, and a density in the order of 1 gram/cc,

(v) the latent electrostatic image having a surface potential of at least 100 volts,

(F) such that portions of the surface of the liquid developer at the development zone opposed to charged segments of the image jet toward said segments as pseudopods from which the liquid at the tips of the pseudopods form droplets on the charged segments which remain on said member, while liquids in any pseudopods formed in opposition to uncharged segments at the development zone are prevented from reaching the uncharged segments by the force of gravity.

4,202,621

RECORDING DEVICE

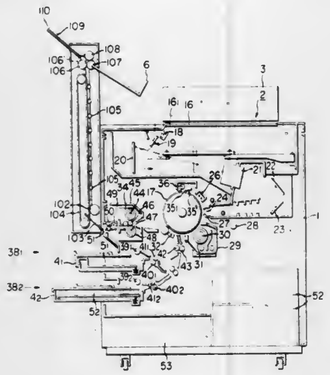
Shigeru Yoshimura, Yokohama, and Katsuichi Shimizu, Hoya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

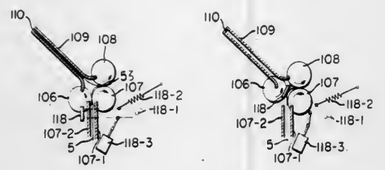
Filed May 31, 1978, Ser. No. 911,141

Claims priority, application Japan, Jun. 3, 1977, 52/65416; Jun. 14, 1977, 52/70074; Jun. 27, 1977, 52/76391

Int. Cl.² G03G *15/00*

U.S. Cl. 355—14 R **41 Claims**





6. A recording device comprising:

(a) image forming means to form a visible image on a recording medium in a flexible sheet;

(b) transfer means which transfers the sheet recording medium, on which the visible image has been formed by said image forming means;

(c) first discharge means which folds the imaged sheet recording medium in half, and discharges the same out of the device;

(d) second discharge means which discharges said imaged sheet recording medium without folding the same; and

(e) selection means to select whether said sheet recording medium transferred by said transfer means is to be introduced into said first discharge means, or into said second discharge means.

4,202,622

DIGITALLY CONTROLLED IMAGE FORMING APPARATUS

Yoshihiro Kawatsura, Kawasaki; Katsuichi Shimizu, Hoya, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

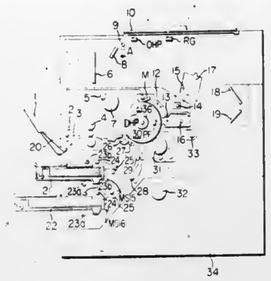
Filed Mar. 30, 1978, Ser. No. 891,852

Claims priority, application Japan, Apr. 6, 1977, 52/39857; Apr. 6, 1977, 52/39858

Int. Cl.² G03G *15/00*

U.S. Cl. 355—14 C **5 Claims**

1. An image forming apparatus comprising a recording member, elements operable for forming an image on said recording member, means for detecting the operational state of the apparatus and for providing detection signals related thereto, and a digital control means provided with a stored main program for actuating said elements for image formation, said digital control means comprising a stored interrupt program to be executed upon interruption of the execution of said stored main program, an input port for receiving signals for causing execution of said interrupt program, and means for enabling the execution of said interrupt program only after a



predetermined operational state of at least one of said elements is reached, and said detecting means being connected to said input port to cause, in response to the detection signals, the execution of said interrupt program after said interrupt program is enabled by said enabling means.

4,202,623

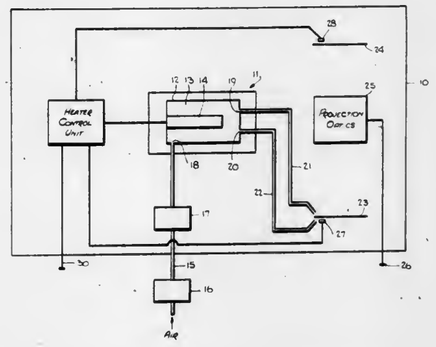
TEMPERATURE COMPENSATED ALIGNMENT SYSTEM

Theodore Watkin, Stamford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 8, 1979, Ser. No. 1,991

Int. Cl.² G03B *27/52*

U.S. Cl. 355—30 **15 Claims**



1. In a projection system for exposing a silicon wafer to circuit patterns on a mask by optically projecting the circuit patterns onto the wafer, apparatus for correction misalignment between the mask and wafer due to changes in dimension of the mask or wafer due to temperature comprising,

first means for viewing the projection of the mask on the wafer,

second means for aligning the viewed mask and wafer to a predetermined standard by adjusting the temperature of the mask or wafer.

4,202,624

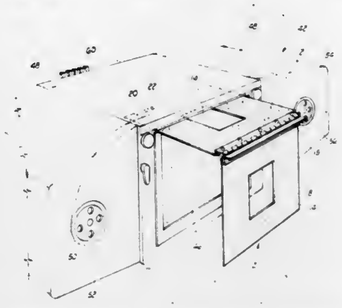
MASKING DEVICE FOR CROPPING PHOTOGRAPHS VIEWED ON A VIEW SCREEN OF A PHOTOGRAPHIC PRINTER

Vivian D. Krehbiel, Wichita, Kans., assignor to Kreonite Inc., Wichita, Kans.

Filed Sep. 15, 1978, Ser. No. 942,873

Int. Cl.² G03B *17/02, 13/28, 27/58*

U.S. Cl. 355—45 **7 Claims**



1. A masking device for cropping a photograph seen through a viewing screen in a photographic printer, the masking device comprising;

a first flat opaque frame having an aperture in the center thereof, said first frame adapted for receipt in front of the photographic paper disposed in the printer; and

a second flat frame attached to said first frame and having an aperature at the center thereof, the size of the aperture in said first frame corresponding to the aperture in said second frame, said second frame adapted for receipt in the front of the viewing screen of the photographic printer.

4,202,625

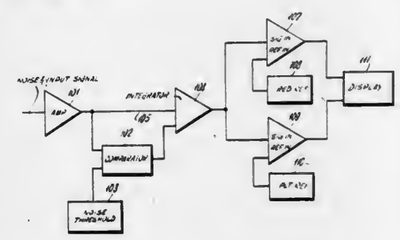
METHOD AND APPARATUS FOR DISCRIMINATING RED BLOOD CELLS FROM PLATELETS

Irving L. Weiner, Sharon, and Russell J. Gershman, both of Middleboro, Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 18, 1978, Ser. No. 934,938

Int. Cl.² G01N *33/16, 15/02*

U.S. Cl. 356—39 **7 Claims**



1. A method of discriminating platelets from red blood cells comprising the steps of:

passing the cells individually through a light field;

measuring optical scatter produced by passage of cells through the field;

generating a signal representative of said measuring;

discriminating portions of said signal based on amplitude, thereby identifying possible signal representations of cells;

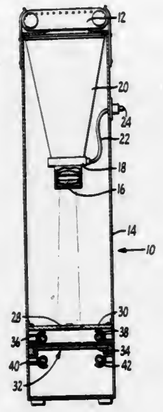
further discriminating among said portions based on area of said portions, larger area portions being deemed red cells, and select smaller area portions being deemed platelets.

4,202,626

SIGNATURE VERIFICATION AND AUTHENTICATION SYSTEMS

George L. Mayer, Jr., New Orleans, La., and John D. Schick, San Francisco, Calif., assignors to A Patent Partnership, New Orleans, La.

Filed Feb. 24, 1978, Ser. No. 880,805
Int. Cl.² G03B 27/68
U.S. Cl. 355—52 56 Claims



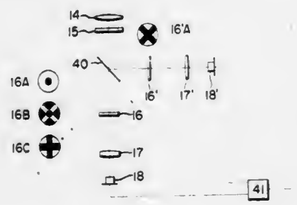
1. A method of signature verification and authentication comprising the step of reproducing on a document a cryptographic representation of at least one property of a signature of an authorized user thereof modified in accordance with at least one indicium identifying said user with said document.

4,202,627

PHOTOELECTRIC DETECTING APPARATUS

Akiyoshi Suzki, Tokyo; Ichiro Kano; Hideki Yoshinari, both of Yokohama; Masao Tozuka, Ohmiya; Ryozo Hiraga, Yokohama; Yuzo Kato, Yokohama, and Yasuo Ogino, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1978, Ser. No. 900,856
Claims priority, application Japan, May 1, 1977, 52-50606
Int. Cl.² G01K 9/08; G01B 11/00
U.S. Cl. 356—71 3 Claims



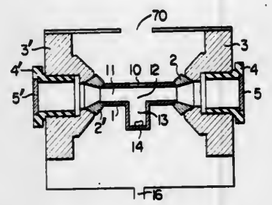
1. A photoelectric detecting apparatus comprising:
a light source;
a scanner for scanning an object to be tested having a pattern which diffracts light in a predetermined direction by a light beam from said light source;
a first photoelectric detector for detecting the diffracted light in the predetermined direction coming from said test object;
a second photoelectric detector for detecting the light diffracted in directions other than said determined direction coming from said test object; and
an electric circuit for producing a signal corresponding to the diffracted light coming from said pattern from the outputs of said first and second photoelectric detectors.

4,202,628

FLAMELESS ATOMIZER

Hideaki Koizumi, and Kazuo Moriya, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 28, 1977, Ser. No. 781,938
Claims priority, application Japan, Mar. 29, 1976, 51-33668
Int. Cl.² G01J 3/30
U.S. Cl. 356—312 15 Claims



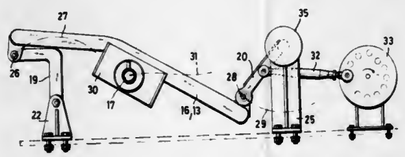
1. A flameless atomizer comprising:
a hollow cuvette including an opening at both ends and a port in a radial direction substantially at its central portion, and made of a conductive material Joule-heated by current flowing theretherethrough, said cuvette being integrally provided with a projection having a recess in the interior thereof at a position situated in a radial direction substantially at its central portion and substantially opposite to said port;
electrodes for supporting said cuvette; and
a device for flowing a protective gas into the interior and exterior of said cuvette, wherein the interior of said cuvette is divided into:
a sample mount section at which a sample introduced through the port of said cuvette is disposed;
a light beam path section through which a light beam passes in said cuvette; and
an absorption cell section at which said light beam path section intersects with atomic vapors generated from the sample disposed in said sample mount section, and a pair of magnets for applying a megnetic field to said absorption cell section limited to a certain area within said cuvette being provided in such a manner that they sandwich said cuvette.

4,202,629

APPARATUS FOR THE DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION OF A GRANULAR MATERIAL

Willy Jakobs, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,338
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730731
Int. Cl.² G01N 21/26
U.S. Cl. 356—335 11 Claims



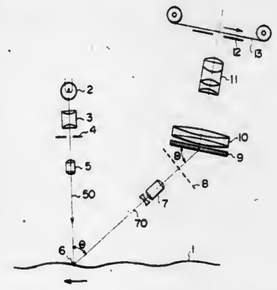
1. A scanning apparatus for the determination of a particle size distribution of a granular material in a measuring channel having radiation permeable side walls and a measuring zone, the granular material being introduced in the measuring channel and distributed according to grain size by a sifting air current, comprising:
a reciprocating measuring frame having a closed loop portion which surrounds the measuring chamber and with all portions of the loop spaced from the chamber;
a radiation transmitter means for producing a measuring beam mounted on the measuring frame such that the measuring beam scans the measuring zone of the measuring channel in transverse fashion when the frame is reciprocated in a given manner; and
a radiation receiver means positioned on the frame and opposite the transmitter means for receiving the measuring beam after it passes through the measuring zone.

4,202,630

METHOD OF AND APPARATUS FOR RECORDING SURFACE IRREGULARITY OF OBJECT

Masane Suzuki, and Kiyoshi Suzuki, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation-in-part of Ser. No. 648,814, Jan. 13, 1976, Pat. No. 4,102,578. This application Feb. 6, 1978, Ser. No. 875,515
Claims priority, application Japan, Jan. 15, 1975, 50-6780
The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.
Int. Cl.² G01B 11/24
U.S. Cl. 356—371 11 Claims



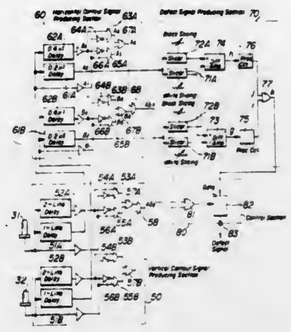
1. A method of recording surface irregularities of a moving object in the form of contour lines comprising the steps of:
feeding an object in the direction in which the surface thereof extends,
forming a slit image on the surface of the object by a first optical focusing means having a first optical axis, said slit image extending in the direction perpendicular to the direction in which the object is fed,
projecting an image of the slit image formed on the surface of the object onto a grid by a second optical focusing optical means having a second optical axis inclined at an angle θ with respect to said first optical axis to form a light section moire element consisting of a number of light spots arranged at intervals representing the surface irregularities of the object, the grid being oriented in the position in which respective slits forming the grid are in parallel to the direction of said slit image,
forming an image of the light section moire element on a slit located adjacent a photographic film through a light spot extending lens means which extends the respective light spots of the light section moire element in the lateral direction so that all the light spots extended are crossed by the slit,
feeding the photographic film in the lateral direction of the slit in synchronization with the movement of the object, and
providing a light deflecting means after said grid to deflect the light passing through the grid to enlarge the light section moire element in the lateral direction.

4,202,631

APPARATUS FOR DETECTING DEFECTS IN PATTERNS

Yasushi Uchiyama, Yokohama, and Daikichi Awamura, Kawasaki, both of Japan, assignors to Nippon Jidoseigyo Ltd., Kawasaki City, Japan

Filed Jul. 5, 1978, Ser. No. 922,217
Claims priority, application Japan, Jul. 14, 1977, 52-83520
Int. Cl.² G01B 11/00
U.S. Cl. 356—394 24 Claims



1. An apparatus for detecting defects in patterns, particularly defects in chip patterns of photomasks for use in manufacturing semiconductor integrated circuits comprising
means for optically scanning simultaneously identical portions of two patterns to be compared with each other to produce first and second picture signals each corresponding to a respective one of the scanned pattern portions;
means for receiving at least one of said first and second picture signals and producing a contour signal which represents contour regions having a predetermined width along the pattern contours;
means for receiving said first and second picture signals and forming a difference between these picture signals to produce a defect signal; and
control means for receiving said contour signals and decreasing a defect detection sensitivity in the contour region of the patterns.

4,202,632

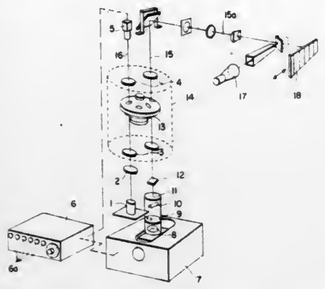
PROCESS AND APPARATUS FOR OPTICAL RECORDING OF MOTIONS AND STATES IN ULTRACENTRIFUGES IN MULTI-CELL OPERATION

Walter Maechtle, Ludwigshafen, and Utz Klodwig, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 28, 1977, Ser. No. 846,331
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2649027
Int. Cl.² G01N 21/24
U.S. Cl. 356—427 2 Claims

1. A process for the optical measurement and recording of motions in ultracentrifuges having a multi-cell rotor for substantially simultaneously measuring a plurality of cells, said process comprising the steps of:
providing synchronizing pulses in accordance with the rotation of said rotor;
deriving from said synchronizing pulses light pulses of constant energy, said energy being independent of the rotational speed of said rotor within a range of from 100 to 80,000 revolutions per minute.
said light pulses being produced by a gas discharge lamp and said deriving step including linearly charging the capacitor of a saw-tooth generator, and rapidly discharging said capacitor at the end of the time interval between any two successive synchronizing pulses so that the maximum voltage of each saw-tooth of the saw-tooth wave pro-

duced by said generator is constant regardless of the rotor speed within said range, whereby light pulses of constant energy are obtained for said gas discharge lamp; and



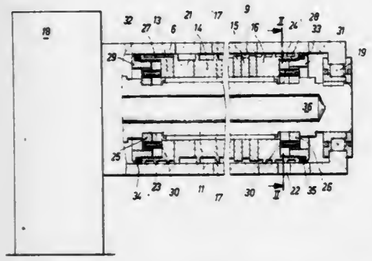
passing said light pulses through one or more cells to be measured.

4,202,633

MACHINE FOR PROCESSING PLASTICS MATERIALS

Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 938,716
Int. Cl.² B29B 1/06; B01F 7/08
U.S. Cl. 366—79 **9 Claims**



1. A machine for processing plastics materials having a screw mounted in a housing and made up of a plurality of screw members in the form of collars on a drive shaft, whereby screw members to suit a particular material treatment are secured against rotation on said drive shaft and can be exchanged when required for other screw members, the machine including a thrust arrangement to press the screw members axially into close engagement with one another, the thrust arrangement comprising a divided thrust ring axially supported on said drive shaft at one of the end zones thereof, thrust bolts which act on the adjacent end surface of the adjacent outermost one of said screw members and a sleeve closely surrounding the periphery of said divided thrust ring.

4,202,634

RACK FOR VESSELS AND MEANS FOR AGITATING THE VESSELS IN THE RACK

Jack A. Kraft, 119 Elm La., New Hyde Park, N.Y. 11040, and Harold D. Kraft, 147-14 70th Ave., Flushing, N.Y. 11367

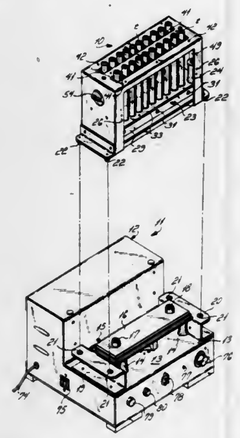
Continuation-in-part of Ser. No. 739,242, Nov. 5, 1976, Pat. No. 4,118,801. This application Sep. 22, 1978, Ser. No. 945,128
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.² B01F 11/00
U.S. Cl. 366—111 **9 Claims**

1. A clamp for holding a vessel while the bottom of said vessel is subjected to an orbital movement, to spin liquid contained within said vessel, said apparatus comprising

a support member engaging the vessel at an upper portion thereof,

said support member comprising a resilient collar comprising a rubbery material to frictionally engage and hold said vessel in said collar while the bottom of said vessel receives said orbital movement,

said rubbery material of said resilient collar frictionally engaging said vessel and comprising yieldable characteris-



tics permitting the bottom of the vessel to receive an orbital movement while said vessel is held within said resilient collar,

said liquid being spun under influence of said orbital movement,

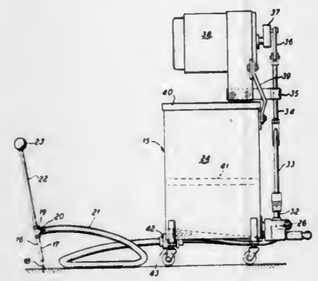
said support member and said vessel being arranged to define a null point of movement of said vessel to be centered within the region defined by said resilient collar to prevent spillage of the liquid contained in the vessel while being spun during said orbital movement.

4,202,635

PORTABLE DEVICE FOR MIXING TWO MATERIALS

Carl E. Hendrickson, P.O. Box 81, Sheridan, Wyo. 82801

Filed Dec. 2, 1977, Ser. No. 856,968
Int. Cl.² B01F 15/04
U.S. Cl. 366—162 **10 Claims**



1. A portable device for mixing two materials in a desired proportion and dispensing the materials under pressure from a nozzle, said device comprising a separate container for each of said two materials; each of said containers having means for discharging the contents of the container under pressure from a discharge tube; a mixing tube of flexible material having a discharge end and an input end with a helical mixing element received in the mixing tube and extending between said ends,

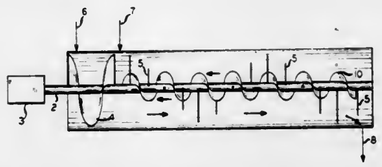
said element being a helically twisted strip member having projections extending from opposite edges thereof with the projections along one edge being offset from the projection along the other edge and with the twisting of said strip member causing the projections to extend outward from the axis of the member at different angles with two adjacent projections along one edge forming an angle of less than 180° and approximately 120°; a nozzle attached to the discharge end of the mixing tube; and coupling means attached to the input end for connecting the discharge tubes of the containers thereto so that a coaction of the mixing element and any bends of the flexible mixing tube provides a thorough mixing of the two materials as they pass along the tube prior to discharge from the nozzle.

4,202,636

MIXING DEVICE WITH INTERNAL RECYCLE

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 762,690, Jan. 26, 1977, Pat. No. 4,123,226. This application Jun. 15, 1978, Ser. No. 915,860
Int. Cl.² B01F 7/04, 7/08
U.S. Cl. 366—319 **6 Claims**



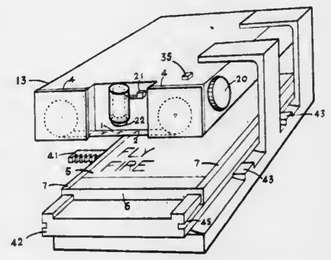
1. A mixing device comprising a vessel, a rotatable shaft therein, pins or tines mounted to depend from said shaft and adapted to be moved upon rotation of said shaft and means in combination with said shaft comprising an auger substantially of a size to force material in said vessel from an inlet end to an outlet end thereof, and a substantially smaller diameter flight blade having a reverse-pitch for impelling material in said mixture in a direction opposite to the normal flow from said inlet to said outlet end thereof.

4,202,637

METHOD AND MACHINE FOR DRY CHARACTER TRANSFER

Mauro Tummolo, 241 Suydam St., Brooklyn, N.Y. 11237, assignor to Mauro Tummolo, Brooklyn, N.Y.

Filed Nov. 14, 1977, Ser. No. 851,348
Int. Cl.² B41J 3/28
U.S. Cl. 400—118 **17 Claims**



1. A machine for effecting the dry transfer of characters from a tape bearing on one side at least one character capable of being transferred to an object by rubbing the other side of said tape opposite the character to be transferred while said character is in contact with said object which comprises:

(a) Means adapted for holding a reel of such tape and for moving it back and forth over an object to receive the transfer of a character therefrom with said one side facing said object,

(b) Means for positioning an object to receive a character from said tape, and

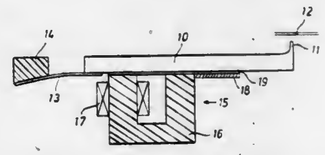
(c) Means for effecting the transfer of selected characters from the tape to the object comprising a rotary drive member, a plurality of rollers mounted in operative relation to said drive member for rotation in a plane parallel to the plane of said object and said tape.

4,202,638

DEVICE FOR POINTWISE ACTION ON AN INFORMATION CARRYING MEDIUM

Sven G. V. Stenudd, Lidingo, Sweden, assignor to Facit Aktiebolag, Atvidaberg, Sweden

Filed Oct. 11, 1977, Ser. No. 840,746
Claims priority, application Sweden, Oct. 11, 1976, 7112564
Int. Cl.² B41J 3/10
U.S. Cl. 400—124 **11 Claims**



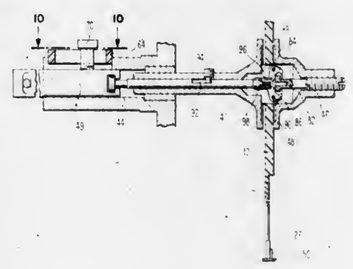
1. In a device for marking an information carrying medium in which a marking tip is provided on an arm means, first means are provided for moving the arm means in a first direction to urge the marking tip against a surface of the information carrying medium, and second means are provided for moving the arm means in a second direction to move the tip away from the information carrying medium, the arm means extending generally parallel to the surface of said information carrying medium and having a planar surface portion; the improvement comprising additionally a fixedly mounted land surface positioned to inhibit the displacement of said arm means in said second direction and being oriented precisely parallel to said planar surface portion when said arm means is at its extreme extent of motion in said second direction, said land surface and arm means comprising in combination an air pressure damping means for damping the movement of said arm means in said second direction by air pressure, said land surface being lateral of said second means along said arm.

4,202,639

DAISY LOADING APPARATUS

Michael J. Rello, Willow Grove, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 14, 1977, Ser. No. 833,276
Int. Cl.² B41J 1/30
U.S. Cl. 400—171 **16 Claims**



1. In a printing apparatus of the type having a circular rotary character array having a hub portion, said character array

being driven by a rotary stepper motor of the type having an axis and a pair of stator elements spaced apart along said axis with an axial air gap therebetween, a rotor element integrally connected to said hub portion, and a support having two axially aligned portions at least one of which is retractable with respect to the other, said support carrying a clamping means for fixing the position of said array, the improvement comprising:

a movable guide means for mating with the outermost circumference of said array to align the center of the array with said axis.

4,202,640

KEYBOARD ASSEMBLY

Helmut Schmidt, Villingen-Schwenningen; Walter Strobel, Unterkirnach; Günter Treude, and Paul Blaser, both of Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Continuation of Ser. No. 779,936, Mar. 21, 1977, Pat. No. 4,124,313, said Ser. No. 779,936, is a continuation of Ser. No. 604,332, Aug. 13, 1975, abandoned, and a continuation of Ser. No. 604,333, Aug. 13, 1975, abandoned. This application Apr. 27, 1978, Ser. No. 900,771

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1974, 2440265

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.[2] **B41J** *5/12*

U.S. Cl. 400—491.2 **1 Claim**



1. A quick-assembly keyboard, for typewriters, calculators, data-processor input terminals, and the like, comprising, in combination,

a plurality of assembled self-contained key units, each assembled self-contained key unit comprising a plurality of components including a stationary housing, a shaft movable relative to said housing, a cap connected to said shaft and operative for moving said shaft from an initial position to an actuating position, and biasing means for restoring said shaft to said initial position;

a plurality of elongated carrier members, each provided with a row of apertures extending along the length of said carrier member,

said assembled self-contained key units and said carrier members being provided with cooperating first releasable connecting means mounting the assembled self-contained key units on said carrier members with said shafts of said assembled self-contained key units lined up with respective ones of said rows of apertures of said elongated carrier members, said first releasable connecting means mounting said assembled self-contained key units on said carrier members dismountably for dismounting of said key units from said carrier members from above said carrier members;

a circuit board provided with a plurality of electrical components,

said carrier members and circuit board being provided with cooperating second releasable connecting means dismountably mounting said carrier members upon said circuit board at a predetermined spacing from the latter independently of said first releasable connecting means and with said shafts of said key units lined up with predetermined ones of said electrical components,

each of said assembled self-contained key units including means holding said stationary housing, said shaft and said biasing means together in assembled condition independently of said first and second releasable connecting means, whereby dismounting of individual assembled self-contained key units from carrier members neither results in nor requires disassembly of the constituent components of the dismounted key units,

said carrier members being dismountable from said circuit board without dismounting of said assembled self-contained key units from said carrier members and without disassembly of the caps, stationary housings, shafts and biasing means of the key units of thusly dismounted carrier members, by releasing said second releasable connecting means,

each assembled self-contained key unit being dismountable from the carrier member on which it is mounted from above without disassembly of said stationary housing, shaft and biasing means of such key unit, by releasing said first releasable connecting means,

the key units including no components permanently electrically connected to any components on the circuit board, whereby to provide no hindrance to dismounting of carrier members from the circuit board nor to dismounting of individual assembled self-contained key units from carrier members,

the carrier members being mounted on the circuit board parallel to and adjoining each other so as to form a plurality of parallel and adjoining rows of key-unit caps.

4,202,641

MULTIPLE-POINT WRITING INSTRUMENT INCLUDING A MECHANICAL PENCIL UNIT

Yoshihiro Tomura, Omiya, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1977, Ser. No. 841,434

Claims priority, application Japan, Oct. 16, 1976, 51-139243[U]

Int. Cl.[2] **B43K** *24/10, 24/18, 27/02*

U.S. Cl. 401—32 **4 Claims**



1. A multiple-point writing instrument, comprising in combination:

a cylindrical holder having top and bottom sections in axial alignment which are rotatable around the axis thereof relative to each other;

two writing units provided in side-by-side positions in said holder, one of said writing units being a mechanical pencil unit having an outer tube, a lead gripping jaw means in said outer tube, an inner tube fixed to said jaw means and extending rearwardly from said outer tube toward said top section, and a tightening ring fixed within said outer tube for normally tightening said jaw means to cause it to grip a lead and for releasing said jaw means to enable feeding out of the lead only when said inner tube and said jaw means are pushed relative to said tightening ring forward toward the writing end of said pencil unit;

a cradle mounted within said holder and connected to said bottom section, said cradle having means rotatably supporting said top section relative to said cradle and said bottom section for said relative rotation, said cradle supporting said mechanical pencil unit and the other writing unit in the side-by-side positions and constraining the units to independent longitudinal motions between retracted positions in which the writing ends of the units are within said holder and advanced writing positions in which the writing ends of the units project out of the lower end of said bottom section of said holder;

resilient means engaging said writing units and urging them toward the retracted positions;

a feed-out cam in the form of an overhanging ledge on the inside suface of said top section of said holder and slidably engaged with the two writing units for selectively moving the respective units from the retracted to an advanced position and then to an advanced writing position upon rotation of said top section in one or the other direction relative to said bottom section, said cam having a lower ledge portion with a notch therein for releasably locking a selected one of two writing units when it is in the advanced writing position, first and second sloping ledge portions on opposite sides of the lower ledge portion, and an upper ledge portion extending circumferentially around the inside of said holder in a plane at right angles to the axis of said holder for engagement by the two writing units when they are in the retracted position, said first and second sloping ledge portions being associated with the mechanical pencil unit and the other writing unit, respectively, said lower ledge portion extending circumferentially a relatively short distance substantially parallel with the upper ledge portion for engaging the writing units for placing them in the advanced position, said notch being disposed at a position circumferentially offset from the center of the lower ledge portion toward the second sloping ledge portion, whereby said top section must be rotated a greater angular distance to move the mechanical pencil unit from the advanced position to the locked writing position than to move the other writing unit from the advanced position to the locked writing position;

a pushbutton mounted in said top section of said holder normally projecting rearwardly therefrom and for relative movement only in the axial direction of the holder; and

an offset pusher extending from the pushbutton toward said writing units normally disposed in side-by-side relationship with the upper end portion of said mechanical pencil unit and movable into substantial axial alignment with said inner tube of said mechanical pencil unit when said mechanical pencil unit is moved from the retracted to the locked writing position by the rotation of said top section of said holder relative to the bottom section, whereby said mechanical pencil unit is moved to said advance position by engagement of said first sloping ledge portion prior to the time said offset pusher comes into alignment with said mechanical pencil unit so said offset pusher does not collide with said mechanical pencil unit, and upon depression of said pushbutton following the movement of said mechanical pencil unit from the advanced position to the locked writing position, said inner tube of said mechanical pencil unit is pushed by said offset pusher and is thus made ready for writing or marking.

4,202,642

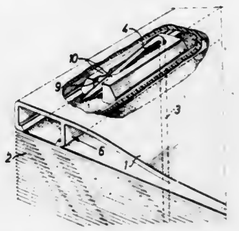
LOOSE-LEAF BINDER UTILIZING STIFF COVERS

Lars L. Sjöstedt, Ellågardsvägen 96, S-183 39 Täby, Sweden

Filed Jun. 28, 1978, Ser. No. 919,920

Int. Cl.[2] **B42F** *13/02*

U.S. Cl. 402—13 **7 Claims**



1. An apparatus for removably uniting a cover with a sheaf of pages having through holes at optional locations, said apparatus comprising:

at least one stem, each said stem passing through at least one said through hole thereby exposing one stem end for each said through hole passed through;

a separate first connecting means receiving each said stem end in a bent condition, each said first connecting means being positioned immediately adjacent said sheaf at its respective through hole whereby said stem passes only through said sheaf and said first connecting means;

a cover for said sheath;

a rail-like second connecting means positioned along the spline edge of said cover, said second connecting means being engagable with each of said first connecting means for connecting said cover to said sheaf at a position opposite said first connecting means; and

whereby said first connecting means may be positioned at optional hole spacings and said stems may be engaged without passing through said cover.

4,202,643

SOLID CONTAINER COUPLING DEVICE

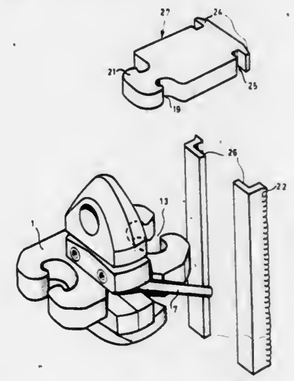
Hans U. Backteman, Lusthusbacken 14, 161 39 Bromma, Sweden

Filed Sep. 18, 1978, Ser. No. 942,919

Claims priority, application Sweden, Sep. 27, 1977, 7710804

Int. Cl.[2] **F16C** *11/00;* **F16D** *1/12, 3/00*

U.S. Cl. 403—33 **6 Claims**



1. Container coupling having a central body including an operating aperture, a turnable shaft extending through said

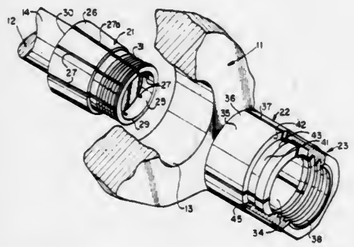
body and provided with a locking head at each end thereof, said heads facing in opposite directions and being sufficiently angularly displaced in relation to each other to enable said heads to selectively sequentially engage respective sockets of adjacent containers, filler pieces provided between said body and said locking heads, said body being provided with side locking means adapted lockingly to cooperate with complementary shaped side locking means in horizontal locking elements, and an operating handle extending into said operating aperture and being connected to said turnable shaft for turning said shaft and said locking heads through three distinct positions to thereby cause said sequential engagement of said head with said respective sockets of said adjacent containers.

4,202,644

MOUNTING DEVICE

Dimitri G. Soussloff, Wyomissing, Pa., assignor to Trantorque Corporation, Manheim, Pa.

Filed Jul. 10, 1978, Ser. No. 923,056
Int. Cl.² F16B *2/14*
U.S. Cl. 403—369 **9 Claims**



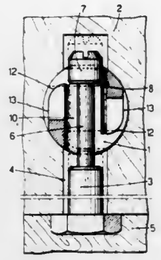
1. A mounting device for mounting a machine element having a cylindrical bore coaxially on a shaft having a cylindrical surface, said device comprising a segmented inner sleeve encircling the shaft, said inner sleeve comprising an integral member having a straight cylindrical interior bore corresponding in diameter to the external cylindrical surface of said shaft and having a tapered external surface, the segments of said inner sleeve providing a plurality of terminated axial slots extending longitudinally of said sleeve each extending from an end of the sleeve and terminating short of the other end, and a single axial through slot extending from end to end of the sleeve to permit contraction and expansion of said interior bore, said device also comprising a segmented outer sleeve encircling said inner sleeve, said outer sleeve having a tapered internal surface corresponding in angle of taper to the tapered external surface of said inner sleeve and having a straight cylindrical outer surface corresponding in diameter to the cylindrical bore of said machine element, said segmented outer sleeve comprising a plurality of separate separable segments, one end of said inner sleeve having external threads, the corresponding end of said outer sleeve having circumferential interlock means providing opposed forward and rearward radial surfaces substantially perpendicular to the central axis of said shaft, and a clamping nut threadedly engaged with the threaded end of said inner sleeve, said nut having cooperating circumferential interlock means defining opposed forward and rearward drive surfaces confronting the corresponding surfaces of the interlock means of said outer sleeve, whereby upon rotation of said nut in one direction, the forward surfaces of the respective interlock means engage and effect relative axial displacement of said sleeves in one direction, and upon rotation of said nut in the opposite direction, the rearward surfaces of the respective interlock means engage and effect relative axial displacement of said sleeves in the opposite direction, said displacements causing said tapered surfaces to expand and contract the interior bore and to contract and expand the exterior surface of said outer sleeve.

4,202,645

READILY RELEASABLE CLAMPING CONNECTOR

Fiorello Giovannetti, Via Marciano 4, Milano, Italy

Filed Nov. 7, 1978, Ser. No. 958,205
Claims priority, application Italy, Nov. 10, 1977, 22696/77[U]
Int. Cl.² B25G *3/00*; F16B *7/02*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—407 **7 Claims**



1. A device for releasably clamping a first part and a second part tightly together comprising:

a first member comprising a one-piece cylindrical body accommodated within a circular opening in one of the parts to be connected for rotation about an axis;

a second member comprising a protruding member secured to project from the other part;

said protruding member having a reduced diameter shank portion and an enlarged head end portion defining a shoulder facing the shank portion;

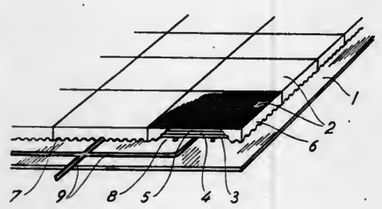
said one-piece cylindrical body having a through hole extending transverse to the rotation axis for receiving therethrough said shank and head end portions of said protruding member, said hole having a diameter at least equal to the diameter of said head end portion; a pair of opposing arcuate slits whose centerlines lie in a plane transverse to the rotation axis, said slits having a sufficient width to accommodate said shank portion and formed in opposite directions each from one end of said hole; at least one cam surface circumferentially extending from inside of the body towards a side surface of the body along an edge of at least one of said slits, said at least one cam surface cooperating with said shoulder to releasably clamp said protruding member.

4,202,646

HELICOPTER LANDING PLATFORM

Oystein Herstad, Vemorkveien, 4300 Sandnes, Norway

Filed Sep. 11, 1978, Ser. No. 941,132
Int. Cl.² E01C *9/10*
U.S. Cl. 404—36 **3 Claims**



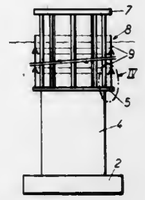
1. A helicopter landing platform, comprising a grid structure disposed above a level surface and resting on said surface by means of a supporting framework, thereby to create a space between the grid structure and said surface, and means in said space for introducing a fire extinguishing substance into said space, said grid structure comprising a fine mesh grid structure which rests on a coarse mesh grid structure.

4,202,647

BUOYANT BASE FOR MARINE PLATFORMS

Jacques E. Lamy, 6 rue d'Estienne d'Orves, Fontenay-Aux-Roses, France (92260)

Continuation of Ser. No. 771,342, Feb. 23, 1977, abandoned. This application May 25, 1978, Ser. No. 909,682
Claims priority, application France, Mar. 22, 1976, 76 08181
Int. Cl.² F02B *17/00*
U.S. Cl. 405—203 **19 Claims**



1. A method for transporting a marine platform structure from a land-like site to a deep water location, comprising the steps of:

a. initially constructing on said land-like site said marine platform structure comprising a base adapted to be secured to the underwater site, said base including a horizontal upper surface, a plurality of structural vertical columns forming an open structure which extends from said base upper surface for supporting said platform thereon;

b. temporarily rendering said base buoyant for towing by securing a plurality of removable elements about said structural members to form a continuous, watertight wall which cooperates with said base, said removable elements comprise panels which engage said base upper surface and extend upwardly to a distance above the water level;

c. towing the resulting buoyant structure over water to a preselected location where the platform structure is to be positioned;

d. immersing the support structure below the water level; and

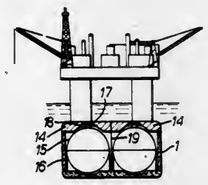
e. removing the panels from the support structure.

4,202,648

FLOATING PLANT FOR OFFSHORE LIQUEFACTION, TEMPORARY STORAGE AND LOADING OF LNG

Rolf Kvamsdal, Moss, Norway, assignor to Moss Rosenberg Verft A/S, Moss, Norway

Filed Aug. 28, 1978, Ser. No. 937,094
Claims priority, application Norway, Sep. 6, 1977, 773076
Int. Cl.² B63B *35/44*
U.S. Cl. 405—210 **6 Claims**



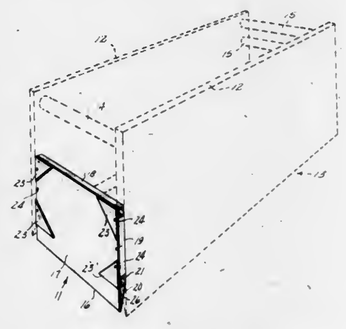
1. In a floating plant for off-shore storage and loading of LNG, the combination of, a submerged module positioned below the surface of the water, an exposed module positioned directly above said submerged module and above the surface of the water, rigid column means interconnecting said modules and supporting said exposed module upon said submerged module, LNG handling facilities mounted upon said exposed module, said submerged module having a plurality of compartments, a plurality of spherical storage tanks for LNG which correspond in number with the number of said compartments and are positioned respectively in said compartments, vertical skirt means comprising a cylindrical skirt substantially surrounding the lower hemisphere of each of said tanks with each of said tanks being supported thereby at substantially its horizontal equator, and means anchoring said submerged module to the sea floor whereby said submerged module is held in stable condition, and said submerged module has sufficient buoyancy to support the entire structure of said exposed module and said column means, with said exposed module being supported thereby above the zone of the surface of the water, and said column means extending throughout a predetermined zone above and below the surface of the water.

4,202,649

FRONT PLATE FOR TRENCH BOXES

John B. Cook, and Melvin Pike, both of East Lansing, Mich., assignors to Efficiency Production, Inc., Okemos, Mich.

Filed Dec. 4, 1978, Ser. No. 965,985
Int. Cl.² E21D *5/00*
U.S. Cl. 405—282 **4 Claims**



1. A front plate for trench boxes for location between a pair of elongate trench box panels at one end thereof and transverse between said panels, the combination including:

an upper horizontal structural shape member;

a lower horizontal structural shape member;

a plurality of vertical structural members between said horizontal structural members and against which said vertical structural members bear;

a plurality of triangularly shaped gusset members in spaced apart registry secured and depending from to the lower edge of said lower horizontal member;

an outer skin secured to said horizontal, said vertical and said gusset members in a plane relation and extending to the lowermost apex of said gusset member; and

a closure plate closing on said gusset members and connecting with said lower horizontal member and said outer skin at the bottom thereof.

4,202,650

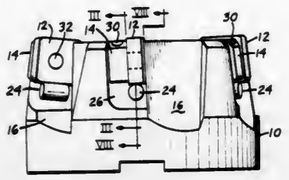
SHIM LOCK TOOLHOLDER

Robert A. Erickson, Ligonier, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Oct. 13, 1978, Ser. No. 951,022
Int. Cl.² B26D *1/12*
U.S. Cl. 407—46 **4 Claims**

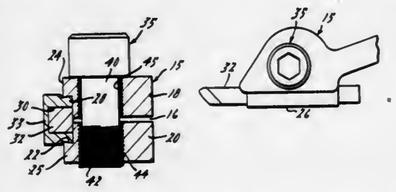
1. In a cutter: a cutter body having at least one recess extending inwardly of the periphery thereof, said recess having an inwardly extending back wall and a front wall parallel thereto; said back and front walls defining a bottom to said recess

therebetween; a shim disposed in said recess and having a back side abutting said back wall thereof and being supported thereby, said shim having a front side substantially parallel to said back side; said shim having a protuberance extending from the front side thereof for engagement with a center hole on an



insert; an insert support pin extending transversely through said bottom wall and located adjacent said front wall so as to firmly abut a side of a cutting insert; and means for simultaneously moving said shim toward said bottom wall and toward said pin so that the cutting insert can be firmly clamped between the shim, the bottom wall and said pin.

4,202,651
LATHE TOOL HOLDER
William A. St. Jean, 20881 Avon La., Southfield, Mich. 48075
Filed Oct. 30, 1978, Ser. No. 955,657
Int. Cl.[2] B26D *1/00*
U.S. Cl. 407—91 4 Claims



1. A tool holder for lathes and the like comprising a body having a supporting arm adapted to be mounted in a tool post or the like and having an outer end bifurcated to define a pair of coacting resilient clamping arms movable toward each other by a compressive force exerted perpendicular to the plane of bifurcation, each of said clamping arms having an orifice extending entirely therethrough in a direction perpendicular to said plane, said orifices being coaxial, the clamping arms being of like thickness in a direction parallel to the axis of said orifices, characterized in that

A. both of said orifices have internal threads of like form and diameter

B. the threads in the two clamping arms lie on the same nominal helix

C. a clamping screw for said clamping arms is provided with a wrenchable head, a shank, and a screw portion at the end of the shank remote from the head and adapted to threadably engage the threads in said clamping arms

a. the shank joining the screw portion to the head and being of a diameter less than the minimum diameter of said internal threads in the clamping arms

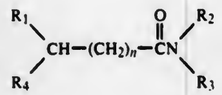
b. the shank being of a length which slightly exceeds the thickness of one of said clamping arms.

4,202,652
CAPILLARY TYPE INK
Phillip E. Sokol, Rockville, Md., assignor to The Gillette Company, Boston, Mass.
Filed Nov. 30, 1977, Ser. No. 855,946
Int. Cl.[2] B43K *8/02*
U.S. Cl. 401—196 9 Claims

1. A writing system comprising a capillary type writing instrument charged with an aqueous solution containing:

(a) from about 0.5% to about 15% by weight of a water soluble dye; and

(b) from about 1% to about 25% of an amide of the formula



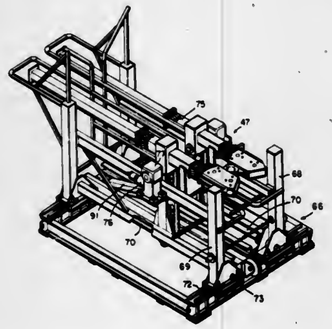
wherein

R_1 is —H, $—CH_3$, or $—NH_2$ when R_2 is $—(CH_2)_2OH$ and R_3 is —H or $—(CH_2)_2OH$, and $—NH_2$ when R_2 and R_3 are —H,

R_4 is —H, $—CH_3$, or $—NH_2$, and

n is 0, 1, or 2.

4,202,653
PIPE HANDLING APPARATUS
Walter H. Moller, Bellevue, Wash., assignor to Western Gear Corporation, Everett, Wash.
Division of Ser. No. 682,052, Apr. 30, 1976, Pat. No. 4,129,221.
This application Jun. 27, 1978, Ser. No. 919,672
Int. Cl.[2] B65G *47/90*
U.S. Cl. 414—22 13 Claims



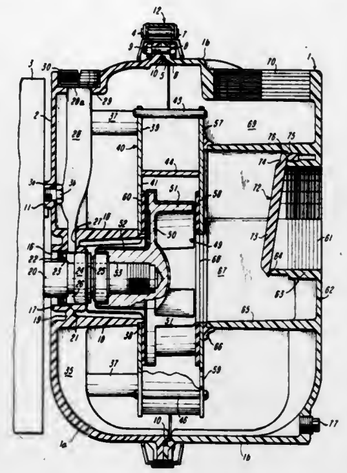
1. A modular stabber for moving the end of a pipe to or from a well hole axis along a longitudinal path comprising:

a base frame,

transversely spaced upright support means each forming part of a side frame, each of said side frames being in a side-by-side relation to each other and being movably mounted on said base frame,

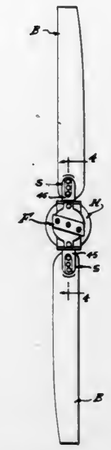
means for moving both said support means transversely equal amounts for adjusting the spacing between said side frames, longitudinally extendible pipe grabbing means on said side frames for positioning the pipe, and means for moving said longitudinally extending pipe grabbing means relative to said side frames to move the end of a pipe to and from the well hole axis.

4,202,654
WEAR RESISTANT SELF LUBRICATING CENTRIFUGAL PUMP
Alfred S. Marlow, 274 Robindale Dr., Leola, Pa. 17540
Filed Dec. 29, 1976, Ser. No. 755,253
Int. Cl.[2] F01D *11/00, 5/14*
U.S. Cl. 415—113 18 Claims



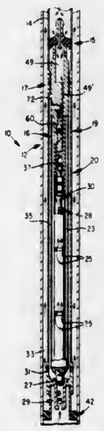
1. A pump particularly advantageous for use in evacuating liquids and solids from a given location, comprising a housing having an inlet thereto and an outlet therefrom, an impeller within said housing, said housing having an opening accommodating the projection therein of a drive shaft arranged to mount said impeller interiorly of said housing, means defining a flow passage through said housing one end of which includes said inlet and the other said outlet, said impeller being positioned within and intermediately of the ends of said flow passage, a volute shaped structure contained between plate-like elements which form therewith a part of said flow passage, said volute shaped structure being positioned about and in encompassing relation to a peripheral portion of said impeller which is contained between said plate-like elements, said volute structure having a spiral configuration which opens to an exit chamber defined in said housing, a wall segment of which exit chamber includes said housing outlet, one of said plate-like elements having an opening therein which is in direct communication with said housing inlet, said impeller embodying vanes positioning peripherally about said plate opening whereby on drive of said impeller to induce an inflow of liquids and solids to said impeller by way of said housing inlet, the said vanes of said impeller being positioned to be operative to direct materials received thereby in a sense peripherally thereof, under pressure, to exit, by way of said volute structure, to said exit chamber, the means defining said opening accommodating said drive shaft also accommodating sealing means which position about said drive shaft, means being provided within said exit chamber to store a supply of lubricant and to place the same in open communication with said drive shaft and the sealing means thereabout, said lubricant storing means including a peripheral wall a portion of which is resilient and flexible and exposed to the flow of liquids and/or solids moved to and through said exit chamber and from said housing by way of said outlet, the pressure applied to move said liquids and/or solids being thereby applied directly to said resilient flexible portion of said lubricant storing means whereby to produce an automatic lubrication of said shaft and the sealing means embodied in association therewith.

4,202,655
PROPELLER FAN BLADING AND HUB THEREFOR
Ralph P. Maloof, 4527 Pk. Monaco, Calabasas, Calif. 91302
Filed Jun. 10, 1977, Ser. No. 805,283
Int. Cl.[2] B64C *11/18*
U.S. Cl. 416—237 23 Claims



1. A propeller-fan blade formed of an elongated uniform cross section and comprised of, front and back cambers of uniform curvature, said front camber being retained from the blade root to the blade tip, and said back camber being truncated by a first flat back face tapered with respect to said front camber of the blade from the blade root toward the blade tip.

4,202,656
DOWNHOLE HYDRAULICALLY ACTUATED PUMP WITH JET BOOST
George K. Roeder, P.O. Box 4335, Odessa, Tex. 79760
Filed Oct. 17, 1977, Ser. No. 842,390
Int. Cl.[2] F04F *5/54*
U.S. Cl. 417—88 2 Claims



1. A downhole hydraulically actuated pump assembly for lifting fluid from a borehole, a power tubing means connected to supply power fluid to the pump assembly, a formation fluid inlet means connected to supply formation fluid to the pump assembly, and a produced fluid flow path connected to the pump assembly through which produced and spent power fluid flows to the surface of the ground;

said pump assembly includes a jet pump having a high pres-

sure inlet, a lower pressure intake, and an exhaust, a double acting engine end, a control valve assembly, and a double acting production end;

said production end includes pistons reciprocatingly received in a cylinder thereof with production valve means connected to receive a flow of formation fluid thereinto and to force the produced fluid to substantially continuously flow towards said intake of said jet pump;

means connecting said engine end to actuate said pump end, said engine end having a power fluid inlet and a spent power fluid outlet, and a piston means reciprocatingly received within a working cylinder, means connecting said engine piston to actuate said pump piston;

means by which said control valve assembly conducts power fluid to and spent power fluid from said engine to cause the engine piston to reciprocate;

means connecting a source of high pressure fluid to said high pressure inlet of said jet pump, means connecting a source of produced fluid to said intake of said jet pump such that energy is extracted from the high pressure fluid in order to boost the flow of produced fluid up the produced fluid flow path;

said jet pump is mounted above said control valve means, while said engine end is interposed between said production end and said control valve means;

said jet pump has the high pressure inlet thereof connected to the spent power fluid flowing from said control valve assembly while the produced fluid from the production end is connected to the low pressure inlet of the jet pump;

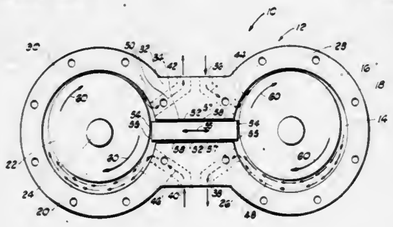
so that the produced fluid and the spent power fluid is admixed within the jet pump as the flow of the produced fluid is boosted.

4,202,657

FLUID PUMP

John E. Kice, Wichita, Kans., assignor to K-B Engineering Co., Wichita, Kans.

Filed Nov. 4, 1975, Ser. No. 628,740
Int. Cl.² F04C *17/00, 29/00*
U.S. Cl. 418—208 **5 Claims**



1. A fluid pump for compressing fluid therein, the pump comprising:

a pump housing having a first end portion, a second end portion and a center portion;

a first cylindrical chamber in the first end portion of said housing;

a first cylindrical eccentric rotor positioned in said first chamber and rotatably attached to said housing;

a first intake port in the center portion of said housing and connected to said first chamber;

a first discharge port on the center portion of said housing and connected to said first chamber;

a second cylindrical chamber in the second end portion of said housing and parallel to said first chamber;

a second cylindrical eccentric rotor positoned in said second chamber and rotatably attached to said housing;

a second intake port in the center portion of said housing and connected to said second chamber;

a second discharge port in the center portion of said housing and connected to said second chamber;

an angular shaped guideway in the center portion of said housing and therethrough, said guideway interconnecting said first chamber and said second chamber;

a rectangular shaped floating block slidably received in said guideway, the ends of said block disposed adjacent a portion of the cylindrical surface of said first and said second rotors as said rotors rotate in said chambers, the sides of said block disposed adjacent said guideway, the width of said guideway sufficient to provide clearance between the sides of said block and said guideway so that in operation the pressure differential between said first chamber and said second chamber provides fluid pressure between the sides of said block and said guideway thereby providing a fluid bearing therebetween; and

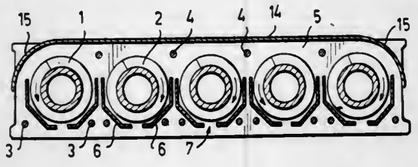
drive means for rotating said first and second rotors in said first and second chambers.

4,202,658

GLIDE-CASTING MACHINE FOR THE MANUFACTURING OF HOLLOW SLABS AND EQUIVALENT

Esko M. Ahonen, Viiala, Finland, assignor to Paraisten Kalkki Oy-Pargas Kalk AB, Parainen, Finland

Filed Jul. 13, 1978, Ser. No. 924,438
Claims priority, application Finland, Aug. 10, 1977, 772406
Int. Cl.² B29B *1/04*
U.S. Cl. 425—64 **14 Claims**



1. A glide-casting machine for the manufacturing of hollow slabs and equivalent, which machine is movable in relation to a casting base and which comprises:

means for feeding concrete mix;

at least two screw feeders;

vibrator sleeves constituting extension of each screw feeder;

external vibrating means;

two guide plates in connection with each screw feeder, arranged at least substantially parallel to the axis of the corresponding screw feeder, said guide plates at least partly following the shape of the corresponding screw feeder in the bottom portion thereof, said guide plates further defining between themselves an elongated space at least substantially parallel to the axis of the screw feeder so as to allow concrete mix to fall straight onto the base at least on a substantial portion of the length of the screw feeder; and

flow plates which follow at least the shape of the outermost screw feeders from above and from the sides.

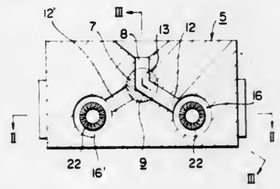
4,202,659

DEVICE FOR CHANGING A WIRE NETTING IN A FILTER DEVICE FOR SYNTHETIC RESINS

Tomoo Kinoshita, Tokyo, Japan, assignor to Nihon Repro Machine Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1978, Ser. No. 876,143
Claims priority, application Japan, Mar. 15, 1977, 52/27589
Int. Cl.² B29F *3/00*
U.S. Cl. 425—183 **2 Claims**

1. A device for changing a wire netting in a filter device for synthetic resins comprising a die body fixed in contact with an exhaust port of an extruding machine, said die body having a first hole for change drilled therein, a guide inlet communicating with said first hole for change and said exhaust port, a pair of second holes for screening drilled in said die body respectively at both sides of said hole for change, a pair of guiding passages respectively communicating with said pair of second holes for screening, a pair of exhaust guide ways respectively communicating with said pair of second holes, a pair of valve sliding ways respectively having a larger diameter than those of said pair of exhaust guide ways and respectively communicating with said pair of exhaust guide ways and an exhaust port one end of which is opened and the other end of which communicates with a center and connecting portion of said pair of valve sliding ways, a valve for changing flow which has a guide opening through which said guide inlet communicates



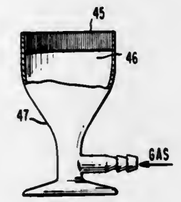
with one of said pair of guide passages, said valve for changing flow being inserted into the hole for change and free to rotate therein, a cylinder strainer surrounded by a wire netting respectively inserted into said pair of second holes for screening, and a choke valve, movable in response to the movement of said valve for changing flow, inserted into the pair of valve sliding ways and free to slide therein wherein each of said valve sliding ways includes a longitudinal clearance seat for guiding resins from one of said valve sliding ways into said exhaust port when said choke valve enters said one of said valve sliding ways.

4,202,660

GLASS-CERAMIC ARTICLE AND METHOD OF MAKING SAME

Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 650,995, Jan. 21, 1976, which is a continuation of Ser. No. 146,665, May 25, 1971, abandoned, which is a continuation-in-part of Ser. No. 30,859, Apr. 22, 1970, abandoned. This application Mar. 29, 1977, Ser. No. 782,590
Int. Cl.² A21D *4/00*
U.S. Cl. 431—328 **3 Claims**



1. A burner for burning a gaseous fuel, said burner terminating in a burner grid comprising a matrix of integrally fused tubes forming a series of smooth, longitudinal, parallel passageways therethrough, wherein the walls defining said passageways

(1) have essentially zero porosity,

(2) consist essentially of an inorganic crystalline oxide glass-ceramic material,

(3) have an average coefficient of lineal thermal expansion of about -2 to $+12\times10^{-7}$/°C. (0°-300° C.),

(4) a thermal conductivity at 400° C. of less than 0.01 cal/cm/sec/cm²/°C.,

wherein the inner diameter of said passageways is at least 3 times the wall thickness through portions of said walls common to adjacent fused tubes and wherein the matrix has an open frontal cross-sectional area of at least 60%.

4,202,661

JET IMPLEMENT RADIATION FURNACE, METHOD AND APPARATUS

Lazaros J. Lazaridis, Lincoln; Gabor Miskolczy, Carlisle, both of Mass., and Paul K. Shefsiek, Farmington, Mich., assignors to Thermo Electron Corporation, Waltham, Mass.

Continuation of Ser. No. 882,166, Mar. 1, 1978, abandoned, which is a continuation of Ser. No. 751,410, Dec. 16, 1976, abandoned. This application Feb. 14, 1979, Ser. No. 11,981
Int. Cl.² F27B *9/02*
U.S. Cl. 432—8 **8 Claims**



1. The method of heating flat strip stock comprising the steps of:

supporting the stock in a furnace chamber below combustion chamber means and separated therefrom by an array of flat refractory plates lying in a common plane, said plates having a plurality of apertures therethrough of substantially equal size perpendicular to said common plane and distributed substantially evenly across said plates;

producing essentially complete combustion in the combustion chamber means for heating the array of plates to radiance at a temperature above approximately 1200° F.;

directing a flow of combustion products from said combustion chamber means through the apertures in the plates as uniform, discrete jets;

producing a pressure drop across said plates of sufficient magnitude that the jets are turbulent after emerging from the apertures in the plates;

positioning the stock in the furnace chamber such that a horizontal surface thereof confronts the plates, said horizontal surface being positioned in the zone of maximum turbulence of said jets; and

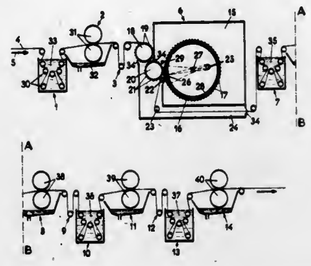
continuously advancing the flat strip stock through the furnace chamber whereby said stock is heated simultaneously by convection from direct contact with said turbulent jets and by radiation from said plates, said convection and said radiation each contributing a substantial fraction of the total heat transferred to the stock.

4,202,662

PHOTOGRAPHIC PRINTING PROCESS, AND COMPOSITION AND DEVICE FOR USE THEREIN

Robert Boucher, Route du Bois de Nefles, Ile de la Reunion, 97490 Sainte-Clotilde, France, and André Foulquier-Gazagnes, Papeete, French Polynesia

Continuation of Ser. No. 562,976, Mar. 28, 1976, abandoned.
This application Jan. 26, 1978, Ser. No. 872,547
Claims priority, application France, Aug. 3, 1974, 74 11761
Int. Cl.[2] D06P *5/20*
U.S. Cl. 8—444 8 Claims



1. A method of photodyeing a natural or synthetic fiber which comprises:

(a) impregnating a dyeable support of said natural or synthetic fiber with an aqueous photosensitive composition comprising a leuco ester of a vat dyestuff, an acid-generating substance and a catalyst selected from the group consisting of ammonium vanadate or meta vanadate; and

(b) exposing to actinic light the moist inpregnated dyeable support.

4,202,663

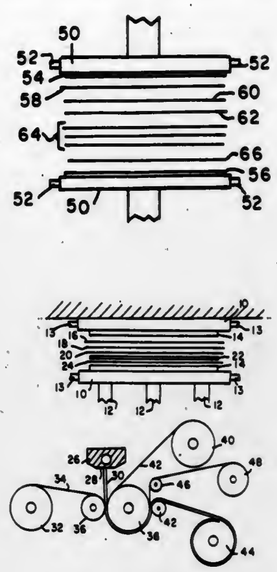
METHOD OF DYE ABSORPTION INTO THE SURFACE OF PLASTIC

John M. Haigh, deceased, late of Baton Rouge, La., and by Joyce E. Quinlan, administrator, 10421 Londonridge Ct., Cincinnati, Ohio 45252

Division of Ser. No. 540,383, Jan. 13, 1975, Pat. No. 4,059,471.
This application Sep. 6, 1977, Ser. No. 830,642
The portion of the term of this patent subsequent to Jan. 14, 1992, has been disclaimed.
Int. Cl.[2] D06P *5/00, 5/20, 1/16, 3/76*
U.S. Cl. 8—471 7 Claims

1. A method for rapid and continuous transfer of dye patterns to at least one plastic dye receptor comprising contacting a dye transfer web and a polyolefin dye carrier web in close contact; contacting the other side of said dye carrier web with said dye receptor and passing the same to a heat and pressure zone, applying heat and pressure thereto sufficient to releasably bond said dye receptor and said webs together in a tri-laminate; passing said tri-laminate from said pressure zone into a post-pressure heating zone which is heated to a temperature sufficient to sublime the dyes from said dye transfer web through said dye carrier web and into the surface of said dye receptor, cooling said tri-laminate below the softening temperatures of the components thereof and separating said webs from said decorated dye receptor.

4. A method for rapid transfer of dye patterns to a plastic article comprising contacting a dye transfer web surmounted by a polyolefin carrier web with the surface of said plastic article, applying sufficient heat and pressure in a heat and pressure zone to releasably bond said webs to said article in a tri-laminate; releasing said pressure and applying heat to said tri-laminate while still in said zone sufficient to sublime the dyes from said dye transfer web through said dye carrier web and into the adjacent surface of said article to decorate and penetrate the same, cooling the tri-laminate to cool the components thereof below their softening temperatures and separating said webs from said article.

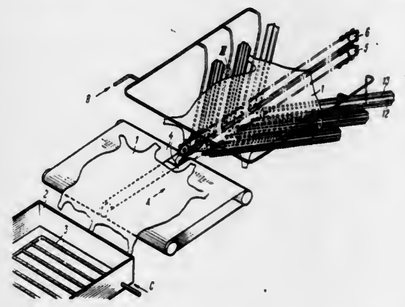


4,202,664

METHOD FOR CLEANSING CATTLE HIDES AND APPARATUS FOR REALIZING SAME

Natan M. Gimelfarb, ulitsa Pervomaiskaya, 67, kv. 67; Fedor T. Lugovnev, ulitsa Mayakovskogo, 40, kv. 18, and Nikolai E. Misjura, pereulok Treugolny, 13, all of Mogilev, U.S.S.R.

Filed Nov. 30, 1977, Ser. No. 855,981
Int. Cl.[2] C14C *1/00;* D01C *1/00*
U.S. Cl. 8—94.15 7 Claims



1. A method for cleansing hair covered hides comprising the steps of:

fixing a hide for movement and moving the hide substantially along its axis of symmetry;

simultaneously irrigating the hide and carding the hide's hair covering while the hide is moving along its axis of symmetry, thereby washing the hide and soaking while simultaneously removing foreign material adhering to the hair side of the hide; and

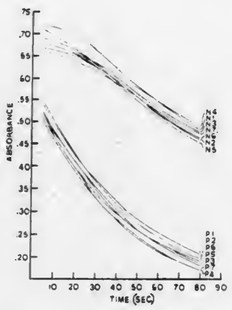
removing surface moisture from the hide.

4,202,665

DETECTION OF HEPATITIS B SURFACE ANTIGEN

Barry Wenz, White Plains; Arthur Karmen, Manhasset, and Chi Shun Feng, Yonkers, all of N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University a Division of Yeshiva University, Bronx, N.Y.

Filed Nov. 6, 1978, Ser. No. 957,749
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **28 Claims**



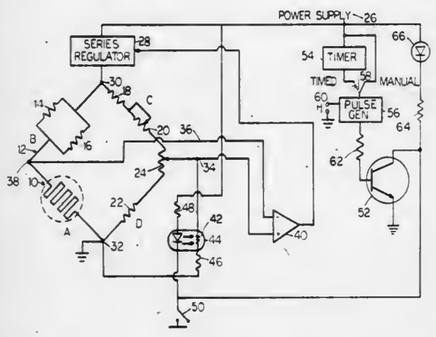
1. A method for the detection of hepatitis antigen in a fluid specimen comprising:
(a) feeding a fluid reagent containing a solid support having an antibody and a specimen containing an antigen specific to the antibody to a centrifuge
(b) accelerating the centrifuge to combine the specimen and the reagent; and
(c) measuring the rate of change in light absorbance caused by the motion of the solid phase support in a centrifugal field.

4,202,666

METHOD AND APPARATUS FOR PREVENTING THE DESTRUCTION OF AN ALKALI SOURCE OF A NITROGEN-PHOSPHOROUS DETECTOR

Randall C. Hall, Round Rock, and Burney J. Ehrlich, Austin, both of Tex., assignors to Tracor, Inc., Austin, Tex.

Filed Feb. 24, 1978, Ser. No. 880,974
Int. Cl.² G01N *27/62, 31/08*
U.S. Cl. 23—232 E **9 Claims**



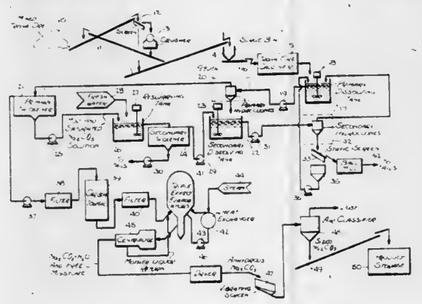
1. In a method of chromatographic analysis utilizing an alkali sensitized ionization detector, the steps of:
reducing the temperature of the alkali source from a first, elevated temperature at which active analysis is performed to a second, lower temperature that is below the temperature at which reactive substances would react with the source, but is above the temperature at which condensation of non-volatile materials on the source occurs,
said reduction in temperature being made during the time that reactive substances are passing through the detector; and
restoring the source temperature to the elevated temperature after the reactive substances have been eluted.

4,202,667

PROCESS FOR THE SEPARATION OF INSOLUBLE MATERIALS IN THE PRODUCTION OF SODA ASH

Edward H. Conroy, Green River, Wyo.; Arthur Gloster, New York, N.Y., and James A. King, Green River, Wyo., assignors to Texasgulf Inc., Stamford, Conn.

Continuation of Ser. No. 835,697, Sep. 20, 1977, abandoned. This application Aug. 16, 1978, Ser. No. 934,020
Int. Cl.² B01D *9/02*
U.S. Cl. 23—302 T **4 Claims**



1. In a process for the production of soda ash from trona by the normal monohydrate process including the steps of calcining said trona to form a mixture of sodium carbonate and insoluble impurities, forming an initial aqueous solution of said carbonate containing a slurry of said impurities, separating said impurities from said sodium carbonate solution to form a purified solution, crystallizing sodium carbonate monohydrate from said purified solution and drying such crystals to form soda ash, the improvement comprising subjecting said initial solution to a first hydrocyclone separation step to provide a first overflow containing dissolved sodium carbonate and relatively fine insoluble impurities and a first underflow containing dissolved sodium carbonate and relatively coarse insoluble impurities, subjecting said first overflow successively to thickening, filtration, color removal, filtration, crystallization and drying steps to provide a soda ash product, and adding said first underflow to an aqueous medium to form a second slurry and then subjecting said second slurry to a second hydrocyclone separation step to provide a second overflow and a second underflow, recycling said second overflow to said initial aqueous solution, and subjecting said second underflow to a screening step to provide a screen oversize fraction which is discarded and a screen undersize which is recycled to said initial aqueous solution.

4,202,668

GELLED FUEL SIMULANT

Nathan J. Sippel, Ridgecrest; Earl J. Hiser, China Lake, and John Christy, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 15, 1970, Ser. No. 64,153
Int. Cl.² C10L *7/00*
U.S. Cl. 44—7 A **2 Claims**

1. An inert simulant formulation for metallized gelled fuel composition comprising an admixture of about 30 to 40 percent by weight hydrocarbon fuel selected from the group consisting of kerosene, aviation gasoline, white gasoline, toluene, and benzene, about 60% by weight aluminum powder, about 1-2% by weight silicon dioxide, and from 0.4 to 5% by weight napalm powder to simulate a density of from about 1.4 to 1.5

grams/cc, a viscosity of about 150 centipoises at shear rate of 10^4 sec^{-1} at 77° F. and ability to flow at −65° F.

4,202,669

FIRE-LIGHTERS

Andrew C. Ball, Tunstead Farm, Tunstead La., Greenfield, Saddleworth, Near Oldham, Lancashire, England

Filed Apr. 28, 1976, Ser. No. 680,999
Claims priority, application United Kingdom, Apr. 30, 1975, 18095/75; Jul. 11, 9175, 29313/75; Jan. 8, 1976, 596/76
Int. Cl.² C10L *11/00*
U.S. Cl. 44—40 **5 Claims**

1. A method of manufacturing a fire-lighter, comprising the steps of forming a combustible envelope of an air-impervious, flexible material, inserting a combustible material in fluid form into said envelope, said combustible material being settable and including an odoriferous fuel capable of being transferred from the surface of said combustible material during handling, sealing said envelope, and allowing said combustible material to set, whereby the fire-lighter may be handled and placed in position in a fire without dirtying the hands or releasing the odour of the fire-lighter.

4,202,670

METHOD FOR PREVENTING SEDIMENTATION OF FINELY POWDERED COAL IN COLLOIDAL FUEL

Tetsuya Tateishi, Higashi-Murayama, Japan, assignor to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Sep. 25, 1978, Ser. No. 945,102
Claims priority, application Japan, Sep. 29, 1977, 52-117009
Int. Cl.² C10L *1/32*
U.S. Cl. 44—51 **2 Claims**

1. A method for preventing sedimentation of finely powdered coal in a colloidal fuel comprised of the finely powdered coal dispersed in heavy oil and containing a minor amount of water, comprising the steps of immersing insulated electrodes in the colloidal fuel and applying an electric potential of 500 V to 1000 V thereto to create an electric field substantially free of sparks in the colloidal fuel and thereby increasing the viscosity of the colloidal fuel owing to the electroviscous effect brought about by the electric field.

4,202,671

FUEL CONDITIONER

Richard C. Diehl, Shingle Springs, Calif., and Jerry L. Walker, Coraopolis, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Jul. 21, 1978, Ser. No. 926,692
Int. Cl.² C10L *1/30*
U.S. Cl. 44—68 **3 Claims**

1. A fuel oil conditioning composition consisting essentially of from 0.1 to 10 parts by weight of at least one organic magnesium compound selected from the group consiting of magnesium sulfonates and magnesium carbonates per part by weight of at least one organic manganese salt of mixed aliphatic acids.

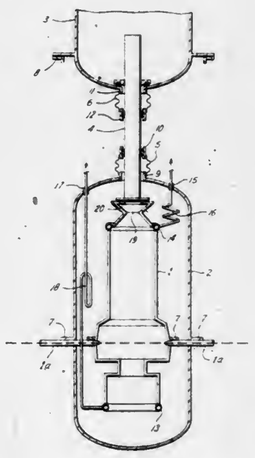
4,202,672

APPARATUS FOR GASIFICATION OF FINELY DIVIDED FUEL

Pieter J. Schuurman, The Hague, Netherlands, assignor to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Nov. 25, 1977, Ser. No. 854,650
Claims priority, application United Kingdom, Dec. 24, 1976, 54037/76
Int. Cl.² C10J *3/86*
U.S. Cl. 48—77 **2 Claims**

1. In an apparatus for gasification of finely divided fuels in suspension by reaction with oxygen-containing gases at elevated pressure comprising a gasification chamber having combustors therein on a common center line and being contained in an outer pressure shell and a tubular quench section on top of said gasification chamber and penetrating into a superposed waste heat boiler, wherein said gasification chamber and said pressure shell have a common fixed support at the level of the center line of said combustors and said waste heat boiler has a fixed support near the bottom thereof, said gasification chamber, said pressure shell, said tubular quench section and said waste heat boiler being in axial alignment, the improvement comprising:
(a) heat expansion means to absorb relative thermal expansion differences provided in a tubular part of said pressure shell surrounding said quench section and connected with said quench section;



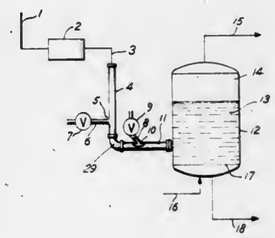
(b) further heat expansion means to absorb thermal expansion differences between said waste heat boiler and common thermal expansion of said gasification chamber and said intermediate quench section provided in a tubular part at the bottom of said waste heat boiler surrounding said quench section and connected with said quench section;
(c) each of said heat expansion means comprising longitudinally elastic elements of tubular parts of said pressure shell and said waste heat boiler, respectively, formed by corrugated bellow type sections of said tubular parts.

4,202,673

COAL CONVERSION APPARATUS

Ted M. Knowlton, Hinsdale, Ill., assignor to Gas Research Institute, Chicago, Ill.

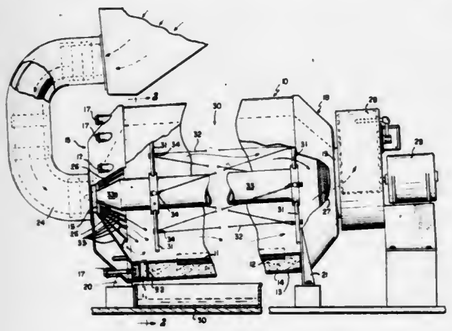
Continuation-in-part of Ser. No. 799,196, May 23, 1977, abandoned. This application Aug. 17, 1978, Ser. No. 934,515
Int. Cl.² C10J *3/50*; B65G *53/42*
U.S. Cl. 48—86 R **4 Claims**



1. An apparatus for the conversion of finely divided solid coal particles into gaseous products which comprise, in combination:

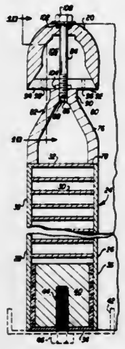
(i) a fluidized bed coal gasification reactor adapted to maintain a fluidized bed of coal particles in the bottom portion thereof;
(ii) a substantially vertical conduit having an upper end and a bottom end, said conduit adapted to receive said finely divided solid coal particles in the upper end thereof;
(iii) a substantially horizontal conduit, one end thereof communicating with the bottom end of said vertical conduit and the other end thereof adapted to discharge said coal particles from the horizontal conduit into the bottom fluidized bed portion of the reactor;
(iv) said communicating vertical and horizontal conduits positioned to provide a generally continuous, unrestricted L-shaped flow path therethrough characterized by the absence of discontinuities in the flow path;
(v) means for introducing a gas directly into the bottom portion of said vertical conduit at a point above the bottom end of said vertical conduit and upstream from where the vertical conduit communicates with said horizontal conduit;
(vi) means for controlling the flow rate of the gas introduced into said vertical conduit;
(vii) said vertical and horizontal conduits providing said continuous, unrestricted L-shaped flow path further characterized as having dimensions sufficient to prevent said solid coal particles from flowing from the vertical conduit in the absence of the introduction of said gas into said vertical conduit by causing said particles to assume an angle of repose on said horizontal conduit; and
(viii) means for separately introducing a second gas stream directly into the top portion only of said unrestricted horizontal conduit to minimize agglomeration of said coal particles therein by removing said particles from said horizontal conduit when said angle of repose is formed, said introduction means being positioned upstream of the discharge end of the horizontal conduit.

4,202,674
ELECTROSTATIC GAS CLEANER
Phillip R. Rodenberger, and William A. Smith, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.
Filed Sep. 15, 1978, Ser. No. 942,763
Int. Cl.² B03C *3/14, 3/41, 3/74*
U.S. Cl. 55—108 **11 Claims**



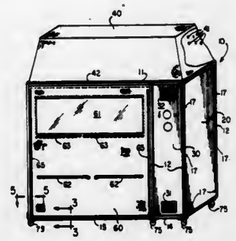
1. An electrostatic gas cleaner, comprising
an electrically grounded cylindrical wall forming a large open flow path for gas to be cleaned having an inlet at one end and an outlet at the other end,
a removable electrode carrier positioned within the cylindrical wall and including a central tubular support having a plurality of projecting rods of electrically non-conductive material at each end of the central tubular support to engage the cylindrical wall and support the electrode carrier coaxially within the cylindrical wall,
a wire electrode connected to the plurality of projecting rods, said wire electrode being fastened adjacent the center of each of the projecting rods and strung between the rods at each end of the central tubular support in a cylindrical array,
an inlet closure having an inlet opening and including a plurality of gas distributing vanes positioned at the inlet end of the large open flow path,
an exhaust closure having an exhaust opening at the outlet end of the large open flow path means connected to the exhaust closure for urging gas through said cleaner, and
means to charge the wire electrode to remove particulate matter carried by said gas and deposit said particulate matter on the walls of said gas cleaner.

4,202,675
COLLECTOR ELECTRODES FOR ELECTROSTATIC PRECIPITATORS
Horst Honacker, Paradise Valley, Ariz., assignor to Envirotech Corporation, Menlo Park, Calif.
Division of Ser. No. 705,096, Jul. 14, 1976, which is a division of Ser. No. 579,960, May 22, 1975, Pat. No. 3,998,611. This application May 1, 1978, Ser. No. 901,435
The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.
Int. Cl.² B03C *3/78*
U.S. Cl. 55—118 **3 Claims**



1. A collector electrode for electrostatic precipitators comprising: a hollow cylindrical body having upper and lower open ends; said body having substantially annular upper and lower edge portions; said collector electrode having a substantially vertical axis concentric with said annular edge portions; said body having an inner concave annular wall and an outer convex annular wall; said inner and outer walls being spaced apart; lightweight filler means between said walls; said filler means connecting said walls together; said inner and outer walls and said upper and lower edge portions bonded together and encapsulating said lightweight filler means; a water distributor fixed to said annular upper edge portion of said body member; said water distributor being generally annular and having a pair of upwardly converging shoulder structures which extend in continuity upward from said inner and outer walls; a generally tubular water conduit means supported on said pair of shoulder structures and said conduit means having a series of downwardly directed water outlet openings; each of said series of said water outlet openings disposed to deliver water downwardly onto one of said shoulders of said pair of shoulder structures.

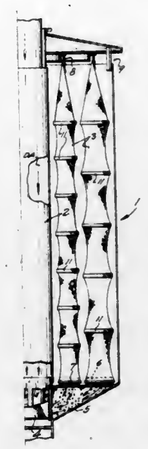
4,202,676
SAFETY ENCLOSURE
Michael H. Pelosi, Jr., and Raymond Fink, both c/o Airo Clean Engineering, Inc., 520 Abbott Dr., Broomall, Pa. 19008
Filed Jul. 31, 1978, Ser. No. 929,834
Int. Cl.² B01D *51/10*; A61L *9/00*; A61B *19/02*
U.S. Cl. 55—269 **12 Claims**



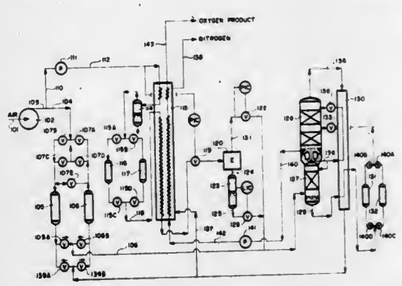
1. A portable self contained enclosure to provide a clean room environment which comprises
a portable housing having
a frame with rigid side and rear panels,
members for detachably securing one of said side panels to one end of said frame for interior access,
said housing having an open bottom,
an air blower,
a dividing panel positioned inside said housing separating the interior of said housing into a chamber for said air blower accessible at said one of said side panels and an operational chamber,
a front wall closing said air blower chamber,
a plenum chamber attached to and closing off the top of said housing and being in communication with said air blower chamber for delivery of air thereto from said air blower chamber,
said air blower chamber being in communication with said operational chamber for receiving air therefrom,
a perforated ceiling panel member between said operational chamber and said plenum chamber,
filter means in said air blower chamber for receiving air from said air blower,
an impervious access curtain providing a front wall closing the front of said operational chamber and having members detachably securing said curtain to said frame, and
said frame having around the lower margin thereof a sealing gasket for engagement with the floor.

4,202,677
FILTER BAG WITH REMOVABLE SHAPING MEMBERS
Ralph H. Clarke; W. James Clarke, and Steven L. Mays, all of Eugene, Oreg., assignors to Clarke's Sheet Metal, Inc., Eugene, Oreg.
Continuation-in-part of Ser. No. 809,113, Jun. 22, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,465
Int. Cl.² B01D *46/02*
U.S. Cl. 55—378 **8 Claims**

1. In a tubular shaped filter bag having an air pervious main body of cylindrical configuration and supported at its ends within an air sructure, the improvement comprising,
bag shaping members located in a spaced apart manner along the bag, and
retainer means associated with each of said members and normally confining one of said bag shaping members in place about the bag body, each of said retainer means including a fabric cuff secured to the bag body and permitting temporary removal of a bag shaping member prior to removal of the filter bag for laundering purposes, said cuff being stitched adjacent one edge thereof to the bag body with a remaining adjustable cuff portion adapted to support a bag shaping member in a removable manner, cuff sizing means carried by and acting on said remaining cuff portion to enable contractive adjustment of same for retention of the bag shaping member and alternatively expansive adjustment of the cuff for removal of said shaping member.



4,202,678
AIR SEPARATION LIQUEFACTION PROCESS
Leonard J. Hvizdos, Emmaus, Pa., assignor to Air Products & Chemicals, Inc., Allentown, Pa.
Filed Oct. 9, 1975, Ser. No. 620,963
Int. Cl.² F25T *3/00*
U.S. Cl. 62—38 **13 Claims**



1. A process for at least partially liquefying an air feed stream for delivery to a distillation column at a preselected temperature and pressure for separation into its components which comprises:
compressing an air feedstream,
splitting the air feedstream into at least a major portion and a minor portion with the major portion being at least partially cooled,
compressing said minor portion to a pressure above the critical pressure, if the minor portion is below the critical pressure,
cooling said compressed minor portion to a temperature below the critical temperature until said minor portion is converted into a critical fluid,
isentropically expanding said critical fluid in a Pelton Wheel under conditions such that the liquefied air is withdrawn from the Pelton Wheel at its saturation temperature or at a temperature below its saturation temperature, said Pelton Wheel being operated in a vapor environment established and maintained by the method selected from the group consisting of injecting a second gas into the Pelton

Wheel at the saturation temperature, or at a temperature slightly above the saturation temperature, raising the enthalpy of the liquefied air to an enthalpy above the enthalpy of the saturated liquid, and

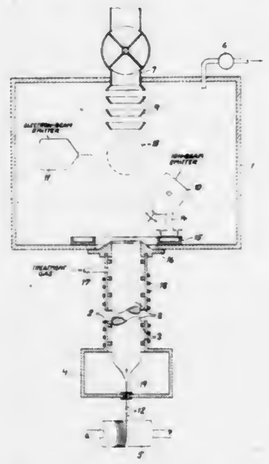
combining said major portion and said minor portion for forming an air feedstream at said preselected pressure and temperature.

4,202,679

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF ELONGATE LIGHT CONDUCTORS

Giuseppe Cocito, San Giusto Cans-se, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Nov. 20, 1978, Ser. No. 962,186
Claims priority, application Italy, Nov. 25, 1977, 69655 A/77
Int. Cl.² C03B *37/02*
U.S. Cl. 65—2 **12 Claims**



1. A process for producing an elongate light conductor of indefinite length, comprising the steps of:

(a) placing a vitreous seed rod in a vertical position with an exposed upper end extending into a vaccum chamber;

(b) depositing successive amounts of a powdered glassy material in said vacuum chamber on the upper end of said rod while training a beam of ions of a refractivity-controlling doping substance, to be implanted in said glassy material, upon a limited area of said upper end;

(c) fusing the deposited material with said doping substance onto said rod, thereby progressively extending same upwardly;

(d) progressively lowering the upwardly growing rod at an average speed corresponding to its growth rate;

(e) thermally softening the lower end of the descending rod sufficiently to enable its mechanical deformation;

(f) drawing the softened lower end of said rod into a vitreous strand of reduced cross-section; and

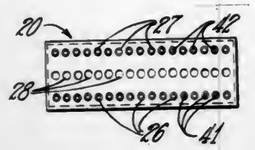
(g) continuously varying the relative position of said beam of ions and said upper end to distribute said substance in a predetermined pattern over the cross-section of said strand.

4,202,680

FLUID FLOW APPARATUS IN COMBINATION WITH GLASS FIBER FORMING APPARATUS

Thomas K. Thompson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 16, 1978, Ser. No. 951,542
Int. Cl.² C03B *37/02*
U.S. Cl. 65—12 **19 Claims**



1. A nozzle in combination with a glass fiber forming bushing comprising:

(a) a chamber having an inlet;

(b) a first outlet means opening from said chamber for discharging fluid from said chamber;

(c) a first duct means abutting said chamber in open communication with said chamber and surrounding said first outlet means;

(d) a second outlet means opening from said chamber for discharging fluid from said chamber;

(e) a second duct means abutting said chamber in open communication with said chamber and surrounding said second outlet means; and

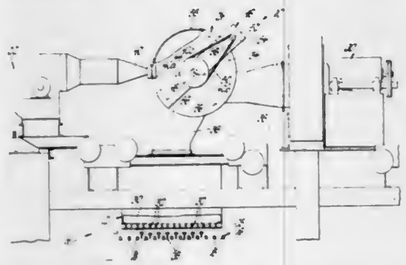
(f) a third outlet means opening from said chamber and adapted for discharging fluid from said chamber between said first duct means and said second duct means.

4,202,681

VACUUM HOLDER SYSTEM AND METHOD FOR USE IN BENDING GLASS

Harold A. McMaster, 420 Water St., Woodville, Ohio 43469, and John S. Nitschke, 324 E. Second St., Perrysburg, Ohio 43551

Continuation-in-part of Ser. No. 872,202, Jan. 25, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,231
Int. Cl.² C03B *23/02*
U.S. Cl. 65—104 **15 Claims**



1. A system for use in bending glass comprising: a vacuum holder having a downwardly facing surface including spaced openings therein; a roller conveyor for conveying a heated sheet of glass below the vacuum holder in a vertically spaced relationship thereto; first means for providing relative vertical movement between the holder surface and a heated sheet of glass below the holder surface on the conveyor so as to position the holder surface in proximity with the heated sheet of glass; and second means for initially drawing a vacuum within the holder surface openings to support a heated glass sheet against the holder surface and for subsequently reducing the extent of vacuum drawn to prevent deformation of the heated sheet of glass at the openings in the holder surface, the first means being operable to position the holder surface with the heated sheet of glass thereon above the roller conveyor in a spaced relationship such that a mold can be moved under the holder above the conveyor, and the second means subsequently supplying positive gage pressure air to the holder surface openings to force the heated glass sheet downwardly away from the holder surface so that bending can take place on the mold.

8. A method for supporting and quick releasing heated sheets of glass being conveyed for processing, the method comprising: conveying a heated sheet of glass on a roller conveyor to below a downwardly facing surface of a vacuum holder; providing relative vertical movement between the heated sheet of glass and the holder to position the sheet of glass in proximity to the holder surface; initially drawing a sufficient vacuum within spaced openings in the downwardly facing surface of the vacuum holder so as to support the heated sheet of glass in engagement therewith; then reducing the degree of vacuum drawn within the holder surface openings to prevent deformation of the heated glass sheet at the openings; positioning the holder surface with the heated sheet of glass thereon in a spaced relationship above the roller conveyor so a bending mold can move between the conveyor and the holder surface; and subsequently supplying positive gage pressure air to the holder surface openings to force the sheet of glass downwardly away from the holder surface.

10. A system for use in bending glass comprising: a heating chamber; a conveyor for conveying glass to be heated through the heating chamber; a holder located above the conveyor within the heating chamber; the holder including a plenum and a downwardly facing surface having restricted openings communicating the plenum and the heating chamber; a gas jet pump located within the heating chamber and having a passage that communicates the holder plenum and the heating chamber; and a pressurized gas source located externally of the heating chamber and communicated with the passage of the jet pump so as to produce a primary gas flow therethrough away from the holder plenum toward the heating chamber in order to thereby induce a secondary gas flow from the plenum to the heating chamber such that a vacuum is drawn at the holder surface openings to receive a heated sheet of glass from the conveyor and support the glass sheet against the holder surface.

4,202,682

GLASS MANUFACTURE

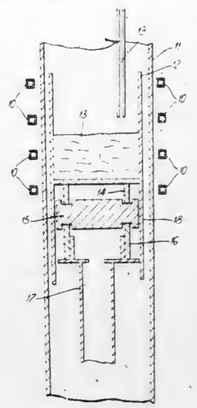
Philip W. Black, Bishops Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 684,431, May 7, 1976, abandoned. This application Nov. 10, 1977, Ser. No. 850,116
Int. Cl.² C03B *5/16*
U.S. Cl. 65—136 **14 Claims**

1. A method of making high purity glass comprising a plurality of glass forming constituents, comprising the steps of:

heating a portion of said constituents in a powdered form to form a melt therefrom; and

adding the remainder of each of said constituents to said melt as a product of a chemical vapor deposition reaction, by



forming said product by said chemical vapor deposition reaction at or near the surface of said melt.

4,202,683

FERTILIZER

Edwin K. Schuman, 100 W. 14th St., Rolla, Mo. 65401

Filed Apr. 14, 1977, Ser. No. 787,626
The portion of the term of this patent subsequent to Mar. 22, 1994, has been disclaimed.
Int. Cl.² C05B *7/00, 13/00, 11/06, 17/00*
U.S. Cl. 71—35 **10 Claims**

1. A farm field granular, soluble fertilizer of grade 21-12-7 + 1.2 Mg comprising the reaction products obtained by admixing approximate parts by weight of 12. oz. av. of langbeinite ($2MgSO_4,K_2SO_4$), 16 oz. of water, 16 oz. av. of diammonium phosphate $(NH_4)_2HPO_4$, 6 oz.av. of muriate of potash, KCl, 0.24 oz. av. of borax $Na_2B_4O_7{:}10H_2O$, 1 oz.av. of guar gum and 34 oz.av. of ammonium nitrate NH_4NO_3.

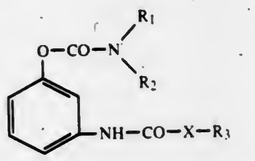
4,202,684

CARBANILIC ACID ESTERS, PROCESS FOR MAKING THE SAME AND HERBICIDAL COMPOSITIONS CONTAINING SAME

Friedrich Arndt, and Gerhard Boroschewski, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 730,716, Oct. 8, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,477
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1975, 2557552
Int. Cl.² A01N *9/12*; C01C *125/06*
U.S. Cl. 71—100 **26 Claims**

1. A carbanilic acid ester of the formula



in which

R_1 is chloro- or bromoalkyl,

R_2 is phenyl, methylphenyl, halogenophenyl, trifluoromethylphenyl or methoxyphenyl,

R_3 is straight chain or branched alkyl, alkenyl, or alkinyl, the

number of carbon atoms in all these groups being 1 to 4, and in which

X is oxygen or sulfur.

24. A herbicidal composition comprising from about 10 to about 80% by weight of at least one active agent constituted by a compound according to claim 1, and about 90 to 20% by weight of a liquid or solid carrier material or both of these types of carrier materials.

4,202,685

2-1-(2-HYDROXY ALKYL IMINO)-ETHYL-1-HYDROXY-4,4,6,6-TETRAMETHYL CYCLOHEXEN-3,5-DIONES

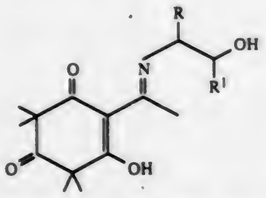
Ronald J. Rusay, Lafayette, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 29, 1978, Ser. No. 947,218

Int. Cl.[2] A01N 9/20; C07C 119/00

U.S. Cl. 71—121 **8 Claims**

7. A composition of matter consisting essentially of an effective amount of



wherein R is hydrogen or alkyl having 1 to 4 carbon atoms, and R^1 is hydrogen or alkyl having 1 to 4 carbon atoms and an inert carrier therefor, said composition being active as a post-emergent herbicide on the plant genus Avena.

4,202,686

PROCESS FOR MANUFACTURING FINE POWDER OF METAL

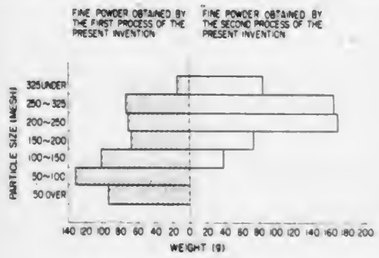
Taizo Ohmura, Ohmiya; Noboru Yonezawa, Urawa, and Kazuo Ikuta, Kawagoe, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1977, Ser. No. 857,886

Claims priority, application Japan, Dec. 27, 1976, 51-156469; Apr. 23, 1977, 52-46350

Int. Cl.[2] B22F 1/02

U.S. Cl. 75—0.5 B **28 Claims**



1. A process for manufacturing a fine powder of a metal, characterized by the steps of:

admixing a metal in at least a semi-molten state, which is to be pulverized, in a vessel with an assistant-powder, said assistant-powder consisting of a material which has a higher melting point than said metal and is difficult to chemically react with said metal and/or difficult to form a solid solution with said metal, and the temperature of said at least semi-molten metal being lower than the melting point of said assistant-powder;

mixing said at least semi-molten metal and said assistant-powder by stirring so as to ensure uniform dispersion of said assistant-powder in said at least semi-molten metal;

slowly cooling said at least semi-molten metal and said assistant-powder, while continuing said stirring, until the temperature of said at least semi-molten metal reaches at least its solidus point, to pulverize said metal into a fine powder and to form a composite powder having a structure in which said assistant-powder adheres to said fine powder to cover the entire surface of each particle of said fine powder; and then,

separating and removing said assistant-powder from said composite powder, thereby obtaining a fine powder of said metal.

4,202,687

LOW MELTING POINT NI-CR ALLOY FOR CAST DENTAL PRODUCTS

Kentaro Murayama, Osaka, and Kazuyuki Nakano, Toyonaka, both of Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

Filed Mar. 28, 1979, Ser. No. 24,864

Claims priority, application Japan, Apr. 5, 1978, 53-40698

Int. Cl.[2] C22C 19/05

U.S. Cl. 75—134 C **2 Claims**

1. A low melting point Ni-Cr alloy for dental casting comprising at least the following components:

Cr	7-20%
Cu	15-35%
Mn	15-35%
Ge	0.5-15%
Al	0.1-3%
Deoxidizer	0.1-3%
	ni balance (by weight)

4,202,688

HIGH CONDUCTIVITY HIGH TEMPERATURE COPPER ALLOY

Jacob Crane, Woodbridge; Eugene Shapiro, Hamden, both of Conn.; Stanley Shapiro, DeWitt, N.Y., and Brian Mravic, North Haven, Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 947,963, Oct. 2, 1978, abandoned, which is a continuation of Ser. No. 547,367, Feb. 5, 1975, abandoned. This application Apr. 30, 1979, Ser. No. 34,403

Int. Cl.[2] C22C 9/00; C22F 1/08

U.S. Cl. 75—153 **11 Claims**

1. A silver free copper base alloy possessing high strength and high conductivity consisting essentially of from about 0.012 to about 0.5% of an element selected from the group consisting of the lanthanide series of the Periodic Table and mixtures thereof, from about 0.011 to about 0.5% of phosphorus, from about 0.007 to about 0.4% magnesium, balance essentially copper, wherein said alloy contains precipitate particles of the lanthanide and phosphorus, Mg_3P_2, and a precipitate consisting essentially of the lanthanide, magnesium and phosphorus wherein said quantities of said lanthanide, said magnesium and said phosphorus may be other than the stoichiometric ratios thereof defined by an equation wherein phosphorus content equals the content of said lanthanide divided by 4.52 plus the content of said magnesium divided by 1.17 while maintaining high strength and high conductivity.

5. The alloy of claim 1 wherein said precipitate consisting essentially of the lanthanide, magnesium and phosphorus possesses a coarse string-like structure.

4,202,689

METHOD FOR THE PRODUCTION OF SINTERED POWDER FERROUS METAL PREFORM

Eiji Ohno, Tokyo, and Kazuo Chikugo, Hiratsuka, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 7, 1978, Ser. No. 931,320

Claims priority, application Japan, Aug. 5, 1977, 52-93375

Int. Cl.[2] B22F 1/00

U.S. Cl. 75—211 **3 Claims**

1. A method for reducing surface oxides of finely divided ferrous metal particles comprising the steps of; heating said ferrous metal particles to a temperature of about 130° C. to 150° C.;

coating said ferrous metal particles with thermoplastic phenol resins having an effective carbon content of 10 to 40 percent by adding said phenol resins to said ferrous metal particles, wherein said phenol resins are present from about 1.0 to 7.0 percent of the total mixture;

cooling said resin coated ferrous metal particles by blowing cooling air thereto; and

heating said resin coated ferrous metal particles to a temperature within the range of about 1100° C. to 1250° C. for a time sufficient to achieve reduction of said resin coated ferrous metal particles.

4,202,690

SETTING AND CONTROLLING DESIRED REDOX POTENTIALS IN GASES

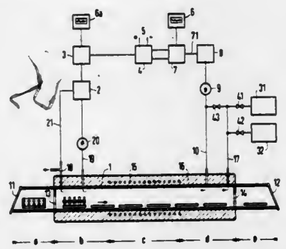
Peter Funke, Rodenbach, Fed. Rep. of Germany, assignor to Alkem GmbH, Hanau, Fed. Rep. of Germany

Filed Oct. 3, 1977, Ser. No. 839,016

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1976, 2655206

Int. Cl.[2] B22F 3/12

U.S. Cl. 75—224 **6 Claims**



1. In a method of treating solid bodies containing oxygen by passing the bodies through a furnace wherein the bodies are subjected to a high temperature in an atmosphere of protective gases containing hydrogen having a predetermined redox potential to produce heated bodies of good quality, flowing countercurrent to the bodies in the furnace, the improvement comprising, continuously withdrawing a sample of the protective gas surrounding the bodies undergoing treatment at high temperature in the furnace, continuously measuring the redox potential of the sample of protective gas at the high temperature, and correcting a deviation of the redox potential of the sample from the predetermined redox potential by humidifying the protective gases flowing through the furnace to maintain said atmosphere of protective gases containing hydrogen having a predetermined redox potential.

4. In a method of treating solid bodies containing oxygen by passing the bodies through a furnace wherein the bodies are subjected to a high temperature in an atmosphere of protective gases containing hydrogen having a predetermined redox potential to produce heated bodies of good quality, flowing countercurrent to the bodies in the furnace, the improvement comprising, continuously withdrawing a sample of the protective gas surrounding the bodies undergoing treatment at high temperature in the furnace, continuously measuring the redox potential of the sample of protective gas at the high temperature, and correcting a deviation of the redox potential of the sample from the predetermined redox potential by humidifying the protective gases flowing through the furnace to maintain said atmosphere of protective gases containing hydrogen having a predetermined redox potential, and wherein an oxygen/-hydrogen mixture is used for humidification, and wherein the oxygen/hydrogen mixture is generated by electrolysis of water and the electrolysis current is controlled as a function of the measured redox potential.

4,202,691

METALLO-THERMIC POWDER

George Yurasko, Jr., Glencove, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Filed Nov. 21, 1978, Ser. No. 962,673

Int. Cl.[2] B05D 1/08; B22F 1/00

U.S. Cl. 75—252 **26 Claims**

1. A flame spray powder mixture formed of the following constituents:

(a) agglomerates of a metallo-thermic heat-generating composition comprised essentially of fine particles of a reducible metal oxide formed from a metal characterized by a negative free energy of oxidation ranging up to about 60,000 calories per gram atom of oxidation referred to 25° C. intimately combined together by means of a thermally fugitive binder with fine particles of a strong reducing agent consisting essentially of a metal characterized by a negative free energy of oxidation referred to 25° C. of at least about 90,000 calories per gram atom of oxygen

(b) said agglomerates being uniformly mixed in an amount ranging from about 10% to 80% by weight with about 90% to 20% by weight of at least one coating material selected from the group consisting of metals, alloys, refractory oxides, and carbides, silicides, nitrides, and borides of the refractory metals of the 4th, 5th, and 6th Groups of the Periodic Table.

4,202,692

TUNDISH FLUX POWDER

George F. Carini, Penn Hills, Pa., assignor to The Clay Harden Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 874,025, Feb. 1, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 31,068

Int. Cl.[2] C22B 9/10

U.S. Cl. 75—257 **4 Claims**

1. In the process of continuous casting of steel wherein the steel is teemed into a tundish from which it is poured into a continuous casting mold, the improvement comprising the step of during the teeming operation providing a tundish flux powder on the surface of the molten metal in the tundish consisting essentially of, in weight percent,

Calcium Carbonate: 31 to 75

Alkali Metal Carbonate: 4 to 14

Fluorspar: up to 18

Sodium Fluoride: 14 to 38.

4,202,693

RECORDING MATERIAL HAVING INTERSECTING CONDUCTIVE STRIPS AND APERTURED SPACING MEANS

Roland Moraw, and Gunther Schadlich, both of Naurod, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 2, 1976, Ser. No. 719,713

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1975, 2539524

Int. Cl.[2] G03G 16/00

U.S. Cl. 430—50 **13 Claims**

1. A recording material comprising:

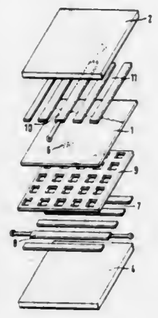
(a) a first transparent, dielectric support member having on

one surface thereof a plurality of first elongated, electrically conductive strips extending adjacent one another in spaced relationship,

(b) a layer comprising a photo-conductive thermoplastic material adjacent to, but spaced from, said surface of said first support member,

(c) spacing means interposed between said photo-conductive layer and said first support member for spacing them apart,

(d) a second transparent dielectric support member positioned contiguous to said photo-conductive layer on the side opposite said first support member, said second support member having on the surface thereof adjacent said photo-conductive layer a plurality of second elongated, electrically conductive strips extending adjacent one another in spaced relationship, the longitudinal axis of each of said second elongated, electrically conductive strips extending generally transversely to the longitudinal axis of each of said first elongated, electrically conductive strips to form cross-over regions, and



(e) said spacing means comprises a layer of an electrically insulative material having a plurality of apertures therein, said apertures coinciding with the cross-over regions between the first elongated conductive strips and the second elongated conductive strips.

4,202,694

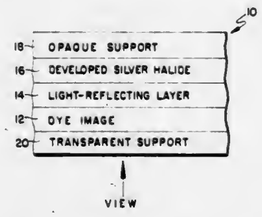
PENDANT OXIME POLYMERS AND PHOTOGRAPHIC USE THEREOF

Lloyd D. Taylor, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 789,422, Apr. 21, 1977, abandoned. This application Apr. 7, 1978, Ser. No. 894,545

Int. Cl.² G03C *1/40, 5/54, 7/00, 5/30*

U.S. Cl. 430—215 **44 Claims**



17. In a photographic process wherein a photosensitive element having a negative component comprising a blue-sensitive, a green-sensitive and a red-sensitive silver halide layer, said layers having associated therewith, respectively, a yellow, a magenta and a cyan dye image-providing material; and a positive component comprising a dyeable stratum is photoexposed to form a developable image, an aqueous alkaline processing composition including a viscosity-increasing reagent, titanium dioxide and at least one pH-sensitive optical filter agent which is colored at the pH of said composition and substantially colorless at a lower pH, is applied as a layer between the positive and negative components to develop said negative component, as a function of said development an imagewise distribution of soluble and diffusible dye is formed, and said imagewise distribution is transferred, at least in part, by diffusion to said dyeable stratum to impart thereto a dye transfer image, said image being viewable against the background of said applied layer including titanium dioxide as a dye transfer image, without separation of said components;

the improvement wherein said viscosity-increasing reagent comprises a polymeric oxime containing repeating pendant oxime groups and having a pKa of at least 12.

4,202,695

PHOTOGRAPHIC LIPPMANN EMULSIONS

Herman A. Philippaerts, Edegem; Robert J. Pollet, Vremde, both of Belgium; Wolfgang Müller-Bardorff, Cologne, Fed. Rep. of Germany; Wilhelm Saleck, Schildgen, Fed. Rep. of Germany; Anita von König, Leverkusen, Fed. Rep. of Germany; Walter Gauss, Cologne, Fed. Rep. of Germany; Franz Moll, Leverkusen-Stinbuchel, Fed. Rep. of Germany, and Theofiel H. Ghys, Kontich, Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

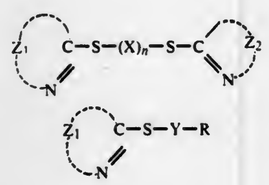
Continuation of Ser. No. 311,160, Dec. 1, 1972, abandoned. This application Jan. 30, 1975, Ser. No. 545,742

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1971, 2161045

Int. Cl.² G03C *5/04, 5/00, 1/28*

U.S. Cl. 430—8 **6 Claims**

1. A method of microphotography including the steps of negative or reversal development of an exposed Lippmann emulsion to create an image, said emulsion at the time of development comprising a derivative of a heterocyclic mercaptan corresponding to one of the following formulae I and II:



I.

II.

wherein:

each of Z_1 and Z_2 represents the atoms necessary to complete a 5- or 6-membered heterocyclic ring system,

n—is 0 or 1,

X—is —CO— or —CS—,

R—represents an alkyl group or an aryl group, and

Y—is —CO—, —COO—, —CS—, —SO_2—, —CON(R_1)— or —CSN(R_1)— wherein R_1 is hydrogen, an alkyl group or an aryl group in an amount sufficient to enhance image sharpness and reduce distortion of the image.

4,202,696

METHOD OF REMOVING SURFACE TACK OF CURED FREE RADICAL POLYMERIZED RESIN COMPOSITION USING ORGANIC CARBONYL COMPOUND

Gensho Takahashi; Kazuhito Miyoshi, and Yoneharu Tanaka, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 16, 1978, Ser. No. 906,890

Claims priority, application Japan, May 23, 1977, 52-58799

Int. Cl.² G03C *1/68*

U.S. Cl. 430—306 **8 Claims**

1. A method of removing surface tack of a cured free radical polymerized resin composition which comprises impregnating the surface layer of the cured free radical polymerized resin

composition with at least one organic carbonyl compound capable of abstracting a hydrogen atom out of other compounds under irradiation with actinic rays, and irradiating the impregnated layer of the cured resin composition with actinic rays having wavelengths of from 200 to 300 nm.

4,202,697

PRODUCTION OF ETCH-RESIST COLLOID AND MATERIAL SUITABLE THEREFOR

Hugo V. Van Goethem, Edegem; Marcel Stroobants, Muizen, and Walter F. De Winter, S-Gravenwezel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed May 30, 1978, Ser. No. 910,333

Claims priority, application United Kingdom, Jun. 1, 1977, 23203/77

Int. Cl.² G03C *5/00, 1/68*

U.S. Cl. 430—306 **13 Claims**

1. Process for image-wise modifying the surface of an element e.g. to produce a printing form by making an etchant diffuse through a layer applied to said surface, the said layer forming an etch resist with image-wise differentations in permeability for etchants characterized in that said etch resist is formed by the steps of image-wise exposing to actinic radiation a layer of a hydrophilic colloid binder containing in the absence of any ethylenically unsaturated photopolymerisable monomeric material, a dispersed phase of at least one radiation sensitive polymer the polymer chain of which comprises units with side substituents containing oxime ester groups, whereby the permeability of the hydrophilic colloid layer for an etchant is reduced in conformity with the image-wise exposure.

4,202,698

QUINOXALINES AND THEIR USE IN PHOTOGRAPHIC PROCESSES

Gerald Jan; Remon Hagen, and John Lenoir, all of Marly, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

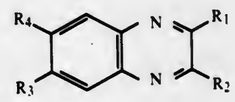
Continuation-in-part of Ser. No. 799,020, May 20, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,384

Claims priority, application Switzerland, May 24, 1976, 6521/76

Int. Cl.² G03C *7/00, 1/76*

U.S. Cl. 430—418 **12 Claims**

1. Process for the production of colored photographic images by the silver dye bleach process which comprises the steps of imagewise exposing a photographic material containing on a substrate, at least one silver halide emulsion layer with a bleachable dyestuff, then (1) developing the silver image obtained, (2) dye bleaching and silver bleaching said silver image, (3) silver fixing and (4) washing, said dye and/or silver bleaching step being carried out in a bath containing at least one bleach catalyst of the formula



(1)

in which R_1 and R_2 independently are alkyl with 1 to 5 carbon atoms, R_3 is alkyl with 1 to 5 carbon atoms, —CH_2OR_5, CH_2NRR', —CH_2OCOR, —CH_2Cl, —CH_2Br, CH_2SR, —$CH_2O(CH_2)_pOR$, —$CH_2PO(OR_5)_2$, —$CH_2PO(OR_6)_2$, $CH_2SO_3R_6$, —$O(CH_2)_mOR$, —$O(CH_2)_pSO_3R_6$ or —$(OCH_2CH_2)_nOAr$, R_4 is hydrogen or alkyl with 1 to 5 carbon atoms or alkoxy of 1 to 4 carbon atoms, when R_3 is other than an alkyl radical with 1 to 5 carbon atoms, or R_4 is —OH, —NRR', —NHCOR, —NHCOAr', —NHCOAr', —NH-SO_2R_5 or —$NHSO_2Ar'$, R and R' independently are hydrogen or alkyl with 1 to 4 carbon atoms, R_5 is alkyl with 1 to 4 carbon atoms, R_6 is hydrogen, an alkali metal cation or —$N^{\oplus}(R)_4$, Ar is aryl or sulphonated aryl, Ar' is aryl or substituted aryl, m is 3 or 4, n is 1 to 3 and p is 2 to 4.

4,202,699

LITHOPLATES OF QUATERNARY AMMONIUM SALT COMPOSITIONS

John M. Kitteridge, and Robert J. Armstrong, both of Leeds, England, assignors to Vickers Limited, London, England

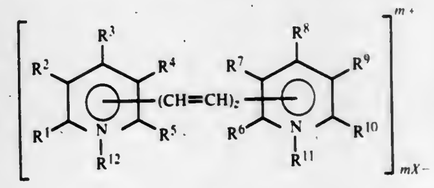
Division of Ser. No. 788,299, Apr. 18, 1977, Pat. No. 4,126,468, which is a continuation-in-part of Ser. No. 700,506, Jun. 28, 1976, abandoned. This application Aug. 7, 1978, Ser. No. 931,642

Claims priority, application United Kingdom, Jun. 28, 1975, 27435/75

Int. Cl.² G03F *7/02;* **G03C** *1/94*

U.S. Cl. 430—302 **8 Claims**

1. A radiation sensitive plate comprising a substrate formed of grained and anodised aluminium and having a surface coated with a radiation sensitive layer based on a radiation sensitive composition comprising a quaternary ammonium salt of the type which accepts at least one electron on exposure to radiation to form a substance capable of causing metal to be deposited onto said substance from an electroless plating solution in contact with said substance and comprising a salt of said metal and a reducing agent, said quaternary ammonium salt having the general formula



wherein R^1 to R^{10} are hydrogen or halogen atoms or organic substituents; R^{11} and R^{12}, if present, are each halogen atoms or organic substituents or together represent a divalent organic substituent; Z is zero or an integer; X^- is an anion; m = 1 or 2; and at least one of the nitrogen atoms is quaternary.

4,202,700

GLASSY COMPOSITION FOR HERMETIC SEALS

James A. Wilder, Jr., Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 2, 1979, Ser. No. 35,157

Int. Cl.² C03C *3/22, 3/16, 3/04*

U.S. Cl. 106—39.6 **3 Claims**

1. A glassy composition having high chemical durability and low gas permeability for hermetically sealing to aluminum and its alloys comprising: about 40 mole percent Na_2O, 10 mole percent BaO, 1 mole percent Al_2O_3, and 49 mole percent P_2O_5, and wherein said glassy composition has a thermal coefficient of expansion of about 235×10^{-7}° C.$^{-1}$.

4,202,701

ASPHALT-ALUMINUM COATING COMPOSITION

Bruce A. Radebaugh, Bradley; Paul J. O'Connor, and Howard J. Fischer, both of Kankakee, all of Ill., assignors to Mortell Company, Kankakee, Ill.

Filed Aug. 29, 1977, Ser. No. 828,673

Int. Cl.² C08L *95/00*

U.S. Cl. 106—278 **1 Claim**

1. An asphalt-aluminum coating material comprised of:

about 57 percent by weight of an asphaltic base selected from the group consisting of parrafinic, naphthenic, or aromatic asphalts, said base being reduced to about 65 percent solids in aliphatic solvent,

about 10.5 percent by weight of an aluminum paste containing about 65 percent metal solids, which is added to said coating composition to provide reflectance,

about 20 percent by weight of solid filler particles added to said coating composition to provide body, wherein said

solid filler particles comprise about 8 percent by weight perlite and about 12 percent limestone,
about 4 percent by weight of a gelling agent comprising attapulgite or sepiolite clay,
about 0.1 percent by weight of a dehydrating agent comprising silica which functions to absorb residual water,
about 7.7 percent by weight of a petroleum-base solvent comprising mineral spirits which is added to adjust viscosity of said coating composition, and
about 0.7 percent by weight of a surfactant comprising nonylphenoxypoly(ethyleneoxy)ethanol.

4,202,702

INORGANIC PIGMENT COMPRISING A SOLID SOLUTION OF DIFFERING SPINELS

James W. Nuss, Rocky River, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Dec. 26, 1978, Ser. No. 972,707
Int. Cl.[2] C09C *1/00, 1/22, 1/36, 1/40*
U.S. Cl. 106—288 B **16 Claims**

1. In a multiple spinel inorganic pigment comprising a solid solution of a solvent spinel containing within its crystal structure the spinel-forming oxides of at least a second, differing spinel as a solute spinel, the improvement in which said solvent spinel is that lithium-based variant of the cubic spinel phase having a non-random, uniform cubic ordering of metal cations about at least the tetrahedral or the octahedral sites of symmetry in the spinel lattice, said ordering of the metal cations with respect to said at least one of the tetrahedral or octahedral sites being an ionic ratios of whole numbers and comprising two different metal ions of differing charges, said solvent spinel being selected from the group consisting of:
(a) $Li^{+1}A_5^{+3}O_8$ in which A is Al, Fe or Ga,
(b) $Li_2^{+1}B^{+2}C_3^{+4}O_8$ in which B is Co, Zn, Mn, Cd, or Mg, and C is Ti or Ge, and
(c) $Li^{+1}D^{+3}Cr_4^{+3}O_8$ in which D is Al or Fe,
said non-random, uniform cubic ordering of said metal cations forming an ordered system of oriented metal cations about said sites to form a substantially identical substructure around those ions of the spinel lattice which generate color and thereby impart a pure color to said pigment.

4,202,703

METHOD OF STRIPPING PHOTORESIST

John R. Zuber, Piscataway, and Herbert Foxman, Raritan, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 7, 1977, Ser. No. 849,471
Int. Cl.[2] C03C *23/00;* B08B *7/00, 30/00*
U.S. Cl. 134—2 **5 Claims**

1. A method of stripping from a substrate a film of photoresist selected from the group consisting of diazide naphthalene sulfonic acid resists and resists derived from acrylic or methacrylic acids comprises
immersing the substrate in a solution consisting essentially of tetramethyl ammonium hydroxide in a lower alcohol at a temperature from about 70°-78° C., and
immersing the substrate in 1,1,1-trichloroethane.

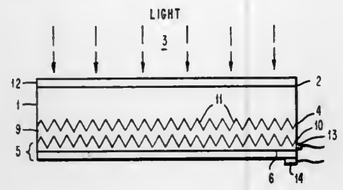
4,202,704

OPTICAL ENERGY CONVERSION

Rodney T. Hodgson, Ossining; Harold J. Hovel, Katonah, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1978, Ser. No. 968,887
Int. Cl.[2] H01L *31/04*
U.S. Cl. 136—89 CL **10 Claims**

1. An optical conversion device comprising in combination:
a translucent frequency shifting support member having an essentially crystalline structure with a first interatomic spacing and further having first and second essentially parallel major surfaces, said first major surface adapted to receive incident radiation;
a semiconductor photoresponsive active region facing said second major surface of said support member and having a second interatomic spacing; and
a crystal perfection accommodation region epitaxial with both said second major surface of said support member



and said photoresponsive region and having a third interatomic spacing of a size between said first and said second interatomic spacings and being interposed between said support member and said photoresponsive region.

4,202,705

TREATING BATH, FORMING A MIXED CARBIDE LAYER OF VA-GROUP ELEMENTS ON A FERROUS ALLOY SURFACE AND RESULTING PRODUCT

Noboru Komatsu; Tohru Arai, both of Toyoake, and Hinonori Fujita, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoto Chuo Kenkyusho, Japan

Filed Jul. 3, 1978, Ser. No. 921,794
Claims priority, application Japan, Jun. 30, 1977, 52-80411
Int. Cl.[2] C23C *9/10*
U.S. Cl. 148—6.11 **14 Claims**

1. A method for forming a mixed-carbide layer of Va-Group elements of the Periodic Table on an article of ferrous alloy, containing at least 0.10 percent by weight of carbon in its composition, which comprises:
immersing the article in a molten treating bath having from 1 to 40 weight percent of at least one oxide of at least one Va-Group element, from 1 to 40 weight percent of at least one metal or alloy of at least one Va-Group element other than any Va-Group element in oxide form and at least one member selected from the group consisting of boric acid and a borate; the percentages being based on the total weight of the molten treating bath; and the weight of Va-Group elements in the metal or alloy being at least 10 percent of the weight of the oxide;
maintaining said article in said molten treating bath to form a mixed-carbide surface layer of Va-Group elements on the article; and
removing said article from the molten treating bath.

4,202,706

CORROSION RESISTANCE TREATMENT OF ALUMINUM WITH N-ALKYL-FLUOROALIPHATICSULFONAMIDOPHOSPHONIC ACIDS AND SALTS THEREOF

Richard G. Newell, Woodbury, and Dale C. Perry, Welch, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 12, 1979, Ser. No. 19,732
Int. Cl.[2] C25D *11/24;* C23F *7/00*
U.S. Cl. 148—6.17 **8 Claims**

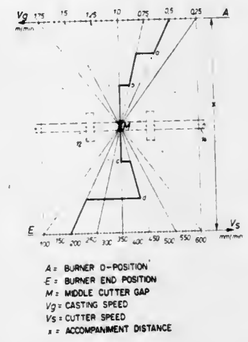
1. A method of treating aluminum surfaces to improve the corrosion resistance thereof which comprises contacting said surfaces with a liquid containing an N-alkyl-fluoroaliphaticsulfonamidophosphonic acid or the salt thereof.

4,202,707

FLAME CUTTING APPARATUS AND METHOD

Franz Hennecke, Arnsberg, Fed. Rep. of Germany, assignor to I. P. U. Limited, Nassau, The Bahamas

Filed Mar. 29, 1979, Ser. No. 25,044
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1978, 2813461
Int. Cl.[2] B23K *7/02*
U.S. Cl. 148—9 R **15 Claims**



1. A method of flame cutting steel slabs or the like in strip casting apparatus, in which a flame cutting machine moves at the strip casting speed during the flame cutting, which method comprises so adapting the flame cutting speed to the casting speed automatically taking into account any temporary delay in the cutting operation so that at the termination of the flame cutting a definite predetermined distance of accompaniment is maintained.

4,202,708

CORROSION RESISTANT COPPER BASE ALLOYS FOR HEAT EXCHANGER TUBE

John F. Bates, Lake Charles, La., and James M. Popplewell, Guilford, Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 879,145, Feb. 21, 1978, Pat. No. 4,171,972. This application Dec. 13, 1978, Ser. No. 968,885
Int. Cl.[2] C22C *9/06;* C22F *1/08*
U.S. Cl. 148—11.5 C **14 Claims**

1. A method of producing a wrought copper base alloy which is particularly useful in applications requiring corrosion resistance, said process comprising the steps of:
(a) providing an aluminum free cast alloy consisting essentially of 8 to 20% by weight zinc, 3 to 7% by weight nickel, 0.3 to 5% by weight iron, balance copper;
(b) homogenizing said alloy at a minimum temperature of 500° C. for at least 15 minutes;
(c) hot working said alloy with a finishing temperature of at least 400° C.;
(d) rapidly cooling the hot worked alloy from said finishing temperature to provide a single phase solid solution microstructure within the alloy; and
(e) cold working said alloy at a temperature below 200° C.

4,202,709

METHOD FOR MANUFACTURING ALUMINUM OR ALUMINUM ALLOY CLAD STEEL SHEET OR STRIP

Seiji Shibamori, and Yoji Ishida, both of Nikko, Japan, assignors to Furukawa Aluminum Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,712
Claims priority, application Japan, Mar. 10, 1978, 53/27280; Nov. 15, 1978, 53/140660
Int. Cl.[2] C22F *1/04*
U.S. Cl. 148—11.5 Q **6 Claims**

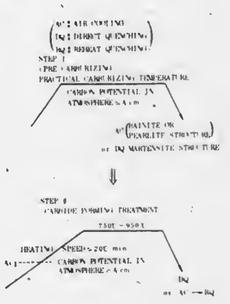
1. A method for manufacturing an aluminum or aluminum alloy clad steel sheet wherein an aluminized steel sheet which is obtained by applying aluminum or an aluminum alloy to a steel sheet by hot dipping is heated up to a temperature between 100° and 550° C.; then, an aluminum or aluminum alloy sheet which has room temperature and has a bonding face thereof cleaned is superposed on one side or on each of two sides of said aluminized steel sheet; and the superposed sheets are together subjected to a rolling process which is carried out at a draft reduction percentage between 10 and 40% to roll-bond said aluminum or aluminum alloy sheet or sheets with said steel sheet.

4,202,710

CARBURIZATION OF FERROUS ALLOYS

Takeshi Naito, Hiratsuka, and Yasutada Kibayashi, Machida, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 1, 1978, Ser. No. 965,433
Int. Cl.[2] C21D *1/48*
U.S. Cl. 148—16.5 **3 Claims**



1. A method for carburizing low alloy steels having carbon content of no more than about 0.5%, which method comprises the steps of:
(a) pre-carburizing said steel in a carburizing atmosphere having a carbon potential of less than Acm to produce a carburized case having hypereutectoid composition;
(b) cooling said steel to transform the case into a bainite, pearlite or martensite structure; and
(c) carburizing said steel by heating thereof to a carburizing temperature for a sufficiently long time to produce carbides in a spheroidal or spherical form by employing carbides in the bainite or pearlite as nuclei or dissolving the martensite by heating to produce carbide particles and employing thereof as nuclei, said carburizing being carried out in such a manner that the heating speed of said steel is being controlled under 20° C. per minute in a region from Ac_1 temperature to 750° C.-950° C. and the carbon potential in the carburizing atmosphere is being maintained over Acm when the temperature is over Ac_1.

4,202,711

PROCESS FOR PRODUCING ORIENTED SILICON IRON FROM STRAND CAST SLABS

Martin F. Littmann, Middletown, Ohio, and Allan R. Obman, Valencia, Pa., assignors to Armco, Incl., Middletown, Ohio

Filed Oct. 18, 1978, Ser. No. 952,313
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—111 **14 Claims**

1. A process for producing grain oriented silicon iron from strand cast slabs having uniformly high permeability and low core loss, which comprises the steps of melting a ferrous charge, refining said charge to obtain a melt consisting essentially of, in weight percent, 0.030% to 0.045% carbon, about 0.04% to about 0.08% manganese, about 0.015% to about 0.025% sulfur and/or selenium, not more than 0.003% titanium, not more than 0.005% nitrogen, residual oxygen, and

balance essentially iron, adding sufficient silicon to provide a range of 2.5% to 4.0% silicon and sufficient aluminum to combine with oxygen in the melt and obtain an oxygen content of not more than 0.005%, casting the melt into a slab thickness of about 125 to about 225 mm, cutting into suitable lenghts, reheating the slabs within the range of about 1330° to about 1400° C., hot rolling to band thickness, cold rolling to an intermediate thickness, annealing at about 850° to about 950° C., cold rolling to final thickness, decarburizing in a hydrogen-containing atmosphere, applying an annealing separator coating to the surfaces of the cold rolled, decarburized material, and subjecting the material to a final anneal in a hydrogen-containing atmosphere for a period of time sufficient to effect secondary recrystallization.

4,202,712

PROPELLANT AND PYROTECHNIC WITH AMINO-SUBSTITUTED GUANIDINE SALTS OF DECAHYDRODECABORIC ACID

Terrence P. Goddard, Apto, Calif., assignor to Teledyne McCormick Selph, Hollister, Calif.

Division of Ser. No. 853,918, Nov. 22, 1977. This application Jun. 16, 1978, Ser. No. 916,406

Int. Cl.² C06B *43/00*

U.S. Cl. 149—22 **4 Claims**

1. A high energy monopropellant consisting essentially of the monoaminoguanidinium salt of decahydrodecaboric acid, having the formula $(CNHNH_2(NH_2)_2)_2B_{10}H_{10}$.

4,202,713

UNIT CHARGES OF PROPELLANT POWDER

Philippe R. Ragon, Soisy sur Seine, and Gerard Van Vooren, Elbeuf, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 14, 1977, Ser. No. 860,325

Claims priority, application France, Dec. 20, 1976, 76 38326

Int. Cl.² C06B *25/20*

U.S. Cl. 149—100 **11 Claims**

1. A unit charge of propellant powder, of potential energy essentially as pure nitrocellulose, free of energetic agents and free of thermosetting resin binders, capable of fragmenting and burning instantly, which consists essentially of grains of nitrocellulose agglomerated together by means of a gelatinizing plasticizer for said nitrocellulose, said plasticizer causing the ordered structure of the nitrocellulose to disappear irreversibly at a temperature between 40° and 100° C., said plasticizer having a melting point of up to 80° C. and being in an amount between 3 and 7% based on the weight of said nitrocellulose.

4,202,714

BALLISTIC MODIFIERS AND SYNTHESIS OF THE BALLISTIC MODIFIERS

Bernard J. Alley, Huntsville; James D. Dake, Redstone Arsenal, and Hiram W. H. Dykes, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 58,133, Sep. 11, 1970. This application Dec. 20, 1972, Ser. No. 316,600

Int. Cl.² C06B *23/00*

U.S. Cl. 149—109.4 **18 Claims**

12. A ballistic modifier composition, for use in solid propellants, said ballistic modifier composition consisting of the reaction product formed by mixing different metal ions selected from the group consisting of lead, copper, silver, cobalt, nickel, zinc and bismuth with from one to two chelating agents in the presence of a reaction liquid selected from the group consisting of water, acetone and alcohol to produce a reaction slurry; stirring said reaction slurry until a constant pH is obtained; and filtering said reaction slurry to separate the reaction product.

4,202,715

METHOD FOR MAKING A SPHERICAL MIRROR

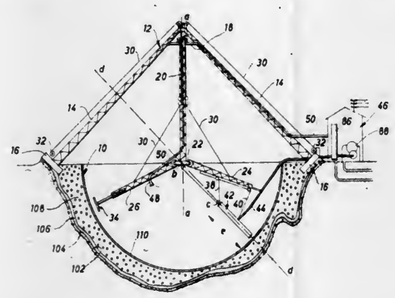
Georg Ziemba, Langenäckerstr 29, 7462 Frommern, Fed. Rep. of Germany

Filed May 25, 1977, Ser. No. 800,571

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1976, 2624672

Int. Cl.² G02B *5/08*; E04F *13/00*

U.S. Cl. 156—71 **5 Claims**



1. A method of producing a large spherical mirror for use in converting solar energy into technically useable energy comprising:

(a) preparing a depression having a shape approximating that of a hemisphere;

(b) applying a hardenable fortifying layer to the depression;

(c) applying a transition layer over said fortifying layer;

(d) applying a solidifiable foam layer over said transition layer;

(e) shaping said foam layer to form a hemisphere; and

(f) cementing a finished mirror layer to said solidified foam layer.

4,202,716

WALL COVERING AND METHOD OF MAKING SAME

Charles A. Roman, Lake Hopatcong, N.J., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 892,053, Mar. 31, 1978. This application Mar. 21, 1979, Ser. No. 22,535

Int. Cl.² B32B *31/20*

U.S. Cl. 156—79 **10 Claims**



1. A method of making a lightweight wall covering having a weight of less than 14 ounces per square yard and having a substantially smooth inside surface and a deep textured outer layer comprising the steps of, providing a substrate having an exposed surface which is adapted to define said inside surface, bonding a fluid impervious film against said substrate, disposing a controlled thickness of liquid vinyl plastisol containing a chemical blowing agent against said film, subjecting said liquid vinyl plastisol and its supporting substrate and film to a controlled temperature to activate said blowing agent and thus define an expanded vinyl plastisol, and embossing said expanded vinyl plastisol immediately after activation of said blowing agent to form said textured outer layer defined by alternating recesses and projections substantially free of air spaces, said air spaces constituting less than 10 percent of the volume of said textured outer layer, said embossing step providing said textured outer layer while simultaneously providing a substantially fluid impervious skin in said textured outer layer, said substrate and film once bonded together following said bonding step having a combined thickness which is roughly 10 mils and less, said embossing step defining said projections having a maximum thickness measured from the interface of said textured outer layer with said film which is within the range of roughly 3 to 12 times said combined thickness and defines said deep texture in said textured outer layer.

4,202,717

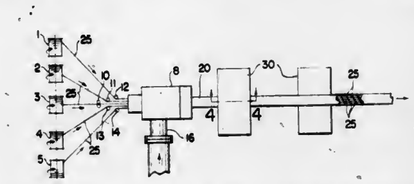
PRE-CURING BEAD WIRE COATING

Theophilus K. Selberling, Akron, Ohio, assignor to Mildred Kelley Selberling and Frances S. Voke, both of Akron, Ohio

Filed Sep. 13, 1976, Ser. No. 722,903

Int. Cl.² B29H *17/34*

U.S. Cl. 156—136 **6 Claims**



1. The process of producing a bead core for a pneumatic tire, comprising the steps of producing a tape consisting of an array of coplanar parallel flexible essentially inextensible tensile elements completely surrounded by rubber which contains heat-responsive curing ingredients and is also curable by electron irradiation, and subjecting both sides of the tape to electron irradiation, or other irradiation having the same curing effect on the rubber, to an extent increasing the firmness but not completely curing the rubber, coiling a plurality of convolutions of the tape into a ring of the size needed for the bead core, building the coil into a pneumatic tire with the margins of the plies turned around the bead coil, and heat-vulcanizing the assembly.

4,202,718

METHOD OF AND APPARATUS OF MANUFACTURING A FIBER-REINFORCED PRESSURE HOSE

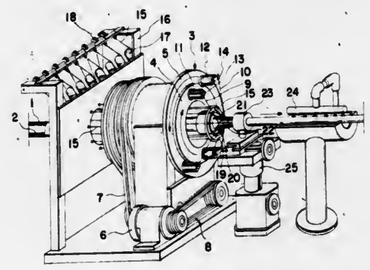
Tadashi Mizutani, Osaka, and Hiromichi Tachibana, Ogaki, both of Japan, assignors to Kuraray Plastics, Co., Ltd., Osaka, Japan

Filed Dec. 6, 1977, Ser. No. 857,909

Claims priority, application Japan, Dec. 9, 1976, 51-148978

Int. Cl.² B65H *81/00*

U.S. Cl. 156—171 **27 Claims**



1. A method of manufacturing a fiberreinforced pressure hose, which comprises the steps of:

forming a reinforcing layer on an elongated mandrel of a construction which has a first and second end and an outer peripheral surface formed with a plurality of guide grooves extending lengthwise of said mandrel, said mandrel being of substantially truncated conical shape tapering from said first end towards said second end thereof at a predetermined angle of convergence, the formation of the reinforcing layer being carried out by guiding a plurality of longitudinal reinforcing strands along the guide grooves on the mandrel in one direction while at least two circumferential reinforcing strands are wound on the longitudinal reinforcing strands on a section of the mandrel intermediate said first and second ends thereof and spirally in opposed direction to each other;

drawing the reinforcing layer outwards from said second end of said mandrel; and

supplying a resinous material to the reinforcing layer at a position outside of and longitudinally spaced from said mandrel to form a tubular product with the reinforcing layer embedded therein while the reinforcing layer being formed is continuously drawn away from the mandrel.

20. An apparatus for manufacturing a fiber-reinforced pressure hose, which comprises, in combination:

an elongated mandrel having first and second ends and an outer peripheral surface formed with a plurality of guide grooves extending lengthwise of said mandrel, said mandrel being of a substantially truncated conical shape tapering from said first end toward said second end thereof at an angle of convergence within the range of 0.5° to 10°;

a balance ring rigidly positioned to said first end of said mandrel and having a plurality of axial holes for guiding longitudinal reinforcing strands into the grooves of the mandrel;

means for winding at least two circumferential reinforcing strands on the longitudinal reinforcing strands on a section of said mandrel intermediate said first and second ends thereof and spirally in opposed directions to each other to form a substantially tubular reinforcing layer;

means for supplying a resinous material in a molten state toward said second end of the mandrel;

means defining an annular orifice for forming a tubular product from said resinous material with the reinforcing layer embedded therein, said annular orifice being disposed outside of and longitudinally spaced from said mandrel; and

means for drawing the tubular product being so manufactured.

4,202,719

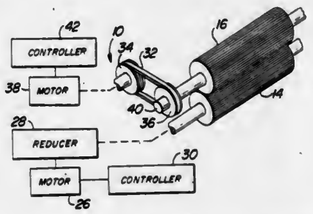
SINGLE FACER DRIVE

S. Stephen Linn, Marlton, N.J., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Apr. 10, 1978, Ser. No. 894,793

Int. Cl.² B31F *1/28*; B32B *31/12*; B65H *17/12*; B31F *1/26*

U.S. Cl. 156—205 **9 Claims**



1. In a single facer machine for producing an endless web of single faced paperboard having transverse crests comprising first and second corrugating rolls having longitudinally extending flutes in mesh, the improvement comprising motor means independently connected to each roll for separately rotating said rolls in opposite directions at substantially the same speed and without gearing said rolls directly together so

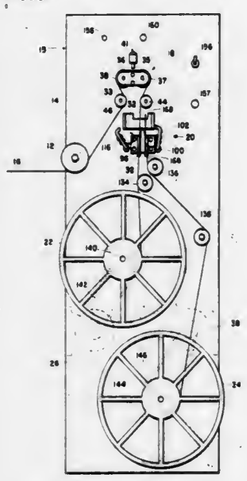
that said rolls may corrugate a web passing therebetween with minimal tension on the web.

4,202,720

WEB CUTTING AND SPLICING APPARATUS

Theodore R. Hughes, Tulsa, Okla., and Glenn L. McCarty, 6319 S. 45 W. Ave., Tulsa, Okla. 74132, assignors to Glen L. McCarty, Tulsa, Okla.

Filed Jun. 21, 1977, Ser. No. 808,448
Int. Cl.² B26D *5/00*
U.S. Cl. 156—353 **9 Claims**



1. Web cutting and splicing apparatus comprising pulley means for initially receiving the web therearound, braking means spaced from the pulley means for receiving the web therethrough, at least one actuator cooperating between the web and the braking means for selective actuation of the braking means to momentarily hold the web against longitudinal movement, cutting means spaced from the braking means for receiving the web therethrough, means operably connected with the cutting means for actuation simultaneously with the braking means for severing the web at a predetermined position thereon, first reel means spaced from the cutting means for receiving the leading end of the web thereon, first power means operably connected with the first reel means for selective rotation thereof to move the web from the pulley means to the first reel means for winding the web thereon, second reel means journalled in spaced relation to the first reel means, second power means operably connected with the second reel means for selective rotation thereof, means operably connected between said first and second power means for alternate actuation thereof, means cooperating between said second reel means and the cutting means for splicing the leading end of the severed web to a leader provided on the second reel means for transferring the winding of the web from the first reel means to the second reel means, and means cooperating between the first and second power means for stopping the actuation of the first power means upon the severing of the web and simultaneously starting the actuation of the second power means.

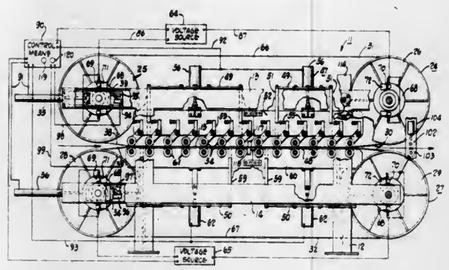
4,202,721

HEAT SEALING MECHANISM

John P. Roberts, Cantonment, Fla., assignor to St. Regis Paper Company, West Nyack, N.Y.

Filed Jan. 26, 1978, Ser. No. 872,669
Int. Cl.² B32B *31/00*; B30B *15/34*; B02C *11/08*; H05B *1/00*
U.S. Cl. 156—358 **8 Claims**

1. A sealing mechanism comprising, in combination,
conveyor means adapted to move first and second portions of heat sealable material in juxtaposed relationship in a first path,
said conveyor means including pulley means,
a rotatable hub and a band guiding surface on said pulley means,
insulating means relatively insulating said rotatable hub and said band guiding surface,
metal band means trained around said band guiding surface of said pulley means to establish first and second band runs on opposite sides of and along said first path,



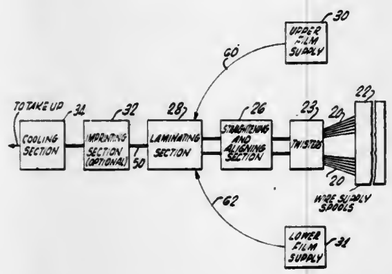
pressure means urging transversely toward each other said band runs with the heat sealable material portions adapted to be disposed therebetween to establish a sealing zone,
and means establishing an electrical current flow in said band guiding surface and into at least part of said metal band runs to heat said part and conduct heat in said sealing zone to said heat sealable material portions to cause said portions to be sealed together under heat and pressure.

4,202,722

APPARATUS FOR MAKING TWISTED PAIR MULTI-CONDUCTOR RIBBON CABLE WITH INTERMITTENT STRAIGHT SECTIONS

Patrick J. Paquin, Hamden, Conn., assignor to Spectra-Strip, Garden Grove, Calif.

Division of Ser. No. 725,539, Sep. 22, 1976, Pat. No. 4,096,006.
This application Mar. 13, 1978, Ser. No. 885,780
Int. Cl.² H01B *13/00*
U.S. Cl. 156—436 **19 Claims**



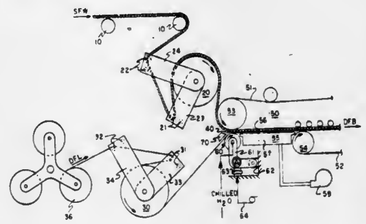
1. Apparatus for making multiconductor cable having a plurality of longitudinally extending insulated conductor pairs with each of said insulated conductor pairs having twisted conductor portions alternating, in series, with straight conductor portions, which comprises:
(a) means for starting and stopping twisting of said insulated conductor pairs to achieve twisted conductor portions having a twist length of a predetermined distance;
(b) means for maintaining the conductors of each of said insulated conductor paris as straight conductor portions for a predetermined distance after said stopping of twisting occurs;
(c) means for supplying first and second sheets of plastic film to opposite sides of said insulated conductor pairs to encapsulate both said twisted conductor portions and said straight conductor portions of said insulated conductor pairs therebetween upon subsequent lamination of said sheets of plastic film;
(d) means for laminating said sheets of plastic film to encapsulate both said twisted conductor portions and said straight conductor portions of said insulated conductor pairs between said sheets and to thereby form said multiconductor cable including:
(i) means for precisely laterally aligning said twisted conductor portions during their lamination having a first laminating roller formed with a series of channels therein for precise lateral spacing of each twisted conductor portion during lamination of the twisted conductor portions of the cable, and
(ii) means for maintaining precise alignment of said straight conductor portions of the cable during lamination having a second laminating roller formed with a series of channels therein for precise lateral spacing of said straight conductor portions during the lamination thereof; and
(e) means for sequentially positioning said first and second laminating rollers for lamination of the alternating twist and straight conductor portions, respectively.

4,202,723

AUTOMATICALLY CONTROLLED MACHINE FOR MAKING DOUBLE-FACE, POLYMER PLASTIC COATED, CORRUGATED PAPERBOARD

Partha S. Chaudhuri, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 758,040, Jan. 10, 1977, Pat. No. 4,071,392.
This application Oct. 11, 1977, Ser. No. 840,768
Int. Cl.² B31F *5/00*
U.S. Cl. 156—470 **3 Claims**



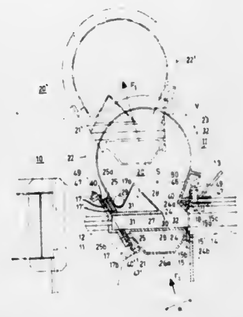
1. An apparatus for laminating a polymer plastic coated liner web surface to flute tip surfaces of a polymer plastic coated, single faced, corrugated web comprising:
means for heating said flute tip surfaces and one surface side of said liner web to a tacky state of said polymer plastic coatings;
a bonding nip between an endless belt carrying pulley and a cylindrical roller located along a continuous traveling route of said webs at a junction point therebetween whereat said heated liner web side is joined with said heated flute tip surfaces;
pneumatic spring means for resiliently holding said roller against said nip;
pressure control means for selectively changing the resilient holding force of said spring means; and,
jack means between said roller and said spring means to selectively adjust the opening of said bonding nip.

4,202,724

QUICK CONNECT APPARATUS FOR HEADBOX COMPONENTS IN A PAPER MAKING MACHINE

Alvi Kirjavainen, Jyvaskyla, Finland, assignor to Valmet Oy, Finland

Filed Feb. 28, 1979, Ser. No. 16,147
Claims priority, application Finland, Mar. 2, 1978, 780711
Int. Cl.² D21F *1/02*
U.S. Cl. 162—272 **12 Claims**



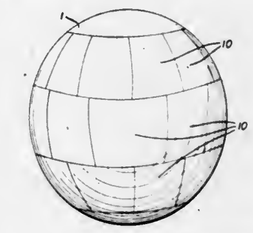
1. In a paper making machine, quick connect apparatus for detachably locking a component of the headbox, such as the air cushion damping device, the distribution header, cover, and-/or bottom plate, into its operative position and for unlocking the same to permit detachment thereof so that the headbox may be serviced, said component to be locked having forward and rearward edge regions in the direction of pulp stock flow adapted to matingly engage with corresponding edge regions of other components to define respective joints therewith, comprising:
an elongated locking rod extending over the substantial length of at least one of the edge regions of said component to be detachably locked in position;
a plurality of spaced locking portions provided on said elongated locking rod adapted to lockingly engage at least one other component of said headbox at its respective joint; and
means for moving said elongated locking rod, said locking rod being movable such that said locking portions are movable out of said locking engagement with said other component to unlock the same by actuation of said moving means.

4,202,725

CONVERGING BEAM FUSION SYSTEM

William S. Jarnagin, P.O. Box 127, Concord, Mass. 01742

Filed Mar. 8, 1978, Ser. No. 884,482
Int. Cl.² G21B *1/00*
U.S. Cl. 176—5 **1 Claim**



1. A converging beam nuclear fusion system comprising a plurality of diametrically opposed wedges joined to form a spherical reaction chamber, said wedges having an interior surface positioned at a predetermined fixed distance from the center of said chamber so as to form an interior spherical space;

a first plurality of said wedges containing electromagnet means of C-shape cross section, a second plurality of said wedges containing magnetic mirror means, two hemispherical electrically conductive bowls located in the interior spherical space so as to form a gap therebetween, said bowls each having at least one perforation; a high frequency high voltage power source connected across said bowls; at least one ion injection means operatively connected to at least one of said bowls, at least one output means operatively connected to at least one of said bowls, a vacuum pump means connected to said reaction chamber, wherein ions are injected into said bowls, therein accelerated across the gap of said bowls toward one of said spherical wedges whereupon said ions are deflected and returned to one of said bowls, accelerated across said gap to the diametrically opposed wedge where it is again deflected to return to other of said bowls so as to form a plurality of beams having figure eight pathways, and where the intersection of each FIG. 8 pathway is located at the center of the reaction chamber for the purpose of enhancing the density and probability of head-on collision of the ions.

4,202,726

LIQUID METAL COOLED FAST BREEDER NUCLEAR REACTORS

Edward Duncombe, Hale, and Gordon Thatcher, Warrington, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 28, 1978, Ser. No. 964,350
Claims priority, application United Kingdom, Dec. 12, 1977, 51635/77; Jan. 10, 1978, 904/78
Int. Cl.² G21C *15/00*
U.S. Cl. 176—18 **4 Claims**



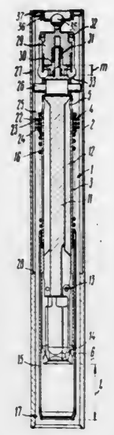
1. A liquid metal cooled fast breeder nuclear reactor having a fuel assembly comprising a plurality of elongate sub-assemblies upstanding in side-by-side array, the sub-assemblies in an outer zone of the fuel assembly each having an electro-magnetic braking device for regulating the flow of coolant through the sub-assembly, the magnetic fields of the electro-magnetic braking devices being temperature sensitive.

4,202,727

GRIPPING MEANS FOR FUEL ASSEMBLIES OF NUCLEAR REACTOR

Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29; Oleg N. Vijugov, ulitsa Novaya, 24, kv. 2; Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46; Alexandr F. Shapkin, ulitsa Zvezdinka, 3, kv. 64, and Lev E. Dyatlov, ulitsa Kuibysheva, 45, kv. 53, all of Gorky, U.S.S.R.

Filed Sep. 22, 1977, Ser. No. 835,582
Int. Cl.² G21C *19/20*; B66C *17/08*, *1/10*
U.S. Cl. 176—30 **4 Claims**



1. A gripping means for fuel assemblies of a nuclear reactor, which have heads of the type that includes a cylindrical portion conjugated with a contact surface, an internal cavity and at least one aperture for passage of a cooling medium into said internal cavity, which aperture is provided in said cylindrical portion of the fuel assembly head, comprising:

a housing having an outer surface;

a sealing member secured on said outer surface of said housing;

a slider accomodated in said housing and adapted for motion relative to said housing;

first apertures for passage of said cooling medium, provided in said housing;

second apertures for passage of said cooling medium, provided in said housing;

a cavity provided in the body of said slider and intended for passage of said cooling medium coming into said cavity through the first apertures of said housing and exiting through the second apertures of said housing;

gripping jaws pivotably secured on said slider to come into contact with said housing and grip and release said head of said fuel assembly as said slider and said housing move in relation to each other;

a casing mounted on said housing, adapted for motion in relation to said housing and having an internal cavity, a first end face and a second end face;

a spring arranged on said outer surface of said housing, having a first end and a second end and interacting with its first end with the first end face of said casing;

a cap mounted on the second end face of said casing and having an end face whose shape corresponds to that of said contact surface of said head of said fuel assembly;

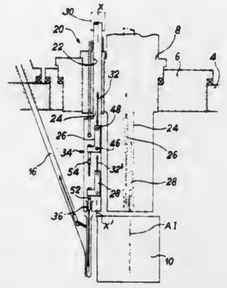
the length of said casing being selected so that as said gripping jaws grip said head of said fuel assembly, said end face of said cap comes into contact, under the action of said spring, with said contact surface of said head, thus forming a closed circuit for passage of said cooling medium through said internal cavity of said casing and through said aperture of said head into said internal cavity of said fuel assembly.

4,202,728

DOUBLE-ARM HANDLING DEVICE FOR A NUCLEAR REACTOR

Albert Allain, Bruyeres-le-Chatel, and Jacqui Buret, Saulx-les-Chartreux, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 3, 1977, Ser. No. 838,476
Claims priority, application France, Oct. 15, 1976, 76 31059
Int. Cl.² G21C *19/20*; B66C *17/08*, *1/10*
U.S. Cl. 176—30 **2 Claims**



1. A handling device for a nuclear reactor of the type comprising within a pressure vessel closed by a top shield slab provided with at least one rotating shield plug, a reactor core constituted by a plurality of fuel assemblies and a handling flask for receiving a fuel assembly, wherein said device comprises:

a vertical body having a vertical axis, the upper end of said body passing through said shield plug, and means for driving said body in rotation about said axis with respect to said shield plug,

a first carriage provided with a first horizontal arm, the free end of which is provided with a first grab adapted to open and close for gripping said fuel assemblies,

a first guiding means rigidly fixed to said body and adapted to guide said first carriage in vertical translational motion so that the first horizontal arm of said first carriage is movable in a first vertical plane,

a second carriage provided with a second horizontal arm, the free end of which is provided with a second grap adapted to open and close for gripping said fuel assemblies,

a second guiding means rigidly fixed to said body and adapted to guide said second carriage in vertical translational motion so that the second horizontal arm of said second carriage is movable in a second vertical plane distinct from the first vertical plane, and so that said second arm remains parallel to said first arm, and means for controlling independently the opening and closing of said grabs.

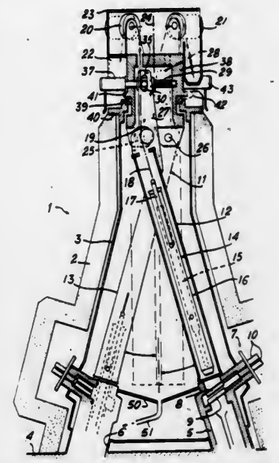
4,202,729

DEVICE FOR THE CHARGE AND DISCHARGE OF NUCLEAR REACTION FUEL ASSEMBLIES

Albert Allain, Bruyeres-le-Chatel; Jacqui Buret, Saulx les Chartreux, and André Plagnard, Montrouge, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 3, 1977, Ser. No. 839,032
Claims priority, application France, Oct. 15, 1976, 76 31060
Int. Cl.² G21C *19/20*; B66C *17/08*, *1/10*
U.S. Cl. 176—30 **6 Claims**

1. A device for the charge and discharge of fuel in a nuclear reactor provided with a reactor vessel and a top closure slab, said device comprising a leak-tight lock chamber placed over said top closure slab and fixed to said slab, first and second guide ramps passing through said slab, the upper end of said ramps opening into said chamber, said ramps communicating respectively with said reactor vessel and with an external storage container and being sealable by means of valves, a revolving unit having a vertical axis located within said chamber, first and second rectilinear rail sections adapted to receive a moving system together with a fuel assembly to be charged and discharged, said rail sections being carried by said revolving unit, said moving system being capable of displacement in sliding motion along each guide ramp under the action of a drive winch placed at the top of said lock chamber, means for rotating each rail section around a horizontal shaft carried by said revolving unit between a first inclined position within the extension of one of said guide ramps and a second vertical



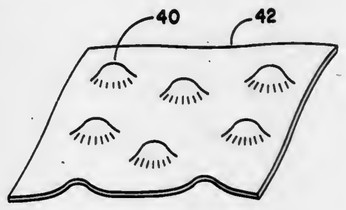
position, said rotating means comprising a lever which forms an extension of said rail section beyond the shaft thereof, and rocking means adapted to cooperate with said lever to displace said rail section from one position to the other one, and means for rotating said revolving unit around said vertical axis only when said two rail sections are in the second vertical position, said leak-tight lock-chamber having in horizontal cross section an elongated shape the greatest dimension corresponding to the position of the upper ends of said guide ramps, the lowest dimension corresponding to the two rail sections in the second vertical position.

4,202,730

RADIONUCLIDE DEPOSITION CONTROL

William F. Brehm, and Joseph C. McGuire, both of Richland, Wash., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 18, 1977, Ser. No. 760,302
Int. Cl.² G21C *15/00*
U.S. Cl. 176—37 **13 Claims**



1. A method for controlling deposition onto component surfaces of radionuclides manganese-54, cobalt-58 and cobalt-60 from a liquid metal stream containing said radionuclides and contacting said component surfaces, comprising disposing a getter material in said liquid metal stream with surfaces of said getter material contacting said liquid metal stream to chemi-

cally getter said radionuclides onto said getter material, wherein said getter material comprises at least 73 weight percent nickel.

4,202,731

CONDENSATION TUBE FOR A BLOW-OFF DEVICE FOR LIMITING EXCESS PRESSURE IN NUCLEAR POWER PLANTS, ESPECIALLY IN BOILING WATER NUCLEAR POWER PLANTS

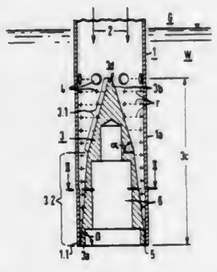
Ulrich Simon, Frankfurt am Main-Oberrad; Klaus-Dieter Werner, Frankfurt am Main-Langen, and Bernd Pontani, Alzenau, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Apr. 14, 1977, Ser. No. 787,324

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616831

Int. Cl.² G21C 9/00

U.S. Cl. 176—37 **8 Claims**



1. In a blow-off device for limiting excess pressure in nuclear power plants, a condensation tube disposed so that a lower outlet end thereof is immersed in a volume of water in a condensation chamber having a gas cushion located in a space above the volume of water, and an upper inlet end of the condensation tube extends out of the volume of water and is connectible to a source of steam that is to be condensed or a steam-air mixture, the outlet end of the tube, for stabilizing the condensation, being provided with a base member at the mouth of the tube permanently closing said tube mouth against discharge of steam flows in axial direction of the tube, and being formed with lateral outlet openings for discharging and for subdividing the steam flow and the bubbles produced in the volume of water so as to discharge the steam substantially transverse to the axis of the tube, the base member at the tube mouth being formed as a conical insert member having a base fastened to the condensation tube in vicinity of the mouth thereof and having an apex extending into the tube mouth, the lateral outlet discharge openings being disposed at least within the axial range of the insert member.

4,202,732

TIGHT CONNECTION BETWEEN FISSION GAS DISCHARGE CHANNELS

Wilfried Jung, Erlangen; Martin Peehs, Bubenreuth; Peter Rau, Mittelehrenbach über Forchheim; Wolfgang Krug, Jülich, and Horst Stechemesser, Linnich-Tetz, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim and Kernforschungsanlage Jülich GmbH, Julich, both of, Fed. Rep. of Germany

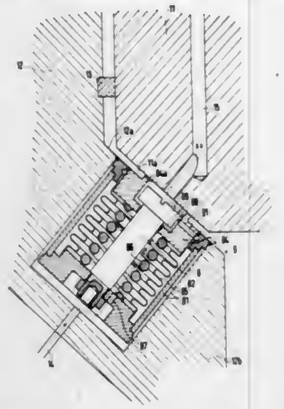
Filed Jul. 20, 1977, Ser. No. 817,223

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1976, 2633192

Int. Cl.² G21C 3/16

U.S. Cl. 176—37 **3 Claims**

1. In a gas-cooled nuclear reactor, a tight connection having an intentionally provided leak site between a fission-gas discharge channel formed in a reactor core carrying plate as well as in a head portion of encased fuel elements that are suspended in receiving bores formed in the core carrying plate, the tight connection being formed by an annular member having a sealing surface engaging the core carrying plate at a region thereof in which an opening to the fission-gas discharge channel formed in the core carrying plate is located, a gas-tight, elastic and substantially cylindrical member, variable in length, connecting said annular member to the fission-gas discharge channel formed in the head portion of the fuel element, compression spring means biasing said annular member in a direction away from the fission gas discharge channel formed in the fuel-element head portion, and a sealing abutment plate secured to a central pin and limiting clearance for play of said annular member with respect to an annular zone thereof disposed within said sealing surface of said annular member, the leak site comprising a radial bore formed in and extending through said annular member between said annular zone and said sealing surface of said annular member.



4,202,733

PROCESS AND APPARATUS FOR PREHEATING COAL INTENDED FOR USE IN COKING INSTALLATIONS

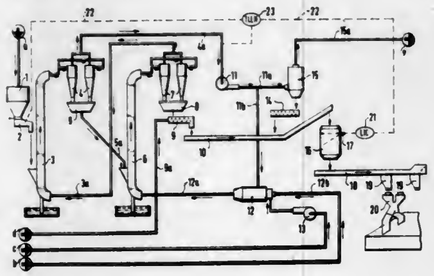
Willy Lüke, Düsseldorf, and Günter Gabriel, Bochum, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 959,186

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750513

Int. Cl.² C10B 57/10, 31/00, 29/00, 45/00

U.S. Cl. 201—1 **6 Claims**



1. A process of preheating coal prior to passing it into a coking installation, the said process comprising

feeding measured amounts of a relatively wet coal into and through at least one flow-through dryer heated by a heat carrier gas to an elevated temperature;

collecting the relatively dry hot coal in a collecting bin before passing the coal into the coking installation;

automatically measuring the level of the hot coal accumulated in said bin;

automatically adjusting the amount of coal fed per unit of time into said at least one dryer as a function of the level of coal measured in said collecting bin;

measuring the temperature of the exhaust gas expelled from said at least one dryer; and

automatically shutting off further adjustments of said amount of coal as the temperatures of the exhaust gas indicated by said measurement are below a predetermined minimum or above a predetermined maximum.

4. An apparatus for preheating coal prior to passing it into a coking installation, the said apparatus comprising

at least one flow-through dryer;

feeding means for charging relatively wet coal into said at least one dryer;

means for passing a heating gas through said dryer together with said coal;

a collecting bin for receiving the relatively dry hot coal from said dryer;

means for measuring the level of the hot coal accumulated in said collecting bin;

means for automatically adjusting the amount of coal fed per unit of time into said dryer as a function of the level of coal measured in said collecting bin;

a temperature sensor for measuring the temperature of the gas expelled from said dryer or one of said dryers; and

automatic lock and release means for keeping the said adjustment of the charge constant in response to said temperature sensor when the temperature of the exhaust gas is above or below said temperature limits and for reinstating the adjustment means when said temperature is again within the range of said temperature limits.

4,202,734

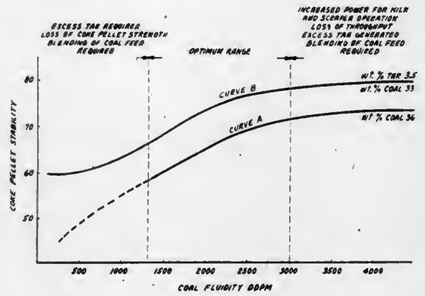
METHOD FOR PRODUCING CALCINED COKE PELLETS

Robert R. Greenbaum, Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 14, 1978, Ser. No. 877,635

Int. Cl.² C10B 45/02, 53/08, 57/04

U.S. Cl. 201—6 **10 Claims**



1. An improved method for producing calcined coke agglomerates having a stability index of not less than 60 percent from coals and blends of coals comprising:

(a) adjusting the fluidity of the coals and blends of coals to between 1300 DDPM and 3000 DDPM,

(b) charging a mix of the coals and blends of coals at a preheated temperature and char heated to a temperature higher than that of the coals and blends of coals into a rotating agglomerating drum,

(c) heating the coals and blends of coals by heat exchange from the char while agglomerating the mix in the rotating drum to form partially coked green coal agglomerates,

(d) discharging the partially coke green coal agglomerates from the rotating agglomerating drum,

(e) charging the partially coked green coal agglomerates into a calcining furnace, and

(f) heating the partially coked green coal agglomerates in the furnace for a time at a temperature to produce calcined coke agglomerates.

4,202,735

PROCESS FOR OPERATING COKING OVENS AND AN OVEN FOR USE IN SAID PROCESS

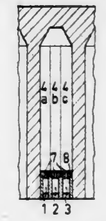
Heinz Dürselen, Essen-Überruhr; Franz-Josef Onnebrink, and Arnulf Schüffler, both of Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 10, 1978, Ser. No. 894,848

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717499

Int. Cl.² C10B 5/12, 5/20

U.S. Cl. 201—41 **10 Claims**



1. A process for operating a coking oven or a group of coking ovens wherein heating medium is furnished to the oven chambers from a bottom fire box of boxes and wherein regenerators or recuperators provide heat exchangers for waste gas, diluted gas or hot air, said process comprising passing the flow of waste gas or diluted gas or hot air through a plurality of parallel flow channels constituting the heat exchange surfaces of each regenerator or recuperator and reducing the portion of the total surfaces available for heat exchange in case of an extension of the coking time by throttling or shutting off the flow to at least one of said channels while operating the oven at normal output and adjusting the degree of said reduction of heat exchange surface to the degree of extension of coking time, whereby an excessive lowering of the temperature of discharged waste gas or air may be avoided.

4,202,736

PROCESS AND APPARATUS FOR THE THOROUGH PURIFICATION OF WATER AND THE HIGHLY PURIFIED WATER OBTAINED THEREBY

Herbert S. Marcovich, Saint-Cloud, and Remi D. Perrin, Paris, both of France, assignors to Institut Pasteur, Paris, France

Filed Jun. 13, 1977, Ser. No. 806,271

Claims priority, application France, Jun. 15, 1976, 76 18150

Int. Cl.² B01D 3/02

U.S. Cl. 203—10 **31 Claims**

1. A distillation process for producing apyrogenic water which comprises the following steps:

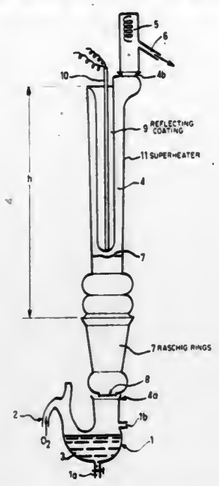
(a) introducing water into a heating zone,

(b) heating the water in the heating zone to convert it into steam,

(c) superheating the steam to a temperature within a range exceeding 300° C. and up to 700° C.,

(d) concurrently with step (c), passing the steam over and

between packing material inert at the temperature with respect to said steam and to any impurities therein and



thus maintaining the steam at said temperature for a dwell time sufficient to produce apyrogenic water, and

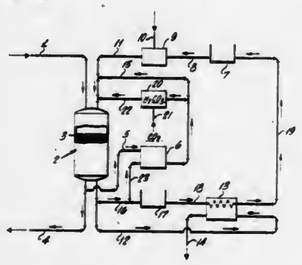
(e) condensing the superheated steam into apyrogenic water.

4,202,737

ION EXCHANGE PROCESS FOR DESALINATION

Hiroshi Shimizu, Tokyo, Japan, assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 2, 1978, Ser. No. 930,478
Int. Cl.[2] B01D *15/06*
U.S. Cl. 210—32 **14 Claims**



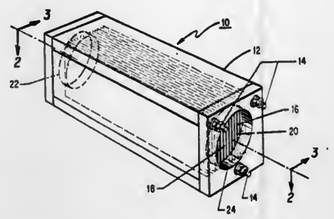
1. In an ion exchange process for desalination characterized by the steps of: (a) contacting an aqueous feed solution containing a salt of a strong acid with a thermally regenerable ion exchange resin having weakly acidic free acid groups and weakly basic free base groups whereby said resin is loaded with said salt by ion exchange and said feed solution is desalinated, (b) removing desalinated solution, and (c) thermally regenerating said resin and eluting from the resin the salt loaded thereon, the improvement which comprises converting said weakly basic free base groups to carbonate form weakly basic groups prior to or simultaneously with contact between said feed solution and said resin.

4,202,738

ELECTROLYTIC GENERATION OF HALOGEN BIOCIDES

Neil W. Stillman, Madison, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 740,870, Nov. 11, 1976. This application May 12, 1978, Ser. No. 905,386
Int. Cl.[2] C25B *1/26*; C02C *5/12*
U.S. Cl. 204—95 **4 Claims**



1. A method for the production of halogen from a dilute halogen salt solution in an amount sufficient to produce a biocidally active agent for the treatment of a liquid comprising the steps of: adding a sufficient amount of halogen salt to the liquid to produce a concentration thereof greater than 0.5 grams per liter; placing in line with the liquid distribution system, an electrolytic cell having a plurality of spaced planar electrode plates attached to the electrolytic cell enclosure in parallel fashion across the entire cross-section area of the liquid distribution system line connected to the electrolytic cell so that the openings at opposing ends of the electrolytic cell are nearly as large as the height of the spaced planar plates, with each of the spaced planar electrode plates having coatings on one side thereof such that an ionic potential is promoted in one direction through each of the spaced planar electrode plates by an electrical power source connected to substantially less than all of the spaced planar electrode plates; providing a liquid flow through the electrolytic cell passed the spaced planar electrode plates in the range of 1 to 3 feet per second (304 to 914 mm per second); operating the electrolytic cell noncontinuously in accordance with a pre-determined desired effective level of the biocidally active agent as electrolytically produced from the dilute halogen salt solution; and providing for the continued operation of the distribution system through the electrolytic cell when the electrolytic cell is not in operation for cleaning the spaced planar electrode plates.

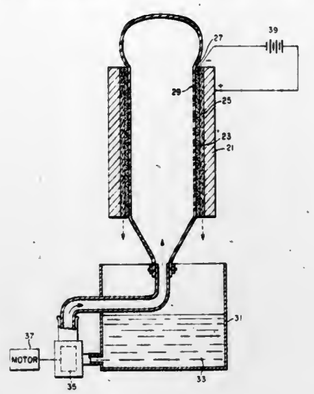
4,202,739

ELECTROCHEMICAL REMOVAL OF MATERIAL FROM METALLIC WORK

Tibor Csakvary, and Robert E. Fromson, both of Wilkens Township, Allegheny County, Pa., assignors to The United States of America as represented by the United Stated Department of Energy, Washington, D.C.

Filed Apr. 25, 1977, Ser. No. 790,226
Int. Cl.[2] B23P *1/00, 1/14*; C25F *7/00*
U.S. Cl. 204—129.35 **2 Claims**

1. The electrochemical machining method of removing material from metallic work with an electrolyte with apparatus including a deformable perforated electrically insulating web, a deformable perforated electrically conducting web, and a low voltage power supply, the said method comprising, placing said insulating web on said work so that it conforms with said work, placing said conducting web on said insulating web so that it is separated from, insulated with respect to, and conforms with said work, conducting said electrolyte through said webs to said work, responsive to the pressure exerted by said electrolyte applying pressure to said electrode to maintain the spacing between said electrode and work, and supplying a high current from said supply between said conducting web and work to remove said material from said work, the voltage



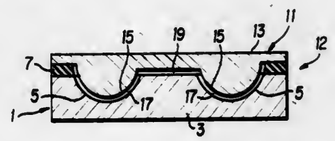
of said supply being so low that no arcing occurs between said conducting web and said work.

4,202,740

APPARATUS AND METHOD FOR DISINFECTING OBJECTS

Glenn E. Stoner, and George L. Cahen, Jr., both of Charlottesville, Va., assignors to Research Corporation, New York, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,513
Int. Cl.[2] A61L *1/00*
U.S. Cl. 204—130 **26 Claims**



1. A method for disinfecting an object which comprises:

holding said object by an electrically conductive substrate,

immersing the combination of said object and said electrically conductive substrate in an electrolyte solution within an electrolytic cell, wherein said cell contains at least one pair of electrodes,

impressing an alternating potential across the electrodes of said cell sufficient such that said electrically conductive substrate becomes a bipolar electrode, and maintaining said bipolarism for a time sufficient to disinfect said object.

4,202,741

ENRICHMENT OF NITROGEN ISOTOPES BY INDUCED ISOMERIZATION OF ISOCYANIDES

Allen Hartford, Jr., Denville, and Sam A. Tuccio, Randolph, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Apr. 3, 1978, Ser. No. 893,099
Int. Cl.[2] B01D *59/00*; B01J *1/12*
U.S. Cl. 204—158 R **10 Claims**

1. A process for obtaining nitrile compounds which are enriched in a particular first elemental isotope which comprises exposing a gaseous organic isocyanide containing said first isotope and one or more other isotopes of the same element to infrared radiation of a predetermined wave length from a laser-based device which selectively isomerizes said isocyanide containing said first isotope to the corresponding nitrile without substantially isomerizing said isocyanide containing other isotopes of said element.

4,202,742

PHOTOPOLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS

Peter M. Castle, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 30, 1979, Ser. No. 34,311
Int. Cl.[2] C08F *2/46, 4/00*
U.S. Cl. 204—159.23 **10 Claims**

1. A method of photopolymerizing an ethylenically unsaturated monomer comprising

(1) preparing a composition of an ethylenically unsaturated monomer and at least about 0.1 mole percent of an inhibitor selected from the group consisting of parabenzoquinone, hydroquinone, and mixtures thereof, said composition being free of any photoinitiator; and

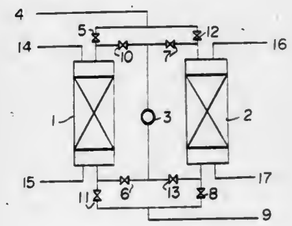
(2) irradiating said composition with light having a wavelength within the absorption band of said inhibitor, said wavelength being outside of the ultraviolet band.

4,202,743

ELECTROLYSIS OF AQUEOUS SOLUTION OF SODIUM CHLORIDE

Yoshio Oda; Manabu Suhara; Shoziro Goto; Takashi Hukushima, all of Yokohama; Koji Miura, Chohfu, and Toshikatsu Hamano, Yokohama, all of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed May 2, 1978, Ser. No. 902,084
Claims priority, application Japan, May 4, 1977, 52-50685; Nov. 29, 1977, 52-142269
Int. Cl.[2] C25B *1/16, 1/26*
U.S. Cl. 204—98 **12 Claims**



1. In a process for producing sodium hydroxide by an electrolysis of an aqueous solution of sodium chloride by employing a fluorinated cation exchange membrane having an ion-exchange capacity of 0.8 to 2.0 meq/g dry polymer and having carboxylic acid groups as functional groups and maintaining a concentration of an aqueous solution of sodium hydroxide in a cathode compartment in a range of 20 to 45 wt.%, an improvement characterized by electrolyzing the aqueous solution of sodium chloride while maintaining a calcium concentration in the aqueous solution of sodium chloride lower than 0.08 mg/liter and a magnesium concentration lower than 0.04 mg/liter.

4,202,744

PRODUCTION OF HYDROGEN

Yen-Chi Pan, Westfield, and John S. Batzold, Union, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 14, 1979, Ser. No. 38,925
Int. Cl.[2] C25B *1/02*
U.S. Cl. 204—129 **10 Claims**

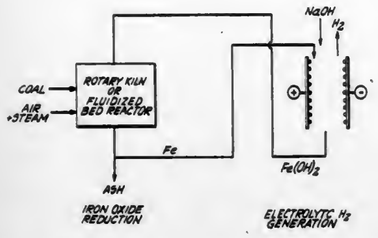
1. A process for manufacturing hydrogen which comprises:

(a) passing an aqueous electrolyte and elemental iron or cobalt particles to an electrolytic cell comprising a cathode and a magnetic anode, said anode adapted to attract and retain said iron or cobalt particles;

(b) anodically oxidizing at least a portion of said iron or cobalt particles to non-ferromagnetic iron or cobalt con-

taining species with the generation of hydrogen at said cathode;

(c) passing said hydrogen and said oxidized, non-ferromagnetic iron or cobalt containing species from said cell;



(d) reducing at least a portion of said oxidized, non-ferromagnetic iron or cobalt containing species to elemental iron or cobalt by contacting the same with a carbonaceous reducing agent at elevated temperatures; and

(e) recycling at least a portion of the elemental iron or cobalt from step (d) to step (a).

4,202,745

METHOD FOR TREATING A DESIZING WASTE STREAM

Jurgen H. Exner, and Cyril B. Henke, both of Knoxville, Tenn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 7, 1978, Ser. No. 922,925

Int. Cl.[2] C02B *1/20*; C02C *5/02*

U.S. Cl. 204—180 R **5 Claims**

1. A method for treating an aqueous desizing waste stream containing dispersed polyvinyl alcohol which consists essentially of combining said stream with an aqueous nonoxidizing salt solution wherein the salt is Na_2SO_4, K_2SO_4, $(NH_4)_2SO_4$, Na_2CO_3, or K_2CO_3 under conditions of high shear mixing to an average salt concentration of about 7–14 percent by weight and a final salt concentration of at least about 4 percent at ambient temperature to about 80° C. to precipitate the major portion of the polyvinyl alcohol as a material containing less than twenty percent by weight of agglomerated salt and separating said precipitated polyvinyl alcohol from the mixture.

2. The process of claim 1 wherein the treated stream is subjected to electrodialysis after separation of the precipitated polymeric size, thereby producing a brine low in organic impurities and enriched in salt content and a solution low in salt content and high in organic impurities.

4,202,746

PREPARATION OF WATER-DILUTABLE POLYMERIC COMPOSITIONS AND CATHODIC COATING OF METALLIC SUBSTRATES

Cedric Lee, Harlow, and Martin E. Burrage, Bishops Stortford, both of England, assignors to Polymer Investments N.V., Curacao, Netherlands Antilles

Filed Jun. 26, 1978, Ser. No. 919,101

Claims priority, application United Kingdom, Jun. 27, 1977, 26849/77

Int. Cl.[2] C25D *13/06*

U.S. Cl. 204—181 C **7 Claims**

1. A process for applying a protective coating of a polymeric material to a metal substrate, comprising the steps of connecting the substrate as a cathode while immersed in a bath of an aqueous polymeric composition, connecting an anode as a counter-electrode in said bath, passing electric current between said anode and cathode thereby to electrodeposit polymeric material on said substrate,

said polymeric composition comprising a water-dilutable composition obtained by the steps of partially epoxidising a liquid polydiene selected from the group consisting of homopolymers of a 1,4-conjugated diene and copolymers comprising a major proportion by weight of a 1,4-conjugated diene and a minor proportion of monomer copolymerisable therewith, the liquid polydiene having a molecular weight such that the cathodically deposited layer of polymeric material will not substantially tend to run off a vertical surface, aminating the epoxidised polydiene at a temperature of at least 120° C. with at least one polyamine reactant to provide an ungelled liquid aminated epoxidised polymer containing at least one milliequivalent of combined amine groups per gram of said liquid aminated polymer, and thereafter at least partially neutralising the aminated polymeric material with acid to yield a water-dilutable material containing residual unsaturation in the polymer chain, and subjecting the electrodeposited polymeric material to oxidative cross-linking by reaction of residual unsaturation in the polymer chain with atmospheric oxygen at elevated temperature.

4,202,747

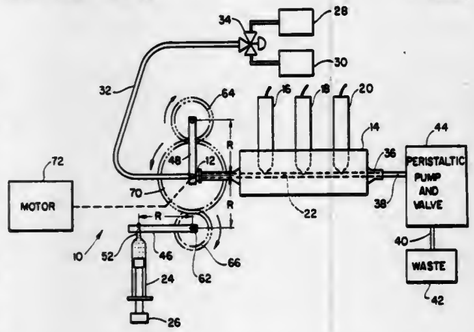
FLOW CELL FLUID AND SAMPLE SUPPLY MECHANISM

Edmund E. Buzza, Fullerton, and Richard C. Meyer, La Habra, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 6, 1978, Ser. No. 922,458

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 R **6 Claims**



1. In a flow cell for sample analysis including a passage therein for accommodating sample flow therethrough past sample measuring apparatus, the flow cell passage having a fluid entrance port, an improved fluid and sample supply mechanism comprising:

sample supply means having an outlet through which sample is delivered;

a first delivery mechanism supporting said sample supply means for presenting the outlet thereof to the fluid entrance port of said flow cell passage;

means for rotating said first delivery mechanism about an axis of rotation generally perpendicular to the direction of flow through said fluid entrance port to move said outlet in an arcuate path toward and away from said fluid entrance port;

fluid supply means including an outlet through which fluid is delivered;

a second delivery mechanism supporting said fluid delivery means for presenting the outlet thereof to the fluid entrance port ofsaid flow cell passage;

means for rotating said second delivery mechanism about an axis of rotation generally perpendicular to the direction of flow through said fluid entrance port to move the fluid delivery outlet in an arcuate path toward and away from said fluid entrance port; and

means for controlling the rotation of said first and second delivery mechanisms to selectively position the outlet of said sample supply means or the outlet of said fluid supply means at the fluid entrance port of the flow cell passage for delivering sample or fluid, as required, through said fluid entrance port into the flow cell passage.

4,202,748

ELECTROCHEMICAL MEASURING CELL

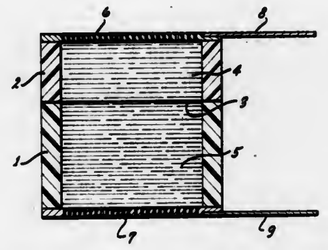
Armin Kronelsen, Frankfurt, Fed. Rep. of Germany, assignor to Hartmann & Braun AG., Frankfurt, Fed. Rep. of Germany

Filed Jul. 26, 1978, Ser. No. 928,058

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733781

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 R **12 Claims**



1. An electrochemical measuring cell for measuring the content of a particular component in a fluid, comprising:

container means;

an electrolyte in the container means distinct from the fluid;

a pair of electrodes made of similar metal and disposed on the container means to be in contact with the electrolyte therein, said electrodes being of perforated construction to permit said fluid to contact the electrolyte adjacent to the electrodes;

an additive in the electrolyte selected for reacting only with the particular component and being disposed in the vicinity of only one of the electrodes; and

barrier means disposed in the container separated from each electrode but in contact on each side with said electrolyte which separates the barrier means from the fluid external to the cell, for preventing the migration of the additive and of reaction products thereof with the particular component to the other one of the electrodes of the pair.

4,202,749

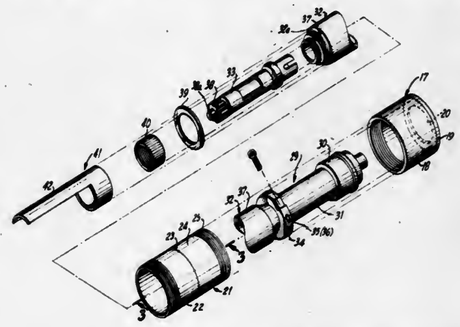
PROBE SYSTEM FOR DETERMINING ACIDITY OF FLUID FLOWING THROUGH PRESSURIZED PIPE LINE

Thomas C. Phelps, Gaston, and Clifford J. Reese, Roanoke Rapids, both of N.C., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 19, 1979, Ser. No. 31,392

Int. Cl.[2] G01N *27/36*

U.S. Cl. 204—195 G **13 Claims**



1. A pH probe system having a pH probe adapted to be removably installed in-line within a pressurized pipe line to determine the acidity of fluid flowing through the pipe line, said system including:

(a) a mounting means secured to the external wall of said pipe line to mount said probe;

(b) a valve means in said mounting means to prevent fluid flow from said pipe line after said probe is removed from said pipe line;

(c) a cap means removably secured to said mounting means and having an opening therethrough;

(d) an elongated pH probe including a transducer which converts the acidity of the fluid in contact with the probe to an electrical signal representative of said acidity;

(e) a plastic resin coating on said pH probe adherent thereto and establishing an elongated sheath having a uniform external shape and size along its length; and

(f) sealing means within said cap means to seal against said sheath and to prevent fluid from flowing past said cap means, said sealing means permitting movement of said sheath relative to said cap means upon installation and removal of said probe within said pipe line.

4,202,750

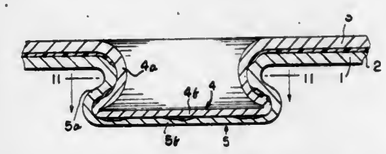
CONTAINER ANODE

Nick S. Khoury, Worth, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,724

Int. Cl.[2] C23F *13/00*

U.S. Cl. 204—197 **8 Claims**



1. An article of manufacture comprising a container for a product likely to be deteriorated due to galvanic action, said container having a ferrous alloy wall with an inner surface having a protective coating thereon, an area on said wall having fractures in said coating, a sacrificial anode of sheet metal attached to said inner surface of said container wall at said fractured area, both said container wall and said anode being imperforate, said container wall and said anode each being formed with at least one protrusion, said anode having a portion circumjacent to said protrusion positioned in close opposition to said coating on said container wall and said protrusions having interlockingly nested leak tight overlapped portions formed in situ, said overlapped portion of said anode extending through said fractures and establishing electrical conductivity contacts through the fractures in said coating and said contacts being isolated from the interior of the container wall to prevent exposure of the underlying ferrous alloy to the product.

7. A method of attaching a sacrificial anode of sheet material to a wall portion of a can or similar metal container having a protective coating of product-compatible material on the inside surface thereof, comprising the steps of:

providing an anode of sheet material, pre-fracturing said coating in a predetermined area by impacting against the coating to form fractures thereby exposing the metal therebeneath, forming at least one protrusion in each of said wall portions and said anode in said fractured area of the coating while nesting the protrusions of said anode and said wall portion and

reforming aid nested protrusions to form interlocked rivets and expanding the anode rivet through the fractures and thereby establishing electrical conductivity therebetween and

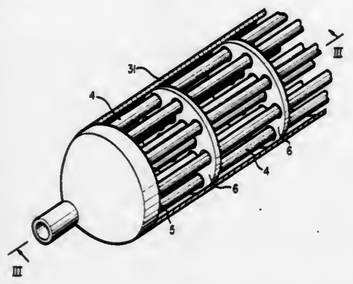
said anode being dimensioned and positioned to completely shield the region of electrical conductivity from direct contact with product adapted to be placed within the can.

4,202,751

SACRIFICIAL ANODE AND APPARATUS EMPLOYING SAME FOR TREATING HOT SEA WATER

Toshio Fukuzuka; Kazutoshi Shimogori, both of Kobe; Hiroshi Satoh, Suita; Fumio Kamikubo, and Tatsuo Hara, both of Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed May 15, 1978, Ser. No. 905,940
Claims priority, application Japan, Nov. 28, 1977, 52-143128
Int. Cl.² C23F *13/00*
U.S. Cl. 204—197 5 Claims



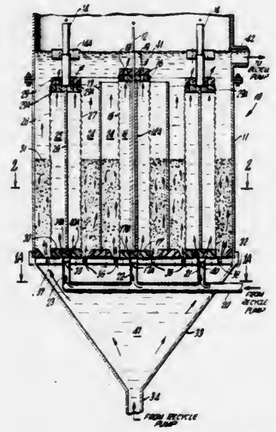
1. In an apparatus for treating hot sea water which contains components made of copper alloy and titanium or titanium alloys, the improvement comprising: a sacrificial anode provided in said apparatus in a position which contacts sea water, in a manner which establishes an electrical shortcircuit with said copper alloy and titanium or titanium alloy components serving as cathodes, said anode maintaining the potential of said components in the range of −0.5 to −0.65 V with respect to the potential at a saturated calomel electrode.

4,202,752

CELL WITH MULTIPLE ANODE-CATHODE CHAMBERS FOR FLUID BED ELECTROLYSIS

William G. Sherwood, Golden; Donald R. Hodges, Denver, both of Colo., and Cvetko Nikolic, Harvey, La., assignors to Amax Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 12,177, Feb. 16, 1979, and Ser. No. 12,178, Feb. 16, 1979. This application Apr. 3, 1979, Ser. No. 26,493
Int. Cl.² C25D *17/00, 21/04, 21/12, 21/16*
U.S. Cl. 204—222 14 Claims



1. A fluid bed electrolysis cell with multiple anode-cathode chambers which comprises,

a first anode disposed axially in said electrolysis cell within an anode chamber surrounded by a first porous diaphragm,

a first cathode surrounding said anode chamber,

said cathode being spaced such that an annular cathode chamber is provided adjacent and surrounding said anode chamber and adapted to support a fluidizable cathode bed of electrically conductive particulate material,

a second porous diaphragm spaced from and surrounding said first cathode,

said second diaphragm defining an annular chamber surrounding said first cathode adapted to support a fluidizable cathode bed of electrically conductive particulate material,

at least a second anode surrounding said second diaphragm,

a third porous diaphragm surrounding said second anode and at least a second cathode spaced from and surrounding said third diaphragm,

said third diaphragm and said at least second cathode defining a second cathode chamber adapted to support a fluidizable cathode bed of electrically conductive particulate material,

means for continuously feeding into said annular cathode chambers and said anode chambers an electrolyte containing at least one electroplatable metal ion,

the feed rate of said electrolyte being such as to maintain said bed of particulate material in said cathode chambers in an electro-chemically active fluidized state,

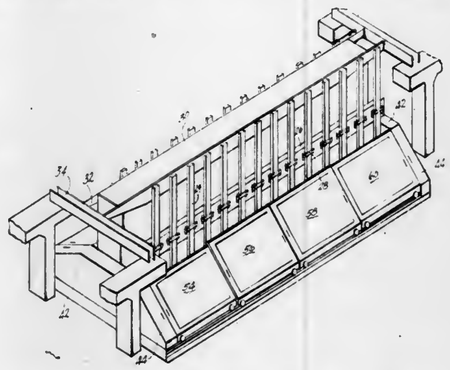
and cell exit means for said electrolyte.

4,202,753

REDUCTION CELL HOOD

Donald R. Bradford, and James E. White, both of Lake Charles, La., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 23, 1979, Ser. No. 32,032
Int. Cl.² C25C *3/22*
U.S. Cl. 204—247 6 Claims



1. In an alumina reduction cell having a pan containing a bath of molten electrolyte, a steel skirt supported over said bath and a plurality of carbon anodes disposed in said bath, the improvement comprising:

a first and second plurality of shields each having a first and a second spaced apart end face arranged to form a lateral enclosure along said cell;

track means mounted on said pan, said track means comprising a first outer track and a second inner track spaced from and parallel to said first outer track, said tracks extending the entire length of said cell; and

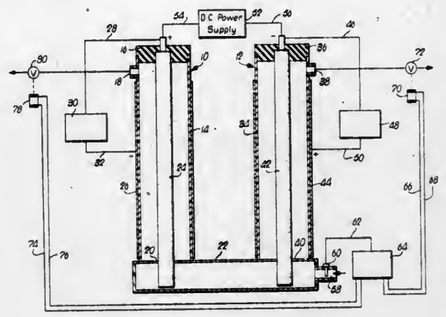
wherein said shields are slidably mounted on said cell and include a flexible gasket secured thereto for sealing the gap between said shields and said track means.

4,202,754

COMBINATION ELECTROLYTIC AND ELECTROSTATIC TREATER

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed Dec. 26, 1978, Ser. No. 972,676
Int. Cl.² C25B *9/00*
U.S. Cl. 204—272 4 Claims



1. A combination electrostatic and electrolytic treater for use in treating an electrolyte, said treater comprising:

a pair of separate chambers;

a pair of oppositely charged electrodes associated with each of said chambers respectively;

means electrically insulating one electrode of each chamber from the other electrode of the same chamber so that, as between electrodes of the same chamber, there can be no electrical current flow when an electrolyte is present therebetween; and

means for electrically connecting electrolyte in one of said chambers with electrolyte in the other,

the other electrode of each chamber being bare for direct physical contact with electrolyte contained within the corresponding chamber and said other electrodes being charged electrically oppositely of one another whereby to establish an electrical current flow between said other electrodes via said connecting means when electrolyte is present and to encourage coagulation and flocculation of hydrated solids within the electrolyte.

4,202,755

CATALYTIC METHOD FOR MAKING PITCH

Gerald H. Spiegelman, Wayne; Harry B. Nickles, Glen Rock, and Jack M. Solomon, West Caldwell, all of N.J., assignors to Witco Chemical Corp., New York, N.Y.

Filed Nov. 3, 1978, Ser. No. 957,762
Int. Cl.² C10C *3/04*
U.S. Cl. 208—5 6 Claims

1. A method for making petroleum pitch comprising passing an oxygen containing gas source through a petroleum bottoms feedstock containing metallic sodium in amounts of 0.5 to about 5.0 weight percent at a temperature in the range of 650° to 750° F. for from about 5 to 100 minutes to obtain a pitch having a specific gravity of up to about 1.35 25/25.

4,202,756

PROCESS FOR THE PRODUCTION OF SOLVENT-REFINED COAL USEFUL AS STARTING MATERIAL FOR OTHER CARBONACEOUS PRODUCTS

Hisashi Murakami, Tokyo; Toshikatsu Ohtsubo, Kamishirakawa; Kenji Fukuda, Yamashita, and Noriaki Ohnishi, Ogawa, all of Japan, assignors to Mitsui Mining Co., Ltd. and Mitsui Coke Co., Ltd., both of Tokyo, Japan

Filed Jan. 9, 1978, Ser. No. 867,751
Claims priority, application Japan, Jan. 14, 1977, 52/2499; Jan. 14, 1977, 52/2500; Jan. 14, 1977, 52/2501
Int. Cl.² C10G *1/04*
U.S. Cl. 208—8 LE 15 Claims

1. Process for the production of solid solvent-refined coal useful as a starting material for carbonaceous products selected from the group consisting of micromosaic carbonaceous products, coarse mosaic carbonaceous products and needle like carbonaceous products which process comprises: dissolving in a hydrocarbon solvent a starting coal selected from the group consisting of coals intrinsically having an oxygen/carbon atomic ratio (O/C) of 0.030 to <0.055 and coals pre-treated with a solvent, under hydrogen pressure, so as to have said O/C atomic ratio of 0.030 to <0.055; heating the resultant coal solution at a temperature of 380°–450° C. in the presence of a hydrogen pressure of at least 10 kg/cm²G for a period of time sufficient to produce a solvent-refined coal selected from one having an O/C atomic ratio of 0.040 to <0.046, one having an O/C atomic ratio of 0.030 to <0.040 and one having an O/C atomic ratio of less than 0.030 removing undissolved matter from the resulting reaction mixture and removing said solvent to recover the solvent-refined coal.

4,202,757

COAL LIQUIFICATION PROCESS

Steven C. Amendola, Scarsdale, N.Y., assignor to Future Research, Inc., Yonkers, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,799
Int. Cl.² C10G *1/06, 13/02*; C10J *3/00*
U.S. Cl. 208—10 21 Claims

1. A process for rapidly converting essentially solid carbonaceous material to essentially liquid and gaseous hydrocarbon products, comprising a first phase of reacting said solid material with at least one acid to form carbon addition products, and a second phase of reacting products of the first-phase reaction with a Lewis acid, halide-ion-acceptor (super-acid) system and hydrogen donor source (hydrogenation), and wherein the acid or acid combinations used in the first phase is capable of donating a negative ligand to the Lewis acid in the second phase in order to form carbonium ions.

4,202,758

HYDROPROCESSING OF HYDROCARBONS

Mark J. O'Hara, Mt. Prospect; Russell W. Johnson, Hoffman Estates, and Lee Hilfman, Mt. Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

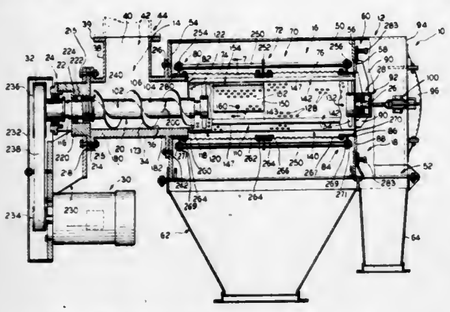
Continuation-in-part of Ser. No. 838,435, Sep. 30, 1977, Pat. No. 4,141,860. This application Dec. 26, 1978, Ser. No. 973,304
The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.
Int. Cl.² C10G *23/02*
U.S. Cl. 208—143 15 Claims

1. A hydrocarbon hyroprocess which comprises reacting a hydrocarbon with hydrogen at conditions selected to effect chemical consumption of hydrogen, and in contact with a catalytic composite comprising an alumina-zeolite support. a rare earth exchange metal component, at least one metal component from Group VIB or Group VIII and from about 0.1 to about 5 weight percent of at least one component from Group IIA based on the weight of the finished catalyst.

4,202,759
CENTRIFUGAL SCREENING APPARATUS

Otto C. Krolopp, Downers Grove, and Leonard M. Haluch, Chicago, both of Ill., assignors to Prater Industries, Inc., Chicago, Ill.

Filed Nov. 24, 1978, Ser. No. 963,402
Int. Cl.[2] B07B 9/00
U.S. Cl. 209—234 8 Claims

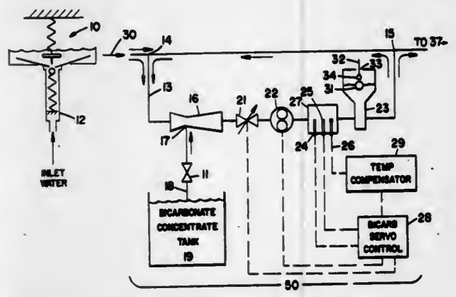


1. A centrifugal screening apparatus comprising:
a housing defining a tubular bulk materials in-feed chamber and a screening chamber in open side-by-side communication,
with said screening chamber being at one end of said in-feed chamber and defining a gravity discharge outlet therefrom,
an auger assembly received in said chambers,
a screening sleeve mounted in said screening chamber through which said auger assembly extends,
said screening sleeve comprising foraminous material through which the bulk materials are to be screened,
said auger assembly comprising:
an auger extending through said in-feed chamber and being journaled at one end thereof at the other end of said in-feed chamber,
said auger at its other end extending into said screening chamber,
a combination metal trap and bulk material feed distributor disposed within said screening sleeve and comprising:
a cylindrical shell extending the effective length of said screening sleeve and having an internal diameter that exceeds that of said auger and an outer diameter whereby the outer surfacing of said shell is in closely spaced relation to but spaced from said screening sleeve,
said shell defining lengthwise thereof uniformly spaced apertures thereabout separated by imperforate walling,
said shell at one end thereof extending over said other end of said auger,
first spider means disposed interiorly of said shell for making said shell one end fast to said auger other end in coaxial concentric relation thereto,
a stub shaft disposed adjacent the other end of said shell,
second spider means disposed interiorly of said shell for making said shell other end fast to said stub shaft in coaxial concentric relation thereto,
said housing further defining in alignment with said screening sleeve a tailings receiving chamber,
third spider means for journaling said stub shaft in coaxial alignment with said auger and disposed exteriorly of said shell other end,
said shell other end being open to said tailings chamber,
means for making said screening chamber closed to said tailings receiving chamber exteriorly of said screening sleeve,
said first spider means being open for unrestricted movement therethrough of the bulk materials from the auger into said shell,
said second and third spider means being open for unrestricted movement therethrough of tailings from said shell into said tailings chamber,
means for rotating said auger assembly at a speed that is at least 200 rpm,
said shell apertures being proportioned in size for effecting bulk material passage radially of said shell under the centrifugal force generated by said auger assembly along substantially the length of said shell for spreading the bulk material applied in screening relation to said screening sleeve substantially along the length thereof,
and means for feeding the tailings that are externally of said shell longitudinally thereof into said tailings chamber,
whereby tramp metal in said bulk material larger than said apertures on entering said shell becomes adhered to the inside of said shell under centrifugal force during operation of said screening apparatus and is thereby held from penetrating said screening sleeve.

4,202,760
APPARATUS AND METHOD FOR PREPARATION OF A HEMODIALYSIS SOLUTION OPTIONALLY CONTAINING BICARBONATE

L. Robert Storey, Hollywood, Fla., and Robert C. Hall, Pleasant Hill, Calif., assignors to Cordis Dow Corp., Miami, Fla.

Filed Jul. 24, 1978, Ser. No. 927,322
Int. Cl.[2] B01D 13/00, 31/00
U.S. Cl. 210—22 A 18 Claims



1. Apparatus for preparing dialysate for use in hemodialysis which comprises a main line connected at its inlet end to a water source and at its exit end to an artificial kidney, a dialysate recirculation line connected into said main line at an upstream end and at a spaced downstream end, and including dialysate venturi means connected at its ends into said recirculation line and at its throat portion with a line to a dialysate concentrate tank, conductivity measuring means in said recirculation line adjacent to and downstream of said venturi means, and pump means in said recirculation line downstream of said conductivity measuring means.

4,202,761
SORTING APPARATUS FOR SORTING FIBER SUSPENSIONS

Emil Holz, Eningen, Fed. Rep. of Germany, assignor to Hermann Finckh Maschinenfabrik, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,223
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712749
Int. Cl.[2] B04C 9/00
U.S. Cl. 209—17 19 Claims

1. An apparatus for sorting fiber suspensions comprising:
a stationary cylindrical screen cage;
a rotor having a cylindrical wall mounted concentrically relative to the screen cage, the screen cage and said rotor forming an annular space therebetween;
an inlet for fiber suspension to be sorted, the inlet being in flow communication with one end of said annular space to introduce at least a first portion of the fibrous suspension to be sorted into said one end of the annular space, the fibrous suspension within the annular space flowing generally toward the other end of said annular space, a portion of the suspension within the annular space passing through the screen cage as accepted stock, the suspension within the annular space and that passing from said other end thereof being unaccepted stock, the action of the rotor causing the unaccepted stock within the annular space to increase in consistency as it flows toward said other end of the annular space;
an accepted stock outlet in flow communication with the side of said screen cage opposite the annular space; and
an unaccepted stock outlet in flow communication with at least said other end of the annular space, the apparatus further comprising means connecting the inlet directly to the other end of the annular space for introducing fibrous suspension to be sorted into the thickened unaccepted stock at the other end of the annular space to reduce the consistency of the latter to facilitate its conveyance to the unaccepted stock outlet.

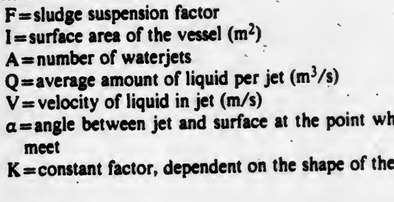
19. An apparatus for sorting fiber suspensions comprising:
a vortex cleaner, said vortex cleaner generating a vertically upward flow of fibrous suspension to be sorted;
a stationary cylindrical screen cage mounted concentric with and at the upper end of the vortex cleaner;

a rotor having a vertically oriented axis and a cylindrical wall mounted concentrically relative to the screen cage, the screen cage and said rotor forming an annular space therebetween, the rotor further comprising a base at its lower end, portions of the rotor forming an opening through the base of the rotor in flow communication with the upper end of the annular space, the opening being substantially coaxial with the flow of suspension from the vortex cleaner, fibrous suspension to be sorted flowing upwardly from the vortex cleaner into the lower end of the annular space, the fibrous suspension within the annular space flowing generally toward the upper of said annular space, a portion of the suspension within the annular space passing through the screen cage as accepted stock, the suspension within the annular space and that passing from said other end thereof being unaccepted stock, the action of the rotor causing the unaccepted stock within the annular space to increase in consistency as it flows toward said other end of the annular space, fibrous suspension to be sorted passing through the opening to the other end of the annular space for the dilution of the unaccepted stock;
an accepted stock outlet in flow communication with the side of said screen cage opposite the annular space; and
an unaccepted stock outlet in flow communication with at least said upper end of the annular space.

4,202,762
PROCESS AND DEVICE FOR THE AERATION OF WASTE WATER

Freerk J. Fontein, Heerlen, and Hubertus F. Jennekens, Geleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation of Ser. No. 794,023, May 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 437,477, Jan. 28, 1974, abandoned. This application Dec. 15, 1978, Ser. No. 969,963
Claims priority, application Netherlands, Jan. 29, 1973, 01201/73
Int. Cl.[2] C02C 1/10
U.S. Cl. 210—3 15 Claims



1. A process for aerating waste water containing suspended biologically active sludge in a vessel comprising:
(a) circulating waste water within the vessel through one continuous substantially horizontal endless path so that the active sludge remains in suspension and is thoroughly mixed throughout the vessel;
(b) withdrawing waste water from the vessel and recirculating that withdrawn water back to the vessel in the form of a number of regularly divided, downwardly inclined waterjets located above the surface of the waste water along one or more located above the surface of the waste water along one or more radii of the vessel so that all the waterjets are directed in the circulation direction, using at least one discharge tube located above the surface of the water in the vessel and having a plurality of outlet openings spaced from one another so as to extend along the length of the discharge tube, and wherein the step of recirculating waste water includes passing the withdrawn waste water through said at least one discharge tube;
(c) controlling the velocity and positioning of the waterjets so that the velocity of the waterjets ranges between about 3 to about 12 meters per second and the angle of the jets is not greater than 60°,
whereby the stream emitted in the form of waterjets has a horizontal component at the point the stream strikes the waste water that is substantially parallel to the circulation direction within the vessel thereby minimizing the energy imparted to the waterjets, entraining air within the waste water in the vessel and maintaining the substantially horizontal circulation in the vessel;
(d) employing a sludge suspension factor of at least 0.10 determined according to the following equation:

$$F = K\sqrt{A} \cdot 1000 / I \cdot (Q \times V \times \cos \alpha)$$

where:
F = sludge suspension factor
I = surface area of the vessel (m^2)
A = number of waterjets
Q = average amount of liquid per jet (m^3/s)
V = velocity of liquid in jet (m/s)
α = angle between jet and surface at the point where they meet
K = constant factor, dependent on the shape of the basin.

4,202,763

HIGH-EFFICIENT ACTIVATED SLUDGE METHOD

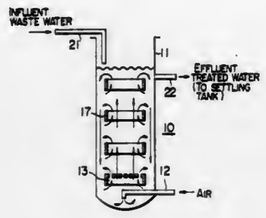
Norio Shimizu, and Youji Odawara, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 4, 1976, Ser. No. 655,218

Claims priority, application Japan, Feb. 7, 1975, 50-15398; Jun. 20, 1975, 50-74432

Int. Cl.[2] C02C *1/06*

U.S. Cl. 210—14 14 Claims



1. A method for high-efficient microbiological oxidation treatment of waste water containing organic materials, wherein the waste water is introduced into an aeration tank and is subjected to aeration treatment in the presence of activated sludge while supplying oxygen to the tank, which comprises forming flocs consisting mainly of bacteria and oxidizing the organic materials at an oxygen transfer rate of 10 to 80 mmol O_2/l·hr to the aeration tank and separating said flocs from said waste after the oxidation of said organic material.

4,202,764

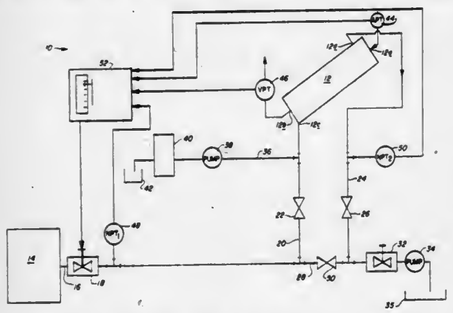
ULTRAFILTRATION CONTROL SYSTEM

Richard L. Afflerbaugh, and Wendell V. Ebling, both of Libertyville, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 2, 1978, Ser. No. 947,993

Int. Cl.[2] B01D *13/00*

U.S. Cl. 210—22 D 14 Claims



1. A dialysis machine that is adapted for operation with a negative pressure-type dialyzer which has a semipermeable membrane that separates dialysis solution and blood flowing through said dialyzer, said machine including:

(a) a flow system which includes negative pressure pump means for drawing fresh dialysis solution under a negative pressure from a source through said dialyzer and for discharging the spent dialysis solution to a drain;

wherein the improvement comprises, in combination:

(b) valve means positioned in said flow system for isolating said dialyzer from said negative pressure pump means, and for terminating flow of dialysis solution to and from said dialyzer;

(c) means defining an ultrafiltration branch connected to the flow system between the dialyzer and the valve means for communication with said dialyzer when said dialyzer is isolated and flow is terminated and for drawing liquid from said dialyzer, said ultrafiltration branch including:

(i) ultrafiltration pump means for drawing and controlling the flow of liquid from the dialyzer so as to adjustably establish an ultrafiltration rate;

(ii) means for measuring the liquid flow rates in said branch; and

(d) means associated with said branch and said dialyzer for measuring the pressure on the blood and dialysis solution sides of the dialyzer at the time the desired ultrafiltration rate is established and for determining a transmembrane pressure.

4,202,765

HYDROXYLAMINE PURIFICATION VIA CATION EXCHANGE

Fred W. Koff, Long Valley; Allen A. Tunick, Boonton; Stylianos Sifniades, Madison, and Reed H. Belden, Bernardsville, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 846,660, Oct. 28, 1977, abandoned. This application Oct. 4, 1978, Ser. No. 947,321

Int. Cl.[2] B01D *15/04*

U.S. Cl. 210—31 R 16 Claims

15. A cyclic process for separating hydroxylamine, under conditions suitable for ion exchange of hydroxyl ammonium ion, from aqueous solutions having a pH not above about 7 containing essentially hydroxylammonium sulfate and nitrate, ammonium sulfate and nitrate, and sulfuric acid comprising the following steps:

(a) passing said solutions through a sulfonic acid resin bed loaded predominantly with ammonium ions;

(b) passing through said resin bed an aqueous solution containing essentially ammonia and hydroxylamine;

(c) passing through said resin bed water and regenerating said resin bed to provide the bed for step (a) of the next cycle;

(d) concurrently with steps (a), (b) and (c) collecting a first effluent fraction substantially depleted of hydroxylammonium ion and correspondingly enriched in ammonium ion and a second effluent fraction containing essentially pure hydroxylamine;

(e) mixing part of said second effluent fraction with ammonia or an ammonia containing aqueous solution and recycling the resulting solution to step (b) of the next cycle.

4,202,766

PROCESS FOR REMOVING OIL PARTICLES FROM WASTE WATER CONTAINING THE SAME

Hiroshi Ono, No. 21-1, Asahi-cho, Fujisawa-shi, Kanagawa-ken; Toyoyasu Saida, No. 14-15, Kataseyama 3-chome, Fujisawa-shi, Kanagawa-ken, and Kunimitsu Fukumura, No. 2070, Iijima-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, all of Japan

Continuation of Ser. No. 761,131, Jan. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 579,319, May 21, 1975, abandoned. This application Jun. 22, 1978, Ser. No. 917,844

Claims priority, application Japan, May 27, 1974, 49-58747; Sep. 27, 1974, 49-110440

Int. Cl.[2] C02C *5/02*

U.S. Cl. 210—40 2 Claims

1. A process for the separation of oil from waste water containing the said oil in the form of anionically emulsified and stabilized particles, which consists of introducing into said waste water a solid compound selected solely from the group consisting of calcium oxide and calcium hydroxide to adsorb thereon said oil, said solid compound being introduced in an amount of 5 to 200% by weight of said oil contained in said waste water; adding an acid selected from the group consisting of hydrochloric acid and nitric acid to said waste water to dissolve said compound, whereby the oil is freed in the form of

large size particles, the pH of said waste water being in the range of 6 to 7 after the acid has been added; and separating said freed oil from said waste water.

4,202,767

PROCESS AND DEVICE FOR THE PURIFICATION OF WASTE WATER BY MEANS OF ELECTROFLOTATION

Marinus Alfenaar, Schinnen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Jul. 28, 1976, Ser. No. 709,534

Claims priority, application Netherlands, Aug. 6, 1975, 7509342

Int. Cl.[2] B03D *1/00*

U.S. Cl. 210—44 8 Claims

1. In a process for removing emulsified or suspended substances from waste water by flotation technique in a flotation cell in which said emulsified or suspended substances separate as an upper layer on said waste water and then by removing said upper layer from said waste water, wherein said waste water is passed through a pair of operating electrodes, said electrodes being disposed horizontally and at some distance from each other, the improvement comprising forming said electrodes of perforated material, wherein the diameter of the apertures of the material forming the lower electrode is at most 5 millimeters thereby ensuring proper upward movement of gas bubbles which are generated, wherein said electrodes cause the generation of said gas bubbles which entrap said emulsified or suspended substances and cause the suspended or emulsified substances to flow upward to form a foam at the surface of the waste water.

8. A flotation cell comprising a vessel with an inlet for aqueous emulsions, dispersions or colloidal solutions, an outlet for treated water and an outlet for floated foam, provided with two electrodes, of perforated material, horizontally disposed with respect to each other, said electrodes equipped with terminals for applying a voltage, and disposed in said cell, the diameter of the apertures in the material of the lower electrode being at most 5 millimeters.

4,202,768

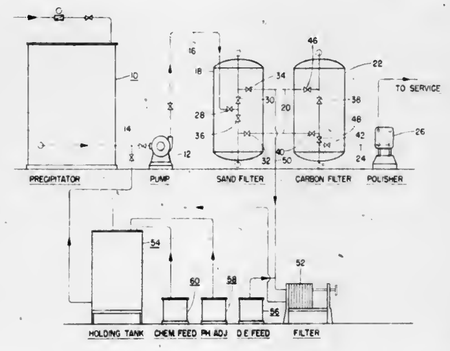
BACKWASH WATER RECYCLING SYSTEM

Harry C. De Longe, Katonah, and Woolfe S. Fabian, Flushing, both of N.Y., assignors to PepsiCo, Inc., Purchase, N.Y.

Filed Sep. 19, 1978, Ser. No. 943,806

Int. Cl.[2] B01D *23/24*

U.S. Cl. 210—62 15 Claims



1. A process for the treatment and recycling of an aqueous backwash effluent resulting from a backwashing operation, in which an industrial filter is cleaned by passing a water-based solution through the filter in countercurrent flow to that passing through the filter during normal filtering operation so that material entrapped by the filter during the normal filtering operation is dislodged therefrom and entrained in a backwash effluent, comprising the steps of:

(a) passing said backwash effluent through a backwash filter to remove the material initially removed from said industrial filter during the backwashing operation;

(b) preparing the water-based solution which has passed through said backwash filter for use in a subsequent backwashing operation; and

(c) utilizing in subsequent backwashing operations the water-based solution which has passed through said backwash filter.

10. Apparatus for treating and recycling an aqueous backwash effluent resulting from backwashing operations on an industrial filter, comprising:

(a) a holding tank for storing a water-based solution adapted for use in periodic backwashing operations;

(b) a backwash filter for removing material from the water-based effluent flowing from the industrial filter during each backwashing operation;

(c) first conduit means for conducting the water-based solution from said holding tank to the industrial filter for effecting each backwashing operation of said industrial filter;

(d) second conduit means for conducting the water-based effluent flowing from the industrial filter during each backwashing operation to said backwash filter; and

(e) third conduit means for conducting the water-based solution flowing from said backwash filter during each backwashing operation to said holding tank.

4,202,769

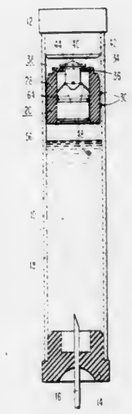
METHOD FOR SEPARATING SERUM OR PLASMA FROM THE FORMED ELEMENTS OF BLOOD

Donald J. Greenspan, 235 Pavilion Ave., Riverside, N.J. 08075

Continuation of Ser. No. 807,013, Jun. 16, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,298

Int. Cl.[2] B01D *21/26*

U.S. Cl. 210—83 8 Claims



1. A method of separating blood into a light phase comprising plasma or serum and a heavy phase comprising the formed elements of the blood including a separator assembly comprising a container having one end and another end, said container being adapted to receive blood from subsequent separation into the light phase and the heavy phase, piston means having an average specific gravity greater than said light phase, the piston means including a container sealing means adapted to sealingly engage the container wall at the periphery of the container, a valve seating portion having a valve opening therein, said valve opening permitting serum or plasma to flow through the piston means, a movable valve member adapted to seat on the seating portion so as to close the valve opening, and

bias means connected between the valve member and the valve seating portion, said method comprising the following steps:

centrifuging the formed elements of the blood toward one end of the container so as to form the heavy phase and the plasma or serum toward the other end of the container so as to form the light phase;

centrifuging the piston means through the container toward the interface of the centrifuged formed elements and the centrifuged plasma or serum;

overcoming the seating force maintained by the bias means on the valve member during centrifuging so as to open the valve opening; and

maintaining a substantial seating force on the valve member through the bias means when the piston means comes to rest in the container so as to close the valve opening; said force being sufficiently great to maintain said valve member in a seated position when said valve member comes to rest in the container at the interface between said light phase and said heavy phase.

4,202,770

APPARATUS FOR PURIFICATION OF WASTE WATER BY MEANS OF ACTIVE CARBON

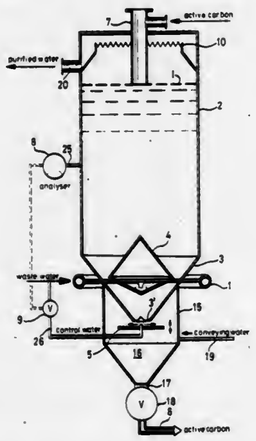
Günther Gappa, Gelsenkirchen-Buer; Harald Jüntgen, and Jürgen Klein, both of Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Aug. 5, 1975, Ser. No. 602,000

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1974, 2437745

Int. Cl.² B01D *33/18*

U.S. Cl. 210—96.1 **5 Claims**



1. Apparatus for the purification of waste water using active carbon, comprising an upright adsorber having an upper end and a frustoconical outlet end defining a lower outlet opening; inlet means for continuously feeding active carbon into said upper end of said adsorber so that the carbon forms a column filling said adsorber up to a level slightly below said upper end and leaves said adsorber through said outlet opening; a distributor cone arranged in the region of the upper third of said frustoconical outlet end, said distributor cone having an upwardly tapering conical wall and being provided therein with a plurality of apertures, the sum of the open cross-sections of said apertures being 0.1–1% of the transverse cross-section of the adsorber, said distributor cone being closed at its base and defines between the circumference of its base and the wall of said frustoconical outlet end an annular gap through which carbon passes to said outlet opening; feed conduit means for continuously feeding waste water into said distributor cone so that the waste water flows upwardly through said apertures and the carbon in the adsorber; an outlet for purified water in the region of said upper end of said adsorber above the level of the carbon therein; wall means connected to said frustoconical outlet end of said adsorber and defining a compartment below said outlet opening; a discharge disk in said compartment below said outlet opening and defining with the latter a vertical gap; a conduit branching off from said feed conduit means and having an outlet end in a central region of said disk for feeding part of the waste water into said vertical gap; a deflecting element facing said outlet end of said conduit and operative for transversely deflecting the part of the waste water fed into said vertical gap so as to thereby expedite passage of carbon through said outlet end; valve means in said branch conduit for relating the flow of waste water therethrough; and a discharge opening at the lower end of said compartment.

4,202,771

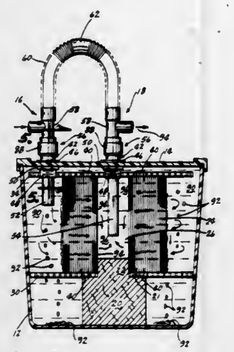
CHEMICAL RECOVERY FILTER

Robert W. Hoff, R.R. 2, Box 66, Hudson, S. Dak. 57034

Filed Dec. 29, 1978, Ser. No. 974,341

Int. Cl.² B01D *27/10*

U.S. Cl. 210—130 **2 Claims**



1. A chemical recovery filter, comprising:

a canister;

a steel wire filter element having a central core, said steel wire filter element being disposed within said canister; being vertically spaced from the bottom of said canister by a vertical spacer including an upper contact surface disposed in supporting relationship to said filter element; and an integrally formed vertically extended central plug having a reduced cross-sectional area, said plug being disposed in mating relationship within the lower portion of said central core; and being horizontally spaced from the sidewalls of said canister by a bottom open grid horizontal spacer attached to the bottom of said filter element and by a top open grid horizontal spacer attached to the top of said filter element, said horizontal spacers extending horizontally to the sidewalls of said canister;

a snap-connect inlet fitting secured to said canister and communicating between the exterior of said canister and the interior of said canister in the space between the sidewalls and said filter element;

a snap-connect outlet fitting secured to said canister and communicating between the exterior of said canister and the interior of said canister within the central core of said filter element;

said snap-connect fittings including a male snap connector stem attached to said canister, said male stem having an annular groove in the portion extending exterior of said canister; a female snap connector element including retainer tabs moveable between a first position wherein said tabs are disposed in mating relationship with said annular groove and a second position wherein said tabs are retracted and separated a distance greater than the diameter of said male stem, and a neoprene o-ring disposed above said retainer tabs in sealing relationship with the upper portion of said male stem and the inside wall of the female connector; and a stainless steel spring contacting said tabs and biasing said tabs to said first position, whereby the female connector is rotatably attached to said male connector when said retainer tabs are in said first position; and

a by-pass tube connected to and communicating between said inlet fitting and said outlet fitting, said tube being disposed exterior of said canister and including an opening in the uppermost portion thereof.

4,202,772

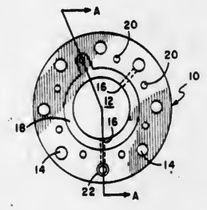
FLUID DISTRIBUTION CELL MODULE

Arthur L. Goldstein, Weston, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Aug. 4, 1977, Ser. No. 821,880

Int. Cl.² B01D *31/00*

U.S. Cl. 210—232 **21 Claims**



11. A multi purpose membrane processing stack for fluid treatment comprising in combination at least two substantially identical configurated cell modules in face to face relationship, each cell module comprising a rotatable plate having:

a. a central aperture transverse of said plate;

b. more than two fluid distribution ports transverse of said rotatable plate, said ports equally spaced apart in a symmetrical configuration about said aperture so that during assembly, rotation of said plate to any other port position with respect to an adjacent plate will allow said ports therein to remain registered and aligned with respect to the ports of said adjacent plate;

c. an enclosed second fluid connecting passage communicating between one of said ports and said aperture;

d. an enclosed second fluid connecting passage communicating between a second of said ports and said aperture; whereby said fluid connecting passages form an included angle (alpha) which is substantially less than 180°.

e. a planar recess in at least one face abutting said central aperture, said stack further including at least one membrane or diaphragm within one of said planar recesses.

4,202,773

APPARATUS FOR THE DEWATERING OF SLUDGE

Eugen Fink, and Peter Ostermeyer, both of Münich, Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 19, 1978, Ser. No. 897,724

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2718673

Int. Cl.² B04B *3/04*

U.S. Cl. 210—256 **9 Claims**

1. An apparatus for dewatering sludge by subjecting a flowable material-containing sludge solids and liquid to separation in a first step into a solids-containing sludge phase and a liquid phase and the sludge phase is further dewatered to separate the same into solids and liquid, said apparatus comprising:

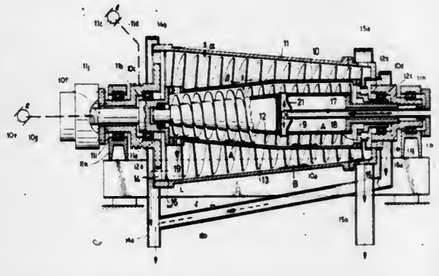
a first elongated imperforate drum rotatable about an axis for subjecting material on the interior of said drum to a first centrifugal force field;

means for rotating the first drum about said axis;

an inlet opening into said drum for distributing said flowable material onto the interior thereof;

first stripper means cooperating with said first drum for displacing the sludge phase formed by separation of liquid phase from said flowable material along said first drum away from said inlet toward a first sludge outlet at one end of said first drum, the other end of said first drum being provided with an outlet for said liquid phase;

a second elongated rotatable imperforate drum having a sludge inlet formed by the sludge outlet of said first drum for directly receiving the sludge phase therefrom, said second drum having a sludge outlet remote from said sludge inlet and a liquid outlet proximal to said sludge inlet, said drums being coaxial;



means for rotating said second drum to impart to the sludge phase therein a centrifugal-force field substantially twice the amplitude of the centrifugal-force field to which the material is subjected in said first drum whereby the sludge phase is subjected to the second centrifugal-force field of said second drum substantially out of contact over at least a major portion of the length of the drum with the liquid separated from the solids in said second drum, said second drum surrounding said first drum and having an average diameter substantially twice that of the first drum, said drums conically converging in opposite directions; and

second stripper means cooperating with said second drum for displacing solids separated from said sludge phase in the second centrifugal-force field from said sludge inlet toward said solids outlet.

4,202,774

FLOW DISTRIBUTOR FOR FLUID BED BIOLOGICAL REACTOR

Peter Kos, Ridgefield, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

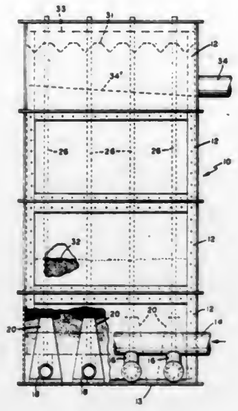
Filed May 24, 1978, Ser. No. 909,076

Int. Cl.² B01D *23/18, 41/02*

U.S. Cl. 210—274 **17 Claims**

1. A liquid treatment apparatus including a tank, a quantity of inert particulate solids therein, an inlet adjacent the bottom of said tank for receiving liquid for treatment, a flow distributor located proximate the bottom of said tank to direct said liquid upwardly into said tank in a manner such that the particulate solids are fluidized without excessive turbulence, said flow distributor comprising a plurality of ports opening within said tank and communicating with said inlet, fluid portals within said tank, each of said fluid portals being in flow communication with one of said ports and constituting a walled divergent flow path of increasing cross-sectional area with increasing distance from its respective communicating port whereby the velocity of liquid traversing said fluid portals from said port is uniformly diminished, said fluid portals being oriented so that the liquid flowing therein is directed at an angle in the range from the horizontal to vertically downward in said tank, flow diffusers, having flow confining walls, each

in flow communication with a fluid portal at one end thereof and oriented to direct flow from said fluid portal in a generally



vertically upward direction in said tank to fluidize said particulate solids.

4,202,775

ADSORBENT FOR ADSORBING ORGANIC COMPOUNDS ADSORBED ON PROTEINS

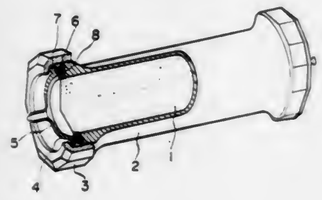
Tsutomu Abe, Fuji; Akihiko Ikeda, Yokohama, and Tokio Sakurai, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 22, 1978, Ser. No. 917,828

Claims priority, application Japan, Jun. 24, 1977, 52-74516; Jul. 5, 1977, 52-80338

Int. Cl.² B01D *15/04*

U.S. Cl. 210—287 **8 Claims**



1. An adsorbent for adsorbing thereonto organic compounds from plasma proteins in blood on which proteins the organic compounds are adsorbed, said adsorbent comprising a porous copolymer produced by copolymerizing a mixture of monomers consisting essentially of 2% to 99% by weight of at least one cross-linkable monomer and 1% to 98% by weight of at least one mono-ethylenically unsaturated monomer, said porous copolymer having pores of an average pore diameter (d) in the range of from 600 Å to 5,000 Å, the volume of pores of a pore diameter in the range of from 0.5 d to 2 d being not more than 60% of the total volume in said porous copolymer.

4,202,776

HOLLOW-FIBER PERMEABILITY APPARATUS

Yasushi Joh, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

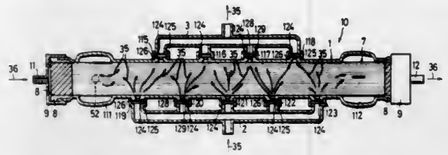
Division of Ser. No. 707,513, Jul. 22, 1976, Pat. No. 4,124,510. This application Jan. 27, 1978, Ser. No. 872,883

Claims priority, application Japan, Jul. 28, 1975, 50-91716; Jul. 30, 1976, 51-92902

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.² B01D *31/00*

U.S. Cl. 210—321 B **7 Claims**



1. In a hollow-fiber permeability apparatus, comprising:
a housing defining an interior including a permeating region;
a bundle of permeable-wall hollow fibers disposed at least in said permeating region of said housing;
a first inlet and means for causing a first fluid to flow into said first inlet and through said housing adjacent the exterior wall surfaces of said fibers;
a first outlet for passage of said first fluid out of said housing; and
a second inlet and means for causing a second fluid to flow into said second inlet and through said housing inside said fibers such that materials selectively permeate through the walls of said fibers;
the improvement wherein said housing is defined by opposed longer walls and interconnecting opposed shorter walls whereby the housing has a flattened cross-section in a plane perpendicular to the longitudinal extent of said fibers, said first inlet comprising one group of at least two openings formed in one longer wall and spaced-apart in the longitudinal direction of the fibers, said first outlet comprising another group of at least two openings formed in the opposite longer wall and spaced-apart in the longitudinal direction of said fibers, the openings comprising said first inlet providing for feeding of said first fluid in a plurality of independent streams across separate portions of said bundle into the openings comprising said first outlet, each of said openings extending across said longer walls whereby the openings are substantially coextensive with the longer transverse dimension of said bundle of fibers, and wherein each of said openings comprises a slit-like opening whereby said separate portions each comprise only a small longitudinal portion of the bundle for engagement by the first fluid exiting from the openings of said first inlet.

4,202,777

FLOW DISTRIBUTION MEANS FOR SCREENING APPARATUS

Robert A. Schall, Stamford, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

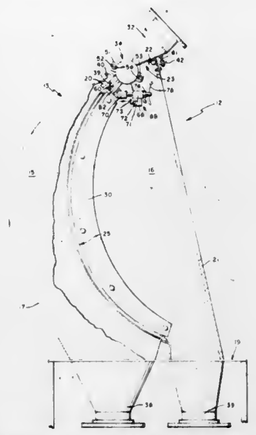
Filed Jan. 2, 1979, Ser. No. 353

Int. Cl.² B01D *35/22*

U.S. Cl. 210—405 **9 Claims**

1. A screen unit for separating solids from a liquid-solids slurry, comprising
(a) a screening surface having a plurality of discharge openings,
(b) spaced outlets for respectively receiving solids overflow from said screen surface and liquid underflow from said discharge openings,

(c) feed input means for receiving a liquid-solids slurry for discharge to said screen surface,
(d) nozzle means interposed between said feed input means and said screen surface for distributing and controlling the flow of said slurry to the surface of said screen,
(e) said nozzle means including a cylindrical housing mounted on said screen unit and extending transversely of said screen surface adjacent one end thereof and having a longitudinally extending discharge opening,



(f) valve means contained within said nozzle housing and including a tubular rotatable member having spaced inlet and outlet longitudinal slot openings aligned respectively with the discharge of said feed input means and with said discharge opening in said nozzle housing, and
(g) control means connected to said rotatable valve member for rotating said member to selectively vary the size of said pair of aligned openings and the velocity of flow of said liquid-solids slurry through said nozzle means to said screen surface.

4,202,778

SEPARATING DEVICE

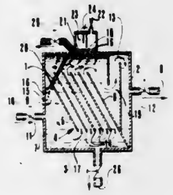
Cornelis G. Middelbeek, Nootdorp, Netherlands, assignor to Ballast-Nedam Groep N.V., Amstelveen and Skimovex B.V, Utrecht, both of, Netherlands

Filed Oct. 30, 1978, Ser. No. 955,629

Claims priority, application Netherlands, Oct. 31, 1977, 7711963

Int. Cl.² B01D *21/00*

U.S. Cl. 210—522 **5 Claims**



1. A separating device for separating by gravitational segregation a mixture of a carrier liquid and substances suspended therein and having a specific weight differing from that of the carrier liquid, said device comprising a separator housing having an inlet port and an outlet port, a separator arranged in said housing and having at least two parallel, sloping plates, the front plate nearest the inlet port for the mixture together with the front wall and the bottom of the housing enclosing a stilling space having on the top side a first collecting space intended for light-weight substances, a feeding space near the inlet side of the separator, a second collecting space near the top wall and a third collecting space enclosed by the rear wall and the hindmost plate nearest thereto and located near the outlet port for the carrier liquid, in which the stilling space, the separator and the third collecting space are disposed at substantially the same level, characterized in that the separator housing is constructed as a pressure vessel, the flow resistance between the stilling space and the feeding space is low and the first and second collecting spaces communicate with one another through at least one conduit in parallel with said separator, the flow resistance of which exceeds that of the separator, and including means for selectively discharging lighter substances from said second collecting space, means for selectively discharging heavier substances from said feeding space, and means for selectively discharging gases from said second collecting space.

4,202,779

MIXTURE OF BIS(2-HYDROXYALKYL) N,N-DI(LOWER ALKYL)AMINOMETHANEPHOSPHONATES WITH POLYOLS

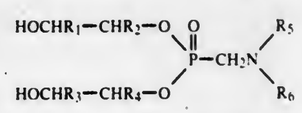
Curtis P. Smith, Cheshire, and Henri Ulrich, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 786,690, Apr. 11, 1977, Pat. No. 4,112,014, which is a continuation of Ser. No. 634,136, Nov. 21, 1975, abandoned. This application Jun. 28, 1978, Ser. No. 919,963

Int. Cl.² C09K *3/28*

U.S. Cl. 252—8.1 **4 Claims**

1. A storage stable premix for reaction with an organic polyisocyanate to form a fire retardant polyurethane foam, said premix comprising:
(a) an O,O'-bis(hydroxyalkyl) N,N-di(lower-alkyl)aminomethanephosphonate having the following formula:



wherein R_1, R_2, R_3, and R_4 are each independently selected from the class consisting of hydrogen and lower-alkyl, and R_5 and R_6 each independently represent lower-alkyl; and
(b) a polyol selected from the class consisting of polyether polyols and polyester polyols having an equivalent weight from about 90 to about 2000 and a functionality from 2 to 6.

4,202,780

METHOD FOR IMPROVING THE LUBRICATING PROPERTIES OF SOLID LUBRICANTS

Marcel C. Brendle, Wittenheim, France, assignor to Dow Corning GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 1, 1976, Ser. No. 701,922

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1975, 2530002

Int. Cl.² C10M *7/10. 7/30. 7/48*

U.S. Cl. 252—12 **12 Claims**

1. A process for improving the lubricating properties of solid lubricants characterized by modifying the solid lubricants by
(A) contacting finely divided solid lubricants with an organic solvent solution of reactive organic polymer;
(B) allowing the finely divided solid lubricant to remain in contact with the solvent solution of reactive organic polymer for a period sufficient to allow the solid lubricant to react with the reactive polymer and attach the organic polymer to the solid lubricant;
(C) washing the reaction product free of impurities using organic solvents;
(D) removing the solvent and recovering the solid lubricant that has been so modified.

whereby a solid lubricant is obtained which has improved lubricating properties.

8. A composition of matter which is a solid lubricant which is chemically bonded with an organic polymer.

10. The use of a modified solid lubricant for lubricating purposes which solid lubricant has been modified by

(A) contacting a finely divided solid lubricant with a reactive gas;

(B) allowing the solid lubricant and the gas to remain in contact for a period of time sufficient to allow the gas to react with the solid lubricant;

(C) recovering the solid lubricant that has been so modified.

4,202,781

PROCESS FOR MAKING MOLYBDENUM PHOSPHOSULFURIZED HYDROCARBON COMPOSITION

Albert R. Sabol, Munster, Ind., and Ernest H. Baughman, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 31, 1978, Ser. No. 956,281
Int. Cl.² C10M 1/48, 3/42; C07F 11/00
U.S. Cl. 252—32.7 HC **8 Claims**

1. A method for preparing a molybdenum-containing phosphosulfurized hydrocarhon composition which comprises reacting an aqueous solution of a molybdenum compound with a phosphosulfurized hydrocarbon and removing substantially all the water.

4,202,782

MULTIFUNCTIONAL ADDITIVES FOR LUBRICANTS

Lester A. Doe, Jr., Newtown, and Lester A. Brooks, Norwalk, both of Conn., assignors to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Jun. 12, 1978, Ser. No. 914,839
Int. Cl.² C10M 1/32; C09K 15/20; C07C 85/18
U.S. Cl. 252—51.5 A **5 Claims**

1. An oil soluble condensation product characterized by having a predominantly linear structure and prepared by reacting diphenylamine and 2-octanone in the molar ratio of about 1:1.6 at reflux temperature in the presence of acid condensation catalyst.

3. A corrosion and oxidation inhibiting composition comprising about 5 to 1 parts by weight p,p'-dioctyldiphenylamine and about 1 to 3 parts by weight condensation product characterized by having a predominantly linear structure and prepared by reacting diphenylamine and 2-octanone in the molar ratio of about 1:1.6 at reflux temperature and in the presence of acid condensation catalyst.

4. A lubricating composition comprising a major portion of oil of lubricating viscosity and about 1.5 to 2.0 parts by weight per hundred parts oil of a corrosion and oxidation inhibiting composition comprising about 5 to 1 parts by weight p,p'-dioctyldiphenylamine and about 1 to 3 parts by weight condensation product characterized by having a predominantly linear structure and prepared by reacting diphenylamine and 2-octanone in the molar ratio of about 1:1.6 at reflux temperature and in the presence of acid condensation catalyst.

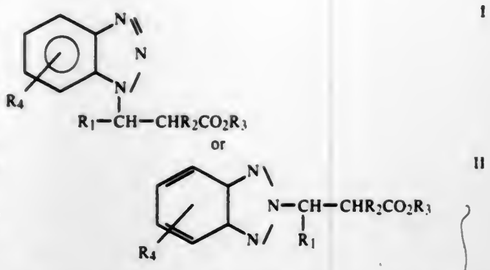
4,202,783

ANTIOXIDANT ADDITIVES AND LUBRICANT COMPOSITIONS CONTAINING SAME

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,667
Int. Cl.² C10M 1/20, 1/32; C07D 249/18
U.S. Cl. 252—51.5 A **22 Claims**

1. A compound or mixture of compounds prepared by reacting under suitable conditions a benzotriazole and an unsaturated ester and thereafter recovering as final product



I

II

or mixtures thereof where R_1 and R_2 = H or C_1 to C_8 alkyl and R_3 is selected from methyl, ethylhexyl, hydroxyethyl and tetraethylenegycol acrylate, and C_2 to C_{22} or mixtures of C_2-C_{22} and R_4 = H or CH_3.

4,202,784

TERTIARY CARBINAMINE MODIFIED MANNICH COMPOSITIONS AND LUBRICANTS CONTAINING SAME

Paul J. Cahill, and John H. Udelhofen, both of Wheaton, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 9, 1979, Ser. No. 28,566
Int. Cl.² C10M 1/32
U.S. Cl. 252—51.5 R **8 Claims**

1. A Mannich composition comprising the reaction product of a substantially hydrocarbon compound having at least one acidic or active hydrogen selected from the group consisting of alkyl phenols, alkyl naphthols and oxidized olefin polymers, formaldehyde or a formaldehyde-yielding compound, a polyamine and a tertiary alkyl carbinamine.

5. A composition comprising the reaction product of an alkyl phenol, 0.1 to 10 moles of a polyamine per mole of phenol, 0.1 to 10 moles of formaldehyde or a formaldehyde-yielding reagent per mole of phenol, and 0.1 to 10 moles of a tertiary alkyl carbinamine per mole of the phenol at a temperature of about 60° C. to about 300° C.

6. A lubricant composition containing a major portion of a lubricating oil and an effective amount of from 1.0 to 50.0 weight percent of composition of claim 1 or claim 5.

4,202,785

POLYESTERIONOMERS HAVING UTILITY IN LIQUID ELECTROGRAPHIC DEVELOPER COMPOSITIONS

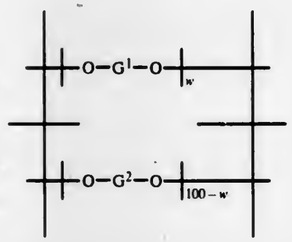
Stewart H. Merrill; Susan E. Hartman; John M. Noonan, all of Rochester; Mohammad A. Sandhu, and Domenic Santilli, both of Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1978, Ser. No. 906,174
Int. Cl.² G03G 9/12
U.S. Cl. 430—106 **11 Claims**

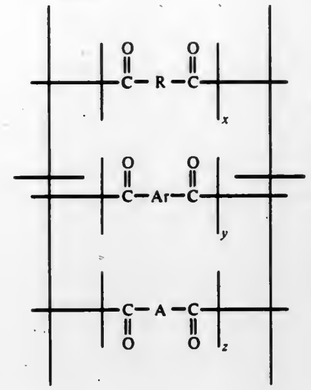
1. A liquid electrographic developer composition comprising

(a) an electrically insulating liquid; and

(b) a polymeric binder having the following structure



-continued



wherein

G^1 represents a straight or branched chain alkylene having about 2 to 12 carbon atoms, or, substituted or unsubstituted, cycloalkylene, cycloalkylenebis(oxyalkylene) or cycloalkylenedialkylene;

G^2 represents, substituted and unsubstituted, arylene, cycloalkylene or a straight or branched chain oxygen free alkylene having about 2 to 12 carbon atoms;

R and Ar, which are always different, represent 1,1,3-trimethyl-3-phenylindan-5, 4'-diyl, or an unsaturated, substituted or unsubstituted alicyclic group having 7-10 carbon atoms or a substituted or unsubstituted moiety selected from the group consisting of alkylene, cycloalkylene, sulfonyldiarylene, arylene, arylenevinylene, arylenealkylene, arylenebisvinylene or arylenebisalkylene;

A represents a sulfoarylene, sulfoaryloxyarylene, sulfocycloalkylene, iminodisulfonylarylene, iminobis(sulfonylarylene), sulfoaryloxysulfonylarylene and sulfoaralkylarylene or the alkali metal or ammonium salt thereof;

said G^1, G^2, R and Ar substituents are selected from the group consisting of alkyl, alkoxy, nitro, carboxyl, halo and cyano;

w is about 50 to about 100 mole percent of the total diol component; and of the total acid component;

x is about 25 to about 95 mole percent;

y is about 1 to about 74 mole percent; and

z is about 4 to about 15 mole percent.

4,202,786

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Gaylen R. Brubaker, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 22, 1978, Ser. No. 972,572
Int. Cl.² C11D 7/54
U.S. Cl. 252—102 **13 Claims**

7. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator therefor a carbodiimide of the formula:

$$R_1-(X)_{n-1}-N=C=N-(X')_{n-1}-R_2$$

wherein R_1 and R_2 each represent alkyl of 1 to 16 carbon atoms; cycloalkyl of 3 to 7 carbon atoms; phenyl; lower alkylphenyl; lower alkylnaphthyl; naphthyl and heterocyclic of 1 to 2 fused rings each having 5 to 6 members of which 1 to 2 are heteroatoms selected from the class consisting of nitrogen, oxygen and sulfur, it being provided that the aforesaid values of R_1 and R_2 may bear optional substituents selected from the group consisting of $-NO_2$, —Cl, —Br, alkoxy, amino, cyano, hydroxyl, —O—, —NH—, quaternary nitrogen, $-SO_3H$ and —COOH and X is a carbonyl or sulfonyl and n is an integer of 1 or 2.

4,202,787

PROTEC 3 CLEANING SOLUTION

C. Paul Davis, 18360 Oxnard St., Tarzana, Calif. 91356

Filed Feb. 6, 1979, Ser. No. 9,775
Int. Cl.² C23G 5/02; C11D 7/52
U.S. Cl. 252—171 **2 Claims**

1. A cleaning composition for records, magnetic discs, and tape heads consisting of:

(a) from about 80-90% of trichlorotrifluoroethane;

(b) from about 5-20% of isopropyl alcohol;

(c) from about 0.051-0.254% of a fatty quaternary ammonium compound; and

(d) from about 0.019-0.047% of a short-chain tetrafluoroethylene telomer dispersed in said trichlorotrifluoroethane.

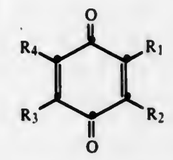
4,202,788

STABILIZATION OF AQUEOUS P-BENZOQUINONES

Joseph S. Zannucci, and John W. Thompson, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,603
Int. Cl.² C09K 3/00
U.S. Cl. 252—182 **12 Claims**

1. A stable composition of matter comprising in an aqueous system a compound of the formula



I

where R_1, R_2, R_3 and R_4 may be the same or different and are selected from hydrogen; hydroxyl; cyano; nitro; halogen; straight or branched alkyl and alkylene of 1-20 carbons both of which may be substituted with 1-3 groups selected from formyl, formyloxy, alkoxycarbonyl of 1-8 carbons, alkoxycarbonyloxy of 1-8 carbons, carbamoyl, alkylcarbamoyl of 1-8 carbons, —CN, alkoxy of 1-8 carbons, and aryl and cycloalkyl of 6-10 carbons each of which also may be substituted with 1-3 halogens, alkyl of 1-8 carbons, alkoxy of 1-8 carbons, and —CN; mercapto; thioethers of 1-10 carbons; alkylthio of 1-10 carbons; sulfonic or sulfinic acid or ester groups of 1-10 carbons; amino; alkylamino of 1-8 carbons; dialkylamino of 2-16 carbons; alkyl arylamino of 1-8 carbons in the alkyl group and 6-10 carbons in the aryl group; arylamino of 6-10 carbons which may be substituted with 1-3 halogens, $-NO_2$, alkyl of 1-8 carbons, alkoxy of 1-8 carbons, and —CN; alkoxycarbonyl of 1-8 carbons; alkoxycarbonyloxy of 1-8 carbons; carbamoyl; alkylcarbamoyl of 1-8 carbons; diarylamino of 12 to 20 carbons which may be substituted with 1-3 halogens, alkyl of 1-8 carbons, alkoxy of 1-8 carbons, and —CN; cycloalkylamino which may be substituted with 1-3 halogens, alkyl of 1-8 carbons, alkoxy of 1-8 carbons, and —CN; acyl, acylamino and acyloxy of straight or branched alkyl of 1-20 carbons or aryl of 6-10 carbons, each of which may be substituted with halogen, alkyl or alkoxy of 1-8 carbons, nitro, or cycloalkyl of 5-18 carbons which may be substituted with 1-3 halogens, alkyl of 1-8 carbons, alkoxy of 1-8 carbons, or —CN; aryl of 6-32 carbons which may be substituted with 1-3 halogens, alkyl of 1-8 carbons, alkoxy of 1-8 carbons, or —CN; and alkoxy of 1-20 carbons which may be substituted with 1-3 halogens, alkoxy of 1-8 carbons, and —CN; admixed with from about 0.5 to about 25.0% by weight of one or more water-soluble acidic or neutral inorganic salts of Groups IA and IIA elements of the Periodic Table, or of nickel.

4,202,789

POSITIVE COBALT ELECTRODE FOR ALKALINE STORAGE BATTERIES AND PROCESS FOR ITS PRODUCTION

Nikolaus Saridakis, Brunswick, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,828

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731063

Int. Cl.[2] **H01M** *4/48;* **C01G** *51/04*

U.S. Cl. 252—182.1 **15 Claims**

1. A cobalt electrode for use as a positive electrode in alkaline storage batteries, said electrode containing aluminum hydroxide.

2. A process for the production of a positive cobalt electrode for alkaline storage batteries comprising the steps of immersing a porous supporting grid of conducting material in an impregnating solution containing a cobalt salt dissolved in a solvent and at least one aluminum salt in solution, and subsequently immersing said grid in an alkaline medium for precipating out hydroxides.

4,202,790

PEROXIDE BLENDS

Kenneth E. Steller, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 26, 1978, Ser. No. 919,096

Int. Cl.[2] **C08F** *8/06;* **C08J** *3/24;* **C07C** *179/14, 179/06*

U.S. Cl. 252—186 **7 Claims**

1. A peroxide blend that is liquid at room temperature selected from the group consisting of (A) a peroxide blend consisting essentially of (1) from about 55% to about 25% dicumyl peroxide and (2) from about 45% to about 75% cumyl isopropylcumyl peroxide, and (B) a peroxide blend consisting essentially of (1) from about 25% to about 10% bis(alpha-t-butylperoxyisopropyl) benzene and (2) from about 75% to about 90% isopropylcumyl t-butyl peroxide.

4,202,791

NEMATIC LIQUID CRYSTALLINE MATERIALS

Hisato Sato, Tabata; Haruyoshi Takatsu, Kodaira, and Masayuki Tazume, Urawa, all of Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo, Japan

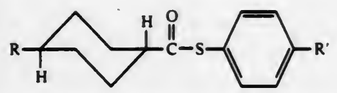
Filed Feb. 14, 1979, Ser. No. 11,798

Claims priority, application Japan, Feb. 17, 1978, 53-16566

Int. Cl.[2] **C09K** *3/34;* **G02F** *1/13;* **C07C** *153/09*

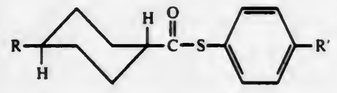
U.S. Cl. 252—299 **25 Claims**

1. A trans(equatorial-equatorial)1,4-disubstituted cyclohexane derivative of the general formula



wherein R represents a linear alkyl group containing 3 to 7 carbon atoms and R′ represents a linear alkoxy group containing 2 to 5 carbon atoms or a cyano group.

3. A nematic liquid crystalline composition comprising at least one trans(equatorial-equatorial)1,4-disubstituted cyclohexane derivative, a nematic liquid crystalline compounds, of the general formula



wherein R represents a linear alkyl group containing 3 to 7 carbon atoms, and R′ represents a linear alkoxy group containing 2 to 5 carbon atoms or a cyano group, and at least one additional component selected from the group consisting of other nematic liquid crystalline compounds and homologs thereof which are not liquid crystalline.

4,202,792

METHOD FOR NONCONTAMINATING SOLIDIFICATION OF RADIOACTIVE WASTE MATERIALS

Friedrich Kaufmann, Karlsruhe; Siegfried Weisenburger, Au/Rhein; Herbert Koschorke, Stutensee-Friedrichstal; Hartmut Seiffert, Karlsruhe; Dieter Sienel, Karlsruhe, and Karl-Heinz Weiss, Karlsruhe, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 862,048

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657265

Int. Cl.[2] **G21F** *9/08, 9/14, 9/16*

U.S. Cl. 252—301.1 W **7 Claims**

7. Method for the solidification, in a manner which protects the environment against contamination, of waste materials obtained during reprocessing of irradiated nuclear fuel and/or breeder materials in a matrix of borosilicate glass, comprising:

(a) mixing a waste liquid which has been obtained from a reprocessing system without pretreatment with glass formers and formic acid to reduce nitric acid and nitrate ions present in said waste liquid, the amount of said formic acid being equal to two to three times the stoichiometrically required amount;

(b) introducing the mixture obtained from step (a) in an amount between 10 1/h to about 150 1/h with the aid of air or another gas, into the center of a borosilicate glass melt disposed in a melting crucible at a temperature in the region of 1000° to 1400° C. to form an island drying and calcinating zone extending up to about two-thirds of said melt surface while avoiding contact of the waste liquid with the walls of the crucible, to form a reducing atmosphere, and to substantially avoid the presence of resulting waste gases which would radiologically and/or chemically contaminate the environment.

4,202,793

PRODUCTION OF MICROSPHERES OF THORIUM OXIDE, URANIUM OXIDE AND PLUTONIUM OXIDE AND THEIR MIXTURES CONTAINING CARBON

Giovanni Bezzi, Bagnacavallo; Alessandro Facchini, San Donato Milanese; Giovanni Martignani, Bagnacavallo, and Michele Pastore, San Donato Milanese, all of Italy, assignors to Agip Nucleare S.p.A., San Donato Milanese, Italy

Continuation of Ser. No. 518,191, Oct. 25, 1974, abandoned. This application Jul. 1, 1977, Ser. No. 812,336

Claims priority, application Italy, Oct. 26, 1973, 30598 A/73

Int. Cl.[2] **C09K** *3/00;* **G21G** *4/04*

U.S. Cl. 252—301.1 S **5 Claims**

1. A process for the production of carbon containing microspheres of thorium oxide, uranium oxide, plutonium oxide or mixtures thereof, said process comprising:

(a) preparing a solution by mixing a salt of thorium, uranium or plutonium or a mixture thereof and an aqueous alkaline medium containing a polymerizable organic compound which is capable of forming a carbonizable polymer and if necessary an agent to make the polymerizable organic compound miscible with said aqueous alkaline medium;

(b) forming microspheres by adding the mixture of steo (a) dripwise to an alkaline solution which is sufficiently alkaline whereby the salts precipitate and the polymerizable organic compound polymerizes;

(c) washing the microspheres with water to remove foreign ions; and

(d) heating the microspheres in an atmosphere which comprises hydrogen to carbonize the organic polymer and form the carbon containing microspheres of thorium oxide, uranium oxide, plutonium oxide or mixtures thereof.

4,202,794

CALCIUM YTTRIUM BORATE PHOSPHOR COMPOSITION

Willi Lehmann, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1978, Ser. No. 954,497

Int. Cl.[2] **C09K** *11/46*

U.S. Cl. 252—301.4 R **3 Claims**

1. A phosphor composition having a higher photoluminescent efficiency than $CaYBO_4$:Eu when excited by 254 nm. radiation and emitting in the red region of the visible spectrum, said phosphor expressible by the general constituent formulation $xCaO.y(Y+Eu)O_{3/2}.zBO_{3/2}$ wherein x is from about 32 to 38, y is from about 31 to 41 and z is from about 25 to 31, and x, y and z express relative molar proportions of said constituents, said phosphor is activated by Eu with the gram-atom ratio of Y to Eu being from about 5:1 to 40:1, and the relative molar proportions of said phosphor constituents fall within the cross-hatched area of the ternary phase diagram as shown in FIG. 1.

4,202,795

METHODS AND ADDITIVES FOR DELAYING THE RELEASE OF CHEMICALS IN AQUEOUS FLUIDS

John W. Burnham; James E. Briscoe, and Eugene A. Elphingstone, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 28, 1978, Ser. No. 946,471

Int. Cl.[2] **B01D** *17/04*

U.S. Cl. 252—332 **33 Claims**

1. A method of delaying the release of a chemical in an aqueous fluid comprising the steps of:

mixing said chemical with a solid hydratable gelling agent and a breaker for the gel produced by said gelling agent when hydrated;

forming the resultant mixture into solid pellets; and

combining said pellets with said aqueous fluid whereby said gelling agent in said pellets is hydrated and forms a protective gel around said pellets for the period of time required for said protective gel to be broken by said breaker in said pellets whereupon said chemical is released into said aqueous fluid

wherein said gelling agent is selected from hydratable polysaccharides, polyacrylamides, polyacrylamide copolymers and polyvinyl alcohol,

said gelling agent being present in said mixture in an amount in the range of from about 0.99 to about 99.99 percent by weight of said mixture, and

wherein said breaker for said gel is selected from mild oxidizing agents, enzymes, acids and mixtures thereof,

said breaker for said gel being present in an amount in the range of from about 0.01 to about 50 percent by weight of said mixture and still further

wherein said chemical is present in said mixture in an amount in the range of from about 1 to about 99 percent by weight of said mixture.

4,202,796

ANTI-CORROSION COMPOSITION

Jose T. Jacob, Lake Zurich, Ill., and Vincent R. Kuhn, Twin Lakes, Wis., assignors to Chemed Corporation, Cincinnati, Ohio

Filed Jul. 31, 1978, Ser. No. 929,272

Int. Cl.[2] **C23F** *11/16, 11/14, 11/18*

U.S. Cl. 252—389 A **11 Claims**

1. Composition consisting essentially of

(A) sorbitol;

(B) a member selected from the group consisting of benzotriazole and tolyltriazole; and

(C) a water-soluble phosphate.

8. Process of inhibiting ferrous corrosion in an aqueous system comprising maintaining therein (A) sorbitol; (B) a member selected from the group consisting of benzotriazole and tolyltriazole; and (C) a water-soluble phosphate, wherein the weight ratio of the components A:B:C is 0.01 to 100 : 0.01 to 100 :1, and component C is maintained at about 0.01 to 5000 ppm.

4,202,797

RECOVERING CATALYST VALUES IN REACTION LIQUORS FROM OXIDATIVE PRODUCTION OF CARBOXYLIC AND POLYCARBOXILIC ACIDS

Peter J. V. Jones, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 27, 1978, Ser. No. 882,206

Claims priority, application United Kingdom, Apr. 7, 1977, 14834/77

Int. Cl.[2] **B01J** *27/32, 27/28;* **C07C** *51/42;* **C01G** *45/00, 51/00*

U.S. Cl. 252—413 **9 Claims**

1. A process for recovering catalyst values comprising heavy metal ions and bromide ions from the reaction mother liquor resulting from the oxidation in the liquid phase to a mono aromatic carboxylic acid product or a polycarboxylic acid product of a feedstock oxidisable thereto by means of a molecular oxygen-containing gas in presence of a lower aliphatic monocarboxylic acid and of a catalyst comprising said heavy metal ions and said bromide ions followed by separation of the same mono or polycarboxylic acid product from the said reaction mother liquor, which process comprises,

(1) concentrating the said reaction mother liquor, when necessary, until the concentration of said heavy metal ions in the concentrate is at least 1000 parts per million (p.p.m.) by weight,

(2) adding sulphuric acid to the said concentrate to precipitate said heavy metal ions as their sulphates,

(3) separating said heavy metal sulphates from the sulphate precipitation mother liquor,

(4) distilling the sulphate precipitation mother liquor to obtain an overhead fraction comprising lower aliphatic monocarboxylic acid, hydrogen bromide and water, which fraction is condensed to a liquid,

(5) dissolving the precipitated heavy metal sulphates from step 3 in water,

(6) contacting the aqueous heavy metal sulphate solution with a cation exchange resin whereby the heavy metal values are absorbed on said resin and an aqueous solution of sulphuric acid is obtained, and

(7) eluting the heavy metal values from the said cation exchange resin with a solution of hydrogen bromide in said lower aliphatic carboxylic acid recovered from step 4.

4,202,798

PHOSPHOROUS-CONTAINING CATALYST AND METHOD FOR PREPARING AND USING SAME

Marvin F. L. Johnson, Homewood, and Henry Erickson, Park Forest, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 559,983, Mar. 19, 1975, abandoned, which is a continuation of Ser. No. 369,265, Jun. 12, 1973, abandoned. This application Oct. 30, 1978, Ser. No. 955,661

Int. Cl.[2] **B01J** *27/18*

U.S. Cl. 252—437 **8 Claims**

1. In a method for producing an improved final catalyst comprising a major amount of alumina and a minor amount effective to promote hydrocarbon hydrotreating of at least one metal component selected from the group consisting of Group VIB metal components, Group VIII metal components and mixtures thereof which comprises the steps of contacting calcined alumina with at least one said metal-containing compound thereby forming a metal-containing material, calcining

said metal-containing material and forming said final catalyst wherein the improvement which consists essentially of:

(1) contacting an aqueous slurry consisting essentially of hydrous alumina with at least one phosphorus acid present in an amount sufficient to provide said final catalyst with a minor amount effective to increase the hydrocarbon hydrotreating activity of the final catalyst of phosphorus and forming a phosphorus-containing hydrous alumina, said phosphorus acid being selected from the group consisting of phosphoric acids, phosphonic acids, phosphinic acids, phosphenic acids, phosphoranic acids, phosphoranedioic acids, phosphoranetrioic acids, phosphoranetetroic acids, phosphoranepentoic acids and mixtures thereof, and

(2) calcining said phosphorus-containing hydrous alumina and forming said calcined alumina.

4,202,799

ORGANIC-HEAT-SENSITIVE SEMICONDUCTIVE COMPOUNDS

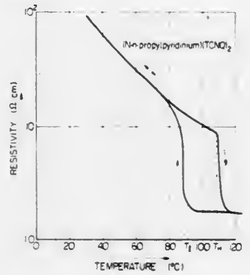
Susumu Yoshimura; Mutsuaki Murakami, and Midori Shinoda, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 13, 1978, Ser. No. 915,259

Claims priority, application Japan, Jun. 17, 1977, 52-72419

Int. Cl.² H01C *1/00*

U.S. Cl. 252—500 **5 Claims**



1. An organic heat-sensitive semiconductive compound of an (N-n-propylpyridinium)$(TCNQ)_2$ complex salt and an (N-n-alkylthiazolium)$(TCNQ)_2$ complex salt wherein the alkyl moiety is propyl or butyl.

4,202,800

LIQUID LAUNDRY DETERGENT COMPRISING A NONIONIC SURFACTANT AND AN ALKANOLAMINE

John D. Ciko, Lindenhurst, Ill.; Robert A. Ward, Cleveland Heights, Ohio, and John J. Cramer, Grosse Ile, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 628,357, Nov. 3, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 812,452

Int. Cl.² C11D *1/66, 3/30*

U.S. Cl. 252—543 **18 Claims**

1. A liquid fabric-cleaning detergent consisting essentially of

a. from 15 to 30 weight percent of at least one nonionic surfactant having an HLB of 5 to 14,

b. from 0.15 to 0.50 weight percent of sodium carboxymethylcellulose,

c. from 10 to 30 weight percent of a lower alkanolamine effective to promote the action of said nonionic surfactant, and

d. water in an amount of 20 to 70 weight percent.

4,202,801

THERMOPLASTIC ELASTOMER COMPOSITION

Henno A. Petersen, Newtown, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,184

Int. Cl.² C08L *7/00, 9/00, 11/00, 47/00*

U.S. Cl. 260—5 **32 Claims**

1. A thermoplastic elastomer comprising a dynamically partially cured blend of 10% to 80% monoolefin copolymer rubber, said monoolefin copolymer being an amorphous, random, elastomeric copolymer of two or more monoolefins, at least one of said monoolefins being ethylene, 5% to 50% polyolefin resin, said resin being a solid, high molecular weight resinous plastic material, and 10% to 80% conjugated diene natural or synthetic rubber having an amount of unsaturation on the order of that occurring in Hevea rubber, wherein the percentages are percent by weight of the total composition, said blend being crosslinked only to an extent that will not prevent its becoming knit together into a coherent mass when processed on conventional rubber or plastic processing machinery.

4,202,802

PEPTIDES RELATED TO SOMATOSTATIN

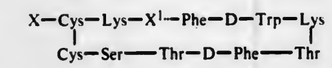
James E. Shields, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 2, 1978, Ser. No. 948,117

Int. Cl.² C08L *89/00*; C07C *103/52*; A61K *37/00*

U.S. Cl. 260—8 **20 Claims**

1. A cyclic tetradecapeptide of the formula:



wherein:

X is H—Ala—D—Ala, H—D—Ala—Gly, or H—D—Val—Gly; and

X^1 is Ala—Leu, Ala—Phe, Ala—D—Phe, D—Ala—Phe, or D—Ala—Cha; or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

4,202,803

RUBBER COMPOSITION CONTAINING GROUND GRAMINACEOUS RICE PRODUCT ESPECIALLY FOR MANUFACTURING MOLDED PANELS

Teresio Signoretto, Frazione Allivellatori 61, Cumiana (Turin), Italy

Filed Jun. 20, 1978, Ser. No. 917,228

Claims priority, application Italy, Jun. 20, 1977, 68427 A/77

Int. Cl.² C08L *5/00*

U.S. Cl. 260—17.4 BB **9 Claims**

1. In a composition for the manufacture of a vulcanized rubber for manufacturing a moulded panel including an elastomer and a vulcanizing agent, the improvement wherein the composition further includes as a filler, at least one member selected from the group consisting of rice husks and rice chaff.

4,202,804

VISCOSITY STABLE, STAINABLE WOOD TEXTURED CAULKING COMPOSITION CONTAINING WATER IMMISCIBLE ORGANIC SOLVENT

Rita E. Porzel, Lisle, and Cathryn D. Bator, Hoffman Estates, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Sep. 11, 1978, Ser. No. 941,184

Int. Cl.² C08L *1/02*

U.S. Cl. 260—17.4 R **13 Claims**

1. A viscosity stable, stainable, wood textured, aqueous latex caulking composition comprising from 5% to 30% of the weight of the composition of wood particles having sorbed therein a water immiscible organic solvent in an amount of at least about 60% of the weight of the wood to provide a free-flowing, solvent-wet powder; from about 35% to about 70% by weight of the composition of an aqueous emulsion of film-forming plasticized resin particles coalescable at about −40° C.; the proportion of wood particles, the resin solids content of said aqueous emulsion and the plasticization of the resin particles providing a viscous mass of gunable viscosity, and said organic solvent providing viscosity stability.

4,202,805

COATING RESIN COMPOSITION

Nobukatsu Kato, Nagoya; Yoshio Morimoto, Tokai, and Hiroshi Ozawa, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

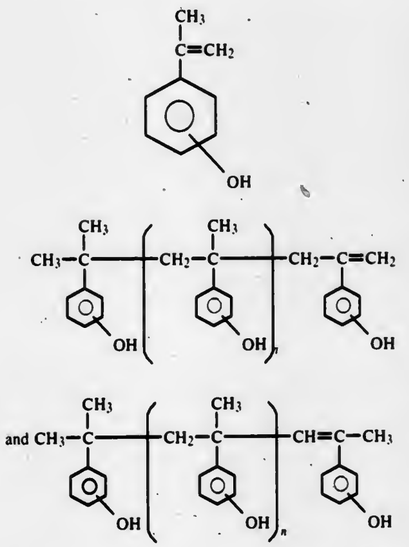
Filed Nov. 13, 1978, Ser. No. 959,766

Claims priority, application Japan, Nov. 24, 1977, 52-139908

Int. Cl.² C09D *3/74, 5/08*

U.S. Cl. 260—22 CB **8 Claims**

1. A coating resin composition comprising the reaction product obtained by reacting at least one isopropenylphenol compound selected from the group consisting of the compounds of the formulas



wherein n is a whole number of from 0 to 18, with at least one unsaturated compound selected from the group consisting of straight-chain unsaturated fatty acids, unsaturated fats and oils composed mainly of glycerides of straight-chain unsaturated fatty acids, polymers of diene hydrocarbon, polymers of diene hydrocarbon having carboxyl substituents at the ends of the polymer molecule, polymers of diene hydrocarbons having hydroxyl substituents at the ends of the polymer molecule, and maleinized polymers of diene hydrocarbon; and then reacting the resulting intermediate product with at least one polyfunctional compound selected from the group consisting of polyhydric alcohols and organic polybasic acids.

4,202,806

STABILIZATION OF CHLORINE-CONTAINING RESINS

Norio Yoshida, Hirakata, and Takesi Matuyama, Sakai, both of Japan, assignors to Koei Chemical Co., Ltd., Osaka, Japan

Filed Apr. 20, 1978, Ser. No. 898,286

Claims priority, application Japan, Apr. 22, 1977, 52-46968; Apr. 22, 1977, 52-46969; May 23, 1977, 52-60019; Feb. 28, 1978, 53-23101

Int. Cl.² C08K *5/11, 5/12*

U.S. Cl. 260—23 XA **11 Claims**

1. A chlorine-containing resin consisting essentially of:

(1) a chlorine-containing resin selected from the group consisting of homopolymer of vinyl chloride, homopolymer of vinylidene chloride and copolymers of vinyl chloride and an olefin copolymerizable therewith,

(2) 0.1 to 10 parts by weight, to 100 parts by weight of said chlorine-containing resin, of a heat stabilizer selected from the group consisting of (a) a partial esterification product of a polyol and an aliphatic acid, having a hydroxyl content of 10% to 40% by weight, said polyol being a member selected from the group consisting of pentaerythritol, polypentaerythritols and their dehydration condensation products, and said aliphatic acid being a member selected from the group consisting of aliphatic polycarboxylic acids and their esters, acid halides and acid anhydrides and (b) a partial esterification product of a polyol and an aromatic acid, having a hydroxyl content of 10% to 40% by weight, said polyol being a member selected from the group consisting of polypentaerythritols and dehydration condensation products of pentaerythritol and/or polypentaerythritols, and said aromatic acid being a member selected from the group consisting of aromatic polycarboxylic acids and their esters, acid halides and acid anhydrides, and

(3) an organic acid zinc salt.

4,202,807

ORGANOPOLYSILOXANE COMPOSITIONS MODIFIED WITH POLYURETHANE

Hans-Heinrich Moretto, Cologne; Armand de Montigny; Helmut Steinberger, both of Leverkusen; Hans Sattlegger, Odenthal-Gloebusch, all of Fed. Rep. of Germany, and Ingrid Larking, Landvetter, Sweden, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

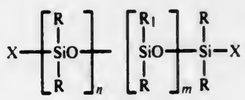
Filed Jun. 21, 1978, Ser. No. 917,717

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730744

Int. Cl.² C08L *75/04, 83/04*

U.S. Cl. 260—29.1 SB **6 Claims**

1. A process for producing a composition comprising a polysiloxane and a polyurethane each present as a discernible phase comprising mixing at a temperature from about room temperature to about 150° C. a liquid polysiloxane of the formula



in which

R is an alkyl, alkenyl, aryl or halogenoalkyl radical with up to about 10 C atoms,

R' is hydrogen, or an alkyl, alkenyl, aryl or halogenoalkyl radical with up to about 10 C atoms,

X is hydroxyl, vinyl or methyl,

n is 2 to about 1,000, and

m is 1 to about 50,

the polysiloxane having a viscosity of the order of about 10,000 centipoise, with a material which with a polyisocyanate will form a polyurethane, thereafter adding to said mixture a polyisocyanate of the formula

$$OCN-R^1-NCO$$

in which

R^1 is an optionally substituted alkylene or arylene radical with up to 24 C atoms,

thereby to form said polyurethane as a discernible phase in the liquid polysiloxane, the proportions of polysiloxane, polyurethane-forming material and polyisocyanate being such that the formed polyurethane constitutes about 40–80% of the weight of polysiloxane plus polyurethane.

4,202,808

VINYL RESIN LATEX COATING COMPOSITIONS

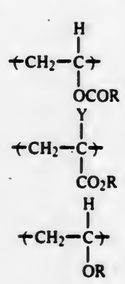
You-Ling Fan, East Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 886,091

Int. Cl.² C08L *27/06*

U.S. Cl. 260—29.6 WB **21 Claims**

1. Method of preparing water-borne colloidal dispersions of vinyl resins selected from the group consisting of vinyl chloride, vinylidene chloride or vinyl chloride/vinylidene chloride copolymers having carboxylic or sulfonic acid groups therein which comprises vigorously blending said resins with a water-miscible base, water, and at least 1 organic water-miscible solvent which has an affinity for said resins and a boiling point below about 160° C. and an organic water-miscible macromolecular compound selected from the group consisting of normally solid cellulose ethers, poly (alkylene oxides), homopolymers of vinyl alcohol, acrylic acid, methacrylic acid, vinyl pyrrolidone, maleic acid and acrylamide and copolymers of vinyl alcohol, acrylic acid, methacrylic acid, vinyl pyrrolidone, maleic acid and acrylamide containing at least one of the following lipophilic moieties copolymerized therein:

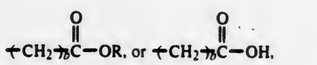


(1)

(2)

(3)

wherein Y is a monovalent radical selected from the group consisting of —H, methyl,



wherein b is an integer having values of 0–4 and R is a C_1–C_{18} alkyl, and then stripping off said organic solvent.

4,202,809

STYRENE-BUTADIENE-ACRYLONITRILE INTERPOLYMER LATEX BASED CEMENT ADDITIVES

R. Douglas Eash, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 815,966, Jul. 15, 1977, abandoned. This application Jun. 16, 1978, Ser. No. 916,168

Int. Cl.² C08K *3/00*

U.S. Cl. 260—29.7 S **12 Claims**

1. A cement additive consisting of (1) an interpolymer latex, said interpolymer consisting of from about 30 to about 70 parts by weight styrene, from about 30 to about 50 parts by weight butadiene and from 1 to about 20 parts by weight acrylonitrile, said latex containing up to about 60 parts by weight of interpolymer solids, and, based on 100 parts by weight of said interpolymer solids, (2) from about 3 to about 10 parts by weight of a nonionic surfactant, (3) from about 3 to about 10 parts by weight of an anionic surfactant, and (4) from about 0.1 to about 5 parts by weight of a polyorganosiloxane foam depressant.

4,202,810

APPLICATION OF CUMYLPHENOL AND DERIVATIVES THEREOF IN PLASTIC COMPOSITIONS

Salvatore J. Monte, Staten Island, N.Y., and Gerald Sugerman, Allendale, N.J., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

Division of Ser. No. 672,425, Mar. 31, 1976, Pat. No. 4,102,862. This application Jun. 5, 1978, Ser. No. 912,880

Int. Cl.² C08G *18/30, 18/83;* C08L *75/04*

U.S. Cl. 260—31.2 N **8 Claims**

1. A polymerizable composition which comprises an admixture of from 10 to 100 parts by weight of cumylphenyl glycidyl ether or a cumylphenyl ester of a carboxylic acid and 100 parts of a urethane resin.

4,202,811

SILOXANE-EPOXY MOLDING COMPOUND WITH IMPROVED CRACK RESISTANCE

Keith W. Michael, Midland, and Alvin L. Moore, Clare, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 21, 1978, Ser. No. 917,618

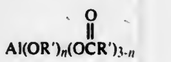
Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **8 Claims**

1. An improved curable siloxane-epoxy molding composition which is a blend of

(A) 5 to 60 weight percent based on the combined weight of (A) and (D) of a phenylpolysiloxane resin having a degree of substitution of from 1.0 to 1.7, a phenyl to silicon ratio of 0.2 to 1.5, an R to silicon ratio of 0.4 to 1.4 in which R is an aliphatic hydrocarbon radical of 1 to 3 carbon atoms, and a silicon-bonded hydroxyl content of from 2.5 to 10.0 weight percent,

(B) 0.1 to 10 weight percent based on the combined weight of (A) and (D) of an aluminum catalyst selected from the group consisting of aluminum acylates of the formula



in which each R′ is independently selected from the group consisting of the hydrogen atom, alkyl radicals containing from 1 to 20 inclusive carbon atoms, and aryl and aryl containing hydrocarbon radicals containing 6 to 24 inclusive carbon atoms and n having a value from 0 to 2, condensates of such compounds,

(C) 65 to 85 weight percent based on the combined weight of (A), (B), and (D) of a silica filler, wherein the improvement comprises employing as the epoxy ingredient,

(D) 40 to 95 weight percent based on the combined weight of (A) and (D) of an aromatic polyepoxide resin which has more than one epoxide per molecule, has a Durran's melting point between 60° and 110° C., and is composed of at least 38 weight percent based on the weight of (D) of a polydiglycidyl ether of a bisphenol.

4,202,812

SILICONE RUBBER COMPOSITIONS CONTAINING EXTENDING FILLERS AND ACRYLOXYALKYLSILANES

Milton C. Murray, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 1, 1978, Ser. No. 939,037

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **8 Claims**

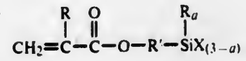
1. A composition comprising

(a) 100 parts by weight of silicone rubber base consisting essentially of polydiorganosiloxane wherein the organic radicals are selected from the group consisting of methyl, vinyl, phenyl, and 3,3,3-trifluoropropyl, reinforcing silica filler, and anti-crepe hardening agent,

(b) from 25 to 300 parts by weight of siliceous extending filler with an average particle size of less than 25 micrometers and a surface area of less than 50 m^2/g.,

(c) from 0.1 to 5 parts by weight of organic peroxide vulcanizing agent suitable for vulcanizing the silicone rubber base,

(d) from 0.08 to 0.3 part by weight of an acryloxyalkylsilane of the formula



in which R is selected from the group consisting of hydrogen and methyl radical, R′ is an alkylene radical of from 1 to 4 inclusive carbon atoms, X is a radical selected from the group consisting of lower alkoxy radicals of from 1 to 3 inclusive carbon atoms and acetoxy radical, and a is from 0 to 2 inclusive.

4,202,813

RUBBER CONTAINING PRECIPITATED SILICEOUS PRODUCTS

Satish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 796,917, May 16, 1977, abandoned, which is a division of Ser. No. 557,707, Mar. 12, 1975, abandoned. This application Oct. 10, 1978, Ser. No. 949,719

Int. Cl.² C08K *3/34, 3/36*

U.S. Cl. 260—37 R **1 Claim**

1. A rubber composition having incorporated and intimately combined therewith, as a reinforcing agent, a finely divided, amorphous, precipitated silicon dioxide having:

(a) a wet cake moisture content of from between about 77.9 to 83.5% where it is between about 77.9 to 83.2% in the presence of a metal cation and between about 79.8 to 83.5% in the absence of said metal cation;

(b) a structure index of from between about 350 to 505 where it is between about 350 to 495 in the presence of said metal cation and between about 395 to 505 in the absence of said metal cation;

(c) an oil absorption of from between about 190 to 212 cc/100 grams where it is between about 193 to 212 cc/100 grams in the presence of said metal cation and between about 190 to 202 cc/100 grams in the absence of said metal cation;

(d) a void volume of from between about 3.19 to 4.40 cc Hg/g SiO_2 where it is between about 3.19 to 4.40 cc Hg/g SiO_2 in the presence of said metal cation and between about 3.55 to 4.14 cc Hg/g SiO_2 in the absence of said metal cation;

(e) a BET surface area of from between about 120 to 220 m^2/g where it is between about 153 to 220 m^2/g in the presence of said metal cation and between about 120 to 153 m^2/g in the absence of said metal cation; and

(f) a percent friability of from between about 20 to 98% where it is between about 28 to 93% in the presence of said metal cation and between about 20 to 98% in the absence of said metal cation;

wherein said silicon dioxide comprises at least 90% SiO_2 and said metal cation is selected from the group consisting of aluminum, magnesium, zinc and calcium.

4,202,814

PROCESS FOR THE MASS COLORATION OF POLYESTERS

Paul Lienhard, Frenkendorf, and Abul Iqbal; Ettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

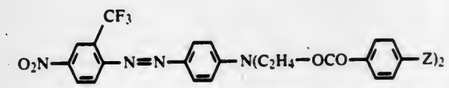
Filed Dec. 16, 1977, Ser. No. 861,327

Claims priority, application Switzerland, Dec. 27, 1976, 16350/76

Int. Cl.² C08K *5/23*

U.S. Cl. 260—40 P **2 Claims**

1. A process for the mass coloration of polyesters which comprises homogeneously mixing a dye of the formula



wherein Z represents hydrogen, chlorine, methyl or methoxy, with said polyester.

4,202,815

CONCENTRATED POWDER OR GRANULAR FORMULATIONS DISPERSABLE IN AQUEOUS MEDIA

Jacques Wegmann, Bettingen, Switzerland, assignor to Rohner AG Pratteln, Pratteln, Switzerland

Filed Mar. 20, 1978, Ser. No. 888,417

Claims priority, application Switzerland, Mar. 21, 1977, 3499/77

Int. Cl.² C08K *5/00*

U.S. Cl. 260—42.21 **15 Claims**

1. A process for the preparation of aqueous-dispersible, free-flowing, and low-dusting concentrated formulations in powder or granular form of substances which are sparingly soluble to insoluble in water comprising the steps of:

(i) finely dispersing at least one of said substances, in the organic phase of a two-phase system consisting of water and an organic solvent, said organic solvent having a limited solubility in the aqueous phase,

(ii) turbulently mixing said two-phase system, containing the substance in the organic phase and having a liquid to paste-like consistency, with at least one organic carrier, said carrier having a molecular weight of at least 500, being sparingly soluble to insoluble in water, containing at least one acid group and being convertible into a water-soluble form with bases, until a homogeneous mixture has been obtained,

(iii) reducing the volume of the organic phase, said organic phase containing the substance and the carrier, by adding further water until formulation particles consisting of the substance and the carrier are formed and are no longer sticky,

(iv) separating off said formulation particles, and

(v) rinsing off with water said separated particles.

4,202,816

NOVEL LIGHT STABILIZERS

Paul Moser, Riehen, and Jean Rody, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

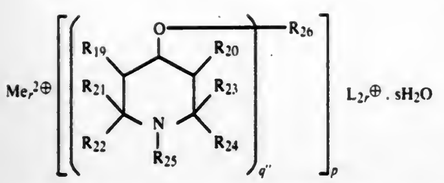
Continuation-in-part of Ser. No. 696,962, Jun. 17, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,156

Claims priority, application Switzerland, Jun. 19, 1975, 7989/75; Dec. 2, 1975, 15651/75; Mar. 18, 1976, 3407/76

Int. Cl.² C08K *5/54, 5/34;* C07D *211/06*

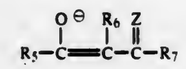
U.S. Cl. 260—45.75 N **57 Claims**

39. A metal complex of formula V



(V)

wherein Me is a doubly positively charged metal ion,
is 1 or 2,
r is equal to the number, to half the number or a quarter of the number of the >N-R_{25} groups present within the parenthesis q",
s is 0 to 2
R_{19} and R_{20} independently of one another are hydrogen, alkyl, alkenyl, alkynyl or aralkyl, R_{21} and R_{22} independently of one another are alkyl, R_{23} is alkyl, R_{24} is alkyl, phenyl or aralkyl or R_{23} and R_{24} together are alkylene, R_{25} is hydrogen, oxyl, alkyl, alkenyl, alkoxyalkyl, aralkyl, epoxyalkyl, alkoxycarbonylmethyl, alkenyloxycarbonylmethyl, phenoxycarbonylmethyl, aralkoxycarbonylmethyl, cycloalkyloxycarbonylmethyl, hydroxyalkyl or acyloxyalkyl, q" is 1, 2, 3 or 4, R_{26} is hydrogen, a mono- to trivalent, optionally substituted hydrocarbon radical or a mono- to quadrivalent radical derived from an organic or inorganic acid by the splitting-off of at least one hydroxyl group and
L is a singly charged enol anion of formula (II)



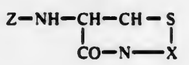
(II)

wherein Z is oxo or optionally substituted imino, R_5 is alkyl, alkenyl, cycloalkyl, aralkyl or aryl, R_6 is hydrogen, alkyl, alkenyl, cycloalkyl, aralkyl, aryl or alkoxycarbonyl, or R_5 and R_6 together are optionally substituted 1,4-butadi-1,3-enylene or 1,4-butylene, and R_7 is optionally substituted alkyl, alkenyl, cycloalkyl, aralkyl, aryl, alkoxy or optionally substituted amino.

54. A process for stabilizing organic polymers against light induced degradation comprising incorporating into said polymers 0.01 to 5% by weight of a metal complex of claim **39**.

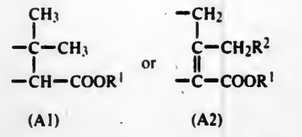
4,202,817
PROCESS FOR THE PRODUCTION OF PENAM AND CEPHEM DERIVATIVES
Erling Guddal, Skovlunde, and Poul Borrevang, Rodovre, both of Denmark, assignors to Novo Industri A/S, Denmark
Continuation of Ser. No. 813,246, Jul. 6, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,463
Claims priority, application United Kingdom, Jul. 7, 1976, 28346/76
Int. Cl.[2] **C07D** *499/12, 501/06*
U.S. Cl. 260—239.1 **13 Claims**

1. In a process for the preparation of penam or cephem derivatives by reacting a phosphite amide of the general formula:



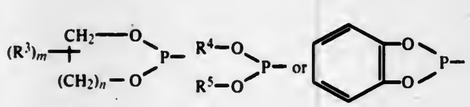
(I)

wherein X represents a group of the general formula:



(A1) (A2)

wherein the carbon atom adjacent to the $COOR^1$ group is connected to the nitrogen atom, R^1 represents a conventional penam or cephem substituted or non-substituted alkyl or aralkyl group, or a metal organic group, R^2 represents a conventional penam or cephem group selected from hydrogen, an acetoxy group, or —S-Het, wherein Het represents a heterocyclic group, and Z represents a group having the formula:

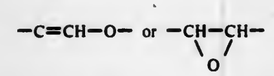


(A3) (A4) (A5)

wherein R^3 represents an alkyl group, R^4 and R^5 are the same or different, each representing an alkyl group, n represents 1 or 2, m represents 0, 1 or 2, with a p-hydroxyphenylglycyl halide or an acid addition salt thereof in an aprotic solvent, the improvement wherein the reaction is carried out in the presence of a proton donor and a phosphite halide scavenger, having the general formula:

$$R^7—Q—R^8 \quad \text{(III)}.$$

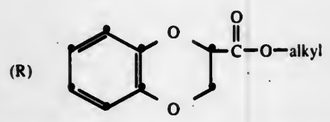
wherein Q represents a moiety of the formula



and R^7 and R^8 are the same or different, each representing hydrogen, an alkyl group optionally substituted by a chlorine atom, or a phenyl group, or R^7 and R^8 together represent trimethylene, with the proviso that any symbol R^7 or R^8 connected to the oxygen atom in the moiety Q of the formula —CH=CH—O— does not represent hydrogen, to prevent the phosphite halide produced by the reaction from reacting with water or alcohol.

4,202,818
LIPOGENESIS INHIBITION BY CERTAIN ESTERS OF SUBSTITUTED BENZODIOXINCARBOXYLIC ACIDS
Harry G. Durham, Modesto, Calif., and John B. Carr, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Continuation-in-part of Ser. No. 951,535, Oct. 16, 1978, abandoned. This application Apr. 26, 1979, Ser. No. 33,634
Int. Cl.[2] **C07D** *277/00, 319/08*
U.S. Cl. 548—204 **1 Claim**

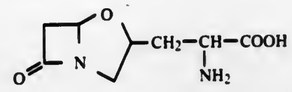
1. A compound of the formula



wherein "alkyl" is alkyl of from one to four carbon atoms, and R is a moiety which is one of: acetamido, (hydroxyimino)-methyl, 1-(hydroxyimino)ethyl, (methoxyimino)methyl, 1-(methoxyimino)ethyl, benzamido, and 2-methyl-4-thiazolyl.

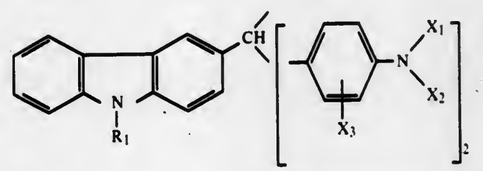
4,202,819
2-(3-ALANYL)CLAVAM ANTIBIOTIC
Martha Kellett, Nutley; David Pruess, and James P. Scannell, both of North Caldwell, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.
Filed May 4, 1979, Ser. No. 35,884
Int. Cl.[2] **C07D** *498/04;* **A61K** *31/42*
U.S. Cl. 260—245.3 **1 Claim**

1. A substantially pure compound of the formula



4,202,820
PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL CONTAINING A CARBAZOLYL METHANE COMPOUND
Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 842,854, Oct. 17, 1977, Pat. No. 4,154,463. This application Jan. 31, 1979, Ser. No. 8,136
Claims priority, application Luxembourg, Oct. 26, 1976, 76074
Int. Cl.[2] **C07D** *209/86;* **B41M** *5/16*
U.S. Cl. 260—315 **6 Claims**

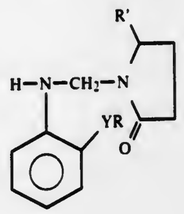
1. A carbazolylmethane compound of the formula



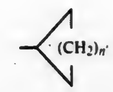
wherein R_1 is alkyl of 1 to 8 carbon atoms or benzyl, X_1 is phenyl or lower alkoxyphenyl, X_2 is lower alkyl and X_3 is hydrogen or methyl.

4,202,821
N-(N'-METHYLENEPYRROLIDONYL)-2-SUBSTITUTED ANILINES
Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 955,483, Oct. 27, 1978, Ser. No. 942,644, Sep. 15, 1978, Pat. No. 4,153,446, Ser. No. 935,354, Aug. 21, 1978, Ser. No. 928,569, Jul. 27, 1978, and Ser. No. 892,146, Mar. 31, 1978. This application Dec. 14, 1978, Ser. No. 969,358
Int. Cl.[2] **A01N** *9/22;* **C07D** *207/26*
U.S. Cl. 260—326.5 S **21 Claims**

1. N-(N'-methylenepyrrolidonyl)-2-substituted aniline intermediate compounds having the formula:



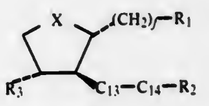
where
R is alkyl, C_1-C_6, alkenyl, C_3-C_5, alkyleneoxyalkyl, —$(CH_2)_nOR''$, where n = 1-3, and R'' is alkyl, C_1-C_3, and cycloalkyl,



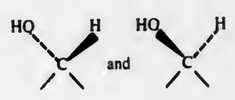
where n' = 0-3,
R' is hydrogen or alkyl, C_1-C_3, and,
Y is oxygen or sulfur.

4,202,822
1-HYDROXYMETHYL-1-OXO-PROSTANE DERIVATIVES OF THE F_1 SERIES
Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Dec. 8, 1977, Ser. No. 858,589
Int. Cl.[2] **C07D** *317/10*
U.S. Cl. 260—340.9 P **190 Claims**

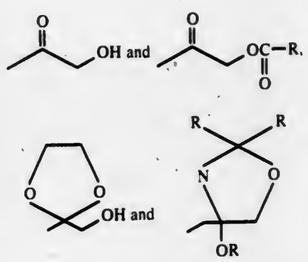
1. An optically active compound of the formula:



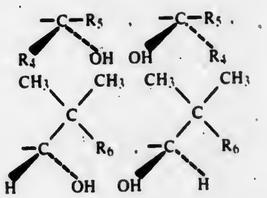
wherein X is a divalent moiety selected from the group consisting of:



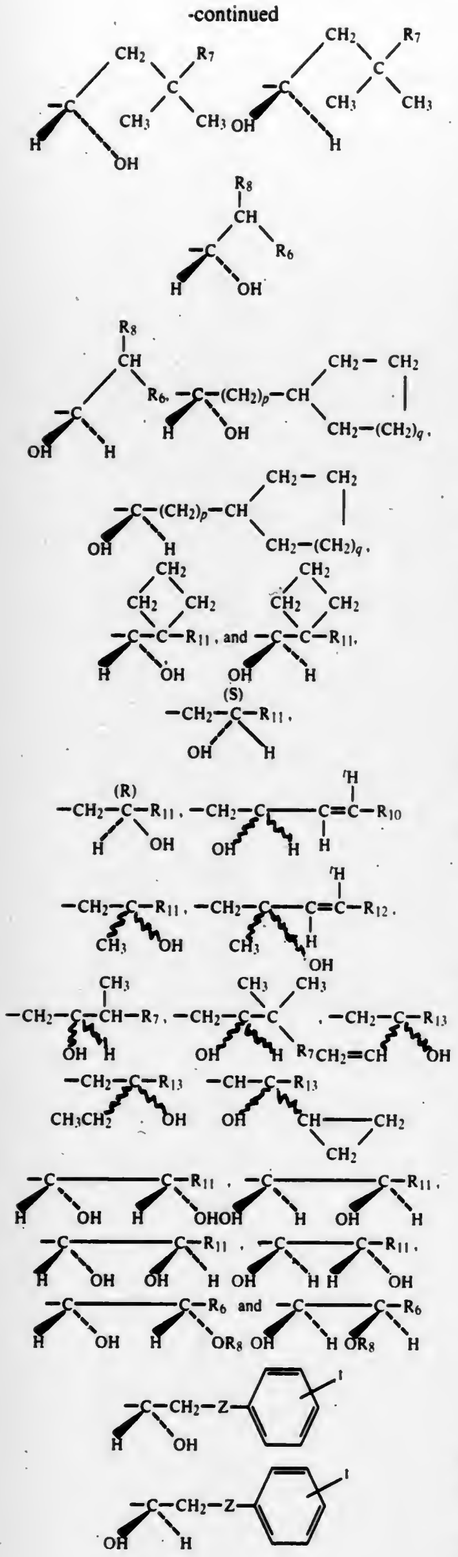
f is an integer from 5 to 7; inclusive; R_3 is selected from the group consisting of hydrogen and hydroxyl; C_{13}-C_{14} is ethyleneor trans-vinylene; R_1 is a radical selected from the group consisting of:



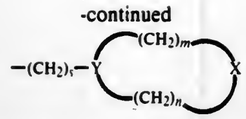
wherein R is selected from the group consisting of C_1-C_4 alkyl; R_2 is moiety selected from the group consisting of:



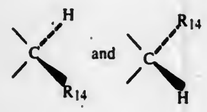
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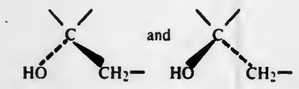
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wherein R_4 is selected from the group consisting of hydrogen and methyl, R_5 is selected from the group consisting of C_4-C_7 alkyl, R_6 is selected from the group consisting of C_3-C_5 alkyl, R_7 is selected from the group consisting of C_2-C_4 alkyl, R_8 is selected from the group consisting of C_1-C_2 alkyl, p is an integer from 0 to 3, and q is 1 or 2, R_{10} is selected from the group consisting of C_1-C_4 alkyl, R_{11} is selected from the group consisting of C_3-C_7 alkyl, R_{12} is selected from the group consisting of C_1-C_4 alkyl, R_{13} is C_3-C_6 alkyl, X is a divalent radical selected from the group consisting of:



wherein R_{14} is selected from the group consisting of C_1-C_7 alkyl, hydrogen and a phenoxy group optionally substituted from the group consisting of halogen, trifluoromethyl and C_1-C_4 alkoxy, Y is a trivalent radical selected from the group consisting of:



Z is a divalent radical selected from the group consisting of —O—and —CH_2— -, m is zero or an integer from 1 to 4 inclusive, with the proviso that the sum of m and n has the value of 1 to 4, s is zero or the integer 1, t is selected from the group consisting of hydrogen, chloro, fluoro, dichloro, trifluoromethyl, methoxy and t-butyl; the racemic mixture thereof; and the mirror image thereof.

4,202,823

D-HOMOPREGNANES

Andor Fürst, Basel; Peter Keller, Reinach, and Marcel Müller, Frenkendorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

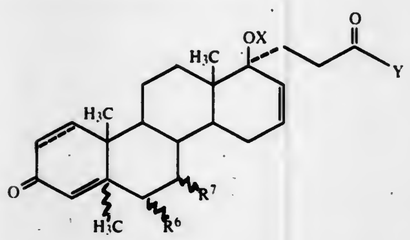
Filed Jun. 30, 1978, Ser. No. 921,036

Claims priority, application Luxembourg, Jul. 6, 1977, 77699

Int. Cl.[2] **C07D** *307/94;* **C07J** *63/00*

U.S. Cl. 260—343.6 **6 Claims**

1. A D-Homopregnane of the formula



wherein X and Y taken together denote an oxygen to carbon bond; R^6 is hydrogen, R^7 is hydrogen, lower alkanoylthio or aroylthio, or R^6 and R^7 taken together denote a carbon to carbon bond and the dotted line in the 1,2-position of the A-ring together with the corresponding solid line denotes a single or double carbon to carbon bond.

4,202,824

PHYSIOLOGICALLY ACTIVE DERIVATIVES OF ESTERASTIN

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa, and Tomio Takeuchi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

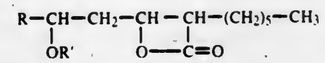
Filed Apr. 26, 1979, Ser. No. 33,359

Claims priority, application Japan, May 25, 1978, 53-61725; May 25, 1978, 53-61726

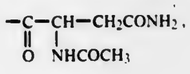
Int. Cl.[2] **C07D** *305/12*

U.S. Cl. 260—343.9 **4 Claims**

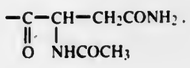
1. The compound having the formula



wherein R denotes a group of the formula CH_3—$(CH_2)_4$—CH=CH—CH_2—CH=CH—CH_2— or a group of the formula CH_3—$(CH_2)_{10}$— and R′ denotes a hydrogen atom or a group of the formula



provided that when R′ is the group



R is the group CH_3—$(CH_2)_{10}$—.

4,202,825

QUERCETIN PENTAMETHYL CARBAMATE AND A PROCESS FOR ITS PREPARATION

Miguel M. Tayà; Dionisio M. Aedo, and René Ricard, all of Barcelona, Spain, assignors to Rogador Sociedad Anonima, Esplugas de LLoebregat, Spain

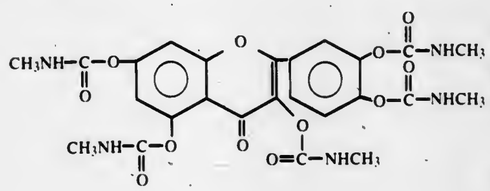
Filed Mar. 7, 1978, Ser. No. 884,448

Claims priority, application Spain, Mar. 7, 1977, 456.574

Int. Cl.[2] **C07D** *311/04*

U.S. Cl. 260—345.2 **1 Claim**

1. Quercetin pentamethyl carbamate having the structural formula:



4,202,826

PROCESS FOR PREPARING ANHYDRIDE FROM ALKANES

Ralph O. Kerr, Houston, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Division of Ser. No. 767,499, Feb. 10, 1977, Pat. No. 4,105,586. This application Apr. 21, 1978, Ser. No. 898,663

The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.

Int. Cl.[2] **C07D** *307/60*

U.S. Cl. 260—346.75 **10 Claims**

1. A process for the partial oxidation of C_4 to C_{10} hydrocarbons comprising contacting a feed comprising C_4 to C_{10} alkane hydrocarbons in vapor phase at elevated temperatures, with oxygen and a catalyst composition consisting of vanadium, phosphorus and oxygen and a modifying component of (a) Nb, Cu, Mo, Ni, Co and Cr, (b) one or more of the elements selected from the group consisting of Ce, Nd, Ba, Hf, U, Ru, Re, Li or Mg, and (c) one or more of the elements selected from the group consisting of Y, Sm, Tb, and Eu, wherein the atomic ratio of vanadium: phosphorus: Nb:Cu:Mo:Ni:Co:Ce:Nd:Cr-:Ba:Hf:U:Ru:Re:Li:Mg:Y:Sm:Tb:Eu is 1:0.90 to 1.3: 0.001 to 0.125:0.022 to 0.201:0.0025 to 0.040:0.0022 to 0.045:0.004 to 0.066:0.0054 to 0.20:0.0022 to 0.20:0.0003 to 0.003:0.0023 to 0.0585:0.0023 to 0.0409:0.0033 to 0.0993:0.0002 to 0.02015:0.0002 to 0.0074:0.0072 to 0.179:0.0088 to 0.222:0.0001 to 0.02:0.0001 to 0.02:0.0001 to 0.02:0.0001 to 0.02, respectively, the total atomic ratio of Nb, Cu, Mo, Ni, Co, Ce, Nd, Cr, Ba, Hf, U, Ru, Re, Li, Mg, Y, Sm, Tb and Eu being in the range of 0.033 to 0.4.

4,202,827

PROCESS FOR THE PRODUCTION OF 1-ANTHRAQUINONYL HYDRAZINE

Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

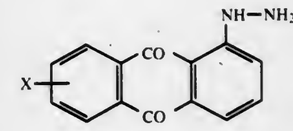
Filed Aug. 18, 1978, Ser. No. 935,035

Claims priority, application Switzerland, Sep. 2, 1977, 10735/77

Int. Cl.[2] **C07C** *109/04, 103/75*

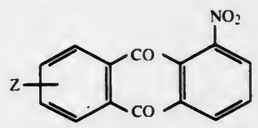
U.S. Cl. 260—378 **3 Claims**

1. A process for the production of 1-anthraquinonyl hydrazines of the formula



(1).

wherein X is hydrogen or —NH—NH_2, which comprises reacting 1-nitroanthraquinones of the formula



(2).

wherein Z is hydrogen or nitro, in aprotic dipolar solvents, with hydrazine or hydrazine hydrate, at normal or slightly elevated temperature, to give 1-anthraquinonyl hydrazines of the formula (1).

4,202,828

PROCESS FOR SEPARATION OF NAPHTHOQUINONE AND PHTHALIC ACID

Ryo Matsuura, Yamato; Tatsuyoshi Komatsu, Kamakura; Yukio Nomiyama, Yokohama, and Kenji Usui, Nihonbashi, all of Japan, assignors to Kawasaki Kasei Chemicals Limited, Tokyo, Japan

Filed Jan. 10, 1978, Ser. No. 868,349

Int. Cl.[2] **C07C** *45/24, 49/66, 51/48, 63/16*

U.S. Cl. 260—396 R **9 Claims**

1. A process for the separation of naphthoquinone and phthalic acid from a gaseous mixture containing naphthoquinone, phthalic anhydride, maleic anhydride and sulfuric anhydride or sulfuric acid obtained from the catalytic vapor phase oxidation of naphthalene comprising:contacting said mixture with an aqueous medium which collects naphthoquinone and phthalic anhydride as an aqueous slurry of napthoquinone and phthalic acid,

adding a base to said aqueous slurry to adjust the pH from

1.2 to 2.5 in order to neutralize only sulfuric acid and maleic acid in said slurry without substantially neutralizing phthalic acid present therein;

heating the aqueous slurry to a temperature of 60° C. to 100° C. to dissolve said phthalic acid thereby forming a slurry of naphthoquinone in an aqueous solution of phthalic acid; and

extracting naphthoquinone from said slurry with a solvent substantially immiscible with water while maintaining the temperature of the aqueous solution at a temperature sufficient to prevent crystallization of phthalic acid.

4,202,829

PROCESS FOR PREPARING 1α-HYDROXYLATED COMPOUNDS

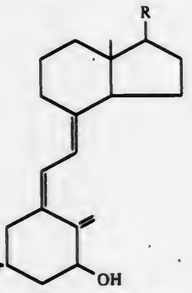
Hector F. DeLuca; Heinrich K. Schnoes; David E. Hamer, all of Madison, and Herbert E. Paaren, Verona, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 867,161, Jan. 5, 1978, abandoned. This application Dec. 13, 1978, Ser. No. 968,738

Int. Cl.² C07J *9/00*

U.S. Cl. 260—397.2 **11 Claims**

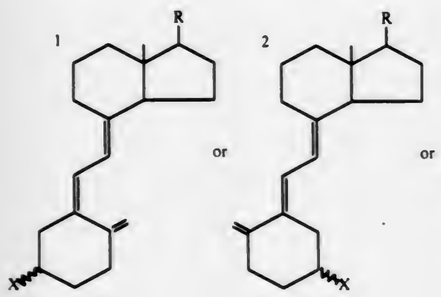
1. A method for preparing 1α-hydroxylated compounds having the general formulae



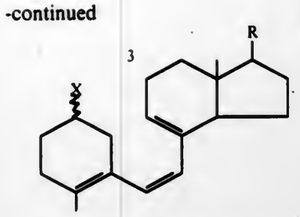
where R is selected from the group consisting of a substituted or unsubstituted cholesterol or ergosterol side chain group, and

X is selected from the group consisting of hydrogen, hydroxy, acyl, O-lower alkyl, O-lower acyl, and O-aromatic acyl,

which comprises subjecting compounds having the formulae



-continued



to allylic oxidation, with the proviso that the 1-hydroxylated product of a compound of formula (2) be subsequently subjected to isomerization by irradiation with ultraviolet light and the 1-hydroxylated product of a compound of formula (3) be subsequently subjected to thermal isomerization

and recovering the desired 1-hydroxylated product.

4,202,830

ORGANOTIN HALIDES

Helmut Korbanka, Adelsried, and Franz Scheidl, Gersthofen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

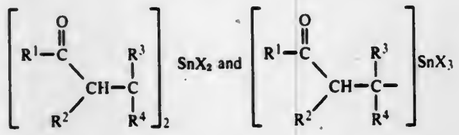
Filed Aug. 7, 1978, Ser. No. 931,678

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735757

Int. Cl.² C07F *7/22*

U.S. Cl. 260—429.7 **3 Claims**

1. Mixture of organotin halides of the formulae

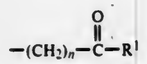


I II

in which

R^1 is OH, halogen, NH_2, an alkyl- or arylamino radical, an O-alkyl or O-aryl radical, both the latter radicals being unsubstituted or substituted by aryl or alkyl which may also carry as additional substituents halogen or hydroxy,

R^2 to R^4, being identical or different, each represent hydrogen with their sum being 0 to 2 hydrogen atoms, or alkyl radicals having from 1 to 20 carbon atoms; at least one of these radicals, however, being a



group where n is an integer of from 1 to 15;

X is chlorine, bromine or iodine,

and the radicals R^1 to R^4 and X corresponding to one another in the components I and II of the mixture are always identical.

4,202,831

PREPARATION OF SILANES

Ottfried Schlak, Leverkusen, and Hans-Heinrich Moretto, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,375

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811854

Int. Cl.² C07F *7/18*

U.S. Cl. 556—467 **3 Claims**

1. A process for the preparation of a silane of the formula



wherein

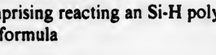
R is optionally subsituted alkyl, alkenyl or aryl with up to 7 C atoms,

R′ is alkyl with 1 to 4 C atoms,

a and b each independently is 1, 2 or 3, and

a+b is at most 4,

comprising reacting an Si-H polysiloxane with a compound of the formula



in the presence of a conventional redox-stable siloxane polymerization catalyst which favors the exchange reaction.

4,202,832

THIOCARBAMOYLTHIO FATTY ACIDS

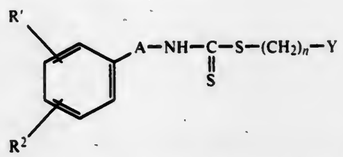
Ulf Fischer, Frenkendorf, and Ado Kaiser, Lausen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 792,630, May 2, 1977, abandoned. This application Oct. 20, 1978, Ser. No. 953,720

Int. Cl.² C07C *155/08;* C07D *207/12, 211/30, 295/18*

U.S. Cl. 260—455 A **5 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, and R^2 is halogen; Y is a group of the formula



wherein

R^3 is hydroxy, lower alkoxy, hydroxy-(lower alkoxy) or a group of the formula $-N(R^4)(R^5)$, wherein R^4 is hydrogen and R^5 is cycloalkyl containing 3 to 6 carbon atoms, or R^4 and R^5, independently, are hydrogen or lower alkyl, or R^4 and R^5, when taken together with the nitrogen atom to which they are attached, are a pyrrolidino, piperidino or morpholino ring; A is methylene, ethylene, propylene or $-OCH_2CH_2-$; and n is 3, or,

when Y is carboxy, salts thereof with pharmaceutically acceptable bases.

4,202,833

HYDROPEROXYISOPROPYLPHENYL CARBONATES

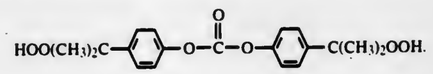
Sheng-Hong A. Dai, Wallingford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 879,788, Feb. 21, 1978, Pat. No. 4,164,510, which is a continuation-in-part of Ser. No. 818,233, Jul. 22, 1977, abandoned. This application May 11, 1979, Ser. No. 38,133

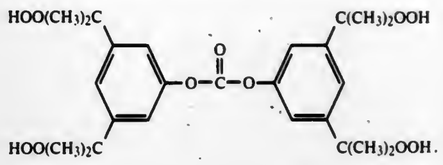
Int. Cl.² C07C *69/00*

U.S. Cl. 260—463 **2 Claims**

1. A dihydroperoxide having the formula



2. A tetrahydroperoxide having the formula



4,202,834

COPOLYMERIZABLE, ULTRAVIOLET LIGHT ABSORBER (2-CYANO-3,3-DIPHENYLACRYLOXY) ALKYLENE ETHYLENIC ETHERS

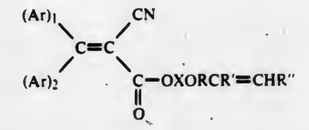
Bruce A. Gruber, Bloomingdale, and Donald H. Lorenz, Basking Ridge, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Mar. 20, 1979, Ser. No. 22,370

Int. Cl.² C07C *21/70*

U.S. Cl. 260—465 D **10 Claims**

1. Copolymerizable ultraviolet light absorber compounds having the formula:



where $(Ar)_1$ and $(Ar)_2$ are phenyl;

X is alkylene, C_2-C_{17}, unsubstituted or substituted with halo, cyano, alkyl, alkoxy, alkoxyalkyl, or alkoxyalkyleneoxy, C_1-C_6; and,

R is alkylene, oxyalkylene, alkyleneoxyalkylene, benzylene, C_1-C_{10}, unsubstituted or substituted with hydroxy; and

R′ and R″ are independently hydrogen or alkyl, C_1-C_6.

4,202,835

PREPARATION OF α-CYANO-3-PHENOXY-BENZYL ALCOHOL

Jacques Prost-Marechal, Paris, and Jean Tessier, Vincennes, both of France, assignors to Roussel Uclaf, Paris, France

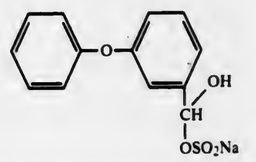
Continuation of Ser. No. 820,097, Jul. 29, 1977, abandoned. This application Apr. 11, 1979, Ser. No. 28,994

Claims priority, application France, Aug. 27, 1976, 76 25938

Int. Cl.² C07C *121/75*

U.S. Cl. 260—465 F **11 Claims**

1. A process for the preparation of α-cyano-3-phenoxy-benzyl alcohol comprising reacting a compound capable of generating CN^- ions and a m-phenoxy-benzaldehyde bisulfite of the formula



in the presence of at least one aprotic dipolar organic solvent.

4,202,836

ACETOXYALKYL CYANOACETATE INTERMEDIATES IN THE MANUFACTURE OF COPOLYMERIZABLE, ULTRAVIOLET LIGHT ABSORBER COMPOUNDS

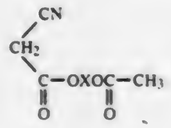
Bruce A. Gruber, Bloomingdale, and Donald H. Lorenz, Basking Ridge, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 6,787, Jan. 26, 1979, and a continuation-in-part of Ser. No. 16,134, Mar. 1, 1979, and a continuation-in-part of Ser. No. 22,320, Mar. 19, 1979. This application Apr. 17, 1979, Ser. No. 30,753

Int. Cl.² C07C *121/00, 121/20*

U.S. Cl. 260—465.4 5 Claims

1. Acetoxyalkyl cyanoacetate compounds having the formula:



where X is alkylene, C_2-C_{17}, unsubstituted or substituted with halo, cyano, alkyl, C_1-C_6, alkoxy, C_1-C_6, alkoxyalkyl, C_1-C_6, or alkoxyalkyleneoxy, C_1-C_6.

4,202,837

CONVERSION OF UNSATURATED ALDEHYDES TO UNSATURATED NITRILES

Alex N. Williamson, Greensboro, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 16, 1978, Ser. No. 961,177

Int. Cl.² C07C *120/00*

U.S. Cl. 260—465.9 7 Claims

1. A process for ammoxidation of an olefinically unsaturated aldehyde selected from acrolein and methacrolein to the corresponding unsaturated nitrile in the liquid phase comprising the steps of

(a) forming a complex of a copper salt with ammonia wherein the molar ratio of copper salt to ammonia is from 1:10 to 10:1 in a solvent by contacting said copper salt with ammonia, and

(b) contacting the complex with the unsaturated aldehyde in the presence of molecular oxygen in the substantial absence of free ammonia.

4,202,838

SULPHONATED CONDENSATION PRODUCTS

Alain Lauton, St. Louis, France; Roland Putzar, Therwil, Switzerland; Hans-Ulrich Berendt, Allschwil, Switzerland, and Gustaaf Scherer, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

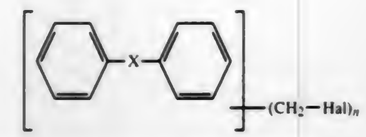
Continuation of Ser. No. 736,643, Oct. 29, 1976, abandoned, which is a continuation of Ser. No. 659,388, Feb. 19, 1976, abandoned, which is a continuation of Ser. No. 410,749, Oct. 29, 1973, abandoned. This application Jun. 29, 1978, Ser. No. 920,589

Claims priority, application Switzerland, Nov. 3, 1972, 16042/72

Int. Cl.² C07C *143/24, 143/42;* C09B *67/00*

U.S. Cl. 260—505 C 11 Claims

1. A sulphonated condensation product, which is obtained, by reaction at 40° to 160° C. of a binuclear aromatic compound containing at least two replaceable hydrogen atoms in the nucleus, said binuclear aromatic compound being selected from the group consisting of diphenyl, naphthalene, tetrahydronaphthalene or naphthalene substituted by hydroxy, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen, with a compound of the formula



(1)

wherein X represents the direct bond or oxygen, Hal represents chlorine or bromine and n is a number from 1 to 4 and sulphonation with sulphuric acid, chlorosulphonic acid or oleum at 20° to 200° C.

4,202,839

NITROPHENYLHYDRAZINE COMPOUNDS

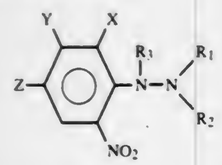
Don L. Hunter, Anaheim; William G. Woods, Fullerton; James D. Stone, Whittier, all of Calif., and Cecil W. LeFevre, Franklin, Id., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Division of Ser. No. 529,655, Dec. 4, 1974, abandoned. This application Dec. 26, 1978, Ser. No. 973,289

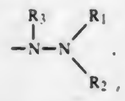
Int. Cl.² C07C *109/04*

U.S. Cl. 260—569 11 Claims

1. A compound of the formula



wherein X is selected from hydrogen and nitro, Y is selected from lower alkoxy, amino, alkylamino, dialkylamino and



Z is selected from halo and trifluoromethyl, R_1 is lower alkyl, and R_2 and R_3 are each selected from hydrogen and lower alkyl, with the proviso that when X is nitro, Y is lower alkoxy.

4,202,840

1-HYDROXY-2-(ALKYLKETO)-4,4,6,6-TETRAMETHYL CYCLOHEXEN-3,5-DIONES

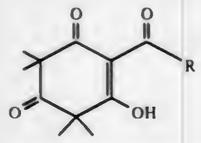
Reed A. Gray, Saratoga; Chien K. Tseng, El Cerrito, and Ronald J. Rusay, Lafayette, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 29, 1978, Ser. No. 947,217

Int. Cl.² C07C *49/44*

U.S. Cl. 260—438.1 6 Claims

1. A compound having the following structural formula



wherein R is alkyl having 2 to 6 carbon atoms, except isopropyl and isobutyl.

4,202,841

D-HOMOPREGNANES

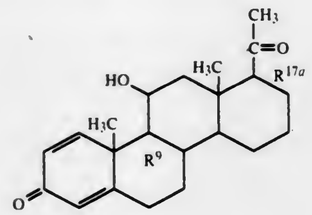
Leo Alig, Kaiseraugst; Andor Fürst, Basel; Marcel Müller, Frenkendorf, all of Switzerland; Ulrich Kerb, Berlin, Fed. Rep. of Germany; Klaus Kieslich, Berlin, Fed. Rep. of Germany, and Rudolf Wiechert, Berlin, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 827,758, Aug. 25, 1977, abandoned. This application Dec. 26, 1978, Ser. No. 973,336

Int. Cl.² C07C *49/00;* C07J *63/00*

U.S. Cl. 424—311 10 Claims

1. A D-homopregnane of the formula



wherein R^9 is hydrogen or fluoro; and R^{17a} is alkanoyloxy of 1 to 7 carbon atoms with the proviso that the C-11 hydroxy group is β-oriented when R^9 is hydrogen.

4,202,842

COPOLYCONDENSATION PRODUCTS OF BETA-HALOALKYL PHOSPHATES AND DIALKYL PHOSPHONATES

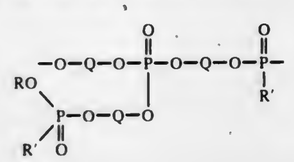
Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 858,316, Dec. 7, 1977, Pat. No. 4,152,371, which is a division of Ser. No. 811,972, Jul. 5, 1977, Pat. No. 4,086,303, which is a continuation-in-part of Ser. No. 783,995, Apr. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 558,862, Mar. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 410,583, Nov. 12, 1973, abandoned. This application Jan. 2, 1979, Ser. No. 230

Int. Cl.² C07G *9/09*

U.S. Cl. 260—928 10 Claims

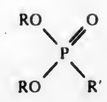
1. A copolycondensation product of a tris(β-haloalkyl) phosphate and a dialkyl phosphonate consisting essentially of a polymer having repeating units of the structure



in which Q is alkylene of from 2 to 4 carbon atoms, R is alkyl of from 1 to 4 carbon atoms and R′ is alkyl of from 1 to 20 carbon atoms, alkenyl of from 3 to 20 carbon atoms, or phenyl optionally substituted with alkyl of from 1 to 4 carbon atoms, said polycondensation product obtained by the steps of (1) heating in the presence of a nucleophilic catalyst a tris(β-haloalkyl) phosphate of the formula

$$(XQO)_3P=O$$

in which X is halogen and Q is as defined herein, with a dialkyl phosphonate of the formula



in the ratio of about 2 moles of dialkyl phosphonate per mole of tris(β-haloalkyl) phosphate, to obtain a crude polycondensation product having acidic structures, and (2) substantially neutralizing said acidic structures by heating the crude product with an epoxide or an orthoester.

4,202,843

PROCESS FOR THE PRODUCTION OF ORGANIC PHOSPHATES BY NITRIC ACID OXIDATION OF ORGANIC PHOSPHITES

Eugene P. Di Bella, Piscataway, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Aug. 2, 1978, Ser. No. 930,446

Int. Cl.² C07F *9/09*

U.S. Cl. 260—985 7 Claims

1. The process for the production of organic phosphates that comprises adding to an organic phosphite having the structural formula



wherein R^1, R^2, and R^3 each represents an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group having 7 to 20 carbon atoms, or an alkaryl group having 7 to 20 carbon atoms and the total number of carbon atoms in R^1, R^2, and R^3 is at least 12, 10% to 70% nitric acid in the amount of at least 0.40 mole of nitric acid per mole of phosphite at a temperature in the range of 0° to 60° C.

4,202,844

PROCESS FOR THE PRODUCTION OF ORGANIC PHOSPHATES

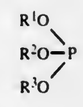
Eugene P. Di Bella, Piscataway, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Aug. 2, 1978, Ser. No. 930,445

Int. Cl.² C07F *9/09*

U.S. Cl. 260—985 9 Claims

1. The process for the production of organic phosphates that comprises contacting an organic phosphite having the structural formula



wherein R^1, R^2, and R^3 each represents an alkyl or haloalkyl group having 1 to 18 carbon atoms, an alkoxyalkyl group having 2 to 18 carbon atoms, an aryl or haloaryl group having 6 to 18 carbon atoms, or an alkoxyaryl, alkaryl, or aralkyl group having 7 to 18 carbon atoms with an amount of an oxygen-containing gas that will provide at least 0.40 mole of oxygen per mole of said phosphite in the presence of an amount of a nitrogen dioxide catalyst that will provide 0.01 mole to 0.25 mole of nitrogen dioxide per mole of said phosphite at a temperature in the range of −30° C. to 100° C.

4,202,845

SULFUR VULCANIZABLE ETHYLENE-VINYL ACETATE COPOLYMER ELASTOMERS

Eugene Y. C. Chang, Bridgewater, and Robert Saxon, Princeton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 20, 1978, Ser. No. 962,414
Int. Cl.² C08F *255/02*
U.S. Cl. 525—302 **15 Claims**

1. A sulfur vulcanizable elastomer composition comprising:

(A) from about 20 to 80 percent by weight of a copolymer of about 50 to 92 percent ethylene and 8 to 50 percent vinyl acetate, and grafted thereon

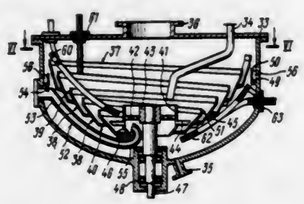
(B) about 80 to 20 percent by weight of a mixture of a major proportion of one or more C_2–C_8 alkyl monoesters of acrylic acid and a minor proportion of an ethylenically unsaturated comonomer containing a cure-site for sulfur vulcanization.

4,202,846

ROTOR FILM APPARATUS FOR PROCESSES WITH PARTICIPATION OF LIQUID AND GAS

Alexandr V. Shafranovsky, Balashikha, Molodezhnaya ulitsa, 4, kv. 7, Moskovskaya; Viktor M. Olevsky, Leningradsky prospekt, 75ª, kv. 91, Moscow; Vladimir K. Chubukov, Komsomolsky prospekt, 41, kv. 97, Moscow; Jury A. Baskov, shosse Entuziastov, 156, kv. 20, Moscow, and Konstantin V. Dmitriev, Sovetsky prospekt 87 kv. 29, Kemerovo, all of U.S.S.R.

Filed Oct. 4, 1978, Ser. No. 948,991
Int. Cl.² B01F *3/04*
U.S. Cl. 261—142 **28 Claims**



1. A rotor film apparatus for processes with participation of liquid and gas comprising: a casing; at least one refluxing stage mounted in said casing with a provision for rotating around its own axis; at least one trough forming said refluxing stage and curved into a spiral which uncoils from the axis of the refluxing stage and has a gap between its loops for the passage of gas; said trough whose hollow is located at the concave side of said spiral and intended to create a liquid film; portions of said trough gradually departing from the axis of said refluxing stage are displaced in one direction parallel to said axis so that said refluxing stage is shaped like a bowl; an appliance mounted on said casing for delivering liquid to said refluxing stage.

4,202,847

APPARATUS AND METHOD FOR COOLING COOLING WATER ESPECIALLY IN COOLING TOWERS

Gunter Ernst, Strasse des Roten Kreuzes, D-7500 Karlsruhe, Fed. Rep. of Germany; Edmund Baer, Karlsruhe, and Dieter Wurz, Pfinztal, both of Fed. Rep. of Germany, assignors to Gunter Ernst, Karlsruhe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 706,301, Jul. 19, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 931,001
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1975, 2532544
Int. Cl.² B01F *3/04*
U.S. Cl. 261—161 **28 Claims**

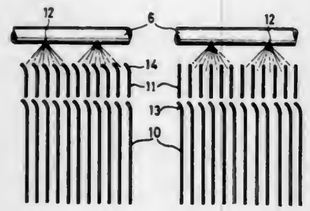
1. A method of achieving both a wet cooling and a dry cooling effect in the same vertical space of a cooling tower comprising the steps of:

(a) providing a plurality of spaced apart substantially vertical trickler plates, the ratio of the vertical height of said plates to the spacing between immediately adjacent plates being no greater than about 50:1;

(b) depositing water to be cooled on only one side of each of the plurality of trickler plates at a rate to produce a substantially undisturbed thin film of water down that side of each of the plurality of trickler plates; and,

(c) passing air up along both sides of each of the plurality of trickler plates as a result of natural draught along a substantially undisturbed path in contact with the water on one side of each of the trickler plates and out of contact with the water on the other side of each of the trickler plates, adjacent ones of said trickler plates forming a duct of substantially constant cross-section over substantially the entire vertical length of said trickler plates bounded on one side by a wet surface and on the other side by a dry surface, to thereby effect both wet and dry cooling in the same vertical space and to reduce the discharge of water particles out of the cooling tower.

4. In a water cooling tower having an aperture at both the upper and lower end thereof, open to the atmosphere respectively for the entrance of air into the tower and for the exit thereof from the tower at a velocity substantially that created by natural draught, having means for introducing water to be cooled and for collecting the cooled water, and having both wet cooling and dry cooling of the water as it traverses the tower under the influence of gravity, means for accomplishing both wet and dry cooling of the water in the same vertical space with reduced discharge of water particles out of the cooling tower as a result of disturbance of the air path upward through the cooling tower and the water path down through the cooling tower to thereby reduce the generation of vapor clouds and bacteriological pollution, said means comprising:



a plurality of substantially planar trickler plates each having a substantially vertical orientation, the ratio of the substantially vertical length of said trickler plates to the substantially horizontal spacing between immediately adjacent ones of said trickler plates being no greater than about 50:1; and,

means for depositing water on only one side of each of said trickler plates so that the substantial vertical orientation of said trickler plates permits a substantially undisturbed low speed film flow of water on the wet surface of each of said trickler plates and permits a substantially undisturbed low speed flow of air on the dry side of each of said trickler plates, adjacent ones of said trickler plates forming a duct of substantially constant cross-section over substantially the entire vertical length of said trickler plates bounded on one side by a wet surface and on the other side by a dry surface,

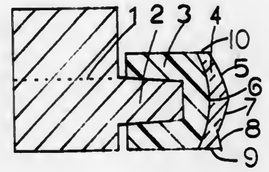
whereby the air transiting each of the ducts thus formed is substantially undisturbed and the generation of vapor clouds and bacteriological pollution reduced.

4,202,848

METHOD OF MAKING BIFOCAL CONTACT LENSES

Charles W. Neefe, Box 429, Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 874,934, Feb. 3, 1978, Pat. No. 4,150,073, which is a continuation-in-part of Ser. No. 793,388, May 25, 1977, abandoned. This application Dec. 22, 1978, Ser. No. 972,526
Int. Cl.² B29D *11/00*; B29C *17/10*
U.S. Cl. 264—1 **2 Claims**



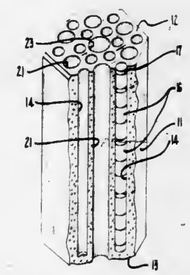
1. A method of making bifocal contact lenses by the steps of providing a positive lens mold having a surface curvature corresponding to the curve required on the concave surface of the finished lens, producing a negative mold from said positive mold by applying heat and pressure to a resinous material, said resinous material being softened by heating and conforming by applied pressure to the shape and curvature for said positive mold to provide a negative resinous mold from said positive mold, providing an open top cylinder formed by the sides of the resinous mold extending upward above the negative optical curve, filling said resinous cylinder and covering said optical curve with a liquid monomer lens material which is polymerized to form a solid monolithic mass within said resinous container having one finished optical surface molded against the optical surface present on the bottom of said resinous cylinder, cutting and polishing a convex optical surface on the polymerized solid lens material by providing for the eccentric rotation of the resinous contact lens blank, eccentrically cutting a first convex radius on the resinous lens, the lens having thick and thin opposing edges, the thick edge being positioned toward the center of rotation and the thin edge positioned away from the center of rotation, repositioning the lens whereby the thin edge is toward the center of rotation and the thick edge is away from the center of rotation, cutting a second convex optical surface having a shorter radius than the first convex surface and a size smaller than the first convex surface, removing the lens from the resinous mold.

4,202,849

METHOD FOR MAKING NUCLEAR FUEL ELEMENT

Gary N. Miertschin, San Diego, and Kenneth F. Powell, Cardiff, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Division of Ser. No. 565,868, Apr. 7, 1975, Pat. No. 4,060,454. This application Sep. 12, 1977, Ser. No. 832,389
Int. Cl.² G21C *21/00*
U.S. Cl. 264—0.5 **3 Claims**



1. A method for making a nuclear fuel element comprised of a graphite block having a plurality of elongated holes therein extending from one surface to terminate spaced from an opposite substantially parallel surface and having nuclear fuel rod segments in said holes, said segments being comprised of nuclear fuel in a matrix material, said method comprising inserting a plurality of unfired fuel rod segments in each of said holes and spacing at least some of said segments axially along said holes from each other by spacers, the total of the distances the rod segments are spaced being at least sufficient to accommodate shrinkage of the block due to irradiation, closing each of said holes with a plug, and firing the fuel element, said spacers being of a material which gasifies at the firing temperature to leave empty the spaces between the spaced fuel rod segments, and wherein a suitable clearance is provided between each of the fuel rod segments and the wall of the holes in which it is inserted sufficient to allow bleeding of fuel rod matrix into the space during firing, such that said fuel rod segments are held in place in the spaced relationship after firing, but are permitted to slide to accommodate differential shrinkage.

4,202,850

PROCESS FOR PRODUCING FIBER-REINFORCED ELASTIC ARTICLES

Shinji Yamamoto; Kouhei Kaijiri, and Denichi Oda, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Mar. 29, 1978, Ser. No. 891,462
Claims priority, application Japan, Apr. 12, 1977, 52/40903; Jul. 11, 1977, 52/81957
Int. Cl.² B29D *3/02*
U.S. Cl. 264—108 **14 Claims**

1. A process for producing a fiber-reinforced elastic article, which comprises the steps of:

kneading a mixture of a rubber material capable of being vulcanized and powdered 1,2-polybutadiene in an amount of 1 to 200 parts by weight per 100 parts by weight of said rubber material, at a temperature lower than the melting point of said 1,2-polybutadiene, to disperse the particles of said 1,2-polybutadiene in the matrix of said rubber material, said 1,2-polybutadiene containing 80% or more of 1,2-structure;

extruding said dispersion through a die at a temperature of at least 5° C. above the melting point of said 1,2-polybutadiene but not higher than 240° C. to provide a strand or tape of said dispersion in which said dispersed 1,2-polybutadiene is in the form of fibrils;

rolling said extruded dispersion by means of a pair of rollers to provide a tape or sheet of said dispersion and to cause the 1,2-polybutadiene fibrils to have an increased degree of molecular orientation, said resultant rolled dispersion tape or sheet having a thickness of 0.02 mm or more and not exceeding one-half of the thickness of said extruded dispersion strand or tape;

providing a composition, (A) when the content of said 1,2-polybutadiene in said rolled dispersion is 1 to 20 parts by weight per 100 parts by weight of said rubber material, by admixing said rolled dispersion with a vulcanizing agent or (B) when the content of said 1,2-polybutadiene in said rolled dispersion is more than 1 part by weight but not more than 200 parts by weight per 100 parts by weight of said rubber material, by admixing said rolled dispersion with a vulcanizing agent and an additional rubber material capable of being vulcanized, said additional rubber material being in an amount enough for adjusting the content of said 1,2-polybutadiene in the resultant composition to a level of from 1 to 20 parts by weight per 100 parts by weight of the sum of said rubber material and said additional rubber material, and;

shaping and vulcanizing said composition to provide a shaped, vulcanized elastic article.

4,202,851

METHOD OF PREPARING A SHEET-FORMED PRODUCT

Karl K. K. Kroyer, Engtoften 3, DK-8260 Viby J., Denmark

Filed Jun. 8, 1977, Ser. No. 804,821

Claims priority, application Denmark, Jun. 18, 1976, 2729/76; Jul. 12, 1976, 3145/76

Int. Cl.² B29J *5/00*

U.S. Cl. 264—113 **17 Claims**

1. A method of preparing a fire-resistant sheet-formed product which comprises the steps of:

(a) grinding together and forming a uniform dry mixture

(i) a particulate inorganic material selected from the group consisting of crystallized blistered glass, crushed cement clinkers and crushed blast-furnace slags;

(ii) a hydraulic binder; and

(iii) from 10 to 20% by weight of an organic thermosetting binder;

the grinding and mixing together being effected in a ball mill until the particulate inorganic material has sufficiently disintegrated and the particulate inorganic material, the hydraulic binder, and the organic thermosetting binder are homogeneously distributed to form a dry mixture of particles;

(b) placing the dry mixture of particles formed during step (a) into a mold, closing the mold, hot pressing said material in said mold to bring about a setting of the organic binder, thereby consolidating and bonding the dry particles into a unitary structure to form a self-supporting sheet; and

(c) after release of pressure, opening the mold, removing said self-supporting sheet, and treating said sheet with water to set and cure the hydraulic binder to form said fire-resistant sheet-formed product.

4,202,852

PROCESS FOR PRODUCING COLORED NONWOVEN FIBROUS WEBS

Walter L. Pauls, Appleton, and Fredric N. Miller, Menasha, both of Wis., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 774,665, Mar. 4, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,441

Int. Cl.² D06P *7/00;* **D06M** *11/16;* **B32B** *23/14*

U.S. Cl. 264—115 **3 Claims**

1. A process for producing a colored non-woven air laid fibrous web, comprising the steps of:

(a) providing a pulp web formed of a compacted mass of individual pulp fibers;

(b) applying to only a portion of the pulp web a water suspension of non-toxic water-insoluble color pigment particles having a size range of 0.1 to 0.5 microns to thereby apply an adherent coating of said pigment particles to a portion of the pulp fibers in said web while leaving a portion of said fibers uncoated;

(c) heating said pigmented web to reduce the water content thereof to less than approximately 15% of the dry weight of the material in the web;

(d) feeding said dry pigmented web into a fiberizer to break down said web into individual pulp fibers and to uniformly mix the pigment-coated fibers with the non-coated fibers to produce a substantially uniformly colored fiber mixture;

(e) air laying the uniformly colored fiber mixture to form a uniformly colored web;

(f) applying a water insoluble liquid polymer binder material onto both sides of the web and through the web; and

(g) curing the binder material to bind the fibers together and firmly bond the pigment particles onto the coated fibers of the web to form a bleed resistant and run resistant uniformly colored air laid web.

4,202,853

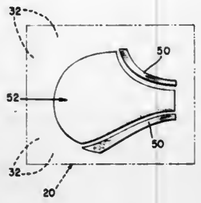
METHOD FOR CONSTRUCTING BREAST CUPS

Flavia DiTullio, New York, N.Y., assignor to Hanes Corporation, Winston-Salem, N.C.

Filed Sep. 6, 1977, Ser. No. 830,398

Int. Cl.² B29C *17/08, 17/03;* **B29D** *31/00*

U.S. Cl. 264—138 **4 Claims**



1. The method of forming a breast receiving cup unit for a brassiere or other garment comprising the steps of: positioning a basically flat sheet of flexible fabric formed at least partially of thermoplastic yarns within a breast cup mold having a prescribed peripheral contour; heat-setting selected portions of the flexible fabric sheet and forming a three dimensional molded fabric surface defining a breast cup having the peripheral contour of the mold and having an endless marginal edge conforming to the base of the mold, and unmolded fabric sections surrounding the endless marginal edge of the molded breast cup; aligning a cutting die, having an endless outer peripheral cutting edge conforming in size and configuration to the endless marginal edge of the three dimensional heat-set breast cup, with the marginal edge of the breast cup, displacing the endless outer peripheral cutting edge of the cutting die to clamp the breast cup marginal edge to prevent wrinkling of the three dimensional molded fabric and to cut the fabric along the marginal edge of the breast cup to remove unmolded portions of the flexible sheet outwardly of the breast cup marginal edge, while simultaneously altering the endless marginal edge of the breast cup to form a modified three dimensional cup differing in shape, cut and configuration from the configuration of the breast cup as initially molded with the fabric surface area of the modified three dimensional breast cup being less than the surface area of the breast cup as initially molded by cutting away selected areas of the flexible, molded, three dimensional surface areas of the initially molded cup inwardly of the marginal edge of the cup as initially molded to define a new marginal edge having portions contiguous with the marginal edge of the cup as initially molded.

4,202,854

POLYAMIDE SPIN-TEXTURE PROCESS

Paul T. Howse, Jr., Pensacola, and Arnold E. Wilkie, Pensacola Beach, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 23, 1977, Ser. No. 864,127

Int. Cl.² D01D *5/22*

U.S. Cl. 264—168 **15 Claims**

1. A process for continuously melt spinning and drawing multifilament polyamide yarn whereby latent crimp is imparted to the yarn during the drawing thereof without the use of special crimping equipment, comprising:

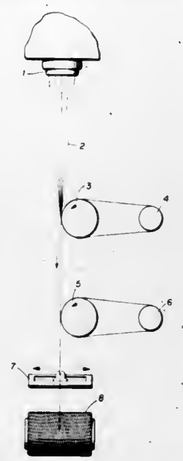
(a) extruding molten fiber-forming polyamide through orifices of a spinneret to form a plurality of molten streams,

(b) cooling the molten streams in a quenching zone to form solid filaments,

(c) heating said filaments by passing the filaments from said quenching zone with a given number of wraps around a first roll arrangement rotating at a given peripheral speed and having at least one roll maintained at a temperature of at least 70° C. but less than that temperature at which deterioration of the filaments occur,

(d) drawing said filaments by passing the filaments from said first roll arrangement with a plurality of wraps around a second roll arrangement rotating at a peripheral speed such that the filaments are drawn between said first and second roll arrangements at a draw ratio ranging from greater than 1.0 to less than 4.0, wherein said drawing is accomplished before the filaments reach equilibrium crystallization and,

(e) collecting said filaments in the form of a yarn,



said process being characterized in that said temperature, said number of wraps taken around said first roll arrangement and said draw ratio are correlated to provide a yarn having at least 10% crimp as determined by the formula % crimp $=(L_3-L_2/L_3)\times 100$ where L_2 and L_3 represent the length of a sample of said yarn after the sample has been exposed to 180° C. dry heat for 5 minutes followed by cooling for 1 minute, first measured stressed at 0.0009 grams per denier (L_2) and then measured stressed at 0.8 grams per denier (L_3).

4,202,855

METHOD OF PRODUCING CONTINUOUS MULTIFILAMENT YARNS

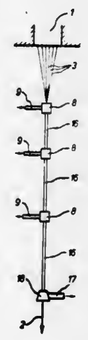
Lüder Gerking; Dirk Stahlmann; Horst Rothert, and Wolf Karasiak, all of Berlin, Fed. Rep. of Germany, assignors to Karl Fischer, Apparate-und Rohrleitungsbau, Berlin, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,742

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2618406

Int. Cl.² D01D *5/12*

U.S. Cl. 264—210.2 **12 Claims**



1. In a method for producing a multifilament bundle of a plurality of continuous individual filaments of thermoplastic

polymers by extruding the polymer in molten form into individual filaments, subjecting the filaments to a removal force to withdraw them from the extrusion location while subjecting the filaments to the steps of preorienting and solidifying the extruded filaments, combining the solidified filaments into a bundle, subjecting the resulting bundle to a preparation treatment, and conducting the bundle, subsequent to the preparation treatment, to a collecting location at which the removal force is applied, the improvement comprising causing a stream of gas flowing in a direction having a component parallel to the length, and extending in the direction of travel, of the filaments to contact the filaments subsequent to solidfication thereof in a region where the filaments are subject to the removal force for subjecting the filaments to a further force in the direction of their length, which further force determines the tension imposed on the filaments during the step of preorienting.

4,202,856

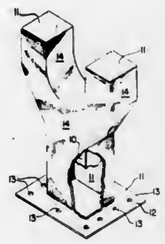
GRAPHITE-EPOXY MOLDING METHOD

Bert R. Frikken, Depew, and Ronald G. Halcomb, Tulsa, both of Okla., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 30, 1977, Ser. No. 838,191

Int. Cl.² B29G *5/00;* **B29C** *17/06*

U.S. Cl. 264—221 **3 Claims**



1. A method of forming a fiber reinforced thermosetting resin composite structural part having a hollow configuration comprising the following steps in the sequence set forth:

(a) providing a hollow, rigid, frangible mandrel having an exterior configuration substantially similar to but sized smaller than the configuration and size of said structural part;

(b) forming a flexible pressure bag on said rigid hollow mandrel, said pressure bag having an interior configuration corresponding to said mandrel exterior configuration and having an exterior configuration substantially similar and sized the same as the interior configuration of said composite structural part;

(c) assembling plies of fiber reinforced thermosetting resin material on said pressure bag;

(d) fracturing and removing at least a portion of said hollow, rigid, frangible mandrel from within said pressure bag;

(e) enclosing any remaining portion of said hollow mandrel, said pressure bag, and said assembled plies of fiber reinforced resin material in a split mold having a molding surface with a configuration corresponding to the exterior configuration of said structural part; and

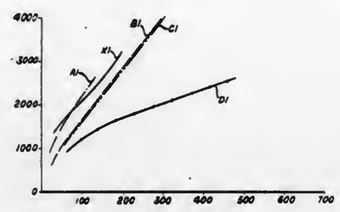
(f) curing said fiber reinforced thermosetting resin material plies in said split mold at an elevated resin curing temperature and with an internal pressure within said pressure bag significantly greater than ambient pressure.

4,202,857

CASTING OF ARTICLES FROM COMPOSITIONS CONTAINING CALCINED GYPSUM AND PORTLAND CEMENT

James N. Lowe, Reigate, England, assignor to Pitun-Unicrete Limited, Reigate, England

Filed Jul. 18, 1978, Ser. No. 925,670
Claims priority, application United Kingdom, Jul. 19, 1977, 30276/77
Int. Cl.² B28B *1/14*
U.S. Cl. 264—333 12 Claims



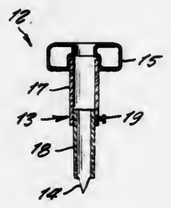
1. In a method of casting an article comprising the steps of mixing a composition comprising an hydraulic binding agent consisting essentially of, by weight, from 90% to 10% calcined gypsum, from 10% to 90% Portland cement and from 0% to 15% Pozzalana cement with water to produce a fluid mixture, causing said fluid mixture to flow into a supporting device, and allowing said mixture to set in said supporting device, the improvement wherein said composition further contains sodium carbonate in an amount of from about 0.1% to about 5% by weight of the dry weight of said cement in said composition, said sodium carbonate reducing local expansion or general expansion of said mixture with a consequent loss in compressive strength upon setting said mixture.

4,202,858

MOSS KILLER

Gary Bruce, c/o George Spector 3615 Woolworth Bldg. 233 Broadway, and George Spector, 3615 Woolworth Bldg. 233 Broadway, both of New York, N.Y. 10007

Filed Mar. 17, 1978, Ser. No. 887,874
Int. Cl.² A61L *13/04, 3/00*
U.S. Cl. 422—243 2 Claims



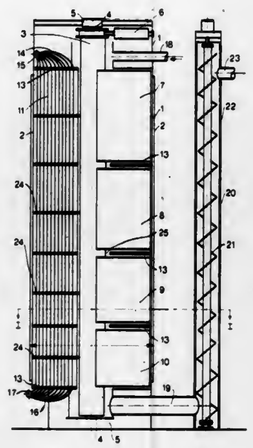
1. A plant growth inhibitor adapted for placement in a water container, comprising in combination a copper pipe and means for causing movement of said pipe in said water in response to water motion, wherein said means comprises a float oscillator mounted on one end of said pipe to urge said pipe to a vertical position and a tapered pivot at the opposite end of said pipe.

4,202,859

CRYSTALLIZER

Rud F. Madsen, Nakskov; Jens H. Jensen, Horsholm, and Jens C. Engvad, Assens, all of Denmark, assignors to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Sep. 27, 1977, Ser. No. 837,469
Claims priority, application Denmark, Sep. 28, 1976, 4359/76
Int. Cl.² B01D *9/02*
U.S. Cl. 422—245 6 Claims



1. A crystallizer comprising an elongated container adapted to hold a crystallizable liquid, cooling elements in the form of at least one bundle of stationary spaced cooling pipes extending longitudinally of and within said container, means for passing coolant through said cooling pipes, a shaft extending longitudinally of and within said container, and at least one wing extending longitudinally of and being attached to said shaft, said shaft being connected to means for effecting an oscillating movement of said shaft so that said at least one wing forces the crystallizable liquid through the spaces between and along the surfaces of said cooling pipes to generate a crystallization thereof.

4,202,860

CONTINUOUS SEPARATION OF URANIUM ISOTOPES

Tetsuya Miyake, Tokyo; Norito Ogawa, Yokohama; Motohisa Asano, Yokohama, and Kazuo Okuyama, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 23, 1977, Ser. No. 799,891
Claims priority, application Japan, May 28, 1976, 51-61973; Jun. 1, 1976, 51-62900
Int. Cl.² C01G *43/00*
U.S. Cl. 423—6 15 Claims

1. In a process for continuously separating uranium isotopes by oxidation-reduction reaction in an acidic solution comprising forming a uranium adsorption zone on a body of anion exchanger, displacing the uranium adsorption zone through the body of anion exchanger by oxidation and reduction reactions of uranium with an oxidizing agent and a reducing agent in contact with the uranium adsorption zone, the improvement which comprises:

subjecting an eluant containing the deactivated oxidizing agent and the deactivated reducing agent as a mixture to an oxidation reaction to regenerate the deactivated oxidizing agent without affecting the the deactivated reducing agent,

separating the regenerated oxidizing agent from the resulting eluant with the anion exchanger used for isotope separation, and

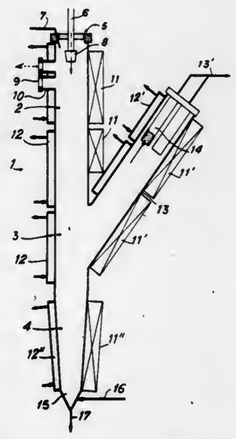
reusing the regenerated oxidizing agent separated for the oxidation of uranium.

4,202,861

METHOD FOR DRY REPROCESSING OF IRRADIATED NUCLEAR FUELS

Michel Bourgeois, Paris; Georges Manevy, Bievres, and Jean-Pierre Roux, Pont St. Esprit, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 15, 1977, Ser. No. 833,683
Claims priority, application France, Sep. 20, 1976, 76 28147
Int. Cl.² C01G *56/06, 43/06*
U.S. Cl. 423—19 10 Claims



1. A method for dry reprocessing of irradiated nuclear fuels in the solid particulate state selected from the group consisting of the oxides, carbides and nitrides of plutonium and/or uranium and mixtures thereof comprising a first step wherein said nuclear fuels are contacted within a first zone of an enclosure with a first gas mixture containing at least one first fluorination reagent to convert at least a portion of said nuclear fuels to gaseous plutonium and/or uranium hexafluorides in a self-maintained flame reaction, and a second step wherein a remaining portion of said nuclear fuels not converted to gaseous hexafluorides in said first step is contacted directly within a second zone of said enclosure with a fluidized bed which has been fluidized by means of a second gas mixture containing at least one second fluorination reagent.

4,202,862

REMOVAL OF 3-MERCAPTO-4-METHYL-2-PENTANONE FROM ZIRCONIUM/HAFNIUM SEPARATION PROCESSES

Lawrence J. Jacoby, Albany; Richard A. Rosenau, Salem; Dorothy P. Carter; Ralph H. Nielsen, both of Albany, and Kenneth C. Ash, Corvallis, all of Oreg., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Aug. 28, 1978, Ser. No. 937,446
Int. Cl.² C01G *25/00, 27/00*
U.S. Cl. 423—70 4 Claims

1. In a methyl isobutyl ketone liquid-liquid extraction method for separating zirconium from hafnium wherein ammonium thiocyanate is used as a complexing agent and wherein 3-mercapto-4-methyl-2-pentanone is formed in the ammonium thiocyanate-methyl isobutyl ketone regeneration process the improvement comprising preventing the formation of 3-mercapto-4-methyl-2-pentanone in said regeneration process comprising maintaining a pH of from 4 to 9 and a temperature below 150° F.

4,202,863

SEPARATION OF IRON METAL VALUES FROM TITANIUM METAL VALUES

William K. Tolley, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 27, 1978, Ser. No. 963,870
Int. Cl.² C01G *23/04*
U.S. Cl. 423—82 7 Claims

1. A process for the separation of iron metal values from titanium metal values in a metal bearing source selected from the group consisting of ilmenite and rutile which comprises:

(a) treating said ilmenite or rutile to a reductive roast at a temperature of from about 650° C. to about 1000° C. in the presence of a reducing gas;

(b) leaching said reduced ilmenite or rutile of step (a) at an elevated temperature of from about 50° C. to about 105° C. with a leaching solution comprising an aqueous hydrogen chloride solution containing from about 1 volume percent to about 10 volume percent of a phosphoric acid to form a leach liquid and undissolved titanium metal values;

(c) separating said leach liquor from said undissolved titanium metal values; and

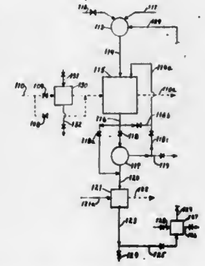
(d) recovering said titanium metal values.

4,202,864

PROCESS FOR CONTROLLING ENVIRONMENTAL POLLUTION FROM STEAM CONTAINING HYDROGEN SULFIDE

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, New Rochelle, N.Y.

Filed Sep. 1, 1978, Ser. No. 938,942
The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.
Int. Cl.² F22G *1/00;* F03G *7/02;* C01B *17/16, 31/20*
U.S. Cl. 423—220 69 Claims



1. A process for controlling pollution of the environment by discharges from a system which utilizes a flow of steam at superatmospheric pressure, said steam being from a source of superatmospheric pressure and containing minor amounts of noncondensable gases including hydrogen sulfide as impurities therein, which process comprises:

(a) providing an aqueous liquid phase containing reactant dispersed therein, said reactant comprising at least a metal compound having the capability of undergoing reaction with aqueous hydrogen sulfide at the temperature and in the presence of said flow of steam to form a solid metal sulfide reaction product suspended in said liquid, said metal sulfide having a solubility product, a 25° C., smaller than 10×10^{-15},

(b) contacting at elevated temperature and superatmospheric pressure said flow of impure steam with said aqueous liquid to extract hydrogen sulfide from said impure steam by transferring the same into said liquid and effecting said reaction with hydrogen sulfide therein at said elevated temperature,

(c) delivering from step (b) the resultant aqueous liquid and solid reaction product and the resultant flow of steam, at

substantially said elevated temperature and superatmospheric pressure, containing noncondensable gases but depleted in hydrogen sulfide, and

(d) making the aforesaid discharges from said system to the environment from said resultants delivered in step (c), whereby such discharges are substantially free of hydrogen sulfide.

4,202,865

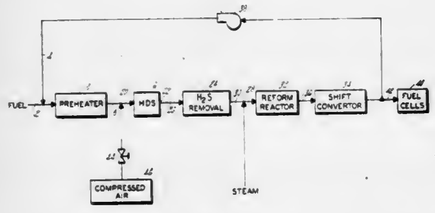
ON-LINE REGENERATION OF HYDRODESULFURIZATION CATALYST

John L. Preston, Jr., Hebron, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 30, 1978, Ser. No. 956,300

Int. Cl.² B01J *8/00*; C10G *23/02*

U.S. Cl. 423—244 **10 Claims**



1. In a method for hydrodesulfurizing a stream comprising a hydrocarbon feedstock and hydrogen by passing said stream through a bed of hydrodesulfurizing catalyst wherein carbon is deposited on said catalyst during the hydrodesulfurizing process and reduces the activity of the catalyst, the steps of preheating the incoming stream to between 232° C. and 343° C. and periodically introducing between 0.1 and 1.0 volume percent oxygen, on a dry gas basis of said stream, into the catalyst bed along with said stream to react said oxygen with the deposited carbon, without significantly affecting the hydrodesulfurizing reaction or harming the catalyst, to reduce the carbon deposits on said catalyst to an acceptable level.

4,202,866

PRODUCTION OF STABLE VANADIUM TETRACHLORIDE

Henry H. Feng, Ardsley; John P. D'Acierno, Ossining, and Adam E. Skrzec, West Nyack, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed May 24, 1978, Ser. No. 909,159

Int. Cl.² C01G *31/00*

U.S. Cl. 423—265 **8 Claims**

1. A method of stabilizing vanadium tetrachloride against decomposition into vanadium trichloride and chlorine which comprises incorporating therein an amount of phosphorus trichloride effective to preclude said decomposition.

5. A stabilized vanadium tetrachloride composition comprising vanadium tetrachloride and an amount of phosphorus trichloride effective to preclude decomposition of said vanadium tetrachloride into vanadium trichloride and chlorine.

4,202,867

PROCESS FOR MANUFACTURE OF PHOSPHORIC ACID AND PHOSPHORUS PENTAFLUORIDE

Curtis W. Cannon, San Diego, Calif., and Robert N. Hall, Boulder, Colo., assignors to Climax Chemical Corporation, Hobbs, N. Mex.

Continuation-in-part of Ser. No. 939,958, Sep. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 828,925, Aug. 29, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 987

Int. Cl.² C01B *25/10, 25/16*

U.S. Cl. 423—301 **28 Claims**

1. A process for making phosphoric acid comprising:

contacting calcium phosphate material with sufficient excess fluorosulfonic acid in the presence of sufficient water to catalyze and carry out the reactions to convert the phosphate content primarily to phosphorous pentafluoride and phosphorous oxyfluoride;

subsequently, separating the volatile phosphorous compounds from the excess fluorosulfonic acid and residual matter, and

hydrolyzing the phosphorous pentafluoride and phosphorous oxyfluoride to produce phosphoric acid and hydrogen fluoride.

20. A process for producing phosphorous pentafluoride comprising:

contacting calcium phosphate material with sufficient excess fluorosulfonic acid in the presence of sufficient water to catalyze and to convert the phosphate content primarily to phosphorous pentafluoride and phosphorous oxyfluoride,

separating the volatile phosphorous compounds from the excess fluorosulfonic acid and residual matter, and

recovering the phosphorous pentafluoride.

4,202,868

PRODUCTION OF HIGH-DENSITY CARBON MATERIALS

Kiyoshige Hayashi, Tokyo; Masanao Nakagawa, Ichihara; Kazuo Ozaki, Ichihara, and Yoshiharu Ito, Ichihara, all of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1977, Ser. No. 810,741

Claims priority, application Japan, Jul. 1, 1976, 51-77010; Jul. 27, 1977, 52-64881

Int. Cl.² C01B *31/00, 31/02, 31/04*

U.S. Cl. 423—445 **11 Claims**

1. A process for the production of a high-density carbon material from a green coke comprising the steps of (a) molding by pressing in a mold a finely pulverized green coke, by itself without the aid of a binder, (b) demolding the molded green coke (c) baking the molded green coke at a sintering temperature to form a sintered carbon material, characterized in that the green coke to be molded is used in the form of a composition comprising a finely pulverized green coke in intimate admixture with 1-15% by weight based on the weight of the green coke of incorporated water or an incorporated monohydric alcohol selected from the group consisting of an alkanol containing 4-8 carbon atoms and benzyl alcohol, whereby to prevent or reduce laminar cracks caused in the molded green coke at the demolding step.

4,202,869

PROCESS FOR THE DESULFURIZATION OF FLUE GASES

David Lurie, 539 Covington Pl., Wyckoff, N.J. 07481

Division of Ser. No. 688,133, May 20, 1976, Pat. No. 4,134,961. This application May 9, 1978, Ser. No. 904,329

Int. Cl.² C01B *17/16, 17/02*; C01F *7/02*

U.S. Cl. 423—563 **2 Claims**

1. A process for the preparation of gaseous hydrogen sulfide and an aqueous sodium aluminate-sodium hydroxide solution, which consists essentially in mixing a fluid molten mixture of aluminum sulfide and sodium sulfide in 1:1 to 1:2 Al_2O_3:Na_2O equivalent molar ratio with a sufficient amount of water to provide a solution having a temperature in excess of about 30° C. and to cause evolution of hydrogen sulfide therefrom.

4,202,870

PROCESS FOR PRODUCING ALUMINA

Willis W. Weber, South Salem; Alexander J. Caglione, Nyack; Albert C. Frost, Congers, all of N.Y., and Thomas J. Weeks, Jr., Columbus, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,641

Int. Cl.² C01F *7/02*

U.S. Cl. 423—630 **4 Claims**

1. Process for the preparation of alumina by the hydrolysis of an aluminum alkoxide which comprises

(a) providing in a reactor a reaction system comprising two substantially immiscible liquid phases, the first liquid phase being water and the second liquid phase being a solution of $Al(OR)_3$ in ROH wherein "R" is an alkyl radical containing sufficient carbon atoms to render the ROH compound containing same substantially immiscible with water at 25° C. and one atmosphere;

(b) heating said reaction system to a temperature at least as high as the azeotropic temperature, at one atmosphere pressure, of water and the ROH constituent thereof having the lowest boiling point;

(c) bubbling steam upward through said reaction system whereby $Al(OR)_3$ is hydrolyzed to form particles of hydrated alumina and ROH as a by-product;

(d) withdrawing overhead from the reactor an azetropic mixture of water and ROH;

(e) passing the said particles of hydrated alumina downwardly through the reactor as an aqueous slurry countercurrently to the flow of steam bubbles for a period of time sufficient to strip occluded alcohol therefrom;

(f) removing the substantially alcohol-free alumina particles from the reactor as a slurry in a portion of the water in said reactor; and

(g) introducing additional water, $Al(OR)_3$ and ROH into said reaction system under conditions which maintain essentially a steady state in said reactor.

4,202,871

PRODUCTION OF ACICULAR FERRIC OXIDE

Seiji Matsumoto, Sakai; Tadashi Koga, Osaka; Kiyoshi Fukai, Sakai, and Shinya Nakatani, Kishiwada, all of Japan, assignors to Sakai Chemical Industry Co., Ltd., Sakai, Japan

Filed Nov. 6, 1978, Ser. No. 957,861

Claims priority, application Japan, Nov. 14, 1977, 52/137087; Nov. 18, 1977, 52/139271

Int. Cl.² C01G *49/06, 49/08*; B01J *17/04*

U.S. Cl. 423—632 **12 Claims**

1. A method for producing single crystalline, acicular ferric oxide particles which comprises maintaining an aqueous suspension of amorphous ferric hydroxide at an elevated temperature from 80° C. to 300° C. at an alkaline pH in the presence of an effective amount of a growth-regulating agent dissolved in said suspension, said agent being selected from the group consisting of an organic phosphonic acid, a salt thereof, an ester thereof, a hydroxycarboxylic acid, a salt thereof, and an ester thereof, said elevated temperature being maintained for a length of time sufficient to convert said amorphous ferric hydroxide into said acicular ferric oxide particles.

4,202,872

DETERMINATION OF HEPARIN IN BLOOD PLASMA

Désiré J. Collen, Winksele, Belgium, assignor to Leuven Research & Development V.Z.W., Leuvein, Belgium

Filed Mar. 1, 1977, Ser. No. 773,192

Claims priority, application Netherlands, Mar. 8, 1976, 7602423

Int. Cl.² G01N *33/16*; A61K *43/00*

U.S. Cl. 424—1 **6 Claims**

1. A method of determining heparin in blood plasma comprising contacting the blood plasma to be examined with antibodies to thrombin-antithrombin-III complex to cause reaction between heparin-antithrombin III complex and the said antibodies to thrombin-antithrombin-III complex, observing an onset of reaction, and determining presence of heparin from such observation by comparison with blood plasmas of known heparin content.

4,202,873

ALKYLOLAMIDES OF IODIZABLE AMINO ACIDS AND IMMUNE TEST REAGENTS CONTAINING THEM

Hans-Georg Batz, Tutzing; Klaus Stellner, Bernried; Hans-Ralf Linke, Wielenbach, and Günter Weimann, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

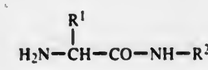
Filed Mar. 30, 1977, Ser. No. 782,868

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616724

Int. Cl.² C07C *103/78*; C07D *233/02*; A61K *43/00*

U.S. Cl. 424—1 **8 Claims**

1. Alkylolamide of an iodizable amino acid, of the formula:



wherein,

R^1 is hydroxybenzyl or dihydroxybenzyl and

R^2 is monohydroxyl-alkyl of 1 or 2 carbon atoms or dihydroxyalkyl of up to 4 carbon atoms,

and the water-soluble salts thereof.

7. Radioiodizable reagents for immune tests in aqueous or physiological solution comprising an alkylolamide of an iodizable amino acid as claimed in claim 1.

4,202,874

MONORADIOIODINATED DERIVATIVES AND PRECURSORS FOR PRODUCTION THEREON

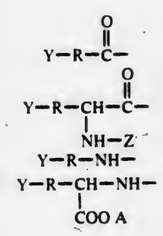
Anandrao S. Akerkar, Pomona, N.Y., and Herman Rutner, Hackensack, N.J., assignors to Becton Dickinson & Company, Paramus, N.J.

Division of Ser. No. 727,407, Sep. 29, 1976, Pat. No. 4,120,867. This application Mar. 10, 1978, Ser. No. 885,447

Int. Cl.² G01N *33/16*; A61K *43/00*

U.S. Cl. 424—1 **17 Claims**

1. A tracer for a radioassay comprising a compound having a radioiodinated substituent group selected from the group consisting of:



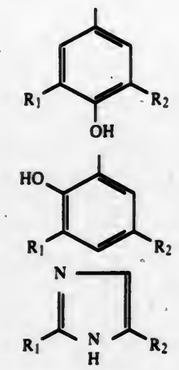
wherein:

R is selected from the group consisting of straight and branched chain aliphatic hydrocarbons having from 1 to 6 carbon atoms;

X is selected from the group consisting of hydrogen and active ester moieties;

Z is selected from the group consisting of acyl or benzyloxycarbonyl;

Y is selected from the group consisting of:



I

II

III

wherein one of R_1 and R_2 is a radioisotope of iodine and the other of R_1 and R_2 is selected from the group consisting of lower alkyl, lower alkoxy, fluoro-, chloro-, bromo-, and nitro-;

A is selected from the group consisting of hydrogen, lower alkyl, an alkali metal and an alkaline earth metal;

said substituent groups (a) and (b) being linked to the compound through an amino group and said substituents (c) and (d) being linked to the compound through a



group, said compound being selected from the group consisting of antigens, haptens, antibodies and compounds having naturally occurring receptors.

17. In a radioassay employing a radioiodinated tracer, the improvement comprising:

employing as said tracer a tracer as defined in claim 1.

4,202,875

RECEPTOR FOR BIOCHEMICAL ASSAY SYSTEM

Jon M. Lindstrom, Del Mar, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Mar. 20, 1978, Ser. No. 888,347

The portion of the term of this patent subsequent to Jul. 5, 1994, has been disclaimed.

Int. Cl.[2] G01N *33/16*; A61K *43/00*

U.S. Cl. 424—1 **3 Claims**

1. In a biochemical assay system comprising a complex of acetylcholine receptor protein derived from muscle tissue with toxin labeled with a radioactive isotope, the improvement wherein the acetylcholine receptor protein is derived from non-human mammalian fetal muscle tissue.

4,202,876

INVESTIGATING BODY FUNCTION

Reginald Monks, and Anthony L. M. Riley, both of Amersham, England, assignors to The Radiochemical Centre Limited, England

Filed Jan. 4, 1978, Ser. No. 866,853

Claims priority, application United Kingdom, Jan. 7, 1977, 628/77

Int. Cl.[2] A61K *29/00, 43/00*

U.S. Cl. 424—1.5 **9 Claims**

1. A method for investigating body function of a mammal, comprising introducing a γ-emitting radioactive Se or Te labelled derivative of a bile acid or a bile salt comprising an amino acid conjugate of a bile acid or a metabolic precursor thereof in to the live mammal, and after the elapse of a suitable period of time determining the distribution of the radioactivity.

4,202,877

ANTIDERMATOMYCOTIC AGENT

Masaki Sato, Sagamihara; Takao Kawasaki, Sayama, and Yasushi Nagane, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1978, Ser. No. 958,973

Claims priority, application Japan, Nov. 21, 1977, 52-139717

Int. Cl.[2] A61K *0/00, 31/11*

U.S. Cl. 424—43 **9 Claims**

8. A method of treating a human patient suffering from dermatomycosis which comprises contacting the skin area afflicted by dermatomycosis with an effective amount of o-methoxycinnamaldehyde capable of inhibiting dermatomycosis.

4,202,878

COMPOSITIONS OF MATTER FOR COLORING TOOTHPASTE AND METHOD OF PREPARING SAME

Lyle W. Ritze, Hamilton Township, Warren County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 744,078, Nov. 22, 1976, Pat. No. 4,129,638, which is a continuation of Ser. No. 507,636, Sep. 20, 1974, abandoned, which is a division of Ser. No. 837,303, Jun. 27, 1969, abandoned. This application Jun. 22, 1978, Ser. No. 917,813

Int. Cl.[2] A61K *7/16*

U.S. Cl. 424—49 **4 Claims**

1. A process for preparing agglomerates of pigment particles in a toothpaste base which comprises the steps of:

(1) melting a wax having a hardness value of from 0 to 65 selected from the group consisting of carnauba wax, candellila wax, montan wax, castor wax, ceresin wax, bayberry wax and paraffin;

(2) uniformly dispersing water-insoluble, non-toxic, colorfast, pigment particles having a mean particle size within the range from about 5 to about 490 microns in the molten wax, said particles being selected from the group consisting of dyed thermosetting resin particles, chromium oxide pigments, carbon blacks, ultramarine blues, ultramarine pinks, ferric oxides, dyed cellulose particles and water insoluble dye lakes;

(3) cooling the wax dispersion of pigment particles to solidification, said solidification yielding the final agglomerates or larger pieces;

(4) reducing the solid wax dispersion to agglomerates having a mean particle size within the range from about 200 to about 500 microns and a pigment particle concentration of from about 30% to about 50% by weight of the total agglomerates; and

(5) dispersing said agglomerates in a toothpaste base of a different color than the agglomerates, in sufficient amount so as to produce a speckled effect in the toothpaste base.

4,202,879

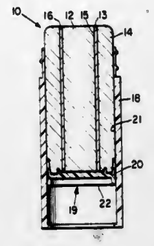
THREE PHASE ANTIPERSPIRANT STICK

David L. Shelton, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 883,075, Mar. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 817,075, Jul. 18, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,478

Int. Cl.[2] A61K *7/34, 7/38*

U.S. Cl. 424—66 **13 Claims**



1. An antiperspirant composition in the form of a three-phase stick, said composition comprising:

(A) from about 35% to 65% by weight of the composition of an antiperspirant phase comprising a solid, shearable vehicle which contains an astringent antiperspirant material;

(B) from about 35% to 65% by weight of the composition of a gel phase, said gel phase comprising

I. from about 10% to 92% by weight of the gel phase of a polyhydric aliphatic alcohol containing 2 to 3 carbon atoms and from 2 to 3 hydroxy groups;

II. from about 5% to 15% by weight of the gel phase of a gel forming agent selected from the group consisting of a sodium salt of a fatty acid containing 14 to about 18 carbon atoms and a potassium salt of a fatty acid containing from about 14 to about 18 carbon atoms; and

(C) from about 1% to 10% by weight of the composition of an interjacent barrier phase contiguous to the gel phase and the antiperspirant phase, wherein the barrier phase has a thickness of at least about 0.005 inch and comprises:

I. from about 10% to 40% by weight of the barrier phase of a water-insoluble, alcohol-insoluble high melting point wax or mixtures thereof which has a melting point of from about 150° F. to 215° F.; and

II. from about 20% to 90% by weight of the barrier phase of a water-insoluble, liquid organic emollient,

and wherein the barrier phase is relatively free of particulate materials and is free of materials capable of reducing the pH of the gel phase below about 9.5 in the region of the gel/barrier interface.

4,202,880

DELIVERY MEANS FOR BIOLOGICALLY ACTIVE AGENTS COMPRISING HYDROPHILIC POLYURETHANE

Francis J. T. Fildes, Macclesfield, and Francis G. Hutchinson, Lymm, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 28, 1977, Ser. No. 855,332

Claims priority, application United Kingdom, Dec. 13, 1976, 51917/76

Int. Cl.[2] A61K *31/785*; C08G *18/48, 18/14*

U.S. Cl. 424—78 **5 Claims**

1. A sustained release delivery means comprising (i) a functionally effective amount of a biologically active agent and (ii) a linear hydrophilic block polyoxyalkylene-polyurethane copolymer, substantially devoid of crosslinking, and containing 30 to 70% by weight of hydrophilic regions and 70 to 30% by weight of hydrophobic regions, the hydrophilic regions being composed of polyoxyethylene of molecular weight 600 to 6,000, and the hydrophobic regions being composed of a polyurethane which is obtainable by reacting 4,4'-diphenylmethane diisocyanate with 1,1'-isopropylidene-bis-p-phenyleneoxy-dipropanol-2.

4,202,881

HAIR SHAMPOO AND CONDITIONING LOTION

Paul Gross; Eugen Konrad, both of Darmstadt, Fed. Rep. of Germany, and Herbert Mager, Fribourg, Switzerland, assignors to Wella AG, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 743,290, Nov. 18, 1976, Pat. No. 4,134,412. This application Oct. 19, 1978, Ser. No. 952,857

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627419

Int. Cl.[2] A61K *7/06*

U.S. Cl. 424—70 **8 Claims**

1. A process of shampooing and conditioning human hair which comprises applying to the hair a lotion comprising an aqueous or aqueous-alcoholic solution, emulsion or gel containing 0.05 to 6% by weight of a water soluble salt of chitosan, said chitosan salt having been prepared by reacting chitosan or a chitin product containing about 70 to 90% by weight of chitosan with a sufficient amount of acid to neutralize the free amino groups present in said chitosan and to form a water soluble salt thereof.

4,202,882

NOVEL DEODORIZING METHOD

Herbert Schwartz, 1963 N. Maurice River Pkwy., Vineland, N.J. 08360

Continuation-in-part of Ser. No. 420,970, Dec. 3, 1973, abandoned. This application Oct. 21, 1975, Ser. No. 624,319

Int. Cl.[2] A61L *13/00*

U.S. Cl. 424—76 **6 Claims**

1. A method of combatting odors comprising contacting the odor causing compounds with an amount sufficient to combat odors of a composition consisting essentially of a tetraazaheterocycle selected from the group consisting of hexamethylenetetramine, 1,3,6,8-tetraazatricyclo [4,4,1,$1^{3,8}$]dodecane and 4,5,9,10-dibenzo-1,3,6,8-tetraazatricyclo[4,4,1,$1^{3,8}$]dodecane and a quaternary ammonium salt being 10:1 to 1:10.

4,202,883

VACCINE FOR TYZZER'S DISEASE IN RABBITS

Roger P. Orcutt, North Andover, Mass., assignor to The Charles River Breeding Laboratories, Inc., N. Wilmington, Mass.

Filed May 10, 1979, Ser. No. 38,012

Int. Cl.[2] A61K *39/02*

U.S. Cl. 424—92 **10 Claims**

1. A vaccine for Tyzzer's disease in rabbits, said vaccine comprising the reaction product, in an aqueous vehicle, of a fixing agent and hepatic or intestinal tissue from immunosuppressed rodents infected with *Bacillus piliformis*.

4,202,884

DERIVATIVE OF LYSOZYME

Arthur G. Schnek, Brussels; Yvan-Roger-Jean Looze, Wavre, and Marc M. Deconinck, Hamme-Mille, all of Belgium, assignors to Prospa S.A., Brussels, Belgium

Filed Oct. 31, 1978, Ser. No. 957,001

Claims priority, application United Kingdom, Nov. 1, 1977, 45411/77

Int. Cl.[2] A61K *37/54*

U.S. Cl. 424—94 **3 Claims**

1. ε-N-trimethyl[lys]-lysozyme.

4,202,885

PROCESS FOR THE PREPARATION OF ANTI-TRANSPLANTED SARCOMA 180 TUMORIGENIC SUBSTANCES

Kiro Asano, Kukizaki; Tsuyoshi Saito; Hiromitsu Tanaka, both of Tokyo, and Satoru Enomoto, Fujisawa, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1976, Ser. No. 749,621
Claims priority, application Japan, Dec. 18, 1975, 50-150114
Int. Cl.[2] A61K *35/12;* **C07H** *1/08*
U.S. Cl. 424—95 **4 Claims**

1. A process for preparing a nitrogen-containing polysaccharide comprising:

contacting a fungus of the genus Coriolus of the Polyporaceae family of class Basidiomycetes selected from the group consisting of *Coriolus biformis, Coriolus conchifer, Coriolus consors, Coriolus hirsutus, Coriolus pargamenus, Coriolus pubescens* and *Coriolus versicolor* with an aqueous solvent under pressure at a temperature within the range of 150° to 200° C. to obtain an extract containing the nitrogen-containing polysaccharide;

refining said abstract to remove substances having a molecular weight less than 5,000;

separating nitrogen-containing polysaccharide from said extract.

4,202,886

ANTIBIOTIC SF-1942 SUBSTANCE AND PROCESS FOR PRODUCTION OF THE SAME

Kazunori Ohba; Takashi Shomura; Yasuaki Ogawa, all of Yokohama; Takashi Tsuruoka, Kawasaki; Hiroshi Watanabe, Yokohama; Takashi Hisamatsu, Yokohama; Shingo Uchida, Yokohama; Michio Kojima, Tokyo, and Shigeharu Inouye, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed May 2, 1978, Ser. No. 902,137
Claims priority, application Japan, May 2, 1977, 52-49896
Int. Cl.[2] A61K *35/74;* **C12P** *1/06*
U.S. Cl. 424—122 **2 Claims**

1. An antibiotic SF-1942 substance having the following properties:

Appearance and Nature: White and electrically neutral substance;

Decomposition Point: Gradually melts over a temperature range of from 122° to 134° C. with decomposition (amorphous powder);

Elemental Analysis (by weight): C: 65.57%; H: 7.80%; O: 26.38%; N: 0%;

U.V. Absorption Spectrum: No characteristic maximum U.V. absorption;

I.R. Absorption Spectrum: Absorption bands at 3400, 2960, 1780, 1710, 1630, 1450, 1390, 1020, 780 cm^{-1} and absorption spectrum as shown in FIG. 2 as determined using the KBr tablet method;

Optical Rotation: $[\alpha]_D^{20} = -21.8°$, 1% methanol solution;

Molecular Weight: 350 to 400 as determined by the vapor pressure method;

Solubility: Soluble in ethyl acetate, lower alcohols (C_1-C_3), acetone, benzene and chloroform, and insoluble in water and hexane;

Color Reactions: Positive, Lemieux, sulfuric acid, and 2,4-dinitrophenylhydrazine; Negative, ninhydrin and Greig-Rayback reagent.

Rf Values on TLC (Silica Gel): 0.52 (benzene/methanol; 5:1 by volume) 0.46 (chloroform/methanol; 10:1 by volume) 0.41 (benzene/acetone; 2:1 by volume)

Mobility on Filter Paper High Voltage Electrophoresis: Behaves as electrically neutral substance.

4,202,887

LIVESTOCK FEED SUPPLEMENT

Tully W. Talbot, Audubon, Iowa; George T. Barrows, Kansas City, Mo., and Granville B. Thompson, Amarillo, Tex., assignors to Redel, Inc., Kansas City, Mo.

Filed Jun. 27, 1977, Ser. No. 810,296
Int. Cl.[2] A23K *1/00*
U.S. Cl. 424—154 **3 Claims**

1. A liquid feed composition consisting essentially of:

a readily available liquid energy source selected from the group consisting of propylene glycol, ethanol, normal propanol, glycerol, and combinations thereof, said energy source being present in said composition in amounts ranging from about 10 percent to about 90 percent by weight of said composition; and

magnesium ions, derived from magnesium salts by completely dissolving said salts in said energy source, whereby said composition is made field stable and can be left unattended in the field without separation of said salts;

said magnesium ions being present in said composition in amounts ranging from about 1 percent to about 6 percent by weight of said composition;

said composition having a pH less than or equal to 7.0; and

said composition being effective to avert nutritional tetany in livestock.

4,202,888

READILY ENTERALLY ABSORBABLE PHARMACEUTICAL COMPOSITIONS OF CARDIAC GLYCOSIDES AND PREPARATION THEREOF

Theodor Eckert; Fritz H. Kemper, both of Muenster; Martin Wischniewski, Neustadt a. Rbge., and Reinhard Hempel, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH., Hanover, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,456
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1976, 2631214; Nov. 18, 1976, 2652508; Dec. 1, 1976, 2654386; Dec. 3, 1976, 2654844
Int. Cl.[2] A61K *31/705;* **C07J** *17/00*
U.S. Cl. 424—182 **12 Claims**

1. A readily enterally absorbable pharmaceutical composition which comprises a therapeutically-effective amount of at least one cardiac glycoside selected from the group consisting of g-strophanthin, k-strophanthin and proscillaridin distributed in a substantially non-aqueous vehicle comprising an absorption-enhancing amount of at least one glyceride selected from the group consisting of mono-glycerides and diglycerides of fatty acids of medium chain length containing 6 to 12 carbon atoms and mixtures thereof.

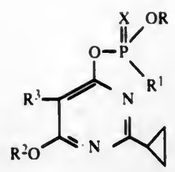
4,202,889

COMBATING ARTHROPODS WITH O-ALKYL-O-(6-ALKOXY-2-CYCLOPROPYL-PYRIMIDIN-4-YL)-(THIONO)(THIOL)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS OR ESTER-AMIDES

Fritz Maurer, Wuppertal; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 931,082
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737401
Int. Cl.[2] A01N *9/36;* **C07F** *9/65*
U.S. Cl. 424—200 **10 Claims**

1. An O-alkyl-O-(6-alkoxy-2-cyclopropyl-pyrimidin-4-yl)-(thiono)(thiol)-phosphoric (phosphonic) acid ester or ester-amide of the formula



in which

R is alkyl with 1 to 6 carbon atoms,

R^1 is alkyl, alkoxy, alkylthio or monoalkylamino each with 1 to 6 carbon atoms, or phenyl,

R^2 is alkyl with 1 to 6 carbon atoms,

R^3 is hydrogen, halogen or alkyl with 1 to 5 carbon atoms, and

X is oxygen or sulphur.

8. An arthropodicidal composition containing as active ingredient an arthropodicidally effective amount of a compound according to claim 1 in admixture with a diluent.

9. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

4,202,890

4-CARBOXY-PHTHALATO(1,2-DIAMINOCYCLOHEXANE)-PLATINUM(II) AND ALKALI METAL SALTS THEREOF WITH CYCLOPHOSPHAMIDE AND HYDROXYUREA IN ALLEVIATING L1210 MURINE LEUKEMIA

Glen R. Gale, and Paul Schwartz, both of Charleston, S.C., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 926,035, Jul. 19, 1978, which is a continuation-in-part of Ser. No. 828,926, Aug. 29, 1977, Pat. No. 4,137,248. This application Dec. 22, 1978, Ser. No. 972,336
Int. Cl.[2] A61K *31/675, 31/28, 31/17*
U.S. Cl. 424—200 **2 Claims**

1. A method of alleviating L1210 murine leukemia which comprises administering 4-carboxyphthalato(1,2-diaminocyclohexane)platinum(II) or alkali metal salt thereof I.P. and at antileukemic dosage to a mount of 5-60 mg/kg for up to 10 days wherein cyclophosphamide is added in an effective dosage of about 50 mg/kg of body weight and hydroxyurea is added in an effective dosage of about 1000-1500 mg/kg of body weight, both to provide a ternary treatment.

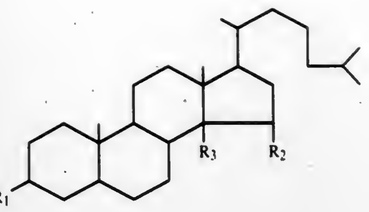
4,202,891

15-OXYGENATED STEROL COMPOUNDS AND THE USE OF SUCH COMPOUNDS TO INHIBIT THE BIOSYNTHESIS OF STEROLS

George J. Schroepfer, Jr.; Edward J. Parish, both of P.O. Box 1892, Houston, Tex. 77001, and Andrew A. Kandutsch, 31 Eagle Lake Rd., Bar Harbor, Me. 04609

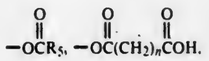
Filed May 16, 1977, Ser. No. 797,345
Int. Cl.[2] A61K *31/56;* **C07J** *9/00*
U.S. Cl. 424—242 **63 Claims**

1. A method of inhibiting the biosynthesis of mevalonic acid, and the effects derived therefrom, which comprises administering to a host an amount effective to inhibit biosynthesis of mevalonic acid of a sterol biosynthesis inhibiting 15-oxgenated sterol, said 15-oxygenated sterol having the structural formula:



where:

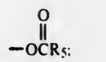
R_1 is —OH, =O, —OR_4,



a sulfate group, or

a Mg, Na, or K salt of a sulfate group;

R_2 is —OH, =O, or



R_3 is non-existent when there is a double bond between the 8 and 14 carbon atoms or αH, βH, or an αC_1 to C_6 alkyl group;

R_4 is a C_1 to C_6 alkyl group;

R_5 is a C_1 to C_{20} aliphatic group, or a phenyl group, provided that when R_5 forms part of the R_2 substituent, R_5 is a C_1 to C_{20} aliphatic group; and

n is a whole number from 2 to 6, with said R_1 and R_2 substituents, other than when they are =0, being in either the α or β position.

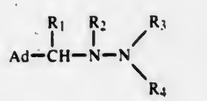
4,202,892

BIOCIDAL METHYLADAMANTYL HYDRAZINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Ben-Zion Weiner; Jeffrey Sterling; Raul Suchi, all of Jerusalem, and Haim Yellin, Ramat Gan, all of Israel, assignors to Teva Pharmaceutical Industries, Ltd., Jerusalem, Israel

Filed Nov. 22, 1978, Ser. No. 963,114
Claims priority, application Israel, Nov. 22, 1977, 53441
Int. Cl.[2] A61K *31/33, 27/00, 31/15;* **C07C** *109/02*
U.S. Cl. 424—244 **44 Claims**

1. A 1- or 2-Adamantylmethyl hydrazine of the general formula A



A

wherein Ad is 1- or 2-adamantyl, R_1 and R_2 are the same or different and are each hydrogen or a lower unsubstituted or substituted alkyl group of 1-4 carbon atoms; R_3 and R_4 are the same or different and are each hydrogen, an unsubstituted or substituted radical being a lower alkyl of 1-4 carbon atoms, a lower alkanoic acid radical or 2-4 carbon atoms or a lower alkyl ester thereof, adamantyl, phenyl, phenethyl, benzyl or an unsubstituted or substituted pyridyl or quilonilyl; or R_3 and R_4 together with the nitrogen atom to which they are attached form a cyclic radical; or a pharmaceutically acceptable acid addition salt thereof.

44. A biocidal composition containing as active ingredient a biocidally effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

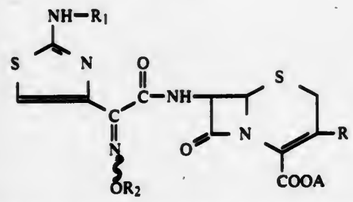
4,202,893

ALKYLOXIMES OF 7-AMINO-THIAZOLYL-ACETAMIDO-CEPHALOSPORANIC ACIDS

René Heymes, Romainville, and André Lutz, Strasbourg, both of France, assignors to Roussel Uclaf, Paris, France

Continuation-in-part of Ser. No. 781,344, Mar. 25, 1977, abandoned. This application May 12, 1977, Ser. No. 796,315
Claims priority, application France, Mar. 25, 1976, 76 08690
The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.
Int. Cl.[2] A61K *31/545*; C07D *501/36*
U.S. Cl. 424—246 **12 Claims**

1. A compound of the formula



wherein R is $—CH_2—SR'$, R' is an acyl of an alkanoic acid of 2 to 4 carbon atoms, R_1 is hydrogen, R_2 is selected from the group consisting of alkyl of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms, A is selected from the group consisting of hydrogen, an alkali metal cation, or equivalent of an alkaline earth metal, and a non-toxic, pharmaceutically acceptable organic amine base cation and OR_2 is in the syn position.

7. An antibiotic composition comprising an antibiotically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

9. A method of treating bacterial infections in warm-blooded animals comprising administering to warm-blooded animals an antibiotically effective amount of at least one compound of claim 1.

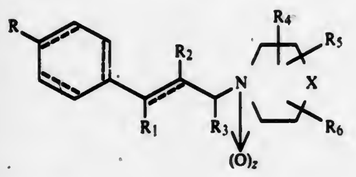
4,202,894

PIPERIDINES MORPHOLINES, ETC., AND FUNGICIDAL COMPOSITIONS THEREOF

Albert Pfiffner, Bulach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 18, 1977, Ser. No. 852,768
Claims priority, application Austria, Nov. 22, 1976, A 8660/76
Int. Cl.[2] C07D *295/02*; A01N *9/22*; C07D *211/14*
U.S. Cl. 424—248.4 **140 Claims**

1. A compound of the formula



(I)

wherein R is alkyl of 4 to 12 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, mono(lower alkyl)-substituted cycloalkyl of 4 to 7 carbon atoms, cycloalkylalkyl of 4 to 12 carbon atoms, phenyl, phenyl-(lower alkyl) of 7 to 12 carbon atoms, or naphthyl-(lower alkyl) of up to 12 carbon atoms in which the phenyl or naphthyl group can be mono- or di-(lower alkyl) substituted; R_1, and R_3, independently, are hydrogen or alkyl of 1 to 8 carbon atoms; R_2 is methyl; R_4, R_5 and R_6, independently, are hydrogen or alkyl of 1 to 8 carbon atoms, and two of R_4, R_5 and R_6 can each be bonded to the same carbon atom or can together form a fused alicyclic or aromatic 6-membered ring; provided that when R is tert.-butyl, at least one of R_1 and R_3 is alkyl of 2 to 8 carbon atoms, or at least one of R_4, R_5 and R_6 is alkyl of 5 to 8 carbon atoms; X is methylene or an oxygen atom; z is zero or 1; and the dotted bonds can be hydrogenated or an acid addition salt of a compound which is basic.

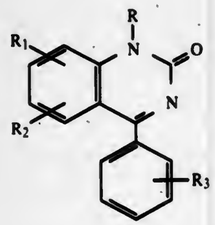
4,202,895

1-POLYHALOALKYL-2(1H)-QUINAZOLINONE DERIVATIVES

Shigeho Inaba, Takarazuka; Michihiro Yamamoto, Toyonaka; Kikuo Ishizumi, Ikeda; Kazuo Mori, Kobe, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 153,031, Jun. 4, 1971, abandoned. This application Jun. 14, 1974, Ser. No. 479,464
Int. Cl.[2] A61K *31/505*; C07D *239/82*
U.S. Cl. 424—250 **14 Claims**

1. A quinazolinone of the formula



(I)

wherein R is a polyhaloalkyl having C_2–C_3 alkyl with at least two fluorine atoms; and R_1, R_2 and R_3 are individually hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl or halogen.

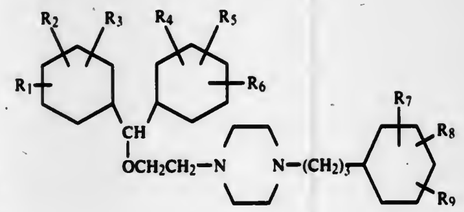
4,202,896

N-BENZHYDRYLOXYETHYL-N-PHENYLPROPYL-PIPERAZINES

Johan Gootjes, Heerhugowaard, Netherlands, assignor to Gist-Brocades N.V., Netherlands

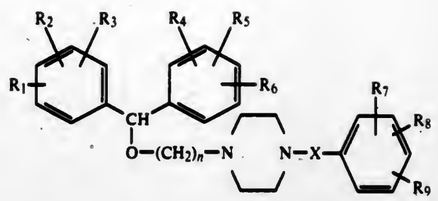
Filed Dec. 14, 1977, Ser. No. 860,460
Claims priority, application United Kingdom, Dec. 14, 1976, 52223/76
Int. Cl.[2] A61K *31/495*; C07D *295/08*
U.S. Cl. 424—250 **13 Claims**

1. A compound of the formula



wherein R_1–R_9 are the same or different and each represents a hydrogen, fluorine, chlorine or bromine atom or a methyl or methoxy group or acid addition salts thereof.

10. A method of treating Parkinson's disease, prolactin induced disorders and acromegaly which comprises administering an effective amount of compound of the formula



I

wherein R_1–R_9 are the same or different and each represents a hydrogen, fluorine, chlorine or bromine atom or a methyl or lower alkoxy group, n is 2 or 3 and X represents a $(CH_2)_3$ group or acid addition salts thereof.

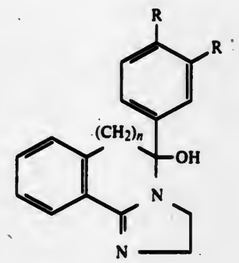
4,202,897

PROLACTIN SECRETION INHIBITORS

Ronald G. Babington, Denville, and F. Eugene Harrington, Mendham, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 891,299, Mar. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 862,366, Dec. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 818,420, Jul. 25, 1977, abandoned. This application May 11, 1978, Ser. No. 904,191
Int. Cl.[2] A61K *31/495, 31/47, 31/48*
U.S. Cl. 424—250 **21 Claims**

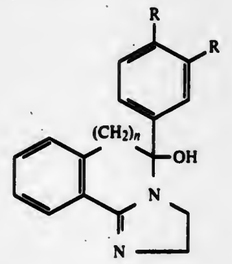
1. A method for inhibiting prolactin secretion which comprises administering to a mammal in need of said treatment an effective amount of a compound of the formula



(I)

where
n represents 0 or 1,
each R, independently, represents hydrogen or halo of atomic weight about 19–36,
or a pharmaceutically acceptable acid addition salt thereof.

6. A method for enhancing the prolactin secretion inhibition activity of chemical agents so active which comprises administering to a mammal in need of said treatment an effective amount of both said chemical agent and an effective amount of a compound of formula (I)



(I)

where
n represents 0 or 1,
each R, independently, represents hydrogen or halo of atomic weight about 19–36,
or a pharmaceutically acceptable acid addition salt thereof.

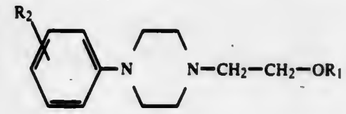
4,202,898

METHOD OF TREATING ANXIETY AND DEPRESSION

Henri Depoortere, Dampierre, France, assignor to Synthelabo, Paris, France

Filed Jun. 5, 1978, Ser. No. 912,738
Int. Cl.[2] A61K *31/495*
U.S. Cl. 424—250 **7 Claims**

1. A method of treating anxiety or depression which comprises administering to a patient suffering from anxiety or depression an effective dosage of a piperazine to relieve said anxiety or depression, said piperazine having the formula:



wherein
R_1 is hydrogen or —CO(lower alkyl); and
R_2 is hydrogen, halogen, trifluoromethyl or trifluoromethylthio
or a pharmaceutically acceptable acid addition salt thereof.

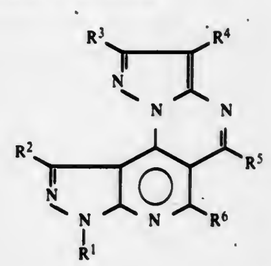
4,202,899

8H-PYRAZOLO[1,5-A]PYRAZOLO[4',3':5,6]PYRIDO[3,4-E]PYRIMIDINE

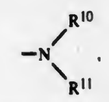
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 21, 1976, Ser. No. 679,121
Int. Cl.[2] A61K *31/505*; C07D *471/22, 487/22*
U.S. Cl. 424—251 **24 Claims**

1. A compound of the formula



wherein
R^1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkylene, benzoyl or substituted benzoyl wherein the benzoyl substituent is one or two halogens, lower alkyl or trifluoromethyl groups;
R^2 and R^3 each is hydrogen, lower alkyl or phenyl;
R^4 is hydrogen, lower alkyl, phenyl, carbonyl or lower alkoxycarbonyl;
R^5 is lower alkoxy, substituted lower alkoxy wherein the substituent is



phenyloxy, substituted phenyloxy wherein the phenyl ring bears one or two halogen, lower alkyl or trifluoromethyl groups, halo,



or —S—R^9,

R^6 is hydrogen or lower alkyl;

R^7 is hydrogen, lower alkyl or substituted lower alkyl wherein the substituent is



phenyl, substituted phenyl wherein the phenyl substituent is halogen, lower alkyl or trifluoromethyl, and R^8,

R^9, R^{10} and R^{11} each is hydrogen or lower alkyl.

22. A composition comprising about 10 to 300 mg. of a compound of claim 1 and a physiologically acceptable carrier therefor.

4,202,900

DERIVATIVES OF PENAM-3-CARBOXYLIC ACID AND A PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Karoly Kocsis, Basel; Bruno Fechtig, Reinach, and Hans Bickel, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

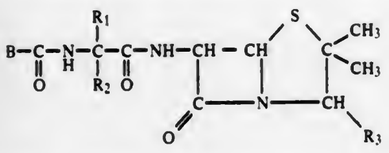
Continuation of Ser. No. 749,934, Dec. 13, 1976, abandoned, which is a division of Ser. No. 398,512, Sep. 18, 1973, Pat. No. 4,015,000. This application Apr. 28, 1978, Ser. No. 900,696

Claims priority, application Switzerland, Sep. 27, 1972, 14257/72; Mar. 14, 1973, 3694/73; May 24, 1973, 7444/73

Int. Cl.² A61K *31/43*; C07D *499/68*

U.S. Cl. 424—251 **6 Claims**

1. A compound of the formula I



(I)

wherein R_3 denotes a free or conventional penicillin the rapeutically useable esterified carboxyl group, and wherein, if the radicals R_1 and R_2 are separate, R_1 is hydrogen and R_2 is phenyl, thienyl, furyl, or phenyl, which is substituted by lower alkyl with up to 6 carbon atoms, lower alkoxy with up to 4 carbon atoms, halogen, trifluoromethyl, nitro, carbamoyl, or lower alkanoyl with up to 6 carbon atoms, and, if the radicals R_1 and R_2 are linked, they form, together with carbon atoms, a cycloalkyl with up to 7 carbon atoms, and wherein B represents 1,2,3,6-tetrahydro-2,6-dioxo-pyrimidyl, a 2,6-dichloropyrimidyl or 2,6-dimethoxypyrimidyl, in which the pyrimidyl groups are bonded in 4- or 5-position of the ring at a carbon atom and are unsubstituted or substituted at a carbon atom by halogen, lower alkyl with up to 4 carbon atoms or phenyl, and conventional therapeutically useable salts thereof with the proviso that if R_1 is hydrogen, R_2 is phenyl and R_3 is carboxyl, B does not represent an unsubstituted 1.2.3.6-tetrahydro-2.6-dioxo-pyrimidyl radical, which is bonded in 5-position.

6. A pharmaceutical preparation for combating infections caused by gram-positive or gram-negative bacteria which comprises a therapeutically effective amount of a compound of formula I of claim 1 in the presence of a pharmaceutically usable excipient.

4,202,901

2-PYRIDINECARBONITRILE COMPOUNDS

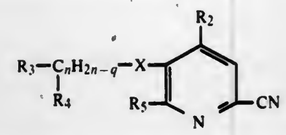
Neville Finch, Millington, and Renat H. Mizzoni, Long Valley, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 787,718, Apr. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 663,940, Mar. 4, 1976, abandoned. This application Mar. 27, 1978, Ser. No. 890,441

Int. Cl.² A61K *31/44, 31/455*; C07D *213/84*

U.S. Cl. 424—263 **5 Claims**

1. A compound of the formula



wherein R_2 and R_5 is hydrogen, lower alkyl, lower alkoxy or halogeno, X is oxygen or sulfur, R_3 is phenyl or phenyl substituted by one or more than one member selected from lower alkyl, lower alkoxy, halo, trifluoromethyl, cyano or amino, R_4 is hydrogen or hydroxy, n is an integer from 1 to 7, q is 1 or 3, (n−q) is positive.

4,202,902

LIPOGENESIS CONTROL BY CYCLOPROPANE-CARBOXYLIC ACIDS, ESTERS AND AMIDES

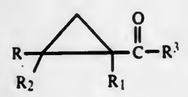
John B. Carr, Houston, Tex., and Harry G. Durham, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 5, 1979, Ser. No. 17,214

Int. Cl.² A61K *31/22, 31/275, 31/215, 31/16*

U.S. Cl. 424—298 **1 Claim**

1. A method for inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally, an effective lipogenesis inhibiting amount of a compound of the formula:



(I)

consisting of two subclasses:

(1) R is alkyl having 4 to 10 carbon atoms, acetoxymethyl, or phenyl, R^1 and R^2 each is hydrogen, or —CN, with the proviso that one of them is hydrogen, and R^3 is $—NH_2$, or $—OR^4$, wherein R^4 is alkyl having 1 to 4 carbon atoms;

(2) R is alkyl having 6 to 16 carbon atoms, or is phenyl, R^1 and R^2 each is hydrogen or —CN, with the proviso that one of them is hydrogen and R^3 is —OH.

4,202,903

ACYL CYANOGUANIDINES FOR TREATING RHEUMATOID ARTHRITIS

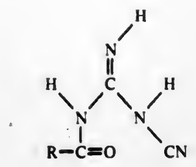
Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 30, 1975, Ser. No. 618,108

Int. Cl.² A61K *31/155*

U.S. Cl. 424—326 **1 Claim**

1. A method of treating rheumatoid arthritis which comprises administering to a patient a therapeutically effective amount of a compound of the formula:



wherein R is C_{1-7}alkyl, substituted C_{1-7}alkyl, C_{1-5}alkoxy, phenyl or substituted phenyl, wherein substituted C_{1-7}alkyl is C_{1-7}alkyl substituted with one or more C_{1-3}alkyl or halo groups and substituted phenyl is phenyl substituted with one or more hydroxy, mercapto, halo, cyano, phenyl, carboxymethylthio, nitro, amino, N-C_{1-5}alkylamino or N,N-di(C_{1-5}-alkyl-)amino groups.

4,202,904

BIS(DIPHENYLAMINOMETHANE)ANTIMICROBIAL AGENTS

Bogislav von Schmeling, Hamden, Conn., and Walter R. Boos, Guelph, Canada, assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal Ltd., Ontario, Canada

Division of Ser. No. 806,650, Jun. 15, 1977, Pat. No. 4,130,664, which is a division of Ser. No. 658,4,004, Feb. 13, 1976, Pat. No. 4,044,139, which is a division of Ser. No. 440,941, Feb. 8, 1974, Pat. No. 3,954,868, which is a division of Ser. No. 231,385, Mar. 2, 1972, Pat. No. 3,808,316. This application Oct. 24, 1978, Ser. No. 954,265

Int. Cl.² A01N *9/20*; C07C *87/29*

U.S. Cl. 424—330 **6 Claims**

1. 1,3-Bis(alpha-aminobenzyl)benzene.

2. A bactericidal or fungicidal composition comprising the compound of claim 1, in bactericidally or fungicidally effective amount, in admixture with a carrier therefor.

3. 1,4-Bis(4-methoxy-alpha-aminobenzyl)benzene.

4,202,905

LUMINOUS MATERIAL FOR USE IN FISHERY AND METHOD FOR THE PRODUCTION THEREOF

Yoshiyuki Asai, Yokohama; Nobuyoshi Makiguchi, Fujsawa; Masanobu Arita; Mitsuyoshi Nakamura, both of Kamakura, and Kozo Sasa, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed Feb. 22, 1978, Ser. No. 880,163

Int. Cl.² A23L *1/325*

U.S. Cl. 426—1 **11 Claims**

1. A method for the production of a luminous fishing article, comprising:

providing an aqueous solution containing a water-soluble polymer;

dispersing luminous bacteria in said solution; and

insolubilizing the polymer under conditions which maintain at least a part of the bacteria alive.

4,202,906

CHEWING GUM BASE CONTAINING A THERMALLY DECOMPOSED PRODUCT OF A NATURAL RUBBER AND A METHOD OF PREPARATION THEREOF

Koichi Ogawa, Tokyo; Shichigoro Tezuka, Hawasaki; Yoshinori Sato, Tokorozawa; Michio Moroe, Mitaka; Haruki Tsuruta, Yokohama, and Toshio Yoshida, Yokohama, all of Japan, assignors to Lotte Co., Ltd. and Takasago Perfumery Co., Ltd., both of Tokyo, Japan

Filed Oct. 5, 1978, Ser. No. 948,910

Claims priority, application Japan, Oct. 12, 1977, 52-121544

Int. Cl.² A23G *3/30*

U.S. Cl. 426—3 **9 Claims**

1. A chewing gum base consisting essentially of from 2 to 60% by weight of a natural rubber component and from 40 to 98% by weight of basic materials for the chewing gum, said natural rubber component being at least 60 parts by weight of a decomposition product obtained by thermally decomposing natural rubber at a temperature of from 200° to 350° C. in an inert atmosphere and the removing low boiling fractions having boiling points up to about 160° C. at a pressure of approximately 1 mmHg.

4,202,907

SAUSAGE PRODUCTS HAVING IMPROVED PHYSICAL PROPERTIES AND METHOD OF PRODUCING THE SAME

Arthur E. Poarch, 5104 Monterey St., Carmel, Calif. 93921

Continuation of Ser. No. 776,299, Mar. 10, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,022

Int. Cl.² A23C *9/12, 9/14*

U.S. Cl. 426—34 **9 Claims**

1. Sausage and meatball products comprising cooked comminuted meat and fat and a gel formed by the reaction during the cooking of said products of enzymatically activated sodium caseinate and calcium ion, said gel being in an amount sufficient to retain fat and moisture within the body of the cooked product.

4,202,908

SYNTHETIC, GRANULAR FOOD CAVIAR AND METHOD OF PREPARING SAME

Alexandr N. Nesmeyanov; Sergei V. Rogozhin; Vladimir B. Tolstoguzov; Vladimir I. Misjurev; Vera A. Ershova, and Evgeny E. Braudo, all of Moscow, U.S.S.R., assignors to Institut Elementoorganicheskih Soedineny, Moscow, U.S.S.R.

Continuation of Ser. No. 668,788, Mar. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 563,202, Mar. 28, 1975, abandoned, and Ser. No. 563,205, Mar. 28, 1975, abandoned. This application May 17, 1978, Ser. No. 907,042

Int. Cl.² A23J *3/00*

U.S. Cl. 426—72 **45 Claims**

1. A synthetic, granular food caviar, the granules of which have a center of an aqueous jell of food gelatin containing additional edible protein surrounded by two coatings: the inner coating consisting essentially of the reaction product of said jell and vegetable tannins, and the outer coating being the reaction product of at least one edible polyvalent metal salt and acid polysaccharide.

4,202,909

TREATMENT OF WHEY

Harold T. Pederson, Jr., Livermore, Calif., assignor to Patent Technology, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 744,082, Nov. 22, 1976, abandoned. This application May 19, 1978, Ser. No. 907,669

Int. Cl.² A23C *21/00*

U.S. Cl. 426—239 **6 Claims**

1. A process for the treatment of whey derived from the manufacture of cheese and having titratable acidity, the steps of subjecting the whey to membrane ultrafiltration to form a protein-rich fraction and a permeate fraction having a solids content of the order of 5.0 to 7.5% and having a lactose content of about 68 to 87%, a protein content of not more than about 6% and a mineral salt content, the mineral salt content including calcium and citrate salts together with phosphate and monovalent salts, precipitating calcium and citrate salts of the permeate without substantial precipitation of phosphate salts by concentrating the unneutralized permeate to a solids content of about 40 to 45%, and by holding the concentrate at a temperature level of about 180° to 200° F. for about 30 to 90 minutes to effect precipitation of calcium and citrate salts without substantial precipitation of phosphate salts, the precipitated salts being about 5.0 to 15.0% of the total mineral salts, removing the precpitated solids from the permeate, and then further concentrating the permeate and crystallizing and removing lactose from the same.

4,202,910

FILTRATION OF VEGETABLE BASED MATTER

Timothy G. Bradley, Denver, and Raymond L. McAdam, Littleton, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Division of Ser. No. 766,096, Feb. 7, 1977, Pat. No. 4,134,857.
This application Jul. 28, 1978, Ser. No. 929,057
Int. Cl.[2] C12H *1/00*; A23L *2/30*
U.S. Cl. 426—423 9 Claims

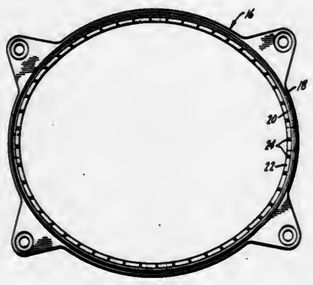
1. A method of producing a vegetable based beverage which comprises filtering said beverage through a filter aid comprising diatomite or perlite, said filter aid having had its initial content of beverage soluble iron reduced prior to such filtration by contacting the filter aid in granular form with tannic acid, gallic acid or mixtures thereof.

4,202,911

METHOD OF PREPARING POCKET PITA BREAD

Andre Papantoniou, and Kostas Papantoniou, both of Chicago, Ill., assignors to Pita Baking Company, Chicago, Ill.

Filed Jun. 8, 1978, Ser. No. 913,851
Int. Cl.[2] A21D *6/00, 8/02*; A21C *11/10*
U.S. Cl. 426—502 4 Claims



1. A method of preparing pita pocket bread from corresponding dough cut-outs and comprising, feeding a sheet of dough to a cutting sleeve, cutting the dough about a continuous periphery to separate a cut-out section while concurrently compressing a continuous, flat, narrow, flange about the periphery of the cut out section and, while cutting the dough, crimping the dough at spaced intervals inwardly and radially from the compressed flange, and concurrently applying mild pressure to the surface of the dough at intervals between the crimps; and thereafterwards baking in an oven the cut-out at a temperature and time to produce a pocket pita bread.

4,202,912

PROCESS FOR PRESERVING VEGETABLES USED TO MAKE KIMCHEE

Sunyong P. Kim, 535 N. Cahuenga Blvd., Los Angeles, Calif. 90004

Filed Oct. 30, 1978, Ser. No. 955,953
Int. Cl.[2] A23L *1/20*
U.S. Cl. 426—615 8 Claims

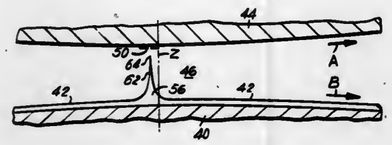
1. A process for preserving vegetables such as cabbages and radishes needed to prepare kimchee, said process including the steps of:
cutting up fresh vegetables into sizeable pieces;
washing the pieces of vegetables with water;
soaking the pieces of vegetables in salt water for a time period on the order of 15 to 20 minutes;
drying the pieces of vegetables of any excess moisture; and
vacuum packaging the pieces of vegetables.

4,202,913

METHOD FOR LIQUID DEVELOPMENT OF LATENT ELECTROSTATIC IMAGES

Irving L. Klavan, Teaneck; Peter J. Calabrese, Maywood; Theron R. Finch, Northvale; Arthur Greenberg, all of Teaneck, N.J., and Robert P. McElroy, Spring Valley, N.Y., assignors to Philip A. Hunt Chemical Corp., Palisades Park, N.J.

Continuation-in-part of Ser. No. 676,463, Apr. 13, 1976, abandoned. This application Jun. 20, 1978, Ser. No. 916,042
Int. Cl.[2] G03G *13/10*
U.S. Cl. 430—106 34 Claims



1. A method for developing a latent electrostatically charged image on a member by passing the image-bearing member above and close to but out of contact with a surface of a liquid developer in the form of a continuous film at a development zone, the surface of the liquid developer at the development zone being spaced from the image-bearing member at the development zone, said film having a smooth surface prior to its approach to the development zone, the space between the latent image on the image-bearing member and the surface of the liquid developer at the development zone being between 4.5 and 40 mils, the liquid developer having a viscosity of 0.5 to 50 centipoises, a surface tension of 20 to 75 dynes/cm, and a density in order of 1 gram/cc, and the latent electrostatic image having a surface potential of at least 100 volts, portions of the surface of the liquid developer at the development zone opposed to charged segments of the image jetting toward the segments under the influence of the charges on the segments as pseudopods perpendicular to the film and to the image-bearing member, the liquid at the tips of such pseudopods reaching the charged segments, while liquid in any pseudopods formed in opposition to uncharged segments at the development zone is prevented from reaching the uncharged segments by the force of gravity.

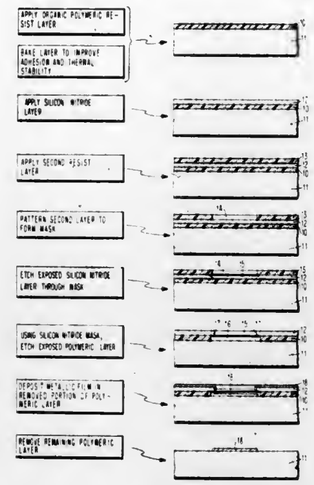
4,202,914

METHOD OF DEPOSITING THIN FILMS OF SMALL DIMENSIONS UTILIZING SILICON NITRIDE LIFT-OFF MASK

Janos Havas, Hopewell Junction, and Gabor Paal, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,461
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—38 15 Claims

1. A lift-off method for forming a patterned film on a substrate comprising the steps of:
(a) forming on said substrate a first layer of organic polymeric material;
(b) forming on said first layer of organic polymeric material a layer of silicon nitride material having selected apertures therein;
(c) forming, by etching in a second gas ambient, apertures in said first organic polymeric material aligned with said apertures in said layer of silicon nitride material, said apertures in said first layer of organic polymeric material extending beyond the edges of said apertures in said layer of silicon nitride material;



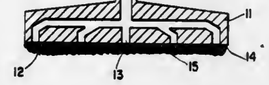
(d) depositing a film layer onto said substrate through said aperture in said layer of silicon nitride; and
(e) removing said first layer of organic polymeric material.

4,202,915

MECHANICAL PLATING PROCESS

Erith T. Clayton, Baltimore, Md., assignor to The Tainton Company, Baltimore, Md.

Filed Oct. 3, 1978, Ser. No. 948,230
Int. Cl.[2] C23C *17/00*
U.S. Cl. 427—47 28 Claims



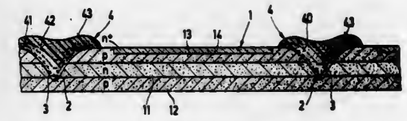
1. A continuous method of mechanically applying a metal coating on a surface of an object comprising the steps of positioning a mechanical plating member adjacent the surface of an object to be plated, said plating member comprising a plurality of plating elements with void spaces separating the plating elements from one another, said void spaces forming reservoirs for particles of metal to be plated on said surface, providing a liquid medium having a pH of 1.6 to 3.5 and comprising an aqueous liquid carrier and solid metal plating particles in the reservoirs formed by said void spaces of said plating member and in contact with said surface to be plated, said metal particles present in said liquid medium being in the form of a plurality of flocculated masses, each floc comprising a lightweight aggregate of loosely held metal particles, said plating member being positioned relative to said object surface such that said plating elements are urged against said object surface, moving said plating member relative to said object surface in said relative position thereby subjecting said metal particles to mechanical energy sufficient to flatten and cold weld said metal particles to the object surface as a continuous adherent metal coating, and, while moving said plating member relatively to said object surface, providing an additional quantity of said liquid medium in said reservoirs and in contact with said surface to be plated to build up a continuous adherent metallic coating on said surface.

4,202,916

SURFACING PROCESS FOR THE STABILIZATION OF SEMICONDUCTOR BODIES EMPLOYING GLASS CONTAINING QUARTZ PASSIVATING LAYER

Madan M. Chadda, Nurmberg-Gaulnhofen, Fed. Rep. of Germany, assignor to Semikron Gesellschaft für Gleichrichterbau und Elektronik m.b.H, Nuremberg, Fed. Rep. of Germany

Filed Aug. 25, 1978, Ser. No. 936,885
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739762
Int. Cl.[2] H01L *21/473*
U.S. Cl. 427—82 14 Claims



1. In a surfacing process for the stabilization of semiconductor wafers in which a glass coating is provided on the surface of the semiconductor at least in the region where a pn junction thereof extends to the surface, the improvement wherein the glass coating is provided by: directly forming on the surface of said semiconductor a layer of the oxide of the semiconductor material; forming on said semiconductor oxide layer, by melting, a base layer composed of a common glass having a thermal coefficient of expansion matched to that of said semiconductor material; and forming on said base layer a terminating layer of a glass containing quartz which has a thermal coefficient of expansion lower than that of said semiconductor material, by melting said quartz-containing glass at a temperature in a higher temperature range adjacent that required for melting the glass of said base layer.

4,202,917

METHOD FOR MANUFACTURE OF INDIUM OXIDE (III) FILM

Elichi Ishii, Toyonaka; Masanori Nakane, Takatsuki; Hiroshi Ishikawa; Itsuki Uehara, both of Ikeda, and Yoshizo Miyake, Toyonaka, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,260
Claims priority, application Japan, Mar. 31, 1978, 53-38663
Int. Cl.[2] B05B *5/00*; B05D *3/02*
U.S. Cl. 427—161 5 Claims

1. A method for the production of an indium oxide (III) film on the surface of a given substrate, which method comprises first forming an indium oxide (I) film on the surface of the substrate and subsequently oxidizing this indium oxide (I) film.

4,202,918

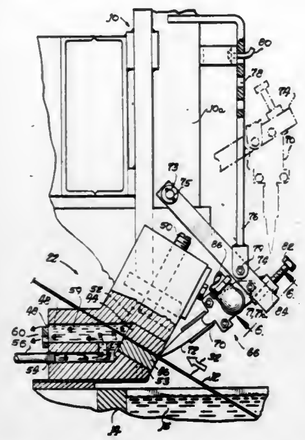
METHOD FOR OBTAINING BRIGHT FINISH GALVANIZING COATING ON WIRE

William L. James, and Alex P. Wonso, both of Homewood, Ill., assignors to Fennell Corporation, Harvey, Ill.

Division of Ser. No. 910,185, May 30, 1978. This application Mar. 7, 1979, Ser. No. 18,302
Int. Cl.[2] C23C *1/02*
U.S. Cl. 427—224 2 Claims

1. A method for obtaining a bright finish on a galvanized wire, comprising : quenching the wire while the zinc coating is still in a molten condition, including passing molten zinc coated wire through a water quenching bath substantially immediately following passage of the wire through a molten zinc galvanizing bath while substantially preventing water from said water quenching bath from leaking into the zinc

bath, and heating the zinc coated wire by passing the wire through the flame of a burner intermediate the zinc bath and



water quenching bath for maintaining the zinc coating in a molten condition until the wire enters the water quenching bath.

4,202,919

PROCESS FOR MANUFACTURING PROTEIN-CONTAINING ARTIFICIAL LEATHER

Margherita Cavallo, Monfalcone, Italy, assignor to Etablissement Chemiaro, Mauren, Liechtenstein

Continuation of Ser. No. 768,870, Feb. 15, 1977, abandoned. This application May 3, 1978, Ser. No. 902,368

Claims priority, application Switzerland, Feb. 20, 1976, 2139/76

Int. Cl.[2] **B05D** *5/00, 3/02;* **B32B** *27/40*

U.S. Cl. 427—245 **12 Claims**

1. A process for manufacturing artificial leather from animal waste, comprising the following steps;

(a) preparing a colloidal solution of a protein substance of collagenic origin by water solvating limed, but neutralised, untanned tannery flesh, slaughterhouse waste or mixtures thereof in hot water;

(b) deeply soaking a synthetic support of good porosity, and of known type, with said solution of collagenic substance, and condensing and cross-linking said collagenic substance on the synthetic support fibres by the simple action of cross-linking agents; and

(c) tanning the support thus soaked by using the known tanning processes of natural hide tanning technology.

4,202,920

CYANOACETIC ACID DERIVATIVES AS EPOXY RESIN CURING AGENTS

Alfred Renner, Münchenstein, and Werner Margotte, Lupsingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 24, 1978, Ser. No. 954,945

Claims priority, application Switzerland, Oct. 25, 1977, 12966/77

Int. Cl.[2] **C08G** *59/40, 59/44;* **C08L** *63/00*

U.S. Cl. 427—386 **22 Claims**

1. A process for the production of a cured shaped article, based on epoxide resins, which comprises reacting at elevated temperature an epoxide resin with a curing agent selected from the group consisting of cyanoacetonitrile or a compound of the formula (I)



(I)

wherein R is an amino group, a substituted or unsubstituted hydrazino group or a radical obtained by the removal of an amine hydrogen or hydroxyl hydrogen from an amine or a monohydric to tetrahydric alcohol with a partial molecular weight of 2,000 or less and n is 1 to 4.

4,202,921

PROCESS FOR THE PREPARATION OF ROPE AND SPRING WIRE OF CARBON STEEL WITH AN IMPROVED CORROSION RESISTANCE

Per Enghag, Garphyttan, Sweden, assignor to Aktiebolaget Garphytte Bruk, Garphyttan, Sweden

Continuation of Ser. No. 660,923, Feb. 24, 1976, abandoned. This application Nov. 8, 1978, Ser. No. 958,546

Int. Cl.[2] **C23C** *1/02, 1/04*

U.S. Cl. 427—406 **3 Claims**

1. In a two-step dipping process for the preparation of corrosion-resistant carbon steel wire the first step of which (melt No. 1) is a conventional hot-dip galvanizing in a first bath of zinc, the improved second step which comprises treating the wire from the first bath in a second bath of a molten alloy composition (melt No. 2) consisting essentially of 2 to 40% by weight of zinc and at least one of the alloying elements of the group consisting of Sn, Cd, Al, Pb, Cu, Si, and Ni, at least one of the alloying elements Sn and Cd being present in said alloy composition, at a temperature of not less than 30° C. and not more than 75° C. above the liquidus temperature for the alloy composition of said second bath, and wherein the alloying elements Pb, Cu, Ni, and Si may be present in amounts ranging up to 10%, 2%, 2%, and 0.10% by weight respectively.

4,202,922

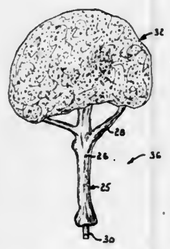
SIMULATED VEGETATION PRODUCT

David L. Osment, 9904 W. 70th Ter., Shawnee Mission, Kans. 66203

Division of Ser. No. 611,903, Sep. 10, 1975, Pat. No. 4,082,586. This application Jan. 23, 1978, Ser. No. 871,392

Int. Cl.[2] **A41G** *1/00*

U.S. Cl. 428—18 **3 Claims**



1. A simulated vegetation product comprising:

a layer of non-ferrous, light-penetrable, fibrous substrate, said substrate being characterized by the ability to be pulled and stretched over the limbs of an artificial tree structure;

and

a non-ferrous, leaf-simulating material comprising ground rubber-like foam particles partially covering and adhered to said substrate.

4,202,923

DRAWING LAYER FOR PLASTIC FILMS

Klaus Thoese, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 860,850

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2656925

Int. Cl.[2] **B32B** *1/00, 3/00*

U.S. Cl. 428—144 **5 Claims**

1. In a drawing layer for a plastic film, in particular for a polyester film, said drawing layer being adherent to the film and comprising a cellulose ester crosslinked by a formaldehyde resin, and including a matt-finishing agent and/or a pigment, the improvement which comprises that the drawing layer is adherent to the film by means of an adhesive layer composed of polymeric material, said drawing layer additionally containing about 5 to 50% by weight, based on the weight of the cellulose ester, of at least one copolymer containing maleic anhydride units having unchanged anhydride groups.

4,202,924

HIGH IMPACT RESISTANT COATED ARTICLES

Walter G. De Witt, III, Southhampton, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 352,157, Apr. 18, 1973, abandoned. This application Oct. 20, 1977, Ser. No. 844,012

Int. Cl.[2] **B32B** *3/00, 7/14*

U.S. Cl. 428—201 **4 Claims**

1. A wood, metal or plastic substrate coated with the composition comprising an acrylic solution polymer polymerized from a monomer system comprising one or more lower alkyl methacrylates and acrylates and having a molecular weight of about 30,000 to 250,000 and a Tg above 65° F., a solvent therefor, and a compatible acrylic polymer having a Tg less than −20° F. comprising a poly(butyl acrylate), wherein the weight ratio of said acrylic solution polymer to said compatible acrylic polymer is about 10:1 to 1:10.

4,202,925

PAPER SURGICAL TAPE

Winifred C. Dabroski, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Apr. 4, 1978, Ser. No. 893,373

Int. Cl.[2] **B32B** *7/00;* **C09J** *7/02*

U.S. Cl. 428—219 **10 Claims**

1. A surgical adhesive tape which includes a pressure sensitive adhesive mass coated on one side of a saturated paper, said paper (1) being saturated with from 20 to 75 parts per hundred parts paper of an acrylic polymer having a T_g of less than 20° C., and (2) comprising a mixture of randomly dispersed woodpulp and thermoplastic fibers, said woodpulp comprising from about 10 to 75% by weight of the paper, and said woodpulp and thermoplastic fibers ranging in length, on the average, from about ¼ to ¾ of an inch and said thermoplastic fibers being selected from the group consisting of polyamide, polyester, polypropylene and polyethylene fibers and a backsize coated on the other side of said paper.

4,202,926

POLYMER CURING SYSTEM

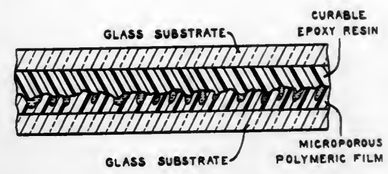
Rostyslaw Dowbenko, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 347,985, Apr. 4, 1973, Pat. No. 3,907,623. This application Jun. 13, 1975, Ser. No. 586,824

Int. Cl.[2] **B32B** *3/26, 5/18*

U.S. Cl. 428—304 **9 Claims**

1. A polymeric film containing a plurality of open, discrete voids, said voids having located therein a polymer curing agent.



9. An adhesive bonding system according to claim 8 wherein said microporous polymeric film comprises an epoxy resin.

4,202,927

MAGNETIC RECORDING MEDIUM

Nobutaka Yamaguchi; Satoru Takayama, and Masaki Fujiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 836,710, Sep. 26, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,258

Claims priority, application Japan, Sep. 29, 1976, 51-116026

Int. Cl.[2] **H01F** *10/00*

U.S. Cl. 428—323 **12 Claims**

1. A magnetic recording medium consisting of a support base having a surface roughness of at most 0.33 micron;

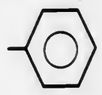
a magnetic recording layer having a Young's modulus of at least 5×10^{10} dyne/cm^2 and being provided on one side of the base; and

a back-coating layer provided on the other side of the base in an amount of 0.2 to 500 mg/m^2, said back-coating layer consisting of a quaternary ammonium salt represented by the general formula:

$$[R_1R_2R_3R_4N]^+X^-$$

wherein

$R_1=R_2=H$, CH_3, C_2H_5, C_3H_7, C_4H_9 or



$R_3=-CH_2CH_2OH$ or $-CH_2CH_2CH_2OH$;

$R_4=C_nH_{2n+1}CONH(C_mH_{2m})-$ or

$C_nF_{2n+1}CONH(C_mH_{2m})-$

wherein n=6-24 and m=2-6; and

X=F, Cl, Br, I, $\frac{1}{2}SO_4$, NO_3, NO_2, ClO_4 or CrO_3.

4,202,928

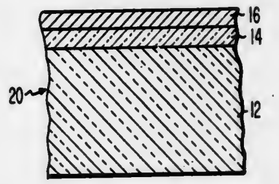
UPDATEABLE OPTICAL STORAGE MEDIUM

David L. Staebler, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,514

Int. Cl.[2] **B32B** *17/06;* **G01D** *15/34*

U.S. Cl. 428—446 **12 Claims**



1. In an optical storage medium comprising a transparent substrate and a light sensitive layer overlying said substrate, the improvement wherein the light sensitive layer is a layer of

amorphous silicon between about 500 angstroms and 5000 angstroms thick which is deposited onto said substrate from a glow discharge and which contains information stored in the form of a pattern of regions with increased optical absorption.

4,202,929

PRODUCTION OF NON-STICK COATINGS

Armand de Montigny; Hans Toepsch, and Werner Büchner, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Atkiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,316

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748421

Int. Cl.[2] **C08G** *47/02;* **B32B** *9/04*

U.S. Cl. 428—452 **3 Claims**

1. In the production of a coated thin substrate having a reduced tendency to adhere by applying to the substrate a solvent-containing mixture comprising (A) an α,ω-polyorganosiloxanediol, (B) an organosiloxane containing Si-H groups, (C) an alkyl- or alkenyl-triacetoxysiloxane, (D) an organic isocyanate with more than two isocyanate radicals and (E) a hardening catalyst, and then heating the substrate to harden the coating, the improvement which comprises including in the mixture applied to the substrate a reaction product (F) of a chloromethylpolymethylsiloxane of the formula

$$ClCH_2(CH_3)_2Si[OSi(CH_3)CH_2Cl]_nOSi(CH_3)_2Cl$$

wherein n is from 2-about 200, with at most an equivalent molar amount of a primary alkyl, alkenyl or cycloalkyl amine with about 4–18 carbon atoms.

4,202,930

LANTHANUM INDIUM GALLIUM GARNETS

Milan R. Kokta, San Diego, Calif.; Robert C. Linares, Warren Township, Somerset County, and Michael A. Di Giuseppe, Succasunna, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 876,820, Feb. 10, 1978, abandoned. This application Sep. 13, 1978, Ser. No. 941,891

Int. Cl.[2] **C04B** *35/40;* **H01F** *1/00;* **C01F** *17/00*

U.S. Cl. 428—539 **7 Claims**

1. A congruently melting composition of a lanthanum indium gallium garnet having the formula

$$La_aIn_bGa_cO_{12}$$

where "a" ranges from greater than about 3.24 to less than 3.32, "b" ranges from greater than about 1.84 to less than about 2.24 and "c" ranges from greater than about 2.48 to less than about 2.88, the total "a" plus "b" plus "c" being 8.

4,202,931

SUPERCONDUCTING ARTICLES OF MANUFACTURE AND METHOD OF PRODUCING SAME

Lawrence R. Newkirk, Los Alamos, and Flavio A. Valencia, Santa Fe, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

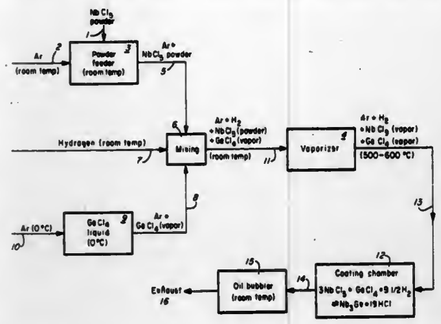
Filed Sep. 23, 1974, Ser. No. 508,586

The portion of the term of this patent subsequent to Feb. 1, 1994, has been disclaimed.

Int. Cl.[2] **B05D** *5/12*

U.S. Cl. 428—662 **8 Claims**

1. A process for forming a bulk coating of Nb_3Ge bonded to a copper substrate which comprises (a) uniformly entraining $NbCl_5$ powder in an argon gas stream, (b) forming a stream of argon gas and $GeCl_4$ vapor, (c) mixing said streams together and with hydrogen in a molar ratio which on the coreduction of said $NbCl_5$ and $GeCl_4$ by said hydrogen produces Nb_3Ge, (d) heating the resulting gas mixture containing said entrained $NbCl_5$ powder to a temperature of 400° to 600° C., (e) flowing the resulting heated gas-vapor mixture over said copper substrate, and (f) heating said copper substrate and said gas-vapor



mixture to a temperature greater than 650° C. to chemically vapor deposit Nb_3Ge on said copper substrate.

4,202,932

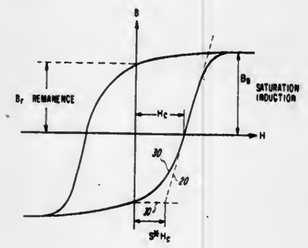
MAGNETIC RECORDING MEDIUM

Tu Chen, Saratoga, and George B. Charlan, San Jose, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 927,068, Jul. 21, 1978. This application Oct. 16, 1978, Ser. No. 952,023

Int. Cl.[2] **G11B** *7/24;* **H01F** *1/06;* **B32B** *15/04*

U.S. Cl. 428—667 **6 Claims**



1. A magnetic recording medium of relatively magnetically isotropic thin metallic film on a support, said film comprising a metallic alloy of cobalt and either rhenium, ruthenium or osmium or an admixture thereof.

4,202,933

METHOD FOR REDUCING FUEL CELL OUTPUT VOLTAGE TO PERMIT LOW POWER OPERATION

Carl A. Reiser, Glastonbury, and Michael B. Landau, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 13, 1978, Ser. No. 951,421

Int. Cl.[2] **H01M** *8/04*

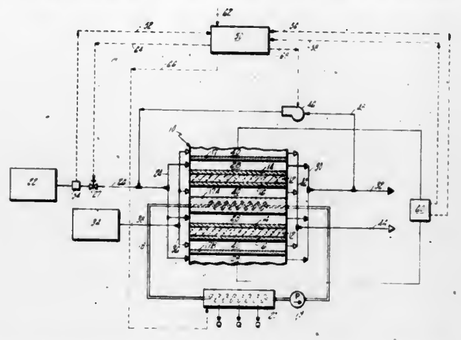
U.S. Cl. 429—13 **6 Claims**

1. In a method for permitting the lowering of the power output of a plurality of fuel cells when the average cell voltage at a present actual power output is at the maximum permitted, wherein the fuel cells are connected electrically in series and each cell includes an anode and a cathode wherein air as the oxidant is fed to the cathodes via a common manifold and hydrogen as the fuel is fed to the anodes and both the anode and cathode exhaust streams are continuously vented, and wherein means is provided to recycle a portion of the cathode exhaust stream to the cathodes, the steps of:

(1) comparing the desired power output to the actual power output and, if the desired power output is less than the actual power output, increasing the cathode exhaust stream recycle rate to lower the average cell voltage;

(2) decreasing the actual power output until the desired power output or the maximum permitted voltage is reached, whichever occurs first;

(3) comparing again the desired power output to the actual power output and, if the desired power output is still less



than the actual power output, increasing the oxygen utilization of the cells by decreasing the rate of air flow to the cells to lower the average cell voltage; and

(4) repeating steps (2) and (3) until either the actual power output equals the desired power output or until a maximum allowable oxygen utilization is reached.

4,202,934

NOBLE METAL/VANADIUM ALLOY CATALYST AND METHOD FOR MAKING

Vinod M. Jalan, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 3, 1978, Ser. No. 922,005

Int. Cl.[2] **H01M** *4/86*

U.S. Cl. 429—40 **28 Claims**

1. A method for making a finely divided alloy of noble metal and vanadium comprising the steps of:

reacting an aqueous solution of a vanadium compound with sodium dithionite to form a sol of a finely dispersed vanadium sulfite complex; and

reacting finely divided unalloyed noble metal particles with said complex by intimately contacting the noble metal particles with the complex and heating to a sufficiently high temperature in at least a locally reducing environment to thermocatalytically reduce said complex and at the same time form a finely divided alloy of the noble metal and vanadium.

22. An electrochemical cell comprising a cathode electrode, said electrode including a catalyst comprising a noble metal-vanadium alloy, said alloy having a catalytic activity for the reduction of oxygen greater than the catalytic activity of the noble metal in unalloyed form, said cell including phosphoric acid electrolyte.

4,202,935

DEFERRED ACTION DRY CELL BATTERY

Alexander R. Malcolm, Five Hamiltonian Apartments, Middlesex, N.J. 08846

Filed Apr. 23, 1979, Ser. No. 32,358

Int. Cl.[2] **H01M** *6/00*

U.S. Cl. 429—48 **21 Claims**

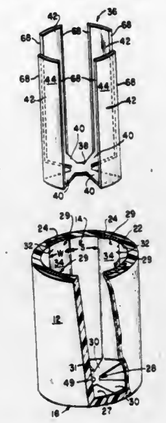
1. A battery, comprising:

a casing;

a pair of electrode means positioned within said casing, said electrode means being spaced from each other so as to form a chamber therebetween;

an electrolyte contained in said chamber; and

shield means movable relative to one of said electrode means for shielding said one electrode means from said electrolyte when said shield means is in a first position relative to said one electrode means and for exposing said one electrode means to said electrolyte when said shield means is in a second position relative to said one electrode means, said shield means being permanently and completely



maintained within said chamber during the movement of said shield means from said first position to said second position.

4,202,936

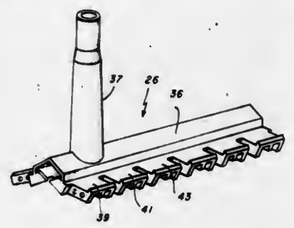
STORAGE BATTERIES OF THE LEAD-ACID CLASS AND METHODS OF MAKING AND OPERATING SAME

Roy A. Gulmond, Holden; Nanci W. Reed, Sudbury, and John E. Gulliksen, Shrewsbury, all of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Filed Oct. 10, 1978, Ser. No. 949,890

Int. Cl.[2] **H01M** *2/00*

U.S. Cl. 429—163 **18 Claims**



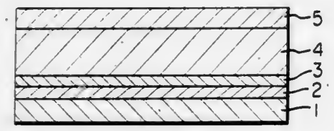
1. In a storage battery of the lead-acid class including positive and negative plate means having respective grid structures, the grid structure of the positive plate means comprising a top bar, post means, and a plurality of spaced apart current collecting spines joined to the top bar, active material, retaining means for locating the active material around the spines, and said positive and negative plate means being supported in an electrolyte body within a container, that improvement which consists of a grid complement formed of a chemically inert material impermeable to the electrolyte, said grid complement having a top bar enclosure, a sleeve portion, and spine-engaging portions formed integrally with the top bar enclosure, and said top bar enclosure and spine-engaging portions comprising depending parts arranged to extend around the top bar and portions of the said spines at their points of joinder with the top bar thereby to overlie positive grid surfaces which are not in contact with the active material.

4,202,937

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING NO FATIGUE EFFECT

Tadaji Fukuda, Toride; Isamu Kajita, Yokohama; Teruo Misumi, Toride; Hideyo Kondo, Toride, and Nobuo Kitajima, Toride, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1977, Ser. No. 797,817
Claims priority, application Japan, May 27, 1976, 51-62134
Int. Cl.² G03G 5/08, 5/082
U.S. Cl. 430—58 14 Claims



1. An electrophotographic photosensitive member which exhibits no fatigue effect and which comprises an inorganic crystalline charge injection layer, a subsidiary charge injection layer overlaid on and in electrical contact with said charge injection layer, a photoconductive layer overlaid on and in electrical contact with said subsidiary charge injection layer and an electrically insulating layer overlaid on said photoconductive layer; said subsidiary charge injection layer being composed of an amorphous semiconductor selected from the group consisting of Se and Se-containing alloys, having a lower free charge density than that of said photoconductive layer and being able to make it easy to inject an amount of electric charge from the charge injection layer into the photoconductive layer; said charge injection layer having a higher free charge density and a lower dark resistance than those of said photoconductive layer, having a maximum dark resistance of 1×10 ohm-cm and serving as a main supply source of the electric charge to be injected into the photoconductive layer; and said photoconductive layer being composed of an amorphous semiconductor selected from the group consisting of Se and Se-containing alloys.

4,202,938

PROCEDURE FOR THE QUANTITATIVE DETERMINATION OF HYDROGEN PEROXIDE CONCENTRATION IN AQUEOUS SOLUTIONS

Rainer Haeckel, and Fritz Heinz, both of Hanover, Fed. Rep. of Germany, assignors to Human Gesellschaft mbH für Biotopanalytic und Biotopschutz, Fed. Rep. of Germany

Continuation of Ser. No. 673,700, Apr. 5, 1976, abandoned. This application Dec. 6, 1977, Ser. No. 857,907
Int. Cl.² G01N 31/14
U.S. Cl. 435—10 7 Claims

1. In a procedure for the rapid quantitative determination of hydrogen peroxide concentration in a biological medium in an aqueous solution containing other substances which occasionally or frequently cause interference reactions, a process for accurately making such determination without encountering such interference, which process comprises (a) reacting the hydrogen peroxide in the aqueous solution in the presence of the catalyst catalase with ethanol in a manner to cause the formation of acetaldehyde, (b) simultaneously in the same reaction medium reacting the latter in the presence of an aldehyde dehydrogenase as a catalyst, with the oxidized form of nicotinamide-adenine-dinucleotide (NAD) or nicotinamide-adenine-dinucleotide-phosphate (NADP) in a manner to reduce said oxidized form to produce a reduced form identifiable as NADH or NADPH, and (c) determining the concentration of said reduced form in said biological medium aqueous solution.

4,202,939

GLUCOAMYLASE IMMOBILIZED ON CATIONIC COLLOIDAL SILICA

Nancy J. Mueller, Lyons, and Dennis J. Holik, Naperville, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Sep. 1, 1977, Ser. No. 829,690
Int. Cl.² C12D 13/04; C07G 7/02
U.S. Cl. 435—96 8 Claims

1. An insoluble active enzyme consisting essentially of a complex of a soluble starch hydrolyzing enzyme and an agglomerated cationic colloidal silica.

4,202,940

GLUCAN AND A PROCESS FOR THE PRODUCTION THEREOF USING ELSINOE

Akira Misaki, 5-21,0 Kanno-cho, Nishinomiya-shi, Hyogo, Japan; Shigeo Takaya, Shizuoka, Japan; Koji Yokobayashi, Okayama, Japan, and Yoichi Tsuburaya, Sakai, Japan, assignors to Director-Gen. of the Tea Experiment Station, Ministry of Agriculture and Forestry Japanese Government, Shizuoka; Misaki, Akira and Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, all of, Japan

Division of Ser. No. 864,015, Dec. 23, 1977. This application Sep. 21, 1978, Ser. No. 944,302
Claims priority, application Japan, Dec. 31, 1976, 51/157935
Int. Cl.² C12P 19/04; C12R 1/645
U.S. Cl. 435—101 2 Claims

1. A process for producing elsinan, a glucan consisting essentially of repeating units of [3)—Glc—(4→4)—Glc—(1→4)—Glc—(1→] (wherein Glc represents alpha-D-glucopyranose residue), comprising cultivating microorganisms of genus Elsinoe, capable of producing the elsinan on a nutrient medium containing sucrose to produce the elsinan, and separating and recovering the elsinan therefrom.

4,202,941

GLYCEROL OXIDASE AND PROCESS FOR THE PRODUCTION THEREOF AND METHOD FOR THE QUANTITATIVE DETERMINATION OF GLYCEROL BY GLYCEROL OXIDASE

Osamu Terada; Takayuki Uwajima; Akira Mihara; Kazuo Aisaka, all of Machida; Hiroko Akita, Yokohama; Toshiaki Nagai, and Yoshiaki Shimizu, both of Sunto, all of Japan, assignors to Kyowa Hakko Kogyo, Co. Ltd., Japan

Filed Apr. 19, 1978, Ser. No. 897,695
Claims priority, application Japan, Apr. 19, 1977, 52-44146
Int. Cl.² C07G 7/028; G01N 31/14
U.S. Cl. 435—190 9 Claims

1. Glycerol oxidase characterized by its ability to oxidize glycerol in the presence of oxygen to form hydrogen peroxide and glyceraldehyde.

4,202,942

DESTRUCTION BY FERMENTATION OF 2-KETOGLUCONATE IN THE PRESENCE OF 2-KETOGULONATE

Donald A. Kita, Essex; John W. Gagne, Norwich, and Dennis M. Fenton, Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 20, 1978, Ser. No. 926,262
Int. Cl.² C12B 1/00
U.S. Cl. 435—262 2 Claims

1. A process for destroying 2-ketogluconate in a mixture containing 2-ketogulonate and said 2-ketogluconate which comprises contacting said mixture with a growing culture of *Pseudomonas fluorescens strain ATCC* 13430 in an aqueous nutrient medium and continuing the fermentation until said 2-ketogluconate is substantially destroyed.

4,202,943

RESOLUTION OF A RACEMATE

Yasuji Suhara; Hiromi Maruyama, both of Yokohama; Sayuri Itoh, Yokosuka, and Kazuteru Yokose, Urayasu, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 839,525, Oct. 5, 1977, abandoned. This application Jul. 12, 1978, Ser. No. 923,842
Claims priority, application Switzerland, Oct. 12, 1976, 12875/76
Int. Cl.² C12P 13/04
U.S. Cl. 435—280 9 Claims

1. A process for the resolution of racemic DL-N-benzyloxycarbonyl-2-(p-hydroxyphenyl)-glycine comprising enzymatically treating said racemate with Actinomycete of the genus Streptomyces capable of effecting the asymmetric cleavage of this racemate to convert the racemte to D-N-benzyloxycarbonyl-2-(p-hydroxyphenyl)-glycine and L-p-hydroxyphenlyglycine.

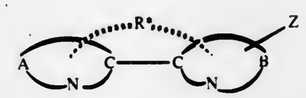
4,202,944

SELECTIVE ION EXCHANGE RESINS WITH PYRIDYL-IMIDAZOLYL CHELATING FUNCTIONAL GROUPS

Robert D. Hancock, Germiston; Roy F. Bond, Johannesburg, and Brian R. Green, Weltevreden Park Extension 9, all of South Africa, assignors to National Institute for Metallurgy, Randburg, South Africa

Filed Sep. 7, 1978, Ser. No. 940,457
Claims priority, application South Africa, Sep. 7, 1977, 77/5398
Int. Cl.² B01D 15/04; C08F 26/06
U.S. Cl. 521—32 7 Claims

1. An ion exchange resin having functional groups of the formula:



wherein:

A and B, independently of each other, represent groups forming together with the attached carbon and nitrogen atoms, an optionally substituted five or six membered heterocyclic ring independent of each other and selected from the group consisting of optionally substituted pyridyl, imidazole and imidazolyl groups; R* may be totally absent or it may represent an optionally substituted alkyl radical and Z represents a resin to which the functional groups are attached.

4,202,945

PHENOLIC FOAM MATERIALS AND METHOD OF MAKING SAME

Franklyn J. Leinhardt, 1248 Wiltshire Rd., York, Pa. 17407

Filed Apr. 3, 1979, Ser. No. 26,664
Int. Cl.² C08J 9/14
U.S. Cl. 521—121 16 Claims

1. A foamable composition for use in preparing foamed phenolic materials comprised of a water soluble phenol-formaldehyde resole, an acid catalyst, a foaming agent mixture containing a low boiling fluorocarbon, a surface active agent and an aliphatic polyhydric alcohol, and a cell structure control agent comprised of from about 12 to 15% water soluble inorganic salt and about 10 to 15% ammonium lignin sulfonate, both by weight relative to the weight of said phenol-formaldehyde resole.

4,202,946

FIRE RETARDANT POLYURETHANES PREPARED FROM HYDROXY SUBSTITUTED AMINOMETHANEPHOSPHONATES

Curtis P. Smith, Cheshire, and Henri Ulrich, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

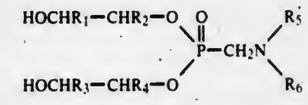
Division of Ser. No. 786,690, Apr. 11, 1977, Pat. No. 4,112,014, which is a continuation of Ser. No. 634,136, Nov. 21, 1975, abandoned. This application Jun. 28, 1978, Ser. No. 919,962
Int. Cl.² C08G 18/14
U.S. Cl. 521—169 5 Claims

1. A fire retardant polyurethane which comprises the product of reaction of

(i) an organic polyisocyanate;

(ii) a polyol having an equivalent weight from about 90 to about 2000 and a functionality of from 2 to 6; and

(iii) an O,O'-bis(hydroxyalkyl) N,N-di(lower-alkyl-)aminomethanephosphonate having the following formula :



wherein R_1, R_2, R_3, and R_4 are each independently selected from the class consisting of hydrogen and lower-alkyl, and R_5 and R_6 each independently represent lower-alkyl.

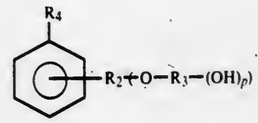
4,202,947

POLYURETHANE FOAM PREPARED FROM GRAFT COPOLYMERS OF VINYL MONOMERS AND UNSATURATED POLYOLS CONTAINING ALKENYL ARYL CONSTITUENTS

Frank J. Preston, Madison, and Kiran B. Chandalia, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 783,354, Mar. 31, 1977, Pat. No. 4,140,667. This application Nov. 13, 1978, Ser. No. 960,365
Int. Cl.² C08G 18/14
U.S. Cl. 521—174 19 Claims

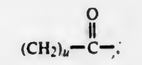
1. In a polyurethane foam prepared from a reaction mixture comprising an organic polyisocyanate, a foaming agent, and a polyol reactant, the improvement comprising preparing said foam using a polyol reactant comprising a graft copolymer prepared by polymerizing an ethylenically unsaturated monomer or a mixture of such monomers in a polyol comprising an alkenyl aryl polyol of the formula:



wherein:

R_4 represents straight or branched chain alkenyl of 2 to 10 carbons;

R_2 represents lower alkyl of 1 to 4 carbons, or



where u is an integer from 0 to 3;

p is an integer from 2 to 5; and $—O—R_3—(OH)_p$ represents a residue of a polyether or polyester polyol, $R_3(OH)_{p+1}$, wherein R_3 represents a polyether or polyester chain, said polyol having an average equivalent weight ranging from

about 250 to 5000, after removal of one hydroxy hydrogen therefrom.

4,202,948

IMPACT-RESISTANT THERMOPLASTIC COMPOSITION BASED ON GRAFT COPOLYMER

Warren J. Peascoe, Woodbridge, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,643
Int. Cl.² C08L 51/06
U.S. Cl. 525—70 **2 Claims**

1. A thermoplastic graft copolymer composition characterized by high impact strength and high resistance to failure from flexing comprising a blend of two separately prepared copolymer compositions (A) and (B);

(A) being a soft, rubbery graft copolymer formed by simultaneous graft copolymerization of:

(a) monoethylenically unsaturated resin-forming monomeric material; and

(b) a rubbery polymer spine consisting essentially of a copolymerizate of ethylene, propylene and 5-ethylidene-2-norobornene, the amount of said resin-forming monomeric material (a) grafted to the rubbery spine (b) being sufficient to provide a weight ratio of grafted resin to rubbery spine of at least 0.2;

(B) being a resinous polymer separately prepared in the absence of the rubbery copolymer (b) by polymerization of monoethylenically unsaturated resin-forming monomeric material;

wherein:

the monomeric material (a) is a mixture of styrene and acrylonitrile in weight ratio of 80/20 to 65/35, the rubbery copolymer (b) is a terpolymer of ethylene, propylene and 5-ethylidene-2-norbornene in which the ratio of ethylene to propylene is within the range from 80/20 to 20/80, the Mooney viscosity of (b) is from 55 to 78 ML-4 at 257° F. and the iodine number of (b) is from 15 to 40, the amount of (a) being about 50% based on the weight of (a) plus (b), the separately prepared resin (B) is a copolymer of styrene and acrylonitrile in weight ratio of 80/20 to 65/35 having an intrinsic viscosity in dimethylformamide at 30° C. of at least 0.65, the amount of (B) in the blend being sufficient to provide an over-all ratio of resin to rubber in the range from 80/20 to 75/25, the said blend having a notched Izod impact strength greater than 5 foot-pounds per inch of notch, an average resistance to hand flexure greater than 2, an ultimate tensile strength of at least 3,600 psi, a Rockwell R hardness of about 85 to 105, a percent gloss of from about 20 to 95, and a die swell of about 1.23 to 1.52.

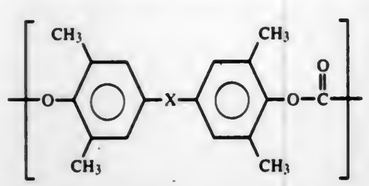
4,202,949

BRANCHED SEGMENT POLYMERS

Manfred Beck, Odenthal; Jochen Schnetger, Odenthal-Hoeffe; Volker Serini, Krefeld, and Gottfried Pampus, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,814
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712230
Int. Cl.² C08L 25/10, 69/00
U.S. Cl. 525—92 **7 Claims**

1. A process for the preparation of a thermoplastic elastomer wherein 0.2–250 moles of an anion of a branched aromatic vinyl/diene block polymer having a vinyl block molecular weight of 5,000 to 500,000 and a diene block molecular weight of 10,000 to 1,000,000 is reacted per mole of an aromatic polycarbonate of molecule weight 10,000 to 200,000 or with a mixture of aromatic polycarbonates wherein at least 50% of the linear chains of the polycarbonate or mixture of polycarbonates consist of structural units corresponding to the Formula (1) having molecular weight 10,000 to 200,000



(1)

in which X represents a C_1–C_5-alkylene or C_1–C_5-alkylindene radical.

4,202,950

PROCESS FOR PREPARING POLYURETHANE ELASTOMERS

Gary L. Statton, Wallingford, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 646,119, Jan. 2, 1976, abandoned. This application Sep. 16, 1977, Ser. No. 833,950
Int. Cl.² C08L 75/00
U.S. Cl. 525—123 **9 Claims**

1. A process of preparing polyurethane elastomers having improved physical properties comprising graft copolymerizing an ethylenically unsaturated monomer selected from the group consisting of styrene, esters of acrylic or methacrylic acid in which the alcohol portion of the ester contains 1 to 18 carbon atoms, vinyl esters and mixtures of these onto a liquid hydroxyl-containing butadiene polymer having a number average molecular weight of about 400 to 25,000 and 1.8 to 3 hydroxyl groups per molecule and reacting the resulting graft copolymer with a polyfunctional isocyanate at an isocyanate to total reactive hydrogen group ratio of about 0.8:1 to 1.5:1.

4,202,951

BRANCHED POLYPHENYLENE-POLYPHENYLENE SULFIDE BLENDS

Chen-Shen Wang, Naperville, Ill., and Sandra K. Koster, Aiken, S.C., assignors to Standard Oil Company of Indiana, Chicago, Ill.

Continuation of Ser. No. 736,388, Oct. 28, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,573
Int. Cl.² C08L 65/02
U.S. Cl. 525—416 **10 Claims**

1. A moldable blended polyphenylene composition exhibiting superior heat aging properties comprising about 40 to 99 wt. % branched polyphenylene containing at least 8 wt. % benzene ring structures which are at least trisubstituted and nonfused and about 1 to 60 wt. % polyphenylene sulfide.

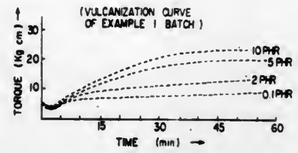
4,202,952

METHOD OF VULCANIZING BROMOBUTYL RUBBER WITH AMINO ACIDS

Masao Onizawa, Kunitachi, Japan, assignor to Sanyo Trading Co., Ltd., Tokyo, Japan

Division of Ser. No. 625,874, Oct. 24, 1975, abandoned. This application Nov. 14, 1977, Ser. No. 851,590
Claims priority, application Japan, Oct. 29, 1974, 49-124031; Oct. 2, 1975, 50-118242
Int. Cl.² C08C 19/22; C08F 8/32
U.S. Cl. 525—374 **3 Claims**

1. A method of vulcanizing bromobutyl rubber which comprises incorporating a vulcanizing amount of at least one amino acid selected from the group consisting of arginine, lysine, hydroxylysine, ornithine, cystine, asparagine, glutamine and citrulline into bromobutyl rubber, and subjecting the resultant mixture, which does not contain any sulfur, sulfur-donor, zinc oxide, lead oxide or vulcanization accelerator, to vulcanization.



4,202,953

PROCESS FOR THE PRODUCTION OF POLYOLEFINS

Kazuo Matsuura, Kawasaki; Nobuyuki Kuroda, Yokohama; Takeichi Shiraishi, Kawasaki, and Mitsuji Miyoshi, Naka, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 594,244, Jul. 9, 1975, abandoned, which is a continuation of Ser. No. 427,725, Dec. 26, 1973, abandoned. This application Jan. 25, 1979, Ser. No. 6,431
Claims priority, application Japan, Dec. 28, 1972, 48/3578; Mar. 20, 1973, 48/31363
The portion of the term of this patent subsequent to Nov. 9, 1993, has been disclaimed.
Int. Cl.² C08F 4/02, 10/02
U.S. Cl. 526—125 **5 Claims**

1. A process for the production of polyolefins which comprises polymerizing or copolymerizing olefins at a temperature of 20°–300° C. and a pressure of atmospheric to 70 kg/cm² in the presence of a catalyst resulting from:

(a) reacting a magnesium dihalide anhydride with an aluminum compound of the general formula:

$$Al(OR)_nX_{3-n}$$

where R is an alkyl, aryl and/or aralkyl group, X is a halogen atom, and n is an integer between 1 and 3, at temperatures ranging between 20° and 400° C., in a molar ratio of magnesium dihalide to aluminum compound ranging between 1:0.001 to 1:20, thereby forming a carrier;

(b) contacting a transistion metal compound with said carrier to be supported thereon at a temperature of 50° to 300° C., wherein said transition metal compound is selected from the group consisting of titanium compounds and vanadium compounds which are liquid under the treatment conditions, and are used in amounts of 0.1 to 50 times the amount of the carrier, and

(c) activating the same with use of an organo-metal compound of a metal of the Groups I to IV of the Periodic Table.

4,202,954

CONTINUOUS SOLUTION POLYMERIZATION PROCESS

Jean-Marie Massoubre, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Division of Ser. No. 723,514, Sep. 15, 1976, which is a division of Ser. No. 639,373, Dec. 10, 1975. This application Sep. 29, 1978, Ser. No. 947,004
Claims priority, application France, Dec. 23, 1975, 74 42810
Int. Cl.² C08F 4/48
U.S. Cl. 526—181 **4 Claims**

1. A process for the continuous solution homopolymerization or copolymerization in a hydrocarbon solvent, initiated by an organolithium initiator, of at least one conjugaged diene or of at least one conjugated diene with at least one vinyl aromatic compound in at least one reactor in which the monomers in solution in a hydrocarbon solvent are introduced continuously and from which the solution of homopolymers or copolymers formed and of unreacted monomers is also removed continuously, characterized by the fact that the polymerization reaction is carried out in a reactor of the open type at a temperature of 20° C. to 110° C. and in the presence of a deactivating system which inhibits the formation of gels and which comprises a termination agent which deactivates living macromolecules, said termination agent being a heavy alcohol of the formula $C_nH_{2n+1}OH$ with $n \geq 4$ or the corresponding carboxylic acid; the components of the deactivating system and the initiator being present in amounts such that the ratio of the deactivation velocities of the living macromolecules to the propagation velocity of the polymerization reaction is between 1×10^{-5} and 5×10^{-3}.

4,202,955

COPOLYMERS OF CYCLIC CONJUGATED DIENES AND MALEIC ANHYDRIDE

Norman G. Gaylord, New Providence, N.J., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 641,215, Dec. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 470,705, May 16, 1974, abandoned. This application Dec. 8, 1977, Ser. No. 858,757
Int. Cl.² C08F 220/08
U.S. Cl. 526—272 **1 Claim**

1. A process for the preparation of saturated 2:1 copolymers of maleic anhydride and a cyclic conjugated diene said diene selected from the group consisting of cyclopentadiene and methylcyclopentadiene, which comprises heating maleic anhydride and said diene in the presence of a free radical precursor selected from the group consisting of peroxides, peresters and hydroperoxides, at a reaction temperature at which the free radical precursor has a half life of no more than two hours.

4,202,956

THIXOTROPIC ISOCYANATE-TERMINATED PREPOLYMERS AND USE IN THE PREPARATION OF POLYURETHANE COATING COMPOSITIONS

James D. Taylor, Flat Rock, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 13, 1978, Ser. No. 959,675
Int. Cl.² C08G 18/63, 18/14; B32B 5/20
U.S. Cl. 528—75 **8 Claims**

1. Liquid thixotropic isocyanate-terminated prepolymers prepared by the reaction of (a) a polyarylene polyalkylene polyisocyanate or diphenylmethane diisocyanate with (b) a graft polyol prepared by the in situ polymerization in the presence of a free radical catalyst of from 10 percent to 30 percent by weight of a mixture of from 55 percent to 75 percent by weight of styrene and from 45 percent to 25 percent by weight of acrylonitrile in from 90 percent to 70 percent by weight of a polyol containing from 0.05 mole to 3.0 moles of unsaturation per mole of polyol.

4,202,957

THERMOPLASTIC POLYURETHANE ELASTOMERS FROM POLYOXYPROPYLENE POLYOXYETHYLENE BLOCK COPOLYMERS

Henry W. Bonk, Wallingford, Conn., and Tilak M. Shah, S-Hertogenbosch, Netherlands, assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 504,183, Sep. 9, 1974, abandoned. This application Apr. 29, 1975, Ser. No. 572,741
Int. Cl.² C08G 18/48
U.S. Cl. 528—77 **14 Claims**

1. A thermoplastic, recyclable polyurethane elastomer which is the product of reaction of

(a) 4,4'-methylenebis(phenyl isocyanate),

(b) a polyoxypropylene polyoxyethylene block copolymer having a molecular weight in the range of about 1000 to 3000, a pH within the range of 4.5 to 9, a primary hy-

droxyl content of not less than 50 percent and a content of alkali metal ion not greater than 25 ppm, said block copolymer having a minimum content of ethylene oxide (E.O.) residues for any given molecular weight (MW) corresponding to:

$$\% \text{ E.O.} = \left[\left(\frac{MW - 900}{4}\right) \times 3\right] \times \left[\frac{100}{MW}\right]$$

(c) an extender consisting of from 75 to 100 percent, on an equivalent basis, of a member selected from the class consisting of aliphatic straight chain diols having from 2 to 6 carbon atoms, inclusive, and the bis(2-hydroxyethyl)ethers of hydroquinone and resorcinol, and mixtures thereof and from 25 to 0 percent by equivalents of a member selected from the class consisting of (i) branched chain aliphatic diols from 3 to 6 carbon atoms, (ii) diethylene glycol and dipropylene glycol, (iii) polyethylene glycols having a molecular weight from 200 to 1500, (iv) polycaprolactone diols having a molecular weight from 500 to 3000, (v) polypropyelene glycols having a molecular weight from 400 to 1000, (vi) polytetramethylene glycols having a molecular weight from 650 to 1500 and (vii) mixtures of two or more of said diols or glycols;

the molar proportions of said block copolymer (b) to said extender (c) being within the range of about 1:1 to 1:12, and the ratio of equivalents of isocyanate to total equivalents of hydroxyl groups being within the range of about 1:0.96 to about 1:1.10.

4,202,958

PROCESS FOR THE PREPARATION OF POLYOLEFINS USING A REDUCED VANADIUM HALIDE CATALYST

Kazuo Yamaguchi, Fujisawa; Toru Tanaka, Komae; Shigeaki Okano, Yamato; Nobuo Enokido, Tokyo, and Masatoshi Suzuki, Fujisawa, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Dec. 28, 1977, Ser. No. 865,196
Claims priority, application Japan, Jan. 24, 1977, 52/6511
Int. Cl.² C08F *4/68*
U.S. Cl. 526—142 **6 Claims**

1. A process for the preparation of an ethylene homopolymer or copolymer which comprises polymerizing, at room temperature to 200° C., more than 90 wt% of ethylene and less than 10 wt% of other α-olefin by using a catalyst comprising (1) a solid catalyst component separated from a reduced reaction mixture obtained by reducing an organic solvent solution of a halogen-containing compound of vanadium with an organic aluminum compound in the presence of an ether represented by the general formula $R^1—O—R^2$, wherein R^1 and R^2 are hydrocarbon groups of 1 to 12 carbon atoms, R^1 and R^2 being independent or bound together to form a ring, at −60° to 90° C., wherein said ether is used in an amount of 0.1 to 100 moles per mole of said halogen-containing compound of vanadium and (2) an organic aluminum compound.

4,202,959

SULFITE-MODIFIED FIBROUS RESINOUS MATERIAL

Richard G. C. Henbest, and Kenneth McGregor, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, England

Filed Dec. 5, 1977, Ser. No. 857,972
Claims priority, application United Kingdom, Dec. 8, 1976, 51199/76
Int. Cl.² B32B *27/02, 27/42*; C08G *12/12, 12/32*
U.S. Cl. 528—254 **1 Claim**

1. An amino-formaldehyde resin selected from the group consisting of urea-formaldehyde, melamine formaldehyde and mixtures thereof, the said resin being in fiber form and containing 0.2 to 15 moles of sulphite radicals per 100 moles of $—CH_2—$ derived from formaldehyde.

4,202,960

THERMOSETTING AROMATIC RESINS AND THERMOSTABLE POLYMERS DERIVED THEREFROM

Guy Rabilloud, Grenoble; Bernard Masson, Poisat; Pierre Giuliani, and Bernard Sillion, both of Grenoble, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Sep. 16, 1977, Ser. No. 834,026
Claims priority, application France, Sep. 17, 1976, 76 28408
Int. Cl.² C08G *61/02*
U.S. Cl. 528—271 **34 Claims**

1. A process for the preparation of a thermostable, infusible, insoluble polymer, comprising the steps of:

(i) reacting meta-terphenyl with acetyl chloride and aluminum chloride under such conditions as to form oligomers;

(ii) separating an organic phase oligomer-containing composition comprising components having a molecular weight of about from 300 to 5000, said composition having a softening temperature from about 80° to 400° C. and a predominant fraction of the contained oligomers having a substantially higher percentage of combined percentages of carbon plus hydrogen than the combined percentages of carbon plus hydrogen in diacetyl meta-terphenyl; and

(iii) heating the resulting composition to a sufficient temperature and for a sufficient time in the presence of an acid catalyst to yield said thermostable, infusible, insoluble polymer.

4,202,961

TRANSPARENT POLYAMIDE FROM AROMATIC DICARBOXYLIC ACID AND DISUBSTITUTED DECANE DIAMINE

Josef Pfeifer, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 26, 1978, Ser. No. 954,808
Claims priority, application Switzerland, Oct. 28, 1977, 13148/77
Int. Cl.² C08G *69/26*
U.S. Cl. 528—324 **11 Claims**

1. A transparent moldable polyamide which is obtained by polycondensing a mixture of essentially stoichiometric amounts of terephthalic acid, or of an amide-forming derivative thereof, and a diamine of the formula I

$$H_2N—\underset{\displaystyle R_1}{\underset{|}{CH}}—(CH_2)_n—\underset{\displaystyle R_2}{\underset{|}{CH}}—NH_2 \quad (I)$$

(a) with 10 to $(n\times2.5)+7.5$ percent by weight of an ω-aminocarboxylic acid of the formula II

$$H_2N—R_3—COOH \quad (II)$$

or of the corresponding lactam, or

(b) with 10 to $(m+p/2\times2.5)+7.5$ percent by weight of a mixture of essentially stoichiometric amounts of a dicarboxylic acid of the formula III

$$HOOC—R_4—COOH \quad (III)$$

and a diamine of the formula IV

$$H_2N—R_5—NH_2 \quad (IV),$$

or of the equivalent amount of a mixture of essentially stoichiometric amounts of an amide-forming derivative of a dicarboxylic acid of the formula III and a diamine of the formula IV, wherein the weight percentages as defined relate to the sum of all the reaction components, and wherein

R_1 and R_2 independently of one another are cycloalkyl which has 4–12 C atoms and which can be substituted by alkyl,

R_3 is alkylene having 5–11 C atoms,
R_4 is alkylene having 4–10 C atoms, and
R_5 is alkylene having 6–12 C atoms, and wherein
n is equal to the number of C atoms in the radical R_3,
m is equal to the number of C atoms in the radical R_4, and
p is equal to the number of C atoms in the radical R_5.

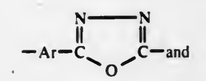
4,202,962

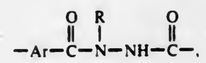
FIBERS OF ARYLENE OXADIAZOLE/ARYLENE N-ALKYLHYDRAZIDE COPOLYMER

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 739,165, Nov. 5, 1976, and a continuation-in-part of Ser. No. 886,317, Mar. 13, 1978, abandoned, which is a division of Ser. No. 520,503, Nov. 4, 1974, Pat. No. 4,115,503, which is a continuation-in-part of Ser. No. 390,667, Aug. 22, 1973, abandoned, and a continuation-in-part of Ser. No. 442,041, Dec. 5, 1973, abandoned, and a continuation-in-part of Ser. No. 202,590, Nov. 26, 1971, abandoned, and a continuation-in-part of Ser. No. 202,669, Nov. 26, 1971, abandoned. This application Jan. 15, 1979, Ser. No. 3,174
Int. Cl.² C08G *73/08*
U.S. Cl. 528—363 **7 Claims**

1. A fiber of a copolymer consisting essentially of recurring units of the formulas


(I)


(II)

wherein Ar is arylene and R is lower alkyl and wherein the mole ratio of units (I) to units (II) is between 20:80 and 95:5, said fiber being characterized in having a tenacity ranging from 8.5 to 30 grams per denier and a modulus ranging from 150 to 625 grams per denier.

4,202,963

VULCANIZATION SYSTEM FOR THIODIETHANOL-BASED ELASTOMERS

Rudolf A. Behrens, Gladstone, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 5, 1979, Ser. No. 17,655
Int. Cl.² C08G *75/04*
U.S. Cl. 528—374 **11 Claims**

1. A vulcanizable elastomer composition comprising a mixture of (1) a vulcanizable elastomer of thiodiethanol, (2) sulfur, and (3) an aliphatic linear, branched chain, or cyclic polyamine selected from the group consisting of (A) polyethyleneamines represented by the formula (I):

$$H—HN\ CH_2CH_2]_nNH_2 \quad (I)$$

wherein n is an integer from 1 to about 10; (B) complex reaction mixtures of polyethyleneamines, boiling above the boiling point of diethylenetriamine, (C) salts of polyethyleneamines with organic acids having a dissociation constant less than about 10^{-3}; and (D) mixtures thereof; said vulcanizable elastomer of thiodiethanol being a copolymer represented by the formula (II):

$$H—OG]_mOH \quad (II)$$

wherein —OG— comprises randomly alternating structural units selected from:

(E) structural units (III) and (IV)

$$—OC_2H_4SC_2H_4— \quad (III)$$

$$—OR— \quad (IV)$$

or (F) structural units (III), (IV), and (V)

$$—OR'— \quad (V)$$

wherein R is one or more radicals remaining on removal of two hydroxyl groups from:

(a) saturated aliphatic linear, branched chain or cyclic diols, or

(b) aliphatic linear, branched chain or cyclic diols containing external unsaturation having an allylic hydrogen atom;

wherein R' is one or more radicals which remain on removal of two hydroxyl groups from a diphenolic compound; said copolymers comprising structural units (E) and (F) being characterized in that:

(1) m is an integer sufficient to provide in said copolymer an average molecular weight of at least 8000;

(2) the molar ratio of (III) to (IV), when said copolymer comprises structural units (E), or the molar ratio of (III) to the total of (IV) and (V) when said copolymer comprises structural units (F), being not less than 1:1; and

(3) containing from about 1 to 10 mole percent of said diol (b), based on the total of all units (III), (IV), and (V) present in said copolymer.

4,202,964

METHOD FOR REDUCING OLIGOMERIC CYCLIC ETHER CONTENT OF A POLYMERIZATE

Gerfried Pruckmayr, Media, Pa., and Ivan M. Robinson, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 887,332, Mar. 16, 1978, abandoned. This application Nov. 27, 1978, Ser. No. 962,311
Int. Cl.² C08G *65/30*
U.S. Cl. 528—482 **8 Claims**

1. A method for reducing the oligomeric cyclic ether content of a tetrahydrofuran/alkylene oxide polymerizate, the method comprising bringing the polymerizate into contact, at a temperature of 60°–150° C., with 0.5–25% , by weight of the polymerizate, of a cationic ion exchange resin bearing $—SO_3H$ groups, insoluble in the reaction medium, for a time sufficient to significantly reduce the oligomeric cyclic ether content of the polymerizate.

4,202,965

METHOD FOR ISOLATING SOLID POLYARYLENE ESTER FROM ITS ORGANIC SOLVENT SOLUTION

Senzo Shimizu, Odawara; Isao Nomura, and Masahiro Harada, both of Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 945,068
Claims priority, application Japan, Sep. 26, 1977, 52-115376
Int. Cl.² C08G *63/72, 63/74*
U.S. Cl. 528—499 **10 Claims**

1. A method for isolating a polyarylene ester from a solution of the polyarylene ester in tetrahydrofuran and/or dioxane which solution is prepared by polycondensing a dihydric phenol compound and an aromatic dicarboxylic acid or its derivative, which comprises adding water to the solvent solution to form a water-containing solution, the weight ratio of water to the solvent solution being from 0.03 to 0.3, subjecting the resulting water-containing solution to an aging treatment, then precipitating substantially all of the polyarylene ester as a particulate solid from the water-containing solution, and separating the precipitated polyarylene ester from the water-containing solution.

4,202,966

GLUCAN POLYSACCHARIDE

Akira Misaki, 5-21, Kanno-cho, Nishinomiya-shi, Hyogo, Japan; Shigeo Takaya, Shizuoka, Japan; Koji Yokobayashi, Okayama, Japan, and Yoichi Tsuburaya, Sakai, Japan, assignors to Director-Gen. of the Tea Experiment Station, Ministry of Agriculture and Forestry Japanese Government, Shizuoka; Akira Misaki, Hyogo and Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, all of, Japan

Filed Dec. 23, 1977, Ser. No. 864,015
Claims priority, application Japan, Dec. 31, 1976, 51-157935
Int. Cl.[2] C08B *37/00*
U.S. Cl. 536—1 **1 Claim**

1. A glucan (elsinan) comsisting predominantly of repeating units of [3)-Glc-(1→4)-Glc-(1→4)-Glc-(1→] (wherein Glc represents alpha-D-glucopyranose residue), said glucan having a molecular weight of approximately 5,000 to approximately 10,000,000.

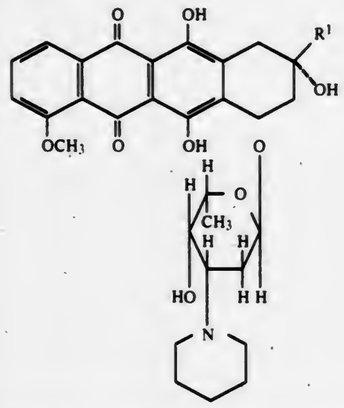
4,202,967

N,N-PENTAMETHYLENE DERIVATIVES OF DAUNOMYCIN AND ADRIAMYCIN

George L. Tong, Cupertino, Calif.; David W. Henry, Chapel Hill, N.C.; Helen Y. Wu, San Jose, and Thomas H. Smith, San Carlos, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Oct. 2, 1978, Ser. No. 947,463
Int. Cl.[2] C07H *15/24*
U.S. Cl. 536—17 A **5 Claims**

1. Compounds of the formula



wherein R^1 is selected from the group consisting of —$COCH_3$, —$CHOHCH_3$, —$COCH_2OH$ and —$CHOHCH_2OH$ and the pharmaceutically acceptable acid addition salts of said compounds.

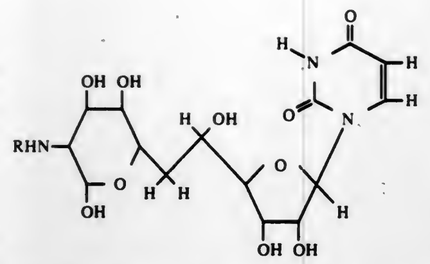
4,202,968

NEW TUNICAMINE DERIVATIVES AND THEIR PREPARATION

Gakuzo Tamura, Tokyo, and Akira Takatsuki, Ichikawa, both of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,448
Claims priority, application Japan, Jul. 6, 1977, 52-79819
Int. Cl.[2] C07H *17/00*
U.S. Cl. 536—23 **3 Claims**

1. A tunicamine derivative of the formula:



(I)

wherein R represents hydrogen or a fatty acid residue of the formula $(CH_3)_2CH(CH_2)_nCH{=}CHCO$—where n represents an integer of 8 to 11 inclusive.

4,202,969

METHOD OF PRODUCING NITROGEN-CONTAINING POLYSACCHARIDES

Saburo Ueno, Ichigayadai; Chikao Yoshikumi, Kunitachi; Fumio Hirose, Tokyo; Yoshio Omura, Tanashi; Toshihiko Wada, Mibu; Takayoshi Fujii, Tokyo, and Eiichi Takahashi, Kawaguchi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,992
Claims priority, application Japan, Jul. 7, 1976, 51-80664
Int. Cl.[2] C07H *1/08*
U.S. Cl. 536—1 **3 Claims**

1. A method of producing a nitrogen-containing polysaccharide which comprises:
   (a) extracting *Coriolus versicolor* (Fr.) Quél. with an aqueous alkaline solution having a concentration within the range of from 0.01 to 2.0 N at a temperature of from 50° to 100° C.;
   (b) neutralizing the resultant extract and including an alkaline salt therewith at a concentration of at least 0.4 M/l, whereby the molecular shape of said polysaccharide is rendered more spherical; and
   (c) subjecting the thus-spherically modified polysaccharide to ultrafiltration through a membrane as a molecular seive under a pressure of at least 0.5 kg/cm^2, whereby portions of the mixture having a molecular weight of less than 5000 are removed therefrom.

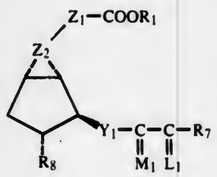
4,202,970

11-DEOXY-TRANS-4,5-DIDEHYDRO-PGI$_1$ COMPOUNDS

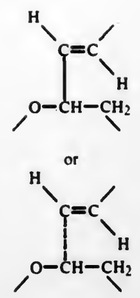
Donald E. Ayer, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 821,542, Aug. 3, 1977. This application Aug. 31, 1978, Ser. No. 938,549
Int. Cl.[2] C07D *307/93*
U.S. Cl. 542—426 **63 Claims**

1. A prostacyclin analog of the formula



wherein Y_1 is trans—CH=CH—, cis—CH=CH—, or —CH_2CH_2—;
wherein Z_2 is

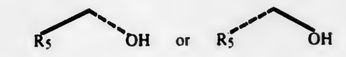


(1)

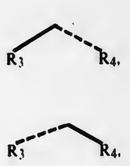
or

(2)

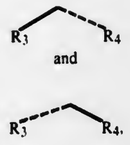
wherein Z_1 is
(1) —$(CH_2)_g$—CH_2—CH_2—, or
(2) —$(CH_2)_g$—CH_2—CF_2—,
wherein g is the integer zero, one, or 2;
wherein R_8 is hydrogen or hydroxymethyl;
wherein M_1 is



wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive,
wherein L_1 is

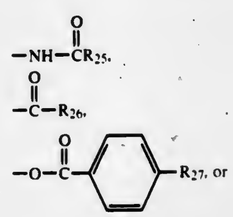


or a mixture of



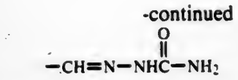
and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



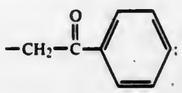
(a)
(b)
(c)

-continued

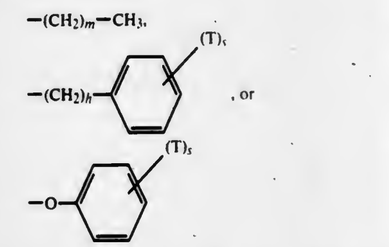


(d)

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is methyl, phenyl, —NH_2, or methoxy; and R_{27} is hydrogen or acetamido, inclusive; phenacyl, i.e.,



phenacyl substituted in the para position by chloro, bromo, phenyl, or benzamido; or a pharmacologically acceptable cation;
wherein R_7 is



(1)
(2)
, or
(3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

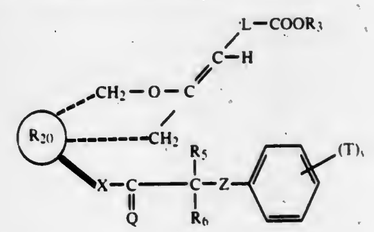
4,202,971

ENLARGED-HETERO-RING PROSTACYCLIN ANALOGS

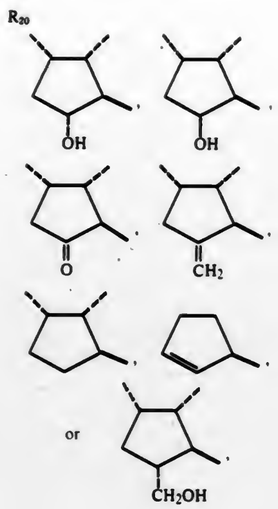
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 935,291, Aug. 21, 1978, which is a division of Ser. No. 819,941, Jul. 28, 1977, Pat. No. 4,124,599, which is a continuation-in-part of Ser. No. 725,547, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,771, Aug. 23, 1976, abandoned. This application Feb. 15, 1979, Ser. No. 12,263
Int. Cl.[2] C07D *311/94*
U.S. Cl. 542—426 **17 Claims**

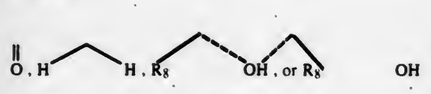
1. A 5Z compound of the formula



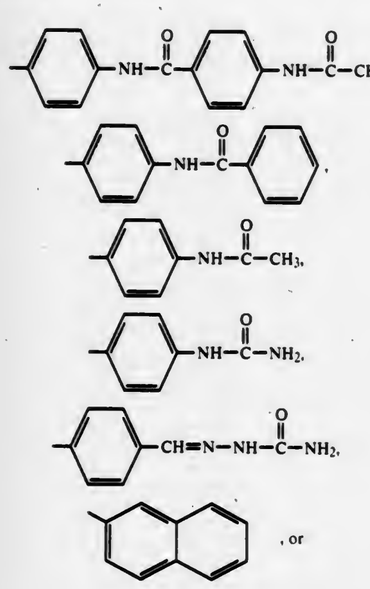
wherein R_{20} is



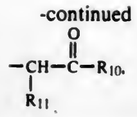
wherein L is
(1) $-(CH_2)_d-C(R_2)_2-$
(2) $-CH_2-O-CH_2-Y-$ or
(3) $-CH_2CH=CH-$
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$ or $-(CH_2)_2-$,
wherein Q is



wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_3 is (a) cycloalkyl of 3 to 10 carbon atoms, inclusive, (b) aralkyl of 7 to 12 carbon atoms, inclusive, (c) phenyl, (d) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,



-continued



(k)

wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl; wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_fC_{2f} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the phenyl ring;
wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and
wherein X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $-CH_2CH_2-$;
including the lower alkanoates thereof.

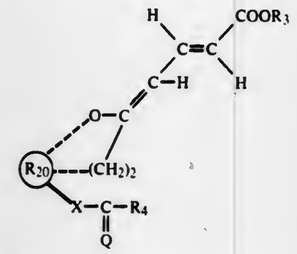
4,202,972

Δ^2-PROSTACYCLIN ANALOGS

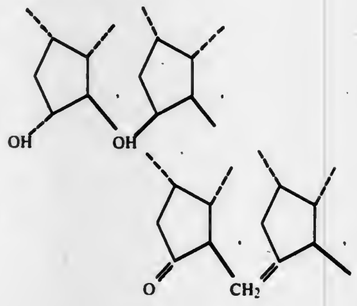
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Aug. 23, 1978, Ser. No. 936,295
Int. Cl.² C07D *311/02*
U.S. Cl. 542—426 **32 Claims**

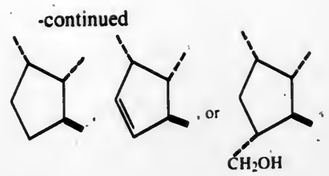
1. A 4Z compound of the formula



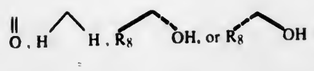
wherein (R_{20}) is



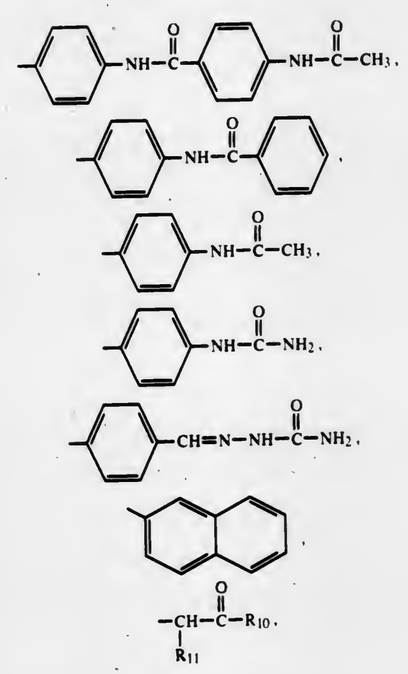
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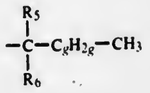
wherein
Q is



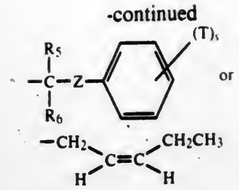
wherein
R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein
R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,



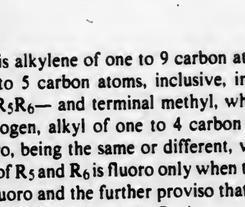
wherein
R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or (n) a pharmacologically acceptable cation;
wherein
R_4 is



-continued



(2)



(3)

wherein
C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—);
wherein
Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the phenyl ring;
wherein
T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and
wherein
X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $-CH_2CH_2-$;
including the lower alkanoates thereof.

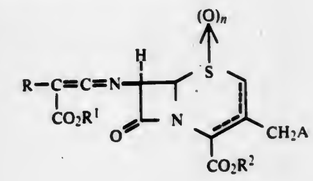
4,202,973

KETENIMINE CEPHALOSPORINS

Andrew W. Taylor, Dorking; George Burton, Sutton, and John P. Clayton, Horsham, all of England, assignors to Beecham Group Limited, England

Filed Jun. 27, 1977, Ser. No. 810,330
Claims priority, application United Kingdom, Jun. 26, 1976, 26684/76
Int. Cl.² C07D *501/18*
U.S. Cl. 544—21 **14 Claims**

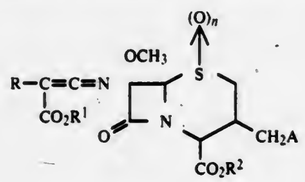
1. A ketenimine of the formula:



wherein
R is furyl, thienyl, cycloalkyl, cycloalkenyl, phenyl or phenyl substituted with from 1 to 3 members selected from the group consisting of hydroxy, halogen, nitro, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, amino and carboxy;
R^1 is alkyl of 1 to 6 carbon atoms, benzyl, phthalidyl, indanyl, phenyl, or phenyl substituted with from 1 to 3 alkyl groups of 1 to 6 carbon atoms;
R^2 is hydrogen, an in vivo hydrolysable ester group selected from the group consisting of acyloxyalkyl, alkoxycar-

bonyloxyalkyl, lactone, thiolactone and dithiolactone or a chemically hydrolysable carboxy blocking group;
A is hydrogen, pyridyl, acetoxy, carbamoyloxy, or S-Het wherein Het is diazolyl, triazolyl, tetrazolyl, thiazolyl, thiadiazolyl, thiatriazolyl, oxazolyl or oxadiazolyl, unsubstituted or substituted with one or two members selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkenyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxyalkyl, carboxyalkyl, carbamoyl, carbamoylmethyl trifluoromethyl, hydroxy and halo;
n is zero or 1; and
the dotted line represents a double bond at either the 2- or 3-position.

7. A 7α-methoxy ketenimine of the formula:



wherein
R is furyl, thienyl, cycloalkyl, cycloalkenyl, phenyl or phenyl substituted with from 1 to 3 members selected from the group consisting of hydroxy, halogen, nitro, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, amino and carboxy;
R^1 is benzyl, phthalidyl, indanyl, phenyl, or phenyl substituted with from 1 to 3 alkyl groups of 1 to 6 carbon atoms;
R^2 is hydrogen, an in vivo hydrolysable ester group selected from the group consisting of acyloxyalkyl, alkoxycarbonyloxyalkyl, lactone, thiolactone and dithiolactone or a chemically hydrolysable carboxy blocking group;
A is hydrogen, pyridyl, acetoxy, carbamoyloxy, or S-Het wherein Het is diazolyl, triazolyl, tetrazolyl, thiazolyl, thiadiazolyl, thiatriazolyl, oxazolyl or oxadiazolyl, unsubstituted or substituted with one or two members selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkenyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxyalkyl, carboxyalkyl, carbamoyl, carbamoylmethyl, trifluoromethyl, hydroxy and halo;
n is zero or 1; and
the dotted line represents a double bond at either the 2- or 3-position.

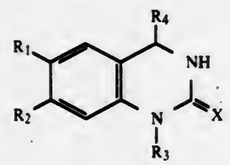
4,202,974

PROCESS FOR PREPARING 3,4-DIHYDRO-2(1H)-QUINAZOLINONE DERIVATIVES

Michihiro Yamamoto, Nishinomiya; Shigenari Katayama, Takarazauka; Masao Koshiba, Nishinomiya, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

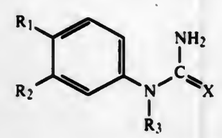
Filed Oct. 12, 1976, Ser. No. 731,574
Claims priority, application Japan, Oct. 24, 1975, 50-128578
Int. Cl.² A61K *31/505*; C07D *239/82, 491/04*
U.S. Cl. 544—251 **2 Claims**

1. A process for preparing a 3,4-dihydro-2(1H)-quinazolinone derivative of the formula,



(I)

wherein R_1 and R_2 are each hydrogen, lower alkyl, lower alkylthio or lower alkoxy, or, when taken together, R_1 and R_2 may form methylenedioxy; R_3 is lower alkyl or lower cycloalkylalkyl; R_4 is phenyl, halophenyl, lower alkoxyphenyl, lower alkylphenyl or thienyl; and X is oxygen or sulfur, which comprises reacting a compound of the formula,



(II)

wherein R_1, R_2, R_3 and X are as defined above, with a compound of the formula,

R_4—CHO (III)

wherein R_4 is as defined above, with heating under reflux in an inert solvent selected from the group consisting of benzene, toluene, xylene, chlorobenzene, dichloroethane and tetrachloroethane in the presence of hydrobromic acid, which is used in an amount of 1.0 to 0.01 molar equivalent based on the compound of formula (II).

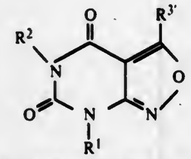
4,202,975

ISOXAZOLO[3,4-D]PYRIMIDINES

Ryuji Marumoto, Minoo; Yoshiyasu Furukawa, Toyonaka, and Kiyohisa Kawai, Nagaokakyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 782,762, Mar. 30, 1977, Pat. No. 4,129,654. This application Sep. 27, 1978, Ser. No. 946,189
Claims priority, application Japan, Apr. 5, 1976, 51-38419
Int. Cl.² A61K *31/505*; C07D *491/04*
U.S. Cl. 544—255 **7 Claims**

1. A compound of the formula



wherein R^1 and R^2, respectively, are hydrogen, lower alkyl, cycloalkyl having 5 to 7 carbon atoms, or aryl selected from the group consisting of phenyl and naphthyl which may be substituted by halogen, and $R^{3'}$ is lower alkyl or aryl selected from the group consisting of phenyl and naphthyl.

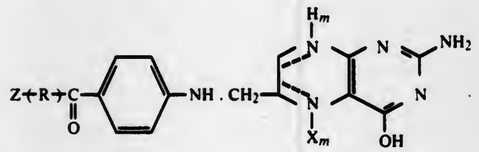
4,202,976

SELENIUM-75 LABELLED DERIVATIVES OF FOLATES

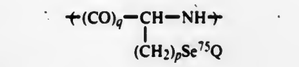
Russell J. Bayly; Virginia E. M. Chambers, and Reginald Monks, all of c/o The Radiochemical Centre, Amersham, Buckinghamshire, England

Continuation-in-part of Ser. No. 531,748, Dec. 11, 1974, Pat. No. 4,115,065. This application Nov. 21, 1977, Ser. No. 853,565
Claims priority, application United Kingdom, Sep. 11, 1973, 57433/73
Int. Cl.² C07D *475/04*
U.S. Cl. 544—261 **6 Claims**

1. A compound having the general formula (III)



where a dotted bond line indicates that the bond may be single or double, and where
X is H or —CH_3,
m is 0 or 1 (such that the adjacent nitrogen atom is trivalent), and either
(a) R is



and is attached through the nitrogen atom to the pteroyl residue where
q is 0 or 1
p is 1 or 2
Q is C_xH_{2x+1} where x is from 1 to 6
and when q is 0, Z is H and when q is 1, Z is HO, or
(b) R is

—CO.CHY.CHY.CH(COOH)NH—

and is attached through the nitrogen atom to the pteroyl residue, where Z is HO,
one group Y is —H
and the other group Y is —$Se^{75}C_xH_{2x+1}$ where x is from 1 to 6 or an ester or salt of such acid.

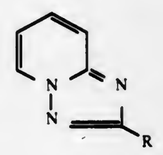
4,202,977

S-TRIAZOLO [1,5-A] PYRIDINE DERIVATIVES

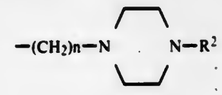
Tsutomu Irikura, Tokyo, and Seigo Suzue, Kuki, both of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,590
Int. Cl.² C07D *471/04*
U.S. Cl. 544—362 **11 Claims**

1. A compound having the formula,



wherein R represents —CH=N—R^1
(wherein R^1 represents dimethylamino) and



(wherein R^2 represents phenyl, 2-methoxyphenyl, benzyl, 2-chlorobenzyl and 2-pyridyl, and n represents 3 and 5), and the acid addition salts thereof.

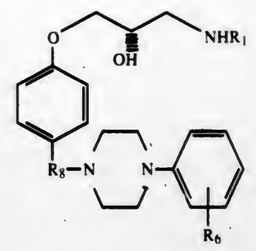
4,202,978

(S)-1-[2-(4-(2-HYDROXY-S-(1-ALKYLAMINOPROPOXY)-PHENYLALKYL]-4-PHENYLPIPERAZINES

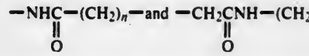
Kenneth E. Fahrenholtz, Bloomfield; Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, and Jefferson W. Tilley, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 8, 1978, Ser. No. 875,966
Int. Cl.² A61K *31/495*; C07D *295/08, 295/14*
U.S. Cl. 544—393 **26 Claims**

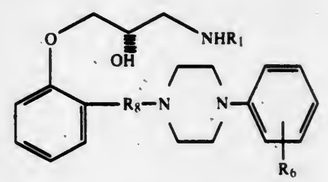
1. The compounds of the formulae



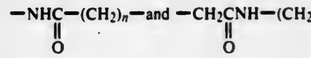
wherein R_1 is lower alkyl; R_8 is selected from the group consisting of —O—$(CH_2)_n$-wherein n is 2 to 20,



and R_6 is selected from the group consisting of hydrogen or lower alkoxy, and



wherein R_1 is lower alkyl; R_8 is selected from the group consisting of —O—$(CH_2)_n$-wherein n is 2 to 20,



and R_6 is selected from the group consisting of hydrogen or lower alkoxy, the racemates thereof and the pharmaceutically acceptable salts thereof.

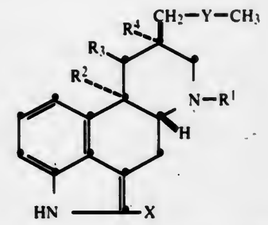
4,202,979

6-ETHYL(OR ALLYL)-8-METHOXYMETHYL OR METHYLMERCAPTOMETHYLERGOLINES AND RELATED COMPOUNDS

Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 875,978, Feb. 8, 1978, and Ser. No. 2,515, Jan. 11, 1979. This application Jan. 11, 1979, Ser. No. 2,514
Int. Cl.² C07D *457/02*; A61K *31/48*
U.S. Cl. 546—67 **5 Claims**

1. A compound of the formula



wherein Y is O, SO, SO_2 or S, R^1 is ethyl, or allyl, X is H, Cl or Br and R^2, R^3 and R^4 when taken singly are hydrogen, and

R^2 and R^3, and R^3 and R^4, when taken together with the carbon atoms to which they are attached, form a double bond, and pharmaceutically-acceptable acid addition salts thereof.

4,202,980

PROCESS FOR THE PREPARATION OF 1-HYDROXYAPORPHINE-DERIVATIVES

Johannes Hartenstein, Stegen-Wittental, and Gerhard Satzinger, Denzlingen, both of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

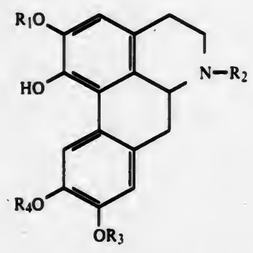
Filed Dec. 19, 1978, Ser. No. 971,142

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757281

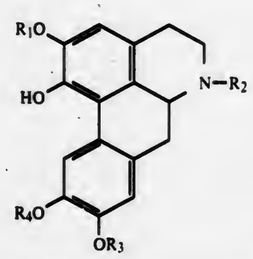
Int. Cl.² C07D *221/18*

U.S. Cl. 546—75 **9 Claims**

1. Process for the preparation of 1-hydroxy-aporphine derivatives of the general formula:



in which R_1, R_3 and R_4, which can be the same or different, are lower alkyl, aryl or aralkyl radicals or R_3 and R_4 can together form a lower alkylene bridge member and R_2 is a hydrogen atom or a lower alkyl, aralkyl or alkoxycarbonyl radical or an acyl radical derived from an aliphatic, aromatic or araliphatic carboxylic acid, wherein a tetrahydroisoquinoline compound of the general formula:



in which R_1, R_2, R_3 and R_4 have the same meanings as above, is oxidised in the presence of a strong acid with at least an equivalent amount of vanadyl chloride.

4,202,981

SUBSTITUTED -6,7,8,9-TETRAHYDRO-PYRIDO- AND 2H-PYRANO [2,3-B][1,8]NAPHTHYRIDINES, STABLE EFFICIENT LASER DYES

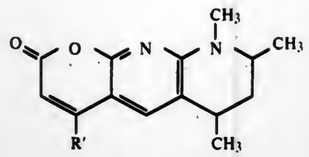
Peter R. Hammond, Livermore; Ronald A. Henry, China Lake; John A. Trias, La Mesa, and Erhard J. Schimitschek, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 20, 1978, Ser. No. 888,125

Int. Cl.² C07D *471/14, 491/14*

U.S. Cl. 546—82 **5 Claims**

1. The compounds having the structure:



wherein R' is selected from the group consisting of H and CH_3.

4,202,982

PROCESS FOR THE PREPARATION OF 14-HYDROXYMORPHINAN DERIVATIVES

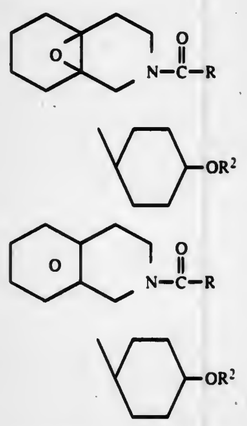
Ivo Monkovic, Candiac; Carol Bachand, Cote Ste-Catherine, and Henry Wong, Candiac, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 837,123, Sep. 28, 1977, Pat. No. 4,153,603, which is a division of Ser. No. 669,795, Mar. 23, 1976, Pat. No. 4,058,531. This application Mar. 22, 1979, Ser. No. 22,669

Int. Cl.² C07D *217/04, 491/04*

U.S. Cl. 546—89 **5 Claims**

3. The compounds having the formulas



in which R^2 is (lower)alkyl of 1 to 6 carbon atoms and R is cyclopropyl or cyclobutyl.

4,202,983

11-(LOWER-ALKOXY- AND LOWER-ALKYLTHIO-3-OXO-LOWER-ALKYL)-HEX-AHYDRO-2,6-M ETHANO-BENZAZOCINES

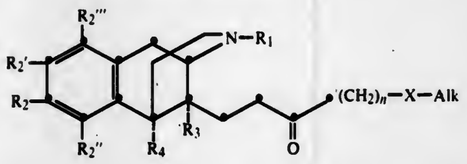
Thomas R. Lewis, Bethlehem, and William F. Michne, Poestenkill, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 886,782, Mar. 15, 1978, abandoned. This application Mar. 26, 1979, Ser. No. 23,613

Int. Cl.² C07D *221/26*

U.S. Cl. 546—97 **8 Claims**

1. A compound having the formula:



where R_1 is hydrogen, lower-alkyl, cycloloweralkyl-lower-alkyl, phenyl-lower-alkyl, lower-alkenyl or lower-alkynyl; R_2, R_2', R_2'' and R_2''' are each hydrogen, or three of them are hydrogen and the fourth is hydroxy, methoxymethoxy or lower-alkoxy; R_3 and R_4 are each hydrogen or lower-alkyl, or R_3 and R_4 together are divalent lower-alkylene, $-(CH_2)_m-$, where m is one of the integers 3 and 4; n is one of the integers from 2 to 4; X is oxygen or sulfur; and Alk is lower-alkyl; or an acid-addition salt thereof.

4,202,984

β-(HEXAHYDRO-2,6-METHANO-3-BENZAZOCIN-11-YL)PROPIONIC ACIDS, ESTERS AND AMIDES

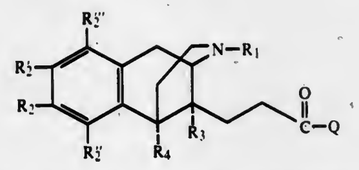
Thomas R. Lewis, Bethlehem, and William F. Michne, Poestenkill, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 886,650, Mar. 15, 1978, abandoned. This application May 4, 1979, Ser. No. 35,937

Int. Cl.² C07D *221/26*

U.S. Cl. 546—97 **21 Claims**

1. A compound having the formula



where R_1 is hydrogen, lower-alkyl, cycloloweralkyl-lower-alkyl, phenyl-lower-alkyl, lower-alkenyl or lower-alkynyl; R_2, R_2', R_2'' and R_2''' are each hydrogen, or three of them are hydrogen and the fourth is hydroxy, lower-alkoxy, methoxymethoxy or benzyloxy; R_3 and R_4 are each hydrogen or lower-alkyl, or R_3 and R_4 together are divalent lower-alkylene, $-(CH_2)_n-$, where n is one of the integers 3 or 4; and Q is hydroxy, lower-alkoxy, amino, N-lower-alkylamino, N,N-di-lower-alkylamino or N-(carbo-lower-alkoxy-lower-alkyl-)amino; or an acid-addition salt thereof.

4,202,985

IMIDAZOLYLETHOXY DERIVATIVES OF QUINOLINE-3-METHANOLS

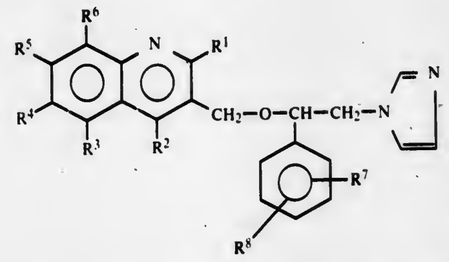
Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 25, 1978, Ser. No. 954,728

Int. Cl.² C07D *401/12, 215/12*; A61K *31/465*

U.S. Cl. 546—176 **11 Claims**

1. A compound of the formula



wherein R^1 to R^8 each is hydrogen, hydroxy, halogen, lower alkyl containing 1 to 7 carbons, lower alkoxy containing 1 to 7 carbons or lower alkylthio containing 1 to 7 carbons; and acid addition salts thereof.

4,202,986

PREPARATION OF DIPHENYLMETHANE DICARBAMATES AND POLYMETHYLENE POLYPHENYL CARBAMATES WITH LEWIS ACID CATALYSTS INTERCALATED IN GRAPHITE

Edward T. Shawl, Wallingford, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 12, 1979, Ser. No. 11,300

Int. Cl.² C07C *125/04*

U.S. Cl. 560—25 **15 Claims**

1. A process for the preparation of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates which comprises reacting an N-aryl carbamic acid ester with a carbonyl compound selected from formaldehyde, paraformaldehyde or trioxane or mixtures thereof at a temperature of from about ambient to about 170° C. in the presence of a Lewis acid having a concentration of at least 0.5 weight percent based on the total reaction mixture and intercalated in graphite in an amount of at least about 1 weight percent.

4,202,987

BIS-ANTHRANILATES

Jurgen Habermeier, Pfeffingen; Roland Moser, Basel, and Wolfgang Seiz, Pfeffingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

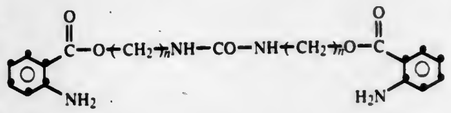
Filed Dec. 4, 1978, Ser. No. 966,424

Claims priority, application Switzerland, Dec. 9, 1977, 15121/77

Int. Cl.² C07C *101/54*; C08G *59/54*

U.S. Cl. 560—49 **4 Claims**

1. A bis-anthranilate of the formula



(1)

in which each n is the number 2, 3 or 4.

4,202,988

PROSTENOIC ACIDS AND ESTERS

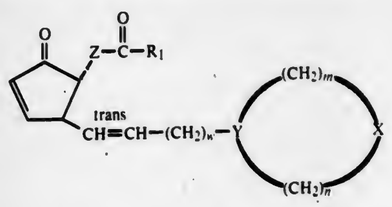
Allan Wissner, Monsey, N.Y.; Martin J. Weiss, Oradell, and Karel F. Bernady, South Sommerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 30, 1977, Ser. No. 782,851

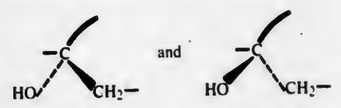
Int. Cl.² C07C *177/00*

U.S. Cl. 560—118 **47 Claims**

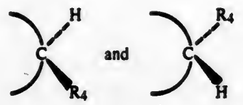
1. An optically active compound of the formula:



wherein R_1 is selected from the group consisting of hydroxy and C_1-C_6 alkoxy; Y is a trivalent radical selected from the group consisting of a moiety of the formula



X is a divalent radical selected from the group consisting of a moiety of the formula



wherein R_4 is selected from the group consisting of C_1-C_7 alkyl, hydrogen; n is zero or an integer from 1 to 4; m is zero or an integer from 1 to 4, with the proviso that the sum of n and m has the value of 2 to 4; w is zero or 1; Z is a divalent radical selected from the group consisting of a moiety of the formula $-(CH_2)_p-$, $-(CH_2)_t-O-CH_2-$, and $-(CH_2)_t-S-CH_2-$, wherein p is an integer from 5 to 7, and t is an integer from 3 to 5; the racemic mixture thereof; the mirror image thereof; and the pharmacologically acceptable cationic salts thereof when R_1 is hydrogen.

4,202,989

15-DEOXY-16-HYDROXY-16-SUBSTITUTED PROSTANOIC ACIDS AND CONGENERS

Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Garnerville, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

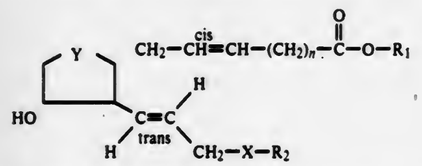
Division of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Aug. 1, 1977, Ser. No. 821,022

The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.

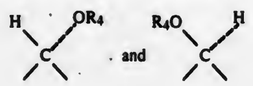
Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—118 24 Claims

1. An optically active compound of the formula:



or a racemic mixture of that formula and the mirror image thereof wherein R_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms, R_2 is selected from the group consisting of alkyl having from 2 to 7 carbon atoms optionally substituted with one or two alkyl groups each having up to 3 carbon atoms; Y is a divalent moiety selected from the group consisting of:



wherein R_4 is selected from the group consisting of hydrogen and alkanoyloxy having from 2 to 6 carbon atoms; X is a divalent moiety selected from the group consisting of:



wherein R_5 is selected from the group consisting of vinyl and cyclopropyl; n is an integer from 3 to 5, inclusive; and the pharmacologically acceptable cationic salts thereof when R_1 is hydrogen.

4,202,990

PROCESS FOR PRODUCING UNSATURATED CARBOXYLIC ACID ESTERS

Fumiki Murakami, Otake; Soichi Teshima, Yamaguchi, and Toshihiko Yokoyama, Otake, all of Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed Jan. 27, 1978, Ser. No. 872,876

Claims priority, application Japan, Feb. 10, 1977, 52/13588; May 16, 1977, 52/56115

Int. Cl.[2] C07C *67/03, 69/54*

U.S. Cl. 560—217 12 Claims

1. An ester exchange process, which comprises:

preparing an ester of an unsaturated carboxylic acid by reacting a lower alkyl ester of an α,β-unsaturated, 3-4 carbon atom carboxylic acid with an alcohol higher than the alcohol fragment of said lower alkyl ester over a catalyst selected from the group consisting of (1) chelate compounds of zirconium with at least one β-diketone compound, (2) chelate compounds of calcium with at least one β-diketone compound and (3) mixtures of said calcium and zirconium chelates by an ester exchange reaction.

4,202,991

NOVEL BICYCLOALKANE DERIVATIVES AND THE PRODUCTION THEREOF

Gerhard Sauer, Berlin; Helmut Häuser, Unna; Gregor Haffer, Berlin; Juergen Ruppert, Berlin; Ulrich Eder, Berlin, and Rudolf Wiechert, Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

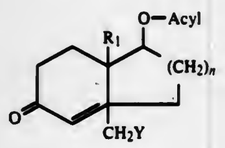
Continuation-in-part of Ser. No. 317,549, Dec. 22, 1972, Pat. No. 4,008,253. This application Dec. 27, 1976, Ser. No. 753,996

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1971, 2165320; Apr. 29, 1972, 2221704; Nov. 2, 1972, 2254175

Int. Cl.[2] C07C *69/145, 69/24*

U.S. Cl. 560—255 12 Claims

1. A bicycloalkane of the formula



wherein n is 1 or 2, R_1 is alkyl of 1-4 carbon atoms, Acyl is the acyl radical of an alkanoic acid of 1-10 carbon atoms, Y is $-S-R_2$ or $-SO_m-R_2$, wherein m is 1 or 2, and R_2 is carbocyclic aryl or carbocyclic aralkyl, each up to 12 carbon atoms.

4,202,992

PROCESS FOR PRODUCING HYDROPEROXIDES

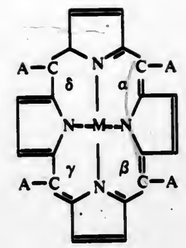
Michael E. Coltrin, Champaign, Ill., and Yulin Wu, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 3, 1978, Ser. No. 883,018

Int. Cl.[2] C07C *179/02*

U.S. Cl. 568—575 22 Claims

1. A process for producing cyclohexylbenzene hydroperoxide comprising reacting cyclohexylbenzene and oxygen in the absence of light and in the presence of at least one copper or nickel porphine complex under conditions suitable for producing said hydroperoxide, said conditions including a temperature in the range of about 25° C. to about 200° C. and a pressure in the range of about 0 psig to about 1000 psig wherein said porphine complex has the formula:



where M is Ni (II) or Cu (II), each A is individually selected from the group consisting of hydrogen, alkyl, or aryl radicals, and at least one A is an aryl radical.

4,202,993

METHOD FOR MAKING SUBSTANTIALLY ANHYDROUS ALKALI METAL BISPHENOL SALTS

Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 9, 1979, Ser. No. 37,440

Int. Cl.[2] C07C *39/16*

U.S. Cl. 568—723 5 Claims

1. A method which comprises,

(1) effecting the flash evaporation of water at a temperature in the range of up to 350° C. from a hydrate of a bisphenol salt selected from the class consisting of

(A) a material substantially free of physically associated water consisting essentially of hydrate of bisphenol alkali metal salt, and

(B) an aqueous solution or slurry resulting from the neutralization of bisphenol with a stoichiometric equivalent of an alkali metal hydroxide in the presence of water,

(2) recovering substantially anhydrous residue from the mixture of (1).

4,202,994

SUBSTITUTED 1-OXYALKYL-2,6,6-TRIMETHYL-CYCLOHEXENE DERIVATIVES, ORGANOLEPTIC USES THEREOF, SYNTHESES FOR PREPARING SAME AND INTERMEDIATES USED IN SAID SYNTHESES

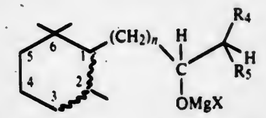
Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; Robin L. Kasper, Eatontown, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jan. 16, 1979, Ser. No. 3,905

Int. Cl.[2] C07F *3/02*

U.S. Cl. 568—824 3 Claims

1. A compound defined by the structure:



wherein one of the wavy lines is a carbon-carbon single bond and the other of the wavy lines is a carbon-carbon double bond; n is zero or 1; X is selected from the group consisting of chloro, bromo and iodo; R_4 and R_5 are each the same or different and each is selected from the group consisting of hydrogen, ethyl and methyl, with the proviso that the sum of the carbon atoms in R_4 and R_5 taken together is greater than or equal to 1 and less than or equal to 2.

4,202,995

PRODUCTION OF GLYCOLS

Alec Mee, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 27, 1979, Ser. No. 24,365

Claims priority, application United Kingdom, Mar. 31, 1978, 12662/78; Apr. 10, 1978, 13944/78

Int. Cl.[2] C07C *29/02*

U.S. Cl. 568—860 7 Claims

1. A process which comprises producing a glycol by contacting an olefin with oxygen and an aqueous solution which comprises as catalyst copper and/or iron ions, bromide ions and iodide ions, the ratio of iodide ions to bromide ions being in the range 1:1000 to 1.5.

4,202,996

HYDROCARBON ISOMERIZATION PROCESS

Lee Hilfman, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 810,323, Jun. 27, 1977, Pat. No. 4,148,759, which is a continuation-in-part of Ser. No. 684,055, May 6, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 973,306

Int. Cl.[2] C07C *5/24, 5/26*

U.S. Cl. 585—377 12 Claims

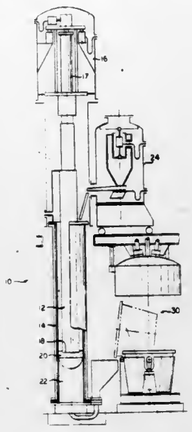
1. A process for isomerizing an isomerizable hydrocarbon which comprises contacting said hydrocarbon, at isomerization conditions, with a catalytic composite comprising a combination of a nickel component, a molybdenum component and a platinum component with a zeolite carrier material wherein said platinum component is present in an amount sufficient to result in the composite containing, on an elemental basis, about 0.2 to about 0.5 percent by weight platinum.

4,202,997

ATMOSPHERIC CONTROL OF FLUX PRE-MELTING FURNACE

Patrick J. Wooding, Moorestown, N.J., assignor to Wooding Corporation, Moorestown, N.J.

Filed Mar. 1, 1977, Ser. No. 773,263
Int. Cl.² F27D *7/06*
U.S. Cl. 13—31 R **15 Claims**



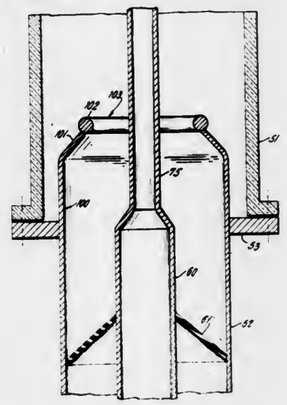
1. In a flux pre-melting furnace for use with an electroslag melting furnace wherein said pre-melting furnace includes a refractory lined crucible and a plurality of graphite electrodes adapted to be inserted into said crucible, the improvement comprising cover means for said crucible, means for creating a seal between said cover means and said crucible and means for controlling the atmosphere within said crucible by removing oxygen therefrom.

4,202,998

AIR ENTRANCE BUSHING FOR GAS-INSULATED BUS

John C. Cronin, Greensburg, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 17, 1978, Ser. No. 925,415
Int. Cl.² H01B *17/26;* **H02G** *15/22*
U.S. Cl. 174—31 R **9 Claims**



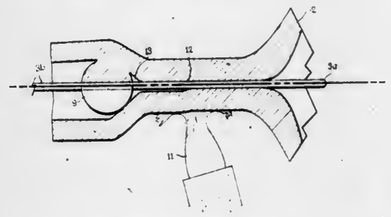
1. A gas-insulated bushing comprising, in combination:
an axially elongated hollow insulation shell filled with gas under pressure;
a conductive mounting flange fixed to one end portion of said insulation shell;
an elongated high voltage conductor extending along the axis of said insulation shell and terminating at the end of said insulation shell opposite said one end portion and being connectable to regions external of said insulation shell;
a gas-filled grounded cylindrical enclosure disposed coaxially with said insulation shell and connected to said flange; said elongated conductor having a portion thereof extending beyond said flange and into said cylindrical enclosure and along the axis of said cylindrical enclosure;
insulation support means fixed within said cylindrical enclosure supporting said elongated conductor with respect to said enclosure and with respect to said insulation shell;
and a hollow conductive shield having one end connected to said flange and to said cylindrical enclosure and being coaxial with said insulation shell and with the axis of said elongated conductor and extending from said one end of said insulation shell and into the interior of said insulation shell; the opposite end of said conductive shield having a diameter substantially smaller than either that of said one end of said shield or that of said insulation shell, the space between said opposite end of said conductive shield and said elongated conductor being filled solely with said gas, whereby the dielectric stress in said gas within said insulation shell in the annular region between said opposite end of said shield and said central conductor when said bushing is in operation is greater than the stress at any other region within said bushing.

4,202,999

FUSED SILICA LAMP ENVELOPE AND SEAL

Robert F. Holle, South Euclid, and Richard L. Hansler, Pepper Pike, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 11, 1978, Ser. No. 895,433
Int. Cl.² H01J *5/36*
U.S. Cl. 174—50.61 **14 Claims**

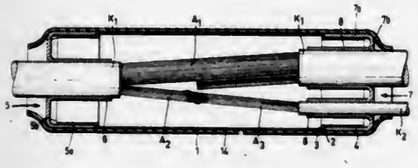


1. An inlead seal assembly comprising:
a fused silica neck extending into a bulb portion and including a passageway therethrough,
a refractory metal wire inlead extending through the passageway into the bulb portion,
a glass bead formed around said wire inlead with wetting, the glass of said bead having a coefficient of expansion intermediate those of the refractory metal and of fused silica,
the silica of the neck being collapsed around said wire inlead without wetting substantially from the bulb portion out to said glass bead, and being engaged by said glass bead with wetting of the fused silica by the glass in order to achieve a hermetic seal, the wetting engagement of glass and fused silica forming a sealing zone concentric with said hermetic seal, and an annular crevice being left between the glass bead and the silica neck on the side of the bulb portion.

4,203,000
CABLE SLEEVE ASSEMBLY

Siegfried Müller, Dahlienstr. 25, 5800 Hagen 8, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,483
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 2731578
Int. Cl.² H02G 15/08
U.S. Cl. 174—92 8 Claims



1. Cable sleeve assembly including an axially split tubular shaped metallic supporting jacket having a pair of opposite ends spaced apart in and extending transversely of the axial direction thereof, an axially extending sleeve head positioned at each of the opposite ends of said jacket, each said sleeve head including at least one axially extending tubular shaped cable inlet part located within and extending in the axial direction of said sleeve head and said supporting jacket, a metallic supporting ring positioned in each said sleeve head and each said supporting ring disposed in form-positive engagement with the adjacent transverse end of said supporting jacket, said sleeve heads including a sleeve part spaced radially outwardly from and laterally enclosing said at least one cable inlet part and said sleeve part retaining its shape while said cable inlet part is shrunk when heat is applied to said sleeve heads, and a shrunk-on plastic hose laterally enclosing said supporting jacket and said sleeve heads for connecting them together, each said cable inlet part is located within and positioned inwardly from the sleeve part of said sleeve head for laterally enclosing a cable passing through the cable sleeve assembly, wherein the improvement comprises said cable inlet part having its axis extending in generally parallel relation with the axis of the sleeve part of said sleeve head, the outer surface of said cable inlet part spaced inwardly from the inner surface of said sleeve part, means interconnecting said cable inlet part and the sleeve part of said sleeve head within which it is positioned for forming an axially extending slot open between the exterior of said sleeve part of said sleeve head and the interior of said cable inlet part for inserting a cable laterally into said cable inlet part, and said plastic shrunk-on hose having an axially extending closable slot therein said means forming said slot comprise a pair of spaced webs extending radially inwardly from said sleeve part of said sleeve head to said cable inlet part with said webs extending in the axial direction of said sleeve part and said cable inlet part and with the space between said webs forming the slot open to the interior of said cable inlet part, each of the surfaces of said webs facing the other and forming the slot has an adhesive layer thereon, and said adhesive layer being meltable when heat is applied, and means for clamping together the facing surfaces of said webs.

4,203,001
APPARATUS FOR ESTABLISHING MULTI-ADDRESS AND CONFERENCE CALL CONNECTIONS

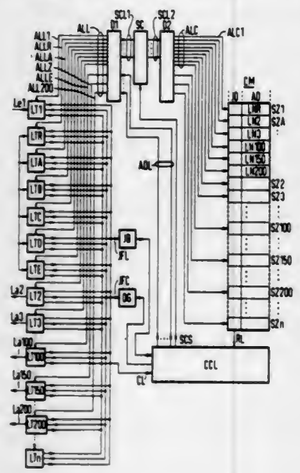
Denis M. Condon, Riverton, N.J., assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 911,720
Int. Cl.² H04L 11/00
U.S. Cl. 178—3 4 Claims

1. In a switching system of the type in which line terminators are respectively associated with the incoming and outgoing lines, wherein a connection memory is common to all line terminators and which includes a respective storage cell assigned to each line terminator which stores, for the duration of a connection, the allocation between a specified calling line terminator and a specified called line terminator, and wherein devices are provided for scanning the line terminators and for addressing the connection memory, and means for evaluating the address contained in the addressed storage cell of the connection memory to cause interconnection of the line terminators only for the purpose of transmitting a message character, the improvement therein of an arrangement for establishing multi-address connections and conference call connections, said arrangement, in combination with said switching system, comprising:

a plurality of multi-address terminators, a first of said multi-address terminators connected to the inputs of the remaining multi-address terminators for simultaneously transmitting received message characters thereto;

means for entering the address of said first multi-address



terminator in the storage cell in the connection memory assigned to a calling line terminator;

additional storage cells in the connection memory assigned to respective ones of said remaining multi-address terminators;

means for storing the addresses of the called line terminators of a multi-address call in respective ones of said additional storage cells;

scanning means, including decoding means, for scanning said line and multi-address terminators and for scanning said connection memory; and

connection control logic means connected to said line and multi-address terminators, to said scanning means and to said connection memory for controlling scanning and information transfer between calling and called terminators.

4,203,002
CODE CORRELATOR LOOP USING ARITHMETIC SYNTHESIZER

Edward J. Nossen, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 11, 1977, Ser. No. 841,058
Int. Cl.² H04L 7/08
U.S. Cl. 375—116 11 Claims

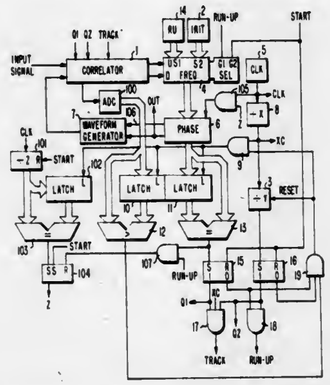
1. A circuit for synchronizing a clock signal with an iterative encoded input signal of period T comprising, in combination:

timing means for producing first timing signals;

arithmetic synthesizer means, including phase accumulator means and frequency register means, responsive to said first timing signals for producing the clock signals, said frequency register means storing a frequency number;

waveform generator means responsive to said clock signal for supplying an iterative encoded output signal having a waveform similar to said input signal but having a period different from the period of said input signal by ΔT;

correlator means for comparing said input signals with said output signals with the relation of the periods thereof being shifted by ΔT at each successive comparison to produce a succession of correlation signals and for producing modifying signals after correlation between said input signals and said output signals has been obtained;



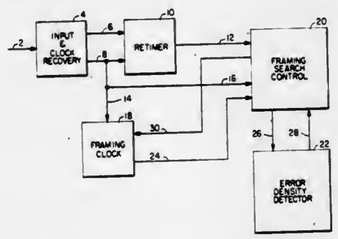
means responsive to said correlation signals for setting said phase accumulator means to a value corresponding to the largest correlation signal; and

means coupling said modifying signals to the frequency register means for changing said frequency number to maintain the clock signals and the iterative encoded output signal in synchronism with said iterative encoded input signal.

4,203,003
FRAME SEARCH CONTROL FOR DIGITAL TRANSMISSION SYSTEM

Ralph L. Kline, Los Altos, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 4, 1978, Ser. No. 965,975
Int. Cl.² H04L 7/00
U.S. Cl. 455—111 6 Claims



1. In a receiver for recovering digital information from an incoming serial bit stream containing information bits and framing bits, and including a bit clock synchronized with the bit rate of the bit stream and an error density detector, a frame search control which comprises;

a framing clock having an output terminal and an inhibit input terminal, and providing at a framing interval a pulse at said output terminal;

means for sequentially storing n bits from the incoming bit stream, having a first input terminal arranged to accept the digital information from said bit stream, a second input terminal and an output terminal;

a timing arrangement providing at an output terminal a series of n clock pulses at the bit rate following a framing interval when an in-frame condition exists said output terminal being connected to the second input terminal of said storing means whereby bits stored during the preceeding frame are read out and new bits are written in during the present frame;

a comparator having one input connected to the output of said storing means, having a second input connected to receive said bit stream, said comparator providing an error indication for each violation of the framing pattern,

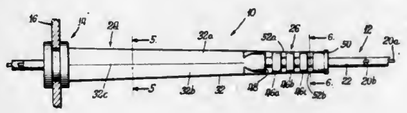
said error indication being applied to said error density detector so as to change the state of the output when an out-of-frame indication occurs, i.e., when the number of error indications at the framing interval exceeds a predetermined ratio; and

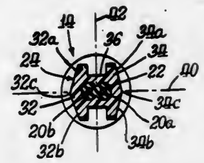
means for limiting the number of pulses in said series of clock pulses, said limiting means having an input connected to the output of said timing arrangement and being responsive to the comparator output and the state of the error density detector so as to provide a count of n when an in-frame condition exists and to increase the count by up to a predetermined number greater than n when both an error indication and an out-of-frame indication occur.

4,203,004
STRAIN RELIEF

Albert R. Cox, Centerville, Ind., assignor to Belden Corporation, Geneva, Ill.

Filed Apr. 20, 1978, Ser. No. 898,170
Int. Cl.² H01R 13/56
U.S. Cl. 174—135 17 Claims





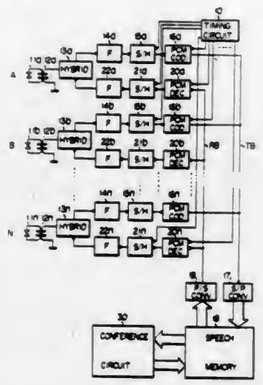
1. A strain relief for use with a cord having a major transverse axis and a minor transverse axis, said major transverse axis having greater magnitude than said minor axis, said strain relief having an axial bore adapted to receive said cord therethrough in close fitting relation therewith, said strain relief defining a head portion adapted for mounting said strain relief on a separate support plate or the like, a flexible tail portion contiguous to said head portion, and a distal end opposite said head portion, said flexible tail portion having a generally H-shaped transverse cross sectional configuration throughout substantially its full longitudinal length so as to define a transverse section modulus about said minor transverse axis which is greater in magnitude than the corresponding transverse section modulus about said major transverse axis, said transverse configuration of said flexible tail portion causing said tail portion to undergo both bending and torsion about its longitudinal axis when a cord disposed within said axial bore is subjected to a bending force tending to bend said cord about a bend axis nonparallel to its said major transverse axis.

4,203,005

DIGITAL TYPE TELEPHONE SYSTEM HAVING A CONFERENCE FUNCTION

Takeo Fukuda, and Hideaki Murayama, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 28, 1978, Ser. No. 919,917
Claims priority, application Japan, Jun. 29, 1977, 52-77576
Int. Cl.² H04M 3/56
U.S. Cl. 179—1 CN **12 Claims**



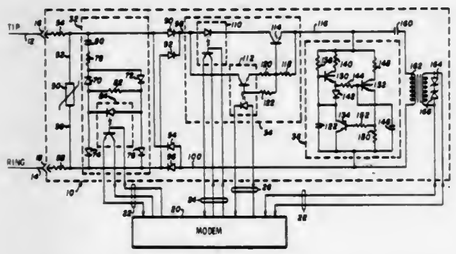
1. A digital type telephone system comprising a plurality of telephone sets for generating speech signals of each member in a telephone conference, means for converting the speech signals into digital speech signals, means for attaching to the digital speech signals alternately opposite polarity signs, means for mutually adding the digital speech signals obtained from the sign attaching means and for storing in a respective address position added digital speech signals except for the digital speech signal of said each member, and means for sending the stored digital speech signals to corresponding telephone sets in the conference according to time slots which are arranged on a time sharing basis.

4,203,006

DIRECT ACCESS COUPLER

Ray C. Mascia, Los Altos, Calif., assignor to Prentice Corporation, Palo Alto, Calif.

Filed Apr. 20, 1978, Ser. No. 898,310
Int. Cl.² H04M 11/00
U.S. Cl. 179—2 C **12 Claims**



1. A direct access coupler capable of withstanding lightning surge transients comprising:

isolation transformer means including a primary winding having a first end and a second end, and a secondary winding;

first capacitor means including a first end which is connected to said first end of said primary winding and a second end;

current source means including

an input lead connected to said second end of said first capacitor means,

an output lead connected to said second end of said primary winding,

second capacitor means having a first end connected to said output lead and a second end,

first resistor means having a first end connected to said second end of said second capacitor means and a second end connected to said input lead, said first resistor for developing a bias current,

second resistor means having a first end connected to said input lead, and a second end,

first transistor means having a base connected to said first end of said first resistor for receiving at least a portion of said bias current, a collector coupled to said second end of said second resistor means, and an emitter for developing an amplified bias current,

third resistor means having a first end connected to said output lead and a second end,

fourth resistor means having a first end connected to said input lead, and a second end,

fifth resistor means having a first end connected to the emitter of said first transistor means, and a second end,

second transistor means having a base coupled to said second end of said fifth resistor means, a collector coupled to said second end of said fourth resistor means, and an emitter connected to said second end of said third resistor means, said second transistor means for causing said off-hook current to flow through said third resistor means,

sixth resistor means having a first end connected to the emitter of said second transistor means, and a second end,

diode means having an anode connected to said emitter of said first transistor means, and a cathode,

third transistor means having a base coupled to said second end of said sixth resistor means, an emitter connected to said output lead and a collector connected to said cathode and to said first end of said first resistor means, said third transistor means being responsive to the level of the potential developed across said third resistor means by said off-hook current and operative to divert a portion of said bias current to maintain said off-hook current at a predetermined magnitude, and

third capacitor means having a first end connected to said output lead, and a second end connected to the base of said second transistor means,

said second and fifth resistor means and said diode means being operative to provide transient energy protection for said first transistor means, said second and third capacitor means being operative to prevent transient energy from driving said second transistor means into saturation, said fourth resistor means being operative to limit said off-hook current, and said sixth resistor means being operative to limit the base current to said third transistor means to a safe level;

a first terminal and a second terminal for connection across a telephone line pair;

first circuit means for coupling signals between said first terminal and said output lead of said current source means; and

second circuit means for coupling signals between said second terminal and said input lead of said current source means, said second circuit means including switching means having an on-hook state wherein said switching means is nonconductive and an off-hook state wherein said switching means is conductive, said switching means being responsive to a control signal and operative to change from said on-hook state to said off-hook state,

whereby an off-hook current of said predetermined magnitude which is voltage independent and of a value at least large enough to apprise the telephone company of the off-hook state of said switching means is conducted through said current source means, whereby AC signals

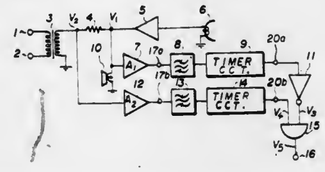
are coupled between said first and second terminals and said primary winding, and whereby DC signals are blocked from flowing into said primary winding by said first capacitor means.

4,203,007

SYSTEM FOR RECEIVING REMOTE CONTROL SIGNAL IN AUTOMATIC TELEPHONE ANSWERING DEVICE

Nobuyoshi Hatori, Hoya, and Eiji Morigami, Yachiyo, both of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Filed Dec. 22, 1977, Ser. No. 863,572
Claims priority, application Japan, Dec. 24, 1976, 51-155012; Dec. 24, 1976, 51-155013
Int. Cl.² H04M 1/64
U.S. Cl. 179—6 E **8 Claims**



1. A system for receiving a remote control signal in an automatic telephone answering device, comprising:

remote control signal detection means for detecting a remote control signal transmitted in operation over a telephone transmission line, said remote control signal detection means comprising a first filter for passing the remote control signal and a first timer circuit responsive to the remote control signal passed by said first filter for developing a detector output signal after a first predetermined time interval;

an output signal sending amplifier for amplifying an output message signal;

message sending means controlled by the detector output signal from said remote control signal detection means for sending a message signal through said output signal sending amplifier to the transmission line in operation in response to the detector output signal;

directional circuit means for extracting the signals flowing through the transmission line in operation and for developing an output signal including the message signal unattenuated and the remote control signal attenuated;

filter means including a second filter and a second timer circuit controlled by the output of said second filter and cooperative with said directional circuit means for filtering the frequency components of the remote control signal from the message signal extracted by said directional circuit means; and

control means connected to said remote control signal detection means, said message sending means and said filter means for inhibiting said message sending means in response to the detector output of said remote control signal detection means during the duration of the output of said filter means.

4,203,008

DIGITAL SIGNALLING RECEIVER FOR RECEIVING PCM TONES

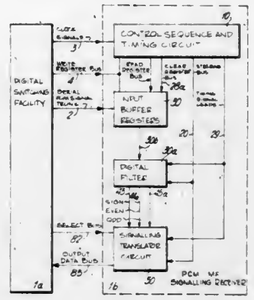
Sorin Cohn-Sfetcu; Jackylene K. Hood, both of Ottawa, and Daniel J. Doyle, Toronto, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 26, 1979, Ser. No. 15,325
Int. Cl.² H04J 3/12
U.S. Cl. 370—50 **11 Claims**

8. A multifrequency signalling receiver for receiving and translating PCM MF signalling into a signal code format compatible with a controller in a time division multiplex (TDM) switching facility, the signalling receiver comprising:

generating means, connected to by synchronized with the TDM switching facility, for generating a set of steering signals on a repetitive basis;

a time-shared filtering means responsive to the steering signals, for performing a plurality of predetermined pass-



band filter functions with a series of PCM signals received from the TDM switching facility and for generating therefrom a corresponding series of amplitude signals relative each of said filter functions;

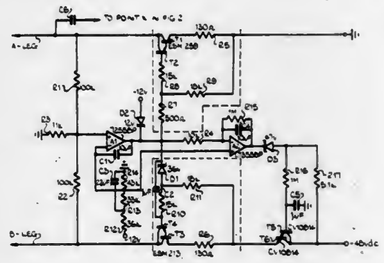
translator means, responsive to the steering signals and said amplitude signals, for determining the presence of valid signalling and translating said valid signalling into data signals of a predetermined signal code format.

4,203,009

UNBALANCED/BALANCED CONVERTER CIRCUITS

Graham D. Tattersall, Kirkkonammi, Finland, assignor to The Post Office, London, England

Filed Aug. 10, 1978, Ser. No. 932,696
Claims priority, application United Kingdom, Aug. 17, 1977, 34510/77
Int. Cl.² H04M 19/06
U.S. Cl. 179—16 AA **14 Claims**



1. A circuit for converting signals balanced to earth or another potential to unbalanced signals and for converting unbalanced signals to signals balanced to earth or another potential, the circuit comprising:

first and second supply terminals for connection to respective poles of an electrical supply,

a balanced network having first and second balanced input-/output terminals,

an unbalanced network having first and second unbalanced input/output terminals,

a first circuit of controllable impedance connected between the first supply terminal and the first balanced input/output terminal,

a second circuit of controllable impedance connected be-

tween the second supply terminal and the second balanced input/output terminal, and

a control circuit connected to monitor any departure from balance of the potentials of the first and second balanced input/output terminals and to simultaneously change the impedances of the first and second circuits of controllable impedance in opposite directions to restore the potentials to balance, the first unbalanced input/output terminal being connected to a terminal selected from the group consisting of one and the other of the balanced input/output terminals and the second unbalanced input/output terminal being connected to a source of common potential.

4,203,010

COMMUNICATION SYSTEM

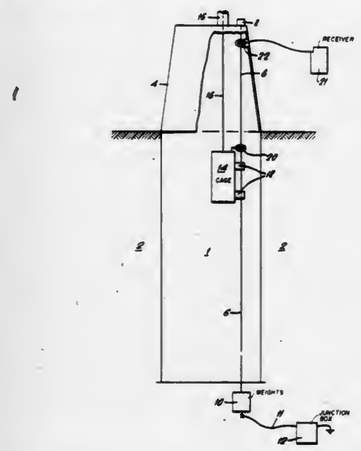
Brian E. Brooks, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, England

Filed Jul. 11, 1978, Ser. No. 923,622

Claims priority, application United Kingdom, Jul. 15, 1977, 29793/77

Int. Cl.³ H04B *5/00*

U.S. Cl. 179—82 **15 Claims**



1. A communication system comprising two transceivers, an elongate metallic member arranged along a desired signal path, toroidal coupler means including a wire winding operably linking at least one of the transceivers to the elongate member, such that data is transmissible along the desired signal path, and shroud means for protecting said toroidal coupler means, the shroud means being constructed so as not to impair said operable linking.

4,203,011

COMPUTER CONTROLLED KEY TELEPHONE STATION SET

Frank A. Coviello, Peekskill, N.Y., assignor to TIE/Communications, Inc., Shelton, Conn.

Filed Jan. 17, 1978, Ser. No. 870,225

Int. Cl.³ H04Q *5/18*

U.S. Cl. 179—99 M **25 Claims**

1. In a key telephone system having a key service unit for connecting a number of central office lines to a plurality of key telephone station sets and for providing switching control and signalling functions in the key telephone system, at least one key telephone station set comprising:

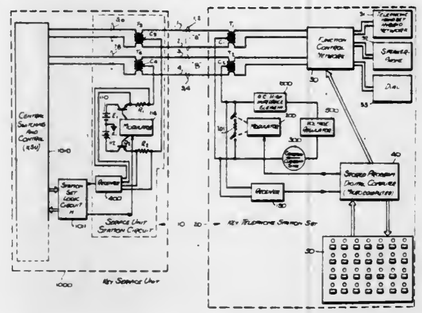
a plurality of switch means operative, when actuated, to generate status signals indicative of desired key telephone services,

at least one conversion means for converting sounds to audio frequency electrical signals and for converting audio frequency electrical signals into sounds,

power receiving and distributing circuit means,

signal receiving circuit means for receiving time-division multiplexed signals from the key service unit and transmitting said time-division multiplexed signals to a stored program digital computer means in said key telephone station set

said stored program digital computer means for generating, in response to said status signals, further time-division multiplexed signals which periodically indicate the status of each of said switch means, and for generating communication circuit control signals in response to the time-division multiplexed signals from the key service unit,



signal transmitting circuit means for receiving said further time-division multiplexed signals from said stored program digital computer means and transmitting said further time-division multiplexed signals to the key service unit,

function control circuit means operative in response to said communication circuit control signals received from said stored program digital computer means to connect said at least one conversion means to either a first communication circuit or a second communication circuit, both said first and second communication circuits connecting said at least one key telephone station set to the key service unit through which said at least one key telephone station set may be connected to any of a plurality of telephone or intercom lines, and

dial signalling means.

4,203,012

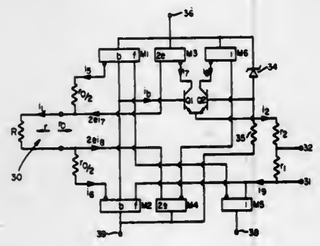
HYBRID CIRCUIT USING CURRENT MIRROR CIRCUITS

Frank S. Boxall, 380 Eleanor Dr., Woodside, Calif. 94062

Continuation-in-part of Ser. No. 815,769, Jul. 14, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,365

Int. Cl.³ H04B *1/58*

U.S. Cl. 179—170 NC **24 Claims**



1. A direct coupled hybrid circuit for providing signal conversion between a balanced bidirectional transmission path and a pair of unbalanced unidirectional transmission paths, said pair

including an incoming and an outgoing transmission path, said hybrid circuit comprising:

first and second loop terminals adapted to be coupled to said bidirectional transmission path;

first and second unidirectional terminals adapted to be coupled to said outgoing and said incoming unidirectional transmission paths, respectively;

a first plurality of current mirror circuit means of a first conductivity type;

a second plurality of current mirror circuit means of an opposite conductivity type;

each of said current mirror circuit means having an input terminal, one or more output terminals, a common terminal and means for supplying currents to said output terminals which are proportional to the current at said input terminal;

the input terminal of the first one of each of said first and second plurality of current mirror circuit means being coupled to said first and second loop terminals, respectively, via first and second impedance elements;

a first output terminal of the second one of each of said first and second plurality of current mirror circuit means being coupled to said first and second loop terminals respectively;

a first output terminal of the first one of said first plurality of current mirror circuit means being coupled to the input terminal of a third one of said second plurality of current mirror circuit means;

a first output terminal of the first and third ones of said second plurality of current mirror circuit means being coupled to the first unidirectional terminal;

a third impedance element connected between the first and second unidirectional terminals;

a fourth impedance element connected between the second unidirectional terminal and the input terminal of the second one of said first plurality of current mirror circuit means; and

a second output of the second one of said first plurality of current mirror circuit means being coupled to the input terminal of the second one of said second plurality of current mirror circuit means.

4,203,013

ALPHANUMERIC CONTROL KEYBOARD WITH DEPRESSIBLE KEYS FOR ELECTRIC OR ELECTRONIC MACHINES

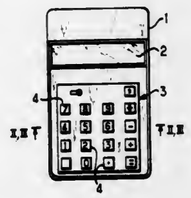
Edouard Serras-Paulet, Casa Nostra - Pech des Treilles, 82240 Puylaroque, France

Continuation-in-part of Ser. No. 735,769, Oct. 26, 1976, abandoned. This application Feb. 1, 1978, Ser. No. 874,553

Claims priority, application France, Jun. 22, 1977, 77 19170

Int. Cl.³ H01H *13/70*; G06C *7/02*; G08C *1/00*; B41J *5/08*

U.S. Cl. 200—5 A **12 Claims**



1. A control keyboard, comprising a first plate having a plurality of apertures, a plurality of keys mounted through said apertures, said keys having flanges of magnetic material on their lower portions for preventing the keys from completely slipping out of said apertures, a second plate arranged under said first plate with a relatively small air gap therebetween and carrying contact means cooperating with said flanges of the keys, said first plate comprising a lower magnetic layer and an upper metal plate forming a magnetic shield for the keyboard, said keys being movable between a first positions in which the flanges are applied onto said lower magnetic layer and kept apart from said contact means and a second position wherein said flanges are applied onto said contact means, said lower magnetic layer and said flanges forming magnetic return means for returning said keys from their second positions to their first positions by magnetic attraction.

10. Alphanumeric control keyboard with depressible keys for electric machines comprising a plurality of keys mounted through apertures in the keyboard and provided with magnetic flanges, said keys in their initial position protruding from an external face of the keyboard and being provided with flanges on lower portions of said keys for preventing the latter from completely slipping out from said apertures, said keyboard consisting of a unitary assembly comprising a plate provided with a plurality of said apertures and said keys, each of which is made of a single piece and the magnetic flanges of which co-operate with said plate retaining the keys applied on said plate when said keys are in their aforesaid initial position, each key comprising a body of electrically insulating material passing through one of said apertures of said plate, on the lower surface of which is secured a transverse metal plate which at the same time forms said flange of said key and contacts said key with conductive elements carried by a plate of insulating material arranged under the plate of the keyboard with a relatively small air-gap therebetween, said keyboard plate comprising a lower magnetic elastomer layer formimg with said transverse metal plate of each key magnetic return means, and an upper metal plate forming a magnetic screen or shield for the keyboard, so that there is no magnetic field on the external face of the keyboard.

4,203,014

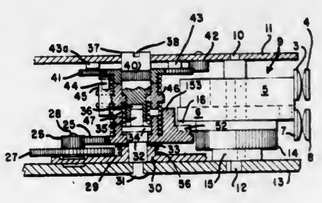
ADJUSTABLE INTERVAL CYCLE TIMER

John L. Harris, Clearwater, Fla., assignor to Deltrol Corp., Bellwood, Ill.

Filed May 19, 1978, Ser. No. 907,802

Int. Cl.³ H01H *43/10*

U.S. Cl. 200—38 R **12 Claims**



11. In a start stop timer, a first timing mechanism having an intermittent drive means including a drive pinion and a gear having a segment without teeth causing the gear to stop when the segment reaches the drive pinion, means including a second timing mechanism for advancing the gear to reengage the pinion, said first timing mechanism including a cam driven by said gear, a switch biased against the cam exerting a resilient force thereon and having a first position and a second position, said cam being formed with a slop engaged for gear engagement without transfer of the switch from one position to the other.

4,203,015

ROLLER BANK SENSOR CONTACT SYSTEM

Lawrence D. Tuchscherer, Goleta, Calif., assignor to General Motors Corporation, Detroit, Mich.

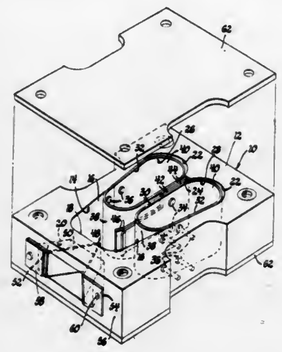
Filed Oct. 5, 1978, Ser. No. 948,963

Int. Cl.³ H01H *35/14*

U.S. Cl. 200—61.45 R **5 Claims**

1. In a sensor having a housing provided with a pair of spaced linear bearing portions, a pair of flexible bands of spring

material disposed between the bearing portions and being forced thereby into generally elongate shape, the adjacent portions of the bands being secured to each other and the remote portions of the bands engaging and being secured to a respective bearing portion, a velocity change of predetermined extent causing the bands to concurrently roll relative to each other along the bearing portions and linearly translate the adjacent secured portions of the bands relative to the bearing portions, the improvement comprising, a pair of first elongated



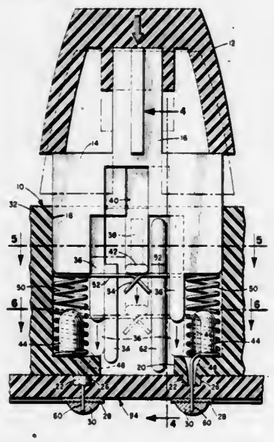
resilient contact members intermediately secured to the bands and having free end portions extending oppositely therefrom and a pair of flexibly related angular second contact members mounted on the housing in spaced relationship to the first contact members and interengageable therewith, the first contact members laterally separating and the second contact members laterally and flexibly contracting about their apical juncture upon interengagement to thereby substantially eliminate contact bounce.

4,203,016

ELECTRIC SWITCH UTILIZING COIL SPRING TORSION BIASING IN SWITCH OPERATION

Robert H. Twyford, Springfield, Va., assignor to Mechanical Enterprises, Incorporated, Sterling, Va.

Filed Nov. 8, 1978, Ser. No. 958,829
Int. Cl.² H01H *3/12, 1/06*
U.S. Cl. 200—159 R **19 Claims**



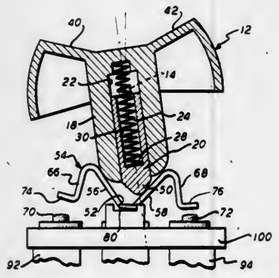
1. A switch comprising:
a housing having a cavity therein opening outwardly of said housing;
a switch actuating plunger reciprocably mounted within said housing cavity;
coil spring means disposed within said housing cavity urging said plunger outwardly of said cavity, said coil spring means having connector means for connecting said switch into an electrical circuit to be controlled and a laterally extending end providing a first contact;
a second contact disposed in said cavity with torsional forces of said coil spring means urging said first contact relative to said second contact; and
stationary cam means carried by said housing urging said laterally extending end relative to said second contact to open and close said contacts incident actuation of said switch between operated and unoperated conditions.

4,203,017

ELECTRIC SWITCH

James Lee, Flanders, N.J., assignor to Integrated Electronics Corporation, Dover, N.J.

Filed Jul. 24, 1978, Ser. No. 927,500
Int. Cl.² H01H *1/22, 3/00*
U.S. Cl. 200—339 **3 Claims**



1. In an electric switch having a rotatable knob adapted to be operated by finger pressure and which upon such operation causes a spring biased plunger to exert a switch closing force on a movable switch contact element, the improvement which comprises stop means associated with said plunger forming an abutment which is engaged by said movable switch contact element to prevent movement of said movable contact element to the switch closed position until the knob and plunger have been rotated through a predetermined angle to a preselected position.

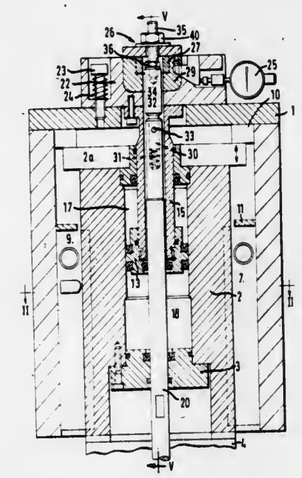
4,203,018

METHOD AND APPARATUS FOR ERODING INNER AND OUTER WALLS OF WORK PIECES

Rudolf Schneider, Reinach, Switzerland, assignor to Erowa AG, Reinach, Switzerland

Filed Dec. 13, 1977, Ser. No. 860,069
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657357
Int. Cl.² B23P *1/12*
U.S. Cl. 219—69 V **9 Claims**

1. A device for eroding a work piece wall by electrical discharge between the work piece and an electrode, the device comprising
a housing,
a working cylinder mounted for axial to-and-fro movement in said housing,
stops for limiting axial movement of said working cylinder in said housing,
a hollow support fixed to one end of said cylinder and formed with a cylindrical chamber co-axial with said working cylinder,
a piston in said cylinder,
a piston rod fixed to said piston and extending through the end of said cylinder remote from said support,
an abutment member forming part of said housing,
a rod-support fixed to said piston rod and cooperating with said abutment member for limiting axial movement of said piston and said piston rod relative to said housing,
a straight axis shaft adjustably fixed coaxially with said piston and said piston rod for limited axial movement in relation thereto and extending into said cylindrical chamber,
two closure members respectively closing opposite ends of said cylinder whereby selective admission to spaces respectively between said piston and each closure member can move said cylinder in either longitudinal direction,
an electrode-holder mounted at the end of said support remote from said cylinder,
bearing means interposed between said support and said electrode holder permitting orbital movement at a variable radius about said shaft axis in a plane to which said shaft axis is perpendicular,
means for effecting said orbital movement, and
a control unit comprising
a cam unit rotatable on said electrode-holder about an axis at said variable radius from said shaft axis, and



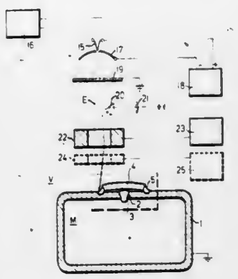
a rotor, rotatable on said shaft but axially fixed in relation thereto, coacting with said cam unit for adjusting said variable radius in accordance with the axial position of said rotor relative to said cam unit,
so that by introducing a medium into one of said spaces the said working cylinder is moved in one axial direction, while said rod-support is stationary against said abutment member, for axially advancing said electrode-holder together with said rotor and said shaft until the latter reaches its limit of axial movement, and for then further advancing said electrode-holder without said rotor and said shaft so that said variable radius is simultaneously adjusted, and when said working cylinder reaches its limit of axial movement said medium is effective to retract said piston and said piston rod together with said shaft and said rotor for further adjusting said variable radius without axial movement of said electrode-holder relative to said housing.

4,203,019

METHOD FOR PRODUCING A SEALED CONTAINER BY VACUUM WELDING

Gerolf Richter, and Scott B. Shanks, both of Berlin, Fed. Rep. of Germany, assignors to Biotronik Mess- und Therapiegeräte GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Apr. 25, 1978, Ser. No. 899,784
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1977, 2719884
Int. Cl.² B23K *31/02, 15/00*
U.S. Cl. 219—72 **20 Claims**



1. Method for producing a container whose interior is substantially under atmospheric pressure by means of a vacuum welding process, comprising:
(a) assembling the container by welding under vacuum a plurality of wall components while maintaining an opening in the container;
(b) filling the interior of the container through the opening with a medium which is substantially under atmospheric pressure;
(c) sealing the opening of the filled container to be vacuum-tight by means of a first sealing means; and
(d) sealing the container interior from the outside by an additional seal in the form of a cover for the opening by vacuum welding the cover to the container, with the cover bordering the outer surface of the container in such a manner that the cover is welded under vacuum to the container along a line which extends at such a distance from the first sealing means that the sealing effect of the first sealing means is not adversely influenced during the vacuum welding of the cover.

4,203,020

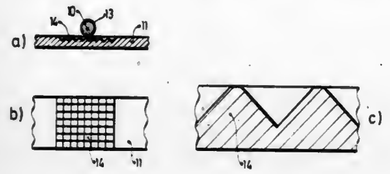
METHOD OF RESISTANCE WELDING WIRES TO A MASSIVE WORKPIECE

Franz Armbruster, Stuttgart; Albano Paoli, Mühlacker; Gerd Bässler, Kornwestheim; Hans-Peter Sitka, Ludwigsburg, and Günter Schmidt, Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 908,931
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2725564
Int. Cl.² B23K *11/14*
U.S. Cl. 219—93 **14 Claims**

1. A method of joining a wire comprising a core of highly thermally and electrically conductive material, and a coating (13) consisting of a metal with a melting point which is substantially higher than the melting point of the core of said wire,
and a massive workpiece of a material having a melting point which is substantially higher than that of the core of the wire by resistance welding,
comprising the steps of
providing the surface of a workpiece (11) with at least one bulge or protrusion in the area of the intended weld;
placing said coated wire on the bulge or protrusion of said workpiece
performing a resistance welding operation on said wire

placed on the bulge or protrusion of said workpiece, the bulge or protrusion restricting dissipation of welding heat throughout the workpiece and concentration of said welding heat at the contact area of the coating and the workpiece and preventing melting of the wire core before effecting the weld connection of the coating with the workpiece.



4,203,021

METHOD AND APPARATUS FOR CONTROL OF METHOD PARAMETERS IN ENERGY BEAM WELDING

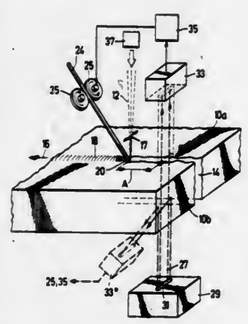
Peter Anderl, Munich; Wilhelm Scheffels, Puchheim; Karl H. Steigerwald, Starnberg; Clauspeter Mönch, Grafrath; Johannes Koy, Germering, and Dieter Konig, Munich, all of Fed. Rep. of Germany, assignors to Steigerwald Strahltechnik GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 29, 1977, Ser. No. 820,331

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 2634341; Jul. 30, 1976, 2634342

Int. Cl.² B23K *9/00*

U.S. Cl. 219—121 EB **30 Claims**



1. A method for seam welding a workpiece by means of an energy beam in the case of which the breadth of a separating gap to be closed by welding is measured and the supply of filling material is controlled in accordance with the result of measurement characterized in that the breadth of the joint gap is measured by means of X-ray radiation, which is influenced by the workpiece parts delimiting the joint gap in accordance with the breadth of the latter.

4,203,022

METHOD AND APPARATUS FOR POSITIONING A PLASMA ARC CUTTING TORCH

Richard W. Couch, Jr., and William V. Bailey, both of Hanover, N.H., assignors to Hypertherm, Incorporated, Hanover, N.H.

Filed Oct. 31, 1977, Ser. No. 846,637

Int. Cl.² B23K *9/00*

U.S. Cl. 219—121 P **6 Claims**

1. The method of initially positioning a plasma arc cutting torch relative a workpiece, the torch being of the type in which a swirling motion is imparted to an ionizable gas through which the arc discharge takes place and in which water is injected to constrict the arc discharge as it leaves the torch; said method comprising:

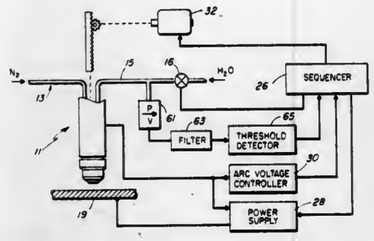
initiating the flow of ionizable gas while the torch is in a retracted position and in which the water supply is turned off;

advancing the torch toward the workpiece;

sensing the vortex pressure within the torch through the water injection conduit and generating a first signal responsive to changes in the vortex pressure;

generating a switching signal only when said first signal corresponds to the abrupt drop in said vortex pressure occurring at attachment of the vortex to the workpiece; and

terminating the advance of the torch in response to said switching signal.



4,203,023

WELDING POOL SUPPORT DEVICE FOR ENERGY BEAM WELDING

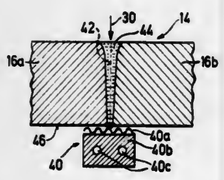
Karl-Heinz Steigerwald, Starnberg; Wilhelm Scheffels, Puchheim; Peter Anderl; Dieter König, both of Munich; Walther Hiller, Puchheim, and Franz Rappold, Munich, all of Fed. Rep. of Germany, assignors to Steigerwald Strahltechnik GmbH, Munich, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,405

Claims priority, application United Kingdom, May 3, 1977, 18509/77

Int. Cl.² B23K *15/00*

U.S. Cl. 219—121 EB **13 Claims**



1. A welding pool support device for energy beam welding in a vacuum, with a metal structure, which on a beam outlet side of a welding seam zone of a workpiece system is put against the beam outlet side and goes up against it at a number of touching points for stopping any movement of melt out of a welding zone, which is produced by the energy beam in the workpiece system and on a relative movement of the energy beam and the workpiece system goes along the weld seam zone, characterised by a supporting structure, which can be so changed in shape that it takes into account uneven parts of the beam outlet side of the workpiece system in the longitudinal direction and also in the transversal direction of the weld seam zone; furthermore the device and the portion of the supporting structure touching the beam outlet side are so irregular and open that the distances between the points of touching from each other and from the parts placed between them, of the supporting structure, permit gases, developing in the welding

zone near the beam outlet side, to freely flow out through the supporting structure and device.

4,203,024

FLUX-CORED ELECTRODE FOR WELDING STEELS IN CARBON DIOXIDE

Igor K. Pokhodnya; Valery N. Shlepakov, and Sergei A. Suprun, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Continuation of Ser. No. 708,609, Jul. 26, 1976, abandoned, which is a continuation of Ser. No. 589,847, Jul. 24, 1975, abandoned. This application Mar. 13, 1978, Ser. No. 886,039

Int. Cl.² B23K *35/30*

U.S. Cl. 219—146.1 **4 Claims**

1. A flux-cored electrode for welding steels in carbon dioxide, made as a casing from a low-carbon steel and filled with a powder flux consisting essentially of, by weight:

4–8% calcined magnesite,

6–9% feldspar,

4–5.5% calcium fluoride,

14–20% titanium dioxide,

6–10% ferromanganese,

0–2% sodium fluosilicate,

1.5–3% ferrosilicon

and the balance being iron powder.

4,203,025

THICK-FILM THERMAL PRINTING HEAD

Mitsuo Nakatani; Takashi Kuroki, both of Yokohama; Toshiaki Syozi, Kanagawa, and Yoshiyuki Horibe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

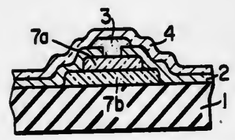
Filed Aug. 17, 1978, Ser. No. 934,368

Claims priority, application Japan, Aug. 19, 1977, 52-98658; Aug. 19, 1977, 52-98659; Aug. 24, 1977, 52-112301[U]

Int. Cl.² H05B *1/00*

U.S. Cl. 219—216 **17 Claims**





1. A thick-film thermal printing head comprising:

a substrate;

a heat insulating layer formed, on said substrate, of glass including 10 to 60% by weight of at least one metal oxide selected from the group consisting of Al_2O_3, MgO, ZrO_2, BeO and TiO_2;

plural pairs of electrodes formed over said heat insulating layer and said substrate, one electrode of each pair laterally opposing to the other on said heat insulating layer;

resistors formed between the opposing electrodes of the respective pairs for generating heat; and

an abrasion protective layer formed of glass to completely cover said heat insulating layer and said electrodes and said resistors on said heat insulating layer.

4,203,026

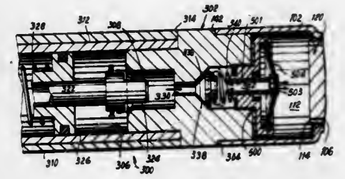
TEMPERATURE RESPONSIVE FLUID DELIVERY CONTROL DEVICE FOR A STEAM CURLING IRON

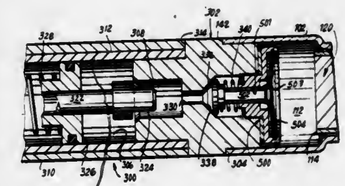
Henry J. Walter, Wilton, and William E. Springer, Stratford, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 768,670, Feb. 14, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,719

Int. Cl.² H05B *1/00*; A45D *2/36*; F22B *27/00*; A45D *1/04*

U.S. Cl. 219—222 **8 Claims**





1. A steam emitting device comprising a fluid reservoir, a vaporization chamber, first means in said chamber for heating and vaporizing fluid in the chamber, second means for delivering fluid to be vaporized from the reservoir into the chamber, said second means comprising a fluid delivery conduit between the reservoir and chamber, a valve in the conduit, and means for selectively moving said valve between a first closed position preventing fluid flow through said conduit and a second open position allowing fluid flow therethrough and third means for regulating fluid delivery through the valve, the third means comprising first and second elements fixedly attached to one another, the first element being in heat exchange relationship to the vaporization chamber and having the property of changing its shape when heated to a particular temperature, the temperature being the same as or in correspondence to the minimum temperature required of the first means for vaporizing fluid in the chamber; the second element having a fluid delivery passage through which fluid may be delivered from the conduit and through the valve into the vaporization chamber and said second element being movable by the first element in and out of contact with the valve, upon change of shape of the first element due to its temperature in relation to said required minimum temperature; and said second element being moved into contact with the valve by the first element when the first element is below said minimum temperature thereby preventing movement of said valve from its first closed position to its second open position and being moved out of contact with the valve by the first element when the first element is at or above said minimum temperature, to allow said valve to be moved from its first closed position to its second open position so that fluid may flow from said reservoir through said conduit and the delivery passage of said second element into the vaporization chamber, so that the third means allows fluid to be delivered to the vaporization chamber only when the first means is at or above the required minimum temperature.

4,203,027

ELECTRICALLY HEATED HUMIDIFYING APPARATUS

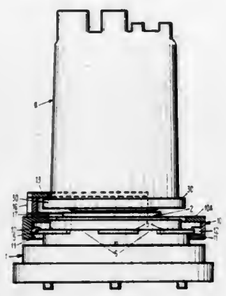
David H. O'Hare; Christopher G. Brickell, and Lindsay G. Spilman, all of Auckland, New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

Filed Dec. 21, 1977, Ser. No. 862,687

Claims priority, application New Zealand, Mar. 7, 1977, 183517

Int. Cl.[2] **H05B** *1/00;* **A61M** *15/00*

U.S. Cl. 219—275 **2 Claims**



2. A humidifier comprising: a humidifier heater having a heating surface and circumferentially spaced connection lugs arranged substantially in a plane on the heater with adjacent ends of the connection lugs defining spaces therebetween;

a humidifier element having an annular connection flange; and

an intermediate adaptor securing said humidifier element to said humidifier element, said adaptor comprising a ring and a horse-shoe shaped member affixed to the upper surface thereof;

said ring having circumferentially spaced coacting lugs lying substantially in a plane with adjacent ends of said coacting lugs defining spaces therebetween, the dimensions and positioning of said coacting lugs being such that in use said coacting lugs pass through the spaces between said connection lugs of said humidifier heater and are rotated to a holding position wherein said coacting lugs engage said connection lugs said coacting lugs and connection lugs being engaged to secure the adaptor to the humidifier heater;

said horse-shoe shaped member comprising a partial annular disc spaced above said ring by a partial hollow cylindrical spacer, said disc and spacer defining a gap dimensioned to slidably receive said connection flange of said humidifier element as said humidifier element is slid to and from a heating contact position by movement of said humidifier element between the legs of said horse-shoe shaped member in a plane parallel to the plane containing said partial disc;

said humidifier element being held between the legs of said horse-shoe shaped member in a heating disposition relative to said heating surface by engagement of said partial disc and said connection flange.

4,203,028

APPARATUS FOR TREATING OPTICAL FIBERS BY SPARK EROSION

Joachim Brumann, Cologne, Fed. Rep. of Germany, assignor to Felten & Guilleaume Carlswerk AG, Cologne, Fed. Rep. of Germany

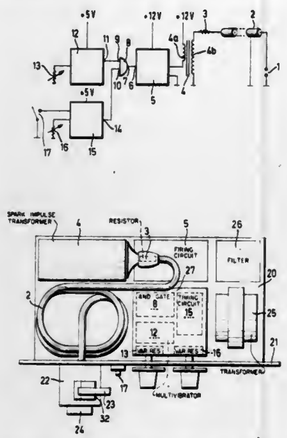
Filed Jan. 12, 1978, Ser. No. 868,832

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735567

Int. Cl.[2] **H05B** *7/18;* **C03C** *25/00;* **G02B** *5/14*

U.S. Cl. 219—384 **14 Claims**

1. An apparatus for treating optical fibers by spark erosion, comprising a base; electrical means on said base and forming a spark gap at which optical fibers are to be exposed to spark erosion treatment, including a pair of electrodes which define a gap therebetween, and means for adjusting the spacing between said electrodes to vary the width of said gap; a housing of electrically insulating material surrounding said electrodes; means for arresting an optical fiber to be exposed to such



treatment; a spark-impulse transformer having a primary winding and a secondary winding; an electric charge storing means connecting said spark gap means with said secondary winding; an electric firing circuit having an output connected with said primary winding, and an input; and an electric control circuit for said firing circuit connected to said input thereof and including a multivibrator.

4,203,029

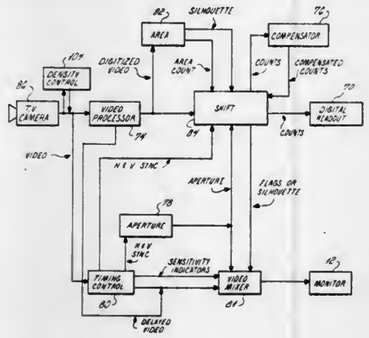
AUTOMATIC OBJECT COUNTER

William R. Kitchener, Huntington, and Stephen L. Sama, Seaford, both of N.Y., assignors to Artek Systems Corporation, Farmingdale, N.Y.

Filed Mar. 6, 1978, Ser. No. 883,996

Int. Cl.[2] **G06M** *11/04*

U.S. Cl. 235—92 PC **55 Claims**



1. A counting apparatus for counting objects contained in a sample and comprising:

(a) scanning means focused onto the sample for providing a scanned video output signal;

(b) video processing means receiving said video output signal and for providing therefrom a digitized video signal:

(c) timing control means receiving said video output signal and for providing horizontal and vertical synchronization signals;

(d) aperture generator means receiving said synchronization signals and generating an electronic aperture signal corresponding to a selected area of the sample and representing a closed loop electronic aperture;

(e) shift control means receiving said digitized video signal, said synchronization signals, and said electronic aperture signal, for identifying each object and producing a respective count signal and flag signal for each object identified within the selected area;

(f) area control means receiving said digitized video signal and said electronic aperture signal and generating a count signal proportional to either the total object area or the percent object area respectively within the electronic aperture, said area control means further providing leading and trailing edge silhouette pulses representative of the perimeters of the objects;

(g) counting means selectively receiving said count signals and selectively providing a total count corresponding to the number of identified objects, a total count corresponding to the total area of identified objects, and a total count corresponding to the percent area of the identified objects within the area represented by the electronic aperture signals; and

(h) video display means receiving said video output signal, said flag signal or said silhouette pulses and said electronic aperture signal, and displaying the selected area of the sample with the objects therein and with a flag signal associated with each identified object or with a silhouette surrounding each identified object, said counting apparatus further comprising

noise detection means coupled to said video processing means for automatically detecting and setting a maximum sensitivity threshold level; silhouette means receiving said digitized video signal and generating leading and trailing edge silhouette pulses for each detected object; area control means receiving said digitized video signal and providing area count signals for each detected object; and percent area control means receiving said digitized video signal and providing percent area signals proportional to the ratio of the detected objects and the area represented by the electric aperture signal.

4,203,030

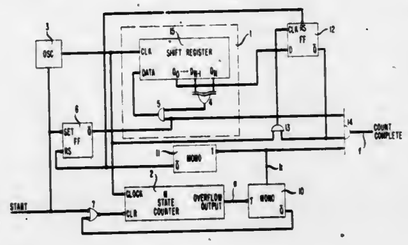
METHOD AND STRUCTURE FOR DETECTING RECYCLING OF POLYNOMIAL COUNTERS

John C. Moran, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1978, Ser. No. 953,831

Int. Cl.[2] **G11C** *19/00;* **H03K** *21/00*

U.S. Cl. 235—92 CC **7 Claims**



1. In an arrangement comprising a source of pulses (3) and a recycling polynomial counter (1) having N counting stages and 2^N-1 counting states for counting the pulses,

a method of determining when the polynomial counter has recycled after progressing through its 2^N-1 counting states, CHARACTERIZED BY the steps of

storing an indication when a prescribed one of the stages of the polynomial counter assumes a predetermined logic state,

clearing the indication after each group of N of the pulses, and

generating a count complete signal after the occurrence of a group N pulses and before the indication is cleared if said indication is not then stored.

4,203,031

AUTOMATIC FOCUSSING APPARATUS FOR MICROSCOPE

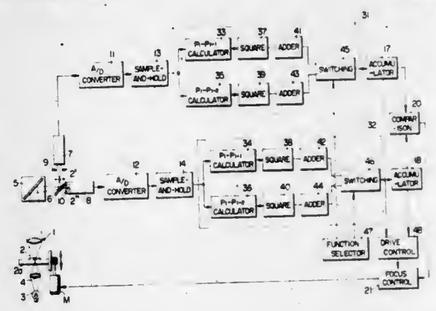
Shinichi Kamachi, Hino, and Nagahiro Gocho, Hachiodi, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Mar. 13, 1978, Ser. No. 885,546

Claims priority, application Japan, Mar. 23, 1977, 52-31071

Int. Cl.[2] **G01J** *1/20*

U.S. Cl. 250—201 **6 Claims**



1. Automatic focussing apparatus for a microscope having a specimen stage, an optical system and a focussing mechanism therefor to bring the image of a specimen at said stage into proper focus, said apparatus comprising a pair of photoelectric transducer elements disposed respectively short of and beyond the imaging position of a focussing optical system for receiving light images formed short of and beyond the imaging position of said focussing optical system; said focussing optical system including means for simultaneously directing successive picture elements towards said transducer elements; a pair of analog-to-digital converters connected with the output of respective transducer elements for converting an analog output from its associated transducer element which corresponds to each picture element into a digital quantity, a pair of sample-and-hold circuits connected with the converters for holding an output signal in the form of the digital quantity, a pair of calculation circuits for deriving one of the evaluation functions $\Sigma(P_i-P_{i-1})^2$ or $\Sigma(P_i-P_{i-2})^2$ where P_i represents density information of a selected picture element represented by the digital signal, and wherein i represents the location of the picture element P_i such that P_i and P_{i-1} represent the density information of adjacent picture elements while P_i and P_{i-2} represent density information of spaced picture elements a pair of accumulators connected with the respective calculation circuits for accumulating the calculated output, a comparison circuit for comparing the stored content of both accumulators, and a focus control circuit for operating a focussing mechanism in response to an output signal from the comparison circuit, thus adjusting the optical system to bring the image into focus.

4,203,032

ARRANGEMENT FOR PRODUCING A CONSTANT SIGNAL AMPLITUDE IN AN OPTO-ELECTRONIC SCANNING SYSTEM

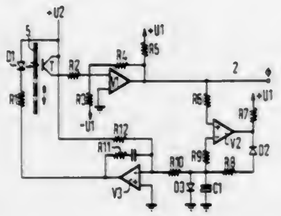
Franz Haunstetter, Augsburg, and Gerhard Koppelmann, Neubaldham, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,995

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735245

Int. Cl.² G01J *1/32*

U.S. Cl. 250—205 **4 Claims**



1. In an arrangement for controlling a constant signal amplitude in an opto-electronic scanning system in which a diaphragm is periodically interposed between a light source and a light receiver, the improvement in combination therewith, of:

a storage device connected to said light receiver for storing for the duration of a dark phase produced by the diaphragm,

a brightness value indicative of the brightness received during a light phase, through a diaphragm gap; and

circuit means connected between said storage device and said light source for regulating the brightness of said light source in response to said brightness value.

4,203,033

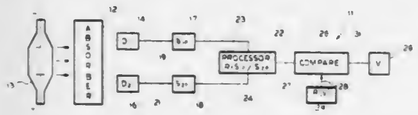
RADIATION ENERGY CALIBRATING SYSTEM AND METHOD

Arnold F. Jacobson, 1141 Petra Pl., Madison, Wis. 53713

Filed Mar. 16, 1979, Ser. No. 21,263

Int. Cl.² G01D *18/00*

U.S. Cl. 250—252 **8 Claims**



1. A radiation energy calibrating system for determining the voltage applied to a source of radiation,

said calibrating system comprising a pair of radiation detectors operated responsive to the radiation output of the source for providing electrical signals that are a function of the radiation intensity,

absorber means between said source and said detectors,

means for determining the ratio between the electrical signals from each of said radiation detectors, and

determining means responsive to the characteristics of each of said detectors and said ratio for determining the voltage applied to said source.

4,203,034

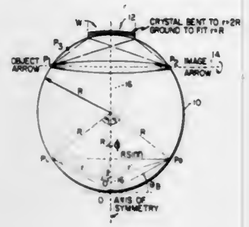
DIFFRACTION CAMERA FOR IMAGING PENETRATING RADIATION

Edward E. Carroll, Jr., Gainesville, Fla., assignor to University of Florida Board of Regents, Tallahasee, Fla.

Filed Jun. 1, 1978, Ser. No. 911,666

Int. Cl.² G01N *23/20*; G21K *1/06*

U.S. Cl. 250—280 **6 Claims**



1. An imaging device for focusing a two dimensional X-ray/gamma ray/neutron radiated object as a two dimensional image by Bragg diffraction comprising at least one single crystal bent to conform to the radius of a Rowland sphere of radius 2R and ground to fit snugly on a Rowland sphere of radius R and in motion relative to an axis normal to the axis of symmetry of the crystal.

4,203,035

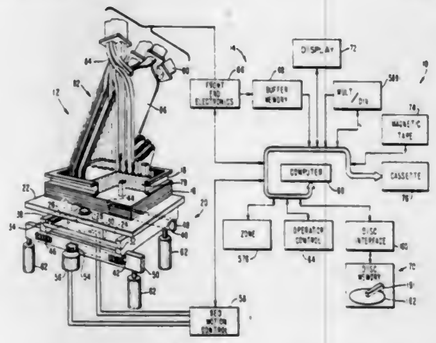
METHOD AND APPARATUS FOR DETERMINING THE CONDITION OF A BIOLOGICAL SPECIMEN

Raymond P. Grenier, Wilmington, Mass., assignor to Baird Corporation, Bedford, Mass.

Continuation of Ser. No. 649,071, Jan. 14, 1976, Pat. No. 4,048,501. This application Jul. 25, 1977, Ser. No. 818,735

Int. Cl.² G01T *1/20*

U.S. Cl. 250—363 S **1 Claim**



1. A method for determining the condition of a selected organ in a biological specimen containing a diagnostic amount of radioactive sample, said method comprising the steps of:

(a) sensing radioactive events that are emitted from the sample within the specimen, said events sensed by a multi-crystal array having a plurality of unique address locations;

(b) temporarily storing and accumulating the sensed events in a buffer memory;

(c) applying signals defining said accumulated sensed events in said buffer memory to a disc memory;

(d) transferring said signals in said disc memory between said disc memory and a general purpose computer;

(e) generating raw data signals of said sensed events, said raw data signal defining a first raw data curve;

(f) generating a smooth data curve corresponding to said raw data curve;

(g) generating data points defining the maximum positive and negative slopes of the smooth data curve by determining the first derivative of a primary curve of the maximum number of detected events;

(h) generating a second raw data curve by linear extrapolation of the rising side of a primary curve of said first data curve from data points about said data point defining the maximum positive slope to a base line of said first raw data curve and by exponential extrapolation of the falling said of said primary curve of said first data curve from data points about said data point defining the maximum negative slope to said base line of said first raw data curve; and

(i) generating data signals defining the condition of the biological specimen by reduction of the biological specimen by reduction of said second raw data curve to find the centroid of said second raw data curve which is the mean transit time or volume divided by flow in the selected organ undergoing diagnosis; and

(j) applying said data signals to a display for presentation of indica defining the condition of said biological specimen, said method utilizing a sampling rate in the order of 0.05 second.

4,203,036

X-RAY DIAGNOSTIC APPARATUS FOR PRODUCING TRANSVERSE LAYER IMAGES

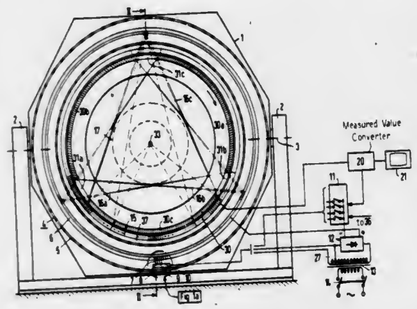
Edgar Tschunt, Rathsberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,209

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1976, 2650237

Int. Cl.² G01N *23/00*

U.S. Cl. 250—445 T **10 Claims**



1. An X-ray diagnostic apparatus for producing transverse layer images of a subject, comprising an X-ray measuring arrangement including an X-ray source for generating a fan-shaped X-ray beam which penetrates the subject, and a radiation receiver which determines the intensity of radiation behind the subject and has a series of detectors, and further comprising means for changing the direction of the X-ray beam, characterized in that the X-ray source comprises an annular anode arrangement with a series of anode regions, and a series of cathodes arranged adjacent the respective anode regions of the anode arrangement, means for switching on electron radiation in steps between at least one cathode and its adjacent anode region to successively change the direction of the X-ray beam, the anode arrangement and the radiation receiver being disposed in such a way that the X-ray beam initially passes laterally by the radiation receiver in the radiation direction and then impinges on respective detectors of the series after transmission through the subject, collimator means inwardly of the series of anode regions and arranged in such a manner that a wide fan-shaped X-ray beam is transmitted from an active anode region through the subject and in such a manner that the X-ray beam is collimated by the collimator means for impingement on respective detectors of the series, and means whereby said collimator means is operative in each successive direction of the X-ray beam for directing the radiation of the X-ray beam from the active anode regions to respective sets of detectors of said series, said radiation receiver having said series of detectors arranged inwardly of the anode regions of said annular anode arrangement so that the anode regions enclose the radiation receiver and the radiation receiver is closer to the subject than the annular anode arrangement.

4,203,037

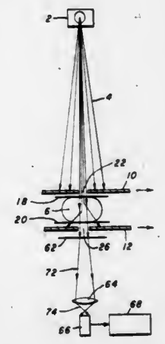
COLLIMATED RADIATION APPARATUS

David Gur; Donald Sashin, and Ernest J. Sternglass, all of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Continuation of Ser. No. 820,423, Aug. 1, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 957,016

Int. Cl.² G03B *41/16*

U.S. Cl. 250—505 **22 Claims**



1. Apparatus for exposing an object to x-ray radiation comprising,

an x-ray generator,

adjustable object supporting and compressing means disposed generally in the path of x-ray emission from said generator for supporting and compressing said object,

first collimator means having an opening therethrough and being interposed between said x-ray generator and said object supporting and compressing means,

x-ray detecting means disposed on the opposite side of said object supporting and compressing means from said x-ray generator,

second collimator means having an opening therethrough and being disposed between said object supporting and compressing means and said x-ray detecting means,

said x-ray detecting means including

(a) scintillator means for receipt of x-rays passing through said second collimator means opening and emitting light responsive thereto,

(b) an array of self-scanning photodiodes for receipt of said light and converting the same into electrical output signals, and

(c) optical coupling means interposed between said scintillator means and said array of self-scanning photodiodes,

said x-ray detecting means being spaced from said object supporting and compressing means,

signal receiving means operatively associated with said self-scanning photodiode array to receive said electrical signals therefrom, whereby said electrical signals corresponding to said x-ray passage through said second collimator means opening may be stored, processed or displayed,

means for effecting movement of said first and second collimator means relative to and independent of said object supporting and compressing means, and

said means for effecting movement of said first and second collimator means effecting synchronized movement thereof so as to maintain said collimator openings in aligned relationship with respect to said x-ray generator, whereby an object supported and compressed by said object supporting and compressing means will have portions thereof sequentially exposed to x-rays which pass through said opening in said first collimator means and after passing through said object will pass through said aligned opening in said second collimator means and will then impinge upon said x-ray detecting means.

4,203,038

HIGH DENSITY SPENT FUEL STORAGE RACK

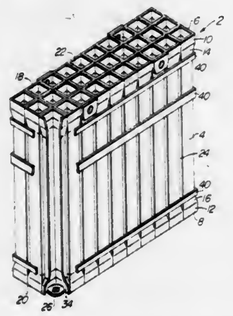
Toshiyori Takahashi, Hitachi; Akihiro Ojima, Takahagi; Teruo Matsumoto, Ibaraki, and Koji Kashiwakura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 26, 1977, Ser. No. 845,534

Claims priority, application Japan, Oct. 29, 1976, 51-130914

Int. Cl.² G21F 5/00

U.S. Cl. 250—507 **8 Claims**



1. In a high density spent fuel storage rack including a plurality of neutron absorbing containers each designed to perimetrically encircle a fuel assembly, said containers being arranged so that the rack can store a plurality of fuel assemblies disposed vertically in an array with predetermined spaces between the adjacent fuel assemblies, the improvement wherein each of said containers is provided with enlarged upper and lower end portions which respectively abut against enlarged upper and lower end portions of adjacent containers along their outer peripheries and said abutting end portions being joined at their extremities by edge-welding to one another whereby said containers are formed into a unitary structure providing predetermined spaces between the adjacent containers to serve for the flow of coolant fluid.

4,203,039

VEHICLE SLIDING DOOR POWER DOOR LOCK MECHANISM ACTUATING DEVICE CONTROL SYSTEM

Gary E. Pritchard, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 17, 1978, Ser. No. 934,622

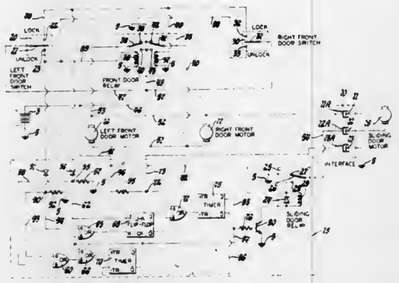
Int. Cl.² E05B 65/36

U.S. Cl. 307—10 R **4 Claims**

1. A vehicle sliding door power door lock mechanism actuating device control system having a memory feature for use with power door lock mechanisms of the type actuated by an electrically energizable actuating device to "Lock" and "Unlock" conditions in response to respective "Lock" and "Unlock" command signals and operative to effect the electrical energization of the lock mechanism actuating device in a direction to actuate the lock mechanism to the "Lock" condition upon each closure of the sliding door subsequent to an occurrence of a "Lock" command signal while the door is open, comprising:

means responsive to the operation of a spring return to neutral type door lock control switch to the "Lock" position for producing and storing a "Lock" command logic signal;

means responsive to the closure of said vehicle sliding door for producing an enabling logic signal;



means responsive to said "Lock" command and enabling logic signals for producing an output electrical signal;

first means responsive to said output electrical signal for effecting the electrical energization of said lock mechanism actuating device in a direction to actuate said lock mechanism to said "Lock" condition, and

second means responsive to said output electrical signal for effecting the removal of said "Lock" command logic signal from storage.

4,203,040

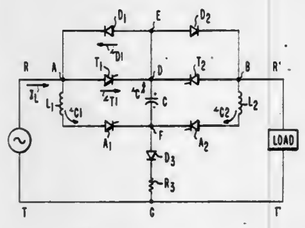
FORCE COMMUTATED STATIC ISOLATOR CIRCUIT

Alberto Abbondanti, and Eric J. Stacey, both of Penn Hills, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 30, 1978, Ser. No. 921,022

Int. Cl.² H03K 17/68

U.S. Cl. 307—65 **8 Claims**



8. An uninterruptible power system (UPS) having a plurality of inverters for supplying AC power to a load through corresponding power lines and a plurality of bilateral static isolators interposed in each of said power lines, respectively, each of said bilateral static isolators comprising: first and second main static controlled switches connected in series-opposition; first and second diode means connected in series-opposition, each of said first and second diode means forming an antiparallel network with one of said first and second main switches and forming a series-conducting network with the other of said first and second main switches; and force commutation means coupled with each of said antiparallel networks; the force commutation means of one of said bilateral isolators being triggered while withholding gating from the associated said first and second main switches for providing soft commutation of a conductive one of said first and second main switches to interrupt the flow of power in the corresponding power line, thereby to disconnect a faulty inverter.

4,203,041

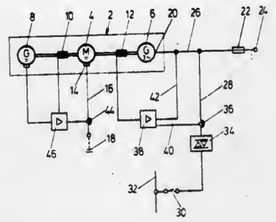
BATTERY/MAINS GENERATOR SET FOR THE PRODUCTION OF INTERRUPTION-FREE CURRENT

Klaus Sachs, Osterode, Fed. Rep. of Germany, assignor to Anton Piller KG., Osterode, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,882

Int. Cl.² H02J 9/06

U.S. Cl. 307—67 **9 Claims**



1. A battery/mains generator set for the production of a continuing electricity supply in the event of failure of the mains supply, the set comprising an a.c. machine capable of operating either as a generator or as a motor and, mechanically coupled thereto, a d.c. machine also operable either as a generator or as a motor, the a.c. machine being, in operation, permanently connected, with the mains supply through a static switch, which prevents back-flow of power into the mains, the a.c. machine, when mains driven, being operable as a motor and driving the d.c. machine, which then operates as a generator and charges a battery in accordance with a required I/V characteristic curve, and, on failure of the mains supply, the d.c. machine being operable as a motor powered by the battery to drive the a.c. machine as a generator, thereby providing an output supply to an external load in place of the mains supply, the set also including a current transformer connected to pass the reactive current flowing between the mains and the a.c. machine or the external load and to supply a potential regulator connected to control a controllable exciter winding of the a.c. machine, whereby the a.c. machine will be operated in accordance with the requirement of the external load for reactive power during mains operation.

4,203,042

INTEGRATED CIRCUIT

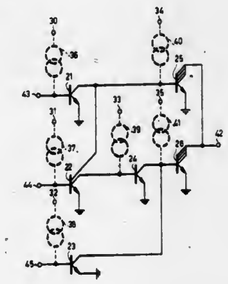
Claude J. P. F. Le Can, Beek, and Johannes A. C. van den Beemt, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,161

Claims priority, application Netherlands, Nov. 4, 1976, 7612222

Int. Cl.² H03K 17/56, 19/08, 19/20; G11C 19/28

U.S. Cl. 307—241 **19 Claims**



1. An integrated circuit for processing of binary signals having a plurality of solid state four-pole circuits, each of said circuits comprising:

a first signal input line for receiving a bivalent signal;

a second signal input line for receiving a bivalent signal;

a signal output line for outputting a bivalent signal;

a control line for receiving a bivalent control signal for connecting alternatively a single one of said signal input lines to said signal output line;

current injector means being provided for powering each of said signal input lines and said control line with injector current; and

drain means being connected to said signal output line for draining an injector current.

4,203,043

TRISTATE CHANGEOVER SWITCHING CIRCUIT

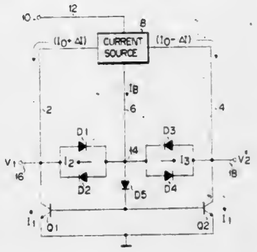
Masayuki Katakura, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 5, 1978, Ser. No. 903,246

Claims priority, application Japan, May 10, 1977, 52-53349; Nov. 15, 1977, 52-136981

Int. Cl.² H03K 17/00, 3/29

U.S. Cl. 307—254 **9 Claims**



1. A switching circuit which comprises:

a current source including an input line for receiving an input signal, first and second signal current lines supplied with differential signal currents $(I_0+\Delta I)$, $(I_0-\Delta I)$ respectively, whose total amount remains constant and one of which has an increment $+\Delta I$ corresponding to a decrement $-\Delta I$ in the other and third signal current line supplied with a constant current;

a first pair of diodes connected in parallel in the opposite directions between the first and third signal current lines and in which the direction of current varies in accordance with the value of current variation ΔI;

a second pair of diodes connected in parallel with each other in the opposite directions between the second and third signal current lines and in which the direction of current varies in accordance with the value of current variation ΔI;

first and second constant current circuits connected to the first and second signal current lines respectively to restrict an amount of input current to the prescribed level; and

first and second output lines which are connected to the first and second signal current lines respectively, and output voltages from which vary in the level with the direction of current passing through the first and second pairs of diodes.

4,203,044

DOUBLE-WALLED ROTOR FOR AN OIL-COOLED ELECTRICAL MACHINE

Phillip S. Linscott, Jr., Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 16, 1978, Ser. No. 869,756

Int. Cl.² H02K 1/32

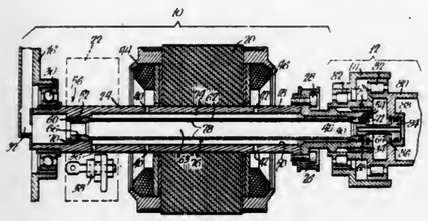
U.S. Cl. 310—61 **12 Claims**

1. A rotor shaft for an electrical machine comprising:

a hollow rotor shaft having a plurality of holes therein for

transmitting oil, a first and a second end, and sealing surfaces on an inner portion of the hollow rotor shaft at said first and second ends;

a hollow tube within said hollow rotor shaft extending from the sealing surface at the first end to the sealing surface at the second end, thereby defining an annular cavity extending along the hollow shaft between the sealing surfaces;



at least one hole extending through the hollow tube for transmitting oil from the inner surface of said tube to said annular cavity;

a shoulder on the inner surface of the hollow rotor shaft adjacent said sealing surface at the first end; and

a removable ring on the inner surface of the hollow rotor shaft adjacent said sealing surfaces at the second end, said ring and shoulder retaining the tube therebetween.

4,203,045

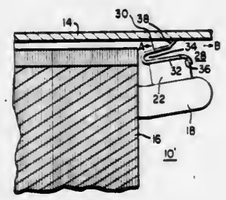
THERMALLY PROTECTED DYNAMOELECTRIC MACHINE

Lloyd W. Buchanan, American Township, Allen County; Noah E. Eberhart, Bath Township, Allen County, and Arthur D. Szabo, American Township, Allen County, all of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 12, 1978, Ser. No. 895,680

Int. Cl.[2] H02K *11/10*

U.S. Cl. 310—68 C **4 Claims**



1. A dynamoelectric machine comprising:

a frame;

a stator core member supported in said frame;

a winding disposed in said stator core;

a thermally responsive protective device disposed against said winding; and

a spring member disposed between and engaged with said frame and said protective device for biasing said protective device against said winding in intimate contact therewith,

said spring member comprising:

a first portion engageable with said protective device and a second portion penetratingly engageable with said frame, said first and second portions being connected at a juncture to form a first angle of predetermined magnitude, said juncture being insertable between said protective device and said frame prior to said first and second portions, said first and second portions providing increased biasing force as said first angle is decreased during progressive insertion of said spring member between said frame and said protective device.

4,203,046

METHOD AND APPARATUS FOR REGULATING THE BRAKE TORQUE OF AN EDDY CURRENT BRAKE

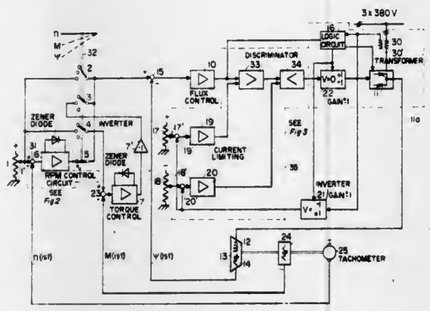
Reimer Homann, Reinheim, and Prodromos Raptopoulos, Gross-Zimmern, both of Fed. Rep. of Germany, assignors to Firma Carl Schenck Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,184

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715870

Int. Cl.[2] H02K *49/04*

U.S. Cl. 310—93 **6 Claims**



1. A circuit arrangement for controlling an eddy current brake, comprising rated signal value setting means (1), first comparator means (31) connected with one input to said setting means (1), actual speed representing signal means (25) connected to another input of said first comparator means (31), speed signal providing means (6) connected to said first comparator means, multiposition selector switch means (32) connectable to said setting means (1) and to said speed signal providing means (6), second comparator means (23) operatively connectable through said multiposition switch means (32) to said setting means (1), actual torque signal measuring means (24) connected to said second comparator means (23), torque signal providing means (7) connected to said second comparator means (23), third comparator means (15) selectively connectable through said selector switch means to said setting means (1), to said speed signal providing means (6), and to said torque signal providing means (7), actual magnetic flux sensing means (14) connected to said third comparator means (15), energizing coil means (12) in said eddy current brake (13), d.c. voltage supply means (11) operatively connected to said coil means (12), control circuit means (10, 16) operatively connected to said third comparator means (15) and to said d.c. voltage supply means for controlling the supply of energizing voltage from said supply means (11) to said coil means (12), and current limiting means (17, 18, 19, 20, 19', 20', 21, 22, 33, 34) operatively connected in a closed loop circuit to limit the power supply to said coil means (12) within presettable limits.

4,203,047

GATE CIRCUIT OF GATE TURN-OFF THYRISTOR

Nagataka Seki, Fuchu, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1978, Ser. No. 888,365

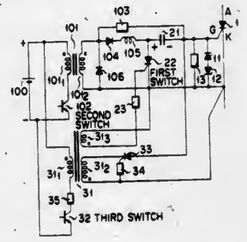
Claims priority, application Japan, Mar. 24, 1977, 52/32396

Int. Cl.[2] H03K *17/72*

U.S. Cl. 307—252 C **5 Claims**

1. A gate circuit of a gate turn-off thyristor, which comprises:

a first circuit means connected between the cathode and gate of a gate turn-off thyristor so as to cause a first pulse current of a large rising rate and a narrow pulse width to flow as reverse current from the cathode to the gate of said gate turn-off thyristor when said gate turn-off thyristor is turned off, wherein said first circuit means includes a first switching element adapted to be turned on when said gate turn-off thyristor is turned off, a capacitor adapted to be charged to such a polarity as to cause reverse flow of the discharge current from said capacitor as said first pulse current from the cathode to the gate of said gate turn-off thryistor through said first switching element when said first switching element is rendered conductive, and a pulse transformer connected to a power source through a second switching element adapted to be rendered conductive at a desired instant and adapted to charge said capacitor to said polarity when said second switching element is rendered conductive; and



a second circuit means connected in parallel to said first circuit means so as to cause reverse flow of a second pulse current of a smaller rate of rising and a wider pulse width than said first pulse current in superimposition thereupon from said cathode to gate when said gate turn-off thyristor is turned off, wherein said second circuit means includes one of an additional pulse transformer and a current transformer having a primary winding connected to a power source through a third switching element adapted to be turned conductive when said gate turn-off thryistor is turned off and a secondary winding to cause said second pulse current to flow reversely from the cathode to the gate of said gate turn-off thyristor when said third switching element is rendered conductive.

4,203,048

COIL SUPPORT FOR DISC ROTOR OF CORELESS MOTOR

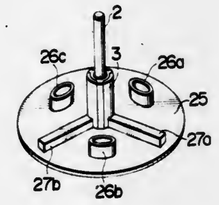
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Sep. 6, 1977, Ser. No. 830,685

Claims priority, application Japan, Sep. 14, 1976, 51-111165; Sep. 14, 1976, 51-111166; Sep. 25, 1976, 51-115191; Sep. 25, 1976, 51-115192; Sep. 27, 1976, 51-116386; Sep. 27, 1976, 51-116387

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—268 **6 Claims**



1. In a rotor of a coreless motor, said rotor being rotatable about an axis of rotation and including a commutator, rotatable about said axis of rotation, and a plurality of coils, the improvement comprising:

a coil positioning member formed integrally with said commutator and extending radially outwardly therefrom, said coil positioning member including a plurality of positioning means, one for each of said coils, said positioning means being located at predetermined locations on said coil positioning member for automatically and positively positioning said coils with respect to said axis of rotation so as to substantially balance said rotor both dynamically and magnetically, said coil positioning member including a plurality of arms and said positioning means including a plurality of guides, each of said guides being carried by a corresponding one of said arms.

4,203,049

ELECTRIC LAMP WITH HYDROGEN GETTER AND HYDROGEN GETTER

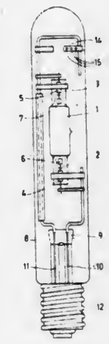
Gijsbert Kuus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1978, Ser. No. 914,135

Claims priority, application Netherlands, Jun. 27, 1977, 7707079

Int. Cl.[2] H01K *1/54*

U.S. Cl. 313—174 **3 Claims**



3. A hydrogen getter for use in an associated electric lamp which comprises a uniform mixture of 65–90% by weight of zirconium powder having a particle size of 100–1000 microns and 35–10% by weight of nickel powder.

4,203,050

GAS DISCHARGE LAMP AND METHOD

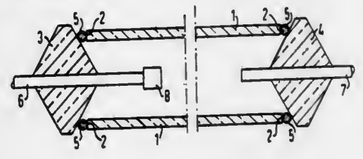
Werner Rech, Taunusstein; Wolfgang Welsch, Wiesbaden, and Eugen Achter, Astheim, all of Fed. Rep. of Germany, assignors to Heimann GmbH, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,797

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734099

Int. Cl.[2] H01J *61/30*

U.S. Cl. 313—220 **10 Claims**



1. A gas discharge lamp having a glass tube and at least two feed-through conductors,

each of said feed-through conductors being connected in gas-tight relationship with said glass tube at the ends of said tube through a sealing part formed of glass,

said sealing parts each having a conically tapered section extending into the interior of said glass tube, and

a glass solder ring interposed between each of said shaped parts and an end surface of said glass tube for sealing said sealing parts in gas-tight relationship to said glass tube,

said glass solder ring compensating for mechanical stresses brought about by different thermal expansion coefficients of the sealing parts and the glass tube.

4,203,051

CATHODE RAY TUBE APPARATUS

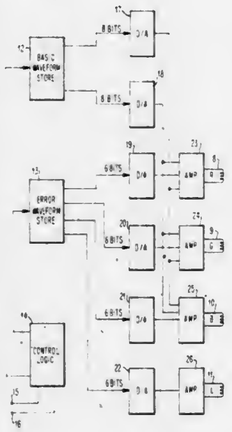
Michael H. Hallett, Chandlers Ford; Michael J. Heneghan, and Brian R. Sowter, both of Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1977, Ser. No. 860,402

Claims priority, application United Kingdom, Dec. 22, 1976, 53583/76

Int. Cl.² H01J *29/70*

U.S. Cl. 315—13 C **11 Claims**



10. In a display system, the method of providing convergence correction signals to a plural beam color cathode ray tube display which comprises:

providing and maintaining in digital storage basic digital information defining nominal convergence requirements of said color cathode ray tube with respect to various areas of the screen thereof,

operating the convergence means of said display in accordance with said information from said basic storage to provide a nominal convergence of said beams, using the result to define digital information characterizing the error in said nominal convergence, and

using said error information to provide final convergence signals for said display.

4,203,052

SOLID STATE IGNITION SYSTEM

Jon H. Bechtel, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 20, 1978, Ser. No. 888,046

Int. Cl.² H05B *37/02, 39/04, 41/36*

U.S. Cl. 315—209 CD **38 Claims**

1. A pulse source for generating high frequency and high energy electrical pulses comprising, in combination, a pulse generating circuit adapted to be connected to a source of AC current, said pulse generating circuit including a capacitor, a load connected to said capacitor, means including an inductor effective to charge said capacitor to a voltage level substantially greater than the voltage of the AC source, trigger means actuatable to discharge said capacitor through said load, and capacitor charge voltage monitoring means effective to delay discharge of said capacitor through said load until any capacitance charge in excess of a predetermined level has discharged back through said inductor into the source.



4,203,053

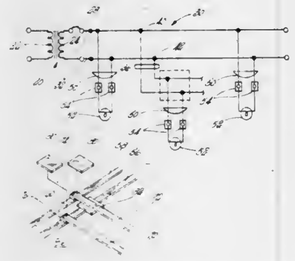
LOW VOLTAGE DISTRIBUTION SYSTEM FOR MINIATURE STRUCTURE

Franziska M. Shepard, 333 E. Las Flores, Santa Maria, Calif. 93454

Filed Jan. 24, 1978, Ser. No. 872,022

Int. Cl.² H05B *39/00;* **A63H** *33/42*

U.S. Cl. 315—254 **14 Claims**



1. A low voltage distribution system for a miniature structure comprising

means for producing a low voltage signal;

a main bus bar formed of a conductive metal foil top layer and an adhesive bottom layer, said conductive metal foil having a pair of elongated bus bar strips each having a selected geometrical dimension across the width thereof, said strips being positioned in spaced parallel relationship wherein the spacing between the parallel center lines of each elongated bus bar strip is of a predetermined distance which is at least equal to said geometrical dimension and said adhesive layer being adapted to attach the main bus bar to a selected portion of a miniature structure with the conductive metal foil exposed;

means for connecting the low voltage signal to the conductive metal foil layer and producing a voltage potential across said strips; and

at least one bi-prong removable electrical fastening device formed of a pair of spaced conductive fastening members each of which are electrically connected to an output terminal, each of said fastening members terminating in an elongated tapered cutting edge, said tapered cutting edges being in spaced parallel relationship and having a dimension therebetween substantially equal to said predetermined distance, and which, when urged into fastening engagement with a said miniature structure, are adapted to pierce, form an elongated slit in and parallel to the center line of each bus bar and be driven through each of the bus bar strips of the main bus bar forming an electrical connection therewith and into fastening engagement with said selected portion of a said miniature structure located under the adhesive layer, and being adapted to terminate said electrical connection with each of the bus bar strips upon removal of the fastening member from fastening engagement with said selected portion of a miniature structure by slideably withdrawing the tapered edges from each bus bar strip leaving a slight elongated slit therein while enabling the strips to maintain a voltage potential thereacross independent of the elongated slit.

4,203,054

CORRECTION FACTOR SIGNALS FOR CATHODE RAY TUBES

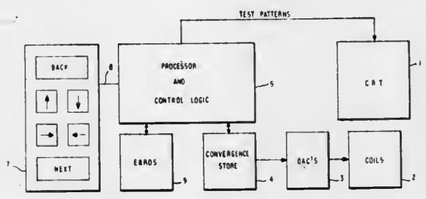
Brian R. Sowter, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1978, Ser. No. 940,695

Claims priority, application United Kingdom, Sep. 15, 1977, 38584/77

Int. Cl.² H01J *29/70, 29/76*

U.S. Cl. 315—368 **14 Claims**



1. In cathode ray tube apparatus in which the screen is notionally divided into a plurality of areas and which includes storage means arranged in operation to contain correction factor signals for each area of the screen, the method of generating correction factor signals comprising the steps of displaying test patterns at a number of points of the screen less than the number of said areas, adjusting the displayed test patterns to remove distortions thereof, deriving correction factor signals for the points at which the test patterns are displayed in accordance with the adjustments effected, and using the derived correction factor signals to determine correction factor signals for each area of the screen.

4,203,055

HIGH VOLTAGE POWER SUPPLY SYSTEM

Derek Chambers, Bedford, N.H., and Hugh C. Masterman, Littleton, Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 758,974, Jan. 13, 1977, which is a continuation of Ser. No. 573,710, May 1, 1975, abandoned. This application Feb. 27, 1978, Ser. No. 881,978

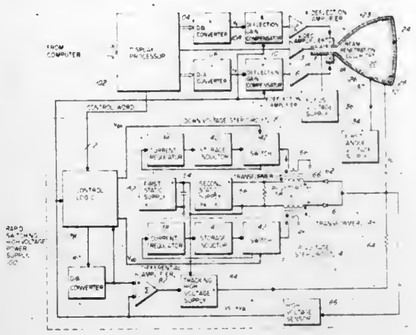
Int. Cl.² H01J *29/80*

U.S. Cl. 315—375 **15 Claims**

1. In combination:

a beam penetration cathode-ray tube having an accelerating electrode and a screen electrode; and

means for producing signals for deflecting the beam of said beam penetration cathode-ray tube in response to input beam position determining signals, the amplitude of said deflecting signals for a fixed amplitude of said input beam



position determining signals being determined in response to the voltage applied to said screen electrode.

4,203,056

VERTICAL DEFLECTION CIRCUIT

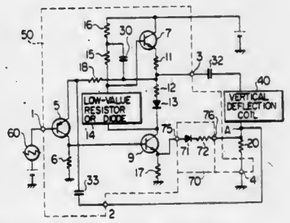
Takashi Itoh, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 17, 1979, Ser. No. 4,221

Claims priority, application Japan, Jan. 20, 1978, 53-4378

Int. Cl.² H01J *29/70*

U.S. Cl. 315—389 **4 Claims**



1. A vertical deflection circuit comprising:

a vertical deflection coil;

an amplifier for supplying a vertical deflection current to said vertical deflection coil in opposite directions, said ammplifier being a vertical output stage in which the amplifier degree for the first period when the vertical deflection current flows through said vertical deflection coil in one direction is higher than that for the second period when the vertical deflection current flows through said vertical deflection coil in the other direction opposite to the one direction;

a driving stage for driving said vertical output stage;

sampling means connected in series to said vertical deflection coil for sampling the vertical deflection current thereby generating a sample signal corresponding to the sampled vertical deflection current;

negative feedback means for negatively feeding back said sample signal to said driving stage; and

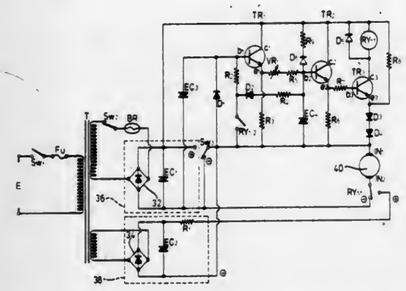
negative feedback amount-correcting means connected to said sampling means for reducing the sampling signal negatively fed back in the second period to a level lower than the sampling signal negatively fed back in the first period, whereby the amplification degree of the vertical output stage for the first period being thus made equal to that for the second period.

4,203,057

CONTROL MEANS FOR THE WIRE WRAPPING MACHINE

Katsuyuki Totsu, No. 4-7, 3-chome, Oshiage, Sumida-ku, Tokyo, Japan

Continuation of Ser. No. 737,078, Nov. 1, 1976, abandoned. This application Nov. 7, 1978, Ser. No. 958,557
Claims priority, application Japan, Dec. 6, 1975, 50-145380
Int. Cl.² H02P *3/10*
U.S. Cl. 318—285 **7 Claims**



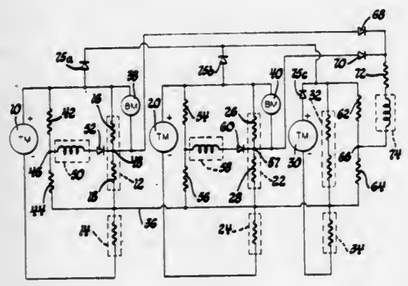
1. A control system for a wire wrapping machine having a lead wire wrapping spindle supported in an outer sleeve for rotation in one direction to wrap said lead wire and in an opposite direction to reposition said spindle with respect to said sleeve, the rotation of said spindle in the opposite direction being limited by engagement with a ratchet mechanism, comprising a reversible DC motor for driving said spindle, a first rectifier circuit connected to a source of current for supplying current of a predetermined polarity, a second rectifier circuit connected to the source of current for supplying current of an opposite polarity and a switching circuit having a manual control operable to connect said first rectifier circuit to said motor for wrapping said lead wire, said switching circuit being thereafter operable independently of said manual control to connect after the elapse of a first predetermined interval said second rectifier circuit to said motor to reverse the rotation of said motor to cause said spindle to rotate into engagement with said ratchet mechanism, and on the elapse of a second predetermined interval to disconnect said second rectifier circuit from said motor independently of said ratchet mechanism.

4,203,058

FAILURE DETECTION CIRCUIT FOR DYNAMIC BRAKING SYSTEM

Stephen S. Chen, Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1978, Ser. No. 936,781
Int. Cl.² H02H *3/04, 3/08, 3/12*
U.S. Cl. 318—380 **4 Claims**



1. In a dynamic braking system for a vehicle having first and second traction motors controlled to substantially the same nominal voltages and connectable in series with first and second dynamic braking grids, respectively, the first dynamic braking grid including two series resistors connected at a first junction, and a blower motor connected across one of the resistors of the first grid for driving a blower to cool the grids when current is applied to the said first grid, a control circuit for detecting failure of the blower motor comprising

a first pair of reference resistors serially connected across the two first grid resistors to form a bridge circuit therewith, first sensor means connected across said bridge circuit to detect a first signal developed due to bridge imbalance only when the blower motor experiences an open circuit condition,

a second pair of reference resistors joined at a second junction and connected across the second grid to provide a reference potential at the second junction, second sensor means connected between the said first and second junctions to detect a second signal that is developed between said junctions only when the blower motor experiences a short circuit condition, and

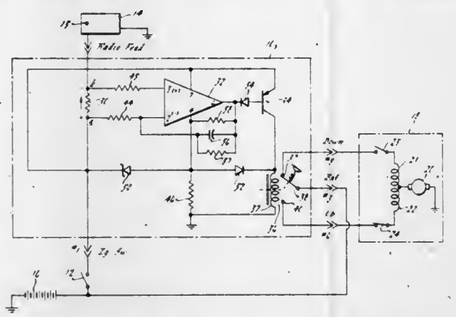
a detector circuit responsive to the first and second signals for generating a control signal when either type of motor failure occurs.

4,203,059

ELECTRONIC CURRENT SENSOR AND CONTROLLER FOR AUTOMATIC POWER ANTENNA

Richard A. Kraus, Berkley, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 780,380, Mar. 23, 1977, abandoned. This application May 3, 1978, Ser. No. 902,473
Int. Cl.² H02P *1/18*
U.S. Cl. 318—446 **18 Claims**



1. A solid state electronic current sensor and controller circuit for sensing the energization of an automobile radio receiver device electrically powered from a potential source and for controlling an extensible and retractable power driven antenna unit remotely located from said receiver device upon energization and deenergization of the receiver device, said current sensor and controller comprising

a first resistor adapted to be connected in series between one side of said potential source and said receiver device;

a high gain, differential operational amplifier having a pair of signal input terminals connected across said first resistor, a signal output terminal and a pair of operating potential supply terminals including a high potential supply terminal and a supply return terminal of which the high potential terminal is connected to one side of said first resistor adjacent said source;

an electrical relay having a coil and a set of switch contacts for connection to said power driven antenna unit to control the extension and retraction thereof upon energization and deenergization of said relay;

an output control transistor having an input control electrode coupled to the output terminal of said amplifier and a pair of output electrodes one of which is connected to the high potential supply terminal of said amplifier and the other to one side of said relay coil in current controlling energization relation with said relay coil; and

a suppression circuit for protection of the operational amplifier and said control transistor from high voltage transients presented to the input of the controller including,

a Zener diode connected between the said return supply terminal of said operational amplifier and the side of said first resistor connected to the said one side of said potential source and

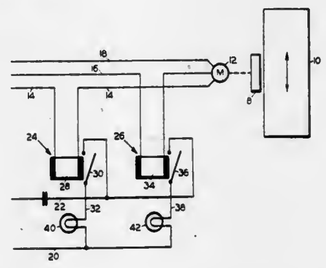
a second resistor connected to the return supply terminal of the amplifier and the other side of said relay coil returned to the other side of said potential source.

4,203,060

VISUAL FEED CONTROL ASSEMBLY FOR CARRIAGE-FED SAWMILL SAWS

Russell A. Heitzman, 349 W. 14th St., McMinnville, Oreg. 97128

Filed Dec. 16, 1977, Ser. No. 861,572
Int. Cl.² G08B *21/00*
U.S. Cl. 318—474 **3 Claims**



1. The combination with an electric motor driven sawmill saw fed by a manually operated variable speed reciprocating log carriage, of a visual or audible signal feed control assembly consisting of:

(a) a three-phase electric circuit electrically connected to the saw motor,

(b) first and second trip current relay means each comprising a solenoid and an associated electric switch,

(c) a second electric circuit,

(d) first and second electrically operated visual or audible signal means in the second electric circuit,

(e) the solenoid component of the first relay means being connected directly in series circuit relationship in one of the lines of the three-phase electric circuit, and the switch component thereof being in series circuit relationship with the first signal means in the second electric circuit,

(f) the solenoid component of the second relay means being connected directly in series circuit relationship in another of the lines of the three-phase electric circuit and the switch component thereof being in series circuit relationship with the second signal means in the second electric circuit,

(g) the first trip current relay means being preset to operate at a predetermined minimum saw motor amperage load, thereby energizing the first electric signal means to signal attainment of minimum log carriage feed rate, and

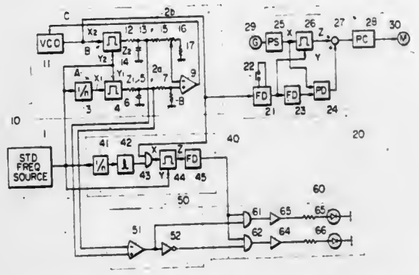
(h) the second trip current relay means being preset to operate at a predetermined maximum saw motor amperage load, thereby energizing the second electric signal means to signal exceeding maximum log carriage feed rate.

4,203,061

ROTATIONAL SPEED INDICATING APPARATUS

Hiroshi Minakuchi, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 28, 1978, Ser. No. 890,911
Claims priority, application Japan, Mar. 30, 1977, 52-36524
Int. Cl.² H02P *7/28*
U.S. Cl. 318—490 **15 Claims**



1. Apparatus for visually indicating the deviation of the speed of a motor from a standard setting speed, comprising:

a variable frequency standard phase signal source for generating a standard phase signal at a manually selectable continuously variable frequency and driving said motor at variable speeds;

a standard frequency signal source;

means for generating a speed related signal at a frequency related to the speed of rotation of said motor;

a phase comparator for detecting a phase difference between said standard phase signal and said speed related signal for correcting the speed of said motor in accordance with the detected phase difference to reduce said phase difference substantially to zero;

a mixing circuit connected to said variable frequency and standard frequency signal sources for generating a beat frequency signal; and

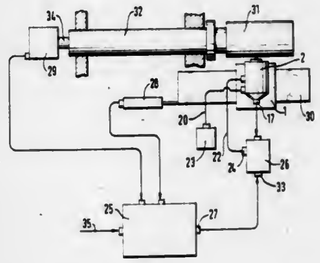
visual indicating means responsive to said beat frequency signal for visually indicating said beat frequency.

4,203,062

MACHINE TOOL CONTROL SYSTEM

Roland Bathen, 31 Hölderlinstrasse, Weissach, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,610
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724808
Int. Cl.² G05B *19/24*
U.S. Cl. 318—571 **5 Claims**



1. A control system for a machine tool including a spindle for rotating a workpiece to be machined and a cutting head mounted for relative movement towards and away from the axis of the spindle comprising:

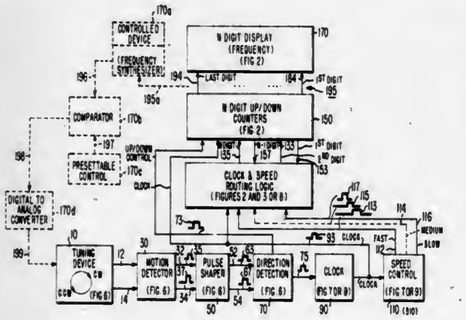
(a) spindle transmitter means for providing a signal indicative of the angular position of the machine tool spindle,
(b) position transmitter means for providing a signal indicative of the relative axial position of the machine tool cutting head and the workpiece rotatable by said tool spindle,
(c) control means for storing information representing desired angular and longitudinal parameters of the desired workpiece shape and including first and second inputs for receiving the signals from said position and spindle transmitter means respectively and an output for providing a signal dependent upon the stored information and said input signals,
(d) an electromagnetic plunger-type coil motor having its plunger mechanically coupled directly to said cutting head for moving said head towards and away from the axis of the tool spindle,
(e) transducer means having an output to provide signals indicative of the respective position of the plunger, and
(f) positional control means having two inputs connected respectively to the output of said control means and the output of said transducer means, an output connected to the plunger coil, and comparator means which compares these signals arriving at the two inputs and, in the event of any difference existing between the actual value and the nominal value, emits a correcting signal to the plunger coil to determine the position of the cutting head.

4,203,063

MOVEMENT DETECTING APPARATUS AND METHOD

Paul Loeb, Glassboro, and Irving P. Magasiny, Cheltenham, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,752
Int. Cl.² G05B *19/28*
U.S. Cl. 318—603 **19 Claims**



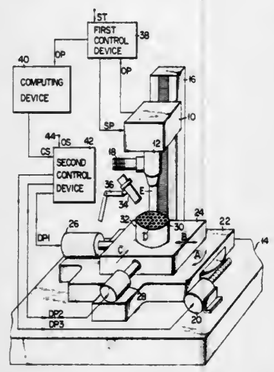
1. Apparatus for detecting the movement of a moveable device comprising;
a. means associated with said device to detect movement of said device to generate a signal indicative of said movement;
b. means responsive to said movement signal to generate a train of clock pulses having a rate corresponding to the rate of movement of said device;
c. means responsive to said clock pulses to generate a speed signal indicative of one range of a plurality of preselected ranges of said clock pulses; and
d. counter means responsive to said clock pulse and said speed signal to provide a count that manifests the displacement of said moveable device and the rate of movement at which said device is moved.

4,203,064

METHOD FOR AUTOMATICALLY CONTROLLING THE POSITION OF SMALL OBJECTS

Etsuji Suzuki; Tomio Kashihara; Susumu Hashimoto, all of Yokohama; Ken Watanabe, Kawasaki, and Tsuyoshi Kodama, Katano, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Apr. 5, 1977, Ser. No. 784,778
Claims priority, application Japan, Apr. 6, 1977, 52-50352
Int. Cl.² G05B *1/06*
U.S. Cl. 318—640 **2 Claims**



1. A method for automatically controlling the position of a small object comprising the steps of:
(a) exposing at least a portion of said object to a light beam;
(b) focusing the optical image created by the reflection of said light from said portion onto first and second separate image forming planes;
(c) illuminating the elements corresponding to said image on first and second linear photoelectric arrays, one of said arrays being formed on each of said planes to detect the position of the object in two directions at right angles to one another;
(d) sequentially scanning the elements of said first and second linear arrays to produce an output pulse from each element corresponding to the illuminated or non-illuminated state of each element;
(e) sequentially detecting the output from each of said elements;
(f) digitally computing the number of non-illuminated elements on each side of said optical image for each linear array from said outputs;
(g) generating first and second correction signals to move said object in the direction of said first and second arrays, respectively, to a point where a predetermined number of non-illuminated elements appears on each side of said optical image for each linear array; and
(h) moving said object to said point in response to said first and second correction signals.

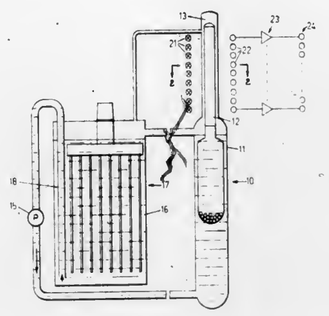
4,203,065

STATE OF CHARGE SENSING MEANS

Darryl R. Whitford, Bedford Park, Australia, assignor to The Flinders University of South Australia and The Minister of Transport, both of, Australia

Filed Jul. 6, 1978, Ser. No. 922,376
Claims priority, application Australia, Jul. 8, 1977, PD0759
Int. Cl.² H02J *7/00*; H01M *10/48*
U.S. Cl. 320—43 **11 Claims**

1. State of charge sensing means for the sensing of the state of charge of a rechargable battery cell having a liquid electrolyte the density of which varies in response to the state of charge, comprising:
an electrolyte recirculating circuit comprising an inlet conduit the mouth of which opens into the cell below the electrolyte level, a container, a return conduit extending from the container back to the cell, and a pump operable to recirculate said electrolyte through said circuit,
a hydrometer float in said container having an upwardly extending opaque neck the height of which above electrolyte level is a function of electrolyte density,



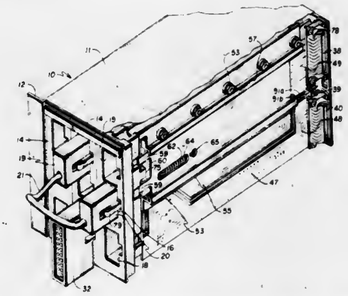
a light source assembly on one side of the opaque neck and a light receiving assembly on the other side of the opaque neck, arranged so that light energy from the light source assembly received by the receiving assembly is a function of said height of the neck,
and slave means connected to and controlled by the light receiving assembly.

4,203,066

ACCESS MODULE

Josef J. Buck, Minneapolis, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Dec. 1, 1977, Ser. No. 856,503
Int. Cl.² G01R *31/02*
U.S. Cl. 324—51 **13 Claims**



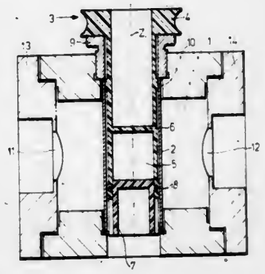
1. A digital patch and access module for use in a patch and access assembly having a series of said modules in side-by-side relationship comprising:
a first plurality of separate conductor leads;
a second plurality of separate conductor leads;
electrical switch means connected between said first plurality of separate conductor leads and said second plurality of separate conductor leads for selectively simultaneously connecting said first and second plurality of separate conductor leads and simultaneously disconnection said first and second plurality of separate conductor leads;
access means for providing monitoring access to a selected plurality of said separate conductor leads when said first and second plurality of conductor leads are electrically connected;
a connection for a power source independent of said plurality of conductor leads;
a selectively removable monitor plug adapted for connection with said access means, said monitor plug including monitor means adapted for monitoring connection with said selected plurality of said separate conductor leads and means adapted for electrically connected said power source conection and said monitor means.

4,203,067

APPARATUS FOR DETERMINING THE WATER CONTENT OF ISOTROPIC MATERIALS BY MEANS OF MICROWAVE ABSORPTION

Hans G. Fitzky, Odenthal-Hahnenberg; Franz Schmitt, Cologne; Norbert Bollongino, Leichlingen, and Helmut Rehrmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,693
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714094
Int. Cl.² G01R *27/04*
U.S. Cl. 324—58.5 C **8 Claims**



1. An apparatus for measuring the water content of a sample of an electrically non-conductive isotropic material, comprising:
a cylindrical single mode transmission cavity resonator excitable in the TM_{010} mode and having protective tube extending centrally axially through the entire resonator cavity perpendicular to the direction of microwave propogation, the tube being open and accessible at both ends and composed of a dielectric material having a low water absorbing capacity and contributing to the homogeneity of an electric field in the resonator center;
a sample container including a sample chamber for holding the sample to be measured and configured to be insertable into the protective tube through one end thereof, the sample chamber having a diameter of not more than 25% of the diameter of the resonator cavity and a height of not more than 50% of the height of the resonator cavity;
a frequency modulated microwave oscillator for supplying microwave energy to the resonator; and
detector means for receiving microwave energy transmitted from the resonator to effect measuring of the water content of a sample in the resonator.

4,203,068

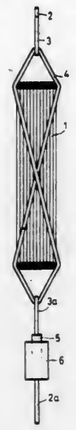
VIBRATING COIL ASSEMBLY

Matthäus Ebensberger; Jürgen Hesse, and Lothar Raab, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,569
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2753251
Int. Cl.² G01R *13/38, 1/02*
U.S. Cl. 324—97 **2 Claims**

1. In a vibrating coil assembly for mirror galvanometers, light-beam oscillographs and the like having a moving coil and a mirror wherein the coil is suspended between suspension elements formed of two tension wires or ribbons the improvement comprising:

the suspension elements having eyes at their ends nearest to the moving coil;
the moving coil being provided with a central window opening; and
a mounting wire passing in a continuous loop successively through the eye of a first suspension element, through the



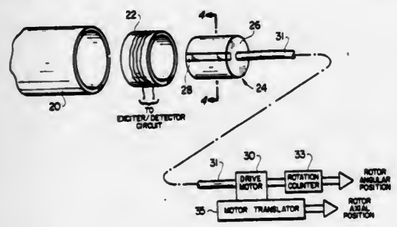
coil window in a first direction from a first side of the coil to a second side of the coil, through the eye of a second suspension element, and through the coil window in a second direction from the second side of the coil to the first side of the coil to form a figure 8 with the moving coil clamped therein.

4,203,069

METHOD AND APPARATUS FOR NON-DESTRUCTIVELY TESTING ELECTRICALLY CONDUCTIVE ELONGATE CYLINDRICAL COMPONENTS USING AN EDDY CURRENT PRODUCING COIL WITH A ROTOR TO CONCENTRATE THE MAGNETIC FIELD IN A SELECTED AREA

Thomas J. Davis, Richland, Wash., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 29, 1977, Ser. No. 865,520
Int. Cl.² G01R *33/00;* **G01N** *27/86*
U.S. Cl. 324—220 **8 Claims**



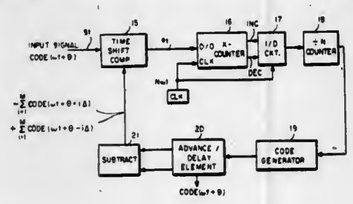
1. Apparatus for non-destructively testing electrically conductive elongate cylindrical components with eddy currents, comprising:
(a) an eddy current inducing coil for generating a magnetic field which induces eddy currents in the cylindrical component being tested, said coil being generally cylindrical, hollow, and sized for insertion into the component;
(b) an independently rotatable rotor located inside of and coaxial with the inducing coil, said rotor includes a first member having high electrical conductivity for dissipating in selected areas the magnetic field energy generated by the coil and a second member having high magnetic permeability and located adjacent to the coil for enhancing the magnetic field coupling between the coil and the component being tested, thereby permitting eddy currents to be induced in a selected volume of the component, said first and second members have a generally integral cylindrical shape, said first and second members shape the magnetic field generated by the coil and concentrate the induced eddy currents into a predetermined inspection volume of the component; and
(c) means for rotating the rotor with respect to the component being tested in a predetermined manner so that the component is non-destructively tested by scanning with concentrated eddy currents.

4,203,070

PSEUDO-RANDOM-NUMBER CODE DETECTION AND TRACKING SYSTEM

William M. Bowles, Arlington, and Duncan B. Cox, Jr., Beverly, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 8, 1978, Ser. No. 931,420
Int. Cl.² H04K *1/04;* **H04L** *25/10, 27/06*
U.S. Cl. 375—1 **13 Claims**



1 A pseudo-random-number code detection and tracking system comprising
means for receiving a transmitted coded signal;
means for generating a local coded feedback signal;
detector means having non-linear response characteristics responsive to said coded received signal and to said local coded signal and including means for comparing said received and local signals to produce an error signal when said received and local signals are not aligned;
means responsive to said error signal for controlling the operation of said local coded feedback signal generating means to vary the characteristics of said local coded feedback signal so as to cause said signals to become aligned and, thereby, to minimize said error signal;
control means, responsive to the statistical characteristics of said error signal, capable of dynamically changing the non-linear response characteristics of said detector means to said local coded signal and to said received coded signal so that said signals remain substantially aligned over a controllable range of error signal levels.

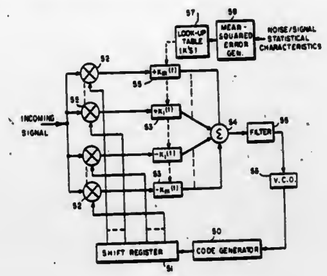
4,203,071

PSEUDO-RANDOM-NUMBER-CODE-DETECTION AND TRACKING SYSTEM

William M. Bowles, Arlington; Duncan B. Cox, Jr., Beverly, and Walter J. Guinon, Newburyport, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 8, 1978, Ser. No. 931,370
Int. Cl.² H04K *1/04;* **H03K** *6/04*
U.S. Cl. 375—1 **14 Claims**

7. A pseudo-random-number code detection and tracking system comprising
means for receiving a transmitted coded signal;
means for generating a local coded feedback signal;
detector means having non-linear response characteristics responsive to said coded received signal and to said local coded signal, said detector means including
shift register means for time shifting said coded feedback signal to provide a first plurality of time-shifted coded feedback signal components advanced in time and a second plurality of timeshifted coded feedback signal components delayed in time;
means responsive to said first and second plurality of time-shifted signals components for providing dynamically selective attenuations thereof; and



means for combining said selectively attenuated time-shifted signal components to produce said time-shifted coded feedback signals.

4,203,072

REDUCTION OF IMPULSE NOISE CONTRIBUTION TO RECEIVER SQUELCH THRESHOLD

Harley W. Beningfield, Satellite Beach, and Ward L. Sparks, Indian Harbour Beach, both of Fla., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 15, 1978, Ser. No. 905,668
Int. Cl.² H04B *1/10*
U.S. Cl. 455—223 **9 Claims**

6. For use with a receiver including demodulator means and demodulator means output intelligence processing means having gating means, squelch means comprising:
first means, connected to said demodulator means, for developing a control signal which is dependent on at least some noise energy in the demodulator means and which is for controlling said gating means; and second means, connected to said demodulator means and responsive to the amplitude of noise therein, for preventing noise energy from contributing to the development of said control signal during controlled intervals each extending at least for the time where the noise amplitude exceeds a predetermined level.

4,203,073

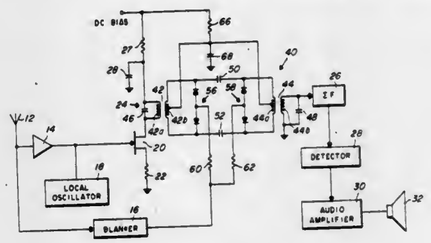
RADIO RECEIVER BLANKER GATE

James W. Rae, Schaumburg, and Larry R. Wright, Glenview, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 670,500, Mar. 25, 1976, abandoned.
This application Feb. 6, 1978, Ser. No. 875,977
Int. Cl.² H04B *1/10*
U.S. Cl. 455—311 **22 Claims**

1. A radio receiver comprising:
an antenna for receiving transmitted ratio frequency signals;

a radio frequency amplifier for amplifying the received signals;
a mixer for translating the received signals to an intermediate frequency;
a blanker for generating blanking signals in response to noise in the received signal;
a blanker gate for processing the intermediate frequency signals and, in response to a blanking signal from the blanker, blanking the intermediate frequency signals, the blanker gate having first and second matched transformers, each transformer having a primary and a secondary winding, the transformers interconnected to form a balanced, doubly tuned network adapted for receiving and tuning to the mixer at its input and tuning to a load at its output, the blanker gate further comprising two diode



pairs, each diode pair series connected, with first diode pair being connected in shunt with the first transformer secondary winding and the second pair being connected in shunt with the second transformer primary winding, each diode pair adapted to be activated to a conducting state in response to a blanking signal, said blanker gate including means for coupling, in the absence of said blanking signal, intermediate frequency signals from said first transformer secondary winding to said second transformer primary winding with a minimal disturbance effect;
an intermediate frequency stage for processing the signals at the output of the blanker gate;
a detector stage, coupled to the intermediate frequency stage, for recovering the baseband signal; and
a means for transducing the baseband signal to audibility.

4,203,074

POTENTIOMETER CIRCUIT

Ernst Gass, Stuttgart, Fed. Rep. of Germany, assignor to Waters Manufacturing, Inc., Wayland, Mass.

Filed Feb. 22, 1977, Ser. No. 770,428
Int. Cl.² H03K *3/00;* **G01P** *3/42*
U.S. Cl. 308—181 **12 Claims**



1. A circuit providing a continuous sawtooth ramp voltage output of uniform slope from two displaced sawtooth voltage inputs of uniform slope, said circuit comprising
circuit means for bringing said sawtooth voltage inputs of uniform slope into an overlapped condition;

comparator means responsive to at least one of said voltage inputs providing a comparator output signal and

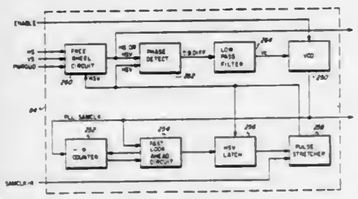
switch means responsive to said comparator output signal alternately switching said voltage inputs, as modified by said circuit means, onto a single line to provide said continuous sawtooth voltage output.

4,203,075

PHASE LOCKED LOOP CIRCUIT FOR VIDEO HARD COPY CONTROLLER

Louis E. Wessler, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1977, Ser. No. 843,012
Int. Cl.² H03B 3/04
U.S. Cl. 331—1 A **12 Claims**



1. A phase-locked loop circuit comprising:

a voltage controlled oscillator responsive to a control voltage for generating a periodic output signal comprised of pulses occurring at a first frequency determined by the value of said control voltage;

first means responsive to said output signal for generating a periodic feedback signal comprised of pulses occurring at a second frequency which bears a predetermined relationship toward said first frequency;

second means, responsive to said feedback signal and to a first input signal having a first periodic interval during which pulses at a third frequency occur and a second periodic interval during which said pulses at said third frequency do not occur, for generating an output signal comprised of the pulses of said first input signal during the first periodic interval of said first input signal and the pulses of said feedback signal during the second periodic interval of said first input signal; and

third means responsive to the feedback signal from said first means and the output signal from said second means for generating said control voltage having a value dependent upon the phase differential between said feedback signal and the output signal from said second means.

4,203,076

CLOCK PULSE SIGNAL GENERATOR HAVING AN AUTOMATIC FREQUENCY CONTROL CIRCUIT

Noriyuki Yamashita, Ichikawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 29, 1977, Ser. No. 828,605
Claims priority, application Japan, Sep. 3, 1976, 51-105977
Int. Cl.² H03B 3/04; H04N 5/05, 5/78
U.S. Cl. 331—25 **4 Claims**

1. A clock pulse generator comprising:

input means for receiving an external reference signal;

controlled oscillator means for generating a clock signal whose frequency is varied by a control signal applied to said oscillator means;

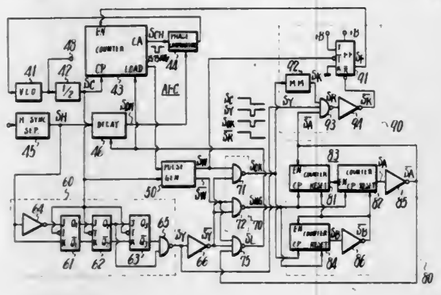
counter means for frequency-dividing said clock signal to obtain a comparing signal having substantially the same frequency as said external reference signal;

phase comparator means for comparing the phase of said comparing signal with the phase of said external reference signal and providing said control signal in correspondence to a detected phase difference therebetween;

first signal forming means for forming a window pulse between a first count and a second count of said counter means;

second signal forming means for generating a further pulse having a pulse width narrower than the width of said window pulse and in a predetermined time relation with said external reference signal;

detecting circuit means for providing a first detecting signal whenever said further pulse occurs substantially during



said window pulse, and a second detecting signal whenever said further pulse occurs substantially at a time other than during said window pulse; and

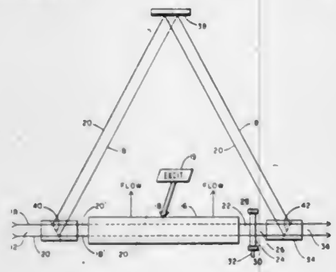
means responsive to said first and second detecting signals for selectively inhibiting said control signal when said further pulse does not occur substantially during said window pulse, including means for generating a hold signal in response to a succession of a predetermined number of said first detecting signals; and, means for causing said counter means to hold the count stored therein in response to said hold signal.

4,203,077

LASER RING RESONATOR WITH DIVERGENCE COMPENSATION

Keimpe Andringa, Richland, Wash., and Charles T. Pike, Lexington, Mass., assignors to Jersey Nuclear Avco Isotopes, Inc., Bellevue, Wash.

Filed Mar. 28, 1977, Ser. No. 781,799
Int. Cl.² H01S 3/083
U.S. Cl. 331—94.5 C **15 Claims**



1. A ring laser comprising:

a laser medium having there through a laser medium path for radiation to traverse said medium;

means for exciting said medium to a lasing condition;

an input beam path for laser radiation;

reflecting means along said laser medium path, for providing reflections in said laser beam path to reapply laser radiation along said laser medium path to said laser medium after an odd number of reflections in a configuration to invert the reapplied radiation from side to opposite side,

said reflecting means including polarizer crystal means including at least one window for injecting laser radiation from said input beam path, into said medium for amplification thereby; and at least one window for transmitting a portion of the radiation from said laser medium to an output beam path;

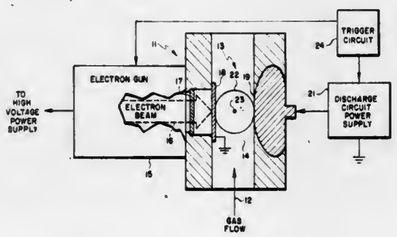
means provided along said laser medium path for changing the polarization in radiation on said laser medium path.

4,203,078

APPARATUS FOR AND METHOD OF OPERATING ELECTRON BEAM ATTACHMENT STABILIZED DEVICES FOR PRODUCING CONTROLLED DISCHARGES AND/OR VISIBLE AND UV LASER OUTPUT

Jack D. Daugherty, Winchester; Jonah H. Jacob, Cambridge, and Joseph A. Mangano, Belmont, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed May 6, 1977, Ser. No. 794,401
Int. Cl.² H01S 3/097
U.S. Cl. 331—94.5 PE **29 Claims**



1. In laser apparatus having means for producing a substantially spatially uniform discharge in a gaseous lasing medium, said discharge producing means comprising:

(a) a gaseous lasing medium comprising a first gaseous species capable of being electronically excited and a halogen bearing molecular second gaseous species;

(b) a cavity for receiving said lasing medium;

(c) first means for ionizing said lasing medium in said cavity and generating free electrons; and

(d) second means for applying a voltage across said lasing medium to heat said free electrons to an energy level necessary to produce an excited metastable state in said first species and excite a portion of said first species to the metastable state whereby said excited first species reacts with said second species to form an excited composite comprising said excited first species and said second species, said first and second means providing an equilibrium ionization rate in said lasing medium; said second species being present in an amount to provide an electron attachment rate at least about n times the said equilibrium ionization rate where n is the number of electron excitations which causes ionization of said first gaseous species.

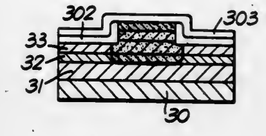
4,203,079

INJECTION LASERS

George H. B. Thompson, Sawbridgeworth, and David F. Lovelace, Waltham Abbey, both of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 886,235
Claims priority, application United Kingdom, Apr. 1, 1977, 13972/77
Int. Cl.² H01S 3/19
U.S. Cl. 331—94.5 H **10 Claims**

1. In a double heterostructure injection laser comprising an active region formed in an active layer of lower band-gap material, which layer is sandwiched between upper and lower layers of higher band-gap material, all three layers having the same conductivity type, wherein overlying said active layer is a surface of the laser provided with a rib of material doped with a mobile dopant providing said rib with the opposite conductivity type to that of the three layers, which rib extends in the direction of the optical axis of the laser cavity from one end face thereof to the other, wherein said dopant has been caused to translate the p-n junction that lies between the rib



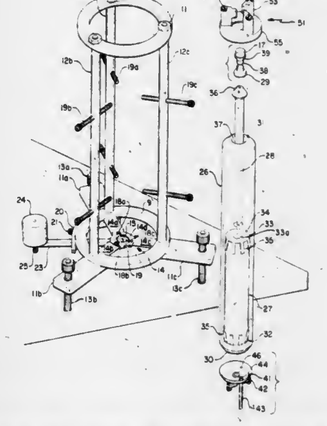
and the three layers downwardly into the active layer in that portion thereof underlying the rib, and wherein the rib is so far removed from the active layer that the contribution to optical guidance in the laser cavity in the lateral direction provided by the rib is insignificant.

4,203,080

METHOD AND APPARATUS FOR PRODUCING LASER PLASMA TUBE AND PRODUCT

Dave L. Wright, Palo Alto; Felix J. Schuda, Mountain View, and Joseph J. Spranza, III, Woodside, all of Calif., assignors to Spectra Physics, Inc., Mountain View, Calif.

Continuation of Ser. No. 689,039, May 24, 1976, abandoned.
This application Jun. 14, 1978, Ser. No. 915,461
Int. Cl.² H01S 3/02
U.S. Cl. 331—94.5 D **12 Claims**



1. A bakable laser plasma tube assembly comprising in combination:

an elongate glass envelope having a cathode end and an anode end with an axis defined therebetween,

a capillary tube in abutment with said anode end of said glass envelope and supported within said envelope along said axis, an electron emissive cathode supported within said envelope at said cathode end in alignment with said axis,

a cathode end assembly including a metal disc in abutment with said cathode end of said glass envelope and electrically and supportably contacting said cathode, a first optical element, means for mounting said first optical element on said disc along said axis and being angularly deformable with respect to said axis, and

an anode end assembly in abutment with said anode end of said glass envelope and including an anode and a second

optical element mounted thereon along said axis, said anode being deformable for angular adjustment of said second optical element along said axis.

4,203,081

PASSIVE CIRCUIT ELEMENT FOR INFLUENCING PULSES

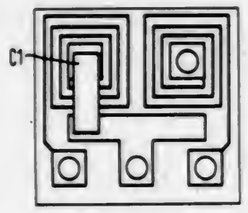
Walter Braeckelmann, Weidach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 17, 1978, Ser. No. 887,652

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714426

Int. Cl.[2] H03H *7/04, 7/18, 7/30*

U.S. Cl. 333—138 **3 Claims**



1. A passive circuit module, including passive circuit elements for influencing pulses, each of the circuit elements being of the type including a first input terminal, a first output terminal, and second input and output terminals which may be combined as a common terminal, and including a pair of inductances connected in series between the first input terminal and the first output terminal, and a capacitor connected between the junction of the inductances and the common terminal, the improvement therein comprising:

a plurality of circuit elements, each of said circuit elements comprising a plurality of spiral conductive paths forming the inductances, insulating substrate means including a first insulating layer carrying said spiral conductive paths such that the turns of one said spiral conductive paths are oppositely directed to the turns of the other spiral conductive paths and such that the paths are superposed with said first insulating layer therebetween;

a contact at the inner end of each spiral conductive path;

a metallized aperture extending through said contact for connecting the inner ends of the spiral paths to form a connecting junction of the inductances and to receive a connection to the capacitor;

said capacitance comprising first and second capacitors connected in parallel and including a second insulating layer and first and second conductive plate layers carried on opposite sides of said second insulating layer, a third insulating layer and third and fourth conductive plate layers carried on opposite sides of said third insulating layer, a fourth insulating layer separating said first conductive plate layer from one of said spiral conductive paths, a fifth insulating layer separating said third conductive plate layer from the other of said spiral conductive paths, said metallized aperture extending through said fourth and fifth conductive layers to connect said contacts of said inner ends of said spiral conductive paths to said first and third conductive plate layers, and an additional metallized aperture electrically connecting said second and fourth conductive plate layers.

4,203,082

SURFACE ACOUSTIC WAVE FILTER

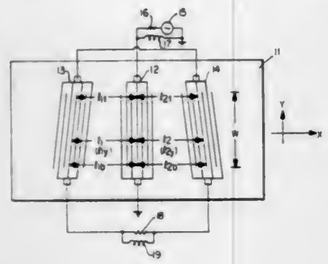
Masahide Tsukamoto, Neyagawa; Masahiro Nagasawa, Hirakata, and Hiroshi Yamazoe, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 31, 1978, Ser. No. 911,082

Claims priority, application Japan, Jun. 3, 1977, 52/66141

Int. Cl.[2] H03H *9/04, 9/26, 9/32;* **H01L** *41/10*

U.S. Cl. 333—194 **27 Claims**



1. A surface acoustic wave filter with a three-transducer configuration on a piezoelectric substrate in which a first transducer connected to a signal source launches surface acoustic waves, and second and third transducers connected in series or in parallel to a load convert said launched surface acoustic waves to electrical signals, characterized in that said second and said third transducers are arranged in such a manner that a distance between central lines of said first and said second transducers and a distance between central lines of said first and said third transducers vary linearly along a Y-direction which is perpendicular to an X-direction which is parallel to the direction of said surface acoustic waves, with the proviso that $|l_{1t}-l_{1b}|=|l_{2t}-l_{2b}|=\alpha\lambda_0$, where l_{1t} and l_{1b} are distances between the center lines of the first and the second transducers at the top part and the bottom part of the first and second transducers, respectively, l_{2t} and l_{2b} are distances between the center lines of the first and the third transducers at the top part and the bottom part of the first and the third transducers, respectively, α is a coefficient between 0.15 and 0.45, and λ_0 is a wavelength of a surface acoustic wave at a center frequency at which said first transducer has a maximum response.

4,203,083

OPERATING MECHANISM FOR A CIRCUIT INTERRUPTING DEVICE

John C. Opfer, Deerfield, and Karel E. Vojta, Chicago, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Aug. 3, 1978, Ser. No. 930,774

Int. Cl.[2] H01H *9/00, 3/00*

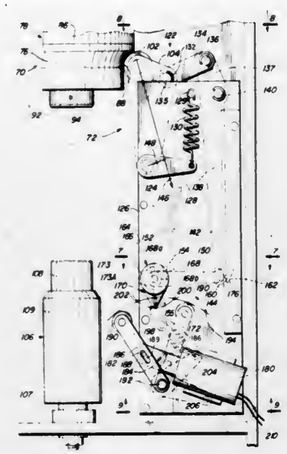
U.S. Cl. 335—174 **28 Claims**

1. Apparatus for operating a circuit interrupting device by selectively latching and releasing a large quantum of stored mechanical energy; the device being of the type which includes a pair of relatively movable contacts which are engaged when the large quantum of energy is stored, release of the large quantum of energy separating the contacts in an interrupting medium to interrupt the circuit, wherein the apparatus comprises:

high mechanical advantage lever-link means for normally latching the large quantum of stored mechanical energy by and during the application to the lever-link means of a low latching force;

movable means for storing latching-force-removing mechanical energy during movement in a first direction in response to a first condition, and for moving in a second direction solely by the stored latching-force-removing energy in response to a second condition which follows the first condition; and

ratchet means for removing the low latching force from the lever-link means in response to movement of the movable



storing means in the second direction so the large quantum of energy is released.

4,203,084

VENTILATED ELECTROMAGNETIC SWITCH

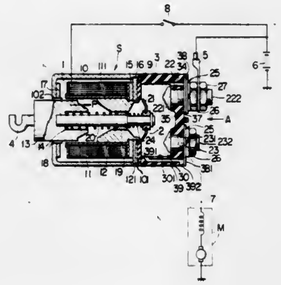
Takao Yamaguchi, Nagoya; Kenjiro Aoyama, Okazaki; Yukihiro Nishio, Kariya, and Sadayosi Kazino, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 8, 1978, Ser. No. 903,614

Claims priority, application Japan, May 13, 1977, 52-62037[U]

Int. Cl.[2] H01H *45/12, 9/02*

U.S. Cl. 335—202 **6 Claims**



1. A ventilated electromagnetic switch comprising:

an electromagnet casing;

a coil mounted in said casing;

a stationary magnetic core mounted to be magnetized by said coil;

a movable magnetic core mounted to be attracted to said stationary magnetic core;

a switch cover mounted to said electromagnetic casing to define a contact chamber therein; and

a contact member arranged in said contact chamber and mounted to be actuated and deactuated by the movement of said movable magnetic core;

said switch cover being provided with at least two meander paths formed therein to independently communicate the inside of said contact chamber with the surrounding atmosphere.

4,203,085

INDUCTION COIL CORE

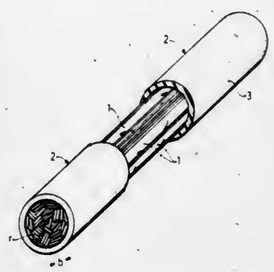
Walter Elsässer, Burgberg, and Werner Hofmann, Sonthofen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,429

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2745990

Int. Cl.[2] H01F *27/24*

U.S. Cl. 336—210 **9 Claims**



1. Induction coil core comprising a plurality of elongated essentially flat metal strips (1) of magnetic material clustered to form a unit having a cross section with a substantially circular circumference having a radius of a first predetermined length (r) extending from an axis;

wherein each of said metal strips has an end edge extending in said cross section and having an end edge length substantially less than said predetermined length;

wherein said end edges of said plurality of metal strips are arranged in random directions in said cross section of said unit;

each of said metal strips having a pair of elongated edges essentially perpendicular to said end edges and essentially parallel to said axis;

and further comprising combining means (2) for permanently maintaining said plurality of metal strips in the shape of said unit.

4,203,086

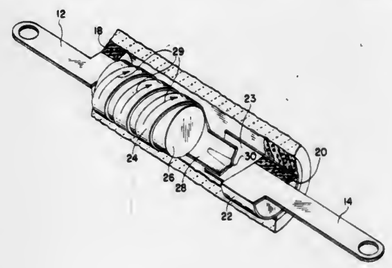
TEMPERATURE-SENSITIVE SPIRAL SPRING SLIDING CONTACT DEVICE

Dennis D. Smith, Carol Stream, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 2, 1978, Ser. No. 947,674

Int. Cl.[2] H01H *37/76*

U.S. Cl. 337—410 **9 Claims**



1. A thermally-sensitive switch comprising an elongated cylindrical housing, first and second leads extending from opposite ends of said housing, a first electrically-conductive projection connected to said first lead, an elongated cylindrical thermally-fusible pellet in said cylindrical housing, an elongated, spiral, electrically-conductive spring in electrical

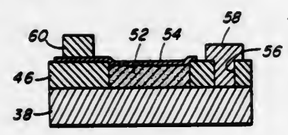
contact with said second lead, and having a plurality of turns which completely encircle said pellet in a spiral path that extends in a direction from said second lead toward said first lead, said spiral spring having a normal inner diameter which is less than the outer diameter of said thermally-fusible pellet, said spiral spring being expanded and held in a stressed expanded diameter state on said thermally-fusible pellet so that a second electrically-conductive projection connected to said spiral spring extends toward said first projection such that when said thermally-fusible pellet melts said spiral spring relaxes to its normal unexpanded diameter and the contact state between said first and said second projections is changed due to rotation of said first projection relative to said second projection.

4,203,087

ABSOLUTE HUMIDITY SENSORS AND METHODS OF MANUFACTURING HUMIDITY SENSORS

Michael G. Kovac, Sudbury; David J. Chleck, Brookline, and Philip Goodman, Lexington, all of Mass., assignors to Panametrics, Inc., Waltham, Mass.

Division of Ser. No. 764,394, Jan. 31, 1977, Pat. No. 4,143,177.
This application Nov. 20, 1978, Ser. No. 962,056
Int. Cl.² G01R 27/02
U.S. Cl. 338—35 **5 Claims**



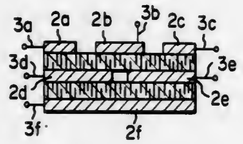
1. The method of manufacturing a humidity sensor comprising the steps of
(a) providing an Si substrate having a microscopically smooth surface,
(b) forming a layer of non-porous SiO_2 on a first region of said Si surface surrounding a second region,
(c) forming an oxide of the Si in said second region to provide a layer of porous SiO_2,
(d) building up an electrically conductive layer, which is substantially permeable to water vapor, over at least a major portion of the exposed surface of said porous SiO_2, and
(e) establishing electrical contact with the layer produced in step (d) and with the Si substrate beneath said porous SiO_2 layer.

4,203,088

PRESSURE-SENSITIVE MULTIPLE RESISTOR ELEMENTS

Ryoichi Sado, Saitama, and Akio Nakamura, Toda, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Japan

Filed Dec. 12, 1978, Ser. No. 968,810
Claims priority, application Japan, Dec. 15, 1977, 52-151143
Int. Cl.² H01C 10/10
U.S. Cl. 338—114 **2 Claims**



1. A pressure sensitive multiple resistor element responsive to an external compressive force comprising
(a) an anisotropically electroconductive composite sheet formed of an electrically insulating rubbery elastomer as a matrix within which a number of electroconductive fibers are dispersed and oriented in alignment in the direction substantially perpendicular to the plane of the composite sheet.
(b) at least one electrode provided on one surface of the composite sheet,
(c) at least two electrodes provided on the other plane surface of the composite sheet, and
(d) the resistance of said element being varied upon application of said compressive force to the composite sheet in a direction substantially parallel to the direction of the orientation of the electroconductive fibers.

4,203,089

ELECTRO-HYDROACOUSTIC TRANSDUCER

David A. DeBell, Annapolis, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1978, Ser. No. 965,015
Int. Cl.² H04B 13/00
U.S. Cl. 367—143 **14 Claims**



1. A transducer for use in a water medium comprising:
(A) a fluid circuit including a supply pump, a return pump, valving means, and accumulator means connected between said supply and return pumps;
(B) a plenum chamber having an aperture open to the ambient water pressure;
(C) said valving means being positioned within said plenum chamber and including a discharge port for discharging the fluid from said supply pump into said plenum chamber, and an intake port for returning fluid from said plenum chamber back to said return pump;
(D) electrodynamic drive means for receiving an input electrical signal and being operatively connected to said valving means to regulate its discharge and intake operation in accordance with said electrical signal;
(E) a container for housing said pumps and accumulator means; and
(F) means for maintaining the interior of said container substantially at the ambient water pressure.

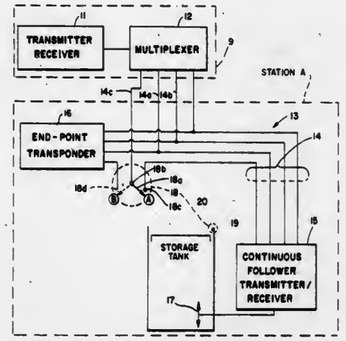
4,203,090

TRANSPONDER SYSTEM INCLUDING AN OSCILLATOR RIPPLE COUNTER CONTROLLING A CODED ANALOG MULTIPLEX NETWORK IN A CIRCUIT WITH A DRIVER/GATE CIRCUIT FOR GENERATING RED-ALERT END CONDITION DIGITAL SIGNALS IN A STORAGE TANK GAUGING SYSTEM

John S. Adamson, Pleasant Hill, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 25, 1977, Ser. No. 855,033
Int. Cl.² G08C 19/16; H04Q 9/14
U.S. Cl. 340—152 T **17 Claims**

1. Transponder network for generating a "red-alert" digital code upon (i) occurrence of an overflow condition within a storage tank under survey and (ii) receipt of a square wave interrogation signal from a transmitter/receiver of a tank gauging systems located at a central station remote from said storage tank but electrically connected to said transponder network through an INTERROGATION, a MARK and a SPACE line of said tank gauging system, comprising:
(A) I/O network for receiving said interrogation signal including voltage divider means for generating a microcircuit drive voltage for a period concident with the pulse width of said interrogation signal;
(B) an oscillator/ripple counter formed essentially of MSI's connected to said I/O network and including at an input, a power-on-reset network for generating a reset pulse for said oscillator/ripple counter, said oscillator/ripple counter generating, in response to said reset pulse, sets of square wave pulses of differing repetition rates and pulse widths;
(C) multiplexer means and gate means connected to each other and to (B) responding to selected sets of said square



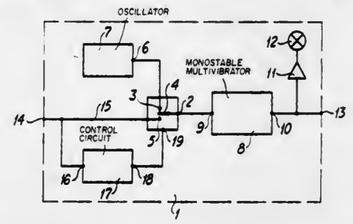
wave pulses to generate a synthetic digital code at microcircuit signal levels at an output means of said gate means;
(D) drive means including switching transistor means having one or more inputs connected to said gate means of (C), and one or more output means connected to said MARK and SPACE lines through said I/O of (A), said drive means being controllable as a function of said synthetic digital code to drive said MARK and SPACE lines between tank gauging operating potentials for generating said "red-alert" digital code of interest at said central station whereby said overflow condition within said storage tank can be indicated.

4,203,091

SEQUENTIALLY ACTUATED FLASHING LIGHT APPARATUS

Hans G. Kruskopf, Åkersberga, Sweden, assignor to Mats Holersson Fridmark, Alvsjo, Sweden

Filed Feb. 22, 1978, Ser. No. 880,271
Int. Cl.² G03B 5/38; H05B 39/09
U.S. Cl. 340—331 **8 Claims**



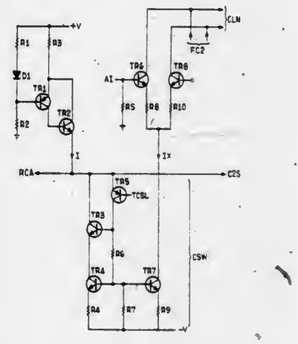
1. A flashing light apparatus including a plurality of flashing light units forming a chain of light units in which each light unit produces a flash of light in a predetermined time slot different from the time slot associated with adjacent light units in the chain, wherein each light unit comprises:
an input terminal for receiving control signals from a preceding light unit in the chain of light units;
an oscillator for producing pulses at a predetermined rate;
a multivibrator circuit for producing output signals;
switching means for selectively connecting said multivibrator to receive pulses from said oscillator in a first mode and control signals from said input terminal in a second mode;
control circuit means responsive to the signals at said input terminal for controlling the operation of said switching means;
flashing means responsive to an output signal from said multivibrator to produce a flash of light; and
an output terminal adapted to provide output signals from said multivibrator circuit as control signals to a subsequent light unit in the chain.

4,203,092

ANALOGUE-TO-DIGITAL CONVERTER

Christopher C. A. Priest, Taplow, England, assignor to The Plessey Company Limited, Illford, England

Filed Sep. 20, 1978, Ser. No. 944,020
Claims priority, application United Kingdom, Oct. 1, 1977, 40859/77
Int. Cl.² H03K 13/02
U.S. Cl. 340—347 AD **4 Claims**



1. A p.c.m. encoder/decoder arrangement comprising at least one transmit amplifier, at least one receive amplifier, a comparator, an analogue-to-digital converter of the ladder network type, a constant current generator and means for switching the constant current generator to drive the transmit amplifier or the receive amplifier, said means for switching the constant current generator to the input or output amplifiers comprising a current steering switch provided for each transmit and receive amplifier, wherein each current steering switch comprises a first transistor which is activated by a select signal which causes current to flow through the emitter and collector and collector load resistors of said first transistor to a negative potential rail, said first transistor causing a second and third transistor to conduct current to the negative potential rail via an emitter load resistor, said second and third transistors having their respective collector and emitter connected in series and a fourth transistor which is activated when said third transistor is activated which thereby causes the respective transmit or receive amplifier to be activated, the arrangement being connected such that the output of the transmit amplifier, the input of the receive amplifier, the output of the ladder network and the input of the comparator are all connected together and (i) when the arrangement is operating in the encoding mode the constant current generator is switched to drive the transmit amplifier which is also fed by the analogue sample to be transmitted and the current produced by the transmit amplifier is applied to the comparator and the comparator is arranged to detect a null current when the current produced by the ladder network is equal to that produced by the transmit amplifier and (ii) when operating in the decoding mode the ladder network produces an analogue sample in accordance with a digital sample to be decoded and the constant current generator is switched to drive the receive ampli-

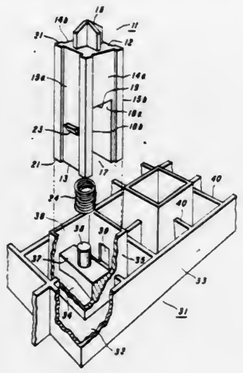
fier to produce an output analogue sample indicative of the signal decoded.

4,203,093

SOLID STATE KEYSWITCH ARRANGEMENT

Jon L. Edwards, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 19, 1978, Ser. No. 943,823
Int. Cl.[2] H03K *17/90*; H01L *43/06*
U.S. Cl. 340—365 L **17 Claims**



1. A solid state keyboard switch having at least one key member comprising an actuation member with an actuation surface for actuating a Hall Effect generator fixedly positioned with respect to the switch, comprising:

(a) a base member having a major surface;

(b) a plunger member extending from said actuation member, said plunger member being comprised of a uniform mixture of a magnetic material and a binder, a portion of said plunger member being charged to a preselected magnetic field, said plunger member being moveable relative to said major surface in response to manual pressure on said actuation surface;

(c) a spring member for normally biasing said plunger member away from said major surface thereby forcing said plunger member to return to a non-activated position upon release of manual pressure from said actuation surface; and

(d) at least one Hall Effect generator being responsive to the relative position of said plunger member for generating an electrical signal in accordance therewith.

4,203,094

APPARATUS FOR SELECTIVELY DISPLAYING A PLURALITY OF INDICATION PANELS

Kunihiro Sowa, Okazaki, and Motoharu Esaki, Oobu, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 7, 1977, Ser. No. 831,291
Claims priority, application Japan, Sep. 21, 1976, 51-126935[U]
Int. Cl.[2] G08B *21/00*; B60Q *11/00*
U.S. Cl. 340—378.5 **3 Claims**

1. An apparatus for selectively displaying a plurality of indication panels, comprising:

a pair of spaced side walls;

first and second rotatable assemblies positioned in spaced parallel relationship and rotatably supported by said side walls;

means for detachably interconnecting said indication panels in an endless belt supported by said rotatable assemblies;

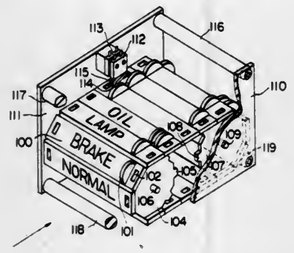
an electric motor coupled to said first rotatable assembly for rotating said first assembly to thereby move the endless belt with respect to the first and second rotatable assemblies; and

motor control means connected to said electric motor for controlling the rotation of said motor, said control means including:

a plurality of input terminals corresponding in number to the number of indication panels;

converter means connected to said input terminals and responsive to a signal on at least one of said terminals to produce a binary coded output representative of the input terminal to which said signal is applied;

means associated with each of said panels for providing panel identification;



means for sequentially sensing the identification means of each panel during movement of the endless belt and developing binary coded signals in response to the sensing;

means for comparing said binary coded output with the binary coded signals developed by said sensing means to produce a motor controlling output from said comparing means, and

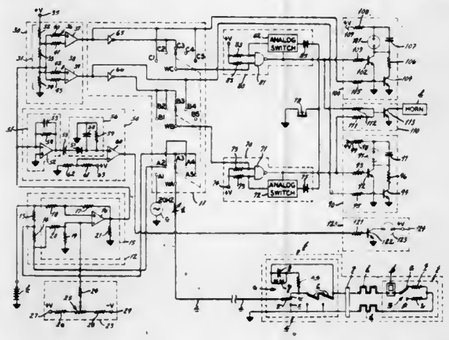
means for connecting the motor controlling output to said electric motor whereby when there is coincidence between a binary coded output and a binary coded signal, said motor is stopped permitting an indication panel to be displayed.

4,203,095

MONITORING APPARATUS FOR DIRECT WIRE ALARM SYSTEM

Stanley Wilson, Jr., St. Charles, Mo., assignor to Potter Electric Signal Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 722,409, Sep. 13, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,278
Int. Cl.[2] G08B *29/00*
U.S. Cl. 340—506 **4 Claims**



1. For use with a security protection system of the type having a fixed voltage power source supplying supervisory current via a communications line to protected premises at which protective devices serve to produce changes from the normal supervisory current level to a plurality of abnormal supervisory current levels,

monitoring apparatus including

A. means to produce a digital signal at an output on occurrence of an abnormal current level in the communications line, said means having an output for each of the plurality of abnormal current levels,

B. a holding register means for each of said outputs, connected to receive the digital signal output and to indicate by a latched output that an abnormal supervisory current level has occured,

C. selector switch means to set the monitoring apparatus either for a normal current level condition or for a selected one of a plurality of abnormal current level conditions, and

D. a signalling circuit means associated with each said holding register means and its corresponding means to produce a digital signal on occurrence of an abnormal current level, each to produce three different displayed indications, one for each of three different states of the monitoring apparatus, each said signalling circuit means including

a neon lamp having a voltage of activation,

a capacitor connected in parallel with said lamp,

a power source coupled to said lamp and capacitor, and supplying a voltage greater than the voltage of activation of the lamp,

a first current path from said parallel connection of said lamp and capacitor, comprising

a first transistor connected to said connection and being so connected to said holding register means as to be rendered conductive responsive to the latched output thereof,

whereby when said first transistor is conductive, to charge said capacitor and light said lamp, together with

a second current path from said parallel connection, comprising

a second transistor so connected as to receive and be rendered conductive responsive to the digital signal output of said means to produce a digital signal to indicate an abnormal supervisory current level,

resistor means in series with said second transistor and being of such value as to limit the current to a value insufficient to light said lamp,

whereby, when only said second transistor is conductive, the capacitor charges slowly due to said resistor means and then discharges through the lamp to cause it to blink at a visually discernable rate,

whereby the said three displayed indications are:

(1) said lamp is off, when said means to produce a digital signal has an output corresponding to a normal supervisory current level when set by said selector switch means for the normal condition; or

(2) said lamp is lighted, when said holding register means has a latched output which is abnormal for the condition for which the apparatus is set by said selector switch means; or

(3) said lamp blinks, when said holding register means has a latched output for that abnormal supervisory current level corresponding to the abnormal condition for which the apparatus is set by said selector switch means.

4,203,096

SENSOR MONITORING ALARM SYSTEM

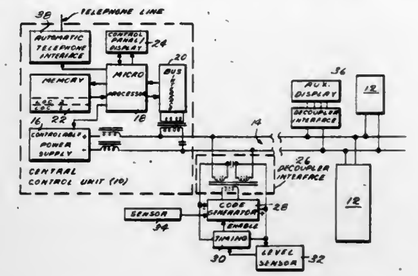
Max F. Farley, and Edmund L. Dutton, both of Marietta, Ohio, assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Apr. 6, 1978, Ser. No. 896,364
Int. Cl.[2] G08B *25/00*
U.S. Cl. 340—538 **16 Claims**

1. A multiplex sensor monitor system of the type including a central control unit connected to a plurality of remote sensor units through a two-wire bus line wherein each remote sensor unit comprises:

means, responsive to a signal indicative of a sensed condition and control signals applied thereto, for controllably generating onto said two-wire bus line a dual tone multifrequency (DTMF) indicative of said sensed condition;

means, for coupling said remote unit to said bus line and for deriving power for said remote sensor unit solely from a DC signal applied thereto over said two-wire bus line without the use of any battery or other local power source; and



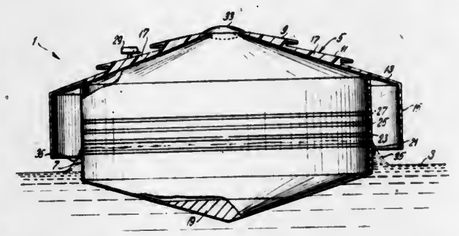
means, responsive to a reset signal applied thereto as an interruption of said D.C. signal, for generating a control signal to effect generation of said DTMF code signal after a respective predetermined time.

4,203,097

POOL ALARM DEVICE

John J. Manning, San Jose, Calif., assignor to RMR Systems, Inc., San Jose, Calif.

Filed Oct. 31, 1978, Ser. No. 956,379
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—566 **3 Claims**



1. An alarm for indicating a disturbance in an electrically conductive liquid medium, said alarm comprising:

a body capable of flotation in the liquid medium;

a first conductive member carried on a lower portion of said body and adapted to be normally immersed in the liquid medium;

a plurality of vertically and axially spaced second conductive members arranged about the periphery of said body and vertically and axially spaced from and normally out of electrical contact with said first conductive member and adapted to be normally out of contact with the liquid medium in the absence of a disturbance in the liquid medium;

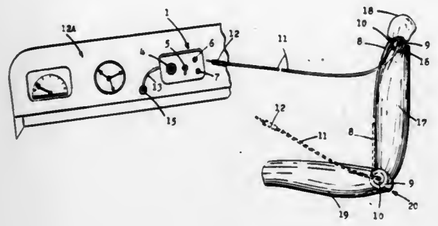
alarm means operatively electrically connected to said first conductive member and to a selected one of said second conductive members such that upon a disturbance of the liquid medium exceeding a minimum predetermined level, said first conductive member and said selected one of said second conductive members are brought into electrical connection through the liquid medium, thereby to activate said alarm means; and switch means for connecting said alarm means to said selected one of said second conductive members, thereby to select the minimum magnitude of a disturbance in the liquid medium required to electrically connect said first and second conductive members to actuate said alarm.

4,203,098

DEVICE FOR PREVENTING DOZING WHILE DRIVING A CAR

Hrand M. Muncheryan, 1735 N. Morningside St., Orange, Calif. 92667

Filed Sep. 18, 1978, Ser. No. 943,249
Int. Cl.² G08B 21/00
U.S. Cl. 340—575 **14 Claims**



1. A device for preventing dozing while driving a car, comprising: a first means having a housing adapted to be attached to the dashboard of an automobile and a second means adapted to be mounted on the upwardly projecting back of a driver's seat and having an integral extension therefrom for abutment with the driver's back when he is seated on said seat, said first means and said second means being in electrical connection theretogether by means of an electric conductor; said first means having therein an electrical circuit energizable from an electric current source therein, electric outlets disposed on the wall of the housing of said first means and connected to said electrical circuit, which is provided therein with branched circuit sections having a current-channeling means to permit selection of a current from said branched circuit sections, and a current-intensity control means in electrically series relation with said current-channeling means to adjust the intensity of current flow therethrough from either of said branched circuit sections to said electric outlets; one of said branched circuit sections having therein means to produce a recurrent flow of current therethrough and when in electrical contact with said current-channeling means a recurrent flow of current therethrough is transmitted to said second means though one of said electric outlets and said electric conductor, and when said current-channeling means is in electrical connection with the other of said branched circuit sections an uninterrupted flow of current passes therethrough to said second means through one of said electric outlets and said electric conductor; means disposed in said second means to receive a recurrent flow of current from one of said branched circuit sections and to produce in said second means pulsative undulations, the vibratory effect of which is transmitted through the integral extension of said second means to the back of a driver, seated in the driver's seat, for preventing him from dozing while driving; and, when said uninterrupted flow of current is transmitted to said second means through the circuit path abovedescribed it produces therein undulations which are variable in intensity by means of said current-intensity control means, the vibratory effect of said undulations being transmitted by the integral extension of said second means to the driver for producing relaxation in his body tired from driving, when he stops his car to rest.

4,203,099

SENSOR FOR SOFT DRINK DISPENSER

Raymond A. Edwards, New York, N.Y., assignor to Elser Farms Corporation, West Chester, Pa.

Filed Jun. 21, 1978, Ser. No. 917,509
Int. Cl.² G08B 19/00
U.S. Cl. 340—619 **8 Claims**

1. A sensor apparatus for indicating when a fluid holding tank within a soft drink dispensing machine and the like has been emptied, said tank including a light passing fluid discharge line, at least a portion of the inside wall thereof being a concaved surface, comprising:

photo monitoring means for detecting the presence of fluid in said discharge line;

means, responsive to said photo monitoring means, for providing a signal indicative of the absence of fluid in said discharge line and for initiating a departure of normal dispensing machine opeation as a function of said fluid absence; and

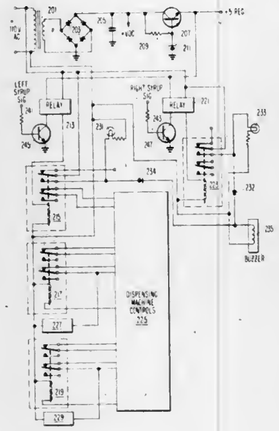


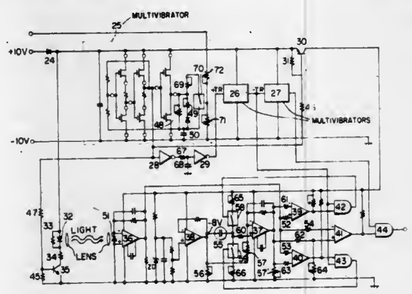
photo means for checking the integrity of said photo monitoring means, being optically coupled thereto.

4,203,100

LIGHT DECREASE TYPE SMOKE SENSOR

Yukio Yamauchi, Kawasaki, and Hiroshi Homma, Tokyo, both of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,466
Claims priority, application Japan, May 23, 1977, 52-58864
Int. Cl.² G08B 17/10
U.S. Cl. 340—630 **12 Claims**



1. A light-depreciation type smoke detector comprising:

a light emitter;

a light receiver;

a smoke detecting space between said light emitter and receiver;

an amplifier connected to said light receiver for amplifying the output of said receiver;

a differential amplifier circuit connected to said amplifier;

a comparator circuit connected to the output of said amplifier circuit;

a memory circuit connected to said comparator circuit and to said differential amplifier circuit, said memory circuit producing an output controlling the output of said differential amplifier which latter output is proportional to any depreciation of the light received by said receiver from said emitter through such smoke detecting space; and

an alarm operating circuit connected to receive the output from said differential amplifier and the output from said memory circuit for producing a signal corresponding to the light depreciation ratio by dividing the output from said differential amplifier by the output from said memory circuit;

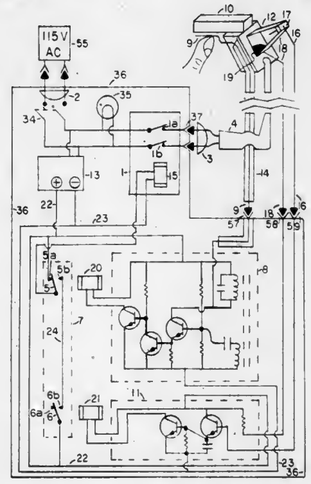
whereby contamination due to age and environment of said light emitter and receiver are minimized.

4,203,101

ELECTRIC POWER INTERRUPTING APPARATUS

Marvin S. Towsend, 1365 Potomac Heights Dr., Oxon Hill, Md. 20022

Continuation-in-part of Ser. No. 758,395, Jan. 11, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 16,196
Int. Cl.² G08B 21/00
U.S. Cl. 340—635 **13 Claims**



1. An AC power interrupting means for a hand-held appliance, comprising:

a. a DC power supply;

b. an AC power connecting means;

c. an electrically actuated switching circuit for controlling said AC power connecting means which is powered by said DC power supply and which is controlled by a first touch circuit controlled switching means and a first orientation circuit controlled switching means in said electrically actuated switching circuit;

d. a touch sensor and a touch circuit powered by said DC power supply for controlling said first touch circuit controlled switching means by means of a first electrically powered switch actuator in said touch circuit; and

e. an orientation sensor and orientation circuit powered by said DC power supply for controlling said first orientation circuit controlled switching means by means of a second electrically powered switch actuator in said orientation circuit.

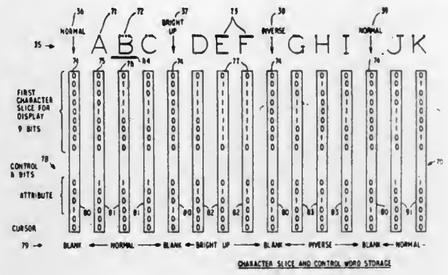
4,203,102

CHARACTER DISPLAY SYSTEM

Alan F. Hydes, Southampton, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1978, Ser. No. 957,371
Claims priority, application United Kingdom, Nov. 16, 1977, 47672/77
Int. Cl.² G06F 3/14
U.S. Cl. 340—723 **10 Claims**

1. A display system utilizing a given display element accessing pattern in which characters may be displayed either in a normal left to right mode or in a reverse right to left mode comprising a display buffer for storing characters to be displayed, a read/write store for storing one complete scan line of character slice bytes as storage words in a predetermined sequence and means to read out the storage words in parallel with constant orientation from said read/write store selectively either in the predetermined sequence or in a reverse sequence to a parallel to serial converter for display, whereby



CHARACTER SLICE AND CONTROL WORD STORAGE

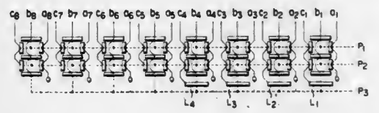
data is displayed selectively either in a normal left to right mode or in a reverse right to left mode, with individual characters having unchanged orientation, without requiring alteration of said pattern.

4,203,103

BATTERY DETERIORATION INDICATOR FOR AN ELECTRONIC DESK TOP CALCULATOR

Kazuhiko Osada, Yokohama; Yoshishige Ogawa, Kawasaki, and Ichizo Takimoto, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Mar. 30, 1978, Ser. No. 891,741
Claims priority, application Japan, Mar. 30, 1977, 52-35704
Int. Cl.² G06F 3/14
U.S. Cl. 340—753 **8 Claims**



1. A battery deterioration indicator for an electronic desk calculator having display units including three column lines and three row lines for enabling a nine-segment display unit, seven of the segments being used to display a character and an eighth segment being used to display a decimal point, the indicator comprising:

means for detecting the progressive deterioration of the voltage level of the battery, including

first means for providing a limiting battery reference voltage level at exhaustion of battery voltage for normal operation of the calculator,

at least one second means for providing at least one predetermined reference voltage representative of at least one stage of deterioration of the voltage level of the battery in advance of the limiting battery voltage level, and

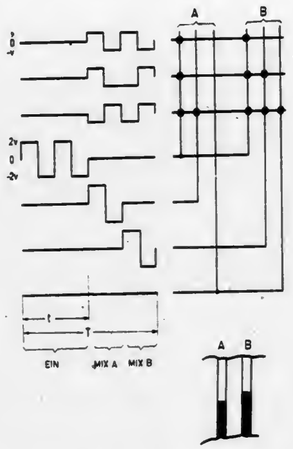
means for comparing the actual voltage level of the battery with said reference voltages and for providing individual signals indicative of the attained reference voltage levels; and

means responsive to said comparing means for displaying the progressive deterioration of the voltage level of the battery including the remaining segment of each of a predetermined number of said display units for respectively indicating the receipt of an individual one of said signals, said remaining segments being arranged in the order of magnitude of said reference voltage levels.

4,203,104
PROCEDURE OF BARGRAPH DISPLAY FOR MEASURED QUANTITIES

Allan R. Kmetz, Nussbaumen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 26, 1978, Ser. No. 909,724
Claims priority, application Switzerland, Jul. 29, 1977, 9398/77
Int. Cl.² G02F 1/13; G09F 9/00
U.S. Cl. 340—754 4 Claims



1. A process for the display of measured quantities as a bargraph with the help of a row of addressable display elements, comprising the steps of:

interconnecting the display elements on one side into contiguous groups and on the other side according to like position within each group;

addressing in a rapid alternation imperceptible to the eye of a beholder either the on-groups, in which all display elements are to be excited, or the mixed group, in which only a part of the display elements are to be excited; and

maintaining the amplitude of the driving voltage across display elements in the mixed group zero during the strobe interval for the on-groups.

4,203,105
SCANABLE ANTENNA ARRANGEMENTS CAPABLE OF PRODUCING A LARGE IMAGE OF A SMALL ARRAY WITH MINIMAL ABERRATIONS

Corrado Dragone, Little Silver, and Michael J. Gans, Monmouth Beach, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 17, 1978, Ser. No. 906,737
Int. Cl.² H01Q 19/13
U.S. Cl. 343—781 P 8 Claims

1. A multiple reflector antenna arrangement comprising

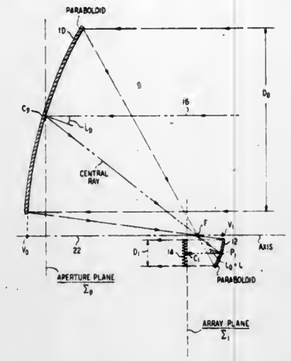
a main parabolic reflector (10) comprising a predetermined exit aperture (D_O) and a geometric focal point (F);

a parabolic subreflector (12) comprising a geometric focal point (F or F_1) and disposed confocally with a next previous reflector along a transmission path of the atenna arrangement in the direction toward the main parabolic reflector from said parabolic subreflector; and

a feed array (14) comprising a plurality of feed elements and directed at the parabolic subreflector

characterized in that

the feed elements of the feed array are disposed substantially on a plane (ξ_1) which is a conjugate plane relative to the exit aperture of the main reflector such that a ray incident at a central point (C_o) of the main reflector from any direction, when reflected by said main reflector essentially

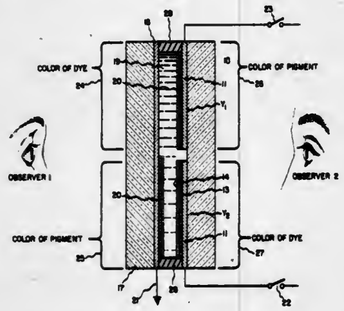


intersects the conjugate plane at said feed array at a central point (C_1).

4,203,106
X-Y ADDRESSABLE ELECTROPHORETIC DISPLAY DEVICE WITH CONTROL ELECTRODE

Andrew L. Dalisa, Yorktown Heights, and Barry M. Singer, New York, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,117
Int. Cl.² G09F 9/32
U.S. Cl. 340—787 10 Claims



1. An X-Y addressable electrophoretic display device comprising:

a first transparent panel serving as a substrate, one side of which is an exterior viewing side of said display;

a first plurality of spaced apart parallel transparent conductive strips adherent to a major portion of the interior surface of said first panel, said conductive strips serving as column electrodes;

a dielectric insulating layer covering said column electrodes;

a second plurality of spaced apart parallel conductive strips extending transversely to said column electrodes, said second plurality of conductive strips adhering to the other surface of said dielectric insulating layer and serving as row electrodes and as control electrodes;

a plurality of substantially uniformly spaced minute perforations in said row electrodes and said dielectric insulating layer;

a second transparent panel corresponding in size to and substantially parallel with said first panel and in spaced apart registration therefrom, one side of which forms an exterior viewing side of said display and the other side of which has an interior plane surface facing the interior side of said first transparent panel;

the interior side of said second transparent panel having a transparent conductive layer adhered thereon forming one continuous electrode layer;

sealing means to enclose the space between said first and second transparent panels, forming a region therebetween;

said enclosed region between said panels being filled with an electrophoretic fluid having pigmented particles homogeneously suspended therein, said particles capable of receiving an electrical charge;

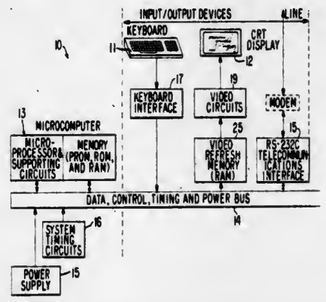
means for furnishing an electrical charge to said pigmented particles;

means to supply voltages to said column electrodes, row electrodes and continuous electrode such that the electrical field between said electrodes can be selectively adjusted by the varying voltages on addressed column electrodes and row electrodes and said continuous electrode to establish a threshold on said row electrodes for transporting said charge particles between said continuous electrode and said addressed column electrodes, depending on the direction of the electrical field, resulting in an image to be formed in the addressed intersection regions corresponding to said addressed column electrodes and row electrodes of said display panel.

4,203,107
MICROCOMPUTER TERMINAL SYSTEM HAVING A LIST MODE OPERATION FOR THE VIDEO REFRESH CIRCUIT

Lawrence R. Lovercheck, Palo Alto, Calif., assignor to Zentec Corporation, Santa Clara, Calif.

Filed Nov. 8, 1978, Ser. No. 958,714
Int. Cl.² G06K 15/20
U.S. Cl. 340—799 14 Claims



1. Apparatus for refreshing a video display comprising:

(a) a memory for storing list address pointers, lists, and character data, each of said lists including a data address pointer;

(b) a video circuit coupled to said memory for reading a list address pointer at a designated location in said memory to be pointed to one of said lists in said memory and to read the data address pointer of said one list to be pointed to the storage location of character data; and

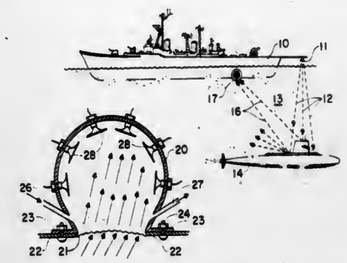
(c) a video display coupled to said video circuit for displaying the character data to which said video circuit was pointed.

4,203,108
UNDERWATER DETECTION SYSTEM

Hrant Eknayan, 7528 Colombia St., South San Gabriel, Calif. 91770

Filed Aug. 18, 1961, Ser. No. 135,399
Int. Cl.² H04B 13/02
U.S. Cl. 340—850 1 Claim

1. A system for detecting the presence and position of submerged objects below the ocean surface, comprising in combination, means for projecting a beam of electro-magnetic rays falling within the 0.4800 to 0.5800 micron wave band in the direction of an object to be detected, a receiver for receiving rays reflected from an object in the path of said projected beam, said receiver comprising a spherically shaped body having an aperture formed in the area which is in contact with the ocean water to permit said reflected rays to enter and impinge on the inner surface of said spherically shaped body,

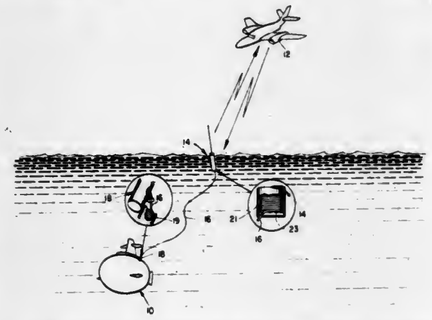


inlet and outlet means for circulating dry cooled constant temperature nitrogen in said spherically shaped body under sufficient pressure to prevent ocean water from entering said spherically shaped body, and a plurality of lead sulfide cells mounted on the inner surface of said sphere for generating an output signal proportional to the intensity and angle of entry of the reflected rays.

4,203,109
SUBMARINE COMMUNICATION SYSTEM

Samuel S. Ballard, Hollis, and Ernest E. Vanham, South Lyndeborough, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Sep. 28, 1964, Ser. No. 399,640
Int. Cl.² H04B 3/60
U.S. Cl. 340—850 9 Claims



1. In a method for communicating information between a submerged vessel and a buoy, the improvement comprising the steps of

A. allowing said buoy to assume substantially the same horizontal velocity as the water in which it is floating,

B. feeding out a communication cable interconnecting said buoy with said vessel at substantially the rate at which the distance between said vessel and said buoy increases,

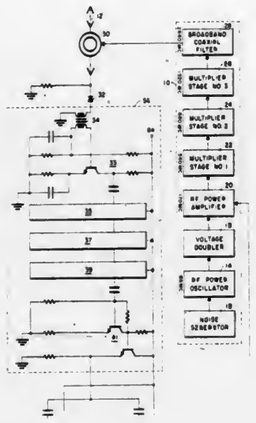
C. destroying said buoy upon command, and

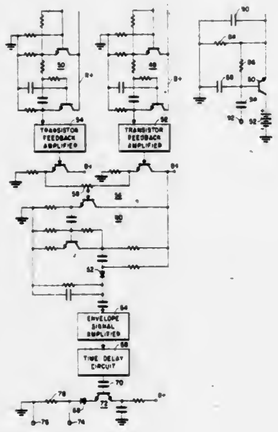
D. releasing the fed-out cable from said vessel.

4,203,110
MICROWAVE PROXIMITY FUZE REQUIRING NO WARM-UP TIME AFTER BEING ACTIVATED

John O. Dick, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 12, 1963, Ser. No. 265,022
Int. Cl.[2] F42C 13/04
U.S. Cl. 343—7 PF 3 Claims





1. In a microwave proximity fuze that can be activated within a few milliseconds prior to intercept of a target, the combination comprising:

(a) a semiconductor frequency modulated microwave generator including a transistor power amplifier,

(b) a power supply for supplying B+ voltage to said power amplifier,

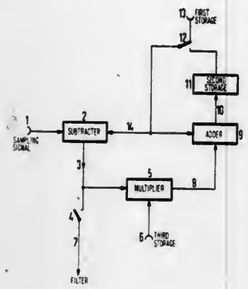
(c) a silicon controlled rectifier switch connected in series between said power supply and said power amplifier, and having its control electrode connected to a terminal adapted to be connected to a control arming signal source,

(d) bias circuit means connected to said rectifier switch for maintaining a bias voltage sufficient to keep said switch in a non-conducting condition until an arming signal with sufficient voltage to overcome said bias voltage is applied to said switch.

4,203,111
RADAR DEVICE INCLUDING A CIRCUIT ARRANGEMENT FOR REDUCING INTERFERENCE

Walter Buehring, Meckenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,162
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737088
Int. Cl.[2] G01S 9/42
U.S. Cl. 343—7.7 2 Claims



1. A radar device particularly with a non-constantly scanning radar antenna, wherein a circuit arrangement for reducing the interference echoes due to ground reflection is provided comprising a subtracter (2) with a first input to which the scanning values are supplied and with output differential signals which are tapped for further processing, the second input of said subtractor (2) switchable with a line (14) and a switch (12) between a first storage means (13) which temporarily supplies a substitute value and a second means storage (11) which supplies an estimated recursion value formed by recursion of the preceding scanning values to the subtractor (2), a multiplier (5) with its first input connected to the output of the subtracter (2) and a third storage means (6) connected to the second input of the multiplier and said third storage supplying a recursion factor μ_i, an adder (9) its output connected to the input of said second storage (11) and having a first input connected to the output of said multiplier (5) and a second input connected to said line (14) on which the substitute value or the recursion value are supplied.

4,203,112
METHOD AND SYSTEM FOR INCREASING THE DISTANCE WHICH CAN BE UNAMBIGUOUSLY MEASURED BY A RADAR SYSTEM

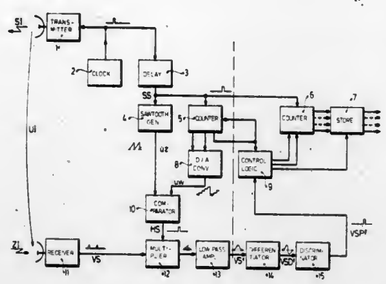
Berthold Wocher, Leonberg, and Thomas Pfendler, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 908,980
Claims priority, application Fed. Rep. of Germany, May 24, 1977, 2723355
Int. Cl.[2] G01S 7/28, 9/12
U.S. Cl. 343—13 R 10 Claims

1. Method for furnishing a distance signal signifying the distance from a radar apparatus location to a target located at less than a predetermined maximum distance from the radar apparatus, in response to a substantially periodic reflected received sequence of radar pulses having a pulse repetition frequency corresponding to the radar pulse repetition frequency of a transmitted radar pulse sequence, comprising, in accordance with the invention, the steps of

creating a sequence of auxiliary pulses having an auxiliary pulse repetition frequency slightly less than said radar pulse repetition frequency and periodically synchronized to said transmitted radar pulse sequence at time periods corresponding to the time required for a radar pulse to travel twice said predetermined maximum distance;

multiplying said received sequence of radar pulses by said sequence of auxiliary pulses thereby creating a multiplier output signal;



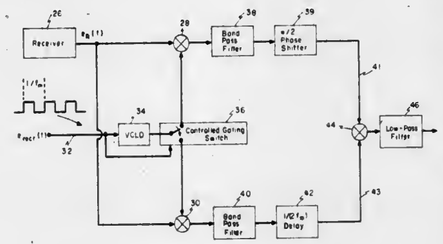
creating a sequence of stretched pulses in response to said multiplier output signal;

and furnishing said distance signal under control of said sequence of stretched pulses.

4,203,113
RADAR METHOD AND APPARATUS

Elie J. Baghdady, 21 Overlook Dr., Weston, Mass. 02193

Continuation-in-part of Ser. No. 552,568, Feb. 24, 1975, Pat. No. 4,106,023. This application Aug. 4, 1978, Ser. No. 931,000
Int. Cl.[2] G01S 9/24
U.S. Cl. 343—14 20 Claims



19. A method for determining the distance to an object comprising the steps of:

broadcasting a carrier wave having abrupt frequency shifts;

receiving the carrier wave returned by reflection from the object;

frequency converting a higher frequency portion of the received carrier wave to produce a first signal within a predetermined frequency range;

separately frequency converting a lower frequency portion of the received carrier wave to produce a second signal within the same predetermined frequency range; and

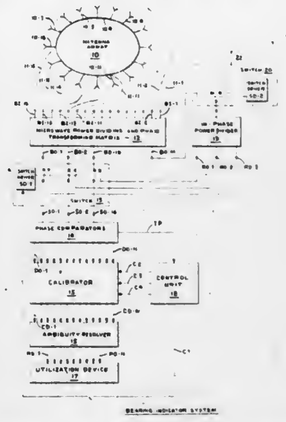
producing a signal related in value to the distance of the object responsive to the phase difference between the first and second signals.

4,203,114
DIGITAL BEARING INDICATOR

Carl W. Gerst, Skaneateles; Hugh A. Hair, Fayetteville, and Stig L. Rehnmark, Skaneateles, all of N.Y., assignors to Anaren Microwave, Inc., Syracuse, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,243
Int. Cl.[2] H04B 7/00
U.S. Cl. 343—100 SA 31 Claims

1. Apparatus for generating a representation of the bearing of a source of microwave energy comprising: an antenna array means having N antenna elements equispaced about an arc of a circle greater than 180° in a plane for receiving microwave energy, where N is an integer; microwave power dividing and phase transforming means having N input ports and a set of output ports, first connecting means for connecting each of the N input ports to a different one of said antenna elements; n two-input port phase comparator means, each of said phase comparator means giving an indication of the phase difference between the signals arriving at their respective input ports, n being an integer greater than 1 and less than N/2; second

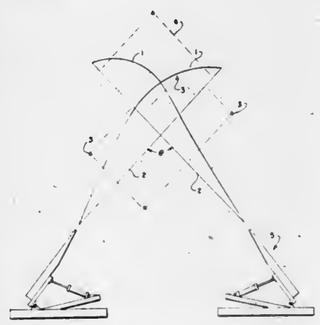


connecting means for connecting the input ports of each of said phase comparator means to a different pair of output ports of said microwave power dividing and phase transforming means; and ambiguity resolving means connected to said n phase comparator means for processing said indications of the phase differences to give a multidigit representation of the bearing of a source of microwave energy.

4,203,115
ZERO-DOPPLER SHIFT POSITIONING TECHNIQUE

Joseph F. Hannigan, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 11, 1973, Ser. No. 402,491
Int. Cl.[2] G01S 3/02
U.S. Cl. 343—112 R 9 Claims



1. A system for determining position location comprising:

a. a pair of projectiles successively propelled along non-parallel, non-circular atmospheric paths;

b. a base station from which said projectiles are propelled;

c. means located selectively on said projectiles and said base station for transmitting carrier and time coded signals from said projectiles and said base station; and

d. observer means including doppler receiver means, means for receiving and storing said time coded signals and means for communicating to a computing means said

received time coded signals corresponding to zero change in said carrier signal as said projectiles travel a predetermined course relative to said base station whereby the position of said observer means at the intersection of perpendiculars to the horizontal subtrack of the projectile trajectories relative to the initial launching position of said projectiles may be determined.

4,203,116

MICROSTRIP ANTENNA RADIATORS WITH SERIES IMPEDANCE MATCHING MEANS

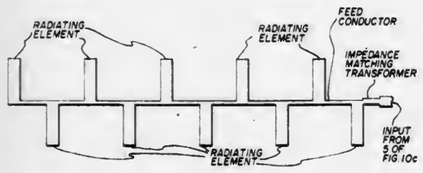
Leonard Lewin, Boulder, Colo., assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,308

Claims priority, application United Kingdom, Sep. 15, 1977, 38545/77

Int. Cl.² H01Q *1/38*

U.S. Cl. 343—700 MS **6 Claims**



1. A microstrip antenna arrangement comprising:
at least one microstrip half wave length radiating element;
an input microstrip feed line for microwave energy; and
a quarter-wave microstrip line comprising a series of rectangular patches of alternately narrow and wide widths to provide alternating high and low characteristic impedance and said patches being connected in series between said input line and said element, said plurality of patches providing an impedance match between said input line and said element.

4,203,117

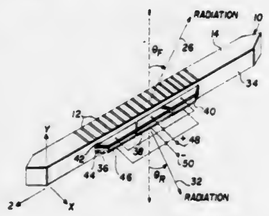
DUAL BEAM LINE SCANNER FOR PHASED ARRAY APPLICATIONS

Harold Jacobs, West Long Branch, and Robert E. Horn, Middletown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 28, 1978, Ser. No. 946,687

Int. Cl.² H01Q *3/26*

U.S. Cl. 343—701 **17 Claims**



1. A semiconductor waveguide scanning antenna providing dual beams of radiation, comprising in combination:
a length of semiconductor waveguide of rectangular cross section adapted to propagate wave energy along a longitudinal axis transverse to said cross section and having a plurality of spaced parallel metallic elements selectively located on one surface of said waveguide along its length which act as perturbations that interact with the propagated wave energy to produce a first radiation pattern directed outwardly from said one surface at a predetermined radiation angle and a second radiation pattern at substantially the same said predetermined radiation angle directed outwardly from a surface opposite said one surface;
distributed PIN diode means formed from contiguous layers of semiconductive material located on an adjacent surface of said waveguide relative to said one and said opposite surface, said layers being disposed orthogonally with respect to and projecting outwardly from said adjacent surface, so that the PIN diode lies on an adjacent surface entirely outside the rectangular cross section of the semiconductor waveguide; and
means coupled to said PIN diode means for applying a bias potential thereto for controlling the conductivity of said PIN diode means which has the effect of varying the wavelength of said semiconductor waveguide and accordingly the radiation angle of said first and second radiation pattern.

4,203,118

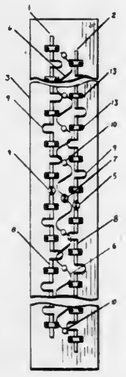
ANTENNA FOR CROSS POLARIZED WAVES

Andrew Alford, 15 Sixth Rd., Woburn, Mass. 01801

Filed Apr. 10, 1978, Ser. No. 895,344

Int. Cl.² H01Q *9/18*

U.S. Cl. 343—727 **9 Claims**



1. A panel antenna for cross polarized waves comprising:
(a) a metal panel on which are mounted two parallel collinear dipole arrays spaced at a distance between 0.3 wavelength and 0.6 of the wavelength from each other, and
(b) a zigzag antenna located half way between the two collinear arrays with its longitudinal axis parallel to the arrays and located substantially half way between the centers of the two collinear arrays.

4,203,119

THERMAL PRINTERS

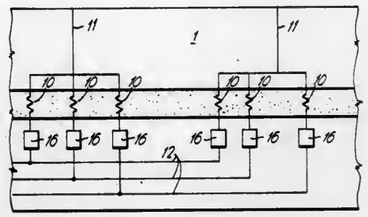
Hussein M. Naguib; David R. Baraff, both of Ottawa, and Steven Kos, Hazeldean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 5, 1978, Ser. No. 939,385

Int. Cl.² G01D *15/10*; H05B *1/00*

U.S. Cl. 346—76 PH **3 Claims**

1. A thermal printer for printing on a heat-sensitive receptor, the printer comprising:
an array of thick film resistive printing elements and, series-connected to each resistive print element, a respective switching element, each switching element comprising a thick film deposit incorporating vanadium dioxide, the material undergoing a marked resistivity change at a predetermined temperature owing to a change in crystalline structure of said vanadium dioxide; and
addressing circuitry for selectively applying a potential difference across a combination of a printing element and its series-connected switching element thereby to cause joule heating of said switching element to promote a



reduction in the material resistivity whereupon the series-connected resistive printing element experiences a corresponding increase in potential difference and consequently undergoes joule heating.

4,203,120

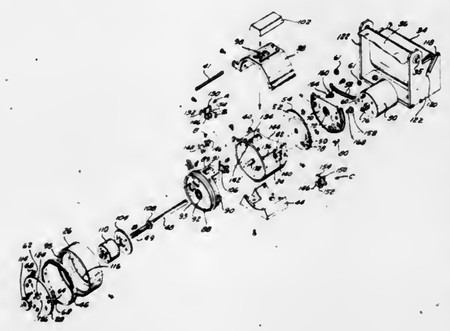
RECORD DRIVE SYSTEM FOR ROTARY ELECTRICAL STYLUS DEVICE

Olin B. King, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Division of Ser. No. 611,785, Sep. 9, 1975, Pat. No. 4,100,551. This application Mar. 22, 1978, Ser. No. 888,960

Int. Cl.² G03G *17/00*

U.S. Cl. 346—162 **6 Claims**



1. A rotary electrical character printing device including a rotor, a plurality of styli secured to said rotor, drive means for turning said rotor, record sheet material feed means coupled to said drive means for feeding a strip of said material past said rotor, with the styli contacting said material, at a speed which is directly proportional to the speed of said rotor, means for electrically energizing each of said styli to form dots on said record material, said drive means including a direct-current electrical drive motor, position indicating means driven by said motor in synchronism with said rotor and including a plurality of periodically-spaced indicia for each of said characters for producing sequential electrical signals upon the detection of corresponding associated indicia, thereby ensuring synchronization between each one of said indicia and an associated one of said dots, and control means utilizing said signals to control the timing of the energizing of said styli, whereby the spacing of dots within each character is substantially independent of the speed of said motor.

4,203,121

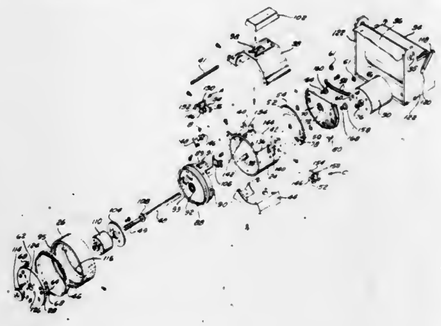
ROTARY ELECTRICAL PRINTER AND METHOD USING DOT-BY-DOT SYNCHRONIZATION

Olin B. King, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Division of Ser. No. 611,785, Sep. 9, 1975, Pat. No. 4,100,551. This application Mar. 22, 1978, Ser. No. 888,969

Int. Cl.² G03G *17/00*

U.S. Cl. 346—162 **6 Claims**



1. In a rotary printer including a rotor, a plurality of electrically actuatable print members secured to said rotor and spaced apart from one another on said rotor, drive means for rotating said rotor and thereby moving said print members across a record surface to be printed upon, indicating means for producing electrical position signals indicating the position of said rotor, actuating means responsive to said position signals for selectively electrically actuating each of said print members when said rotor is in a pre-determined position, said print members being adapted to print images by forming dots on said record surface, said indicating means including indicia, the spacing of said indicia corresponding to the desired spacing of dots on said record surface, there being one of said indicia for each of said dots, so as to produce each of said position signals in response to one of said indicia to thus precisely control the location of said dots, whereby the timing of the formation of each dot is controlled by the actual position of said rotor and is substantially independent of the rotor speed.

4,203,122

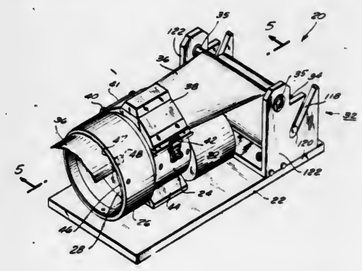
ELECTRICAL STYLUS ADJUSTMENT MEANS AND METHOD FOR ROTARY ELECTRICAL PRINTER

Olin B. King, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Division of Ser. No. 611,785, Sep. 9, 1975, Pat. No. 4,100,551. This application Mar. 22, 1978, Ser. No. 888,970

Int. Cl.² G03G *17/00*

U.S. Cl. 346—162 **4 Claims**



1. In a rotary printer including a rotor, a plurality of electrically actuatable print members secured to said rotor and spaced apart from one another on said rotor, drive means for

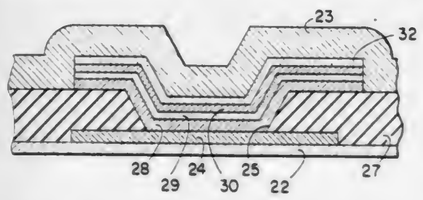
rotating said rotor and thereby moving said print members across a record surface to be printed upon, indicating means for producing electrical position signals indicating the position of said rotor, actuating means responsive to said position signals for selectively electrically actuating each of said print members when said rotor is in a pre-determined position, control means for changing the position of the printing produced on said record surface by at least one of said printing members, said control means comprising means for changing the time separation between successive actuations of said print members, said indicating means including indicia rotating with said rotor, a plurality of stationary indicia detectors near said indicia, said detectors being adapted to produce said position signals in response to detection of said indicia, said control means comprising means for adjusting the angular position of one of said detectors with respect to said rotor.

4,203,123

THIN FILM MEMORY DEVICE EMPLOYING AMORPHOUS SEMICONDUCTOR MATERIALS

Roy R. Shanks, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 12, 1977, Ser. No. 859,580
Int. Cl.[2] H01L *27/24*
U.S. Cl. 357—2 **3 Claims**



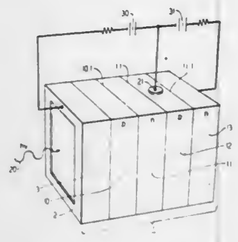
1. A thin film memory device on a substrate, comprising:
a plurality of first conductive layers forming a plurality of parallel first conductors;
a plurality of second conductive layers forming a plurality of parallel second conductors perpendicular to said first conductors;
each of said first conductive layers serving as a first electrode;
a plurality of structures of memory material mounted in electrical contact with said first electrode at the intersection of each of said first and second conductors, which structures have first, second, and third regions;
said second regions being formed of a tellurium germanium based chalcogenide which has a higher electrical resistance in its amorphous state and a lower electrical resistance in its crystalline state and can be switched from one state to the other upon application of an electrical signal of appropriate value;
said first regions being formed of a material having a higher percentage of tellurium than said second regions;
said third regions being formed of a material having a higher percentage of germanium than said second regions;
said third regions being in direct electrical contact with said first conductive layers; said second regions being in contact with said third regions, said first regions being in contact with said second regions;
a plurality of layers of N-type amorphous semiconductor material, each layer being in direct electrical contact with a corresponding first region of a corresponding one of said structures of memory material,
a layer of material in rectifying contact with each layer of N-type amorphous semiconductor material, each of said second conductive layers serving as a second electrode in direct electrical contact with said layers of material in rectifying contact with said layers of N-type amorphous semiconductor material.

4,203,124

LOW NOISE MULTISTAGE AVALANCHE PHOTODETECTOR

James P. Gordon, Rumson; Robert E. Nahory, Lincroft; Martin A. Pollack, Westfield, and John M. Worlock, Fair Haven, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 6, 1978, Ser. No. 949,057
Int. Cl.[2] H01L *29/90*
U.S. Cl. 357—13 **24 Claims**



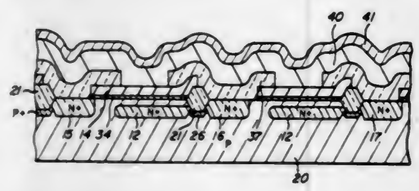
6. A reduced noise avalanche detector comprising:
a substrate and a plurality of abutting layers of semiconductor material of alternating opposed conductivity type, said layers being grouped into a sequence of pairs of layers;
characterized in that:
the bandgap of the first layer and the bandgap of the second layer of each pair of said sequence of pairs of layers are substantially equal;
the bandgaps of each pair of said sequence of pairs of layers are arranged in a decreasing sequence of sizes;
and said reduced noise avalanche detector further comprises
means for reverse biasing the junctions formed at the interface between the first layer and the second layer of each pair of said sequence of pairs of layers; and means for forward biasing the heterojunctions formed at the interface between the layers from different pairs of said sequence of pairs of layers.

4,203,125

BURIED STORAGE PUNCH THROUGH DYNAMIC RAM CELL

Pallab K. Chatterjee; Geoff W. Taylor, both of Dallas; Al F. Tasch, Jr., Richardson, and Horng-Sen Fu, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 3, 1978, Ser. No. 921,933
Int. Cl.[2] H01L *29/78*
U.S. Cl. 357—41 **8 Claims**



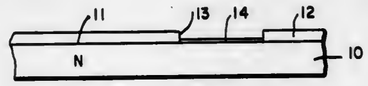
1. A semiconductor device comprising:
a substrate of a first conductivity type semiconductor material;
a buried charge storage region of the opposite conductivity type disposed in said substrate wholly below the surface thereof;
a second region of said opposite conductivity type disposed in said substrate in laterally spaced relation from said charge storage region, said second region opening onto the surface of said substrate and defining a current carrying electrode;
an insulating layer of substantially uniform thickness on the surface of said substrate and disposed directly above the entire area of said charge storage region and the entire surface area of said substrate lying laterally between said charge storage region and said current carrying electrode; and
a single conductive layer covering substantially said entire insulating layer and being in coextensive directly engaging relationship therewith throughout the extent of said insulating layer on said substrate surface;
said insulating layer being a gate insulator, and said single conductive layer being the sole gate electrode of the device.

4,203,126

CMOS STRUCTURE AND METHOD UTILIZING RETARDED ELECTRIC FIELD FOR MINIMUM LATCH-UP

Ernest W. Yim, Sunnyvale, and Paul G. G. VanLoon, San Jose, both of Calif., assignors to Siliconix, Inc., Santa Clara, Calif.

Filed Nov. 13, 1975, Ser. No. 631,729
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—42 **6 Claims**



6. In a CMOS field effect transistor structure: a body of N-type semiconductor material having a generally planar surface and a resistivity no greater than about 0.7 ohm-cm, a buried layer of P-type material formed within the body below the surface and having an impurity concentration ranging from about $5\times10^{18}/cm^3$ toward the surface to about $8\times10^{15}/cm^3$ away from the surface, a well of P-type material extending from the surface to the buried layer and having an impurity concentration ranging from about $2\times10^{16}/cm^3$ near the surface to about $8\times10^{15}/cm^3$ a few microns from the surface and to about $10^{18}/cm^3$ at the buried layer, source and drain regions formed of N-type material formed in the well and extending to the surface, source and drain regions of P-type material formed in the body outside the well and extending to the surface, a layer of insulating material overlying the source and drain regions, and gate electrodes overlying the source and drain regions and spaced therefrom by the layer of insulating material, said well and said buried layer forming a region of retarded electric field in the base region of a parasitic transistor formed by the N-type source or drain region, the P-type well and the N-type body, the retarded field serving to reduce the current gain of the parasitic transistor and thereby prevent undesired SCR action in said transistor.

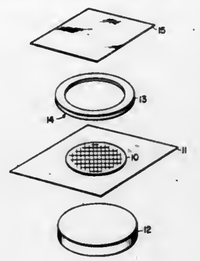
4,203,127

PACKAGE AND METHOD OF PACKAGING SEMICONDUCTOR WAFERS

Bruce R. Tegge, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 816,778, Jul. 18, 1977, abandoned. This application Mar. 2, 1979, Ser. No. 17,202
Int. Cl.[2] H01L *29/06, 23/02, 23/12*
U.S. Cl. 357—55 **3 Claims**

1. A package for a semiconductor wafer or a portion thereof wherein said wafer is comprised of a plurality of separate and individual die, said package comprised of:
a first sheet having a surface to contact a first surface of the semiconductor wafer;
an adhesive backed ring affixed to said surface of said first sheet and positioned to surround said semiconductor wafer, said ring having a thickness sufficient to extend above and protect said semiconductor wafer and sufficient to remain rigid and approximately flat; and



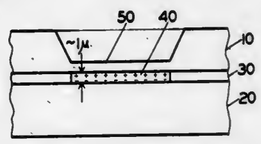
a second sheet to cover a second surface of said semiconductor wafer.

4,203,128

ELECTROSTATICALLY DEFORMABLE THIN SILICON MEMBRANES

Henry Guckel, Madison, Wis., and Steven T. Larsen, Albany, Oreg., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 739,583, Nov. 8, 1976, abandoned. This application Sep. 21, 1978, Ser. No. 944,637
Int. Cl.[2] H01L *29/04, 29/06, 29/84, 27/12*
U.S. Cl. 357—60 **20 Claims**



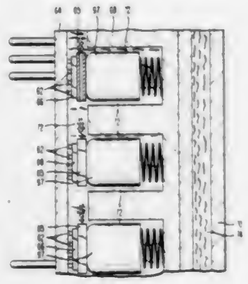
1. An electro-mechanical capacitive device comprising:
(a) a first substrate of crystalline silicon having opposite sides, a portion of one side having boron diffused therein to a selected depth having a layer between 1 and 10 microns in thickness with boron atom concentrations sufficient to render the layer conductive and resistant to etching by selected silicon etchants, a cavity formed in the opposite side of said substrate bottoming on the boron diffused etchant resistant layer to define a diaphragm in said layer under said cavity having a thickness of between approximately 1 and 10 microns, lateral dimensions between approximately 1 millimeter and 2 centimeters, and internal tension of the order of magnitude of 10^5 dynes per centimeter; and
(b) a second electrode spaced away and insulated from the boron diffused layer side of said diaphragm at a distance selected such that mechanical deflection of said diaphragm will measurably change the capacitance between said diaphragm and said second electrode, whereby changes in pressure across said diaphragm which deflect said diaphragm can be measured by measuring the change in capacitance between said diaphragm and second electrode, and whereby an oscillating electrical signal applied between said diaphragm and said second electrode will induce mechanical vibration of said diaphragm to provide an effective resonant impedance to the electrical signal.

4,203,129

BUBBLE GENERATING TUNNELS FOR COOLING SEMICONDUCTOR DEVICES

Sevgin Oktay, Poughkeepsie; Gerard J. Torgersen, Pawling, and Alexander C. Wong, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 11, 1978, Ser. No. 923,592
Int. Cl.² H01L 25/04, 39/02
U.S. Cl. 357—82 **28 Claims**



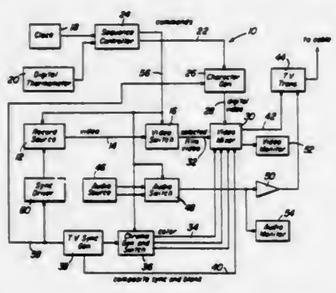
1. A liquid encapsulated module comprising:
a plurality of heat generating devices on a substrate;
a container attached to said substrate in sealed relationship such that the substrate forms a vertical side wall to the inside of said container;
a heat sink composed of a heat conducting body having a plurality of vertically oriented tunnels therein formed on one side of said heat generating components;
a low boiling point liquid partially filling said container and completely covering said heat generating components;
a vapor space above the liquid surface level;
said tunnels being of such dimension so as to provide enhanced bubble nucleation growth and the movement of bubbles upward and out of the tunnels to promote cooling of said devices; and
means for removing heat from the said container.

4,203,130

INFORMATION DISPLAYING SYSTEM

Joseph A. Doumit, New Iberia, La., and Robert E. Weiblen, Towson, Md., assignors to Dial-A-Channel, Inc., New Iberia, La.

Filed Jan. 11, 1977, Ser. No. 758,553
Int. Cl.² H04N 9/02
U.S. Cl. 358—1 **19 Claims**



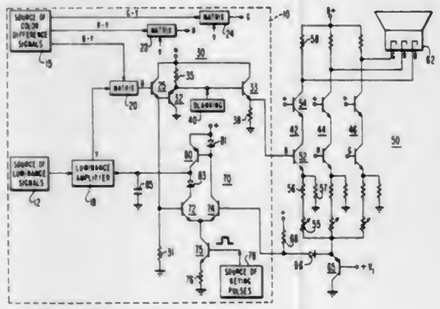
1. A system for continuously transmitting program schedule information over an informational television channel including a plurality of data sources, video mixing means connected to said sources for combining information received therefrom to produce a composite video modulating output, sequence control means connected to said sources for selection of the information fed to the mixing means, and clock means connected to the sequence control means for timing and updating the selected information fed to the mixing means.

4,203,131

PREDICTABLE AUTOMATIC BRIGHTNESS CONTROL CIRCUIT IN A VIDEO SIGNAL IMAGE REPRODUCING SYSTEM

Leopold A. Harwood, Bridgewater; Erwin J. Wittmann, North Plainfield, both of N.J., and Robert L. Shanley, II, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,050
Int. Cl.² H04N 5/16
U.S. Cl. 358—34 **13 Claims**



1. In a video signal processing system including a video signal channel for processing an image representative video signal having periodically recurring image intervals, and blanking intervals disposed between adjacent image intervals and containing a blanking level determinative of image brightness; a kinescope for reproducing images in response to video signals applied thereto; and kinescope amplifier means for coupling video signals from said channel to said kinescope; automatic brightness control apparatus comprising:
comparator means having first and second inputs for comparing, during said blanking intervals, signals applied to said inputs to provide an output control signal indicative of the difference in magnitude between the input signals;
means coupled to said kinescope amplifier means for providing a substantially fixed reference potential to which video signals amplified by said kinescope amplifier means are referenced;
means for coupling a substantially fixed reference voltage derived from said reference potential to said first input of said comparator means;
means for coupling video signals from said channel to said second input of said comparator means; and
means for coupling said output of said comparator means to said channel, for varying said blanking level in a direction to reduce the difference between said derived input reference voltage and the blanking level of said input video signal to a minimum.

10. In a color television receiver including a video signal transmission path for processing a color image representative video signal, said transmission path including a luminance channel for processing a luminance component of said video signal having periodically recurring image intervals and image blanking intervals disposed between adjacent image intervals and containing a blanking level determinative of image brightness, and a chrominance channel for processing a chrominance component of said video signal; means for combining signals processed by said luminance and chrominance channels; a kinescope for reproducing images in response to video signals applied thereto; and kinescope amplifier means for coupling combined video signals from said combining means to said kinescope; apparatus comprising:

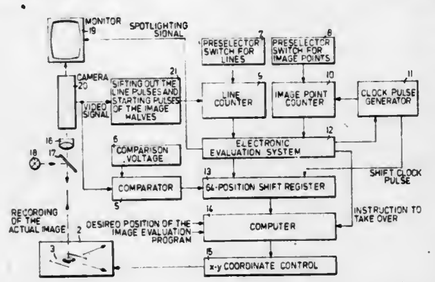
a source of keying signals coincident with a portion of said blanking interval containing said blanking level;
comparator means responsive to said keying signals and having first and second inputs for comparing, during said portion of said blanking intervals, signals applied to said inputs to provide an output control signal indicative of the difference in magnitude between said input signals;
means coupled to said kinescope amplifier means for providing a substantially fixed reference potential to which signals amplified by said kinescope amplifier means are referenced;
means for coupling a substantially fixed reference voltage derived from said reference potential to said first input of said comparator means;
means for coupling output signals from said combining means to said second input of said comparator means; and
means for coupling said output of said comparator means to said video signal transmission path, for varying said blanking level in a direction to reduce the difference between said derived input voltage and the blanking level of said input video signal to a minimum.

4,203,132

METHOD OF ALIGNMENT

Alfons Schmitt, Talheim; Klaus Schäfer, Heilbronn, and Diether Utz, Öhringen, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 29, 1977, Ser. No. 837,889
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643810
Int. Cl.² H04N 7/00
U.S. Cl. 358—101 **15 Claims**



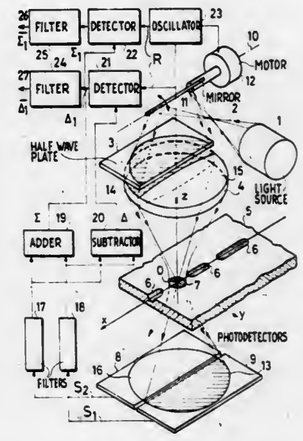
1. A method of aligning the connection contacts of a semiconductor component with the contact fingers of a contacting strip in an alignment system, comprising: moving the contacting strip and the semiconductor component out of alignment by defined distances which are so large that the alignment position of the contacting strip is not coincident with and does not overlap the alignment position of the semiconductor component; producing an image of the actual locations of the two alignment positions thus separated and breaking the image down into image points the spacing of which image points is smaller than the required alignment accuracy; digitalizing and storing the information content of the image points; while taking into account the defined movement out of adjustment which has been undertaken, comparing the locations of the two alignment positions in a data processing system and calculating their deviations; and displacing the parts to be aligned with respect to each other by the amount of the calculated deviations from the desired position of coincidence of the two alignment positions, while taking into account the defined movement out of alignment, with the aid of movement devices controlled by the data processing system.

4,203,133

OPTICAL PLAYER WITH HALF WAVE PLATE

Claude Bricot, and Jean-Claude Lehureau, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Apr. 2, 1976, Ser. No. 673,057
Claims priority, application France, Apr. 4, 1975, 75 10624
Int. Cl.² H04N 5/76
U.S. Cl. 358—128.5 **11 Claims**



1. A system for reading out a record by point optical scanning of a diffractive track carried by said record, and along which information items are transcribed, said system comprising: means causing said record to displace in front of a read-out head, said read-out head comprising a source furnishing monochromatic radiation, and optical means focussing said monochromatic radiation for forming a read-out beam; said read-out beam having a point of convergence positioned close to the optical axis of said optical means and in immediate proximity of the element of said diffractive track being read at the time; said read-out head further comrpising at least two photodetector elements picking up the radiation emerging from the illuminated portion of said diffractive track; said system further comprising deflection means for deflecting said read-out beam positioned between said source and said record for causing said point of convergence to displace transversely in relation to the longitudinal axis of said diffractive track; a half-wave plate intercepting one of the halves of said read-out beam; said halves being generated by said half wave plate, and obtained by partitioning said read-out beam with a plane containing said optical axis and perpendicular to the direction of displacement of said point of convergence; an electrical generator being connected to said deflection means for imparting to said point of convergence an oscillatory motion; synchronous detector means being connected to said electrical generator and to said photodetector elements for supplying signals representing positional errors on the part of said point of convergence, in relation to said longitudinal axis.

4,203,134

FM SIGNAL DEMODULATOR WITH DEFECT DETECTION

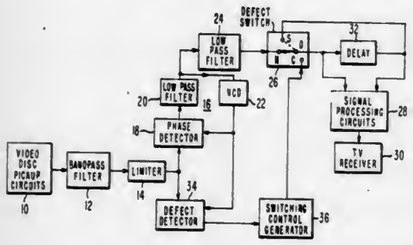
Todd J. Christopher, Indianapolis, Ind., and Tsan H. Lin, Millsboro, Del., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,013
Int. Cl.² H04N 5/76, 5/78
U.S. Cl. 358—128.5 **8 Claims**

1. In a signal translating system including a source of carrier waves, the instantaneous frequency of said carrier waves being subject to variation over a given deviation range, said source being randomly subject to occasions of defective operation during which the apparent instantaneous frequency of said

carrier waves departs from said given deviation range, the apparatus comprising:

a phase locked loop having a phase detector and a voltage controlled oscillator, said phase detector being responsive to first signals corresponding to said carrier waves and to the output signals of said oscillator for providing output signals dependent upon the phase relationship between the signals applied thereto, said oscillator being responsive to said phase detector output signals for altering the frequency of the oscillator output signals in a direction to maintain the relative phase between said first signals and



said oscillator output signals within a certain range of values; and

defect detection means responsive to said first signals and to said oscillator output signals for providing a defect indication signal when the relative phase between said first signals and said oscillator output signals departs from a given range of values, said departure corresponding to an occurrence of said occasions of defective operation, and for providing a reference level signal when the relative phase between said first signals and said oscillator output signals is within said given range of values.

4,203,135

EXTERNAL SYNCHRONIZING SIGNAL GENERATING CIRCUIT FOR A COLOR TELEVISION CAMERA

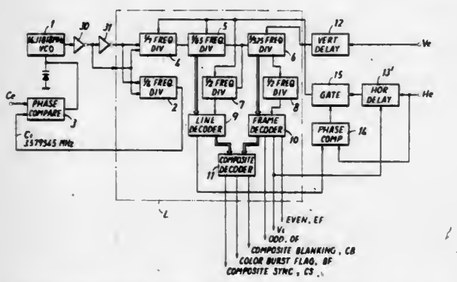
Takashi Sasaki, Higashiosaka, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jan. 19, 1978, Ser. No. 870,828

Claims priority, application Japan, Jan. 27, 1977, 52-9496[U]; Jun. 30, 1977, 52-88428[U]

Int. Cl.² H04N 5/04, 9/46

U.S. Cl. 358—149 **7 Claims**



1. A synchronizing signal generator responsive to an external synchronizing signal including an external subcarrier signal, an external horizontal synchronizing signal and an external vertical synchronizing signal for a television signal, comprising:

reference oscillator means phase controlled in response to said external subcarrier signal for generating an internal reference signal,

first frequency dividing means for frequency dividing said internal reference signal said first frequency dividing means being reset in response to said external horizontal synchronizing signal at each horizontal period,

line decoder means coupled to said first frequency dividing means for decoding the frequency divided output of said first frequency dividing means for providing an internal horizontal synchronizing signal,

second frequency dividing means for frequency dividing said reference signal said second frequency dividing means being reset in response to said external vertical synchronizing signal at each vertical period,

frame decoder means coupled to said second frequency dividing means for decoding the frequency divided output of said second frequency dividing means for providing an internal vertical synchronizing signal,

phase comparator means for comparing the phases of said external and internal horizontal synchronizing signals,

gate means coupled to said first frequency dividing means for controlling the application, of said external horizontal synchronizing signal therethrough to said first frequency dividing means and for preventing the application of said external horizontal synchronizing signal in response to the output of said phase comparing means, whereby said external horizontal synchronizing signal is prevented from being applied to said first frequency dividing means when the phases of said external and internal horizontal synchronizing signals coincide with each other, and

variable delay means coupled to said gate means and to said frame decoder means, said variable delay means controlling the delay of the application of external horizontal synchronizing signal to said gate means in response to the internal vertical synchronizing signal output of said frame decoder means.

4,203,136

METHOD AND APPARATUS FOR ELECTRO-OPTICALLY SENSING, TRANSMITTING AND RECORDING PICTORIAL INFORMATION IN PARTICULAR FACSIMILE TRANSMISSION SYSTEMS

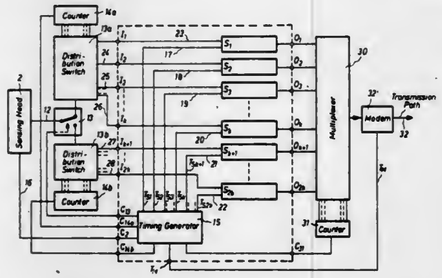
Klaus Wellendorf, Kitzeberg, and Rwediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Division of Ser. No. 803,143, Jun. 3, 1977, which is a continuation-in-part of Ser. No. 679,087, Apr. 21, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,766

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1975, 2518370

Int. Cl.² H04N 1/40, 1/18

U.S. Cl. 358—280 **5 Claims**



1. A transmitter including a flat-bed sensor for optic-electric sensing and recordation of picture patterns comprising, a sensing head means with multiple optic-electric converter means mounted for scanning the picture pattern line-by-line and capable of being advanced between scans, said multiple optic-electric converter means arranged in a row in the sensing head means, which row is perpendicular to the movement direction of said head means, and including a sensing line associated with each converter means, a plurality of shift register means connected to the converter means and the converter means are

interrogated in synchronism and picture signals of sensed picture dots are supplied one after the other to the shift register means and correspond to the converter means which scan different lines in succession during interrogation including an advancing system means which after the scanning of the pattern by the sensing head means causes a relative step movement between the pattern and the sensing head means, comprising distribution switch means connected between said sensing lines and plurality of shift register means and the number of shift register means being equal to two times the number of converter means, said distribution switch means arranging said picture signals supplied to respective shift register means so that they are sorted line-by-line and stored in said shift register means and a multiplexer means connected to said shift register means and having an output wherein the output of said shift register means occurs one after the other.

4,203,137

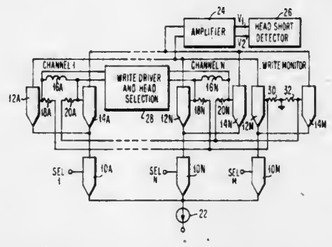
DUAL MODE READ PREAMPLIFIER WITH ELECTRICAL SHORT DETECTOR

John W. Beck, Santa Cruz, and Donald P. McCown, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,443

Int. Cl.² G11B 27/36, 5/09

U.S. Cl. 360—31 **9 Claims**



1. A dual mode read preamplifier for use in a data recording system comprising;

a plurality of recording channels for operating during read and write modes;

a monitor channel including first resistance means connected to each of said recording channels for operation during the write mode;

first selection means for energizing any one of said recording channels for transducing operation;

write driver and second selection means for supplying a write signal to a selected recording channel; and

second resistance means coupled to the inputs of said recording channels and connected to said first resistance means for attenuating said write signal, and for providing isolation between a selected energized recording channel and the others of said recording channels.

4,203,138

VIDEO SIGNAL RECORDING SYSTEM WITH DELAYED VERTICAL SYNC

William J. Elenbaas, 130 S. Pine St., McBain, Mich. 49657

Filed Jul. 14, 1978, Ser. No. 924,798

Int. Cl.² H04N 5/78

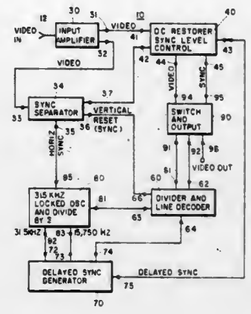
U.S. Cl. 360—37 **16 Claims**

1. A system for recording composite video signals using a helical tape recorder which has a head switchover point occurring before the vertical sync signals after vertical blanking starts to eliminate line distortion caused by the head switching comprising:

input means for receiving composite video signals from a camera;

output means for applying video and delayed synchronization signals to a multiple head helical tape recorder in which the head switchover point occurs a predetermined time prior to the vertical synchronization signals; and

a delayed vertical synchronization signal circuit coupled between said input and output means for providing de-



layed vertical synchronization signals during each vertical blanking interval to position the head switchover point in the vertical blanking interval before the vertical synchronization signals.

4,203,139

PLAY/RECORD SWITCHING CIRCUIT FOR A SIGNAL REPRODUCING AND RECORDING APPARATUS

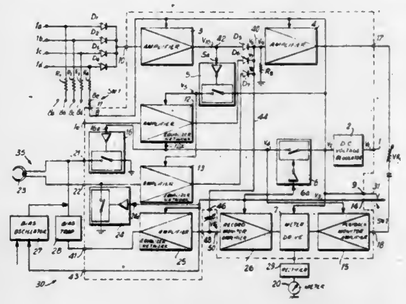
Harumi Horiuchi, Yokohama, Japan, assignor to Soundesign Corporation, Jersey City, N.J.

Filed Aug. 14, 1978, Ser. No. 933,268

Claims priority, application Japan, Sep. 10, 1977, 52-109154

Int. Cl.² G11B 15/12

U.S. Cl. 360—62 **12 Claims**



1. A play/record switching circuit for an electrical signal reproducing and recording apparatus of the type having inputs for a plurality of source data signals and a microphone data signal, and tape head means for generating a tape head reproducing signal and for receiving one of said data signals to be recorded, said switching circuit comprising:

(a) switching-state selector means for selecting between a first switching state in which one of said source data signals is selected, and a second switching state in which one of said microphone data signal and said tape head reproducing signal is selected;

(b) mode-selector means constituting a single mechanical switch which is solely responsive for selecting between a play and a record mode of operation for the apparatus;

(c) first actuatable electronic means for processing the selected one of said source data signals to thereby generate a processed source data signal;

(d) second actuatable means for processing the selected microphone data signal to thereby generate a processed microphone data signal;

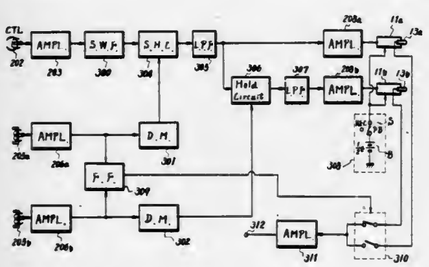
(e) third actuatable means for processing the selected tape head reproducing signal to thereby generate a processed tape head reproducing signal in said play mode;
(f) fourth actuatable means for processing one of said data signals to be recorded by said tape head means in said record mode;
(g) electronic circuit means for generating a D.C. voltage signal and for conveying the same to each of said actuatable processing means for actuating the latter; and
(h) electronic switching means for selecting at least one of said processing means in dependence upon the selected switching state and the selected mode, including logic-controlled electronic switches electrically connected to said electronic circuit means and operative in dependence upon the magnitude of said same D.C. voltage signal which actuates the processing means
for selecting said first processing means in said play mode upon selection of said first switching state,
for selecting said third processing means in said play mode upon selection of said second switching state,
for selecting said first and fourth processing means in said record mode upon selection of said first switching state, and
for selecting said second and fourth processing means in said record mode upon selection of said second switching state.

4,203,140

HELICAL SCAN VTR WITH DEFLECTABLE HEAD

Yoshimi Watanabe, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 635,139, Nov. 25, 1976, abandoned. This application Oct. 26, 1977, Ser. No. 845,558
Claims priority, application Japan, Nov. 26, 1974, 49-136554
Int. Cl.² G11B *21/10*
U.S. Cl. 360—77 **6 Claims**



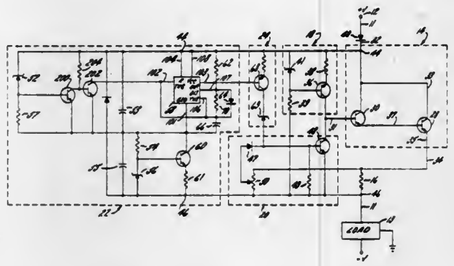
1. Apparatus for reproducing video signals recorded on a recording medium in successive parallel tracks which are skewed relative to a direction of movement of said medium, said apparatus comprising:
signal transducer means repeatedly scanning said recording medium in a direction generally along said tracks for reproducing the video signals from said successive tracks upon said movement of the medium;
controllable support means movably supporting said signal transducer means and being responsive to variations in a tracking control signal for displacing said transducer means from a neutral position in first and second opposed directions respectively extending transversely with respect to the tracks, said support means having predetermined limits of its displacement of said transducer means in said first and second directions from said neutral position; and
control signal generating means for providing said tracking control signal and being normally operative, upon mistracking of said transducer means relative to a track, to vary said tracking control signal in the sense for causing said support means to displace said transducer means in a respective one of said directions for restoring correct tracking of said track by said transducer means, said control signal generating means including means operative upon displacement of said transducer means to said limit thereof in one of said directions for varying said tracking control signal in the sense for causing said support means to displace said transducer means in the other of said directions substantially to the respective limit thereof.

4,203,141

LOW POWER DISSIPATION SERIES REGULATOR FOR PCM REPEATER LINES

Larry D. Bishop, Colleyville, Tex., and Jack C. Parker, Jr., Bolingbrook, Ill., assignors to Wescom, Inc., Downers Grove, Ill.

Filed Mar. 30, 1978, Ser. No. 891,531
Int. Cl.² H02H *3/08*
U.S. Cl. 361—18 **3 Claims**



1. In an overload current regulator having first and second terminals adapted to be connected in a line between a voltage potential and a load, the combination comprising:
(a) a controllable impedance device interposed between the terminals to control the current flow in the line and having a relatively low impedance when small currents flow in the line;
(b) sensing means in series with the impedance device for sensing the current flowing in the line and operatively connected to the impedance device to increase the impedance thereof to limit the current flowing in the line to a predetermined maximum level;
(c) a timer having inputs connected between the two terminals and an output operatively connected to the impedance device to control the impedance thereof, the timer in sequence being activated when the current flowing in the line has reached the maximum level, timing out a first predetermined time, increasing the impedance of the device to a maximum level to inhibit current flow in the line, timing out a second predetermined time, and decreasing the impedance of the device to the aforementioned relatively low impedance; and
(d) timer control means connected across the two terminals and operatively connected to the timer for assuring that the timer is initialized before the timer is activated.

4,203,142

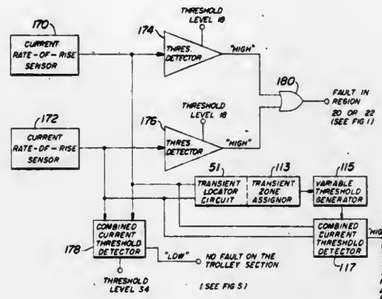
GROUND FAULT SYSTEM AND METHOD OF DETECTION

Donald E. Lee, 2033 Parkview Ave., Abington, Pa. 19001

Filed Jul. 31, 1978, Ser. No. 929,712
Int. Cl.² H02H *3/32*
U.S. Cl. 361—42 **13 Claims**

1. A ground fault detection system for detecting and distinguishing ground faults from normal loads on a line between at least two power substations, comprising:
(a) first current rate of rise sensor means coupled to a first of said power substations;
(b) second current rate of rise sensor means coupled to a second of power substations;

(c) first threshold detection means coupled to at least one of said current rate of rise sensor means for indicating a ground fault condition within a first predetermined distance range on said line close in to one of said power substations; and,



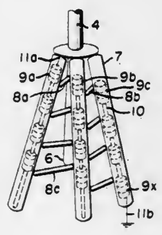
(d) second threshold detection means coupled to said current rate of rise sensors for indicating an absence of a ground fault condition at any location or distance range between said first and second power substations.

4,203,143

PROTECTIVE DEVICE

Mitsumasa Imataki; Katsu Ujita, and Tsutomu Egashira, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1978, Ser. No. 902,449
Claims priority, application Japan, May 7, 1977, 52-52191
Int. Cl.² H02H *3/22*
U.S. Cl. 361—120 **5 Claims**



1. A protective device for protecting from abnormal voltage which comprises an earthing cylindrical metallic casing; an electrode or conductive substrate which is disposed in the direction of the axis of the metallic casing; an insulating pipe which is disposed between the metallic casing and the electrode or the conductive substrate; and a plurality of non-linear resistors which are disposed in said insulating pipe wherein said non-linear resistors are respectively connected so as to be substantially similar to the potential distribution in said metallic casing.

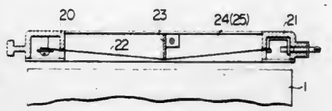
4,203,144

CORONA CHARGER FOR IMAGE TRANSFER

Toyoo Okamoto, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed May 17, 1978, Ser. No. 906,829
Claims priority, application Japan, May 20, 1977, 52-58348
Int. Cl.² H01T *19/04*
U.S. Cl. 361—234 **11 Claims**

1. A corona charger for transfering a visible toner image on a photoconductor to a transfer sheet comprising a corona wire stretched between a pair of insulating support members, said corona wire being curved outwardly at the central portion thereof and the curved portion of said corona wire being directed in the direction opposite to a transfer sheet transport direction so that a central portion of the transfer sheet is charged first by said central portion of the corona wire to



adhere the transfer sheet to the photoconductor in its central portion before the adherence of the transfer sheet to the photoconductor in its remaining portions so that any air between the transfer sheet and the photoconductor is urged outwardly from between the transfer sheet and photoconductor.

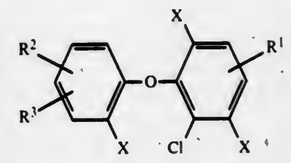
4,203,145

CHLORO-DIPHENYL

Alfons Klein, Duesseldorf; Ernst Knust; Rudolf Kron, both of Leverkusen, and Karlfried Wedemeyer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 6, 1978, Ser. No. 867,543
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703745
Int. Cl.² H01B *3/24*
U.S. Cl. 361—317 **29 Claims**

1. In an electrical device containing a dielectric liquid, the improvement wherein said dielectric liquid is a compound of the formula



wherein
X=Cl or H;
R^1 and R^3 are independently C_{1-6} alkyl or C_{5-7} cycloalkyl or hydrogen; and
R^2 is C_{1-6} alkyl or C_{5-7} cycloalkyl.

4,203,146

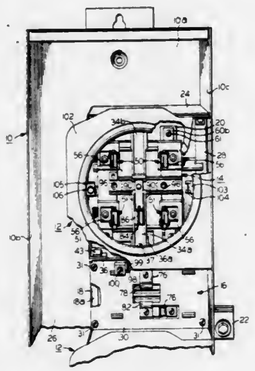
MULTIPLE METERING PANELBOARD ASSEMBLY

Robert J. Sabatella; Andre J. M'Sadoques, both of Southington, and Joseph F. Rich, New Britain, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,411
Int. Cl.² H02B *9/00*
U.S. Cl. 361—361 **7 Claims**

1. A multiple metering panelboard assembly comprising, in combination:
A. an enclosure having opposed sidewalls;
B. a barrier wall mounted within said enclosure, said barrier wall defining with one enclosure sidewall a vertically elongated busbar channel and defining with the other enclosure sidewall a wiring trough:
C. a plurality of vertical busbars positioned in said busbar channel; and
D. a vertical array of individual meter sections, each said section including
(1) a molded meter socket base mounted with said enclosure in overlying relation with said busbar channel.

(2) a plurality of first cavities formed in the front surface of said meter socket base,
(3) a plurality of second cavities formed in the rear surface of said meter socket base, each said second cavity intersecting a respective one of said first cavities, said intersecting first and second cavities being in open communication with each other, the bottom surface of each said second cavity being disposed forwardly of the bottom surface of its intersecting first cavity,
(4) a line side jaw positioned in at least one of said first cavities,
(5) a rigid, electrically conductive line strap having a laterally turned forward end portion disposed in the one of said second cavities intersecting said one first cavity and a laterally turned rearward end portion disposed in overlapping relation with one of said busbars,
(6) first electrical joint effecting means including a first bolt threadingly engaging said one busbar to clamp said line strap rearward end portion in electrical connection with said one busbar, a second bolt threadingly engaging said line strap forward end portion to project its threaded shank forwardly into said one first cavity, and a nut threaded on said shank to clamp said line side jaw in electrical connection with said line strap forward end portion,



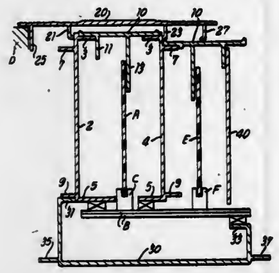
(7) a molded circuit breaker base mounted in said enclosure in overlying relation with said busbar channel,
(8) at least one stab terminal connector positioned in an open bottom cavity in said circuit breaker base,
(9) a connector strap supported behind said circuit breaker base, said connector strap extending from a first termination clamped in electrical connection with said stab connector toward said meter socket base to a second termination exposed beyond said circuit breaker base,
(10) a load side jaw positioned in at least one other of said meter socket base first cavities,
(11) a rigid electrically conductive load strap having a laterally turned forward end portion disposed in the one of said second cavities intersecting said other first cavity and a laterally turned rearward end portion in disposed overlapping relation with said second termination of said connector strap, and
(12) second electrical joint effecting means including a first bolt threadedly engaging said connector strap second termination to clamp said load strap rearward end portion in electrical connection therewith, a second bolt threadedly engaging said load strap forward end portion to project its threaded shank forwardly into said other first cavity, and a nut threaded on said shank to clamp said load side jaw in electrical connection with said load strap forward end portion.

4,203,147

ELECTROSTATIC SHIELDING ASSEMBLY FOR MOUNTING ELECTRIC CIRCUIT BOARDS

Saad Z. M. Gabr, Canterbury, England, assignor to A.R.D. Anstalt, Vaduz, Liechtenstein

Division of Ser. No. 695,569, Jun. 14, 1976, Pat. No. 4,096,546, which is a continuation of Ser. No. 492,976, Jul. 26, 1974, abandoned. This application Jun. 2, 1978, Ser. No. 911,906
Claims priority, application United Kingdom, Aug. 2, 1973, 36803/73; Aug. 10, 1973, 37961/73; Aug. 24, 1973, 40263/73; Sep. 20, 1973, 44227/73
The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.
Int. Cl.[2] H05K 7/20
U.S. Cl. 361—386 **4 Claims**



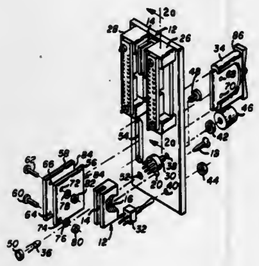
1. An electrostatic shielding assembly for mounting electric circuit boards, comprising a pair of spaced parallel vertical metal plates (2, 4 in FIG. 2; 60, 70 in FIG. 5), a horizontal bottom metal plate (30 in FIG. 2; 80 in FIG. 5) in good electrical contact with at least one of said vertical plates, a horizontal circuit board (B in FIG. 2; 78 in FIG. 5) supported by said assembly and spaced from said bottom plate, and a second vertical circuit board (A in FIG. 2; 68 in FIG. 5) spaced between said vertical plates and disposed above said horizontal circuit board, said vertical circuit board and said pair of spaced parallel vertical metal plates defining between them two channels, there being a third channel between said horizontal circuit board and said bottom plate, said bottom plate closing the lower side of said third channel, whereby said vertical and horizontal metal plates provide electrostatic shielding for said vertical circuit board and said horizontal circuit board.

4,203,148

INDICATOR AND CONTROL DEVICE FOR PC BOARDS

Ralph J. McComas, P.O. Box 113, Boulder Creek, Calif. 95006

Filed Apr. 10, 1978, Ser. No. 894,714
Int. Cl.[2] H02B 1/02
U.S. Cl. 361—399 **6 Claims**



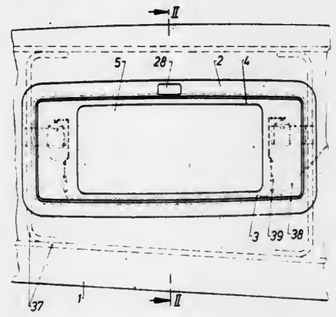
1. An indicator and control device for PC boards and the like comprising:
an elongated generally rectangular component mounting plate having a front surface a rear surface and a longitudinal axis, said plate being provided with at least one elongated aperture lying parallel to and laterally offset from said longitudinal axis, and at least one other aperture;
an elongated indicator means affixed to said rear surface so as to be viewable through said elongated aperture;
a manually operable electrical component mounted within said other aperture;
at least one insulating standoff member disposed along said longitudinal axis and provided with a slot for receiving an edge of said circuit board; and
means attaching said standoff member to the rear surface of said mounting plate,
whereby said indicator and control device is attached to said circuit board by lodging an edge of said circuit board within the slot of said standoff member, and by wiring said electrical component to said circuit board.

4,203,149

SUN VISOR FOR VEHICLES

Lothar Viertel, Wuppertal; Gert Mahler, Radevormwald, and Manfred Nowak, Solingen, all of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Wuppertal, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,760
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725430
Int. Cl.[2] B60J 3/02
U.S. Cl. 362—144 **36 Claims**



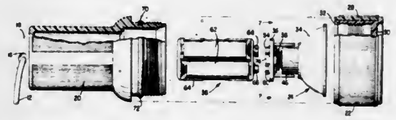
1. A sun visor for vehicles, or the like, comprising:
a sun visor body; a mirror;
frame means for holding said mirror to the exterior of said visor body whereby said mirror is always exposed at the exterior of said visor body and for enabling said mirror to be flipped into and out of said visor body;
said frame means comprising an outer frame in said visor body and comprising an inner frame which is flippably mounted in said outer frame, such that said inner frame may be flipped partially out of said outer frame; said mirror being supported on and flippable with said inner frame;
an electric contact in said outer frame; a cooperating electric contact on said inner frame and placed such that with said inner frame flipped into said outer frame, said electric contacts are disengaged and with said inner frame flipped out of said outer frame, said electric contacts are in engagement;
a light source attached to and movable with said inner frame and connected to said inner frame electric contact for being energized by said contacts being in engagement said inner frame has a chamber therein in which said light source is located; said inner frame chamber having a ventilating hole communicating into said inner frame chamber, wherein said ventilating hole is so placed on said inner frame that when said inner frame is flipped into said outer frame, said ventilating hole is covered and when said inner frame is flipped out of said outer frame, said ventilating hole is uncovered.

4,203,150

RECHARGEABLE MODULAR COMPONENT LIGHT WITH QUICK-DISCONNECT CONNECTION

Ralph B. Shamlian, 3549 Haven Ave. #E, Menlo Park, Calif. 94025

Filed Oct. 18, 1977, Ser. No. 843,288
Int. Cl.[2] F21C 9/00
U.S. Cl. 362—183 **9 Claims**



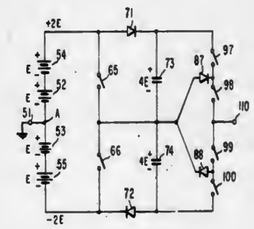
1. A flashlight comprising: battery means; casing means for housing said battery means; a lens cap engageable with said casing means; a light; assembly means for mounting said light; means for directly structurally and electrically interconnecting said battery means and said light assembly means together as a unitary assembly comprising a first pair of quick-disconnect electrical contact means on said battery means and a second, mating pair of quick-disconnect electrical contact means on said light assembly means, whereby said light assembly means and said battery means may also be readily disassembled for recharging or replacement of said battery means.

4,203,151

HIGH-VOLTAGE CONVERTER CIRCUIT

Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 21, 1978, Ser. No. 944,634
Int. Cl.[2] H02M 7/537
U.S. Cl. 363—43 **13 Claims**



1. An inverter circuit for converting DC voltages in a range between +NE volts into an AC voltage having a multitier waveform, where N is any integer number 1, 2, 3, 4, 5 . . . , comprising:
first and second terminals for receiving first and second operation voltages, respectively;
third, fourth and fifth terminals;
an output terminal;
a reference voltage terminal for connection to a point of reference potential;
a plurality of N first and N second switching means each having a main current conduction path, each being selectively operable to one of a first condition or a second condition, for opening and closing, respectively, their main current conduction path, the main current conduction path of said N first switching means being connected in series between said first and fourth terminals, the main current conduction paths of said N first and N second switching means being connected in series between said

first and fourth, and second and fourth terminals, respectively;

a plurality of N first and N second electrical charge storage means connected in series between said third and fourth, and fourth and fifth terminals, respectively;

first unidirectional current means connected between and polarized for passing current from said first to said third terminals;

second unidirectional current means connected between and polarized for passing current from said fifth to said second terminals;

a plurality of (N−1) pairs of third and (N−1) pairs of fourth unidirectional current means, said (N−1) pairs of third unidirectional current means being connected individually in series between the common connection points of each succeeding different two of said plurality of N first switching devices, and the corresponding levels of common connection points relative to said third terminal of each succeeding different two of said plurality of N first electrical charge storage means, respectively, each pair of third unidirectional current means being polarized for permitting current to flow from their own common connection point to their associative common connection points of said N first switching means and said N first charge storage means, respectively, said (N−1) pairs of fourth unidirectional current means each being connected individually in series between the common connection points of each succeeding different two of said plurality of N second switching devices, and the corresponding levels of common connection points relative to said fourth terminal of said plurality of N second electrical charge storage means, respectively, each pair of fourth unidirectional current means being polarized for conducting current from their own common connection point to their associative common connection points of said N second switching means and said N second charge storage means, respectively;

a plurality of 2N third and 2N fourth switching means each having a main current conduction path, the main current conduction paths of said 2N third switching means being connected in series between said third and output terminals, the main current conduction paths of said 2N fourth switching means being connected in series between said output and fifth terinals, each one of said 2N third and 2N fourth switching means being selectively operable to one of a first condition or a second condition, for opening and closing, respectively, their main current conduction paths;

a plurality of (2N−1) fifth and (2N−1) sixth unidirectional current means, said (2N−1) fifth unidirectional means being individually connected between the common connection points of each succeeding different two of the series string of said N first and N second electrical charge storage means, and the corresponding levels of common connection points relative to said third terminal of each succeeding different two of said plurality of 2N third switching means, said (2N−1) fifth unidirectional means each being polarized for conducting current from the associative connection point in said string of N first and N second electrical charge storage means to their associative point in said series string of 2N third switching means, said (2N−1)sixth unidirectional means each being polarized for conducting current from their associative connection point in said string of 2N fourth switching means to their associative connection point in said string of said N first and N second electrical charge storage means;

DC voltage supply means connected between said first and second terminals, for supplying +2NE volts and −2NE volts to these terminals, respectively, and for individually applying progressively less positive fixed levels of voltage to the midpoints of each one of said (N−1) pairs of third unidirectional current means relative to said first terminal, the midpoints of said (N−1) pairs of fourth unidirectional current means relative to said fourth terminal being connected individually to like positioned midpoints of said (N−1) pairs of third unidirectional current means relative to said first terminal, said DC voltage supply means having a common point connected to said reference voltage terminal;

said pluralities of N first, N second, 2N third and 2N fourth switching means being operable to various combinations of their first and second conditions for producing substantially any practical AC voltage having a multitiered waveform with a peak-to-peak amplitude of up to +NE volts, and a predetermined frequency.

4,203,152

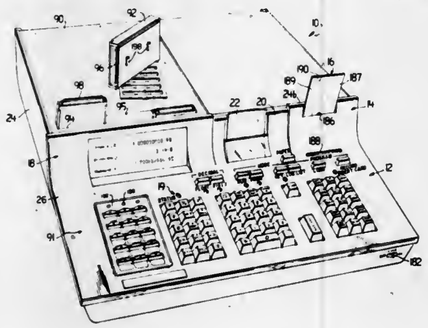
PROGRAMMABLE CALCULATOR INCLUDING KEY-LOG PRINTING MEANS

Robert E. Watson; Jack M. Walden, and Charles W. Near, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 535,750, Dec. 23, 1974, which is a division of Ser. No. 153,437, Jun. 15, 1971, Pat. No. 3,859,635. This application Nov. 10, 1977, Ser. No. 850,332

Int. Cl.² G06F *3/12, 3/02*

U.S. Cl. 364—200 **13 Claims**



1. An electronic calculator having a plurality of operating modes including the manual operating mode and the automatic operating mode, said calculator comprising:

a keyboard input unit including numeric and non-numeric keys having unique key codes for entering information into the calculator;

a first memory unit into which information may be written and from which information may be read;

a second memory unit for storing routines and subroutines to be executed by the calculator in performing selected functions;

processing means responsive to information from the keyboard input unit or the first memory unit and to operating modes of the calculator for selectively executing one or more of the routines and subroutines stored in the second memory unit to perform selected functions employing information from the keyboard input and first memory units;

an output printer unit coupled to the processing means for providing an output indication of the functions performed by the calculator; and

control means coupled to the processing means and the output printer unit for causing the key code of the numeric and several of the non-numeric keys actuated to be printed by the output printer unit in response to actuation of a first non-numeric key in the manual operating mode;

said control means including logic means coupled to the processing means and output printer unit for causing the key code and mnemonic representation of each program step of programs stored in the first memory unit to be printed by the output printer unit in response to the actuation of a second non-numeric key in the automatic operating mode.

4,203,153

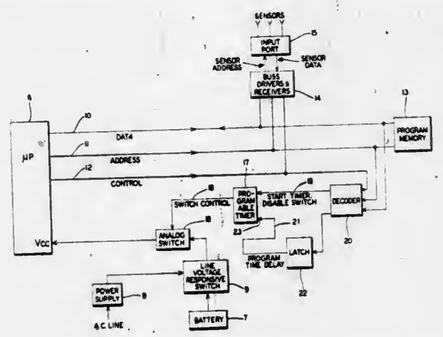
CIRCUIT FOR REDUCING POWER CONSUMPTION IN BATTERY OPERATED MICROPROCESSOR BASED SYSTEMS

James C. Boyd, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed Apr. 12, 1978, Ser. No. 895,771

Int. Cl.² G06F *3/00*

U.S. Cl. 364—200 **8 Claims**



1. A circuit for conserving battery power in a battery operated, microprocessor based system, comprising:

a microprocessor having an internal clock;

a battery for energizing said microprocessor;

switch means for selectively establishing a connection between said battery and said microprocessor to energize or deenergize said microprocessor;

means for providing instructions to said microprocessor which periodically call for task performances by said microprocessor to be executed upon energization of said microprocessor, said switch means being closed during task performances to maintain said microprocessor energized by said battery;

timer means continuously energized independently of said switch means as well as of said microprocessor and clock for controlling said switch means,

said timer means operative, upon being triggered, to open said switch means and thereby disconnect said microprocessor from said battery for a predetermined time duration and then reclose said switch means after the predetermined time duration to reconnect said microprocessor with said battery and thereby enable said microprocessor for another task performance; and

means responsive to an output of said microprocessor for triggering said timer means upon completion of each task performance.

4,203,154

ELECTRONIC IMAGE PROCESSING SYSTEM

Butler W. Lampson, Portola Valley, Calif.; Robert F. Sproull, Pittsburgh, Pa.; Severo M. Ornstein, Portola Valley, and James Y. Leung, Torrance, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 24, 1978, Ser. No. 899,751

Int. Cl.² G06F *3/14, 13/00*

U.S. Cl. 364—200 **9 Claims**

1. An electronic image processing system for converting character font data into image data utilizable by a raster output scanning device capable of formatting said image data in a plurality of scan lines onto an imaging medium, comprising:

a main memory having character font data stored therein;

an input memory for receiving character font data from said main memory;

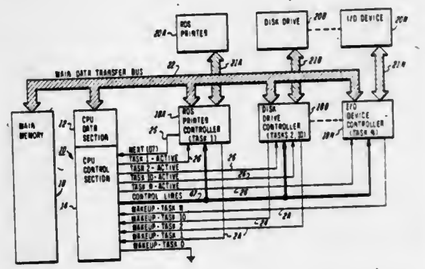
a data pattern memory responsive to a predetermined address signal for providing a predetermined pattern of data defining a desired grey-scale tone for said image data;

a band buffer memory capable of storing image data representing a predetermined number of scan lines constituting an image band, said band buffer memory having enable input lines and associated data input lines;

means coupled to said input memory for addressing said input memory to access character font data therefrom;

means coupled to said band buffer memory for applying character font data accessed from said input memory to respective enable input lines of said band buffer memory;

means coupled to said data pattern memory for applying said predetermined address signal to said data pattern memory;



means coupled to said band buffer memory for applying said predetermined pattern of data accessed from said data pattern memory to respective data input lines of said band buffer memory; and

means for addressing said band buffer memory to load into an addressed memory location said predetermined pattern of data only with respect to those data input lines whose associated enable input lines are enabled by said character font data.

4,203,155

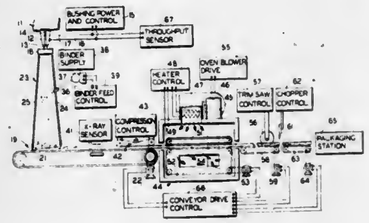
APPARATUS AND METHOD FOR CHANGING PRODUCTS ON A CONTINUOUS FIBROUS GLASS PRODUCTION LINE

John M. Garst, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 798,510, May 19, 1977, abandoned. This application Jul. 20, 1978, Ser. No. 926,591

Int. Cl.² G06F *15/46*; C03B *37/02*

U.S. Cl. 364—473 **10 Claims**



1. A system for controlling the production of each one of a plurality of continuous fibrous glass products, comprising:

a source of fibrous glass for the continuous products;

means for processing said fibrous glass into the continuous products in response to a plurality of control signals, said processing means including at least a first and a second processing station spaced apart along the path of travel of the continuous products;

means for defining the advance of a sacrificial production increment through each of said first and second processing stations, said sacrificial production increment including lost production of the continuous products;

control means for generating said control signals in response

to a plurality of setpoint signals representing processing variables;

means for generating a product change request signal; and

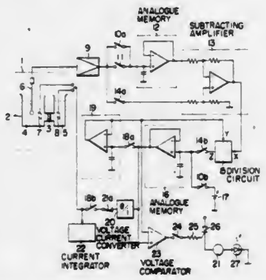
means for generating said setpoint signals, said signal generating means being responsive to said advance defining means and said product change request signal for changing the value of at least one of said setpoint signals associated with each of said first and second processing stations during the times that said sacrificial production increment is being processed by said first and second processing stations respectively.

4,203,156

TITRATION APPARATUS WITH CONTROL MEANS

Seiji Ishikawa, Kitakyushu, Japan, assignor to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1978, Ser. No. 973,562
Claims priority, application Japan, Dec. 27, 1977, 52-156397
Int. Cl.² G01N 27/44; G06G 7/18
U.S. Cl. 364—500 **4 Claims**



1. A titration controlling apparatus comprising an electrolytic cell including a pair of electrolytic electrodes and a detecting electrode; first analogue memory device for temporarily storing an electric signal obtained from the detecting electrode; a subtractor for subtracting said stored electric signal from an electric signal immediately following said electric signal; a division circuit receiving the output of the subtractor as a dividend; a second analogue memory device for temporarily storing the output of the division circuit; a third analogue memory device for temporarily storing the output of the second analogue memory device and for delivering an output to the division circuit as a divisor; and a voltage/current converter receiving the output of said second analogue memory device for supplying an electrolytic current to the electrolytic electrodes in the electrolytic cell.

4,203,157

CARRY ANTICIPATOR CIRCUIT AND METHOD

R. Gary Daniels, Round Rock; Fuad H. Musa; Wm. Bryant Wilder, Jr., both of Austin; Michael F. Wiles, Round Rock, all of Tex., and Thomas H. Bennett, Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

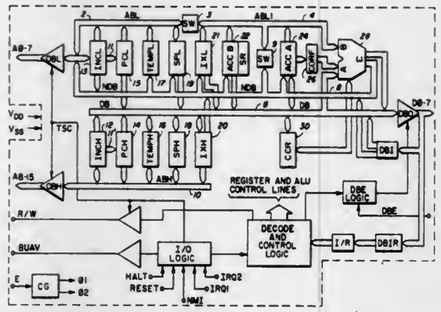
Filed Sep. 5, 1978, Ser. No. 939,724
Int. Cl.² G06F 7/50
U.S. Cl. 364—788 **11 Claims**

1. A carry anticipator circuit suitable for use within a data processor for reducing the time required to perform arithmetic operations, comprising:

(a) first means for providing a first digital signal having a first predetermined number of bits;

(b) second means for providing a second digital signal having a second predetermined number of bits, the second predetermined number being greater than the first predetermined number, the second digital signal being provided as a most significant group and a least significant group of bits, the least significant group having the first predetermined number of bits, and the most significant group of bits corresponding to a first binary value;

(c) arithmetic means having first input means coupled to the first means for receiving the first digital signal and second input means coupled to the second means for receiving the least significant group of bits, the arithmetic means performing an arithmetic operation upon the bits received by the first and second input means to provide a least significant result having the first predetermined number of bits, the arithmetic means also providing a carry signal for indicating whether a carry-out resulted from the operation performed by the arithmetic means;



(d) third means coupled to the second means for receiving the most significant group of bits and for providing an incremented group of bits, the incremented group of bits corresponding to a second binary value which is one larger than the first binary value; and

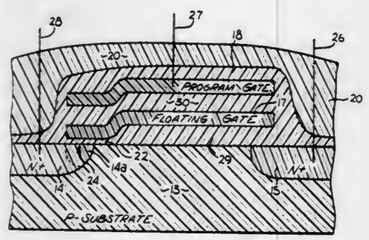
(e) fourth means coupled to the third means for receiving the incremented group of bits and coupled to the second means for receiving the most significant group of bits, the fourth means being responsive to the carry signal for selecting either the most significant group of bits or the incremented group of bits and providing the selected bits as a most significant result.

4,203,158

ELECTRICALLY PROGRAMMABLE AND ERASABLE MOS FLOATING GATE MEMORY DEVICE EMPLOYING TUNNELING AND METHOD OF FABRICATING SAME

Dov Frohman-Bentchkowsky, Haifa, Israel; Jerry Mar, Sunnyvale, Calif.; George Perlegos, Cupertino, Calif., and William S. Johnson, Palo Alto, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 881,029, Feb. 24, 1978, abandoned. This application Dec. 15, 1978, Ser. No. 969,819
Int. Cl.² G11C 11/40
U.S. Cl. 365—185 **16 Claims**



1. An electrically programmable and electrically erasable MOS memory device comprising:

a substrate of a first conductivity type;

first and second spaced-apart regions in said substrate of a second conductivity type;

an electrically floating, conductive gate disposed generally between said spaced-apart first and second regions;

a first insulative layer insulating said floating gate from said substrate;

a thin region in said substrate of said second conductivity type;

said floating gate extending over said third region and insultated from said third region by a second insulative layer which is 70 Å to 200 Å thick;

a second gate disposed above and insulated from said floating gate;

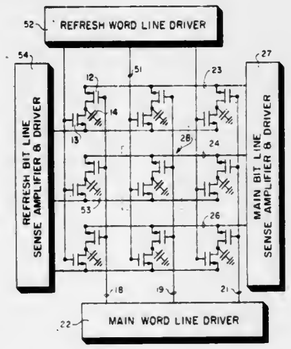
whereby, by the application of a first potential to said second gate, carriers are tunneled through said second insulative layer from said third region into said floating gate, and whereby, by the application of a second potential of the same polarity as said first potential to said third reigon, carriers are tunneled through said second insulative layer from said floating gate to said third region.

4,203,159

PSEUDOSTATIC ELECTRONIC MEMORY

Frank M. Wanlass, 21498 Meteor Dr., Cupertino, Calif. 95014

Filed Oct. 5, 1978, Ser. No. 948,683
Int. Cl.² G11C 7/00, 11/24
U.S. Cl. 365—222 **5 Claims**



1. A pseudostatic electronic memory comprising:

A. an array of capacitative memory cells, each one of which is adapted to hold any one of a plurality of different amounts of electrical charge representative of information to be stored and includes;

(1) a first electronic switch for controlling the application and sensing of charge on said cell;

(2) a single second electronic switch for controlling periodic detection and refreshing of the charge on said cell;

B. means both to apply electrical charge to said cells and to sense the amount of charge thereon at any given time;

C. means independent of said charge application and sensing means to detect and refresh periodically the amount of charge on each of said cells;

D. the operation of said first electronic switch being controlled by the voltage state present on a word line of said array, and the charge on said cell being sensed and applied thereto through a bit line of said array; and

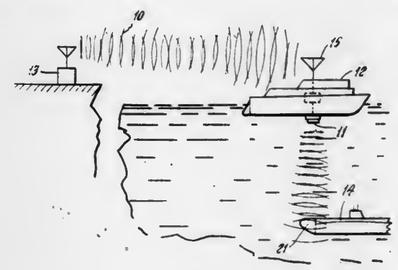
E. the operation of said second electronic switch being controlled by the voltage state present on a second word line of said array, and the charge on said cell being detected and refreshed periodically through a second bit line of said array.

4,203,160

SUBMARINE COMMUNICATION

John J. Doherty, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1960, Ser. No. 79,931
Int. Cl.² H04B 1/59
U.S. Cl. 367—2 **3 Claims**



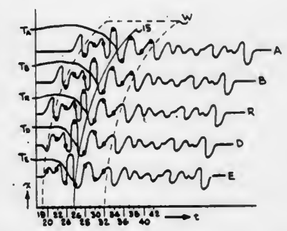
2. A method by which a submarine while deeply submerged in the sea may receive a message from a remote station without disclosing to others the position of the submarine, which comprises transmitting from said remote station into the atmosphere message information modulated on electromagnetic radiant energy, intercepting said radiant energy at a plurality of separated and widely dispersed relay stations on the surface of the sea, extracting the message information from the electromagnetic energy and transmitting acoustic wave energy modulated by said message information from each of said relay stations into the sea, locating said submerged submarine in message receiving range of one of said relay stations and detecting the acoustic wave energy modulated by the message information aboard said submarine.

4,203,161

METHOD OF ENHANCING COMMON DEPTH POINT SEISMIC DATA

Jay P. Johnson, Houston; Alvin L. Parrack, Bellaire, and Delbert R. Lunsford, Houston, all of Tex., assignors to Texaco Inc., White Plains, N.J.

Continuation-in-part of Ser. No. 230,810, Mar. 1, 1972. This application Nov. 10, 1972, Ser. No. 305,386
Int. Cl.² G01V 1/36
U.S. Cl. 367—40 **17 Claims**



1. A method for enhancing digital seismic data said data having a coherent signal component comprising a measure of similarity between spatially related time series data, and a noise component in unmoved out form, comprising the steps of:

(a) determining for a selected time T_R on a selected seismic trace R, the estimated times T_X on one or more additional traces included in the data at which possible events common to a possible event at T_R occur;

(b) determining, for a search window having edges equally

spaced on either side of times T_R the coherent signal component;

(c) computing, by use of said coherent signal component, the component of said coherent signal extant in said selected trace T_R and replacing in time alignment with said selected trace on an output signal record medium, that portion of said selected trace T_R included in said search window with said component of the selected trace comprising said coherent signal portion; and

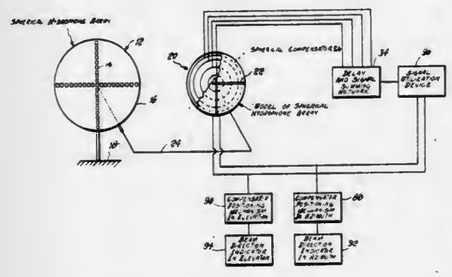
(d) repeating the recited steps for other selected times and other selected traces until all said seismic data are so processed.

4,203,162

ELECTRICALLY STEERABLE SPHERICAL HYDROPHONE ARRAY

Walter L. Clearwaters, Quaker Hill; Lloyd T. Einstein, New London; Paul F. Radics, Jr., Oakdale, and John W. Soderberg, Niantic, all of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1964, Ser. No. 360,181
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—122 **2 Claims**



1. Beam forming apparatus for a spherical array of hydrophones comprising:

a spherical array of radially inwardly directed wiper contacts,

a compensator inside said spherical array of wiper contacts and including insulator means and a series of circular conducting elements having a common axis secured in said insulator means and presenting a smooth spherical surface sector with the conductor elements exposed at the spherical surface, for wiping engagement with the contacts,

training means supporting said compensator concentrically within said array of wiper contacts and operable to arcuately displace said compensator about two axes through the center of said array of contacts,

signal delay means and signal summing means carried by said training means inside said array of contacts and coupled to the conducting elements for delaying signals from the progressively smaller conductors by progressively longer time periods and for summing the variously delayed signals, and

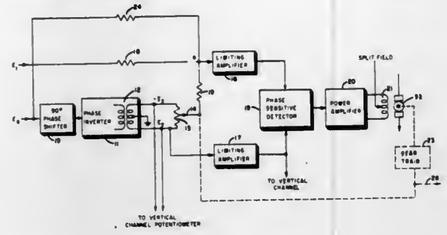
cooperating brush and slip ring means carried by said training means and said array of wiper contacts for delivering the output of said summing means.

4,203,163

TARGET-DETECTION AND LOCATION SYSTEM

Carroll L. Key, Jr., State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 25, 1959, Ser. No. 855,479
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—125 **12 Claims**



6. In a target-detection and location system adaptable for the navigation of an acoustic torpedo, having a first and a second alternating voltage signal emanating from the acoustic detection portion of said torpedo the combination comprising: a phase-shifter adapted to delay the phase of said incoming first voltage signal 90 degrees; a phase-inverter driven by said phase-shifter the output of said phase-inverter being two voltages, one in-phase with and the other out-of-phase with the signal from said phase-shifter; a potentiometer having a variable arm electrically connected therewith, said potentiometer being connected across the output of said phase-inverter; means for combining the voltage at said variable arm with said second voltage signal; a first and a second limiting amplifier adapted to maintain a constant power output, said second voltage signal and the voltage present at said variable arm being applied to said second limiting amplifier, and said in-phase voltage from said phase-inverter being applied to said first limiting amplifier; a phase-sensitive detector connected to said first and second limiting amplifiers adapted to compare signals of said limiting amplifiers, the polarity of the output signal of said phase-sensitive detector being dependent on the phase-relationship of the output signal of said limiting amplifiers; and a servo motor system operationally associated with said potentiometer arm, the direction of rotation of said motor being controlled by the output of said phase-sensitive detector whereby said potentiometer arm is so oriented as to result in a zero signal input to said limiting amplifier, the orientation of said potentiometer arm being respectively proportional to the magnitude of said second voltage and indicative of its polarity.

4,203,164

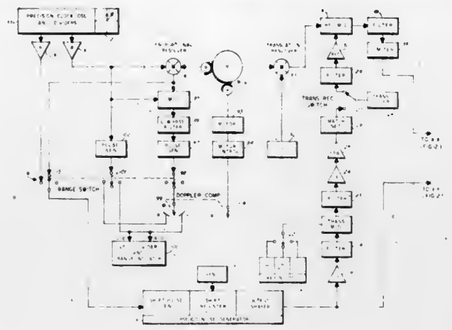
SECURE SONAR COMMUNICATION SYSTEM

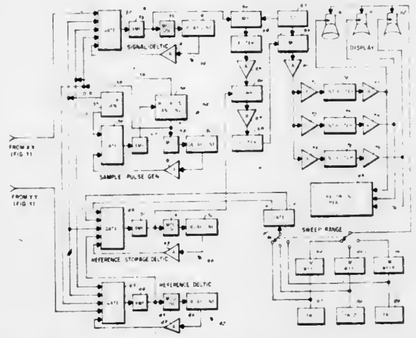
Robert D. Isaak; William E. Klund; Woodrow H. Littrell, all of San Diego, and Richard G. Stephenson, Rolling Hills, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1961, Ser. No. 93,811
Int. Cl.[2] H04B *11/00*
U.S. Cl. 367—134 **11 Claims**

1. A secure sonar communication system for transmitting and receiving intelligence signals within an aqueous medium comprising in combination means for generating an electrical pseudo random noise signal within a predetermined bandwidth, means connected to said pseudo random noise generating means for selectively driving same at one of a plurality of predetermined frequencies, keying oscillator means adapted to selectively produce an output of one of a plurality of predetermined frequency signals, a balanced modulator means coupled to said pseudo random noise signal generating means and said keying oscillator means for mixing the output signals therefrom, bandpass filter means connected to the output of said balanced modulator means for passing the upper sideband

thereof, means for receiving an electrical pseudo random noise signal, transducer means, said transducer means being capable of broadcasting acoustical energy upon excitation by the upper sideband from the aforesaid bandpass filter means and in proportion thereto and for producing an electrical pseudo random





noise output signal in proportion to a received acoustical pseudo random noise signal, and means connected to the output of said bandpass filter means and the input of said electrical pseudo random noise signal receiving means for selectively connecting same to said transducer means during broadcasting and receiving operations respectively.

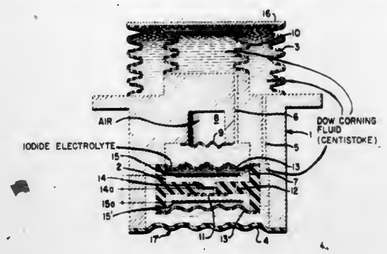
4,203,165

ACOUSTIC FILTER

Herbert V. Hillery, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1956, Ser. No. 618,160
Int. Cl.[2] H04R *1/44*
U.S. Cl. 367—135 **6 Claims**

1. A hydroacoustic filter and detecting device of the character described comprising an electrolytic detector cell having an acoustical resistance and an inertance in series therewith and an asymmetrical acoustical filter network, said filter network including means providing a pair of input acoustical capacitances with one each thereof disposed in each of the two sides of the filter to be subjected to a signal input, means including straight tube for providing acoustical resistance and inertance in output shunting relation to said input capacitances, acoustical capacitance means and a straight tube acoustical resistance inertance means connected in series in one side of said filter and following said shunting resistance and inertance, a acoustical capacitance means in the other side of the filter and connected in an acoustical shunting relation between said input shunting straight tube connection and the output termination of said series connected capacitance and resistance-inertance to provide one output terminal of said filter, said electrolytic detector cell being connected in shunting relation to said last named acoustical capacitance means with one output termination common to said first mentioned filter output termination and a second output termination connected in impedance dividing relation between the acoustical capacitance provided by said detector cell and the series inertance and acoustical resistance thereof.

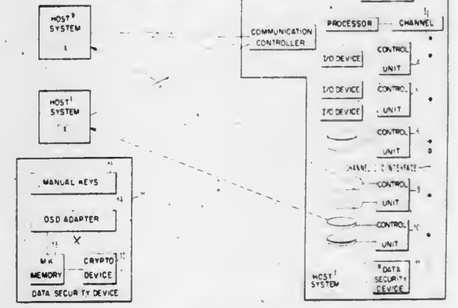


4,203,166

CRYPTOGRAPHIC FILE SECURITY FOR MULTIPLE DOMAIN NETWORKS

William F. Ehrsam, Kingston; Robert C. Elander, Saugerties; Stephen M. Matyas, Poughkeepsie; Carl H. W. Meyer, Kingston; Richard J. Sahulka, and Walter L. Tuchman, both of Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,535
Int. Cl.[2] H04L *9/00*
U.S. Cl. 375—2 **43 Claims**



1. In a multiple domain data processing system providing file security for a data file created by a first host system in one domain and recovered by a second host system in another domain, a first host system arrangement for creating said data file comprising:

means providing a file recovery key for said data file for subsequent recovery at said second host system representing a primary file key enciphered under a file cross domain key for cross domain file communication between said first and second host systems,

means providing first host system plaintext, and

means performing a cryptographic operation to encipher said first host system plaintext under said primary file key to obtain first host system ciphertext for said data file.

DESIGN PATENTS

GRANTED MAY 13, 1980

ERRATA

For CLASS	See PATENT NO.
D26-035	254,995

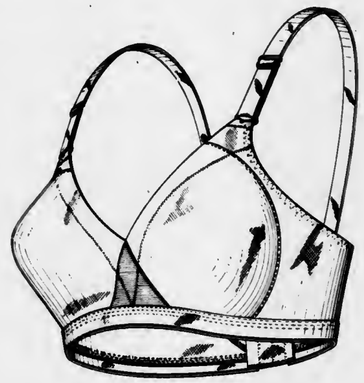
DESIGNS

MAY 13, 1980

254,936
FROZEN POTATO PATTY
Francis R. Saunders, Lake Oswego, Oreg., assignor to Amfac Foods, Inc., Portland, Oreg.
Filed Nov. 15, 1976, Ser. No. 741,870
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—1



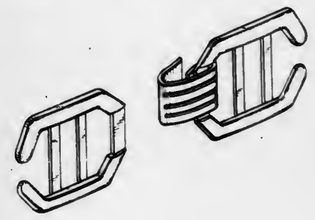
254,937
BRASSIERE
Phyllis Raimondi, Glen Rock, N.J., assignor to International Playtex, Inc., Stamford, Conn.
Filed Jun. 17, 1977, Ser. No. 807,605
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



254,938
SHOE
Joergen Keller, Vordingborg, Denmark, assignor to A/S JAC. Engelbredt, Vordingborg, Denmark
Filed Sep. 16, 1977, Ser. No. 834,150
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—268



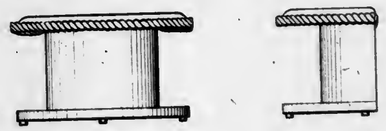
254,939
BELT BUCKLE
Otto Lober, Pforzheim, Fed. Rep. of Germany, assignor to Gutos Metallschliessenfabrik Bader & Hoch AG, Pforzheim, Fed. Rep. of Germany
Filed Apr. 8, 1977, Ser. No. 786,017
Term of patent 3½ years
Int. Cl. D02—*99*
U.S. Cl. D2—418



254,940
GOLF BALL AND TEE CADDY
Thomas A. Thomas, 1911 Harrison St., Hollywood, Fla. 33020
Filed Sep. 1, 1977, Ser. No. 829,973
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400



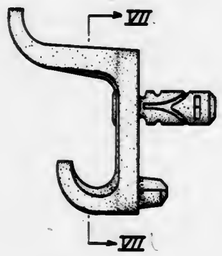
254,941
UPHOLSTERED STOOL OR THE LIKE
Gregory L. Simmons, 7863 Denham Rd. E., Jacksonville, Fla. 32208
Filed Aug. 29, 1977, Ser. No. 828,558
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



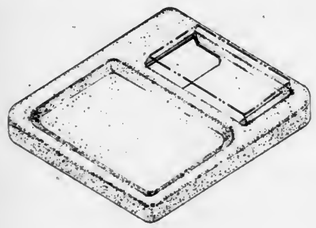
254,942
GLIDER CHAIR
Albert E. Browning, Rte. 4, Box 425, Winnsboro, La. 71295
Filed Feb. 13, 1978, Ser. No. 877,363
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—54



254,943
HOOK FOR A HOLLOW DOOR
Paul S. Hepworth, Leicester, England, assignor to Plas Plugs Ltd., Staffordshire, England
Filed Apr. 11, 1978, Ser. No. 895,307
Claims priority, application United Kingdom, Oct. 27, 1977, 982064/77; Dec. 21, 1977, 982687/77
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—122



254,944
COMBINED CHANGE TRAY AND PORTABLE CALCULATOR SUPPORT
Thomas M. Lee, 15 A Redhill Cir., Tiburon, Calif. 94920, and Richard A. Seifert, 5631 Firestone Rd., Livermore, Calif. 94550
Filed Oct. 27, 1977, Ser. No. 846,270
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181



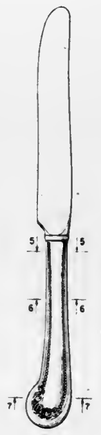
254,945
CHAIR FRAME
James Worrell, 1854 Gail La., Anaheim, Calif. 92802
Filed Feb. 9, 1978, Ser. No. 876,425
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



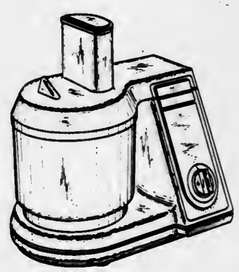
254,946
GOBLET
Ramin Tayebi, 31252 Ceanothus, South Laguna, Calif. 92677
Filed Jul. 10, 1978, Ser. No. 923,029
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13

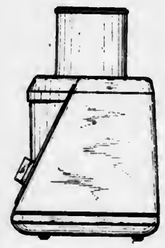


254,947
KNIFE OR SIMILAR ARTICLE OF FLATWARE
William J. Knope, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Oct. 3, 1977, Ser. No. 838,931
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—150

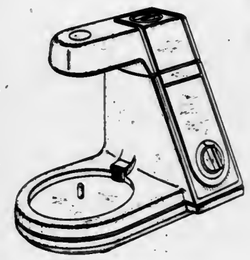


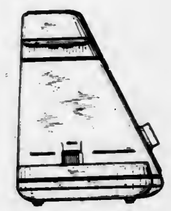
254,948
KITCHEN-MACHINE
John Besford, Son, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 27, 1977, Ser. No. 791,503
Claims priority, application Benelux, Oct. 29, 1976, 765141903
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—153



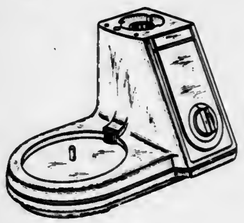


254,949
KITCHEN-MACHINE
John Besford, Son, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 27, 1977, Ser. No. 791,504
Claims priority, application Benelux, Oct. 29, 1976, 7651419-02
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—153

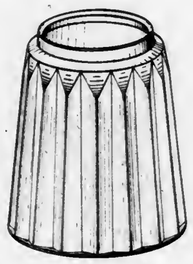




254,950
KITCHEN-MACHINE
John Besford, Son, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 27, 1977, Ser. No. 791,505
Claims priority, application Benelux, Oct. 29, 1976, 7651419-01
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153



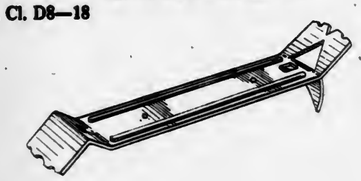
254,951
COMPOST BIN
Laurence R. Gedye, Doncaster East, Australia, assignor to L. R. & N. R. Gedye Pty. Limited, Doncaster East, Australia
Filed Oct. 31, 1977, Ser. No. 846,997
Term of patent 14 years
Int. Cl. D7—*07, 01*
U.S. Cl. D7—192



254,952
SHEARS
William J. Hildebrandt, West Simsbury, and Richard H. Rathbun, Oakdale, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Nov. 2, 1977, Ser. No. 848,021
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5



254,953
COMBINED GRILL CLEANER AND CONTAINER OPENER
William B. Delamater, 9114 Valley View, Whittier, Calif. 90603
Filed Mar. 24, 1977, Ser. No. 781,069
Term of patent 14 years
Int. Cl. D07—*99*; D08—*05*
U.S. Cl. D8—18



254,954
JAR OR THE LIKE
J. A. Pinto Ribeiro, Lisbon, Portugal, assignor to Florists' Transworld Delivery Association, Southfield, Mich.
Filed Sep. 20, 1978, Ser. No. 945,172
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39



254,955
BOTTLE
Philip F. Hartung, 655 Main St., Greenwich, R.I. 02818, and John J. Tramonti, 142 Smith St., Warwick, R.I. 02886
Filed Sep. 22, 1977, Ser. No. 835,767
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—91



254,956
TRAY FOR PACKAGING CONTAINERS OF YOGURT OR THE LIKE
James E. Gilley, South China, Me., assignor to Keyes Fibre Company, Waterville, Me.
Filed Dec. 19, 1977, Ser. No. 862,166
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184



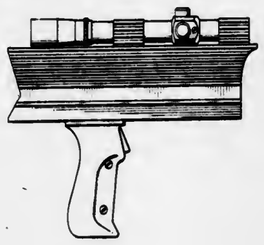
254,957
BEVERAGE CONTAINER
Arlin L. Campbell, and Roger B. Cannon, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.
Filed Aug. 17, 1977, Ser. No. 825,464
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



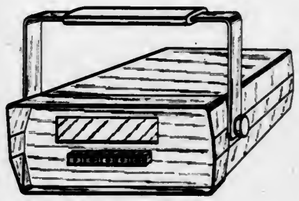
254,958
LID FOR A PACKAGING CONTAINER OR THE LIKE
David R. Dugan, Warsaw, and Kenneth E. Prince, Indianapolis, both of Ind., assignors to Owens-Illinois Inc., Toledo, Ohio
Filed Sep. 29, 1977, Ser. No. 837,953
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—254



254,959
RADIATION PYROMETER
Charles E. Everest, Santa Ana, Calif., assignor to Telatemp Corporation, Fullerton, Calif.
Filed Jan. 3, 1978, Ser. No. 866,533
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



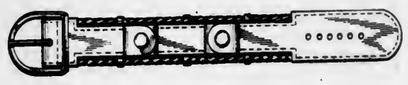
254,960
DIGITAL TACHOMETER DESIGN
Patrick J. Helm, Toledo, Ohio, assignor to Kent-Moore Instrument Company, Pioneer, Ohio
Filed Dec. 29, 1977, Ser. No. 865,366
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—98



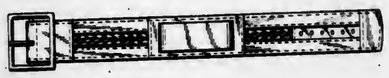
254,961
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,750
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



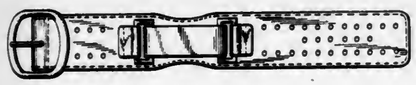
254,962
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,751
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



254,963
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,761
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



254,964
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,768
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



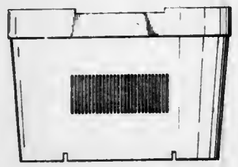
254,965
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,769
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3

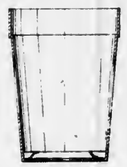


254,966
PENDANT OR THE LIKE
Terry C. Allison, 607 Foundry Rd., Greenwood, S.C. 29646
Filed Feb. 16, 1977, Ser. No. 769,020
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61

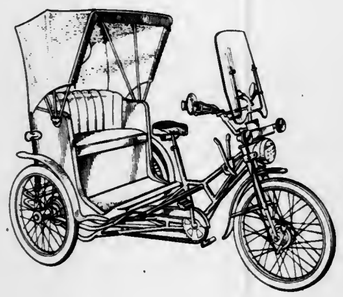


254,967
FLOWER POT
Michael I. Katz, P.O. Box 1401, Johannesburg 2000, South Africa
Filed Aug. 1, 1978, Ser. No. 930,078
Claims priority, application South Africa, Feb. 6, 1978, 78/0088
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152





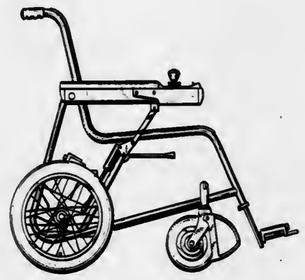
254,968
THREE-WHEELED VEHICLE
George C. Moore; Jodele Moore, both of P.O. Box 1006, Solvang, Calif. 93463, and James M. Tipke, 2823 N. Perry St., Spokane, Wash. 99207
Filed Sep. 15, 1978, Ser. No. 942,666
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



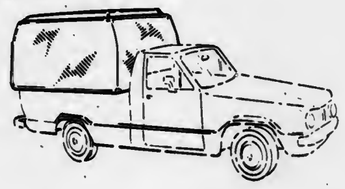
254,969
BABY STROLLER
Shinroku Nakao, Yokohama; Kouichi Kobayashi, and Kazuo Moriya, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Feb. 24, 1978, Ser. No. 880,814
Claims priority, application Japan, Aug. 26, 1977, 52-33952
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129



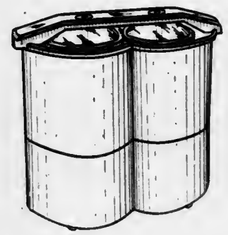
254,970
WHEELCHAIR
Hiroshi Honzyou, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 29, 1978, Ser. No. 891,471
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—131



254,971
CANOPY FOR PICK-UP TRUCK BED
Ronald D. Riddle, 9572 Oasis Ave., Garden Grove, Calif. 92644
Filed May 15, 1978, Ser. No. 906,017
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



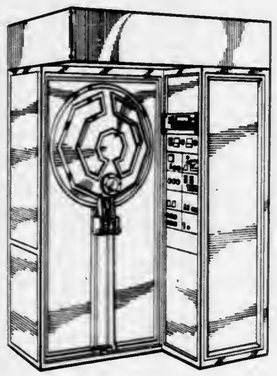
254,972
ICE CREAM MAKER
William J. Rakocy, Nutley, and Masao Tsuji, North Plainfield, both of N.J., assignors to North American Philips Corporation, New York, N.Y.
Filed Dec. 7, 1977, Ser. No. 858,364
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—82



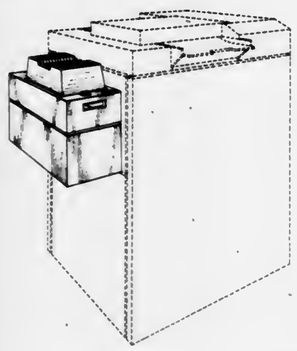
254,973
COLOR MIXING APPARATUS
Börge Ahrenskou-Sörensen, Hägersten, Sweden, assignor to Svenska Skandex Aktiebolag, Stockholm, Sweden
Filed May 5, 1977, Ser. No. 794,124
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—147



254,974
VACUUM DEPOSITION APPARATUS
Gunard O. B. Mahl, San Francisco, Calif., assignor to CHA Industries, Menlo Park, Calif.
Filed Apr. 17, 1978, Ser. No. 896,920
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199



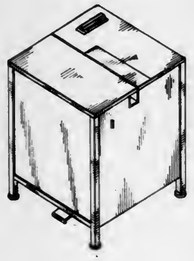
254,975
CONVENIENCE COLLATOR FOR A COPIER
Joseph L. Gambrell, Lexington, Ky.; Gene P. Gilleland, Boulder, Colo.; Allen D. Hawthorne, New Canaan, Conn.; Robert M. Hofland, Boulder, and James A. McCuiston, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 17, 1977, Ser. No. 852,412
Term of patent 14 years
Int. Cl. D16—*03;* D14—*02*
U.S. Cl. D16—32



254,976
MUSICAL RHYTHM INSTRUMENT
Michael J. Valente, 116 Harding Ter., Dedham, Mass. 02026
Filed Aug. 15, 1977, Ser. No. 824,445
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22



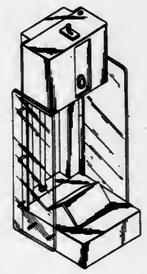
254,977
COMBINED POWER STAPLER AND DESK STAPLER UNIT
George F. Villwock, and Conrad R. Medina, both of Rolling Meadows, Ill., assignors to Swingline, Inc., Long Island City, N.Y.
Filed Dec. 20, 1976, Ser. No. 752,813
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D18—34



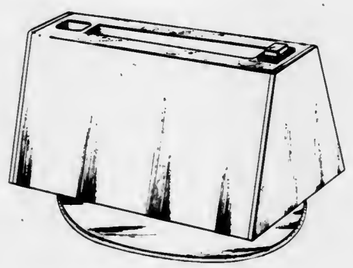
254,978
PENCIL SHARPENER
Werner Mobius, Hindenburgstrasse 77, Erlangen, Fed. Rep. of Germany
Filed Feb. 23, 1978, Ser. No. 880,351
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 7372
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—73



254,979
BAG VENDING MACHINE
Henry Verbeke, Tannersbrook Rd., Chester, N.J. 07930
Filed Dec. 15, 1977, Ser. No. 860,922
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—1



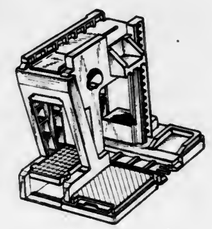
254,980
COMBINED KENO TICKET HOLDER WITH PAGER AND GAME RESULTS DISPLAY
David L. White, San Juan Capistrano, Calif.; Morton M. Goldstein, and Harry Kraft, both of Las Vegas, Nev., assignors to Kramor Industries, Ltd., Las Vegas, Nev.
Filed Oct. 20, 1977, Ser. No. 843,842
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—1



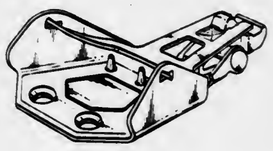
254,981
GAME BOARD
Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055
Filed Jul. 29, 1977, Ser. No. 820,366
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—32



254,982
TOY RAILROAD STATION
Victor J. Fratarcangeli, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 10, 1978, Ser. No. 876,844
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—118



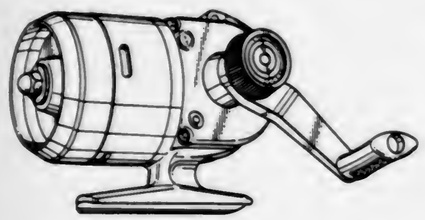
254,983
SKIBINDING
Bernt O. Hauglin, Röyken, Norway, assignor to A-S Royken Jernvarefabrik, Klokkarstua, Norway
Filed Aug. 30, 1977, Ser. No. 829,164
Claims priority, application Norway, Mar. 18, 1977, 7758203
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230



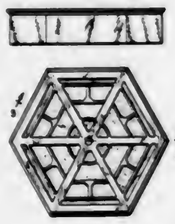
254,984
GOLF CLUB PRACTICE HEAD
Armand J. Goyette, Jr., 155 Rapin Pl., Buffalo, N.Y. 14211
Filed Sep. 5, 1978, Ser. No. 939,902
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—234



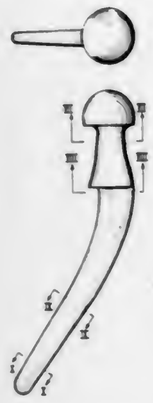
254,985
FISHING REEL
Yasomatsu Morishita, Kure, Japan, assignor to Ryobi Ltd., Fuchu, Japan
Filed Jan. 9, 1978, Ser. No. 868,143
Claims priority, application Japan, Aug. 20, 1977, 52-33064
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



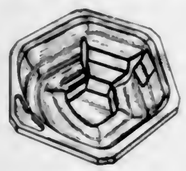
254,986
ROOM DEODORANT DISPENSER
Richard C. Palson, Medfield, and John C. Armstrong, Milton, both of Mass., assignors to The Pharmasol Corporation, Randolph, Mass.
Filed Dec. 18, 1978, Ser. No. 970,611
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



254,987
HIP PROSTHESIS
James T. Treace and Dan H. Treace, both of Germantown, Tenn., assignors to Richards Manufacturing Co., Inc., Memphis, Tenn.
Filed Oct. 31, 1977, Ser. No. 847,118
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—33

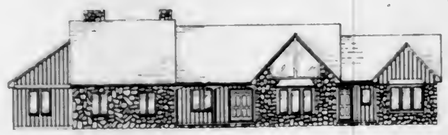


254,988
HYDROTHERAPY SPA
Robert H. Jones, and Lennard E. Nylin, both of San Jose, Calif., assignors to Viking Sauna Company, San Jose, Calif.
Filed Oct. 20, 1978, Ser. No. 953,090
Term of patent 14 years
Int. Cl. D24—*01*; D25—*99*; D23—*02*
U.S. Cl. D24—38

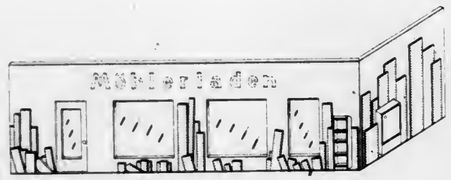




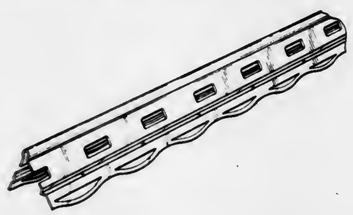
254,989
HOUSE OR THE LIKE
Elaine E. Sandman, 6925 N. Ridge Dr., Raleigh, N.C. 27609
Filed Dec. 27, 1977, Ser. No. 864,498
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17



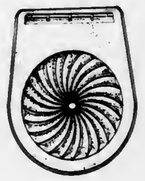
254,990
FACADE FOR A FURNITURE STORE
Claus Winter, Usedomstrasse 23, 2000 Hamburg 70, Fed. Rep. of Germany
Filed Jun. 21, 1977, Ser. No. 808,686
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—59



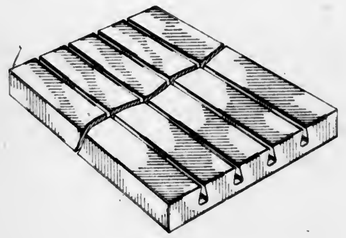
254,991
CORNER ANGLE IRON FOR CEILING PLASTERWORK
René S. Falcq, Chaudfontaine, Belgium, assignor to Société Anonyme Metal Deploye Belge, Sclessin-Ougrée, Belgium
Filed Nov. 1, 1977, Ser. No. 847,691
Claims priority, application Benelux, May 4, 1977, 5184800
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



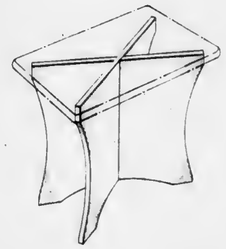
254,992
DISPOSABLE LADY'S RAZOR
David O. Chase, and Paul H. Pfuhl, both of Skaneateles, N.Y., assignors to American Safety Razor Company, Verona, Va.
Filed Mar. 21, 1978, Ser. No. 888,886
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46



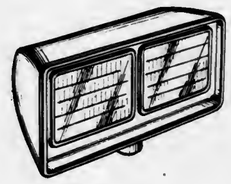
254,993
FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, and Roy J. Hancock, both of 5202 E. Washington, Phoenix, Ariz. 85034
Filed Jun. 12, 1978, Ser. No. 914,583
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



254,994
AQUARIUM STAND
Michael Miereanu, and Renee Miereanu, both of 15133 Ventura Blvd., Sherman Oaks, Calif. 91413
Filed Oct. 6, 1977, Ser. No. 839,828
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



254,995
DUAL LAMP DRIVING LIGHT
Bill R. Alsman, 2200 Christmas Tree La., Riverbank, Calif. 95367
Filed Apr. 21, 1978, Ser. No. 898,875
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—35



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TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MAY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See—*
Zahradnik, George J., 4,202,266, Cl. 101-218.000.

A. H. Robins Company, Inc.: *See—*
Greenberg, Jack, 4,202,129, Cl. 43-131.000.

A Patent Partnership: *See—*
Mayer, George L., Jr.; and Schick, John D., 4,202,626, Cl. 355-52.000.

A.R.D. Anstalt: *See—*
Gabr, Saad Z. M., 4,203,147, Cl. 361-386.000.

A-Team, Inc., The: *See—*
Lawler, Cary R., 4,202,585, Cl. 312-15.000.

AB Gustavsberg: *See—*
Strom, Torsten E. T., 4,202,568, Cl. 285-336.000.

AB Sture Ljungdahl: *See—*
Petersson, Nils E., 4,202,150, Cl. 53-206.000.

Abbondanti, Alberto; and Stacey, Eric J., to Westinghouse Electric Corp. Force commutated static isolator circuit. 4,203,040, Cl. 307-65.000.

Abe, Akira; Kimura, Shoji; and Kuwabara, Yuzo, to Omron Tateisi Electronics Co. Korotkov sound sensor. 4,202,348, Cl. 128-680.000.

Abe, Takeo: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

Abe, Tsutomu; Ikeda, Akihiko; and Sakurai, Tokio, to Asahi Kasei Kogyo Kabushiki Kaisha. Adsorbent for adsorbing organic compounds adsorbed on proteins. 4,202,775, Cl. 210-287.000.

Abernethy, Lynn W.; and Watts, Elvert S., to AMP Incorporated. Jack. 4,202,593, Cl. 339-125.00R.

Abraham, Edward D.; and Hartung, Rodney L., to Carver Foundry Products. Support table for foundry sand molding apparatus. 4,202,399, Cl. 164-203.000.

Acheson, Willard P.; Morris, Richard A.; Rennard, Raymond J.; and Viswanathan, Thiagarajan, to Gulf Research & Development Company. Method for the recovery of power from LHV gas. 4,202,168, Cl. 60-39.060.

Acheson, Willard P.; Morris, Richard A.; and Viswanathan, Thiagarajan, to Gulf Research & Development Company. System for combustion of gases of low heating value. 4,202,169, Cl. 60-39.120.

Achter, Eugen: *See—*
Rech, Werner; Welsch, Wolfgang; and Achter, Eugen, 4,203,050, Cl. 313-220.000.

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Adams, William C. Transportable module for trilevel dwelling. 4,202,146, Cl. 52-236.400.

Adamson, John S., to Chevron Research Company. Transponder system including an oscillator ripple counter controlling a coded analog multiplex network in a circuit with a driver/gate circuit for generating red-alert end condition digital signals in a storage tank gauging system. 4,203,090, Cl. 340-152.00T.

Addis, Kenneth J.; and McCollough, John K., Jr., to Milliken Research Corporation. Apparatus for the application of liquids to moving materials. 4,202,189, Cl. 68-205.00R.

Aedo, Dionisio M.: *See—*
Taya, Miguel M.; Aedo, Dionisio M.; and Ricard, Rene, 4,202,825, Cl. 260-345.200.

Afflerbaugh, Richard L.; and Ebling, Wendell V., to Baxter Travenol Laboratories, Inc. Ultrafiltration control system. 4,202,764, Cl. 210-22.00D.

Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See—*
Ishii, Eiichi; Nakane, Masanori; Ishikawa, Hiroshi; Uehara, Itsuki; and Miyake, Yoshizo, 4,202,917, Cl. 427-161.000.
Tateishi, Tetsuya, 4,202,670, Cl. 44-51.000.

AGFA-Gevaert, A.G.: *See—*
Stemme, Otto; Schroder, Rolf; Lermann, Peter; and Karl, Horst, 4,202,616, Cl. 354-173.000.
Waschk, Fritz; Webersik, Heinz; and Schinagl, Rudolf, 4,202,618, Cl. 355-3.0FU.

AGFA-GEVAERT N.V.: *See—*
Philippaerts, Herman A.; Pollet, Robert J.; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; von Konig, Anita; Gauss, Walter; Moll, Franz; and Ghys, Theofiel H., 4,202,695, Cl. 430-8.000.
Van Goethem, Hugo V.; Stroobants, Marcel; and De Winter, Walter F., 4,202,697, Cl. 430-306.000.

Agip Nucleare S.p.A.: *See—*
Bezzi, Giovanni; Facchini, Alessandro; Martignani, Giovanni; and Pastore, Michele, 4,202,793, Cl. 252-301.10S.

Ahonen, Esko M., to Paraisten Kalkki Oy-Pargas Kalk AB. Glide-casting machine for the manufacturing of hollow slabs and equivalent. 4,202,658, Cl. 425-64.000.

Ainoura, Masato. Method for preparation of spherical hob for generation of gear. 4,202,222, Cl. 76-101.00A.

Air Products & Chemicals, Inc.: *See—*
Hvizdos, Leonard J., 4,202,678, Cl. 62-38.000.

Aisaka, Kazuo: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,202,941, Cl. 435-190.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Sakakibara, Naoji; and Kawata, Shoji, 4,202,424, Cl. 180-176.000.

Akerkar, Anandrao S.; and Rutner, Herman, to Becton Dickinson & Company. Monoradioiodinated derivatives and precursors for production thereon. 4,202,874, Cl. 424-1.000.

Akita, Hiroko: *See—*
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Akkerman, Neil H.; and Goans, Kip B., to Baker CAC, Inc. Safety valve or blowout preventer for use in a fluid transmission conduit. 4,202,368, Cl. 137-498.000.

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Enghag, Per, 4,202,921, Cl. 427-406.000.

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Madsen, Rud F.; Jensen, Jens H.; and Engvad, Jens C., 4,202,859, Cl. 422-245.000.

Albert Einstein College of Medicine of Yeshiva University a Division of Yeshiva University: *See—*
Wenz, Barry; Karmen, Arthur; and Feng, Chi Shun, 4,202,665, Cl. 23-230.00B.

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Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, to Hoffmann-La Roche Inc. D-Homopregnanes. 4,202,841, Cl. 424-311.000.

Alison, W. Evans. Equine vaginal speculum. 4,202,324, Cl. 128-20.000.

Alkem GmbH: *See—*
Funke, Peter, 4,202,690, Cl. 75-224.000.

Allain, Albert; and Buret, Jacqui, to Commissariat a l'Energie Atomique. Double-arm handling device for a nuclear reactor. 4,202,728, Cl. 176-30.000.

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Allain, Gerard: *See—*
Multon, Francois; and Allain, Gerard, 4,202,210, Cl. 73-194.00A.

Allen, Richard T.; Moyer, Rudolph H.; Sibbett, Donald J.; Anderson, Howard H.; Martner, Glen R.; and Willis, Don, to Geomet, Incorporated. In-line respirating pump. 4,202,212, Cl. 73-421.50R.

Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., to United States of America, Army. Ballistic modifiers and synthesis of the ballistic modifiers. 4,202,714, Cl. 149-109.400.

Allied Chemical Corporation: *See—*
Carlson, Charles E., 4,202,404, Cl. 164-423.000.
Hartford, Allen, Jr.; and Tuccio, Sam A., 4,202,741, Cl. 204-158.00R.
Koff, Fred W.; Tunick, Allen A.; Sifniades, Stylianos; and Belden, Reed H., 4,202,765, Cl. 210-31.00R.
Kokta, Milan R.; Linares, Robert C.; and Di Giuseppe, Michael A., 4,202,930, Cl. 428-539.000.

Alonso, Agustin M.: *See—*
Zorrilla, Fermin; and Alonso, Agustin M., 4,202,310, Cl. 123-191.00A.

Alther, George A., to Smith International, Inc. Raise drill with elastomeric load absorbing means. 4,202,417, Cl. 175-320.000.

Altmann, Josef: *See—*
Roth, Zdenek; and Altmann, Josef, 4,202,367, Cl. 137-187.000.

Amax Inc.: *See—*
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, 4,202,752, Cl. 204-222.000.

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Dreyer, Heinz, 4,202,474, Cl. 222-609.000.

Amendola, Steven C., to Future Research, Inc. Coal liquification process. 4,202,757, Cl. 208-10.000.

Amerace Corporation: *See—*
Borgstrom, Alan D., 4,202,591, Cl. 339-111.000.

American Can Company: *See—*
Pauls, Walter L.; and Miller, Fredric N., 4,202,852, Cl. 264-115.000.

American Cyanamid Company: *See—*
Behrens, Rudolf A., 4,202,963, Cl. 528-374.000.
Chang, Eugene Y. C.; and Saxon, Robert, 4,202,845, Cl. 525-302.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,202,989, Cl. 560-118.000.
Wissner, Allan, 4,202,822, Cl. 260-340.90P.
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American Ecosystems, Inc.: *See—*
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,202,363, Cl. 135-2.000.

Ametek, Inc.: *See—*
Bowen, John C., 4,202,320, Cl. 126-447.000.

Amory, Daniel: *See—*
Szadkowski, Stanislav; Amory, Daniel; and Thomas, Jean M., 4,202,473, Cl. 222-598.000.

AMP Incorporated: *See—*
Abernethy, Lynn W.; and Watts, Elvert S., 4,202,593, Cl. 339-125.00R.
Reavis, Robert P., Jr.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Hughes, Richard L., 4,202,589, Cl. 339-97.00R.

Amsted Industries Incorporated: *See—*
Simpson, Neville H.; and Dykeman, Fred E., 4,202,164, Cl. 57-232.000.

An, Viktor B.: *See—*
Bukhtiyarov, Ivan D.; An, Viktor B.; Demin, Alexei S.; Farshatov, Marat N.; and Slepchuk, Valery A., 4,202,206, Cl. 73-116.000.

Anaren Microwave, Inc.: *See—*
Gerst, Carl W.; Hair, Hugh A.; and Rehnmark, Stig L., 4,203,114, Cl. 343-100.0SA.

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Annett, Leland W., to Minnesota Mining and Manufacturing Company. Stapler including means for preventing double feeding of staples. 4,202,480, Cl. 227-8.000.

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Villari, Frank K.; Ellmann, Norbert W.; and Annis, Larry D., 4,202,325, Cl. 128-24.00R.

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Sachs, Klaus, 4,203,041, Cl. 307-67.000.

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Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

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Umezawa, Hamao; Aoyagi, Takaaki; and Takeuchi, Tomio, 4,202,824, Cl. 260-343.900.

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Yamaguchi, Takao; Aoyama, Kenjiro; Nishio, Yukihiro; and Kazino, Sadayosi, 4,203,084, Cl. 335-202.000.

Arai, Akihiro: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; and Umetsu, Junji, 4,202,617, Cl. 354-268.000.

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Komatsu, Noboru; Arai, Tohru; and Fujita, Hinonori, 4,202,705, Cl. 148-6.110.

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Teodorescu, Constantin; Ceauselu, Constantin; and Ardeleanu, Stefan, 4,202,272, Cl. 104-91.000.

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Kawashima, Kenichi; Arima, Yosiaki; Endo, Yoshihide; Suginuma, Atsushi; Uenishi, Akira; and Miyamoto, Seigo, 4,202,182, Cl. 62-511.000.

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Littmann, Martin F.; and Obman, Allan R., 4,202,711, Cl. 148-111.000.

Armstrong, Edward T., to TII Corporation (Telecommunications Industries, Inc.). System for pollution suppression. 4,202,371, Cl. 137-604.000.

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Kitteridge, John M.; and Armstrong, Robert J., 4,202,699, Cl. 430-302.000.

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Kitchener, William R.; and Sama, Stephen L., 4,203,029, Cl. 235-92.0PC.

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Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Asahi Glass Company, Limited: *See—*
Oda, Yoshio; Suhara, Manabu; Goto, Shoziro; Hukushima, Takashi; Miura, Koji; and Hamano, Toshikatsu, 4,202,743, Cl. 204-98.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Abe, Tsutomu; Ikeda, Akihiko; and Sakurai, Tokio, 4,202,775, Cl. 210-287.000.
Kominami, Naoya; Fwkumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,202,291, Cl. 119-3.000.
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Takahashi, Gensho; Miyoshi, Kazuhito; and Tanaka, Yoneharu, 4,202,696, Cl. 430-306.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; and Umetsu, Junji, 4,202,617, Cl. 354-268.000.

Asai, Koichi; Kawada, Tohsuke; Iwaki, Yoshiyuki; and Kuroda, Ryozo, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing stator core. 4,202,196, Cl. 72-137.000.

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Asano, Kiro; Saito, Tsuyoshi; Tanaka, Hiromitsu; and Enomoto, Satoru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for the preparation of anti-transplanted sarcoma 180 tumorigenic substances. 4,202,885, Cl. 424-95.000.

Asano, Motohisa: *See—*
Miyake, Tetsuya; Ogawa, Norito; Asano, Motohisa; and Okuyama, Kazuo, 4,202,860, Cl. 423-6.000.

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Jacoby, Lawrence J.; Rosenau, Richard A.; Carter, Dorothy P.; Nielsen, Ralph H.; and Ash, Kenneth C., 4,202,862, Cl. 423-70.000.

Assistance Industrielle Dauphinoise S.A.: *See—*
Rutten, Pierre L.; and Danel, Francois H., 4,202,467, Cl. 222-20.000.

Ateliers des Charmilles S.A.: *See—*
Piguet, Pierre, 4,202,084, Cl. 29-156.80R.

Atlantic Richfield Company: *See—*
Johnson, Marvin F. L.; and Erickson, Henry, 4,202,798, Cl. 252-437.000.
Shawl, Edward T., 4,202,986, Cl. 560-25.000.
Statton, Gary L., 4,202,950, Cl. 525-123.000.
Voelz, Frederick L.; and Jewell, Roy G., 4,202,385, Cl. 141-59.000.

Atwood Vacuum Machine Company: *See—*
Leonhardt, Robert F., 4,202,243, Cl. 85-37.000.

Aubert, Rene, to Societe d'Usinage des Tubes pour l'Electricite S.U.T.E. Automatic device for installing self-locking straps. 4,202,384, Cl. 140-123.600.

Aument, Patrick E.: *See—*
de la Burde, Roger Z.; Aument, Patrick E.; and Utsch, Francis V., 4,202,357, Cl. 131-140.00R.

Automated Packaging Systems, Inc.: *See—*
Lerner, Bernard; and Liebhart, Dana J., 4,202,153, Cl. 53-459.000.

Avco Corporation: *See—*
Polastri, Robert S.; and Ruzicka, Harry L., Jr., 4,202,539, Cl. 269-70.000.

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Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., 4,203,078, Cl. 331-94.5PE.

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Skinner, Edward A., 4,202,191, Cl. 72-10.000.

Avery, Alfred J. Heat exchange system. 4,202,406, Cl. 165-47.000.

Avery International Corporation: *See—*
Burke, Thomas F.; and Walker, Donald H., 4,202,600, Cl. 350-103.000.

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Uchiyama, Yasushi; and Awamura, Daikichi, 4,202,631, Cl. 356-394.000.

Ayer, Donald E., to Upjohn Company, The. 11-Deoxy-trans-4,5-didehydro-PG1$_1$ compounds. 4,202,970, Cl. 542-426.000.

Azikov, Boris A.: *See—*
Klimkovsky, Bronislav M.; Azikov, Boris A.; Zemtsov, Mikhail U.; Kusch, Sergei A.; and Nalivkin, Nikolai P., 4,202,439, Cl. 198-642.000.

Babin, Vladimir V.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Babington, Ronald G.; and Harrington, F. Eugene, to Sandoz, Inc. Prolactin secretion inhibitors. 4,202,897, Cl. 424-250.000.

Bach, Hartwig C., to Monsanto Company. Fibers of arylene oxadiazole-/arylene N-alkylhydrazide copolymer. 4,202,962, Cl. 528-363.000.

Bach, Nicholas J.: *See—*
Kornfeld, Edmund C.; and Bach, Nicholas J., 4,202,979, Cl. 546-67.000.

Bachand, Carol: *See—*
Monkovic, Ivo; Bachand, Carol; and Wong, Henry, 4,202,982, Cl. 546-89.000.

Bachley, Peter V. Drafting apparatus. 4,202,111, Cl. 33-444.000.

Backteman, Hans U. Solid container coupling device. 4,202,643, Cl. 403-33.000.

Bader, Hartmann, to Sulzer Brothers Limited. Drop plate for an electrical stop motion of a weaving machine. 4,202,380, Cl. 139-368.000.

Baer, Edmund: *See—*
Ernst, Gunter; Baer, Edmund; and Wurz, Dieter, 4,202,847, Cl. 261-161.000.

Baghdady, Elie J. Radar method and apparatus. 4,203,113, Cl. 343-14.000.

Bailey, William V.: *See—*
Couch, Richard W., Jr.; and Bailey, William V., 4,203,022, Cl. 219-121.00P.

Baird Corporation: *See—*
Grenier, Raymond P., 4,203,035, Cl. 250-363.00S.

Baker CAC, Inc.: *See—*
Akkerman, Neil H.; and Goans, Kip B., 4,202,368, Cl. 137-498.000.

Baker International Corporation: *See—*
Sharp, Keith W.; and Sparlin, Derry D., 4,202,411, Cl. 166-244.00C.

Baker, Richard H., to Exxon Research & Engineering Co. High-voltage converter circuit. 4,203,151, Cl. 363-43.000.

Ball, Andrew C. Fire lighters. 4,202,669, Cl. 44-40.000.

Ball Corporation: *See—*
Rodenberger, Phillip R.; and Smith, William A., 4,202,674, Cl. 55-108.000.

Ballard, Samuel S.; and Vanham, Ernest E., to Sanders Associates, Inc. Submarine communication system. 4,203,109, Cl. 340-850.000.

Ballast-Nedam Groep N.V.: *See—*
Middelbeek, Cornelis G., 4,202,778, Cl. 210-522.000.

Baltschun, Horst, to SMG Suddeutsche Maschinenbau-Gesellschaft mbH. Tool protection arrangement for hydraulic presses. 4,202,433, Cl. 192-129.00A.

Ban, Masuo: *See—*
Ishida, Takuo; and Ban, Masuo, 4,202,508, Cl. 242-84.20G.

Baraff, David R.: *See—*
Naguib, Hussein M.; Baraff, David R.; and Kos, Steven, 4,203,119, Cl. 346-76.0PH.

Barlage, Bruno, to H. Niemeyer Sohne GmbH & Co. KG. Soil cultivating machine. 4,202,415, Cl. 172-125.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Turk, Herbert; Schiminski, Herbert; and Lenk, Erich, 4,202,163, Cl. 57-58.950.

Barna, Alex J. Compound bow. 4,202,316, Cl. 124-24.00R.

Barrows, George T.: *See—*
Talbot, Tully W.; Barrows, George T.; and Thompson, Granville B., 4,202,887, Cl. 424-154.000.

BASF Aktiengesellschaft: *See—*
Hoerauf, Werner; Pirzer, Hans; Guenther, Ernst; Neumann, Eckart; and Dietrich, Ernst, 4,202,375, Cl. 138-39.000.
Maechtle, Walter; and Klodwig, Utz, 4,202,632, Cl. 356-427.000.
Merger, Franz; and Nestler, Gerhard, 4,202,199, Cl. 568-793.000.

BASF Wyandotte Corporation: *See—*
Ciko, John D.; Ward, Robert A.; and Cramer, John J., 4,202,800, Cl. 252-543.000.
Taylor, James D., 4,202,956, Cl. 528-75.000.

Baskov, Jury A.: *See—*
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; Baskov, Jury A.; and Dmitriev, Konstantin V., 4,202,846, Cl. 261-142.000.

Bassler, Gerd: *See—*
Armbruster, Franz; Paoli, Albano; Bassler, Gerd; Sitka, Hans-Peter; and Schmidt, Gunter, 4,203,020, Cl. 219-93.000.

Bates, John F.; and Popplewell, James M., to Olin Corporation. Corrosion resistant copper base alloys for heat exchanger tube. 4,202,708, Cl. 148-11.50C.

Bates, Laurence H. J., to G. & S. Allgood (Holdings) Limited. Door handle mechanisms. 4,202,575, Cl. 292-347.000.

Bathen, Roland. Machine tool control system. 4,203,062, Cl. 318-571.000.

Batjukov, Vladimir I.; Vijugov, Oleg N.; Fadeev, Alexandr I.; Shapkin, Alexandr F.; and Dyatlov, Lev E. Gripping means for fuel assemblies of nuclear reactor. 4,202,727, Cl. 176-30.000.

Bator, Cathryn D.: *See—*
Porzel, Rita E.; and Bator, Cathryn D., 4,202,804, Cl. 260-17.40R.

Battelle-Institut e.V.: *See—*
Reiner, Roland; Heide, Helmut; and Koster, Kari, 4,202,055, Cl. 3-1.910.

Batz, Hans-Georg; Stellner, Klaus; Linke, Hans-Ralf; and Weimann, Gunter, to Boehringer Mannheim GmbH. Alkylolamides of iodizable amino acids and immune test reagents containing them. 4,202,873, Cl. 424-1.000.

Batzold, John S.: *See—*
Pan, Yen-Chi; and Batzold, John S., 4,202,744, Cl. 204-129.000.

Bauer Kassenfabrik AG: *See—*
Wieland, Jakob, 4,202,587, Cl. 312-219.000.

Baughman, Ernest H.: *See—*
Sabol, Albert R.; and Baughman, Ernest H., 4,202,781, Cl. 252-32.7HC.

Baxter Travenol Laboratories, Inc.: *See—*
Afflerbaugh, Richard L.; and Ebling, Wendell V., 4,202,764, Cl. 210-22.00D.

Bayer Aktiengesellschaft: *See—*
Beck, Manfred; Schnetger, Jochen; Serini, Volker; and Pampus, Gottfried, 4,202,949, Cl. 525-92.000.
Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,203,067, Cl. 324-58.50C.
Klein, Alfons; Knust, Ernst; Kron, Rudolf; and Wedemeyer, Karlfried, 4,203,145, Cl. 361-317.000.
Maurer, Fritz; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,202,889, Cl. 424-200.000.
Moretto, Hans-Heinrich; de Montigny, Armand; Steinberger, Helmut; Sattlegger, Hans; and Larking, Ingrid, 4,202,807, Cl. 260-29.1SB.
Schlak, Ottfried; and Moretto, Hans-Heinrich, 4,202,831, Cl. 556-467.000.

Bayer Atkiengesellschaft: *See—*
de Montigny, Armand; Toepsch, Hans; and Buchner, Werner, 4,202,929, Cl. 428-452.000.

Bayly, Russell J.; Chambers, Virginia E. M.; and Monks, Reginald. Selenium-75 labelled derivatives of folates. 4,202,976, Cl. 544-261.000.

BBC Brown Boveri & Company Limited: *See—*
Kaufmann, Meinolph, 4,202,608, Cl. 350-339.00R.
Kmetz, Allan R., 4,203,104, Cl. 340-754.000.
Wild, Peter, 4,202,606, Cl. 350-336.000.

Bechtel, Jon H., to Robertshaw Controls Company. Solid state ignition system. 4,203,052, Cl. 315-209.0CD.

Beck, John W.; and McCown, Donald P., to International Business Machines Corporation. Dual mode read preamplifier with electrical short detector. 4,203,137, Cl. 360-31.000.

Beck, Manfred; Schnetger, Jochen; Serini, Volker; and Pampus, Gottfried, to Bayer Aktiengesellschaft. Branched segment polymers. 4,202,949, Cl. 525-92.000.

Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, to Carl Freudenberg, Firma. Sealing ring. 4,202,555, Cl. 277-153.000.

Becker, Reinhold: *See—*
Michel, Wolfgang; and Becker, Reinhold, 4,202,075, Cl. 17-41.000.

Becker, Ronald K.; and Korb, Donald R., to SyntexLaboratories, Inc. Method and apparatus for manufacturing plastic lenses. 4,202,226, Cl. 82-12.000.

Becker, Willi, to Heidelberger Druckmaschinen Aktiengesellschaft. Transfer drum for printing presses with devices for gripping the leading and trailing edges of a sheet which is being imprinted. 4,202,268, Cl. 101-409.000.

Beckman Instruments, Inc.: *See—*
Buzza, Edmund E.; and Meyer, Richard C., 4,202,747, Cl. 204-195.00R.
Edwards, John R., 4,202,487, Cl. 233-1.00A.
Smith, Leland B.; McIntyre, Robert A.; and Pawlak, Raymond M., 4,202,354, Cl. 128-731.000.

Becton Dickinson & Company: *See—*
Akerkar, Anandrao S.; and Rutner, Herman, 4,202,874, Cl. 424-1.000.

Beecham Group Limited: *See—*
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,202,973, Cl. 544-21.000.

Behrens, Rudolf A., to American Cyanamid Company. Vulcanization system for thiodiethanol-based elastomers. 4,202,963, Cl. 528-374.000.

Behrenz, Wolfgang: *See—*.
Maurer, Fritz; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,202,889, Cl. 424-200.000.

Belden Corporation: *See—*
Cox, Albert R., 4,203,004, Cl. 174-135.000.
Belden, Reed H.: *See—*
Koff, Fred W.; Tunick, Allen A.; Sifniades, Stylianos; and Belden, Reed H., 4,202,765, Cl. 210-31.00R.
Bell & Howell Company: *See—*
Parker, Robert R., 4,202,611, Cl. 352-179.000.
Bell, Michael. Weather-proof garment. 4,202,053, Cl. 2-84.000.
Bell Telephone Laboratories, Incorporated: *See—*
Dragone, Corrado; and Gans, Michael J., 4,203,105, Cl. 343-781.00P.
Gordon, James P.; Nahory, Robert E.; Pollack, Martin A.; and Worlock, John M., 4,203,124, Cl. 357-13.000.
Moran, John C., 4,203,030, Cl. 235-92.0CC.
Belsky, Valentin I: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.
Bendix Corporation, The: *See—*
Ewald, Jerome T., 4,202,248, Cl. 91-375.00A.
Bendt, Anders. Protecting device for edges. 4,202,449, Cl. 206-453.000.
Benel, Michel: *See—*
Rullier, Noel; and Benel, Michel, 4,202,592, Cl. 339-116.00R.
Beningfield, Harley W.; and Sparks, Ward L., to Rockwell International Corporation. Reduction of impulse noise contribution to receiver squelch threshold. 4,203,072, Cl. 455-223.000.
Bennett, Thomas H.: *See—*
Daniels, R. Gary; Musa, Fuad H.; Wilder, W. Bryant, Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,203,157, Cl. 364-788.000.
Benser, Earl H., to United States of America, Air Force. Electronic tripod technique. 4,202,516, Cl. 244-3.150.
Bereiter, Rolf; and Jachimowski, Alexander, to Von Roll AG. Furnace flue apparatus for improved fly ash separation. 4,202,280, Cl. 110-216.000.
Berendt, Hans-Ulrich: *See—*
Lauton, Alain; Putzar, Roland; Berendt, Hans-Ulrich; and Scherer, Gustaaf, 4,202,838, Cl. 260-505.00C.
Berg, William F., to Hudson Products Corporation. Air cooled condenser. 4,202,405, Cl. 165-110.000.
Berggren, Donald R. Camper shell structure. 4,202,579, Cl. 296-156.000.
Bergwerksverband GmbH: *See—*
Gappa, Gunther; Juntgen, Harald; and Klein, Jurgen, 4,202,770, Cl. 210-96.100.
Luke, Willy; and Gabriel, Gunter, 4,202,733, Cl. 201-1.000.
Berkowitz, Irving L.; and Bourgeois, John J., to Kason Hardware Corporation. Safety closure system. 4,202,573, Cl. 292-223.000.
Berkowitz, Milton. Hanger for hanging fabric. 4,202,451, Cl. 206-526.000.
Bernady, Karel F.: *See—*
Wissner, Allan; Weiss, Martin J.; and Bernady, Karel F., 4,202,988, Cl. 560-118.000.
Bernhard Forster, Firma: *See—*
Forster, Rolf, 4,202,100, Cl. 433-7.000.
Berson, Steven. Sailing training device. 4,202,114, Cl. 35-11.00A.
Bethlehem Steel Corporation: *See—*
Greenbaum, Robert R., 4,202,734, Cl. 201-6.000.
Hlinka, Joseph W.; Whitmore, Bruce C.; and Ozgu, Mustafa R., 4,202,397, Cl. 164-82.000.
Betrue, Norman A., Sr. Construction device. 4,202,149, Cl. 52-699.000.
Bezzi, Giovanni; Facchini, Alessandro; Martignani, Giovanni; and Pastore, Michele, to Agip Nucleare S.p.A. Production of microspheres of thorium oxide, uranium oxide and plutonium oxide and their mixtures containing carbon. 4,202,793, Cl. 252-301.10S.
Bi-Modal Corporation: *See—*
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,276, Cl. 105-165.000.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,277, Cl. 105-215.00C.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,454, Cl. 213-86.000.
Biche, Barton A., to Bunker Ramo Corporation. Identification means for electrocardiographic monitoring instruments or the like. 4,202,351, Cl. 128-696.000.
Bickel, Hans: *See—*
Kocsis, Karoly; Fechtig, Bruno; and Bickel, Hans, 4,202,900, Cl. 424-251.000.
Bidegain, Pierre, to Bidegain S.A. Shoe, more particularly for toddlers. 4,202,117, Cl. 36-112.000.
Bidegain S.A.: *See—*
Bidegain, Pierre, 4,202,117, Cl. 36-112.000.
Bielefelder Kuchenmaschinen-u. Transport-Geratefabrik vom Braucke GmbH: *See—*
vom Braucke, Hans; vom Braucke, Manfred; and Schuring, Walter, 4,202,414, Cl. 172-42.000.
Bilanzich, Lydia K. Extendable infant sheet and sleeper. 4,202,052, Cl. 2-69.500.
Billitzer, Edward P.: *See—*
DeParales, Lawrence T.; and Billitzer, Edward P., 4,202,459, Cl. 220-90.400.
Bills, John E. Pocket brush. 4,202,361, Cl. 132-123.000.
Billy The Kid, Inc.: *See—*
Breck, Louis W., Jr., 4,202,447, Cl. 206-389.000.
Bils, Robert F. Specimen processing apparatus for microscopy. 4,202,289, Cl. 118-50.000.
Biotronik Mess- und Therapiegerate GmbH & Co.: *See—*
Blaser, Reinhard, 4,202,341, Cl. 128-419.0PG.
Keller, John W., Jr., 4,202,342, Cl. 128-419.0PG.
Richter, Gerolf; and Shanks, Scott B., 4,203,019, Cl. 219-72.000.
Bishop, Larry D.; and Parker, Jack C., Jr., to Wescom, Inc. Low power dissipation series regulator for PCM repeater lines. 4,203,141, Cl. 361-18.000.
Bitrolf, Ehrenfried, to Richard Wolf GmbH. Device for removing excrescences and polyps. 4,202,338, Cl. 128-303.150.
Bitterberg, Friedhelm, to Thyssen Industrie Aktiengesellshaft. Device for protecting self-propelled rail vehicles against swaying. 4,202,275, Cl. 105-61.000.
Black & Decker Inc.: *See—*
Alessio, Lorenzo E., 4,202,140, Cl. 51-395.000.
Black, Philip W., to International Standard Electric Corporation. Glass manufacture. 4,202,682, Cl. 65-136.000.
Blaschke, Kurt; and Roob, Josef, to Stahl- und Apparatebau Hans Leffer GmbH. Method and apparatus for sinking a cased borehole for producing cased pile foundations. 4,202,416, Cl. 175-94.000.
Blaser, Paul: *See—*
Schmidt, Helmut; Strobel, Walter; Treude, Gunter; and Blaser, Paul, 4,202,640, Cl. 400-491.200.
Blaser, Reinhard, to Biotronik Mess- und Therapiegerate GmbH & Co. Cardiac pacemaker circuit with variable operation. 4,202,341, Cl. 128-419.0PG.
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Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,202,174, Cl. 60-413.000.
Bock, Thomas: *See—*
Wirtzfeld, Alexander; and Bock, Thomas, 4,202,339, Cl. 128-419.0PG.
Bodig, Bernd: *See—*
Jundt, Werner; and Bodig, Bernd, 4,202,304, Cl. 123-148.00E.
Boehringer Mannheim GmbH: *See—*
Batz, Hans-Georg; Stellner, Klaus; Linke, Hans-Ralf; and Weimann, Gunter, 4,202,873, Cl. 424-1.000.
Boeing Company, The: *See—*
Brunner, Dietrich W., 4,202,172, Cl. 60-245.000.
Champoux, Louis A.; Falcioni, Joseph G.; and Mendels, Morton, 4,202,242, Cl. 85-7.000.
Fletcher, John J., 4,202,519, Cl. 244-214.000.
Waters, Kenneth L., 4,202,061, Cl. 4-317.000.
Bogdashich, Vladimir E.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.
Bollongino, Norbert: *See—*
Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,203,067, Cl. 324-58.50C.
Bond, Roy F.: *See—*
Hancock, Robert D.; Bond, Roy F.; and Green, Brian R., 4,202,944, Cl. 521-32.000.
Bonk, Henry W.; and Shah, Tilak M., to Upjohn Company, The. Thermoplastic polyurethane elastomers from polyoxypropylene polyoxyethylene block copolymers. 4,202,957, Cl. 528-77.000.
Boos, Walter R.: *See—*
von Schmeling, Bogislav; and Boos, Walter R., 4,202,904, Cl. 424-330.000.
Borel, Jacques M. L. Shot simulating apparatus. 4,202,115, Cl. 35-25.000.
Borg Instruments, Inc.: *See—*
Johnston, Samuel A., 4,202,081, Cl. 29-25.410.
Borg-Warner Corporation: *See—*
Gaylord, Norman G., 4,202,955, Cl. 526-272.000.
Borgstrom, Alan D., to Amerace Corporation. Apparatus for the remote grounding, connection and disconnection of high voltage electrical circuits. 4,202,591, Cl. 339-111.000.
Boroschewski, Gerhard: *See—*
Arndt, Friedrich; and Boroschewski, Gerhard, 4,202,684, Cl. 71-100.000.
Borrevang, Poul: *See—*
Guddal, Erling; and Borrevang, Poul, 4,202,817, Cl. 260-239.100.
Bostrom, David A.: *See—*
Fitting, William L., 4,202,529, Cl. 254-89.00H.
Boucher, Robert; and Foulquier-Gazagnes, Andre. Photographic printing process, and composition and device for use therein. 4,202,662, Cl. 8-444.000.
Bourgeois, John J.: *See—*
Berkowitz, Irving L.; and Bourgeois, John J., 4,202,573, Cl. 292-223.000.
Bourgeois, Michel; Manevy, Georges; and Roux, Jean-Pierre, to Commissariat a l'Energie Atomique. Method for dry reprocessing of irradiated nuclear fuels. 4,202,861, Cl. 423-19.000.

Bourgeois, Ronald D. Modular compartmentalized conveyor belt system. 4,202,441, Cl. 198-779.000.
Bowen, John C., to Ametek, Inc. Solar energy collector assembly. 4,202,320, Cl. 126-447.000.
Bowles, William M.; and Cox, Duncan B., Jr., to Charles Stark Draper Laboratory, Inc., The. Pseudo-random-number code detection and tracking system. 4,203,070, Cl. 375-1.000.
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Boxall, Frank S. Hybrid circuit using current mirror circuits. 4,203,012, Cl. 179-170.0NC.
Boyd, James C., to Diebold, Incorporated. Circuit for reducing power consumption in battery operated microprocessor based systems. 4,203,153, Cl. 364-200.000.
Boyesen, Eyvind, to Performance Industries, Inc. Fuel porting for two cycle internal combustion engine. 4,202,298, Cl. 123-73.00R.
Boyesen, Eyvind, to Performance Industries, Inc. Two cycle internal combustion engine. 4,202,299, Cl. 123-73.00A.
Bradford, Donald R.; and White, James E., to Swiss Aluminium Ltd. Reduction cell hood. 4,202,753, Cl. 204-247.000.
Bradley, Timothy G.; and McAdam, Raymond L., to Johns-Manville Corporation. Filtration of vegetable based matter. 4,202,910, Cl. 426-423.000.
Braeckelmann, Walter, to Siemens Aktiengesellschaft. Passive circuit element for influencing pulses. 4,203,081, Cl. 333-138.000.
Brakebill, Harold G., to Robertshaw Controls Company. Valve positioner and method of making the same. 4,202,524, Cl. 251-28.000.
Brandenstein, Manfred: *See—*
Olschewski, Armin; Brandenstein, Manfred; Krug, Manfred; and Martin, Horst, 4,202,558, Cl. 280-11.280.
Brandt, Michael W. Blade holder and nozzle assembly. 4,202,469, Cl. 222-91.000.
Braudo, Evgeny E.: *See—*
Nesmeyanov, Alexandr N.; Rogozhin, Sergei V.; Tolstoguzov, Vladimir B.; Misjurev, Vladimir I.; Ershova, Vera A.; and Braudo, Evgeny E., 4,202,908, Cl. 426-72.000.
Breck, Louis W., Jr., to Billy The Kid, Inc. Collating and bundling belt loops. 4,202,447, Cl. 206-389.000.
Brehm, William F.; and McGuire, Joseph C., to United States of America, Energy. Radionuclide deposition control. 4,202,730, Cl. 176-37.000.
Breitschwerdt, Werner; Andres, Rudolf; Heiss, Werner; and Fussnegger, Wolfgang, to Daimler-Benz Aktiengesellschaft. Motor vehicle provided with a hatch-back door closing off a storage space. 4,202,577, Cl. 296-24.00R.
Brendle, Marcel C., to Dow Corning GmbH. Method for improving the lubricating properties of solid lubricants. 4,202,780, Cl. 252-12.000.
Brickell, Christopher G.: *See—*
O'Hare, David H.; Brickell, Christopher G.; and Spilman, Lindsay G., 4,203,027, Cl. 219-275.000.
Bricot, Claude; and Lehureau, Jean-Claude, to Thomson-Brandt. Optical player with half wave plate. 4,203,133, Cl. 358-128.500.
Briscoe, James E.: *See—*
Burnham, John W.; Briscoe, James E.; and Elphingstone, Eugene A., 4,202,795, Cl. 252-332.000.
Bristol-Myers Company: *See—*
Monkovic, Ivo; Bachand, Carol; and Wong, Henry, 4,202,982, Cl. 546-89.000.
British Gas Corporation: *See—*
Bull, Reginald B.; Duffill, Colin; and Usmar, Ronald A., 4,202,216, Cl. 73-639.000.
Bromberg, Howard M., to Flexi Group, Inc., The. Game. 4,202,546, Cl. 273-93.00R.
Brooks, Brian E., to Coal Industry (Patents) Limited. Communication system. 4,203,010, Cl. 179-82.000.
Brooks, Lester A.: *See—*
Doe, Lester A., Jr.; and Brooks, Lester A., 4,202,782, Cl. 252-51.50A.
Brooks, Robert S. H. Popcorn stirrer. 4,202,256, Cl. 99-323.500.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, to Bi-Modal Corporation. Self-steering wheel-set for convertible railway vehicle. 4,202,276, Cl. 105-165.000.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, to Bi-Modal Corporation. Convertible rail-highway semi-trailer. 4,202,277, Cl. 105-215.00C.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, to Bi-Modal Corporation. Coupler to connect convertible rail-highway vehicles end to end. 4,202,454, Cl. 213-86.000.
Brubaker, Gaylen R., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,202,786, Cl. 252-102.000.
Bruce, Gary; and Spector, George. Moss killer. 4,202,858, Cl. 422-243.000.
Brumann, Joachim, to Felten & Guilleaume Carlswerk AG. Apparatus for treating optical fibers by spark erosion. 4,203,028, Cl. 219-384.000.
Brunner, Dietrich W., to Boeing Company, The. Boost survivable ramjet elements. 4,202,172, Cl. 60-245.000.
Buchanan, Lloyd W.; Eberhart, Noah E.; and Szabo, Arthur D., to Westinghouse Electric Corp. Thermally protected dynamoelectric machine. 4,203,045, Cl. 310-68.00C.
Bucher, Robert R., to Jakob Muller, Forschungs und Finanz AG. Ribbon fabric, method for the manufacture thereof and ribbon loom for carrying out the method. 4,202,381, Cl. 139-383.00R.
Buchner, Werner: *See—*
de Montigny, Armand; Toepsch, Hans; and Buchner, Werner, 4,202,929, Cl. 428-452.000.
Buck, Josef J., to Magnetic Controls Company. Access module. 4,203,066, Cl. 324-51.000.
Buehring, Walter, to Siemens Aktiengesellschaft. Radar device including a circuit arrangement for reducing interference. 4,203,111, Cl. 343-7.700.
Buhrer, Werner, to Transver AG. Conveyor belt curve. 4,202,443, Cl. 198-831.000.
Buit, Klaas, to B.V. Neratoom. Method of assembling the parts of a heat exchanger, and a heat exchanger thus assembled. 4,202,086, Cl. 29-157.30R.
Bukhtiyarov, Ivan D.; An, Viktor B.; Demin, Alexei S.; Farshatov, Marat N.; and Slepchuk, Valery A., to Spetsialnoe Opytnoe Proektno-Konstruktorsko-Tekhnologicheskoe Bjuro Sibirskogo Otdelenia Vsesojuznoi Akademii Selskokhozyaistvennykh Nauk Imeni v.i. Lenina. Device for measuring power output of an internal-combustion engine. 4,202,206, Cl. 73-116.000.
Bull, Reginald B.; Duffill, Colin; and Usmar, Ronald A., to British Gas Corporation. Ultrasonic testing. 4,202,216, Cl. 73-639.000.
Bullard, James: *See—*
Lester, Frank R.; and Bullard, James, 4,202,068, Cl. 15-28.000.
Bunker Ramo Corporation: *See—*
Biche, Barton A., 4,202,351, Cl. 128-696.000.
Inouye, Hiromasa; Otsuki, Tomonari; and Saito, Tsukasa, 4,202,595, Cl. 339-174.000.
Burbo, James H.; and Hartman, Louis P., to International Telephone and Telegraph Corporation. Training aid for use with night vision apparatus. 4,202,601, Cl. 350-159.000.
Buret, Jacqui: *See—*
Allain, Albert; and Buret, Jacqui, 4,202,728, Cl. 176-30.000.
Allain, Albert; Buret, Jacqui; and Plagnard, Andre, 4,202,729, Cl. 176-30.000.
Burke, James W. Automatic starting fluid dispenser. 4,202,309, Cl. 123-180.00R.
Burke, Thomas F.; and Walker, Donald H., to Avery International Corporation. Diced retroreflective sheeting. 4,202,600, Cl. 350-103.000.
Burnham, J. Kellogg; and Gottfried, Mario H., Jr. Air-borne support and lift mechanism adapted to aircraft. 4,202,518, Cl. 244-12.100.
Burnham, John W.; Briscoe, James E.; and Elphingstone, Eugene A., to Halliburton Company. Methods and additives for delaying the release of chemicals in aqueous fluids. 4,202,795, Cl. 252-332.000.
Burrage, Martin E.: *See—*
Lee, Cedric; and Burrage, Martin E., 4,202,746, Cl. 204-181.00C.
Burri, Peter, to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material containing a carbazolyl methane compound. 4,202,820, Cl. 260-315.000.
Burroughs Corporation: *See—*
Shanks, Roy R., 4,203,123, Cl. 357-2.000.
Burton, George: *See—*
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,202,973, Cl. 544-21.000.
Bush, Lyman F.; and Weaver, Dennis R. Rebar safety cap. 4,202,378, Cl. 138-96.00R.
Busygin, Valery P.: *See—*
Smirnov, Boris A.; Busygin, Valery P.; Komina, Lidia S.; Mochalov, Vyacheslav N.; Shagalov, Lev V.; and Gruzdev, Evgeny A., 4,202,314, Cl. 128-218.00F.
Butler, Denis V., to Plessey Handel und Investments AG. Fluid switch with reflected shock wave. 4,202,374, Cl. 137-827.000.
Buzza, Edmund E.; and Meyer, Richard C., to Beckman Instruments, Inc. Flow cell fluid and sample supply mechanism. 4,202,747, Cl. 204-195.00R.
B.V. Neratoom: *See—*
Buit, Klaas, 4,202,086, Cl. 29-157.30R.
Hirs, Gilles G., 4,202,552, Cl. 277-26.000.
Byrne, Joseph H., Jr., to Joy Manufacturing Company. Hydraulic torque indicator. 4,202,208, Cl. 73-139.000.
C. G. Conn, Ltd.: *See—*
Southard, James S.; and Mott, Daniel R., 4,202,239, Cl. 84-1.260.
C. L. Frost & Son, Inc.: *See—*
Weis, Siegfried K., 4,202,219, Cl. 74-254.000.
C. R. Bard, Inc.: *See—*
Elson, Edward E., 4,202,334, Cl. 128-272.000.
Caglione, Alexander J.: *See—*
Weber, Willis W.; Caglione, Alexander J.; Frost, Albert C.; and Weeks, Thomas J., Jr., 4,202,870, Cl. 423-630.000.
Cahen, George L., Jr.: *See—*
Stoner, Glenn E.; and Cahen, George L., Jr., 4,202,740, Cl. 204-130.000.
Cahill, Paul J.; and Udelhofen, John H., to Standard Oil Company (Indiana). Tertiary carbinamine modified mannich compositions and lubricants containing same. 4,202,784, Cl. 252-51.50R.
Calabrese, Peter J.: *See—*
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,620, Cl. 355-10.000.
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,913, Cl. 430-106.000.
Calgon Corporation: *See—*
Diehl, Richard C.; and Walker, Jerry L., 4,202,671, Cl. 44-68.000.
Cameron, Wallace C., to Copper Alloys Corp. Two-piece hammers for hammer mills. 4,202,504, Cl. 241-194.000.
Cann, Peter L.; Hayes, Richmond S., Jr.; and Miller, Lester N., to Carrier Corporation. One piece top cover with stamped open louvers and motor mount. 4,202,409, Cl. 165-122.000.

Cannon, Curtis W.; and Hall, Robert N., to Climax Chemical Corporation. Process for manufacture of phosphoric acid and phosphorus pentafluoride. 4,202,867, Cl. 423-301.000.

Canon Kabushiki Kaisha: *See—*
Fukuda, Tadaji; Kajita, Isamu; Misumi, Teruo; Kondo, Hideyo; and Kitajima, Nobuo, 4,202,937, Cl. 430-58.000.
Kawatsura, Yoshihiro; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,202,622, Cl. 355-14.00C.
Suzki, Akiyoshi; Kano, Ichiro; Yoshinari, Hideki; Tozuka, Masao; Hiraga, Ryozo; Kato, Yuzo; and Ogino, Yasuo, 4,202,627, Cl. 356-71.000.
Yoshimura, Shigeru; and Shimizu, Katsuichi, 4,202,621, Cl. 355-14.00R.

Carini, George F., to Clay Harden Company, The. Tundish flux powder. 4,202,692, Cl. 75-257.000.

Carl Freudenberg, Firma: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,202,855, Cl. 277-153.000.

Carl Schenck Aktiengesellschaft, Firma: *See—*
Homann, Reimer; and Raptopoulos, Prodromos, 4,203,046, Cl. 310-93.000.

Carlson, Charles E., to Allied Chemical Corporation. Chill roll casting of amorphous metal strip. 4,202,404, Cl. 164-423.000.

Carpenter, David A., to MRC Corporation. Integral torquer for mass measurement system. 4,202,205, Cl. 73-65.000.

Carr, John B.; and Durham, Harry G., to Shell Oil Company. Lipogenesis control by cyclopropane-carboxylic acids, esters and amides. 4,202,902, Cl. 424-298.000.

Carr, John B.: *See—*
Durham, Harry G.; and Carr, John B., 4,202,818, Cl. 548-204.000.

Carrier Corporation: *See—*
Cann, Peter L.; Hayes, Richmond S., Jr.; and Miller, Lester N., 4,202,409, Cl. 165-122.000.

Carroll, Edward E., Jr., to University of Florida Board of Regents. Diffraction camera for imaging penetrating radiation. 4,203,034, Cl. 250-280.000.

Carter, Dorothy P.: *See—*
Jacoby, Lawrence J.; Rosenau, Richard A.; Carter, Dorothy P.; Nielsen, Ralph H.; and Ash, Kenneth C., 4,202,862, Cl. 423-70.000.

Carver Foundry Products: *See—*
Abraham, Edward D.; and Hartung, Rodney L., 4,202,399, Cl. 164-203.000.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 4,202,362, Cl. 133-4.00A.

Castle, Peter M., to Westinghouse Electric Corp. Photopolymerization of ethylenically unsaturated monomers. 4,202,742, Cl. 204-159.230.

Caterpillar Tractor Co.: *See—*
Hooker, James A.; Martin, Dean W.; and Williamson, Shellie O., 4,202,224, Cl. 81-3.00R.

Cavallo, Margherita, to Establissement Chemiaro. Process for manufacturing protein-containing artificial leather. 4,202,919, Cl. 427-245.000.

Ceauselu, Constantin: *See—*
Teodorescu, Constantin; Ceauselu, Constantin; and Ardeleanu, Stefan, 4,202,272, Cl. 104-91.000.

Centerline Steering Safety Axle Corporation, The: *See—*
Inbody, Melvin R., 4,202,560, Cl. 280-96.300.

Ceramic Coating Company: *See—*
Kropp, Donald E., 4,202,553, Cl. 277-41.000.

Chadda, Madan M., to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H. Surfacing process for the stabilization of semiconductor bodies employing glass containing quartz passivating layer. 4,202,916, Cl. 427-82.000.

Chambers, Derek; and Masterman, Hugh C., to Raytheon Company. High voltage power supply system. 4,203,055, Cl. 315-375.000.

Chambers, Virginia E. M.: *See—*
Bayly, Russell J.; Chambers, Virginia E. M.; and Monks, Reginald, 4,202,976, Cl. 544-261.000.

Champion International Corporation: *See—*
McLaren, Edwin C., 4,202,465, Cl. 220-468.000.
Phelps, Thomas C.; and Reese, Clifford J., 4,202,749, Cl. 204-195.00G.

Champoux, Louis A.; Falcioni, Joseph G.; and Mendels, Morton, to Boeing Company, The. Wedge head pin fastener. 4,202,242, Cl. 85-7.000.

Chandalia, Kiran B.: *See—*
Preston, Frank J.; and Chandalia, Kiran B., 4,202,947, Cl. 521-174.000.

Chang, Eugene Y. C.; and Saxon, Robert, to American Cyanamid Company. Sulfur vulcanizable ethylene-vinyl acetate copolymer elastomers. 4,202,845, Cl. 525-302.000.

Charlan, George B.: *See—*
Chen, Tu; and Charlan, George B., 4,202,932, Cl. 428-667.000.

Charles River Breeding Laboratories, Inc., The: *See—*
Orcutt, Roger P., 4,202,883, Cl. 424-92.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Bowles, William M.; and Cox, Duncan B., Jr., 4,203,070, Cl. 375-1.000.
Bowles, William M.; Cox, Duncan B., Jr.; and Guinon, Walter J., 4,203,071, Cl. 375-1.000.

Chatterjee, Pallab K.; Taylor, Geoff W.; Tasch, Al F., Jr.; and Fu, Horng-Sen, to Texas Instruments Incorporated. Buried storage punch through dynamic ram cell. 4,203,125, Cl. 357-41.000.

Chaudhuri, Partha S., to Westvaco Corporation. Automatically controlled machine for making double-face, polymer plastic coated, corrugated paperboard. 4,202,723, Cl. 156-470.000.

Chelyabinsky Politekhnichesky Institut: *See—*
Vydrin, Vladimir N.; Dukmasov, Vladimir G.; Davlyatshin, Garifulla; and Kuznetsov, Sergei L., 4,202,197, Cl. 72-245.000.

Chemed Corporation: *See—*
Jacob, Jose T.; and Kuhn, Vincent R., 4,202,796, Cl. 252-389.00A.

Chemworld Corporation: *See—*
Hobbs, James E., 4,202,525, Cl. 251-40.000.

Chen, Cheng-Kuan. Hydraulic jack device. 4,202,514, Cl. 254-93.00H.

Chen, Sow-Mei L.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,202,989, Cl. 560-118.000.

Chen, Stephen S., to General Motors Corporation. Failure detection circuit for dynamic braking system. 4,203,058, Cl. 318-380.000.

Chen, Tu; and Charlan, George B., to Xerox Corporation. Magnetic recording medium. 4,202,932, Cl. 428-667.000.

Chernyak, Alexandr I.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Chevron Research Company: *See—*
Adamson, John S., 4,203,090, Cl. 340-152.00T.

Chiba, Iwane: *See—*
Kawasoko, Yoshiaki; Chiba, Iwane; Yamazaki, Noboru; Chiyonobu, Toshimi; and Shikuma, Masao, 4,202,537, Cl. 266-252.000.

Chibnik, Sheldon, to Mobil Oil Corporation. Antioxidant additives and lubricant compositions containing same. 4,202,783, Cl. 252-51.50A.

Chikugo, Kazuo: *See—*
Ohno, Eiji; and Chikugo, Kazuo, 4,202,689, Cl. 75-211.000.

Chiyonobu, Toshimi: *See—*
Kawasoko, Yoshiaki; Chiba, Iwane; Yamazaki, Noboru; Chiyonobu, Toshimi; and Shikuma, Masao, 4,202,537, Cl. 266-252.000.

Chleck, David J.: *See—*
Kovac, Michael G.; Chleck, David J.; and Goodman, Philip, 4,203,087, Cl. 338-35.000.

Christopher, Todd J.; and Lin, Tsan H., to RCA Corporation. FM Signal demodulator with defect detection. 4,203,134, Cl. 358-128.500.

Christy, John: *See—*
Sippel, Nathan J.; Hiser, Earl J.; and Christy, John, 4,202,668, Cl. 44-7.00A.

Chrysler Corporation: *See—*
Kraus, Richard A., 4,203,059, Cl. 318-446.000.

Chubukov, Vladimir K.: *See—*
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; Baskov, Jury A.; and Dmitriev, Konstantin V., 4,202,846, Cl. 261-142.000.

Ciba-Geigy AG: *See—*
Jan, Gerald; Hagen, Remon; and Lenoir, John, 4,202,698, Cl. 430-418.000.

Ciba-Geigy Corporation: *See—*
Burri, Peter, 4,202,820, Cl. 260-315.000.
Finch, Neville; and Mizzoni, Renat H., 4,202,901, Cl. 424-263.000.
Habermeier, Jurgen; Moser, Roland; and Seiz, Wolfgang, 4,202,987, Cl. 560-49.000.
Kocsis, Karoly; Fechtig, Bruno; and Bickel, Hans, 4,202,900, Cl. 424-251.000.
Kosche, Horst, 4,202,566, Cl. 282-27.500.
Lauton, Alain; Putzar, Roland; Berendt, Hans-Ulrich; and Scherer, Gustaaf, 4,202,838, Cl. 260-505.00C.
Lienhard, Paul; and Iqbal, Abul, 4,202,814, Cl. 260-40.00P.
Moser, Paul; and Rody, Jean, 4,202,816, Cl. 260-45.75N.
Pfeifer, Josef, 4,202,961, Cl. 528-324.000.
Renner, Alfred; and Margotte, Werner, 4,202,920, Cl. 427-386.000.
Tzikas, Athanassios, 4,202,827, Cl. 260-378.000.

Ciko, John D.; Ward, Robert A.; and Cramer, John J., to BASF Wyandotte Corporation. Liquid laundry detergent comprising a nonionic surfactant and an alkanolamine. 4,202,800, Cl. 252-543.000.

Citizen Watch Co., Ltd.: *See—*
Komiyama, Katsuhiko; Kasama, Noriyuki; Tsukamoto, Keiji; and Murakami, Tomomi, 4,202,166, Cl. 368-82.000.

Claas, Helmut; Romer, Gerhard; and Weddeling, Otger, to Gebr. Claas Maschinenfabrik GmbH. Agricultural baler. 4,202,262, Cl. 100-4.000.

Clairol Incorporated: *See—*
Walter Henry J., 4,202,360, Cl. 132-40.000.
Walter, Henry J.; and Springer, William E., 4,203,026, Cl. 219-222.000.

Clark, David E.: *See—*
Hren, John J.; Clark, David E.; Jenkins, David A.; Johnson, Paul F., III; and Degler, Howead E., Jr., 4,202,337, Cl. 128-303.140.

Clarke, Ralph H.; Clarke, W. James; and Mays, Steven L., to Clarke's Sheet Metal, Inc. Filter bag with removable shaping members. 4,202,677, Cl. 55-378.000.

Clarke, W. James: *See—*
Clarke, Ralph H.; Clarke, W. James; and Mays, Steven L., 4,202,677, Cl. 55-378.000.

Clarke's Sheet Metal, Inc.: *See—*
Clarke, Ralph H.; Clarke, W. James; and Mays, Steven L., 4,202,677, Cl. 55-378.000.

Clay Harden Company, The: *See—*
Carini, George F., 4,202,692, Cl. 75-257.000.

Clayton, Erith T., to Tainton Company, The. Mechanical plating process. 4,202,915, Cl. 427-47.000.

Clayton, John P.: *See—*
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,202,973, Cl. 544-21.000.

Clearwaters, Walter L.; Einstein, Lloyd T.; Radics, Paul F., Jr.; and Soderberg, John W., to United States of America, Navy. Electrically steerable spherical hydrophone array. 4,203,162, Cl. 367-122.000.

Clifton, John D.; and Titow, Victor W., to Clifton, John David. Novel mesh fabric and wig and hair-piece made therefrom. 4,202,359, Cl. 132-5.000.

Clifton, John David: *See—*
Clifton, John D.; and Titow, Victor W., 4,202,359, Cl. 132-5.000.

Climax Chemical Corporation: *See—*
Cannon, Curtis W.; and Hall, Robert N., 4,202,867, Cl. 423-301.000.

Coal Industry (Patents) Limited: *See—*
Brooks, Brian E., 4,203,010, Cl. 179-82.000.

Cocito, Giuseppe, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Process and apparatus for the continuous production of elongate light conductors. 4,202,679, Cl. 65-2.000.

Cohn-Sfetcu, Sorin; Hood, Jackylene K.; and Doyle, Daniel J., to Northern Telecom Limited. Digital signalling receiver for receiving PCM tones. 4,203,008, Cl. 370-50.000.

Coleman, Clyde F.; and Stewart, Myron C., to RCA Corporation. RF Connector assembly including mounting apparatus for a washer-like capacitor. 4,202,594, Cl. 339-147.00R.

Coles, Robert E., to General Foods Limited. Wrapping process. 4,202,152, Cl. 53-451.000.

Colite Industries, Inc.: *See—*
Witt, Frank A., 4,202,123, Cl. 40-596.000.

Collen, Desire J., to Leuven Research & Development V.Z.W. Determination of heparin in blood plasma. 4,202,872, Cl. 424-1.000.

Collins, Andrew P. Recreational basketball court facility. 4,202,543, Cl. 272-3.000.

Coltrin, Michael E.; and Wu, Yulin, to Phillips Petroleum Company. Process for producing hydroperoxides. 4,202,992, Cl. 568-575.000.

Combustion Engineering, Inc.: *See—*
Miller, Charles R., 4,202,403, Cl. 164-409.000.

Comerford, Peter J., to National Research Development Corporation. Digital generator for musical notes. 4,202,234, Cl. 84-1.010.

Commissariat a l'Energie Atomique: *See—*
Allain, Albert; and Buret, Jacqui, 4,202,728, Cl. 176-30.000.
Allain, Albert; Buret, Jacqui; and Plagnard, Andre, 4,202,729, Cl. 176-30.000.
Bourgeois, Michel; Manevy, Georges; and Roux, Jean-Pierre, 4,202,861, Cl. 423-19.000.

Compagnie Generale des Etablissements Michelin: *See—*
Massoubre, Jean-Marie, 4,202,954, Cl. 526-181.000.

Compagnie Nationale d'Amenagement de la Region du Bas-Rhone et du Languedoc: *See—*
Rutten, Pierre L.; and Danel, Francois H., 4,202,467, Cl. 222-20.000.

Concast AG: *See—*
Rohrig, Adalbert, 4,202,402, Cl. 164-263.000.

Concept, Inc.: *See—*
Hren, John J.; Clark, David E.; Jenkins, David A.; Johnson, Paul F., III; and Degler, Howead E., Jr., 4,202,337, Cl. 128-303.140.

Condon, Denis M., to Siemens Aktiengesellschaft. Apparatus for establishing multi-address and conference call connections. 4,203,001, Cl. 178-3.000.

Conoco, Inc.: *See—*
Peterson, Marvin L., 4,202,484, Cl. 228-173.00A.

Conroy, Edward H.; Gloster, Arthur; and King, James A., to Texasgulf Inc. Process for the separation of insoluble materials in the production of soda ash. 4,202,667, Cl. 23-302.00T.

Conti, Allen C. Method for pulling cable using a tear-away feeder tube. 4,202,530, Cl. 254-134.3FT.

Continental Group, Inc., The: *See—*
Khoury, Nick S., 4,202,750, Cl. 204-197.000.

Control Concepts, Inc.: *See—*
Zeuner, Kenneth W.; and Jarman, Alonzo B., 4,202,250, Cl. 91-449.000.

Cook, James S., to Econotherm Insulation Company, Inc. Lined curvilinear support cradle and a method for manufacturing the same. 4,202,090, Cl. 29-417.000.

Cook, John B.; and Pike, Melvin, to Efficiency Production, Inc. Front plate for trench boxes. 4,202,649, Cl. 405-282.000.

Cook, Kenneth, to Henry Simon Limited. Method of and apparatus for dispensing predetermined proportions of two or more materials. 4,202,466, Cl. 222-1.000.

Cooper, Edward M.: *See—*
Jackson, Joseph F.; and Cooper, Edward M., 4,202,488, Cl. 233-24.000.

Cooper-Weymouth, Peterson, Inc.: *See—*
Kula, Bernard, 4,202,478, Cl. 226-189.000.

Copper Alloys Corp.: *See—*
Cameron, Wallace C., 4,202,504, Cl. 241-194.000.

Cordis Dow Corp.: *See—*
Storey, L. Robert; and Hall, Robert C., 4,202,760, Cl. 210-22.00A.

Couch, Richard W., Jr.; and Bailey, William V., to Hypertherm, Incorporated. Method and apparatus for positioning a plasma arc cutting torch. 4,203,022, Cl. 219-121.00P.

Coulter, Alton R.; Hubbard, Lonnie G.; Johnston, Vincent P.; and Rich, Michael H., to Leav-Er-Rite Mfg. Co. Incorporated. Cast-in-place concrete slab pouring form. 4,202,145, Cl. 52-169.100.

Coutin, Pierre F.: *See—*
Hasquenoph, Jean H.; and Coutin, Pierre F., 4,202,576, Cl. 294-83.00R.

Coviello, Frank A., to TIE/Communications, Inc. Computer controlled key telephone station set. 4,203,011, Cl. 179-99.00M.

Cox, Albert R., to Belden Corporation. Strain relief. 4,203,004, Cl. 174-135.000.

Cox, Duncan B., Jr.: *See—*
Bowles, William M.; and Cox, Duncan B., Jr., 4,203,070, Cl. 375-1.000.
Bowles, William M.; Cox, Duncan B., Jr.; and Guinon, Walter J., 4,203,071, Cl. 375-1.000.

Cox, Frank H., to Scott & Fetzer Company, The. Liquefied gas supply system. 4,202,180, Cl. 62-50.000.

CPC International Inc.: *See—*
Mueller, Nancy J.; and Holik, Dennis J., 4,202,939, Cl. 435-96.000.

Craig, Chester W., Sr.: *See—*
Adams, Daniel, Jr.; and Craig, Chester W., Sr., 4,202,108, Cl. 33-189.000.

Cramer, John J.: *See—*
Ciko, John D.; Ward, Robert A.; and Cramer, John J., 4,202,800, Cl. 252-543.000.

Crane, Jacob; Shapiro, Eugene; Shapiro, Stanley; and Mravic, Brian, to Olin Corporation. High conductivity high temperature copper alloy. 4,202,688, Cl. 75-153.000.

Crawford, Lynn D.: *See—*
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,202,363, Cl. 135-2.000.

Crepaco, Inc.: *See—*
Kristapovich, Paul J.; and Schiltz, Ronald M., 4,202,436, Cl. 198-472.000.

Cripe, Alan R.: *See—*
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,276, Cl. 105-165.000.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,277, Cl. 105-215.00C.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,454, Cl. 213-86.000.

Cronin, John C., to Gould Inc. Air entrance bushing for gas-insulated bus. 4,202,998, Cl. 174-31.00R.

Csakvary, Tibor; and Fromson, Robert E., to United States of America, Energy. Electrochemical removal of material from metallic work. 4,202,739, Cl. 204-129.350.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Cocito, Giuseppe, 4,202,679, Cl. 65-2.000.

D. T. Equipment Limited: *See—*
Held, Ross, 4,202,118, Cl. 37-41.000.

Dabroski, Winifred C., to Johnson & Johnson. Paper surgical tape. 4,202,925, Cl. 428-219.000.

D'Acierno, John P.: *See—*
Feng, Henry H.; D'Acierno, John P.; and Skrzec, Adam E., 4,202,866, Cl. 423-265.000.

Dai, Sheng-Hong A., to Upjohn Company, The. Hydroperoxyisopropylphenyl carbonates. 4,202,833, Cl. 260-463.000.

Daimler-Benz Aktiengesellschaft: *See—*
Breitschwerdt, Werner; Andres, Rudolf; Heiss, Werner; and Fussnegger, Wolfgang, 4,202,577, Cl. 296-24.00R.
Meyer, Franz-Josef, 4,202,170, Cl. 60-39.230.
Tattermusch, Peter, 4,202,563, Cl. 280-675.000.

Dainippon Ink & Chemicals Inc.: *See—*
Sato, Hisato; Takatsu, Haruyoshi; and Tazume, Masayuki, 4,202,791, Cl. 252-299.000.

Dake, James D.: *See—*
Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., 4,202,714, Cl. 149-109.400.

Dalamangas, Chris A.; Piccirillo, Thomas P.; and Seip, Donald P., to Technical Wire Products. Electrical connector and support means therefor. 4,202,588, Cl. 339-59.00M.

Dalisa, Andrew L.; and Singer, Barry M., to North American Philips Corporation. X-Y addressable electrophoretic display device with control electrode. 4,203,106, Cl. 340-787.000.

Danel, Francois H.: *See—*
Rutten, Piefre L.; and Danel, Francois H., 4,202,467, Cl. 222-20.000.

Dangeleit, Siegfried; and Kothe, Dieter, to DEMAG Aktiengesellschaft. Removal apparatus for handling discarded end portions in a multistrand casting plant. 4,202,274, Cl. 104-165.000.

Daniels, R. Gary; Musa, Fuad H.; Wilder, W. Bryant, Jr.; Wiles, Michael F.; and Bennett, Thomas H., to Motorola, Inc. Carry anticipator circuit and method. 4,203,157, Cl. 364-788.000.

Dansbury, Leonard D.: *See—*
Young, Robert W.; and Dansbury, Leonard D., 4,202,517, Cl. 244-3.220.

Dansky, Barry: *See—*
Farella, Ralph; Dansky, Barry; and Epifano, Leonard, 4,202,345, Cl. 128-654.000.

Darnall, Tom A., Jr. Acoustic dampening assembly for record player turntable. 4,202,551, Cl. 274-39.00R.

Dassler, Armin A. Sport shoe tread. 4,202,116, Cl. 36-59.00R.

Datograf Apparatebau GmbH & Co.: *See—*
Mogler, Joachim, 4,202,463, Cl. 220-307.000.

Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., to Avco Everett Research Laboratory, Inc. Apparatus for and method

of operating electron beam attachment stabilized devices for producing controlled discharges and/or visible and UV laser output. 4,203,078, Cl. 331-94.5PE.
Daussan, Andre: *See—*
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,202,533, Cl. 266-45.000.
Daussan et Compagnie: *See—*
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,202,533, Cl. 266-45.000.
Daussan, Gerard: *See—*
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,202,533, Cl. 266-45.000.
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, to Daussan et Compagnie. Method and a device for unchoking the casting outlet of a metallurgical vessel. 4,202,533, Cl. 266-45.000.
David Brown-Vosper (Offshore) Limited: *See—*
Paddington, Arthur L., 4,202,567, Cl. 285-18.000.
David, Joseph S., to Joy Manufacturing Company. Conveyor. 4,202,442, Cl. 198-820.000.
Davis, C. Paul. Protec 3 cleaning solution. 4,202,787, Cl. 252-171.000.
Davis, Thomas J., to Electric Power Research Institute, Inc. Method and apparatus for non-destructively testing electrically conductive elongate cylindrical components using an eddy current producing coil with a rotor to concentrate the magnetic field in a selected area. 4,203,069, Cl. 324-220.000.
Davis, William L., Jr., to HICAP Engineering & Development Corp. Method and apparatus for producing metallized iron ore. 4,202,534, Cl. 266-172.000.
Davlyatshin, Garifulla: *See—*
Vydrin, Vladimir N.; Dukmasov, Vladimir G.; Davlyatshin, Garifulla; and Kuznetsov, Sergei L., 4,202,197, Cl. 72-245.000.
Davy, Edward, Jr. Dry wall tape dispenser. 4,202,288, Cl. 118-41.000.
Day, John H., to United States of America, Army. Safe and arm device. 4,202,271, Cl. 102-247.000.
Dayco Corporationp: *See—*
Roman, Charles A., 4,202,716, Cl. 156-79.000.
Dayton-Walther Corporation: *See—*
Foster, Alan D., 4,202,528, Cl. 254-86.00R.
de la Burde, Roger Z.; Aument, Patrick E.; and Utsch, Francis V., to Philip Morris Incorporated. Reordering expanded tobacco by water mist. 4,202,357, Cl. 131-140.00R.
DeBell, David A., to Westinghouse Electric Corp. Electro-hydroacoustic transducer. 4,203,089, Cl. 367-143.000.
Deconinck, Marc M.: *See—*
Schnek, Arthur G.; Looze, Yvan-Roger-Jean; and Deconinck, Marc M., 4,202,884, Cl. 424-94.000.
Deere & Company: *See—*
Lob, James P., 4,202,429, Cl. 188-71.100.
Degler, Howead E., Jr.: *See—*
Hren, John J.; Clark, David E.; Jenkins, David A.; Johnson, Paul F., III; and Degler, Howead E., Jr., 4,202,337, Cl. 128-303.140.
Dekker, David J.: *See—*
Heck, Richard A.; and Dekker, David J., 4,202,395, Cl. 160-84.00R.
Del Manufacturing Company: *See—*
Delgado, Manuel M.; and Riise, Harold N., 4,202,322, Cl. 126-425.000.
Delgado, Manuel M.; and Riise, Harold N., to Del Manufacturing Company. Solar energy collector and heat exchanger. 4,202,322, Cl. 126-425.000.
De Longe, Harry C.; and Fabian, Woolfe S., to PepsiCo, Inc. Backwash water recycling system. 4,202,768, Cl. 210-62.000.
Deltrol Corp.: *See—*
Harris, John L., 4,203,014, Cl. 200-38.00R.
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., to Wisconsin Alumni Research Foundation. Process for preparing 1α-hydroxylated compounds. 4,202,829, Cl. 260-397.200.
DEMAG Aktiengesellschaft: *See—*
Dangeleit, Siegfried; and Kothe, Dieter, 4,202,274, Cl. 104-165.000.
Demidowicz, Lech; and Sztuka, Mieczyslaw, to Kombinat Gorniczo-Hutniczy Miedzihuta Miedzi "Legnica". Automated installation for punching and cleaning of converter tuyeres. 4,202,536, Cl. 266-135.000.
Demin, Alexei S.: *See—*
Bukhtiyarov, Ivan D.; An, Viktor B.; Demin, Alexei S.; Farshatov, Marat N.; and Slepchuk, Valery A., 4,202,206, Cl. 73-116.000.
de Montigny, Armand; Toepsch, Hans; and Buchner, Werner, to Bayer Atkiengesellschaft. Production of non-stick coatings. 4,202,929, Cl. 428-452.000.
de Montigny, Armand: *See—*
Moretto, Hans-Heinrich; de Montigny, Armand; Steinberger, Helmut; Sattlegger, Hans; and Larking, Ingrid, 4,202,807, Cl. 260-29.1SB.
den Hartog, Huibert; Stann, Klaus; and Stolze, Lutz, to Hoesch Werke Aktiengesellschaft. Inclined rolling stand. 4,202,194, Cl. 72-78.000.
Denka Chemical Corporation: *See—*
Kerr, Ralph O., 4,202,826, Cl. 260-346.750.
Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. 8H-Pyrazolo[1,5-a]pyrazolo[4',3':5,6]pyrido[3,4-e]pyrimidine. 4,202,899, Cl. 424-251.000.
DeParales, Lawrence T.; and Billitzer, Edward P. Disposable cup cover. 4,202,459, Cl. 220-90.400.
DePodesta, Thomas C.; and Moss, Milton. Heating apparatus. 4,202,318, Cl. 126-110.00R.
Depoortere, Henri, to Synthelabo. Method of treating anxiety and depression. 4,202,898, Cl. 424-250.000.
DeSoto, Inc.: *See—*
Porzel, Rita E.; and Bator, Cathryn D., 4,202,804, Cl. 260-17.40R.
Deuterium Corporation: *See—*
Spevack, Jerome S., 4,202,864, Cl. 423-220.000.
De Winter, Walter F.: *See—*
Van Goethem, Hugo V.; Stroobants, Marcel; and De Winter, Walter F., 4,202,697, Cl. 430-306.000.
De Witt, Walter G., III, to Rohm and Haas Company. High impact resistant coated articles. 4,202,924, Cl. 428-201.000.
Dial-A-Channel, Inc.: *See—*
Doumit, Joseph A.; and Weiblen, Robert E., 4,203,130, Cl. 358-1.000.
Diamond Shamrock Corporation: *See—*
Stillman, Neil W., 4,202,738, Cl. 204-95.000.
Di Bella, Eugene P., to Tenneco Chemicals, Inc. Process for the production of organic phosphates by nitric acid oxidation of organic phosphites. 4,202,843, Cl. 260-985.000.
Di Bella, Eugene P., to Tenneco Chemicals, Inc. Process for the production of organic phosphates. 4,202,844, Cl. 260-985.000.
Dick, John O., to United States of America, Navy. Microwave proximity fuze requiring no warm-up time after being activated. 4,203,110, Cl. 343-7.0PF.
Didier Engineering GmbH: *See—*
Luke, Willy; and Gabriel, Gunter, 4,202,733, Cl. 201-1.000.
Woitowitz, Friedhelm, 4,202,407, Cl. 165-76.000.
Diebold, Incorporated: *See—*
Boyd, James C., 4,203,153, Cl. 364-200.000.
Diehl, Richard C.; and Walker, Jerry L., to Calgon Corporation. Fuel conditioner. 4,202,671, Cl. 44-68.000.
Dietrich, Ernst: *See—*
Hoerauf, Werner; Pirzer, Hans; Guenther, Ernst; Neumann, Eckart; and Dietrich, Ernst, 4,202,375, Cl. 138-39.000.
Digenis, George A.; and Shambhu, Manvendra B., to University of Kentucky Research Foundation. Tobacco smoke filter material. 4,202,356, Cl. 131-10.900.
Di Giuseppe, Michael A.: *See—*
Kokta, Milan R.; Linares, Robert C.; and Di Giuseppe, Michael A., 4,202,930, Cl. 428-539.000.
Dilworth, James L.: *See—*
VanderKelen, James B.; and Dilworth, James L., 4,202,496, Cl. 239-14.000.
Di Matteo, Paul L.; Ross, Joseph A.; Stern, Howard K.; and Waszak, Lawrence, to Solid Photography Inc. Arrangement for sensing the geometric characteristics of an object. 4,202,612, Cl. 353-28.000.
Director-Gen. of the Tea Experiment Station, Ministry of Agriculture and Forestry Japanese Government: *See—*
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,940, Cl. 435-101.000.
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,966, Cl. 536-1.000.
DiTullio, Flavia, to Hanes Corporation. Method for constructing breast cups. 4,202,853, Cl. 264-138.000.
Dmitriev, Konstantin V.: *See—*
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; Baskov, Jury A.; and Dmitriev, Konstantin V., 4,202,846, Cl. 261-142.000.
Dr. E. Fresenius Chem.-Pharm. Industrie KG: *See—*
Hartert, Hellmut, 4,202,204, Cl. 73-64.100.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Mezger, Hans, 4,202,176, Cl. 60-600.000.
Dr. Ing. Rudolf Hell GmbH: *See—*
Wellendorf, Klaus; and Sommer, Ruediger, 4,203,136, Cl. 358-280.000.
Doe, Lester A., Jr.; and Brooks, Lester A., to R. T. Vanderbilt Company, Inc. Multifunctional additives for lubricants. 4,202,782, Cl. 252-51.50A.
Doherty, John J., to United States of America, Navy. Submarine communication. 4,203,160, Cl. 367-2.000.
Donnelly, James F.: *See—*
Aoki, Tadashi; MacAfee, Jerry D.; and Donnelly, James F., 4,202,365, Cl. 137-72.000.
Dorr-Oliver Incorporated: *See—*
Kos, Peter, 4,202,774, Cl. 210-274.000.
Schall, Robert A., 4,202,777, Cl. 210-405.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Yagisawa, Hideji, 4,202,202, Cl. 73-40.000.
Doumit, Joseph A.; and Weiblen, Robert E., to Dial-A-Channel, Inc. Information displaying system. 4,203,130, Cl. 358-1.000.
Dow Chemical Company, The: *See—*
Eash, R. Douglas, 4,202,809, Cl. 260-29.70S.
Exner, Jurgen H.; and Henke, Cyril B., 4,202,745, Cl. 204-180.00R.
Dow Corning Corporation: *See—*
Michael, Keith W.; and Moore, Alvin L., 4,202,811, Cl. 260-37.0SB.
Murray, Milton C., 4,202,812, Cl. 260-37.0SB.
Dow Corning GmbH: *See—*
Brendle, Marcel C., 4,202,780, Cl. 252-12.000.
Dowbenko, Rostyslaw, to PPG Industries, Inc. Polymer curing system. 4,202,926, Cl. 428-304.000.
Doyle, Daniel J.: *See—*
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Dragone, Corrado; and Gans, Michael J., to Bell Telephone Laboratories, Incorporated. Scanable antenna arrangements capable of producing a large image of a small array with minimal aberrations. 4,203,105, Cl. 343-781.00P.

Drapaniotis, Dimitrios. Filter for cigarettes with two chambers. 4,202,358, Cl. 131-187.000.
Dresser Europe S.A.: *See—*
Parkinson, Derek; and Goose, Jack, 4,202,503, Cl. 241-194.000.
Dresser Industries, Inc.: *See—*
Youngblood, Thomas F., 4,202,419, Cl. 175-374.000.
Dreyer, Heinz, to Amazonen-Werke. Machine for spreading fertilizer and seed. 4,202,474, Cl. 222-609.000.
Dub, Vladimir S.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.
Dufaylite Developments Limited: *See—*
Thwaites, Peter John, 4,202,253, Cl. 93-1.00H.
Duffill, Colin: *See—*
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Dukmasov, Vladimir G.: *See—*
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Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., 4,202,714, Cl. 149-109.400.
Dyna Con Packaging Inc.: *See—*
Fremion, Edwin A., 4,202,485, Cl. 229-22.000.
Dzus Fastener Co., Inc.: *See—*
Schenk, Peter, 4,202,390, Cl. 151-41.750.
E. R. Squibb & Sons, Inc.: *See—*
Denzel, Theodor; and Hoehn, Hans, 4,202,899, Cl. 424-251.000.
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Holmes, Lloyd H., 4,202,209, Cl. 73-168.000.
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Tansi, Hakki M., 4,202,457, Cl. 220-3.300.
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Harvey, Donald M., 4,202,614, Cl. 354-121.000.
Merrill, Stewart H.; Hartman, Susan E.; Noonan, John M.; Sandhu, Mohammad A.; and Santilli, Domenic, 4,202,785, Cl. 430-106.000.
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Ebling, Wendell V.: *See—*
Afflerbaugh, Richard L.; and Ebling, Wendell V., 4,202,764, Cl. 210-22.00D.
Eckert, Theodor; Kemper, Fritz H.; Wischniewski, Martin; and Hempel, Reinhard, to Kali-Chemie Pharma GmbH. Readily enterally absorbable pharmaceutical compositions of cardiac glycosides and preparation thereof. 4,202,888, Cl. 424-182.000.
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Cook, James S., 4,202,090, Cl. 29-417.000.
Eder, Ulrich: *See—*
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Edwards, John W. Crop harvesting apparatus. 4,202,158, Cl. 56-328.00R.
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Edwards, Raymond A., to Elser Farms Corporation. Sensor for soft drink dispenser. 4,203,099, Cl. 340-619.000.
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Cook, John B.; and Pike, Melvin, 4,202,649, Cl. 405-282.000.
Egashira, Tsutomu: *See—*
Imataki, Mitsumasa; Ujita, Katsu; and Egashira, Tsutomu, 4,203,143, Cl. 361-120.000.
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Hall, Randall C.; and Ehrlich, Burney J., 4,202,666, Cl. 23-232.00E.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Sahulka, Richard J.; and Tuchman, Walter L., to International Business Machines Corporation. Cryptographic file security for multiple domain networks. 4,203,166, Cl. 375-2.000.
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Clearwaters, Walter L.; Einstein, Lloyd T.; Radics, Paul F., Jr.; and Soderberg, John W., 4,203,162, Cl. 367-122.000.
Eknayan, Hrant. Underwater detection system. 4,203,108, Cl. 340-850.000.
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Elenbaas, William J. Video signal recording system with delayed vertical sync. 4,203,138, Cl. 360-37.000.
Eli Lilly and Company: *See—*
Kornfeld, Edmund C.; and Bach, Nicholas J., 4,202,979, Cl. 546-67.000.
Shields, James E., 4,202,802, Cl. 260-8.000.
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Villari, Frank K.; Ellmann, Norbert W.; and Annis, Larry D., 4,202,325, Cl. 128-24.00R.
Ellson, Allan H., to Pye (Electronic Products) Limited. Apparatus for detecting explosive substances. 4,202,200, Cl. 73-23.000.
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Burnham, John W.; Briscoe, James E.; and Elphingstone, Eugene A., 4,202,795, Cl. 252-332.000.
Elsasser, Walter; and Hofmann, Werner, to Robert Bosch GmbH. Induction coil core. 4,203,085, Cl. 336-210.000.
Elser, Dieter: *See—*
Jablonsky, Erich; and Elser, Dieter, 4,202,249, Cl. 91-422.000.
Elser Farms Corporation: *See—*
Edwards, Raymond A., 4,203,099, Cl. 340-619.000.
Elson, Edward E., to C. R. Bard, Inc. Cap and stopper. 4,202,334, Cl. 128-272.000.
Emerson Electric Co.: *See—*
Hargraves, David P.; Pauli, Jude A.; and Williams, Steven E., 4,202,373, Cl. 137-625.290.
Mang, Josef; and Waters, Robert W., 4,202,435, Cl. 198-339.000.
Endo, Yoshihide: *See—*
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Mohs, Thomas J.; and Engel, Richard C., Jr., 4,202,464, Cl. 220-339.000.
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Early, Jack; Mooney, John J.; and Keith, Carl D., 4,202,301, Cl. 123-119.0EC.
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Madsen, Rud F.; Jensen, Jens H.; and Engvad, Jens C., 4,202,859, Cl. 422-245.000.
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Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Suzuki, Masatoshi, 4,202,958, Cl. 526-142.000.
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Asano, Kiro; Saito, Tsuyoshi; Tanaka, Hiromitsu; and Enomoto, Satoru, 4,202,885, Cl. 424-95.000.
Entreprise Generale de Chauffage Industriel Pillard: *See—*
Pillard, Jean-Claude L., 4,202,281, Cl. 110-259.000.
Envirotech Corporation: *See—*
Honacker, Horst, 4,202,675, Cl. 55-118.000.
Epifano, Leonard: *See—*
Farella, Ralph; Dansky, Barry; and Epifano, Leonard, 4,202,345, Cl. 128-654.000.
Erbe Elektromedizin KG: *See—*
van Gerven, Hans, 4,202,336, Cl. 128-303.100.
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Johnson, Marvin F. L.; and Erickson, Henry, 4,202,798, Cl. 252-437.000.
Erickson, Robert A., to Kennametal Inc. Shim lock toolholder. 4,202,650, Cl. 407-46.000.

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Schneider, Rudolf, 4,203,018, Cl. 219-69.00V.

Ershova, Vera A.: *See—*
Nesmeyanov, Alexandr N.; Rogozhin, Sergei V.; Tolstoguzov, Vladimir B.; Misjurev, Vladimir I.; Ershova, Vera A.; and Braudo, Evgeny E., 4,202,908, Cl. 426-72.000.

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Sowa, Kunihiro; and Esaki, Motoharu, 4,203,094, Cl. 340-378.500.

Establissement Chemiaro: *See—*
Cavallo, Margherita, 4,202,919, Cl. 427-245.000.

Eutectic Corporation: *See—*
Yurasko, George, Jr., 4,202,691, Cl. 75-252.000.

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Nixdorf, Hans W.; and Tolle, Gunther, 4,202,069, Cl. 15-250.030.

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Baker, Richard H., 4,203,151, Cl. 363-43.000.
Kamvachirapitag, Bhinyo, 4,202,366, Cl. 137-172.000.
Pan, Yen-Chi; and Batzold, John S., 4,202,744, Cl. 204-129.000.
Rello, Michael J., 4,202,639, Cl. 400-171.000.

Fabian, Woolfe S.: *See—*
De Longe, Harry C.; and Fabian, Woolfe S., 4,202,768, Cl. 210-62.000.

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Bezzi, Giovanni; Facchini, Alessandro; Martignani, Giovanni; and Pastore, Michele, 4,202,793, Cl. 252-301.10S.

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Stenudd, Sven G. V., 4,202,638, Cl. 400-124.000.

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Batjukov, Vladimir I.; Vijugov, Oleg N.; Fadeev, Alexandr I.; Shapkin, Alexandr F.; and Dyatlov, Lev E., 4,202,727, Cl. 176-30.000.

Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., to Hoffmann-La Roche Inc. (S)-1-[2-(4-(2-Hydroxy-s-(1-alkylaminopropoxy)phenylalkyl]-4-phenylpiperazines. 4,202,978, Cl. 544-393.000.

Falcioni, Joseph G.: *See—*
Champoux, Louis A.; Falcioni, Joseph G.; and Mendels, Morton, 4,202,242, Cl. 85-7.000.

Fan, You-Ling, to Union Carbide Corporation. Vinyl resin latex coating compositions. 4,202,808, Cl. 260-29.6WB.

Faragher, Raymond F., Jr. Reversible shower curtain. 4,202,059, Cl. 4-149.000.

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Farley, Max F.; and Dutton, Edmund L., to Mallinckrodt, Inc. Sensor monitoring alarm system. 4,203,096, Cl. 340-538.000.

Farshatov, Marat N.: *See—*
Bukhtiyarov, Ivan D.; An, Viktor B.; Demin, Alexei S.; Farshatov, Marat N.; and Slepchuk, Valery A., 4,202,206, Cl. 73-116.000.

Faulstich, George W., to Three Sisters Ranch Enterprises. Molded plastic container for use with a cap having inner and outer skirts. 4,202,455, Cl. 215-31.000.

Fechtig, Bruno: *See—*
Kocsis, Karoly; Fechtig, Bruno; and Bickel, Hans, 4,202,900, Cl. 424-251.000.

Federal Paper Board Company, Inc.: *See—*
Sutherland, Robert L., 4,202,446, Cl. 206-147.000.

Fegley, Charles R. Fluid dispensing anti-burglar booby trap device. 4,202,471, Cl. 222-153.000.

Feinmechanische Werke Mainz GmbH: *See—*
Scheufler, Bernd; and Muller, Heinz, 4,202,252, Cl. 91-483.000.

Feldkamper, Richard, to Windmoller & Holscher. Apparatus for transversely severing or transversely perforating webs of material. 4,202,229, Cl. 83-304.000.

Felten & Guilleaume Carlswerk AG: *See—*
Brumann, Joachim, 4,203,028, Cl. 219-384.000.

Feng, Chi Shun: *See—*
Wenz, Barry; Karmen, Arthur; and Feng, Chi Shun, 4,202,665, Cl. 23-230.00B.

Feng, Henry H.; D'Acierno, John P.; and Skrzec, Adam E., to Stauffer Chemical Company. Production of stable vanadium tetrachloride. 4,202,866, Cl. 423-265.000.

Fennell Corporation: *See—*
James, William L.; and Wonso, Alex P., 4,202,918, Cl. 427-224.000.

Fenton, Dennis M.: *See—*
Kita, Donald A.; Gagne, John W.; and Fenton, Dennis M., 4,202,942, Cl. 435-262.000.

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Nuss, James W., 4,202,702, Cl. 106-288.00B.

Fildes, Francis J. T.; and Hutchinson, Francis G., to Imperial Chemical Industries Limited. Delivery means for biologically active agents comprising hydrophilic polyurethane. 4,202,880, Cl. 424-78.000.

Finch, Neville; and Mizzoni, Renat H., to Ciba-Geigy Corporation. 2-Pyridinecarbonitrile compounds. 4,202,901, Cl. 424-263.000.

Finch, Theron R.: *See—*
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,620, Cl. 355-10.000.
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,913, Cl. 430-106.000.

Fink, Eugen; and Ostermeyer, Peter, to Krauss-Maffei Aktiengesellschaft. Apparatus for the dewatering of sludge. 4,202,773, Cl. 210-256.000.

Fink, Raymond: *See—*
Pelosi, Michael H., Jr.; and Fink, Raymond, 4,202,676, Cl. 55-269.000.

Fischer, Artur. Hollow structural element. 4,202,132, Cl. 46-16.000.

Fischer, Howard J.: *See—*
Radebaugh, Bruce A.; O'Connor, Paul J.; and Fischer, Howard J., 4,202,701, Cl. 106-278.000.

Fischer, Ulf; and Kaiser, Ado, to Hoffmann-La Roche Inc. Thiocarbamoylthio fatty acids. 4,202,832, Cl. 260-455.00A.

Fisher, Don E., to Monsanto Company. Chuck assembly. 4,202,507, Cl. 242-46.200.

Fisher & Paykel Limited: *See—*
O'Hare, David H.; Brickell, Christopher G.; and Spilman, Lindsay G., 4,203,027, Cl. 219-275.000.

Fitting, William L., to Fitting, William L.; and Bostrom, David A. Small vehicle lift. 4,202,529, Cl. 254-89.00H.

Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, to Bayer Aktiengesellschaft. Apparatus for determining the water content of isotropic materials by means of microwave absorption. 4,203,067, Cl. 324-58.50C.

Fleishman, Gregg. Support means for portable furniture. 4,202,581, Cl. 297-440.000.

Fletcher, John J., to Boeing Company, The. Airfoil leading edge slat apparatus. 4,202,519, Cl. 244-214.000.

Flexi Group, Inc., The: *See—*
Bromberg, Howard M., 4,202,546, Cl. 273-93.00R.

Flinders University of South Australia, The: *See—*
Whitford, Darryl R., 4,203,065, Cl. 320-43.000.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-substituted prostanoic acids and congeners. 4,202,989, Cl. 560-118.000.

FMC Corporation: *See—*
Brubaker, Gaylen R., 4,202,786, Cl. 252-102.000.
Gibbons, Harold M., 4,202,372, Cl. 137-615.000.

Focke, Heinz; and Liedtke, Kurt, to Focke & Pfuhl. Apparatus for producing cigarette packs. 4,202,151, Cl. 53-378.000.

Focke & Pfuhl: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,202,151, Cl. 53-378.000.

Foil, Martin B., Jr., to Tuscarora Yarns, Inc. Apparatus for producing novelty yarn. 4,202,161, Cl. 57-12.000.

Fontein, Freerk J.; and Jennekens, Hubertus F., to Stamicarbon, B.V. Process and device for the aeration of waste water. 4,202,762, Cl. 210-3.000.

Forch, Hans: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,202,555, Cl. 277-153.000.

Forsell, Bror I., to RP Rorprodukter AB. Closing cap on well casings in well openings. 4,202,376, Cl. 138-89.000.

Forster, Rolf, to Bernhard Forster, Firma. Orthodontic appliance. 4,202,100, Cl. 433-7.000.

Foster, Alan D., to Dayton-Walther Corporation. Coupler and jack assembly. 4,202,528, Cl. 254-86.00R.

Foulquier-Gazagnes, Andre: *See—*
Boucher, Robert; and Foulquier-Gazagnes, Andre, 4,202,662, Cl. 8-444.000.

Foxman, Herbert: *See—*
Zuber, John R.; and Foxman, Herbert, 4,202,703, Cl. 134-2.000.

Frahme, Carl E.; and Wygant, Gary E., to Industrial Insulations, Inc. Method of making thick-walled refractory fiber modules and the product formed thereby. 4,202,148, Cl. 52-592.000.

France Bed Co., Ltd.: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.
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Franchina, Antonino. Heating system having solar assist. 4,202,493, Cl. 237-2.00B.

Freire Costas, Alfonso, to Industrias P. Freire, S.A. Universal thread cutting device and complementary devices applicable to sewing machines. 4,202,286, Cl. 112-286.000.

Fremion, Edwin A., to Dyna Con Packaging Inc. Container and blank therefor. 4,202,485, Cl. 229-22.000.

Fricke, Roy A. Two way spark plug cleaner and method. 4,202,141, Cl. 51-412.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Pinck, Klaus, 4,202,421, Cl. 175-410.000.

Frikken, Bert R.; and Halcomb, Ronald G., to Rockwell International Corporation. Graphite-epoxy molding method. 4,202,856, Cl. 264-221.000.

Frohlich, Michael; and Stahle, Walter, to Robert Bosch GmbH. Gear coupling. 4,202,183, Cl. 64-1.00C.

Frohman-Bentchkowsky, Dov; Mar, Jerry; Perlegos, George; and Johnson, William S., to Intel Corporation. Electrically programmable and erasable MOS floating gate memory device employing tunneling and method of fabricating same. 4,203,158, Cl. 365-185.000.

Fromson, Robert E.: *See—*
Csakvary, Tibor; and Fromson, Robert E., 4,202,739, Cl. 204-129.350.

Frost, Albert C.: *See—*
Weber, Willis W.; Caglione, Alexander J.; Frost, Albert C.; and Weeks, Thomas J., Jr., 4,202,870, Cl. 423-630.000.

Fu, Horng-Sen: *See—*
Chatterjee, Pallab K.; Taylor, Geoff W.; Tasch, Al F., Jr.; and Fu, Horng-Sen, 4,203,125, Cl. 357-41.000.

Fuji Photo Film Co., Ltd.: *See—*
Obinata, Akira, 4,202,230, Cl. 83-345.000.
Yamaguchi, Nobutaka; Takayama, Satoru; and Fujiyama, Masaki, 4,202,927, Cl. 428-323.000.

Fuji Photo Optical Co., Ltd.: *See—*
Suzuki, Masane; and Suzuki, Kiyoshi, 4,202,630, Cl. 356-371.000.

Fujii, Etsuo: *See—*
Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, 4,202,584, Cl. 303-105.000.

Fujii, Minoru. Pressurized dispensers for dispensing products utilizing a pressure transfer fluid. 4,202,470, Cl. 222-130.000.

Fujii, Takayoshi: *See—*
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,202,969, Cl. 536-1.000.

Fujita, Hinonori: *See—*
Komatsu, Noboru; Arai, Tohru; and Fujita, Hinonori, 4,202,705, Cl. 148-6.110.

Fujiyama, Masaki: *See—*
Yamaguchi, Nobutaka; Takayama, Satoru; and Fujiyama, Masaki, 4,202,927, Cl. 428-323.000.

Fukai, Kiyoshi: *See—*
Matsumoto, Seiji; Koga, Tadashi; Fukai, Kiyoshi; and Nakatani, Shinya, 4,202,871, Cl. 423-632.000.

Fukuda, Kenji: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,202,756, Cl. 208-8.0LE.

Fukuda, Tadaji; Kajita, Isamu; Misumi, Teruo; Kondo, Hideyo; and Kitajima, Nobuo, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member having no fatigue effect. 4,202,937, Cl. 430-58.000.

Fukuda, Takeo; and Murayama, Hideaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital type telephone system having a conference function. 4,203,005, Cl. 179-1.0CN.

Fukumi, Hirokazu: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,202,291, Cl. 119-3.000.

Fukumura, Kunimitsu: *See—*
Ono, Hiroshi; Saida, Toyoyasu; and Fukumura, Kunimitsu, 4,202,766, Cl. 210-40.000.

Fukuzuka, Toshio; Shimogori, Kazutoshi; Satoh, Hiroshi; Kamikubo, Fumio; and Hara, Tatsuo, to Kobe Steel, Ltd. Sacrificial anode and apparatus employing same for treating hot sea water. 4,202,751, Cl. 204-197.000.

Funke, Peter, to Alkem GmbH. Setting and controlling desired redox potentials in gases. 4,202,690, Cl. 75-224.000.

Furst, Andor; Keller, Peter; and Muller, Marcel, to Hoffmann-La Roche Inc. D-Homopregnanes. 4,202,823, Cl. 260-343.600.

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Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,202,841, Cl. 424-311.000.

Furukawa Aluminum Co., Ltd.: *See—*
Shibamori, Seiji; and Ishida, Yoji, 4,202,709, Cl. 148-11.50Q.

Furukawa Electric Co., Ltd., The: *See—*
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,202,273, Cl. 104-298.000.

Furukawa Metals Co. Ltd.: *See—*
Osugi, Kozo, 4,202,398, Cl. 164-150.000.

Furukawa, Yoshiyasu: *See—*
Marumoto, Ryuji; Furukawa, Yoshiyasu; and Kawai, Kiyohisa, 4,202,975, Cl. 544-255.000.

Fussnegger, Wolfgang: *See—*
Breitschwerdt, Werner; Andres, Rudolf; Heiss, Werner; and Fussnegger, Wolfgang, 4,202,577, Cl. 296-24.00R.

Future Research, Inc.: *See—*
Amendola, Steven C., 4,202,757, Cl. 208-10.000.

G. & S. Allgood (Holdings) Limited: *See—*
Bates, Laurence H. J., 4,202,575, Cl. 292-347.000.

Gabr, Saad Z. M., to A.R.D. Anstalt. Electrostatic shielding assembly for mounting electric circuit boards. 4,203,147, Cl. 361-386.000.

Gabriel, Gunter: *See—*
Luke, Willy; and Gabriel, Gunter, 4,202,733, Cl. 201-1.000.

GAF Corporation: *See—*
Gruber, Bruce A.; and Lorenz, Donald H., 4,202,834, Cl. 260-465.00D.
Gruber, Bruce A.; and Lorenz, Donald H., 4,202,836, Cl. 260-465.400.
Schneider, Louis; and Graham, David E., 4,202,821, Cl. 260-326.50S.

Gagne, John W.: *See—*
Kita, Donald A.; Gagne, John W.; and Fenton, Dennis M., 4,202,942, Cl. 435-262.000.

Gale, Glen R.; and Schwartz, Paul, to United States of America, Health, Education and Welfare. 4-Carboxy-phthalato(1,2-diaminocyclohexane)-platinum(II) and alkali metal salts thereof with cyclophosphamide and hydroxyurea in alleviating L1210 murine leukemia. 4,202,890, Cl. 424-200.000.

Galileo Electro-Optics Corporation: *See—*
Tosswill, Christopher H., 4,202,599, Cl. 350-96.250.

Galperin, Alexandr L.; Serebryannikov, Albert S.; Onikov, Eduard A.; Zabotin, Alexandr A.; Loschilin, Evgeny D.; and Santucci, Nicola. Apparatus for winding a weft thread onto spools of carriers in travelling-wave looms. 4,202,383, Cl. 139-436.000.

Gans, Michael J.: *See—*
Dragone, Corrado; and Gans, Michael J., 4,203,105, Cl. 343-781.00P.

Gappa, Gunther; Juntgen, Harald; and Klein, Jurgen, to Bergwerksverband GmbH. Apparatus for purification of waste water by means of active carbon. 4,202,770, Cl. 210-96.100.

Garrett, Donald E. Energy production for complex geothermal waters. 4,202,177, Cl. 60-641.000.

Garst, John M., to Owens-Corning Fiberglas Corporation. Apparatus and method for changing products on a continuous fibrous glass production line. 4,203,155, Cl. 364-473.000.

Gas Research Institute: *See—*
Knowlton, Ted M., 4,202,673, Cl. 48-86.00R.

Gass, Ernst, to Waters Manufacturing, Inc. Potentiometer circuit. 4,203,074, Cl. 308-181.000.

Gauss, Walter: *See—*
Philippaerts, Herman A.; Pollet, Robert J.; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; von Konig, Anita; Gauss, Walter; Moll, Franz; and Ghys, Theofiel H., 4,202,695, Cl. 430-8.000.

Gaylord, Norman G., to Borg-Warner Corporation. Copolymers of cyclic conjugated dienes and maleic anhydride. 4,202,955, Cl. 526-272.000.

Gebr. Claas Maschinenfabrik GmbH: *See—*
Claas, Helmut; Romer, Gerhard; and Weddeling, Otger, 4,202,262, Cl. 100-4.000.

Gebr. Happich GmbH: *See—*
Viertel, Lothar; Mahler, Gert; and Nowak, Manfred, 4,203,149, Cl. 362-144.000.

Geirnaert, Marcel, to S.E.C.A. Societe Anonyme Societe d'Entreprises Commerciales et Aeronautiques. Generator for flow rate of pressurized fluid. 4,202,251, Cl. 91-472.000.

General Atomic Company: *See—*
Miertschin, Gary N.; and Powell, Kenneth F., 4,202,849, Cl. 264-0.500.

General Dynamics Pomona Division: *See—*
Schertz, Charles W.; and Ritter, Edward H., 4,202,246, Cl. 89-41.0EA.

General Electric Company: *See—*
Gigliotti, Michael F. X., Jr.; and Sawyer, Thomas F., 4,202,400, Cl. 164-251.000.
Holle, Robert F.; and Hansler, Richard L., 4,202,999, Cl. 174-50.610.
Sabatella, Robert J.; M'Sadoques, Andre J.; and Rich, Joseph F., 4,203,146, Cl. 361-361.000.
Takekoshi, Tohru, 4,202,993, Cl. 568-723.000.

General Foods Limited: *See—*
Coles, Robert E., 4,202,152, Cl. 53-451.000.

General Motors Corporation: *See—*
Chen, Stephen S., 4,203,058, Cl. 318-380.000.
Johnson, Gary W.; and Robinson, Carl J., 4,202,207, Cl. 73-119.00A.
Pritchard, Gary E., 4,203,039, Cl. 307-10.00R.
Tuchscherer, Lawrence D., 4,203,015, Cl. 200-61.45R.

Geode Industries, Inc.: *See—*
Smith, Edward E., 4,202,138, Cl. 51-229.000.

Geomet, Incorporated: *See—*
Allen, Richard T.; Moyer, Rudolph H.; Sibbett, Donald J.; Anderson, Howard H.; Martner, Glen R.; and Willis, Don, 4,202,212, Cl. 73-421.50R.

Gerking, Luder; Stahlmann, Dirk; Rothert, Horst; and Karasiak, Wolf, to Karl Fischer, Apparate-und Rohrleitungsbau. Method of producing continuous multifilament yarns. 4,202,855, Cl. 264-210.200.

Gershman, Russell J.: *See—*
Weiner, Irving L.; and Gershman, Russell J., 4,202,625, Cl. 356-39.000.

Gerst, Carl W.; Hair, Hugh A.; and Rehnmark, Stig L., to Anaren Microwave, Inc. Digital bearing indicator. 4,203,114, Cl. 343-100.0SA.

Gesellschaft fur Kernforschung m.b.H.: *See—*
Kaufmann, Friedrich; Weisenburger, Siegfried; Koschorke, Herbert; Seiffert, Hartmut; Sienel, Dieter; and Weiss, Karl-Heinz, 4,202,792, Cl. 252-301.10W.

Ghys, Theofiel H.: *See—*
Philippaerts, Herman A.; Pollet, Robert J.; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; von Konig, Anita; Gauss, Walter; Moll, Franz; and Ghys, Theofiel H., 4,202,695, Cl. 430-8.000.

Gibbons, Harold M., to FMC Corporation. Articulated fluid conduit with auxiliary support. 4,202,372, Cl. 137-615.000.

Giebler, Fritz: *See—*
Heinzl, Joachim; Kern, Hans; and Giebler, Fritz, 4,202,267, Cl. 101-364.000.

Gigliotti, Michael F. X., Jr.; and Sawyer, Thomas F., to General Electric Company. Directional solidification furnace. 4,202,400, Cl. 164-251.000.

Gillette Company, The: *See—*
Sokol, Phillip E., 4,202,652, Cl. 401-196.000.

Gilmer, William N.: *See—*
Suggitt, Robert M.; Gilmer, William N.; and Richter, George N., 4,202,167, Cl. 60-39.020.

Gimelfarb, Natan M.; Lugovnev, Fedor T.; and Misjura, Nikolai E. Method for cleansing cattle hides and apparatus for realizing same. 4,202,664, Cl. 8-94.150.

Gingras, Hilaire. Steak knife. 4,202,095, Cl. 30-340.000.

Giovannetti, Fiorello. Readily releasable clamping connector. 4,202,645, Cl. 403-407.000.

Gist-Brocades N.V.: *See—*
Gootjes, Johan, 4,202,896, Cl. 424-250.000.

Giuliani, Pierre: *See—*
Rabilloud, Guy; Masson, Bernard; Giuliani, Pierre; and Sillion, Bernard, 4,202,960, Cl. 528-271.000.

Glancy, John J. Dynamic orthotic device. 4,202,327, Cl. 128-78.000.

Glander, Siegfried: *See—*
von der Eltz, Hans-Ulrich; and Glander, Siegfried. 4,202,112, Cl. 34-4.000.

Gloster, Arthur: *See—*
Conroy, Edward H.; Gloster, Arthur; and King, James A., 4,202,667, Cl. 23-302.00T.

Goans, Kip B.: *See—*
Akkerman, Neil H.; and Goans, Kip B., 4,202,368, Cl. 137-498.000.

Gocho, Nagahiro: *See—*
Kamachi, Shinichi; and Gocho, Nagahiro, 4,203,031, Cl. 250-201.000.

Goddard, Terrence P., to Teledyne McCormick Selph. Propellant and pyrotechnic with amino-substituted guanidine salts of decahydrodecaboric acid. 4,202,712, Cl. 149-22.000.

Gold, Lawrence W. External catheter drainage device. 4,202,335, Cl. 128-295.000.

Goldstein, Arthur L., to Ionics, Incorporated. Fluid distribution cell module. 4,202,772, Cl. 210-232.000.

Golyanovsky, Anton V.; and Kuznetsov, Albert P. Rotary mower. 4,202,156, Cl. 56-13.600.

Gonda, Gerald J.; and Vancza, John, Jr., to Tri-Tronics, Inc. Dog training collars and methods. 4,202,293, Cl. 119-29.000.

Gonzales, Albert S. Antifreeze means for car-wash wet-vacuum cleaning machines. 4,202,072, Cl. 15-302.000.

Goodman, Philip: *See—*
Kovac, Michael G.; Chleck, David J.; and Goodman, Philip, 4,203,087, Cl. 338-35.000.

Goodyear Tire & Rubber Company, The: *See—*
Mineur, Mark H.; and Toth, Robert L., 4,202,392, Cl. 152-330.00L.
Young, John J., 4,202,159, Cl. 56-364.000.

Goose, Jack: *See—*
Parkinson, Derek; and Goose, Jack, 4,202,503, Cl. 241-194.000.

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Goransson, Rolf E., to Internationella Siporex AB. Method of cutting slabs from a body of uncured, light-weight concrete and an apparatus for carrying out the method. 4,202,228, Cl. 83-23.000.

Gordon, James P.; Nahory, Robert E.; Pollack, Martin A.; and Worlock, John M., to Bell Telephone Laboratories, Incorporated. Low noise multistage avalanche photodetector. 4,203,124, Cl. 357-13.000.

Gordon, James R. Scraper assembly for a conveyor belt. 4,202,437, Cl. 198-497.000.

Goto, Shoziro: *See—*
Oda, Yoshio; Suhara, Manabu; Goto, Shoziro; Hukushima, Takashi; Miura, Koji; and Hamano, Toshikatsu, 4,202,743, Cl. 204-98.000.

Gottfried, Mario H., Jr.: *See—*
Burnham, J. Kellogg; and Gottfried, Mario H., Jr., 4,202,518, Cl. 244-12.100.

Gould Inc.: *See—*
Cronin, John C., 4,202,998, Cl. 174-31.00R.

Grace, Frederick J. Waterway cleaner with endless bucket conveyor. 4,202,119, Cl. 37-69.000.

Graham, David E.: *See—*
Schneider, Louis; and Graham, David E., 4,202,821, Cl. 260-326.50S.

Granier, Pierre M., to Societe d'Etudes et d'Applications Technologiques-Serat. Catheter for the examination or treatment of a blood vessel and apparatus for the utilization of this catheter. 4,202,346, Cl. 128-658.000.

Grapha-Holding AG: *See—*
Muller, Hans, 4,202,232, Cl. 83-519.000.

Graubert, Seth: *See—*
Leskiw, Alexander; and Graubert, Seth, 4,202,541, Cl. 271-132.000.

Gray, Reed A.; Tseng, Chien K.; and Rusay, Ronald J., to Stauffer Chemical Company. 1-Hydroxy-2-(alkylketo)-4,4,6,6-tetramethyl cyclohexen-3,5-diones. 4,202,840, Cl. 260-438.100.

Green, Brian R.: *See—*
Hancock, Robert D.; Bond, Roy F.; and Green, Brian R., 4,202,944, Cl. 521-32.000.

Green, William M. Latch for escape door. 4,202,572, Cl. 292-217.000.

Greenbaum, Robert R., to Bethlehem Steel Corporation. Method for producing calcined coke pellets. 4,202,734, Cl. 201-6.000.

Greenberg, Arthur: *See—*
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,620, Cl. 355-10.000.

Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,913, Cl. 430-106.000.

Greenberg, Jack, to A. H. Robins Company, Inc. Insect-combatting device. 4,202,129, Cl. 43-131.000.

Greenspan, Donald J. Method for separating serum or plasma from the formed elements of blood. 4,202,769, Cl. 210-83.000.

Grenier, Raymond P., to Baird Corporation. Method and apparatus for determining the condition of a biological specimen. 4,203,035, Cl. 250-363.00S.

Greune, Christian: *See—*
Jurisch, Wilhelm; Greune, Christian; and Maier, Karl, 4,202,171, Cl. 60-39.28R.

Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V. Hydraulic drive. 4,202,174, Cl. 60-413.000.

Gross, Paul; Konrad, Eugen; and Mager, Herbert, to Wella AG. Hair shampoo and conditioning lotion. 4,202,881, Cl. 424-70.000.

Gruber, Bruce A.; and Lorenz, Donald H., to GAF Corporation. Copolymerizable, ultraviolet light absorber (2-cyano-3,3-diphenylacryloxy) alkylene ethylenic ethers. 4,202,834, Cl. 260-465.00D.

Gruber, Bruce A.; and Lorenz, Donald H., to GAF Corporation. Acetoxyalkyl cyanoacetate intermediates in the manufacture of copolymerizable, ultraviolet light absorber compounds. 4,202,836, Cl. 260-465.400.

Gruber, Heinz, to Kusters, Eduard. Apparatus for applying a liquid on a moving web in patterns. 4,202,188, Cl. 68-205.00R.

Grudzinskas, Charles V.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,202,989, Cl. 560-118.000.

Gruzdev, Evgeny A.: *See—*
Smirnov, Boris A.; Busygin, Valery P.; Komina, Lidia S.; Mochalov, Vyacheslav N.; Shagalov, Lev V.; and Gruzdev, Evgeny A., 4,202,314, Cl. 128-218.00F.

GTE Automatic Electric Laboratories Incorporated: *See—*
Kline, Ralph L., 4,203,003, Cl. 455-111.000.

Guckel, Henry; and Larsen, Steven T., to Wisconsin Alumni Research Foundation. Electrostatically deformable thin silicon membranes. 4,203,128, Cl. 357-60.000.

Guddal, Erling; and Borrevang, Poul, to Novo Industri A/S. Process for the production of penam and cephem derivatives. 4,202,817, Cl. 260-239.100.

Guenther, Ernst: *See—*
Hoerauf, Werner; Pirzer, Hans; Guenther, Ernst; Neumann, Eckart; and Dietrich, Ernst, 4,202,375, Cl. 138-39.000.

Guimond, Roy A.; Reed, Nanci W.; and Gulliksen, John E., to Koehler Manufacturing Company. Storage batteries of the lead-acid class and methods of making and operating same. 4,202,936, Cl. 429-163.000.

Guinon, Walter J.: *See—*
Bowles, William M.; Cox, Duncan B., Jr.; and Guinon, Walter J., 4,203,071, Cl. 375-1.000.

Gulf Research & Development Company: *See—*
Acheson, Willard P.; Morris, Richard A.; Rennard, Raymond J.; and Viswanathan, Thiagarajan, 4,202,168, Cl. 60-39.060.
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Gulliksen, John E.: *See—*
Guimond, Roy A.; Reed, Nanci W.; and Gulliksen, John E., 4,202,936, Cl. 429-163.000.

Gunkel, Walter A.; and Lybecker, Robert W., to Hughes Tool Company. Drill pipe identification method and system. 4,202,490, Cl. 235-449.000.

Gunther, Arnold. Device to control evaporation losses from liquid holding storage tanks. 4,202,458, Cl. 220-85.00B.

Gur, David; Sashin, Donald; and Sternglass, Ernest J., to University of Pittsburgh. Collimated radiation apparatus. 4,203,037, Cl. 250-505.000.

Guthrie, Robert W.: *See—*
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,202,978, Cl. 544-393.000.

Gutner, Kenneth H. Method of making a furniture leveling device. 4,202,083, Cl. 29-150.000.

Gutshall, Charles E., to Technofast, Inc. Recessed head screw. 4,202,244, Cl. 85-45.000.

H. Niemeyer Sohne GmbH & Co. KG: *See—*
Barlage, Bruno, 4,202,415, Cl. 172-125.000.

Habermeier, Jurgen; Moser, Roland; and Seiz, Wolfgang, to Ciba-Geigy Corporation. Bis-anthranilates. 4,202,987, Cl. 560-49.000.

Haeckel, Rainer; and Heinz, Fritz, to Human Gesellschaft mbH fur Biotopanalytic und Biotopschutz. Procedure for the quantitative determination of hydrogen peroxide concentration in aqueous solutions. 4,202,938, Cl. 435-10.000.

Haffer, Gregor: *See—*
Sauer, Gerhard; Hauser, Helmut; Haffer, Gregor; Ruppert, Juergen; Eder, Ulrich; and Wiechert, Rudolf, 4,202,991, Cl. 560-255.000.

Hagen, Remon: *See—*
Jan, Gerald; Hagen, Remon; and Lenoir, John, 4,202,698, Cl. 430-418.000.

Haigh, John M., deceased; and by Quinlan, Joyce E., administrator. Method of dye absorption into the surface of plastic. 4,202,663, Cl. 8-471.000.

Hair, Hugh A.: *See—*
Gerst, Carl W.; Hair, Hugh A.; and Rehnmark, Stig L., 4,203,114, Cl. 343-100.0SA.

Haji, Takashi: *See—*
Haneda, Yoshikazu; Yamamoto, Yoshun; Matsufuji, Akira; Haji, Takashi; and Nakajima, Koe, 4,202,192, Cl. 72-21.000.

Hakansson, Bjarne C., to Linden & Linder AB. Device for producing sounds, which can be coupled to a musical instrument. 4,202,237, Cl. 84-1.240.

Halcomb, Ronald G.: *See—*
Frikken, Bert R.; and Halcomb, Ronald G., 4,202,856, Cl. 264-221.000.

Hale, Frank L.: *See—*
Hale, John D.; and Hale, Frank L., 4,202,175, Cl. 60-477.000.

Hale, John D.; and Hale, Frank L. Hydraulic control system for a dump truck. 4,202,175, Cl. 60-477.000.

Hall, Randall C.; and Ehrlich, Burney J., to Tracor, Inc. Method and apparatus for preventing the destruction of an alkali source of a nitrogen-phosphorous detector. 4,202,666, Cl. 23-232.00E.

Hall, Robert C.: *See—*
Storey, L. Robert; and Hall, Robert C., 4,202,760, Cl. 210-22.00A.

Hall, Robert N.: *See—*
Cannon, Curtis W.; and Hall, Robert N., 4,202,867, Cl. 423-301.000.

Hallett, Michael H.; Heneghan, Michael J.; and Sowter, Brian R., to International Business Machines Corporation. Cathode ray tube apparatus. 4,203,051, Cl. 315-13.00C.

Halliburton Company: *See—*
Burnham, John W.; Briscoe, James E.; and Elphingstone, Eugene A., 4,202,795, Cl. 252-332.000.

Haluch, Leonard M.: *See—*
Krolopp, Otto C.; and Haluch, Leonard M., 4,202,759, Cl. 209-234.000.

Hamaguchi, Yoshiharu: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

Hamano, Toshikatsu: *See—*
Oda, Yoshio; Suhara, Manabu; Goto, Shoziro; Hukushima, Takashi; Miura, Koji; and Hamano, Toshikatsu, 4,202,743, Cl. 204-98.000.

Hambrick, William H., Sr.; and Raybon, Charles L. Acoustic impulse generator. 4,202,425, Cl. 181-120.000.

Hamer, David E.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,202,829, Cl. 260-397.200.

Hammann, Ingeborg: *See—*
Maurer, Fritz; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,202,889, Cl. 424-200.000.

Hammond, Peter R.; Henry, Ronald A.; Trias, John A.; and Schimitischek, Erhard J., to United States of America, Navy. Substituted -6,7,8,9-tetrahydro-pyrido- and 2H-pyrano [2,3-b][1,8]naphthyridines, stable efficient laser dyes. 4,202,981, Cl. 546-82.000.

Hamrick, James C., to Thomas Industries of Tennessee Inc. Pneumatic rodding of conduit using everted flexible tubing. 4,202,531, Cl. 254-134.400.

Hanas, Walter E.; and Sutko, Ronald R., to Honeywell Inc. Injection molding apparatus for accommodating various sizes of molding die inserts. 4,202,522, Cl. 249-102.000.

Hancock, Robert D.; Bond, Roy F.; and Green, Brian R., to National Institute for Metallurgy. Selective ion exchange resins with pyridylimidazolyl chelating functional groups. 4,202,944, Cl. 521-32.000.

Haneda, Yoshikazu; Yamamoto, Yoshun; Matsufuji, Akira; Haji, Takashi; and Nakajima, Koe, to Nippon Steel Corporation. Apparatus for controlling the position of roll in the direction of the roll axis. 4,202,192, Cl. 72-21.000.

Hanes Corporation: *See—*
DiTullio, Flavia, 4,202,853, Cl. 264-138.000.

Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, to Microform Data Systems, Inc. Film strip handling apparatus and method. 4,202,613, Cl. 353-120.000.

Hannigan, Joseph F., to United States of America, Army. Zero-doppler shift positioning technique. 4,203,115, Cl. 343-112.00R.

Hansen, Laird H. Spark plug boot puller. 4,202,088, Cl. 29-280.000.

Hansler, Richard L.: *See—*
Holle, Robert F.; and Hansler, Richard L., 4,202,999, Cl. 174-50.610.

Hanson, Raymond, to USM Corporation. Method of heat setting footwear. 4,202,066, Cl. 12-142.00R.

Hara, Tatsuo: *See—*
Fukuzuka, Toshio; Shimogori, Kazutoshi; Satoh, Hiroshi; Kamikubo, Fumio; and Hara, Tatsuo, 4,202,751, Cl. 204-197.000.

Harada, Masahiro: *See—*
Shimizu, Senzo; Nomura, Isao; and Harada, Masahiro, 4,202,965, Cl. 528-499.000.

Harada, Susumu: *See—*
Kondo, Toshio; Harada, Susumu; Ito, Nobuyuki; and Kobayashi, Nobuyuki, 4,202,295, Cl. 123-32.0EH.

Hard Af Segerstad, Goran J. F. Curtain suspension devices. 4,202,074, Cl. 16-94.00D.

Harding, Frank M. Combination bag holder and dolly. 4,202,521, Cl. 248-98.000.

Harfst, Robert G. Vacuum apparatus with concrete housing, and method of constructing same. 4,202,070, Cl. 15-300.00A.

Hargraves, David P.; Pauli, Jude A.; and Williams, Steven E., to Emerson Electric Co. Four way valve. 4,202,373, Cl. 137-625.290.

Harrington, F. Eugene: *See—*
Babington, Ronald G.; and Harrington, F. Eugene, 4,202,897, Cl. 424-250.000.

Harris, John L., to Deltrol Corp. Adjustable interval cycle timer. 4,203,014, Cl. 200-38.00R.

Harrison, George W., to Team, Inc. Pipe cleaning and plugging apparatus. 4,202,377, Cl. 138-94.000.

Hartenstein, Johannes; and Satzinger, Gerhard, to Warner-Lambert Company. Process for the preparation of 1-hydroxyaporphine-derivatives. 4,202,980, Cl. 546-75.000.

Hartert, Hellmut, to Dr. E. Fresenius Chem.-Pharm. Industrie KG. Apparatus and method for measuring changes in conditions in coagulating liquids. 4,202,204, Cl. 73-64.100.

Hartford, Allen, Jr.; and Tuccio, Sam A., to Allied Chemical Corporation. Enrichment of nitrogen isotopes by induced isomerization of isocyanides. 4,202,741, Cl. 204-158.00R.

Hartman, Louis P.: *See—*
Burbo, James H.; and Hartman, Louis P., 4,202,601, Cl. 350-159.000.

Hartman, Susan E.: *See—*
Merrill, Stewart H.; Hartman, Susan E.; Noonan, John M.; Sandhu, Mohammad A.; and Santilli, Domenic, 4,202,785, Cl. 430-106.000.

Hartmann & Braun AG.: *See—*
Kroneisen, Armin, 4,202,748, Cl. 204-195.00R.

Hartung, Rodney L.: *See—*
Abraham, Edward D.; and Hartung, Rodney L., 4,202,399, Cl. 164-203.000.

Harvey, Donald M., to Eastman Kodak Company. Photographic cameras. 4,202,614, Cl. 354-121.000.

Harvey Hubbell, Incorporated: *See—*
Hoffman, Ernest G., 4,202,590, Cl. 339-107.000.

Harwood, Leopold A.; Wittmann, Erwin J.; and Shanley, Robert L., II, to RCA Corporation. Predictable automatic brightness control circuit in a video signal image reproducing system. 4,203,131, Cl. 358-34.000.

Hashimoto, Susumu: *See—*
Suzuki, Etsuji; Kashihara, Tomio; Hashimoto, Susumu; Watanabe, Ken; and Kodama, Tsuyoshi, 4,203,064, Cl. 318-640.000.

Hasquenoph, Jean H.; and Coutin, Pierre F., to R. Alkan & Cie. Device for locking to fixed supports loads carried under aircraft. 4,202,576, Cl. 294-83.00R.

Hatfield, David G., to Interpace Corporation. Apparatus for decorating surfaces of ceramic ware. 4,202,290, Cl. 118-211.000.

Hatori, Nobuyoshi; and Morigami, Eiiji, to Iwasaki Tsushinki Kabushiki Kaisha. System for receiving remote control signal in automatic telephone answering device. 4,203,007, Cl. 179-6.00E.

Haunstetter, Franz; and Koppelmann, Gerhard, to Siemens Aktiengesellschaft. Arrangement for producing a constant signal amplitude in an opto-electronic scanning system. 4,203,032, Cl. 250-205.000.

Hauser, Helmut: *See—*
Sauer, Gerhard; Hauser, Helmut; Haffer, Gregor; Ruppert, Juergen; Eder, Ulrich; and Wiechert, Rudolf, 4,202,991, Cl. 560-255.000.

Hauser, Kurt: *See—*
Nonnenmann, Manfred; Hauser, Kurt; and Schwarz, Gebhard, 4,202,296, Cl. 123-41.480.

Hauser, Raimund: *See—*
Kittag, Gerd, 4,202,610, Cl. 352-91.00C.

Hausman, John M. Structure for hydraulic power apparatus. 4,202,264, Cl. 100-269.00A.

Haussmann, August; Klaissle, Siegfried; Hugger, Hermann; Moser, Bernhard; Muller, Walter; Peetz, Wolfgang; Scheuch, Anton; and Schwarz, Gerhard, to Hawera Probst GmbH & Co. Drilling device. 4,202,557, Cl. 279-19.500.

Havas, Janos; and Paal, Gabor, to International Business Machines Corporation. Method of depositing thin films of small dimensions utilizing silicon nitride lift-off mask. 4,202,914, Cl. 427-38.000.

Hawera Probst GmbH & Co.: *See—*
Haussmann, August; Klaissle, Siegfried; Hugger, Hermann; Moser, Bernhard; Muller, Walter; Peetz, Wolfgang; Scheuch, Anton; and Schwarz, Gerhard, 4,202,557, Cl. 279-19.500.
Peetz, Wolfgang; Klaissle, Siegfried; and Moser, Bernhard, 4,202,420, Cl. 175-395.000.

Hayashi, Kiyoshige; Nakagawa, Masanao; Ozaki, Kazuo; and Ito, Yoshiharu, to Maruzen Petrochemical Co., Ltd. Production of high-density carbon materials. 4,202,868, Cl. 423-445.000.

Hayashi, Yoshimasa: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; and Yoshimura, Tooru, 4,202,306, Cl. 123-148.00C.

Hayashida, Shuji: *See—*
Ohtake, Sadao; Hayashida, Shuji; Matsunaga, Hirotsugu; and Kaimori, Michinobu, 4,202,186, Cl. 68-3.00R.

Hayes, Richmond S., Jr.: *See—*
Cann, Peter L.; Hayes, Richmond S., Jr.; and Miller, Lester N., 4,202,409, Cl. 165-122.000.

Haynes, Kenneth H. Constant volume aerated showerhead apparatus. 4,202,501, Cl. 239-570.000.

Heberlein Hispano SA: *See—*
Vignon, Louis, 4,202,162, Cl. 57-58.890.

Heck, Richard A.; and Dekker, David J., to Sundberg-Ferar, Inc. Adjustable shade construction. 4,202,395, Cl. 160-84.00R.

Heide, Helmut: *See—*
Reiner, Roland; Heide, Helmut; and Koster, Kari, 4,202,055, Cl. 3-1.910.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Becker, Willi, 4,202,268, Cl. 101-409.000.

Heilman, Marlin S.: *See—*
Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, 4,202,340, Cl. 128-419.00D.

Heimann GmbH: *See—*
Rech, Werner; Welsch, Wolfgang; and Achter, Eugen, 4,203,050, Cl. 313-220.000.

Heinz, Fritz: *See—*
Haeckel, Rainer; and Heinz, Fritz, 4,202,938, Cl. 435-10.000.

Heinz, Theodore A., to Rockwell International Corporation. Active segmented mirror. 4,202,605, Cl. 350-292.000.

Heinzl, Joachim; Kern, Hans; and Giebler, Fritz, to Siemens Aktiengesellschaft. Device for monitoring the ink supply in ink-operated printers. 4,202,267, Cl. 101-364.000.

Heiss, Werner: *See—*
Breitschwerdt, Werner; Andres, Rudolf; Heiss, Werner; and Fusnegger, Wolfgang, 4,202,577, Cl. 296-24.00R.

Heitzman, Russell A. Visual feed control assembly for carriage-fed sawmill saws. 4,203,060, Cl. 318-474.000.

Held, Ross, to D. T. Equipment Limited. Snowmobile trail groomer. 4,202,118, Cl. 37-41.000.

Helfrich, Adam: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,202,555, Cl. 277-153.000.

Hempel, Reinhard: *See—*
Eckert, Theodor; Kemper, Fritz H.; Wischniewski, Martin; and Hempel, Reinhard, 4,202,888, Cl. 424-182.000.

Henbest, Richard G. C.; and McGregor, Kenneth, to Imperial Chemical Industries Limited. Sulfite-modified fibrous resinous material. 4,202,959, Cl. 528-254.000.

Hendrickson, Carl E. Portable device for mixing two materials. 4,202,635, Cl. 366-162.000.

Heneghan, Michael J.: *See—*
Hallett, Michael H.; Heneghan, Michael J.; and Sowter, Brian R., 4,203,051, Cl. 315-13.00C.

Henke, Cyril B.: *See—*
Exner, Jurgen H.; and Henke, Cyril B., 4,202,745, Cl. 204-180.00R.

Hennecke, Franz, to I. P. U. Limited. Flame cutting apparatus and method. 4,202,707, Cl. 148-9.00R.

Henry, David W.: *See—*
Tong, George L.; Henry, David W.; Wu, Helen Y.; and Smith, Thomas H., 4,202,967, Cl. 536-17.00A.

Henry, Ronald A.: *See—*
Hammond, Peter R.; Henry, Ronald A.; Trias, John A.; and Schimitischek, Erhard J., 4,202,981, Cl. 546-82.000.

Henry Simon Limited: *See—*
Cook, Kenneth, 4,202,466, Cl. 222-1.000.

Hercules Incorporated: *See—*
Steller, Kenneth E., 4,202,790, Cl. 252-186.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Anders, Dietmar, 4,202,633, Cl. 366-79.000.

Hermann Finckh Maschinenfabrik: *See—*
Holz, Emil, 4,202,761, Cl. 209-17.000.

Herron, Charles R., to National Mine Service Company. Stabilizer assembly for a mining machine conveyor. 4,202,434, Cl. 198-316.000.

Herstad, Oystein. Helicopter landing platform. 4,202,646, Cl. 404-36.000.

Herz, Matthew L.: *See—*
Zweig, Jack; McLaughlin, William; and Herz, Matthew L., 4,202,323, Cl. 128-1.100.

Hesse, Jurgen: *See—*
Ebensberger, Matthaus; Hesse, Jurgen; and Raab, Lothar, 4,203,068, Cl. 324-97.000.

Hewlett-Packard Company: *See—*
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,203,152, Cl. 364-200.000.

Heymes, Rene; and Lutz, Andre, to Roussel Uclaf. Alkyloximes of 7-amino-thiazolyl-acetamido-cephalosporanic acids. 4,202,893, Cl. 424-246.000.

HICAP Engineering & Development Corp.: *See—*
Davis, William L., Jr., 4,202,534, Cl. 266-172.000.

Hickman, Ronald P., to Inventec International Limited. Ladder. 4,202,428, Cl. 182-22.000.

Hihara, Yukiyoshi, to Yasui Sangyo Co. Ltd. Wheel fixing device for a wheel balancer. 4,202,214, Cl. 73-487.000.

Hilfman, Lee, to UOP Inc. Hydrocarbon isomerization process. 4,202,996, Cl. 585-377.000.

Hilfman, Lee: *See—*
O'Hara, Mark J.; Johnson, Russell W.; and Hilfman, Lee, 4,202,758, Cl. 208-143.000.

Hill, Robin E. T.; Mann, Alan W.; McDonald, Ean L.; and Perdrix, John L. Adjustable float sinker. 4,202,128, Cl. 43-43.140.

Hiller, Walther: *See—*
Steigerwald, Karl-Heinz; Scheffels, Wilhelm; Anderl, Peter; Konig, Dieter; Hiller, Walther; and Rappold, Franz, 4,203,023, Cl. 219-121.0EB.

Hillery, Herbert V., to United States of America, Navy. Acoustic filter. 4,203,165, Cl. 367-135.000.

Hindin, Eugene: *See—*
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,276, Cl. 105-165.000.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,277, Cl. 105-215.00C.
Browne, Kenneth A.; Cripe, Alan R.; and Hindin, Eugene, 4,202,454, Cl. 213-86.000.

Hiraga, Ryozo: *See—*
Suzki, Akiyoshi; Kano, Ichiro; Yoshinari, Hideki; Tozuka, Masao; Hiraga, Ryozo; Kato, Yuzo; and Ogino, Yasuo, 4,202,627, Cl. 356-71.000.

Hirai, Masataka; and Matsuno, Koichiro, to Nippon Telegraph and Telephone Public Corp.; Sumitomo Electric Industries, Ltd.; and Sumitomo Electric Industries, Ltd. Method and apparatus for cutting optical fibers. 4,202,475, Cl. 225-2.000.

Hirata, Motonobu: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

Hirose, Akira: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

Hirose, Fumio: *See—*
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,202,969, Cl. 536-1.000.

Hirs, Gilles G., to B.V. Neratoom. Heat shield and apparatus comprising same. 4,202,552, Cl. 277-26.000.

Hirsch, Leon C.; Rawson, Paul O.; and Nagy, Louis E., to United States Surgical Corporation. Temperature and respiration sensing probe. 4,202,353, Cl. 128-724.000.

Hisamatsu, Takashi: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.

Hiser, Earl J.: *See—*
Sippel, Nathan J.; Hiser, Earl J.; and Christy, John, 4,202,668, Cl. 44-7.00A.

Hitachi, Ltd.: *See—*
Hukuzawa, Soiti; Togasi, Mituyuki; and Mori, Toshiro, 4,202,187, Cl. 68-18.00F.
Itoh, Takashi, 4,203,056, Cl. 315-389.000.
Kawashima, Kenichi; Arima, Yosiaki; Endo, Yoshihide; Suginuma, Atsushi; Uenishi, Akira; and Miyamoto, Seigo, 4,202,182, Cl. 62-511.000.
Koizumi, Hideaki; and Moriya, Kazuo, 4,202,628, Cl. 356-312.000.
Nakatani, Mitsuo; Kuroki, Takashi; Syozi, Toshiaki; and Horibe, Yoshiyuki, 4,203,025, Cl. 219-216.000.
Shimizu, Norio; and Odawara, Youji, 4,202,763, Cl. 210-14.000.
Suzuki, Atsushi, 4,202,491, Cl. 235-491.000.
Takahashi, Toshiyori; Ojima, Akihiro; Matsumoto, Teruo; and Kashiwakura, Koji, 4,203,038, Cl. 250-507.000.

Hlinka, Joseph W.; Whitmore, Bruce C.; and Ozgu, Mustafa R., to Bethlehem Steel Corporation. Method of continuously casting molten metal. 4,202,397, Cl. 164-82.000.

Hobbs, James E., to Chemworld Corporation. Water control device for flush valves. 4,202,525, Cl. 251-40.000.

Hobbs, Jim F.; and Smyser, Craig. Method of incineration. 4,202,282, Cl. 110-346.000.

Hochiki Corporation: *See—*
Yamauchi, Yukio; and Homma, Hiroshi, 4,203,100, Cl. 340-630.000.

Hodges, Donald R.: *See—*
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, 4,202,752, Cl. 204-222.000.

Hodgson, Rodney T.; Hovel, Harold J.; and Woodall, Jerry M., to International Business Machines Corporation. Optical energy conversion. 4,202,704, Cl. 136-89.0CL.

Hoechst Aktiengesellschaft: *See—*
Korbanka, Helmut; and Scheidl, Franz, 4,202,830, Cl. 260-429.700.
Michel, Wolfgang; and Becker, Reinhold, 4,202,075, Cl. 17-41.000.
Moraw, Roland; and Schadlich, Gunther, 4,202,693, Cl. 430-50.000.
Thoese, Klaus, 4,202,923, Cl. 428-144.000.
von der Eltz, Hans-Ulrich; and Glander, Siegfried, 4,202,112, Cl. 34-4.000.

Hoehn, Hans, to E. R. Squibb & Sons, Inc. Imidazolylethoxy derivatives of quinoline-3-methanols. 4,202,985, Cl. 546-176.000.

Hoehn, Hans: *See—*
Denzel, Theodor; and Hoehn, Hans, 4,202,899, Cl. 424-251.000.

Hoerauf, Werner; Pirzer, Hans; Guenther, Ernst; Neumann, Eckart; and Dietrich, Ernst, to BASF Aktiengesellschaft. Process and apparatus for achieving a uniform flow profile. 4,202,375, Cl. 138-39.000.

Hoesch Werke Aktiengesellschaft: *See—*
den Hartog, Huibert; Stann, Klaus; and Stolze, Lutz, 4,202,194, Cl. 72-78.000.

Hoff, Robert W. Chemical recovery filter. 4,202,771, Cl. 210-130.000.

Hoffman, Ernest G., to Harvey Hubbell, Incorporated. Interlock arrangement for an electrical terminal enclosure. 4,202,590, Cl. 339-107.000.

Hoffman-La Roche Inc.: *See—*
Kellett, Martha; Pruess, David; and Scannell, James P., 4,202,819, Cl. 260-245.300.

Hoffmann-La Roche Inc.: *See—*
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,202,841, Cl. 424-311.000.
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,202,978, Cl. 544-393.000.
Fischer, Ulf; and Kaiser, Ado, 4,202,832, Cl. 260-455.00A.

Furst, Andor; Keller, Peter; and Muller, Marcel, 4,202,823, Cl. 260-343.600.
Pfiffner, Albert, 4,202,894, Cl. 424-248.400.
Suhara, Yasuji; Maruyama, Hiromi; Itoh, Sayuri; and Yokose, Kazuteru, 4,202,943, Cl. 435-280.000.

Hofmann, Werner: *See—*
Elsasser, Walter; and Hofmann, Werner, 4,203,085, Cl. 336-210.000.

Hogle, Kenneth A. Brush guide. 4,202,105, Cl. 33-483.000.

Holik, Dennis J.: *See—*
Mueller, Nancy J.; and Holik, Dennis J., 4,202,939, Cl. 435-96.000.

Holle, Robert F.; and Hansler, Richard L., to General Electric Company. Fused silica lamp envelope and seal. 4,202,999, Cl. 174-50.610.

Holmes, Lloyd H., to E-Systems, Inc. Shock suppressor valve test system and method. 4,202,209, Cl. 73-168.000.

Holz, Emil, to Hermann Finckh Maschinenfabrik. Sorting apparatus for sorting fiber suspensions. 4,202,761, Cl. 209-17.000.

Holzl, Robert A.; Pickett, Frederick P.; and Lawrence, James L., Jr., to U.T.I.-Spectrotherm Corporation. Mass spectrometer filter. 4,202,080, Cl. 29-25.180.

Homann, Reimer; and Raptopoulos, Prodromos, to Carl Schenck Aktiengesellschaft, Firma. Method and apparatus for regulating the brake torque of an eddy current brake. 4,203,046, Cl. 310-93.000.

Homma, Hiroshi: *See—*
Yamauchi, Yukio; and Homma, Hiroshi, 4,203,100, Cl. 340-630.000.

HON Industries Inc.: *See—*
Mosch, Duane L., 4,202,565, Cl. 280-756.000.

Honacker, Horst, to Envirotech Corporation. Collector electrodes for electrostatic precipitators. 4,202,675, Cl. 55-118.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, 4,202,584, Cl. 303-105.000.

Honeywell Inc.: *See—*
Hanas, Walter E.; and Sutko, Ronald R., 4,202,522, Cl. 249-102.000.

Hong, In S.; and Roelofs, Glenn E., to Minnesota Mining and Manufacturing Company. Conformable hand sanding pad. 4,202,139, Cl. 51-393.000.

Hood, Jackylene K.: *See—*
Cohn-Sfetcu, Sorin; Hood, Jackylene K.; and Doyle, Daniel J., 4,203,008, Cl. 370-50.000.

Hooker, James A.; Martin, Dean W.; and Williamson, Shellie O., to Caterpillar Tractor Co. Apparatus for rotating of track bushing by combined static and dynamic torque. 4,202,224, Cl. 81-3.00R.

Horibe, Yoshiyuki: *See—*
Nakatani, Mitsuo; Kuroki, Takashi; Syozi, Toshiaki; and Horibe, Yoshiyuki, 4,203,025, Cl. 219-216.000.

Horiuchi, Harumi, to Soundesign Corporation. Play/record switching circuit for a signal reproducing and recording apparatus. 4,203,139, Cl. 360-62.000.

Horn, Gerald H. Coil-carrying vehicle and method of using same. 4,202,509, Cl. 242-86.50R.

Horn, Robert E.: *See—*
Jacobs, Harold; and Horn, Robert E., 4,203,117, Cl. 343-701.000.

Hoshino, Toshisuke: *See—*
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Hovel, Harold J.: *See—*
Hodgson, Rodney T.; Hovel, Harold J.; and Woodall, Jerry M., 4,202,704, Cl. 136-89.0CL.

Howell, Bryan G.; and Ringrose, Gordon H., to Twinpak Ltd. Flexible wall pouch with label. 4,202,450, Cl. 206-459.000.

Howse, Paul T., Jr.; and Wilkie, Arnold E., to Monsanto Company. Polyamide spin-texture process. 4,202,854, Cl. 264-168.000.

Hoyt, Maurice A.: *See—*
Viravec, Joseph T.; and Hoyt, Maurice A., 4,202,369, Cl. 137-508.000.

Hren, John J.; Clark, David E.; Jenkins, David A.; Johnson, Paul F., III; and Degler, Howead E., Jr., to Concept, Inc. Bipolar electrosurgical knife. 4,202,337, Cl. 128-303.140.

Hubbard, Lonnie G.: *See—*
Coulter, Alton R.; Hubbard, Lonnie G.; Johnston, Vincent P.; and Rich, Michael H., 4,202,145, Cl. 52-169.100.

Hudson Products Corporation: *See—*
Berg, William F., 4,202,405, Cl. 165-110.000.

Hugger, Hermann: *See—*
Haussmann, August; Klaissle, Siegfried; Hugger, Hermann; Moser, Bernhard; Muller, Walter; Peetz, Wolfgang; Scheuch, Anton; and Schwarz, Gerhard, 4,202,557, Cl. 279-19.500.

Hughes, Richard J., to Research Technology Inc. Moisture stripping device for film cleaning apparatus. 4,202,073, Cl. 15-306.00A.

Hughes, Richard L.: *See—*
Reavis, Robert P., Jr.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Hughes, Richard L., 4,202,589, Cl. 339-97.00R.

Hughes, Theodore R.; and McCarty, Glenn L., to McCarty, Glen L. Web cutting and splicing apparatus. 4,202,720, Cl. 156-353.000.

Hughes Tool Company: *See—*
Gunkel, Walter A.; and Lybecker, Robert W., 4,202,490, Cl. 235-449.000.

Hukushima, Takashi: *See—*
Oda, Yoshio; Suhara, Manabu; Goto, Shoziro; Hukushima, Takashi; Miura, Koji; and Hamano, Toshikatsu, 4,202,743, Cl. 204-98.000.

Hukuzawa, Soiti; Togasi, Mituyuki; and Mori, Toshiro, to Hitachi, Ltd. Washing basket of washing machine capable of functioning as hydro-extractor. 4,202,187, Cl. 68-18.00F.

Human Gesellschaft mbH fur Biotopanalytic und Biotopschutz: *See—*
Haeckel, Rainer; and Heinz, Fritz, 4,202,938, Cl. 435-10.000.

Hunkar, Denes B.; and Ortlepp, Hans, to Hunkar Laboratories, Inc. Closed loop electro-fluidic control system. 4,202,247, Cl. 91-364.000.

Hunkar Laboratories, Inc.: *See—*
Hunkar, Denes B.; and Ortlepp, Hans, 4,202,247, Cl. 91-364.000.

Hunter, Don L.; Woods, William G.; Stone, James D.; and LeFevre, Cecil W., to United States Borax & Chemical Corporation. Nitrophenylhydrazine compounds. 4,202,839, Cl. 260-569.000.

Hutchinson, Francis G.: *See—*
Fildes, Francis J. T.; and Hutchinson, Francis G., 4,202,880, Cl. 424-78.000.

Hvizdos, Leonard J., to Air Products & Chemicals, Inc. Air separation liquefaction process. 4,202,678, Cl. 62-38.000.

Hydes, Alan F., to International Business Machines Corporation. Character display system. 4,203,102, Cl. 340-723.000.

Hypertherm, Incorporated: *See—*
Couch, Richard W., Jr.; and Bailey, William V., 4,203,022, Cl. 219-121.00P.

I. P. U. Limited: *See—*
Hennecke, Franz, 4,202,707, Cl. 148-9.00R.

Ibarra, Guillermo N. Device for receiving and disposing of urine from bedridden women. 4,202,057, Cl. 4-144.300.

Ichelson, David L. Jogger's brassiere. 4,202,343, Cl. 128-438.000.

Igarashi, Kohei: *See—*
Wakita, Nobuaki; and Igarashi, Kohei, 4,202,173, Cl. 60-290.000.

Igashira, Toshihiko: *See—*
Mori, Kouichi; Igashira, Toshihiko; and Yamaguchi, Shunzo, 4,202,312, Cl. 123-210.000.

Ikeda, Akihiko: *See—*
Abe, Tsutomu; Ikeda, Akihiko; and Sakurai, Tokio, 4,202,775, Cl. 210-287.000.

Ikeda, Ryo; Nogami, Yoichi; and Koizumi, Teruo, to Yokohama Rubber Co., Ltd., The. Run flat tire for motorcycles. 4,202,393, Cl. 152-330.0RF.

Ikuta, Kazuo: *See—*
Ohmura, Taizo; Yonezawa, Noboru; and Ikuta, Kazuo, 4,202,686, Cl. 75-0.50B.

Illinois Tool Works Inc.: *See—*
Smith, Dennis D., 4,203,086, Cl. 337-410.000.

Imamura, Yoshio. Ignition plug. 4,202,307, Cl. 123-169.00V.

Imataki, Mitsumasa; Ujita, Katsu; and Egashira, Tsutomu, to Mitsubishi Denki Kabushiki Kaisha. Protective device. 4,203,143, Cl. 361-120.000.

Imbeault, Fernand A. Sectional floating cover. 4,202,460, Cl. 220-218.000.

Imber, William I., to Metal Box Limited. Containers having locking structure. 4,202,462, Cl. 220-293.000.

Imperial Chemical Industries Limited: *See—*
Fildes, Francis J. T.; and Hutchinson, Francis G., 4,202,880, Cl. 424-78.000.
Henbest, Richard G. C.; and McGregor, Kenneth, 4,202,959, Cl. 528-254.000.
Jones, Peter J. V., 4,202,797, Cl. 252-413.000.
Laska, Friedrich, 4,202,502, Cl. 241-82.500.
Mee, Alec, 4,202,995, Cl. 568-860.000.

Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. 1-Polyhaloalkyl-2(1H)-quinazolinone derivatives. 4,202,895, Cl. 424-250.000.

Inbody, Melvin R., to Centerline Steering Safety Axle Corporation, The. Speedometer drive gear assembly for a centerline steering wheel assembly. 4,202,560, Cl. 280-96.300.

Incom International Inc.: *See—*
Williams, Gordon T., 4,202,082, Cl. 29-149.50B.

Industrial Insulations, Inc.: *See—*
Frahme, Carl E.; and Wygant, Gary E., 4,202,148, Cl. 52-592.000.

Industrias P. Freire, S.A.: *See—*
Freire Costas, Alfonso, 4,202,286, Cl. 112-286.000.

Inouye, Hiromasa; Otsuki, Tomonari; and Saito, Tsukasa, to Bunker Ramo Corporation. Electrical connector. 4,202,595, Cl. 339-174.000.

Inouye, Shigeharu: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.

Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR: *See—*
Pokhodnya, Igor K.; Shlepakov, Valery N.; and Suprun, Sergei A., 4,203,024, Cl. 219-146.100.

Institut Elementoorganicheskih Soedineny: *See—*
Nesmeyanov, Alexandr N.; Rogozhin, Sergei V.; Tolstoguzov, Vladimir B.; Misjurev, Vladimir I.; Ershova, Vera A.; and Braudo, Evgeny E., 4,202,908, Cl. 426-72.000.

Institut Francais du Petrole: *See—*
Rabilloud, Guy; Masson, Bernard; Giuliani, Pierre; and Sillion, Bernard, 4,202,960, Cl. 528-271.000.

Institut Pasteur: *See—*
Marcovich, Herbert S.; and Perrin, Remi D., 4,202,736, Cl. 203-10.000.

Institutul National Pentru Creatie Stiintifica Si Tehnica: *See—*
Teodorescu, Constantin; Ceauselu, Constantin; and Ardeleanu, Stefan, 4,202,272, Cl. 104-91.000.

Integrated Electronics Corporation: *See—*
Lee, James, 4,203,017, Cl. 200-339.000.

Intel Corporation: *See—*
Frohman-Bentchkowsky, Dov; Mar, Jerry; Perlegos, George; and Johnson, William S., 4,203,158, Cl. 365-185.000.
International Business Machines Corporation: *See—*
Beck, John W.; and McCown, Donald P., 4,203,137, Cl. 360-31.000.
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Sowter, Brian R., 4,203,054, Cl. 315-368.000.
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Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin L.; and Vock, Manfred H., 4,202,994, Cl. 568-824.000.
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Radtke, Schrade F., 4,202,523, Cl. 249-115.000.
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Lewin, Leonard, 4,203,116, Cl. 343-700.0MS.
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Romo, Edgar A., 4,202,218, Cl. 73-766.000.
Internationella Siporex AB: *See—*
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Interpace Corporation: *See—*
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Ionics, Incorporated: *See—*
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Weissman, Bernard, 4,202,101, Cl. 433-225.000.
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Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; and Yamamoto, Hisao, 4,202,895, Cl. 424-250.000.
Ito, Nobuyuki: *See—*
Kondo, Toshio; Harada, Susumu; Ito, Nobuyuki; and Kobayashi, Nobuyuki, 4,202,295, Cl. 123-32.0EH.
Ito, Yoshiharu: *See—*
Hayashi, Kiyoshige; Nakagawa, Masanao; Ozaki, Kazuo; and Ito, Yoshiharu, 4,202,868, Cl. 423-445.000.
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Suhara, Yasuji; Maruyama, Hiromi; Itoh, Sayuri; and Yokose, Kazuteru, 4,202,943, Cl. 435-280.000.
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Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,202,273, Cl. 104-298.000.
Iwasaki Tsushinki Kabushiki Kaisha: *See—*
Hatori, Nobuyoshi; and Morigami, Eiiji, 4,203,007, Cl. 179-6.00E.
J. M. Huber Corporation: *See—*
Wason, Satish K., 4,202,813, Cl. 260-37.00R.
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Bereiter, Rolf; and Jachimowski, Alexander, 4,202,280, Cl. 110-216.000.
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James, William L.; and Wonso, Alex P., to Fennell Corporation. Method for obtaining bright finish galvanizing coating on wire. 4,202,918, Cl. 427-224.000.
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Zeuner, Kenneth W.; and Jarman, Alonzo B., 4,202,250, Cl. 91-449.000.
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Jenkins, David A.: *See—*
Hren, John J.; Clark, David E.; Jenkins, David A.; Johnson, Paul F., III; and Degler, Howead E., Jr., 4,202,337, Cl. 128-303.140.
Jennekens, Hubertus F.: *See—*
Fontein, Freerk J.; and Jennekens, Hubertus F., 4,202,762, Cl. 210-3.000.
Jensen, Jens H.: *See—*
Madsen, Rud F.; Jensen, Jens H.; and Engvad, Jens C., 4,202,859, Cl. 422-245.000.
Jersey Nuclear Avco Isotopes, Inc.: *See—*
Andringa, Keimpe; and Pike, Charles T., 4,203,077, Cl. 331-94.50C.
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Voelz, Frederick L.; and Jewell, Roy G., 4,202,385, Cl. 141-59.000.
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Bradley, Timothy G.; and McAdam, Raymond L., 4,202,910, Cl. 426-423.000.
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Johnson & Johnson: *See—*
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Hren, John J.; Clark, David E.; Jenkins, David A.; Johnson, Paul F., III; and Degler, Howead E., Jr., 4,202,337, Cl. 128-303.140.
Johnson, Roy A., to Upjohn Company, The. Δ^2-Prostacyclin analogs. 4,202,972, Cl. 542-426.000.
Johnson, Russell W.: *See—*
O'Hara, Mark J.; Johnson, Russell W.; and Hilfman, Lee, 4,202,758, Cl. 208-143.000.

Johnson, William S.: *See—*
Frohman-Bentchkowsky, Dov; Mar, Jerry; Perlegos, George; and Johnson, William S., 4,203,158, Cl. 365-185.000.
Johnston, Samuel A., to Borg Instruments, Inc. Method of assembling a pressure sensor. 4,202,081, Cl. 29-25.410.
Johnston, Vincent P.: *See—*
Coulter, Alton R.; Hubbard, Lonnie G.; Johnston, Vincent P.; and Rich, Michael H., 4,202,145, Cl. 52-169.100.
Jones, Howard: *See—*
Shen, Tsung-Ying; and Jones, Howard, 4,202,903, Cl. 424-326.000.
Jones, James W. Radiopaque vessel markers. 4,202,349, Cl. 128-689.000.
Jones, Peter J. V., to Imperial Chemical Industries Limited. Recovering catalyst values in reaction liquors from oxidative production of carboxylic and polycarboxilic acids. 4,202,797, Cl. 252-413.000.
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Krude, Werner; and Jordan, Alfons, 4,202,184, Cl. 64-32.00R.
Joy Manufacturing Company: *See—*
Byrne, Joseph H., Jr., 4,202,208, Cl. 73-139.000.
David, Joseph S., 4,202,442, Cl. 198-820.000.
Joyce, John E. Apparatus for use in generating liquid concentration gradients hydrostatically. 4,202,370, Cl. 137-585.000.
Judd, Fred V. H. Exhaust gas splitter construction. 4,202,426, Cl. 181-257.000.
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Jung, Gottfried: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,202,555, Cl. 277-153.000.
Jung, Wilfried; Peehs, Martin; Rau, Peter; Krug, Wolfgang; and Stechemesser, Horst, to Kraftwerk Union Aktiengesellschaft; and Kernforschungsanlage Julich GmbH. Tight connection between fission gas discharge channels. 4,202,732, Cl. 176-37.000.
Juntgen, Harald: *See—*
Gappa, Gunther; Juntgen, Harald; and Klein, Jurgen, 4,202,770, Cl. 210-96.100.
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K-B Engineering Co.: *See—*
Kice, John E., 4,202,657, Cl. 418-208.000.
Kabel-und Metallwerke Gutehoffnungshuette AG: *See—*
Tuschy, Eckhard; Wischmeyer, Georg; and Steinkamp, Walter, 4,202,195, Cl. 72-78.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,940, Cl. 435-101.000.
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
Naito, Takeshi; and Kibayashi, Yasutada, 4,202,710, Cl. 148-16.500.
Ohno, Eiji; and Chikugo, Kazuo, 4,202,689, Cl. 75-211.000.
Kabushiki Kaisha Toyoto Chuo Kenkyusho: *See—*
Komatsu, Noboru; Arai, Tohru; and Fujita, Hinonori, 4,202,705, Cl. 148-6.110.
Kaijiri, Kouhei: *See—*
Yamamoto, Shinji; Kaijiri, Kouhei; and Oda, Denichi, 4,202,850, Cl. 264-108.000.
Kaimori, Michinobu: *See—*
Ohtake, Sadao; Hayashida, Shuji; Matsunaga, Hirotsugu; and Kaimori, Michinobu, 4,202,186, Cl. 68-3.00R.
Kaiser, Ado: *See—*
Fischer, Ulf; and Kaiser, Ado, 4,202,832, Cl. 260-455.00A.
Kajita, Isamu: *See—*
Fukuda, Tadaji; Kajita, Isamu; Misumi, Teruo; Kondo, Hideyo; and Kitajima, Nobuo, 4,202,937, Cl. 430-58.000.
Kali-Chemie Pharma GmbH.: *See—*
Eckert, Theodor; Kemper, Fritz H.; Wischniewski, Martin; and Hempel, Reinhard, 4,202,888, Cl. 424-182.000.
Kalmar, Irene. Rotary machine attachment. 4,202,094, Cl. 30-276.000.
Kamachi, Shinichi; and Gocho, Nagahiro, to Olympus Optical Co., Ltd. Automatic focussing apparatus for microscope. 4,203,031, Cl. 250-201.000.
Kamikubo, Fumio: *See—*
Fukuzuka, Toshio; Shimogori, Kazutoshi; Satoh, Hiroshi; Kamikubo, Fumio; and Hara, Tatsuo, 4,202,751, Cl. 204-197.000.
Kamvachirapitag, Bhinyo, to Exxon Research & Engineering Co. Automatic floating roof drain valve. 4,202,366, Cl. 137-172.000.
Kandutsch, Andrew A.: *See—*
Schroepfer, George J., Jr.; Parish, Edward J.; and Kandutsch, Andrew A., 4,202,891, Cl. 424-242.000.
Kanebo Limited: *See—*
Ohtake, Sadao; Hayashida, Shuji; Matsunaga, Hirotsugu; and Kaimori, Michinobu, 4,202,186, Cl. 68-3.00R.
Kankaanpaa, Matti, to Valmet Oy. Paper machine drying section and method for operating same. 4,202,113, Cl. 34-23.000.
Kano, Ichiro: *See—*
Suzki, Akiyoshi; Kano, Ichiro; Yoshinari, Hideki; Tozuka, Masao; Hiraga, Ryozo; Kato, Yuzo; and Ogino, Yasuo, 4,202,627, Cl. 356-71.000.
Kanzaka, Yoshihiro, to Yoshida-Kogyo K.K. Presser foot for concealed slide fasteners. 4,202,285, Cl. 112-235.000.
Karasiak, Wolf: *See—*
Gerking, Luder; Stahlmann, Dirk; Rothert, Horst; and Karasiak, Wolf, 4,202,855, Cl. 264-210.200.
Karl Fischer, Apparate-und Rohrleitungsbau: *See—*
Gerking, Luder; Stahlmann, Dirk; Rothert, Horst; and Karasiak, Wolf, 4,202,855, Cl. 264-210.200.
Karl, Horst: *See—*
Stemme, Otto; Schroder, Rolf; Lermann, Peter; and Karl, Horst, 4,202,616, Cl. 354-173.000.
Karmen, Arthur: *See—*
Wenz, Barry; Karmen, Arthur; and Feng, Chi Shun, 4,202,665, Cl. 23-230.00B.
Karr, Graydon L. Method for separating fluids by means of pressure differential. 4,202,364, Cl. 137-13.000.
Kasai, Nobuharu. Automatic water supply system for breeding or raising animals. 4,202,294, Cl. 119-78.000.
Kasama, Noriyuki: *See—*
Komiyama, Katsuhiko; Kasama, Noriyuki; Tsukamoto, Keiji; and Murakami, Tomomi, 4,202,166, Cl. 368-82.000.
Kashihara, Tomio: *See—*
Suzuki, Etsuji; Kashihara, Tomio; Hashimoto, Susumu; Watanabe, Ken; and Kodama, Tsuyoshi, 4,203,064, Cl. 318-640.000.
Kashio, Toshio, to Casio Computer Co., Ltd. Coin-delivering device. 4,202,362, Cl. 133-4.00A.
Kashiwakura, Koji: *See—*
Takahashi, Toshiyori; Ojima, Akihiro; Matsumoto, Teruo; and Kashiwakura, Koji, 4,203,038, Cl. 250-507.000.
Kason Hardware Corporation: *See—*
Berkowitz, Irving L.; and Bourgeois, John J., 4,202,573, Cl. 292-223.000.
Kasper, Robin L.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin L.; and Vock, Manfred H., 4,202,994, Cl. 568-824.000.
Katakura, Masayuki, to Tokyo Shibaura Electric Co., Ltd. Tristate changeover switching circuit. 4,203,043, Cl. 307-254.000.
Katayama, Shigenari: *See—*
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, 4,202,974, Cl. 544-251.000.
Kato, Nobukatsu; Morimoto, Yoshio; and Ozawa, Hiroshi, to Mitsui Toatsu Chemicals Incorporated. Coating resin composition. 4,202,805, Cl. 260-22.0CB.
Kato, Yuzo: *See—*
Suzki, Akiyoshi; Kano, Ichiro; Yoshinari, Hideki; Tozuka, Masao; Hiraga, Ryozo; Kato, Yuzo; and Ogino, Yasuo, 4,202,627, Cl. 356-71.000.
Kaufmann, Friedrich; Weisenburger, Siegfried; Koschorke, Herbert; Seiffert, Hartmut; Sienel, Dieter; and Weiss, Karl-Heinz, to Gesellschaft fur Kernforschung m.b.H. Method for noncontaminating solidification of radioactive waste materials. 4,202,792, Cl. 252-301.10W.
Kaufmann, Meinolph, to BBC Brown Boveri & Company Limited. Instrument having a liquid crystal display. 4,202,608, Cl. 350-339.00R.
Kawada, Tohsuke: *See—*
Asai, Koichi; Kawada, Tohsuke; Iwaki, Yoshiyuki; and Kuroda, Ryozo, 4,202,196, Cl. 72-137.000.
Kawai, Kiyohisa: *See—*
Marumoto, Ryuji; Furukawa, Yoshiyasu; and Kawai, Kiyohisa, 4,202,975, Cl. 544-255.000.
Kawasaki Kasei Chemicals Limited: *See—*
Matsuura, Ryo; Komatsu, Tatsuyoshi; Nomiyama, Yukio; and Usui, Kenji, 4,202,828, Cl. 260-396.00R.
Kawasaki, Takao: *See—*
Sato, Masaki; Kawasaki, Takao; and Nagane, Yasushi, 4,202,877, Cl. 424-43.000.
Kawashima, Kenichi; Arima, Yosiaki; Endo, Yoshihide; Suginuma, Atsushi; Uenishi, Akira; and Miyamoto, Seigo, to Hitachi, Ltd. Multi-tube evaporator for a cooler used in an automobile. 4,202,182, Cl. 62-511.000.
Kawasoko, Yoshiaki; Chiba, Iwane; Yamazaki, Noboru; Chiyonobu, Toshimi; and Shikuma, Masao, to Nippon Kokan Kabushiki Kaisha. Apparatus for annealing strip coils. 4,202,537, Cl. 266-252.000.
Kawata, Shoji: *See—*
Sakakibara, Naoji; and Kawata, Shoji, 4,202,424, Cl. 180-176.000.
Kawatsura, Yoshihiro; Shimizu, Katsuichi; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Digitally controlled image forming apparatus. 4,202,622, Cl. 355-14.00C.
Kazino, Sadayosi: *See—*
Yamaguchi, Takao; Aoyama, Kenjiro; Nishio, Yukihiro; and Kazino, Sadayosi, 4,203,084, Cl. 335-202.000.
Kehrle, Wolfgang. Apparatus for removing an exposed roll of film from a camera. 4,202,223, Cl. 81-3.00R.
Keiczek, Hubert, to Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft. Multi-hole injection nozzle. 4,202,500, Cl. 239-533.300.
Keith, Carl D.: *See—*
Early, Jack; Mooney, John J.; and Keith, Carl D., 4,202,301, Cl. 123-119.0EC.
Keller, John W., Jr., to Biotronik Mess- und Therapiegerate GmbH & Co. Programmable pacer with variable amplifier sensitivity and pacing rate. 4,202,342, Cl. 128-419.0PG.
Keller, Peter: *See—*
Furst, Andor; Keller, Peter; and Muller, Marcel, 4,202,823, Cl. 260-343.600.
Kellett, Martha; Pruess, David; and Scannell, James P., to Hoffman-La Roche Inc. 2-(3-Alanyl)clavam antibiotic. 4,202,819, Cl. 260-245.300.
Kelly, Robert C., to Upjohn Company, The. Enlarged-hetero-ring prostacyclin analogs. 4,202,971, Cl. 542-426.000.
Kelly Well Company, Inc.: *See—*
Wilderman, Charles L., 4,202,087, Cl. 24-263.00R.

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Eckert, Theodor; Kemper, Fritz H.; Wischniewski, Martin; and Hempel, Reinhard, 4,202,888, Cl. 424-182.000.

Kendall Company, The: *See—*
Villari, Frank K.; Ellmann, Norbert W.; and Annis, Larry D., 4,202,325, Cl. 128-24.00R.

Kennametal Inc.: *See—*
Erickson, Robert A., 4,202,650, Cl. 407-46.000.

Kenner, Jurgen: *See—*
Muller, Fritz; Kenner, Jurgen; and Schadlich, Wolfgang, 4,202,526, Cl. 251-51.000.

Kenrich Petrochemicals, Inc.: *See—*
Monte, Salvatore J.; and Sugerman, Gerald, 4,202,810, Cl. 260-31.20N.

Kent, Lenore S.; and Straub, John D. Decorative optical device. 4,202,604, Cl. 350-291.000.

Kerb, Ulrich: *See—*
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,202,841, Cl. 424-311.000.

Kern, Hans: *See—*
Heinzl, Joachim; Kern, Hans; and Giebler, Fritz, 4,202,267, Cl. 101-364.000.

Kernforschungsanlage Julich GmbH: *See—*
Jung, Wilfried; Peehs, Martin; Rau, Peter; Krug, Wolfgang; and Stechemesser, Horst, 4,202,732, Cl. 176-37.000.

Kerr, Ralph O., to Denka Chemical Corporation. Process for preparing anhydride from alkanes. 4,202,826, Cl. 260-346.750.

Keuffel & Esser Company: *See—*
Kooi, J. Peter E., 4,202,110, Cl. 33-299.000.

Key, Carroll L., Jr., to United States of America, Navy. Target-detection and location system. 4,203,163, Cl. 367-125.000.

Khasin, Kim M.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Khoury, Nick S., to Continental Group, Inc., The. Container anode. 4,202,750, Cl. 204-197.000.

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Naito, Takeshi; and Kibayashi, Yasutada, 4,202,710, Cl. 148-16.500.

Kice, John E., to K-B Engineering Co. Fluid pump. 4,202,657, Cl. 418-208.000.

Kienzle Apparate GmbH: *See—*
Schmidt, Helmut; Strobel, Walter; Treude, Gunter; and Blaser, Paul, 4,202,640, Cl. 400-491.200.

Kierstead, Richard W.: *See—*
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,202,978, Cl. 544-393.000.

Kieslich, Klaus: *See—*
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,202,841, Cl. 424-311.000.

Kim, Sunyong P. Process for preserving vegetables used to make kimchee. 4,202,912, Cl. 426-615.000.

Kimball International, Inc.: *See—*
Wilcox, Brian N.; and Robinson, John W., 4,202,236, Cl. 84-1.030.

Kimura, Morihiro: *See—*
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Kimura, Shoji: *See—*
Abe, Akira; Kimura, Shoji; and Kuwabara, Yuzo, 4,202,348, Cl. 128-680.000.

King, Arthur S. Combination electrolytic and electrostatic treater. 4,202,754, Cl. 204-272.000.

King, James A.: *See—*
Conroy, Edward H.; Gloster, Arthur; and King, James A., 4,202,667, Cl. 23-302.00T.

King, Olin B., to SCI Systems, Inc. Record drive system for rotary electrical stylus device. 4,203,120, Cl. 346-162.000.

King, Olin B., to SCI Systems, Inc. Rotary electrical printer and method using dot-by-dot synchronization. 4,203,121, Cl. 346-162.000.

King, Olin B., to SCI Systems, Inc. Electrical stylus adjustment means and method for rotary electrical printer. 4,203,122, Cl. 346-162.000.

King, William R. Brake control apparatus for railway cars. 4,202,583, Cl. 303-22.00R.

Kinoshita, Tomoo, to Nihon Repro Machine Kogyo Kabushiki Kaisha. Device for changing a wire netting in a filter device for synthetic resins. 4,202,659, Cl. 425-183.000.

Kioritz Corporation: *See—*
Nagashima, Akira, 4,202,096, Cl. 30-381.000.

Kirjavainen, Alvi, to Valmet Oy. Quick connect apparatus for headbox components in a paper making machine. 4,202,724, Cl. 162-272.000.

Kita, Donald A.; Gagne, John W.; and Fenton, Dennis M., to Pfizer Inc. Destruction by fermentation of 2-ketogluconate in the presence of 2-ketogulonate. 4,202,942, Cl. 435-262.000.

Kitajima, Nobuo: *See—*
Fukuda, Tadaji; Kajita, Isamu; Misumi, Teruo; Kondo, Hideyo; and Kitajima, Nobuo, 4,202,937, Cl. 430-58.000.

Kitchener, William R.; and Sama, Stephen L., to Artek Systems Corporation. Automatic object counter. 4,203,029, Cl. 235-92.0PC.

Kittag, Gerd, to Vockenhuber, Karl; and Hauser, Raimund. Motion picture camera with fade-in and fade-out effects during long-term exposure. 4,202,610, Cl. 352-91.00C.

Kitteridge, John M.; and Armstrong, Robert J., to Vickers Limited. Lithoplates of quaternary ammonium salt compositions. 4,202,699, Cl. 430-302.000.

Klaissle, Siegfried: *See—*
Haussmann, August; Klaissle, Siegfried; Hugger, Hermann; Moser, Bernhard; Muller, Walter; Peetz, Wolfgang; Scheuch, Anton; and Schwarz, Gerhard, 4,202,557, Cl. 279-19.500.
Peetz, Wolfgang; Klaissle, Siegfried; and Moser, Bernhard, 4,202,420, Cl. 175-395.000.

Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., to Philip A. Hunt Chemical Corp. Apparatus for liquid development of latent electrostatic images. 4,202,620, Cl. 355-10.000.

Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., to Philip A. Hunt Chemical Corp. Method for liquid development of latent electrostatic images. 4,202,913, Cl. 430-106.000.

Klein, Alfons; Knust, Ernst; Kron, Rudolf; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Chloro-diphenyl. 4,203,145, Cl. 361-317.000.

Klein, Jurgen: *See—*
Gappa, Gunther; Juntgen, Harald; and Klein, Jurgen, 4,202,770, Cl. 210-96.100.

Klimkovsky, Bronislav M.; Azikov, Boris A.; Zemtsov, Mikhail U.; Kusch, Sergei A.; and Nalivkin, Nikolai P. Thrower of transported materials. 4,202,439, Cl. 198-642.000.

Kline, Ralph L., to GTE Automatic Electric Laboratories Incorporated. Frame search control for digital transmission system. 4,203,003, Cl. 455-111.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Jakobs, Willy, 4,202,629, Cl. 356-335.000.

Klodwig, Utz: *See—*
Maechtle, Walter; and Klodwig, Utz, 4,202,632, Cl. 356-427.000.

Klund, William E.: *See—*
Isaak, Robert D.; Klund, William E.; Littrell, Woodrow H.; and Stephenson, Richard G., 4,203,164, Cl. 367-134.000.

Kmetz, Allan R., to BBC Brown Boveri & Company Limited. Procedure of bargraph display for measured quantities. 4,203,104, Cl. 340-754.000.

Knowlton, Ted M., to Gas Research Institute. Coal conversion apparatus. 4,202,673, Cl. 48-86.00R.

Knudsen, Leland F. Center pivot irrigation system with slinger-type sprinkler means. 4,202,596, Cl. 239-177.000.

Knust, Ernst: *See—*
Klein, Alfons; Knust, Ernst; Kron, Rudolf; and Wedemeyer, Karlfried, 4,203,145, Cl. 361-317.000.

Kobayashi, Motonobu: *See—*
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Kobayashi, Nobuyuki: *See—*
Kondo, Toshio; Harada, Susumu; Ito, Nobuyuki; and Kobayashi, Nobuyuki, 4,202,295, Cl. 123-32.0EH.

Kobayashi, Takumi: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; and Umetsu, Junji, 4,202,617, Cl. 354-268.000.

Kobe Steel, Ltd.: *See—*
Fukuzuka, Toshio; Shimogori, Kazutoshi; Satoh, Hiroshi; Kamikubo, Fumio; and Hara, Tatsuo, 4,202,751, Cl. 204-197.000.

Kocsis, Karoly; Fechtig, Bruno; and Bickel, Hans, to Ciba-Geigy Corporation. Derivatives of penam-3-carboxylic acid and a pharmaceutical composition containing the same. 4,202,900, Cl. 424-251.000.

Kodama, Tsuyoshi: *See—*
Suzuki, Etsuji; Kashihara, Tomio; Hashimoto, Susumu; Watanabe, Ken; and Kodama, Tsuyoshi, 4,203,064, Cl. 318-640.000.

Koehler Manufacturing Company: *See—*
Guimond, Roy A.; Reed, Nanci W.; and Gulliksen, John E., 4,202,936, Cl. 429-163.000.

Koei Chemical Co., Ltd.: *See—*
Yoshida, Norio; and Matuyama, Takesi, 4,202,806, Cl. 260-23.0XA.

Koff, Fred W.; Tunick, Allen A.; Sifniades, Stylianos; and Belden, Reed H., to Allied Chemical Corporation. Hydroxylamine purification via cation exchange. 4,202,765, Cl. 210-31.00R.

Koga, Tadashi: *See—*
Matsumoto, Seiji; Koga, Tadashi; Fukai, Kiyoshi; and Nakatani, Shinya, 4,202,871, Cl. 423-632.000.

Koike, Matsuhiro: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

Koito Manufacturing Company Limited: *See—*
Miyauchi, Shizuya, 4,202,603, Cl. 350-289.000.

Koizumi, Hideaki; and Moriya, Kazuo, to Hitachi, Ltd. Flameless atomizer. 4,202,628, Cl. 356-312.000.

Koizumi, Teruo: *See—*
Ikeda, Ryo; Nogami, Yoichi; and Koizumi, Teruo, 4,202,393, Cl. 152-330.0RF.

Kojima, Michio: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.

Kokta, Milan R.; Linares, Robert C.; and Di Giuseppe, Michael A., to Allied Chemical Corporation. Lanthanum indium gallium garnets. 4,202,930, Cl. 428-539.000.

Komatsu, Noboru; Arai, Tohru; and Fujita, Hinonori, to Kabushiki Kaisha Toyoto Chuo Kenkyusho. Treating bath, forming a mixed carbide layer of Va-Group elements on a ferrous alloy surface and resulting product. 4,202,705, Cl. 148-6.110.

Komatsu, Tatsuyoshi: *See—*
Matsuura, Ryo; Komatsu, Tatsuyoshi; Nomiyama, Yukio; and Usui, Kenji, 4,202,828, Cl. 260-396.00R.

Kombinat Gorniczo-Hutniczy Miedzihuta Miedzi "Legnica": *See—*
Demidowicz, Lech; and Sztuka, Mieczyslaw, 4,202,536, Cl. 266-135.000.

Komina, Lidia S.: *See—*
Smirnov, Boris A.; Busygin, Valery P.; Komina, Lidia S.; Mochalov, Vyacheslav N.; Shagalov, Lev V.; and Gruzdev, Evgeny A., 4,202,314, Cl. 128-218.00F.

Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for keeping aquatic animals alive over long period of time. 4,202,291, Cl. 119-3.000.

Komiyama, Katsuhiko; Kasama, Noriyuki; Tsukamoto, Keiji; and Murakami, Tomomi, to Citizen Watch Co., Ltd. Solid state watch module construction. 4,202,166, Cl. 368-82.000.

Komori, Fukutaro, to Komori Seisakusho Co., Ltd. Clutch disk for use in automobile. 4,202,432, Cl. 192-107.00M.

Komori Seisakusho Co., Ltd.: *See—*
Komori, Fukutaro, 4,202,432, Cl. 192-107.00M.

Kondo, Hideyo: *See—*
Fukuda, Tadaji; Kajita, Isamu; Misumi, Teruo; Kondo, Hideyo; and Kitajima, Nobuo, 4,202,937, Cl. 430-58.000.

Kondo, Toshio; Harada, Susumu; Ito, Nobuyuki; and Kobayashi, Nobuyuki, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply control system for internal combustion engines. 4,202,295, Cl. 123-32.0EH.

Konig, Dieter: *See—*
Anderl, Peter; Scheffels, Wilhelm; Steigerwald, Karl H.; Monch, Clauspeter; Koy, Johannes;; and Konig, Dieter, 4,203,021, Cl. 219-121.0EB.
Steigerwald, Karl-Heinz; Scheffels, Wilhelm; Anderl, Peter; Konig, Dieter; Hiller, Walther; and Rappold, Franz, 4,203,023, Cl. 219-121.0EB.

Konrad, Eugen: *See—*
Gross, Paul; Konrad, Eugen; and Mager, Herbert, 4,202,881, Cl. 424-70.000.

Kooi, J. Peter E., to Keuffel & Esser Company. Theodolite tangent screw system. 4,202,110, Cl. 33-299.000.

Kool, Bram: *See—*
Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, 4,202,613, Cl. 353-120.000.

Koppelmann, Gerhard: *See—*
Haunstetter, Franz; and Koppelmann, Gerhard, 4,203,032, Cl. 250-205.000.

Korb, Donald R.: *See—*
Becker, Ronald K.; and Korb, Donald R., 4,202,226, Cl. 82-12.000.

Korbanka, Helmut; and Scheidl, Franz, to Hoechst Aktiengesellschaft. Organotin halides. 4,202,830, Cl. 260-429.700.

Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. 6-Ethyl(or allyl)-8-methoxymethyl or methylmercaptomethylergolines and related compounds. 4,202,979, Cl. 546-67.000.

Kortum, William M. Method and apparatus for inducing immunological and resistant response in mammary glands. 4,202,329, Cl. 128-130.000.

Kos, Peter, to Dorr-Oliver Incorporated. Flow distributor for fluid bed biological reactor. 4,202,774, Cl. 210-274.000.

Kos, Steven: *See—*
Naguib, Hussein M.; Baraff, David R.; and Kos, Steven, 4,203,119, Cl. 346-76.0PH.

Kosche, Horst, to Ciba-Geigy Corporation. Heat-sensitive recording or copying material. 4,202,566, Cl. 282-27.500.

Koschorke, Herbert: *See—*
Kaufmann, Friedrich; Weisenburger, Siegfried; Koschorke, Herbert; Seiffert, Hartmut; Sienel, Dieter; and Weiss, Karl-Heinz, 4,202,792, Cl. 252-301.10W.

Koshiba, Masao: *See—*
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, 4,202,974, Cl. 544-251.000.

Koslowski, Gerhard, to W. Schlafhorst & Co. Thread braking device. 4,202,511, Cl. 242-150.00R.

Koster, Kari: *See—*
Reiner, Roland; Heide, Helmut; and Koster, Kari, 4,202,055, Cl. 3-1.910.

Koster, Sandra K.: *See—*
Wang, Chen-Shen; and Koster, Sandra K., 4,202,951, Cl. 525-416.000.

Kostka, Frank: *See—*
Anderson, David R.; Kostka, Frank; and Kostka, Frank J., 4,202,468, Cl. 221-93.000.

Kostka, Frank J.: *See—*
Anderson, David R.; Kostka, Frank; and Kostka, Frank J., 4,202,468, Cl. 221-93.000.

Kothe, Dieter: *See—*
Dangeleit, Siegfried; and Kothe, Dieter, 4,202,274, Cl. 104-165.000.

Kovac, Michael G.; Chleck, David J.; and Goodman, Philip, to Panametrics, Inc. Absolute humidity sensors and methods of manufacturing humidity sensors. 4,203,087, Cl. 338-35.000.

Kovacs, Donald J. Fishing rod holder with signal means. 4,202,125, Cl. 43-17.000.

Kovalenko, Jury A.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury. A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Koy, Johannes;: *See—*
Anderl, Peter; Scheffels, Wilhelm; Steigerwald, Karl H.; Monch, Clauspeter; Koy, Johannes;; and Konig, Dieter, 4,203,021, Cl. 219-121.0EB.

Kraft, Harold D.: *See—*
Kraft, Jack A.; and Kraft, Harold D., 4,202,634, Cl. 366-111.000.

Kraft, Jack A.; and Kraft, Harold D. Rack for vessels and means for agitating the vessels in the rack. 4,202,634, Cl. 366-111.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Jung, Wilfried; Peehs, Martin; Rau, Peter; Krug, Wolfgang; and Stechemesser, Horst, 4,202,732, Cl. 176-37.000.
Simon, Ulrich; Werner, Klaus-Dieter; and Pontani, Bernd, 4,202,731, Cl. 176-37.000.

Kranzle, Josef. Multiple nozzle head. 4,202,495, Cl. 239-1.000.

Kraus, Richard A., to Chrysler Corporation. Electronic current sensor and controller for automatic power antenna. 4,203,059, Cl. 318-446.000.

Krauss-Maffei Aktiengesellschaft: *See—*
Fink, Eugen; and Ostermeyer, Peter, 4,202,773, Cl. 210-256.000.

Krehbiel, Vivian D., to Kreonite Inc. Masking device for cropping photographs viewed on a view screen of a photographic printer. 4,202,624, Cl. 355-45.000.

Kreonite Inc.: *See—*
Krehbiel, Vivian D., 4,202,624, Cl. 355-45.000.

Kristapovich, Paul J.; and Schiltz, Ronald M., to Crepaco, Inc. Apparatus for handling a plurality of articles. 4,202,436, Cl. 198-472.000.

Krogh, Georg. Silo. 4,202,147, Cl. 52-245.000.

Krolopp, Otto C.; and Haluch, Leonard M., to Prater Industries, Inc. Centrifugal screening apparatus. 4,202,759, Cl. 209-234.000.

Kron, Rudolf: *See—*
Klein, Alfons; Knust, Ernst; Kron, Rudolf; and Wedemeyer, Karlfried, 4,203,145, Cl. 361-317.000.

Kroneisen, Armin, to Hartmann & Braun AG. Electrochemical measuring cell. 4,202,748, Cl. 204-195.00R.

Kropp, Donald E., to Ceramic Coating Company. Seal cartridge for agitator shaft of a chemical reactor. 4,202,553, Cl. 277-41.000.

Kroyer, Karl K. K. Method of preparing a sheet-formed product. 4,202,851, Cl. 264-113.000.

Krude, Werner; and Jordan, Alfons, to Uni-Cardan Aktiengesellschaft. Homokinetic universal joint assembly. 4,202,184, Cl. 64-32.00R.

Krug, Manfred: *See—*
Olschewski, Armin; Brandenstein, Manfred; Krug, Manfred; and Martin, Horst, 4,202,558, Cl. 280-11.280.

Krug, Wolfgang: *See—*
Jung, Wilfried; Peehs, Martin; Rau, Peter; Krug, Wolfgang; and Stechemesser, Horst, 4,202,732, Cl. 176-37.000.

Krupp-Koppers GmbH: *See—*
Durselen, Heinz; Onnebrink, Franz-Josef; and Schuffler, Arnulf, 4,202,735, Cl. 201-41.000.

Kruskopf, Hans G., to Mats Holersson Fridmark. Sequentially actuated flashing light apparatus. 4,203,091, Cl. 340-331.000.

Kuhn, Vincent R.: *See—*
Jacob, Jose T.; and Kuhn, Vincent R., 4,202,796, Cl. 252-389.00A.

Kula, Bernard, to Cooper-Weymouth, Peterson, Inc. Stock check and lead-in roll assembly. 4,202,478, Cl. 226-189.000.

Kulicke & Soffa Industries, Inc.: *See—*
Sade, Moshe E.; Soffa, Albert; Vilenski, Dan; and Wing, William, 4,202,482, Cl. 228-4.500.

Kulite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D.; and Mallon, Joseph R., 4,202,217, Cl. 73-727.000.

Kuraray Plastics, Co., Ltd.: *See—*
Mizutani, Tadashi; and Tachibana, Hiromichi, 4,202,718, Cl. 156-171.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Asano, Kiro; Saito, Tsuyoshi; Tanaka, Hiromitsu; and Enomoto, Satoru, 4,202,885, Cl. 424-95.000.
Sato, Masaki; Kawasaki, Takao; and Nagane, Yasushi, 4,202,877, Cl. 424-43.000.
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,202,969, Cl. 536-1.000.

Kuribayashi, Akio: *See—*
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Kuroda, Nobuyuki: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, 4,202,953, Cl. 526-125.000.

Kuroda, Ryozo: *See—*
Asai, Koichi; Kawada, Tohsuke; Iwaki, Yoshiyuki; and Kuroda, Ryozo, 4,202,196, Cl. 72-137.000.

Kuroki, Takashi: *See—*
Nakatani, Mitsuo; Kuroki, Takashi; Syozi, Toshiaki; and Horibe, Yoshiyuki, 4,203,025, Cl. 219-216.000.

Kurt Orban Company, Inc.: *See—*
Meyer, Charles R., 4,202,215, Cl. 73-599.000.

Kurtz, Anthony D.; and Mallon, Joseph R., to Kulite Semiconductor Products, Inc. Semiconductor transducers employing flat bondable surfaces with buried contact areas. 4,202,217, Cl. 73-727.000.

Kusch, Sergei A.: *See—*
Klimkovsky, Bronislav M.; Azikov, Boris A.; Zemtsov, Mikhail U.; Kusch, Sergei A.; and Nalivkin, Nikolai P., 4,202,439, Cl. 198-642.000.

Kushigian, Anthony. Grinding wheel dresser. 4,202,317, Cl. 125-11.00H.

Kusters, Eduard: *See—*
Gruber, Heinz, 4,202,188, Cl. 68-205.00R.

Kuus, Gijsbert, to U.S. Philips Corporation. Electric lamp with hydrogen getter and hydrogen getter. 4,203,049, Cl. 313-174.000.

Kuwabara, Yuzo: *See—*
Abe, Akira; Kimura, Shoji; and Kuwabara, Yuzo, 4,202,348, Cl. 128-680.000.

Kuznetsov, Albert P.: *See—*
Golyanovsky, Anton V.; and Kuznetsov, Albert P., 4,202,156, Cl. 56-13.600.

Kuznetsov, German N.: *See—*
Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,202,174, Cl. 60-413.000.

Kuznetsov, Sergei L.: *See—*
Vydrin, Vladimir N.; Dukmasov, Vladimir G.; Davlyatshin, Garifulla; and Kuznetsov, Sergei L., 4,202,197, Cl. 72-245.000.

Kvamsdal, Rolf, to Moss Rosenberg Verft A/S. Floating plant for offshore liquefaction, temporary storage and loading of LNG. 4,202,648, Cl. 405-210.000.

Kyoden, Hiroshi: *See—*
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Kyorin Pharmaceutical Co., Ltd.: *See—*
Irikura, Tsutomu; and Suzue, Seigo, 4,202,977, Cl. 544-362.000.

Kyowa Hakko Kogyo, Co. Ltd.: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,202,941, Cl. 435-190.000.

Lamb, Jeffrey W. Fuel conservation controller for heating and refrigeration apparatus. 4,202,181, Cl. 62-141.000.

Lammers, Gerald B.; and Ritchie, Robert T., to International Business Machines Corporation. Apparatus for handling flexible sheet material of different sizes. 4,202,542, Cl. 271-276.000.

Lampson, Butler W.; Sproull, Robert F.; Ornstein, Severo M.; and Leung, James Y., to Xerox Corporation. Electronic image processing system. 4,203,154, Cl. 364-200.000.

Lamy, Jacques E. Buoyant base for marine platforms. 4,202,647, Cl. 405-203.000.

Landau, Michael B.: *See—*
Reiser, Carl A.; and Landau, Michael B., 4,202,933, Cl. 429-13.000.

Landyshev, Vladimir V.: *See—*
Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,202,174, Cl. 60-413.000.

Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, to Mirowski, Mieczyslaw. Method and apparatus for monitoring heart activity, detecting abnormalities, and cardioverting a malfunctioning heart. 4,202,340, Cl. 128-419.00D.

Larking, Ingrid: *See—*
Moretto, Hans-Heinrich; de Montigny, Armand; Steinberger, Helmut; Sattlegger, Hans; and Larking, Ingrid, 4,202,807, Cl. 260-29.1SB.

Larsen, Steven T.: *See—*
Guckel, Henry; and Larsen, Steven T., 4,203,128, Cl. 357-60.000.

Larson, Keith J. Saw guide device. 4,202,233, Cl. 83-745.000.

Laska, Friedrich, to Imperial Chemical Industries Limited. Cutting tool assembly for meat mincer. 4,202,502, Cl. 241-82.500.

Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D. Apparatus for electroslag casting of heavy ingots. 4,202,401, Cl. 164-252.000.

Lauton, Alain; Putzar, Roland; Berendt, Hans-Ulrich; and Scherer, Gustaaf, to Ciba-Geigy Corporation. Sulphonated condensation products. 4,202,838, Cl. 260-505.00C.

Lawler, Cary R., to A-Team, Inc., The. Portable storage modules for floppy disks and the like. 4,202,585, Cl. 312-15.000.

Lawrence, James L., Jr.: *See—*
Holzl, Robert A.; Pickett, Frederick P.; and Lawrence, James L., Jr., 4,202,080, Cl. 29-25.180.

Lawson, William J., to Magnuson Engineers, Inc. Method and apparatus for trimming onions or like produce. 4,202,261, Cl. 99-636.000.

Lazaridis, Lazaros J.; Miskolczy, Gabor; and Shefsiek, Paul K., to Thermo Electron Corporation. Jet implement radiation furnace, method and apparatus. 4,202,661, Cl. 432-8.000.

Leav-Er-Rite Mfg. Co. Incorporated: *See—*
Coulter, Alton R.; Hubbard, Lonnie G.; Johnston, Vincent P.; and Rich, Michael H., 4,202,145, Cl. 52-169.100.

Le Can, Claude J. P. F.; and van den Beemt, Johannes A. C., to U.S. Philips Corporation. Integrated circuit. 4,203,042, Cl. 307-241.000.

Lee, Cedric; and Burrage, Martin E., to Polymer Investments N.V. Preparation of water-dilutable polymeric compositions and cathodic coating of metallic substrates. 4,202,746, Cl. 204-181.00C.

Lee, Donald E. Ground fault system and method of detection. 4,203,142, Cl. 361-42.000.

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LeFevre, Cecil W.: *See—*
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Lehmann, Willi, to Westinghouse Electric Corp. Calcium yttrium borate phosphor composition. 4,202,794, Cl. 252-301.40R.

Lehureau, Jean-Claude: *See—*
Bricot, Claude; and Lehureau, Jean-Claude, 4,203,133, Cl. 358-128.500.

Lehwald, George F.: *See—*
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Leinhardt, Franklyn J. Phenolic foam materials and method of making same. 4,202,945, Cl. 521-121.000.

Lenk, Erich: *See—*
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Lenoir, John: *See—*
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Leonhardt, Robert F., to Atwood Vacuum Machine Company. Self-compensating rivet. 4,202,243, Cl. 85-37.000.

Lermann, Peter: *See—*
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Lerner, Bernard; and Liebhart, Dana J., to Automated Packaging Systems, Inc. Method and apparatus for loading containers horizontally. 4,202,153, Cl. 53-459.000.

Leskiw, Alexander; and Graubert, Seth, to S & S Corrugated Paper Machinery Co., Inc. Suction feed table. 4,202,541, Cl. 271-132.000.

Lesley, Bascum G., to Milliken Research Corporation. Warp knitting machine. 4,202,185, Cl. 66-203.000.

Lester, Frank R.; and Bullard, James, to Nuvite Chemical Compounds Corporation. Portable scrubbing tool. 4,202,068, Cl. 15-28.000.

Lestradet, Maurice C. J. Liquid distributing apparatus and in particular a fertilizer or insecticide sprayer. 4,202,498, Cl. 239-156.000.

Leung, James Y.: *See—*
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Collen, Desire J., 4,202,872, Cl. 424-1.000.

Levy, Abraham. Motor vehicles and sunshields. 4,202,396, Cl. 160-107.000.

Lewin, Leonard, to International Standard Electric Corporation. Microstrip antenna radiators with series impedance matching means. 4,203,116, Cl. 343-700.0MS.

Lewis, Thomas R.; and Michne, William F., to Sterling Drug Inc. 11-(Lower-alkoxy- and lower-alkylthio-3-oxo-lower-alkyl)-hexahydro-2,6-m ethano-benzazocines. 4,202,983, Cl. 546-97.000.

Lewis, Thomas R.; and Michne, William F., to Sterling Drug Inc. β-(Hexahydro-2,6-methano-3-benzazocin-11-yl)propionic acids, esters and amides. 4,202,984, Cl. 546-97.000.

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Schmitt, Alfons; Schafer, Klaus; and Utz, Diether, 4,203,132, Cl. 358-101.000.

Liebhart, Dana J.: *See—*
Lerner, Bernard; and Liebhart, Dana J., 4,202,153, Cl. 53-459.000.

Liedtke, Kurt: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,202,151, Cl. 53-378.000.

Lienhard, Paul; and Iqbal, Abul, to Ciba-Geigy Corporation. Process for the mass coloration of polyesters. 4,202,814, Cl. 260-40.00P.

Lin, Feng. Dispenser for insecticide or the like. 4,202,472, Cl. 222-187.000.

Lin, Tsan H.: *See—*
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Kokta, Milan R.; Linares, Robert C.; and Di Giuseppe, Michael A., 4,202,930, Cl. 428-539.000.

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Schulte, Heinrich, 4,202,263, Cl. 100-95.000.

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Hakansson, Bjarne C., 4,202,237, Cl. 84-1.240.

Lindstrom, Jon M., to Salk Institute for Biological Studies, The. Receptor for biochemical assay system. 4,202,875, Cl. 424-1.000.

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Linn, S. Stephen, to Molins Machine Company, Inc. Single facer drive. 4,202,719, Cl. 156-205.000.

Linscott, Phillip S., Jr., to Sundstrand Corporation. Double-walled rotor for an oil-cooled electrical machine. 4,203,044, Cl. 310-61.000.

Lisitsin, Vladimir A.: *See—*
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Littmann, Martin F.; and Obman, Allan R., to Armco, Incl. Process for producing oriented silicon iron from strand cast slabs. 4,202,711, Cl. 148-111.000.

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Ljung, Bo Hans G., to Singer Company, The. Splat-cooled instrument flexure and method to fabricate same. 4,202,089, Cl. 29-527.600.

Lob, James P., to Deere & Company. Mounting for a stationary pad of a disc brake structure. 4,202,429, Cl. 188-71.100.

Loeb, Paul; and Magasiny, Irving P., to RCA Corporation. Movement detecting apparatus and method. 4,203,063, Cl. 318-603.000.

Loeffler, Cecil W. X-ray grid orthometer. 4,202,355, Cl. 128-774.000.

Long, Alvin L. Air vent auto's. 4,202,254, Cl. 98-2.120.

Loos, John F.; and Petty, James C., to UOP Inc. Modular support assembly for tubes. 4,202,520, Cl. 248-68.0CB.

Looze, Yvan-Roger-Jean: *See—*
Schnek, Arthur G.; Looze, Yvan-Roger-Jean; and Deconinck, Marc M., 4,202,884, Cl. 424-94.000.

Lorenz, Donald H.: *See—*
Gruber, Bruce A.; and Lorenz, Donald H., 4,202,834, Cl. 260-465.00D.
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Loschilin, Evgeny D.: *See—*
Galperin, Alexandr L.; Serebryannikov, Albert S.; Onikov, Eduard A.; Zabotin, Alexandr A.; Loschilin, Evgeny D.; and Santucci, Nicola, 4,202,383, Cl. 139-436.000.

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Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, 4,202,906, Cl. 426-3.000.

Lovelace, David F.: *See—*
Thompson, George H. B.; and Lovelace, David F., 4,203,079, Cl. 331-94.50H.

Lovercheck, Lawrence R., to Zentec Corporation. Microcomputer terminal system having a list mode operation for the video refresh circuit. 4,203,107, Cl. 340-799.000.

Lowe, James N., to Pitun-Unicrete Limited. Casting of articles from compositions containing calcined gypsum and Portland cement. 4,202,857, Cl. 264-333.000.

Lucas Industries Limited: *See—*
Mowbray, Dorian F., 4,202,303, Cl. 123-139.0AQ.
Skinner, Barrie C., 4,202,308, Cl. 123-179.00G.

Lucas, Stephen J. Decorative drumstick system with different appearing inserts. 4,202,241, Cl. 84-422.00S.

Lugovnev, Fedor T.: *See—*
Gimelfarb, Natan M.; Lugovnev, Fedor T.; and Misjura, Nikolai E., 4,202,664, Cl. 8-94.150.

Luke, Willy; and Gabriel, Gunter, to Bergwerksverband GmbH; and Didier Engineering GmbH. Process and apparatus for preheating coal intended for use in coking installations. 4,202,733, Cl. 201-1.000.

Lunsford, Delbert R.: *See—*
Johnson, Jay P.; Parrack, Alvin L.; and Lunsford, Delbert R., 4,203,161, Cl. 367-40.000.

Lurie, David. Process for the desulfurization of flue gases. 4,202,869, Cl. 423-563.000.

Luther, Hans W.; and Marwitz, Hartmut, to Rheinmetall GmbH. Stub case obturator. 4,202,270, Cl. 102-43.00R.

Lutrat, Jacques. Single cycle rotary engine with constant fuel feeding. 4,202,315, Cl. 123-249.000.

Lutz, Andre: *See—*
Heymes, Rene; and Lutz, Andre, 4,202,893, Cl. 424-246.000.

Lybecker, Robert W.: *See—*
Gunkel, Walter A.; and Lybecker, Robert W., 4,202,490, Cl. 235-449.000.

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Aoki, Tadashi; MacAfee, Jerry D.; and Donnelly, James F., 4,202,365, Cl. 137-72.000.

Madsen, Rud F.; Jensen, Jens H.; and Engvad, Jens C., to Aktieselskabet de Danske Sukkerfabrikker. Crystallizer. 4,202,859, Cl. 422-245.000.

Maechtle, Walter; and Klodwig, Utz, to BASF Aktiengesellschaft. Process and apparatus for optical recording of motions and states in ultracentrifuges in multi-cell operation. 4,202,632, Cl. 356-427.000.

Magasiny, Irving P.: *See—*
Loeb, Paul; and Magasiny, Irving P., 4,203,063, Cl. 318-603.000.

Mager, Herbert: *See—*
Gross, Paul; Konrad, Eugen; and Mager, Herbert, 4,202,881, Cl. 424-70.000.

Magnetic Controls Company: *See—*
Buck, Josef J., 4,203,066, Cl. 324-51.000.

Magnuson Engineers, Inc.: *See—*
Lawson, William J., 4,202,261, Cl. 99-636.000.

Mahler, Gert: *See—*
Viertel, Lothar; Mahler, Gert; and Nowak, Manfred, 4,203,149, Cl. 362-144.000.

Maier, Karl: *See—*
Jurisch, Wilhelm; Greune, Christian; and Maier, Karl, 4,202,171, Cl. 60-39.28R.

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Malcolm, Alexander R. Deferred action dry cell battery. 4,202,935, Cl. 429-48.000.

Malinak, Frank J., to Western States Machine Company, The. Depither. 4,202,078, Cl. 19-26.000.

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Farley, Max F.; and Dutton, Edmund L., 4,203,096, Cl. 340-538.000.

Mallon, Joseph R.: *See—*
Kurtz, Anthony D.; and Mallon, Joseph R., 4,202,217, Cl. 73-727.000.

Maloof, Ralph P. Propeller fan blading and hub therefor. 4,202,655, Cl. 416-237.000.

Manevy, Georges: *See—*
Bourgeois, Michel; Manevy, Georges; and Roux, Jean-Pierre, 4,202,861, Cl. 423-19.000.

Mang, Josef; and Waters, Robert W., to Emerson Electric Co. Automatic reciprocating, indexing and picking assembly apparatus. 4,202,435, Cl. 198-339.000.

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Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., 4,203,078, Cl. 331-94.5PE.

Mann, Alan W.: *See—*
Hill, Robin E. T.; Mann, Alan W.; McDonald, Ean L.; and Perdrix, John L., 4,202,128, Cl. 43-43.140.

Manning, John J., to RMR Systems, Inc. Pool alarm device. 4,203,097, Cl. 340-566.000.

Mar, Jerry: *See—*
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Marcovich, Herbert S.; and Perrin, Remi D., to Institut Pasteur. Process and apparatus for the thorough purification of water and the highly purified water obtained thereby. 4,202,736, Cl. 203-10.000.

Marcy Tool Company: *See—*
Marcyan, Stanley T., 4,202,062, Cl. 5-66.000.

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Marek, Larry L. Noise making lure. 4,202,127, Cl. 43-42.310.

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Marlow, Alfred S. Wear resistant self lubricating centrifugal pump. 4,202,654, Cl. 415-113.000.

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Hooker, James A.; Martin, Dean W.; and Williamson, Shellie O., 4,202,224, Cl. 81-3.00R.

Martin, Harry M., Sr. Crab peeler. 4,202,077, Cl. 17-73.000.

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Martin, John R. Web tensioning apparatus for a hostile fluid bath. 4,202,476, Cl. 226-119.000.

Martner, Glen R.: *See—*
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Marumoto, Ryuji; Furukawa, Yoshiyasu; and Kawai, Kiyohisa, to Takeda Chemical Industries, Ltd. Isoxazolo[3,4-d]pyrimidines. 4,202,975, Cl. 544-255.000.

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Suhara, Yasuji; Maruyama, Hiromi; Itoh, Sayuri; and Yokose, Kazuteru, 4,202,943, Cl. 435-280.000.

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Hayashi, Kiyoshige; Nakagawa, Masanao; Ozaki, Kazuo; and Ito, Yoshiharu, 4,202,868, Cl. 423-445.000.

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Morrison, Howard J., 4,202,134, Cl. 46-92.000.

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Luther, Hans W.; and Marwitz, Hartmut, 4,202,270, Cl. 102-43.00R.

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Keiczek, Hubert, 4,202,500, Cl. 239-533.300.

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Masson, Bernard: *See—*
Rabilloud, Guy; Masson, Bernard; Giuliani, Pierre; and Sillion, Bernard, 4,202,960, Cl. 528-271.000.

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Asai, Koichi; Kawada, Tohsuke; Iwaki, Yoshiyuki; and Kuroda, Ryozo, 4,202,196, Cl. 72-137.000.

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Nakatani, Mitsuo; Kuroki, Takashi; Syozi, Toshiaki; and Horibe, Yoshiyuki, 4,203,025, Cl. 219-216.000.

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Meyer, Charles R., 4,202,215, Cl. 73-599.000.

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Klimkovsky, Bronislav M.; Azikov, Boris A.; Zemtsov, Mikhail U.; Kusch, Sergei A.; and Nalivkin, Nikolai P., 4,202,439, Cl. 198-642.000.

Kushigian, Anthony. Grinding wheel dresser. 4,202,317, Cl. 125-11.00H.

Kusters, Eduard: *See—*
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Abe, Akira; Kimura, Shoji; and Kuwabara, Yuzo, 4,202,348, Cl. 128-680.000.

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Golyanovsky, Anton V.; and Kuznetsov, Albert P., 4,202,156, Cl. 56-13.600.

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Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,202,174, Cl. 60-413.000.

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Vydrin, Vladimir N.; Dukmasov, Vladimir G.; Davlyatshin, Garifulla; and Kuznetsov, Sergei L., 4,202,197, Cl. 72-245.000.

Kvamsdal, Rolf, to Moss Rosenberg Verft A/S. Floating plant for offshore liquefaction, temporary storage and loading of LNG. 4,202,648, Cl. 405-210.000.

Kyoden, Hiroshi: *See—*
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Irikura, Tsutomu; and Suzue, Seigo, 4,202,977, Cl. 544-362.000.

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Lamb, Jeffrey W. Fuel conservation controller for heating and refrigeration apparatus. 4,202,181, Cl. 62-141.000.

Lammers, Gerald B.; and Ritchie, Robert T., to International Business Machines Corporation. Apparatus for handling flexible sheet material of different sizes. 4,202,542, Cl. 271-276.000.

Lampson, Butler W.; Sproull, Robert F.; Ornstein, Severo M.; and Leung, James Y., to Xerox Corporation. Electronic image processing system. 4,203,154, Cl. 364-200.000.

Lamy, Jacques E. Buoyant base for marine platforms. 4,202,647, Cl. 405-203.000.

Landau, Michael B.: *See—*
Reiser, Carl A.; and Landau, Michael B., 4,202,933, Cl. 429-13.000.

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Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,202,174, Cl. 60-413.000.

Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, to Mirowski, Mieczyslaw. Method and apparatus for monitoring heart activity, detecting abnormalities, and cardioverting a malfunctioning heart. 4,202,340, Cl. 128-419.00D.

Larking, Ingrid: *See—*
Moretto, Hans-Heinrich; de Montigny, Armand; Steinberger, Helmut; Sattlegger, Hans; and Larking, Ingrid, 4,202,807, Cl. 260-29.1SB.

Larsen, Steven T.: *See—*
Guckel, Henry; and Larsen, Steven T., 4,203,128, Cl. 357-60.000.

Larson, Keith J. Saw guide device. 4,202,233, Cl. 83-745.000.

Laska, Friedrich, to Imperial Chemical Industries Limited. Cutting tool assembly for meat mincer. 4,202,502, Cl. 241-82.500.

Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D. Apparatus for electroslag casting of heavy ingots. 4,202,401, Cl. 164-252.000.

Lauton, Alain; Putzar, Roland; Berendt, Hans-Ulrich; and Scherer, Gustaaf, to Ciba-Geigy Corporation. Sulphonated condensation products. 4,202,838, Cl. 260-505.00C.

Lawler, Cary R., to A-Team, Inc., The. Portable storage modules for floppy disks and the like. 4,202,585, Cl. 312-15.000.

Lawrence, James L., Jr.: *See—*
Holzl, Robert A.; Pickett, Frederick P.; and Lawrence, James L., Jr., 4,202,080, Cl. 29-25.180.

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Lazaridis, Lazaros J.; Miskolczy, Gabor; and Shefsiek, Paul K., to Thermo Electron Corporation. Jet implement radiation furnace, method and apparatus. 4,202,661, Cl. 432-8.000.

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Coulter, Alton R.; Hubbard, Lonnie G.; Johnston, Vincent P.; and Rich, Michael H., 4,202,145, Cl. 52-169.100.

Le Can, Claude J. P. F.; and van den Beemt, Johannes A. C., to U.S. Philips Corporation. Integrated circuit. 4,203,042, Cl. 307-241.000.

Lee, Cedric; and Burrage, Martin E., to Polymer Investments N.V. Preparation of water-dilutable polymeric compositions and cathodic coating of metallic substrates. 4,202,746, Cl. 204-181.00C.

Lee, Donald E. Ground fault system and method of detection. 4,203,142, Cl. 361-42.000.

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LeFevre, Cecil W.: *See—*
Hunter, Don L.; Woods, William G.; Stone, James D.; and LeFevre, Cecil W., 4,202,839, Cl. 260-569.000.

Lehmann, Willi, to Westinghouse Electric Corp. Calcium yttrium borate phosphor composition. 4,202,794, Cl. 252-301.40R.

Lehureau, Jean-Claude: *See—*
Bricot, Claude; and Lehureau, Jean-Claude, 4,203,133, Cl. 358-128.500.

Lehwald, George F.: *See—*
Messineo, Joseph R.; and Lehwald, George F., 4,202,269, Cl. 102-8.000.

Leinhardt, Franklyn J. Phenolic foam materials and method of making same. 4,202,945, Cl. 521-121.000.

Lenk, Erich: *See—*
Turk, Herbert; Schiminski, Herbert; and Lenk, Erich, 4,202,163, Cl. 57-58.950.

Lenoir, John: *See—*
Jan, Gerald; Hagen, Remon; and Lenoir, John, 4,202,698, Cl. 430-418.000.

Leonhardt, Robert F., to Atwood Vacuum Machine Company. Self-compensating rivet. 4,202,243, Cl. 85-37.000.

Lermann, Peter: *See—*
Stemme, Otto; Schroder, Rolf; Lermann, Peter; and Karl, Horst, 4,202,616, Cl. 354-173.000.

Lerner, Bernard; and Liebhart, Dana J., to Automated Packaging Systems, Inc. Method and apparatus for loading containers horizontally. 4,202,153, Cl. 53-459.000.

Leskiw, Alexander; and Graubert, Seth, to S & S Corrugated Paper Machinery Co., Inc. Suction feed table. 4,202,541, Cl. 271-132.000.

Lesley, Bascum G., to Milliken Research Corporation. Warp knitting machine. 4,202,185, Cl. 66-203.000.

Lester, Frank R.; and Bullard, James, to Nuvite Chemical Compounds Corporation. Portable scrubbing tool. 4,202,068, Cl. 15-28.000.

Lestradet, Maurice C. J. Liquid distributing apparatus and in particular a fertilizer or insecticide sprayer. 4,202,498, Cl. 239-156.000.

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Lampson, Butler W.; Sproull, Robert F.; Ornstein, Severo M.; and Leung, James Y., 4,203,154, Cl. 364-200.000.

Leuven Research & Development V.Z.W.: *See—*
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Lerner, Bernard; and Liebhart, Dana J., 4,202,153, Cl. 53-459.000.

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Focke, Heinz; and Liedtke, Kurt, 4,202,151, Cl. 53-378.000.

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Lin, Tsan H.: *See—*
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Kokta, Milan R.; Linares, Robert C.; and Di Giuseppe, Michael A., 4,202,930, Cl. 428-539.000.

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Schulte, Heinrich, 4,202,263, Cl. 100-95.000.

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Lindstrom, Jon M., to Salk Institute for Biological Studies, The. Receptor for biochemical assay system. 4,202,875, Cl. 424-1.000.

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Isaak, Robert D.; Klund, William E.; Littrell, Woodrow H.; and Stephenson, Richard G., 4,203,164, Cl. 367-134.000.

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Loos, John F.; and Petty, James C., to UOP Inc. Modular support assembly for tubes. 4,202,520, Cl. 248-68.0CB.

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Schnek, Arthur G.; Looze, Yvan-Roger-Jean; and Deconinck, Marc M., 4,202,884, Cl. 424-94.000.

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Gruber, Bruce A.; and Lorenz, Donald H., 4,202,834, Cl. 260-465.00D.
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Galperin, Alexandr L.; Serebryannikov, Albert S.; Onikov, Eduard A.; Zabotin, Alexandr A.; Loschilin, Evgeny D.; and Santucci, Nicola, 4,202,383, Cl. 139-436.000.

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Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, 4,202,906, Cl. 426-3.000.

Lovelace, David F.: *See—*
Thompson, George H. B.; and Lovelace, David F., 4,203,079, Cl. 331-94.50H.

Lovercheck, Lawrence R., to Zentec Corporation. Microcomputer terminal system having a list mode operation for the video refresh circuit. 4,203,107, Cl. 340-799.000.

Lowe, James N., to Pitun-Unicrete Limited. Casting of articles from compositions containing calcined gypsum and Portland cement. 4,202,857, Cl. 264-333.000.

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Mowbray, Dorian F., 4,202,303, Cl. 123-139.0AQ.
Skinner, Barrie C., 4,202,308, Cl. 123-179.00G.

Lucas, Stephen J. Decorative drumstick system with different appearing inserts. 4,202,241, Cl. 84-422.00S.

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Luther, Hans W.; and Marwitz, Hartmut, to Rheinmetall GmbH. Stub case obturator. 4,202,270, Cl. 102-43.00R.

Lutrat, Jacques. Single cycle rotary engine with constant fuel feeding. 4,202,315, Cl. 123-249.000.

Lutz, Andre: *See—*
Heymes, Rene; and Lutz, Andre, 4,202,893, Cl. 424-246.000.

Lybecker, Robert W.: *See—*
Gunkel, Walter A.; and Lybecker, Robert W., 4,202,490, Cl. 235-449.000.

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Aoki, Tadashi; MacAfee, Jerry D.; and Donnelly, James F., 4,202,365, Cl. 137-72.000.

Madsen, Rud F.; Jensen, Jens H.; and Engvad, Jens C., to Aktieselskabet de Danske Sukkerfabrikker. Crystallizer. 4,202,859, Cl. 422-245.000.

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Gross, Paul; Konrad, Eugen; and Mager, Herbert, 4,202,881, Cl. 424-70.000.

Magnetic Controls Company: *See—*
Buck, Josef J., 4,203,066, Cl. 324-51.000.

Magnuson Engineers, Inc.: *See—*
Lawson, William J., 4,202,261, Cl. 99-636.000.

Mahler, Gert: *See—*
Viertel, Lothar; Mahler, Gert; and Nowak, Manfred, 4,203,149, Cl. 362-144.000.

Maier, Karl: *See—*
Jurisch, Wilhelm; Greune, Christian; and Maier, Karl, 4,202,171, Cl. 60-39.28R.

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Malcolm, Alexander R. Deferred action dry cell battery. 4,202,935, Cl. 429-48.000.

Malinak, Frank J., to Western States Machine Company, The. Depither. 4,202,078, Cl. 19-26.000.

Mallinckrodt, Inc.: *See—*
Farley, Max F.; and Dutton, Edmund L., 4,203,096, Cl. 340-538.000.

Mallon, Joseph R.: *See—*
Kurtz, Anthony D.; and Mallon, Joseph R., 4,202,217, Cl. 73-727.000.

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Manevy, Georges: *See—*
Bourgeois, Michel; Manevy, Georges; and Roux, Jean-Pierre, 4,202,861, Cl. 423-19.000.

Mang, Josef; and Waters, Robert W., to Emerson Electric Co. Automatic reciprocating, indexing and picking assembly apparatus. 4,202,435, Cl. 198-339.000.

Mangano, Joseph A.: *See—*
Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., 4,203,078, Cl. 331-94.5PE.

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Hill, Robin E. T.; Mann, Alan W.; McDonald, Ean L.; and Perdrix, John L., 4,202,128, Cl. 43-43.140.

Manning, John J., to RMR Systems, Inc. Pool alarm device. 4,203,097, Cl. 340-566.000.

Mar, Jerry: *See—*
Frohman-Bentchkowsky, Dov; Mar, Jerry; Perlegos, George; and Johnson, William S., 4,203,158, Cl. 365-185.000.

Marcovich, Herbert S.; and Perrin, Remi D., to Institut Pasteur. Process and apparatus for the thorough purification of water and the highly purified water obtained thereby. 4,202,736, Cl. 203-10.000.

Marcy Tool Company: *See—*
Marcyan, Stanley T., 4,202,062, Cl. 5-66.000.

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Marek, Larry L. Noise making lure. 4,202,127, Cl. 43-42.310.

Margotte, Werner: *See—*
Renner, Alfred; and Margotte, Werner, 4,202,920, Cl. 427-386.000.

Maris, George; and Nelson, Carl G. Display device. 4,202,121, Cl. 40-152.100.

Marlow, Alfred S. Wear resistant self lubricating centrifugal pump. 4,202,654, Cl. 415-113.000.

Martignani, Giovanni: *See—*
Bezzi, Giovanni; Facchini, Alessandro; Martignani, Giovanni; and Pastore, Michele, 4,202,793, Cl. 252-301.10S.

Martin, Dean W.: *See—*
Hooker, James A.; Martin, Dean W.; and Williamson, Shellie O., 4,202,224, Cl. 81-3.00R.

Martin, Harry M., Sr. Crab peeler. 4,202,077, Cl. 17-73.000.

Martin, Horst: *See—*
Olschewski, Armin; Brandenstein, Manfred; Krug, Manfred; and Martin, Horst, 4,202,558, Cl. 280-11.280.

Martin, John R. Web tensioning apparatus for a hostile fluid bath. 4,202,476, Cl. 226-119.000.

Martner, Glen R.: *See—*
Allen, Richard T.; Moyer, Rudolph H.; Sibbett, Donald J.; Anderson, Howard H.; Martner, Glen R.; and Willis, Don, 4,202,212, Cl. 73-421.50R.

Marumoto, Ryuji; Furukawa, Yoshiyasu; and Kawai, Kiyohisa, to Takeda Chemical Industries, Ltd. Isoxazolo[3,4-d]pyrimidines. 4,202,975, Cl. 544-255.000.

Maruyama, Hiromi: *See—*
Suhara, Yasuji; Maruyama, Hiromi; Itoh, Sayuri; and Yokose, Kazuteru. 4,202,943, Cl. 435-280.000.

Maruzen Petrochemical Co., Ltd.: *See—*
Hayashi, Kiyoshige; Nakagawa, Masanao; Ozaki, Kazuo; and Ito, Yoshiharu, 4,202,868, Cl. 423-445.000.

Marvin Glass & Associates: *See—*
Morrison, Howard J., 4,202,134, Cl. 46-92.000.

Marwitz, Hartmut: *See—*
Luther, Hans W.; and Marwitz, Hartmut, 4,202,270, Cl. 102-43.00R.

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Keiczek, Hubert, 4,202,500, Cl. 239-533.300.

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Masson, Bernard: *See—*
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Massoubre, Jean-Marie, to Compagnie Generale des Etablissements Michelin. Continuous solution polymerization process. 4,202,954, Cl. 526-181.000.

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Chambers, Derek; and Masterman, Hugh C., 4,203,055, Cl. 315-375.000.

Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, to France Bed Co., Ltd. Cooking apparatus. 4,202,257, Cl. 99-348.000.

Masuda, Teruo; and Morita, Masayasu, to France Bed Co., Ltd. Cooking apparatus. 4,202,258, Cl. 99-348.000.

Mathews, Lester R. Swimming pool cleaner. 4,202,499, Cl. 239-206.000.

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Kruskopf, Hans G., 4,203,091, Cl. 340-331.000.

Matsufuji, Akira: *See—*
Haneda, Yoshikazu; Yamamoto, Yoshun; Matsufuji, Akira; Haji, Takashi; and Nakajima, Koe, 4,202,192, Cl. 72-21.000.

Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, to Furukawa Electric Co., Ltd., The. Travelling object control system utilizing power control. 4,202,273, Cl. 104-298.000.

Matsuishi, Masanori: *See—*
Washizuka, Isamu; Teramura, Satoshi; and Matsuishi, Masanori, 4,202,607, Cl. 350-338.000.

Matsumoto, Seiji; Koga, Tadashi; Fukai, Kiyoshi; and Nakatani, Shinya, to Sakai Chemical Industry Co., Ltd. Production of acicular ferric oxide. 4,202,871, Cl. 423-632.000.

Matsumoto, Sigeru, to Victor Company of Japan, Limited. Solenoid actuated control system. 4,202,220, Cl. 74-471.00R.

Matsumoto, Teruo: *See—*
Takahashi, Toshiyori; Ojima, Akihiro; Matsumoto, Teruo; and Kashiwakura, Koji, 4,203,038, Cl. 250-507.000.

Matsunaga, Hirotsugu: *See—*
Ohtake, Sadao; Hayashida, Shuji; Matsunaga, Hirotsugu; and Kaimori, Michinobu, 4,202,186, Cl. 68-3.00R.

Matsuno, Koichiro: *See—*
Hirai, Masataka; and Matsuno, Koichiro, 4,202,475, Cl. 225-2.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Minakuchi, Hiroshi, 4,203,061, Cl. 318-490.000.
Ohnishi, Masanori, 4,202,091, Cl. 29-527.100.
Shibasaki, Hatsuhiko; Omura, Junishi; Tanabe, Tetsuo; and Takamori, Kazumi, 4,202,092, Cl. 29-741.000.
Tsukamoto, Masahide; Nagasawa, Masahiro; and Yamazoe, Hiroshi, 4,203,082, Cl. 333-194.000.
Yoshimura, Susumu; Murakami, Mutsuaki; and Shinoda, Midori, 4,202,799, Cl. 252-500.000.

Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, to Nippon Oil Co., Ltd. Process for the production of polyolefins. 4,202,953, Cl. 526-125.000.

Matsuura, Ryo; Komatsu, Tatsuyoshi; Nomiyama, Yukio; and Usui, Kenji, to Kawasaki Kasei Chemicals Limited. Process for separation of naphthoquinone and phthalic acid. 4,202,828, Cl. 260-396.00R.

Matuyama, Takesi: *See—*
Yoshida, Norio; and Matuyama, Takesi, 4,202,806, Cl. 260-23.0XA.

Matyas, Stephen M.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Sahulka, Richard J.; and Tuchman, Walter L., 4,203,166, Cl. 375-2.000.

Maurer, Fritz; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Combating arthropods with O-alkyl-O-(6-alkoxy-2-cyclopropyl-pyrimidin-4-yl)-(thiono)(thiol)-phosphoric (phosphonic) acid esters or ester-amides. 4,202,889, Cl. 424-200.000.

Maxwell, Richard F., Jr., to United States of America, Army. Two tone tracker. 4,202,515, Cl. 244-3.110.

Mayer, George L., Jr.; and Schick, John D., to A Patent Partnership. Signature verification and authentication systems. 4,202,626, Cl. 355-52.000.

Mays, Steven L.: *See—*
Clarke, Ralph H.; Clarke, W. James; and Mays, Steven L., 4,202,677, Cl. 55-378.000.

McAdam, Raymond L.: *See—*
Bradley, Timothy G.; and McAdam, Raymond L., 4,202,910, Cl. 426-423.000.

McCarty, Glen L.: *See—*
Hughes, Theodore R.; and McCarty, Glenn L., 4,202,720, Cl. 156-353.000.

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McCollough, John K., Jr.: *See—*
Addis, Kenneth J.; and McCollough, John K., Jr., 4,202,189, Cl. 68-205.00R.

McComas, Ralph J. Indicator and control device for PC boards. 4,203,148, Cl. 361-399.000.

McCormick, Joseph R. Supporting rack for breakable articles. 4,202,452, Cl. 211-41.000.

McCown, Donald P.: *See—*
Beck, John W.; and McCown, Donald P., 4,203,137, Cl. 360-31.000.

McDonald, Ean L.: *See—*
Hill, Robin E. T.; Mann, Alan W.; McDonald, Ean L.; and Perdrix, John L., 4,202,128, Cl. 43-43.140.

McElroy, Robert P.: *See—*
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,620, Cl. 355-10.000.

Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,913, Cl. 430-106.000.

McGregor, Kenneth: *See—*
Henbest, Richard G. C.; and McGregor, Kenneth, 4,202,959, Cl. 528-254.000.

McGuire, Joseph C.: *See—*
Brehm, William F.; and McGuire, Joseph C., 4,202,730, Cl. 176-37.000.

McIntyre, Robert A.: *See—*
Smith, Leland B.; McIntyre, Robert A.; and Pawlak, Raymond M., 4,202,354, Cl. 128-731.000.

McKamie, William F.: *See—*
Sada, Charles A.; and McKamie, William F., 4,202,427, Cl. 182-2.000.

McLaren, Edwin C., to Champion International Corporation. Divided food container. 4,202,465, Cl. 220-468.000.

McLaughlin, William: *See—*
Zweig, Jack; McLaughlin, William; and Herz, Matthew L., 4,202,323, Cl. 128-1.100.

McLean, Kenneth W., to Sperry Rand Corporation. Safety lock for agricultural windrower or the like. 4,202,422, Cl. 180-6.480.

McMaster, Harold A.; and Nitschke, John S. Vacuum holder system and method for use in bending glass. 4,202,681, Cl. 65-104.000.

McNamara, Joseph R. Chimney cap. 4,202,255, Cl. 98-42.00R.

McSpadden, Larry W. Shell reloader with automatic ejection. 4,202,245, Cl. 86-36.000.

Mear, Brian; and Smith, Gary. Combined formwork and cavity tray. 4,202,143, Cl. 52-97.000.

Mechanical Enterprises, Incorporated: *See—*
Twyford, Robert H., 4,203,016, Cl. 200-159.00R.

Medi-Ray, Inc.: *See—*
Farella, Ralph; Dansky, Barry; and Epifano, Leonard, 4,202,345, Cl. 128-654.000.

Mee, Alec, to Imperial Chemical Industries Limited. Production of glycols. 4,202,995, Cl. 568-860.000.

Meiji Seika Kaisha, Ltd.: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.
Tamura, Gakuzo; and Takatsuki, Akira, 4,202,968, Cl. 536-23.000.

Mendels, Morton: *See—*
Champoux, Louis A.; Falcioni, Joseph G.; and Mendels, Morton, 4,202,242, Cl. 85-7.000.

Merck & Co., Inc.: *See—*
Shen, Tsung-Ying; and Jones, Howard, 4,202,903, Cl. 424-326.000.

Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Manufacture of alkylphenol compounds. 4,202,199, Cl. 568-793.000.

Merrill, Stewart H.; Hartman, Susan E.; Noonan, John M.; Sandhu, Mohammad A.; and Santilli, Domenic, to Eastman Kodak Company. Polyesterionomers having utility in liquid electrographic developer compositions. 4,202,785, Cl. 430-106.000.

Merritt, James A., to United States of America, Army. HCl or DCl Chemical laser using laser induced chemistry. 4,202,104, Cl. 331-94.50G.

Messenger, Joseph U., to Mobil Oil Corporation. Well cementing process using presheared water swellable clays. 4,202,413, Cl. 166-292.000.

Messineo, Joseph R.; and Lehwald, George F., to United States of America, Army. Fuze mine anti-personnel. 4,202,269, Cl. 102-8.000.

Mesta Machine Company: *See—*
Petros, Andrew J., 4,202,198, Cl. 72-250.000.

Metal Box Limited: *See—*
Imber, William I., 4,202,462, Cl. 220-293.000.

Meyer, Carl H. W.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Sahulka, Richard J.; and Tuchman, Walter L., 4,203,166, Cl. 375-2.000.

Meyer, Charles R., to Kurt Orban Company, Inc. Sonic pulse-echo method and apparatus for determining attenuation coefficients. 4,202,215, Cl. 73-599.000.

Meyer, Franz-Josef, to Daimler-Benz Aktiengesellschaft. Combustion chamber for gas turbines. 4,202,170, Cl. 60-39.230.

Meyer, Richard C.: *See—*
Buzza, Edmund E.; and Meyer, Richard C., 4,202,747, Cl. 204-195.00R.

Mezger, Hans, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Internal combustion engine with an exhaust gas turbocharger formed by an exhaust gas turbine and by a supercharging blower driven thereby. 4,202,176, Cl. 60-600.000.

Michael, Keith W.; and Moore, Alvin L., to Dow Corning Corporation. Siloxane-epoxy molding compound with improved crack resistance. 4,202,811, Cl. 260-37.0SB.

Michel, Wolfgang; and Becker, Reinhold, to Hoechst Aktiengesellschaft. Device for filling a shirred tubular casing. 4,202,075, Cl. 17-41.000.

Michne, William F.: *See—*
Lewis, Thomas R.; and Michne, William F., 4,202,983, Cl. 546-97.000.
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Microform Data Systems, Inc.: *See—*
Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, 4,202,613, Cl. 353-120.000.

Middelbeek, Cornelis G., to Ballast-Nedam Groep N.V.; and Skimovex B.V. Separating device. 4,202,778, Cl. 210-522.000.

Miertschin, Gary N.; and Powell, Kenneth F., to General Atomic Company. Method for making nuclear fuel element. 4,202,849, Cl. 264-0.500.

Mihara, Akira: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,202,941, Cl. 435-190.000.

Miller, Charles R., to Combustion Engineering, Inc. Rollover closer. 4,202,403, Cl. 164-409.000.

Miller, Fredric N.: *See—*
Pauls, Walter L.; and Miller, Fredric N., 4,202,852, Cl. 264-115.000.

Miller, Lester N.: *See—*
Cann, Peter L.; Hayes, Richmond S., Jr.; and Miller, Lester N., 4,202,409, Cl. 165-122.000.

Milliken Research Corporation: *See—*
Addis, Kenneth J.; and McCollough, John K., Jr., 4,202,189, Cl. 68-205.00R.
Lesley, Bascum G., 4,202,185, Cl. 66-203.000.

Mills, Harold; and Stein, Herbert. Electrocardiograph electrodes and associated assemblies. 4,202,344, Cl. 128-644.000.

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Annett, Leland W., 4,202,480, Cl. 227-8.000.
Hong, In S.; and Roelofs, Glenn E., 4,202,139, Cl. 51-393.000.
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Thill, Gary A.; and Strand, Jerome E., 4,202,333, Cl. 128-218.00A.

Mirowski, Mieczyslaw: *See—*
Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, 4,202,340, Cl. 128-419.00D.

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Gimelfarb, Natan M.; Lugovnev, Fedor T.; and Misjura, Nikolai E., 4,202,664, Cl. 8-94.150.

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Nesmeyanov, Alexandr N.; Rogozhin, Sergei V.; Tolstoguzov, Vladimir B.; Misjurev, Vladimir I.; Ershova, Vera A.; and Braudo, Evgeny E., 4,202,908, Cl. 426-72.000.

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Lazaridis, Lazaros J.; Miskolczy, Gabor; and Shefsiek, Paul K., 4,202,661, Cl. 432-8.000.

Misumi, Teruo: *See—*
Fukuda, Tadaji; Kajita, Isamu; Misumi, Teruo; Kondo, Hideyo; and Kitajima, Nobuo, 4,202,937, Cl. 430-58.000.

Mitsubishi Chemical Industries, Ltd.: *See—*
Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Suzuki, Masatoshi, 4,202,958, Cl. 526-142.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Asai, Koichi; Kawada, Tohsuke; Iwaki, Yoshiyuki; and Kuroda, Ryozo, 4,202,196, Cl. 72-137.000.
Imataki, Mitsumasa; Ujita, Katsu; and Egashira, Tsutomu, 4,203,143, Cl. 361-120.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Shimizu, Senzo; Nomura, Isao; and Harada, Masahiro, 4,202,965, Cl. 528-499.000.

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Makishima, Mamoru; and Yamasaki, Koyu, 4,202,556, Cl. 277-190.000.

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Ishikawa, Seiji, 4,203,156, Cl. 364-500.000.

Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Ohmura, Taizo; Yonezawa, Noboru; and Ikuta, Kazuo, 4,202,686, Cl. 75-0.50B.

Mitsubishi Rayon Company, Limited: *See—*
Murakami, Fumiki; Teshima, Soichi; and Yokoyama, Toshihiko, 4,202,990, Cl. 560-217.000.

Mitsui Coke Co., Ltd.: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,202,756, Cl. 208-8.0LE.

Mitsui Mining Co., Ltd.: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,202,756, Cl. 208-8.0LE.

Mitsui Toatsu Chemicals Incorporated: *See—*
Asai, Yoshiyuki; Makiguchi, Nobuyoshi; Arita, Masanobu; Nakamura, Mitsuyoshi; and Sasa, Kozo, 4,202,905, Cl. 426-1.000.
Kato, Nobukatsu; Morimoto, Yoshio; and Ozawa, Hiroshi, 4,202,805, Cl. 260-22.0CB.

Miura, Koji: *See—*
Oda, Yoshio; Suhara, Manabu; Goto, Shoziro; Hukushima, Takashi; Miura, Koji; and Hamano, Toshikatsu, 4,202,743, Cl. 204-98.000.

Miyagawa, Yoshitaka: *See—*
Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, 4,202,584, Cl. 303-105.000.

Miyake, Tetsuya; Ogawa, Norito; Asano, Motohisa; and Okuyama, Kazuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Continuous separation of uranium isotopes. 4,202,860, Cl. 423-6.000.

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Ishii, Eiichi; Nakane, Masanori; Ishikawa, Hiroshi; Uehara, Itsuki; and Miyake, Yoshizo, 4,202,917, Cl. 427-161.000.

Miyamoto, Akira: *See—*
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Miyamoto, Seigo: *See—*
Kawashima, Kenichi; Arima, Yosiaki; Endo, Yoshihide; Suginuma, Atsushi; Uenishi, Akira; and Miyamoto, Seigo, 4,202,182, Cl. 62-511.000.

Miyauchi, Shizuya, to Koito Manufacturing Company Limited. Remotely controlled mirrors. 4,202,603, Cl. 350-289.000.

Miyoshi, Kazuhito: *See—*
Takahashi, Gensho; Miyoshi, Kazuhito; and Tanaka, Yoneharu, 4,202,696, Cl. 430-306.000.

Miyoshi, Mitsuji: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, 4,202,953, Cl. 526-125.000.

Mizrahi, Robert: *See—*
Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, 4,202,613, Cl. 353-120.000.

Mizutani, Tadashi; and Tachibana, Hiromichi, to Kuraray Plastics, Co., Ltd. Method of and apparatus of manufacturing a fiber-reinforced pressure hose. 4,202,718, Cl. 156-171.000.

Mizzoni, Renat H.: *See—*
Finch, Neville; and Mizzoni, Renat H., 4,202,901, Cl. 424-263.000.

Mobil Oil Corporation: *See—*
Chibnik, Sheldon, 4,202,783, Cl. 252-51.50A.
Messenger, Joseph U., 4,202,413, Cl. 166-292.000.

Mochalov, Vyacheslav N.: *See—*
Smirnov, Boris A.; Busygin, Valery P.; Komina, Lidia S.; Mochalov, Vyacheslav N.; Shagalov, Lev V.; and Gruzdev, Evgeny A., 4,202,314, Cl. 128-218.00F.

Mogler, Joachim, to Datograf Apparatebau GmbH & Co. Stoppers for pressure containers. 4,202,463, Cl. 220-307.000.

Mohs, Thomas J.; and Engel, Richard C., Jr., to Placon Corporation. Recloseable container. 4,202,464, Cl. 220-339.000.

Molins Machine Company, Inc.: *See—*
Linn, S. Stephen, 4,202,719, Cl. 156-205.000.

Moll, Franz: *See—*
Philippaerts, Herman A.; Pollet, Robert J.; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; von Konig, Anita; Gauss, Walter; Moll, Franz; and Ghys, Theofiel H., 4,202,695, Cl. 430-8.000.

Moller, Walter H., to Western Gear Corporation. Pipe handling apparatus. 4,202,653, Cl. 414-22.000.

Monch, Clauspeter: *See—*
Anderl, Peter; Scheffels, Wilhelm; Steigerwald, Karl H.; Monch, Clauspeter; Koy, Johannes;; and Konig, Dieter, 4,203,021, Cl. 219-121.0EB.

Monkovic, Ivo; Bachand, Carol; and Wong, Henry, to Bristol-Myers Company. Process for the preparation of 14-hydroxymorphinan derivatives. 4,202,982, Cl. 546-89.000.

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Monks, Reginald: *See—*
Bayly, Russell J.; Chambers, Virginia E. M.; and Monks, Reginald, 4,202,976, Cl. 544-261.000.

Monsanto Company: *See—*
Bach, Hartwig C., 4,202,962, Cl. 528-363.000.
Fisher, Don E., 4,202,507, Cl. 242-46.200.
Howse, Paul T., Jr.; and Wilkie, Arnold E., 4,202,854, Cl. 264-168.000.
Williamson, Alex N., 4,202,837, Cl. 260-465.900.

Monte, Salvatore J.; and Sugerman, Gerald, to Kenrich Petrochemicals, Inc. Application of cumylphenol and derivatives thereof in plastic compositions. 4,202,810, Cl. 260-31.20N.

Moog, Robert A., to Norlin Industries, Inc. Compressor-expander for a musical instrument. 4,202,238, Cl. 84-1.270.

Mookherjee, Braja D.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin L.; and Vock, Manfred H., 4,202,994, Cl. 568-824.000.

Mooney, John J.: *See—*
Early, Jack; Mooney, John J.; and Keith, Carl D., 4,202,301, Cl. 123-119.0EC.

Moore, Alvin L.: *See—*
Michael, Keith W.; and Moore, Alvin L., 4,202,811, Cl. 260-37.0SB.

Moore, William T., to Rank Organisation Limited, The. Optical scanning system with compensation for unwanted image rotation during scanning. 4,202,597, Cl. 350-6.600.

Moran, John C., to Bell Telephone Laboratories, Incorporated. Method and structure for detecting recycling of polynomial counters. 4,203,030, Cl. 235-92.0CC.

Moraw, Roland; and Schadlich, Gunther, to Hoechst Aktiengesellschaft. Recording material having intersecting conductive strips and apertured spacing means. 4,202,693, Cl. 430-50.000.

Moretto, Hans-Heinrich; de Montigny, Armand; Steinberger, Helmut; Sattlegger, Hans; and Larking, Ingrid, to Bayer Aktiengesellschaft. Organopolysiloxane compositions modified with polyurethane. 4,202,807, Cl. 260-29.1SB.

Moretto, Hans-Heinrich: *See—*
Schlak, Ottfried; and Moretto, Hans-Heinrich, 4,202,831, Cl. 556-467.000.

Mori, Kazuo: *See—*
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; and Yamamoto, Hisao, 4,202,895, Cl. 424-250.000.

Mori, Kouichi; Igashira, Toshihiko; and Yamaguchi, Shunzo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition device for rotary piston engine. 4,202,312, Cl. 123-210.000.

Mori, Toshiro: *See—*
Hukuzawa, Soiti; Togasi, Mituyuki; and Mori, Toshiro, 4,202,187, Cl. 68-18.00F.

Morigami, Eiiji: *See—*
Hatori, Nobuyoshi; and Morigami, Eiiji, 4,203,007, Cl. 179-6.00E.

Morimoto, Yoshio: *See—*
Kato, Nobukatsu; Morimoto, Yoshio; and Ozawa, Hiroshi, 4,202,805, Cl. 260-22.0CB.

Morinaga, Mitsuyoshi, to Trio Kabushiki Kaisha. Stereo lead wires and arrangements thereof for connecting pick-up device to amplifier. 4,202,550, Cl. 274-23.00R.

Morita, Masayasu: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.
Masuda, Teruo; and Morita, Masayasu, 4,202,258, Cl. 99-348.000.

Moritz, Jules G.: *See—*
Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, 4,202,613, Cl. 353-120.000.

Moriya, Kazuo: *See—*
Koizumi, Hideaki; and Moriya, Kazuo, 4,202,628, Cl. 356-312.000.

Moriyoshi, Hiroshi, to Toyo Kogyo Co., Ltd. Means for resiliently connecting an oil pan to an engine body. 4,202,311, Cl. 123-195.00C.

Moroe, Michio: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, 4,202,906, Cl. 426-3.000.

Moroz, Jury A.: *See—*
Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,202,174, Cl. 60-413.000.

Morris, Richard A.: *See—*
Acheson, Willard P.; Morris, Richard A.; Rennard, Raymond J.; and Viswanathan, Thiagarajan, 4,202,168, Cl. 60-39.060.
Acheson, Willard P.; Morris, Richard A.; and Viswanathan, Thiagarajan, 4,202,169, Cl. 60-39.120.

Morrison, Howard J., to Marvin Glass & Associates. Water toy. 4,202,134, Cl. 46-92.000.

Mortell Company: *See—*
Radebaugh, Bruce A.; O'Connor, Paul J.; and Fischer, Howard J., 4,202,701, Cl. 106-278.000.

Mosch, Duane L., to HON Industries Inc. Retractable overhead guard. 4,202,565, Cl. 280-756.000.

Moser, Bernhard: *See—*
Haussmann, August; Klaissle, Siegfried; Hugger, Hermann; Moser, Bernhard; Muller, Walter; Peetz, Wolfgang; Scheuch, Anton; and Schwarz, Gerhard, 4,202,557, Cl. 279-19.500.
Peetz, Wolfgang; Klaissle, Siegfried; and Moser, Bernhard, 4,202,420, Cl. 175-395.000.

Moser, Paul; and Rody, Jean, to Ciba-Geigy Corporation. Novel light stabilizers. 4,202,816, Cl. 260-45.75N.

Moser, Roland: *See—*
Habermeier, Jurgen; Moser, Roland; and Seiz, Wolfgang, 4,202,987, Cl. 560-49.000.

Moss, Milton: *See—*
DePodesta, Thomas C.; and Moss, Milton, 4,202,318, Cl. 126-110.00R.

Moss Rosenberg Verft A/S: *See—*
Kvamsdal, Rolf, 4,202,648, Cl. 405-210.000.

Motor Wheel Corporation: *See—*
Strader, Don S., 4,202,564, Cl. 280-678.000.

Motoren- und Turbinen-Union GmbH: *See—*
Jurisch, Wilhelm; Greune, Christian; and Maier, Karl, 4,202,171, Cl. 60-39.28R.

Motorola, Inc.: *See—*
Daniels, R. Gary; Musa, Fuad H.; Wilder, W. Bryant, Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,203,157, Cl. 364-788.000.
Rae, James W.; and Wright, Larry R., 4,203,073, Cl. 455-311.000.
Tegge, Bruce R., Jr., 4,203,127, Cl. 357-55.000.

Mott, Daniel R.: *See—*
Southard, James S.; and Mott, Daniel R., 4,202,239, Cl. 84-1.260.

Mowbray, Dorian F., to Lucas Industries Limited. Fuel systems for compression ignition engines. 4,202,303, Cl. 123-139.0AQ.

Mower, Morton M.: *See—*
Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, 4,202,340, Cl. 128-419.00D.

Moyer, Rudolph H.: *See—*
Allen, Richard T.; Moyer, Rudolph H.; Sibbett, Donald J.; Anderson, Howard H.; Martner, Glen R.; and Willis, Don, 4,202,212, Cl. 73-421.50R.

Mravic, Brian: *See—*
Crane, Jacob; Shapiro, Eugene; Shapiro, Stanley; and Mravic, Brian, 4,202,688, Cl. 75-153.000.

MRC Corporation: *See—*
Carpenter, David A., 4,202,205, Cl. 73-65.000.

M'Sadoques, Andre J.: *See—*
Sabatella, Robert J.; M'Sadoques, Andre J.; and Rich, Joseph F., 4,203,146, Cl. 361-361.000.

Mueller, Nancy J.; and Holik, Dennis J., to CPC International Inc. Glucoamylase immobilized on cationic colloidal silica. 4,202,939, Cl. 435-96.000.

Mueller, Thomas L. Movable golf green apparatus. 4,202,547, Cl. 273-181.00A.

Mukha, Vitaly P.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Muller-Bardorff, Wolfgang: *See—*
Philippaerts, Herman A.; Pollet, Robert J.; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; von Konig, Anita; Gauss, Walter; Moll, Franz; and Ghys, Theofiel H., 4,202,695, Cl. 430-8.000.

Muller, Fritz; Kenner, Jurgen; and Schadlich, Wolfgang, to Muller, Fritz. Valve. 4,202,526, Cl. 251-51.000.

Muller, Hans, to Grapha-Holding AG. Apparatus for trimming stacks of paper sheets or the like. 4,202,232, Cl. 83-519.000.

Muller, Heinz: *See—*
Scheufler, Bernd; and Muller, Heinz, 4,202,252, Cl. 91-483.000.

Muller, Marcel: *See—*
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,202,841, Cl. 424-311.000.
Furst, Andor; Keller, Peter; and Muller, Marcel, 4,202,823, Cl. 260-343.600.

Muller, Siegfried. Cable sleeve assembly. 4,203,000, Cl. 174-92.000.

Muller, Walter: *See—*
Haussmann, August; Klaissle, Siegfried; Hugger, Hermann; Moser, Bernhard; Muller, Walter; Peetz, Wolfgang; Scheuch, Anton; and Schwarz, Gerhard, 4,202,557, Cl. 279-19.500.

Multon, Francois; and Allain, Gerard, to Ultraflux. Ultrasonic flow meter for gases. 4,202,210, Cl. 73-194.00A.

Muncheryan, Hrand M. Device for preventing dozing while driving a car. 4,203,098, Cl. 340-575.000.

Murakami, Fumiki; Teshima, Soichi; and Yokoyama, Toshihiko, to Mitsubishi Rayon Company, Limited. Process for producing unsaturated carboxylic acid esters. 4,202,990, Cl. 560-217.000.

Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, to Mitsui Mining Co., Ltd.; and Mitsui Coke Co., Ltd. Process for the production of solvent-refined coal useful as starting material for other carbonaceous products. 4,202,756, Cl. 208-8.0LE.

Murakami, Mutsuaki: *See—*
Yoshimura, Susumu; Murakami, Mutsuaki; and Shinoda, Midori, 4,202,799, Cl. 252-500.000.

Murakami, Tomomi: *See—*
Komiyama, Katsuhiko; Kasama, Noriyuki; Tsukamoto, Keiji; and Murakami, Tomomi, 4,202,166, Cl. 368-82.000.

Murayama, Hideaki: *See—*
Fukuda, Takeo; and Murayama, Hideaki, 4,203,005, Cl. 179-1.0CN.

Murayama, Kentaro; and Nakano, Kazuyuki, to Sankin Industry Co., Ltd. Low melting point Ni-Cr alloy for cast dental products. 4,202,687, Cl. 75-134.00C.

Murray, James B. Patient lifting device. 4,202,063, Cl. 5-81.00R.

Murray, Milton C., to Dow Corning Corporation. Silicone rubber compositions containing extending fillers and acryloxyalkylsilanes. 4,202,812, Cl. 260-37.0SB.

Musa, Fuad H.: *See—*
Daniels, R. Gary; Musa, Fuad H.; Wilder, W. Bryant, Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,203,157, Cl. 364-788.000.

Nagai, Toshiaki: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,202,941, Cl. 435-190.000.

Nagane, Yasushi: *See—*
Sato, Masaki; Kawasaki, Takao; and Nagane, Yasushi, 4,202,877, Cl. 424-43.000.

Nagasawa, Masahiro: *See—*
Tsukamoto, Masahide; Nagasawa, Masahiro; and Yamazoe, Hiroshi, 4,203,082, Cl. 333-194.000.

Nagashima, Akira, to Kioritz Corporation. Portable chain saw. 4,202,096, Cl. 30-381.000.

Nagoya Kiko Kabushiki Kaisha: *See—*
Niki, Akira, 4,202,440, Cl. 198-718.000.

Naguib, Hussein M.; Baraff, David R.; and Kos, Steven, to Northern Telecom Limited. Thermal printers. 4,203,119, Cl. 346-76.0PH.

Nagy, Louis E.: *See—*
Hirsch, Leon C.; Rawson, Paul O.; and Nagy, Louis E., 4,202,353, Cl. 128-724.000.

Nahory, Robert E.: *See—*
Gordon, James P.; Nahory, Robert E.; Pollack, Martin A.; and Worlock, John M., 4,203,124, Cl. 357-13.000.

Naito, Takeshi; and Kibayashi, Yasutada, to Kabushiki Kaisha Komatsu Seisakusho. Carburization of ferrous alloys. 4,202,710, Cl. 148-16.500.

Nakagawa, Masanao: *See—*
Hayashi, Kiyoshige; Nakagawa, Masanao; Ozaki, Kazuo; and Ito, Yoshiharu, 4,202,868, Cl. 423-445.000.

Nakajima, Koe: *See—*
Haneda, Yoshikazu; Yamamoto, Yoshun; Matsufuji, Akira; Haji, Takashi; and Nakajima, Koe, 4,202,192, Cl. 72-21.000.

Nakajima, Yasuo; Hayashi, Yoshimasa; and Yoshimura, Tooru, to Nissan Motor Company, Limited. Multi-point spark ignition engine provided with exhaust recirculation circuit. 4,202,306, Cl. 123-148.00C.

Nakakura, Kenji: *See—*
Shibayama, Toshiyuki; and Nakakura, Kenji, 4,202,391, Cl. 152-209.00D.

Nakamura, Akio: *See—*
Sado, Ryoichi; and Nakamura, Akio, 4,203,088, Cl. 338-114.000.

Nakamura, Mitsuyoshi: *See—*
Asai, Yoshiyuki; Makiguchi, Nobuyoshi; Arita, Masanobu; Nakamura, Mitsuyoshi; and Sasa, Kozo, 4,202,905, Cl. 426-1.000.

Nakane, Masanori: *See—*
Ishii, Eiichi; Nakane, Masanori; Ishikawa, Hiroshi; Uehara, Itsuki; and Miyake, Yoshizo, 4,202,917, Cl. 427-161.000.

Nakanishi Dental Mfg., Co., Ltd.: *See—*
Nakanishi, Takasuke, 4,202,102, Cl. 433-127.000.

Nakanishi, Takasuke, to Nakanishi Dental Mfg., Co., Ltd. Device for opening and closing a chuck for a dental handpiece. 4,202,102, Cl. 433-127.000.

Nakano, Kazuyuki: *See—*
Murayama, Kentaro; and Nakano, Kazuyuki, 4,202,687, Cl. 75-134.00C.

Nakatani, Mitsuo; Kuroki, Takashi; Syozi, Toshiaki; and Horibe, Yoshiyuki, to Hitachi, Ltd. Thick-film thermal printing head. 4,203,025, Cl. 219-216.000.

Nakatani, Shinya: *See—*
Matsumoto, Seiji; Koga, Tadashi; Fukai, Kiyoshi; and Nakatani, Shinya, 4,202,871, Cl. 423-632.000.

Nakazawa, Kazutada: *See—*
Yanagida, Jun; Ishikawa, Souichiro; and Nakazawa, Kazutada, 4,202,481, Cl. 227-145.000.

Nalivkin, Nikolai P.: *See—*
Klimkovsky, Bronislav M.; Azikov, Boris A.; Zemtsov, Mikhail U.; Kusch, Sergei A.; and Nalivkin, Nikolai P., 4,202,439, Cl. 198-642.000.

Namiki, Naokuni, to Slidex Corporation. Self-supporting unitary plate for holding photographic slides. 4,202,122, Cl. 40-158.00B.

Namiki, Yasushi; Terashima, Akira; and Yoshizawa, Naomi, to Pilot Man-Nen Hitsu Kabushiki Kaisha. Electronic musical box. 4,202,235, Cl. 84-1.010.

Naryshkin, Jury A.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

National Can Corporation: *See—*
Zundel, Arthur P., 4,202,287, Cl. 113-121.00C.

National Institute for Metallurgy: *See—*
Hancock, Robert D.; Bond, Roy F.; and Green, Brian R., 4,202,944, Cl. 521-32.000.

National Mine Service Company: *See—*
Herron, Charles R., 4,202,434, Cl. 198-316.000.

National Research Development Corporation: *See—*
Comerford, Peter J., 4,202,234, Cl. 84-1.010.

National Steel Corporation: *See—*
Wilson, Walter A., 4,202,193, Cl. 72-42.000.

Near, Charles W.: *See—*
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,203,152, Cl. 364-200.000.

Neefe, Charles W. Method of making bifocal contact lenses. 4,202,848, Cl. 264-1.000.

Neff, Lawrence M. Bar-type clamp. 4,202,540, Cl. 269-166.000.

Nelson, Carl G.: *See—*
Maris, George; and Nelson, Carl G., 4,202,121, Cl. 40-152.100.

Nemoto, Kazuyuki, to Olympus Optical Co., Ltd. Single lens reflex camera with electrical shutter. 4,202,615, Cl. 354-152.000.

Nesmeyanov, Alexandr N.; Rogozhin, Sergei V.; Tolstoguzov, Vladimir B.; Misjurev, Vladimir I.; Ershova, Vera A.; and Braudo, Evgeny E., to Institut Elementoorganicheskih Soedineny. Synthetic, granular food caviar and method of preparing same. 4,202,908, Cl. 426-72.000.

Nestler, Gerhard: *See—*
Merger, Franz; and Nestler, Gerhard, 4,202,199, Cl. 568-793.000.

Neumann, Eckart: *See—*
Hoerauf, Werner; Pirzer, Hans; Guenther, Ernst; Neumann, Eckart; and Dietrich, Ernst, 4,202,375, Cl. 138-39.000.

New York Institute of Technology: *See—*
Shelley, Edwin F., 4,202,179, Cl. 62-2.000.

Newell, Richard G.; and Perry, Dale C., to Minnesota Mining and Manufacturing Company. Corrosion resistance treatment of aluminum with N-alkyl-fluoroaliphaticsulfonamidophosphonic acids and salts thereof. 4,202,706, Cl. 148-6.170.

Newkirk, Lawrence R.; and Valencia, Flavio A., to United States of America, Energy. Superconducting articles of manufacture and method of producing same. 4,202,931, Cl. 428-662.000.

Nichols, Philip T.: *See—*
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,202,363, Cl. 135-2.000.

Nicholson, Thomas F., Jr. Level layer winding method and apparatus. 4,202,512, Cl. 242-157.100.

Nickles, Harry B.: *See—*
Spiegelman, Gerald H.; Nickles, Harry B.; and Solomon, Jack M., 4,202,755, Cl. 208-5.000.

Nielsen, Ralph H.: *See—*
Jacoby, Lawrence J.; Rosenau, Richard A.; Carter, Dorothy P.; Nielsen, Ralph H.; and Ash, Kenneth C., 4,202,862, Cl. 423-70.000.

Nihon Repro Machine Kogyo Kabushiki Kaisha: *See—*
Kinoshita, Tomoo, 4,202,659, Cl. 425-183.000.

Niki, Akira, to Nagoya Kiko Kabushiki Kaisha. Apparatus for accumulating materials on a shuttle conveyor. 4,202,440, Cl. 198-718.000.

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Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Nikolic, Cvetko: *See—*
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, 4,202,752, Cl. 204-222.000.

Nikulin, Alexandr A.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Takeuchi, Atsushi, 4,202,549, Cl. 274-9.0RA.

Nippon Jidoseigyo Ltd.: *See—*
Uchiyama, Yasushi; and Awamura, Daikichi, 4,202,631, Cl. 356-394.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Kawasoko, Yoshiaki; Chiba, Iwane; Yamazaki, Noboru; Chiyonobu, Toshimi; and Shikuma, Masao, 4,202,537, Cl. 266-252.000.
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Nippon Oil Co., Ltd.: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, 4,202,953, Cl. 526-125.000.

Nippon Soken, Inc.: *See—*
Sowa, Kunihiro; and Esaki, Motoharu, 4,203,094, Cl. 340-378.500.

Nippon Steel Corporation: *See—*
Haneda, Yoshikazu; Yamamoto, Yoshun; Matsufuji, Akira; Haji, Takashi; and Nakajima, Koe, 4,202,192, Cl. 72-21.000.

Nippon Telegraph and Telephone Public Corp.: *See—*
Hirai, Masataka; and Matsuno, Koichiro, 4,202,475, Cl. 225-2.000.

Nippon Zeon Co., Ltd.: *See—*
Joh, Yasushi, 4,202,776, Cl. 210-321.00B.

Nippondenso Co., Ltd.: *See—*
Kondo, Toshio; Harada, Susumu; Ito, Nobuyuki; and Kobayashi, Nobuyuki, 4,202,295, Cl. 123-32.0EH.
Yamaguchi, Takao; Aoyama, Kenjiro; Nishio, Yukihiro; and Kazino, Sadayosi, 4,203,084, Cl. 335-202.000.

Nishikoori, Tsutomu, to Toyo Kogyo Co., Ltd. Locking means for automobile rear doors. 4,202,571, Cl. 292-216.000.

Nishio, Yukihiro: *See—*
Yamaguchi, Takao; Aoyama, Kenjiro; Nishio, Yukihiro; and Kazino, Sadayosi, 4,203,084, Cl. 335-202.000.

Nissan Motor Company, Limited: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; and Yoshimura, Tooru, 4,202,306, Cl. 123-148.00C.
Yamamori, Takahiro; and Ohtsuka, Kunio, 4,202,431, Cl. 192-3.290.

Nitschke, John S.: *See—*
McMaster, Harold A.; and Nitschke, John S., 4,202,681, Cl. 65-104.000.

Nixdorf, Hans W.; and Tolle, Gunther, to ever clean GmbH H. W. Nixdorf. Window cleaning apparatus. 4,202,069, Cl. 15-250.030.

Nogami, Yoichi: *See—*
Ikeda, Ryo; Nogami, Yoichi; and Koizumi, Teruo, 4,202,393, Cl. 152-330.0RF.

Nomiyama, Yukio: *See—*
Matsuura, Ryo; Komatsu, Tatsuyoshi; Nomiyama, Yukio; and Usui, Kenji, 4,202,828, Cl. 260-396.00R.

Nomura, Isao: *See—*
Shimizu, Senzo; Nomura, Isao; and Harada, Masahiro, 4,202,965, Cl. 528-499.000.

Nomura, Junji: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,202,291, Cl. 119-3.000.

Nonnenmann, Manfred; Hauser, Kurt; and Schwarz, Gebhard, to Sud-deutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. K.G. Cooling system for internal combustion engines. 4,202,296, Cl. 123-41.480.

Noonan, John M.: *See—*
Merrill, Stewart H.; Hartman, Susan E.; Noonan, John M.; Sandhu, Mohammad A.; and Santilli, Domenic, 4,202,785, Cl. 430-106.000.

Norlin Industries, Inc.: *See—*
Moog, Robert A., 4,202,238, Cl. 84-1.270.

North American Philips Corporation: *See—*
Dalisa, Andrew L.; and Singer, Barry M., 4,203,106, Cl. 340-787.000.

Northern Telecom Limited: *See—*
Cohn-Sfetcu, Sorin; Hood, Jackylene K.; and Doyle, Daniel J., 4,203,008, Cl. 370-50.000.
Naguib, Hussein M.; Baraff, David R.; and Kos, Steven, 4,203,119, Cl. 346-76.0PH.

Nossen, Edward J., to RCA Corporation. Code correlator loop using arithmetic synthesizer. 4,203,002, Cl. 375-116.000.

Novo Industri A/S: *See—*
Guddal, Erling; and Borrevang, Poul, 4,202,817, Cl. 260-239.100.

Nowak, Manfred: *See—*
Viertel, Lothar; Mahler, Gert; and Nowak, Manfred, 4,203,149, Cl. 362-144.000.

NP Industries, Inc.: *See—*
Perry, Jack A., 4,202,211, Cl. 73-227.000.

Nuss, James W., to Ferro Corporation. Inorganic pigment comprising a solid solution of differing spinels. 4,202,702, Cl. 106-288.00B.

Nuvite Chemical Compounds Corporation: *See—*
Lester, Frank R.; and Bullard, James, 4,202,068, Cl. 15-28.000.

Obinata, Akira, to Fuji Photo Film Co., Ltd. Rotary cutter. 4,202,230, Cl. 83-345.000.

Obman, Allan R.: *See—*
Littmann, Martin F.; and Obman, Allan R., 4,202,711, Cl. 148-111.000.

Occidental Oil Shale, Inc.: *See—*
Ruskin, Arnold M., 4,202,412, Cl. 166-256.000.

O'Connor, Paul J.: *See—*
Radebaugh, Bruce A.; O'Connor, Paul J.; and Fischer, Howard J., 4,202,701, Cl. 106-278.000.

Oda, Denichi: *See—*
Yamamoto, Shinji; Kaijiri, Kouhei; and Oda, Denichi, 4,202,850, Cl. 264-108.000.

Oda, Yoshio; Suhara, Manabu; Goto, Shoziro; Hukushima, Takashi; Miura, Koji; and Hamano, Toshikatsu, to Asahi Glass Company, Limited. Electrolysis of aqueous solution of sodium chloride. 4,202,743, Cl. 204-98.000.

Odawara, Youji: *See—*
Shimizu, Norio; and Odawara, Youji, 4,202,763, Cl. 210-14.000.

Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, to Lotte Co., Ltd.; and Takasago Perfumery Co., Ltd. Chewing gum base containing a thermally decomposed product of a natural rubber and a method of preparation thereof. 4,202,906, Cl. 426-3.000.

Ogawa, Norito: *See—*
Miyake, Tetsuya; Ogawa, Norito; Asano, Motohisa; and Okuyama, Kazuo, 4,202,860, Cl. 423-6.000.

Ogawa, Yasuaki: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.

Ogawa, Yoshishige: *See—*
Osada, Kazuhiko; Ogawa, Yoshishige; and Takimoto, Ichizo, 4,203,103, Cl. 340-753.000.

Ogino, Yasuo: *See—*
Suzki, Akiyoshi; Kano, Ichiro; Yoshinari, Hideki; Tozuka, Masao; Hiraga, Ryozo; Kato, Yuzo; and Ogino, Yasuo, 4,202,627, Cl. 356-71.000.

Oguma, Yoshio: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

O'Hara, Mark J.; Johnson, Russell W.; and Hilfman, Lee, to UOP Inc. Hydroprocessing of hydrocarbons. 4,202,758, Cl. 208-143.000.

O'Hare, David H.; Brickell, Christopher G.; and Spilman, Lindsay G., to Fisher & Paykel Limited. Electrically heated humidifying apparatus. 4,203,027, Cl. 219-275.000.

Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, to Meiji Seika Kaisha, Ltd. Antibiotic SF-1942 substance and process for production of the same. 4,202,886, Cl. 424-122.000.

Ohmura, Taizo; Yonezawa, Noboru; and Ikuta, Kazuo, to Mitsubishi Kinzoku Kabushiki Kaisha. Process for manufacturing fine powder of metal. 4,202,686, Cl. 75-0.50B.

Ohnishi, Masanori, to Matsushita Electric Industrial Co. Ltd. Method of manufacturing a hybrid framework consisting of metallic plate and projection made of synthetic resin. 4,202,091, Cl. 29-527.100.

Ohnishi, Noriaki: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,202,756, Cl. 208-8.0LE.

Ohno, Eiji; and Chikugo, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Method for the production of sintered powder ferrous metal preform. 4,202,689, Cl. 75-211.000.

Ohtake, Sadao; Hayashida, Shuji; Matsunaga, Hirotsugu; and Kaimori, Michinobu, to Kanebo Limited. Apparatus for dyeing a bundle of fibers such as a sliver or top. 4,202,186, Cl. 68-3.00R.

Ohtsubo, Toshikatsu: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,202,756, Cl. 208-8.0LE.

Ohtsuka, Kunio: *See—*
Yamamori, Takahiro; and Ohtsuka, Kunio, 4,202,431, Cl. 192-3.290.

Ojima, Akihiro: *See—*
Takahashi, Toshiyori; Ojima, Akihiro; Matsumoto, Teruo; and Kashiwakura, Koji, 4,203,038, Cl. 250-507.000.

Okamoto, Toyoo, to Ricoh Company, Ltd. Corona charger for image transfer. 4,203,144, Cl. 361-234.000.

Okano, Shigeaki: *See—*
Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Suzuki, Masatoshi, 4,202,958, Cl. 526-142.000.

Oktay, Sevgin; Torgersen, Gerard J.; and Wong, Alexander C., to International Business Machines Corporation. Bubble generating tunnels for cooling semiconductor devices. 4,203,129, Cl. 357-82.000.

Oku, Yuji; and Tsuyama, Yasuharu, to Yamaha Hatsudoki Kabushiki Kaisha. Two-stroke engine having variable exhaust port timing. 4,202,297, Cl. 123-65.0PE.

Okuyama, Kazuo: *See—*
Miyake, Tetsuya; Ogawa, Norito; Asano, Motohisa; and Okuyama, Kazuo, 4,202,860, Cl. 423-6.000.

Olevsky, Viktor M.: *See—*
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; Baskov, Jury A.; and Dmitriev, Konstantin V., 4,202,846, Cl. 261-142.000.

Olin Corporation: *See—*
Bates, John F.; and Popplewell, James M., 4,202,708, Cl. 148-11.50C.
Crane, Jacob; Shapiro, Eugene; Shapiro, Stanley; and Mravic, Brian, 4,202,688, Cl. 75-153.000.
Preston, Frank J.; and Chandalia, Kiran B., 4,202,947, Cl. 521-174.000.

Olschewski, Armin; Brandenstein, Manfred; Krug, Manfred; and Martin, Horst, to SKF Kugellagerfabriken GmbH. Support body for rollers of skating devices. 4,202,558, Cl. 280-11.280.

Olson, James D. Bolt pattern gauge. 4,202,106, Cl. 33-168.00R.

Olympus Optical Co., Ltd.: *See—*
Kamachi, Shinichi; and Gocho, Nagahiro, 4,203,031, Cl. 250-201.000.
Nemoto, Kazuyuki, 4,202,615, Cl. 354-152.000.
Osanai, Akira, 4,202,513, Cl. 242-189.000.
Sato, Masaaki, 4,203,048, Cl. 310-268.000.

Omron Tateisi Electronics Co.: *See—*
Abe, Akira; Kimura, Shoji; and Kuwabara, Yuzo, 4,202,348, Cl. 128-680.000.

Omura, Junishi: *See—*
Shibasaki, Hatsuhiko; Omura, Junishi; Tanabe, Tetsuo; and Takamori, Kazumi, 4,202,092, Cl. 29-741.000.

Omura, Yoshio: *See—*
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,202,969, Cl. 536-1.000.

Onikov, Eduard A.: *See—*
Galperin, Alexandr L.; Serebryannikov, Albert S.; Onikov, Eduard A.; Zabotin, Alexandr A.; Loschilin, Evgeny D.; and Santucci, Nicola, 4,202,383, Cl. 139-436.000.

Onizawa, Masao, to Sanyo Trading Co., Ltd. Method of vulcanizing bromobutyl rubber with amino acids. 4,202,952, Cl. 525-374.000.

Onnebrink, Franz-Josef: *See—*
Durselen, Heinz; Onnebrink, Franz-Josef; and Schuffler, Arnulf, 4,202,735, Cl. 201-41.000.

Ono, Hiroshi; Saida, Toyoyasu; and Fukumura, Kunimitsu. Process for removing oil particles from waste water containing the same. 4,202,766, Cl. 210-40.000.

Onoguchi, Kunio: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

Opfer, John C.; and Vojta, Karel E., to S & C Electric Company. Operating mechanism for a circuit interrupting device. 4,203,083, Cl. 335-174.000.

Oplinger, Terry R. Stackable furniture modules having replaceable panels. 4,202,586, Cl. 312-107.000.

Orcutt, Roger P., to Charles River Breeding Laboratories, Inc., The. Vaccine for Tyzzer's disease in rabbits. 4,202,883, Cl. 424-92.000.

Orlov, Gennady I.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Ornstein, Severo M.: *See—*
Lampson, Butler W.; Sproull, Robert F.; Ornstein, Severo M.; and Leung, James Y., 4,203,154, Cl. 364-200.000.

Orr, Brian A. Overfill preventive funnel. 4,202,386, Cl. 141-300.000.

Ortho Diagnostics, Inc.: *See—*
Weiner, Irving L.; and Gershman, Russell J., 4,202,625, Cl. 356-39.000.

Ortlepp, Hans: *See—*
Hunkar, Denes B.; and Ortlepp, Hans, 4,202,247, Cl. 91-364.000.

Osada, Kazuhiko; Ogawa, Yoshishige; and Takimoto, Ichizo, to Tokyo Shibaura Electric Co., Ltd. Battery deterioration indicator for an electronic desk top calculator. 4,203,103, Cl. 340-753.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Tape end detector for reel driven cassette tape recorder. 4,202,513, Cl. 242-189.000.

Osborn, John J., to Research Development Corporation. Apparatus for measurement of expired gas concentration in infants. 4,202,352, Cl. 128-719.000.

Osment, David L. Simulated vegetation product. 4,202,922, Cl. 428-18.000.

Ostermeyer, Peter: *See—*
Fink, Eugen; and Ostermeyer, Peter, 4,202,773, Cl. 210-256.000.

Osugi, Kozo, to Furukawa Metals Co. Ltd. Molten metal surface level detection system. 4,202,398, Cl. 164-150.000.

Otsuki, Tomonari: *See—*
Inouye, Hiromasa; Otsuki, Tomonari; and Saito, Tsukasa, 4,202,595, Cl. 339-174.000.

Owens-Corning Fiberglas Corporation: *See—*
Garst, John M., 4,203,155, Cl. 364-473.000.
Thompson, Thomas K., 4,202,680, Cl. 65-12.000.

Owens-Illinois, Inc.: *See—*
Pei, Yu K., 4,202,660, Cl. 431-328.000.

Ozaki, Kazuo: *See—*
Hayashi, Kiyoshige; Nakagawa, Masanao; Ozaki, Kazuo; and Ito, Yoshiharu, 4,202,868, Cl. 423-445.000.

Ozawa, Hiroshi: *See—*
Kato, Nobukatsu; Morimoto, Yoshio; and Ozawa, Hiroshi, 4,202,805, Cl. 260-22.0CB.

Ozgu, Mustafa R.: *See—*
Hlinka, Joseph W.; Whitmore, Bruce C.; and Ozgu, Mustafa R., 4,202,397, Cl. 164-82.000.

Paal, Gabor: *See—*
Havas, Janos; and Paal, Gabor, 4,202,914, Cl. 427-38.000.

Paaren, Herbert E.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,202,829, Cl. 260-397.200.

Paddington, Arthur L., to David Brown-Vosper (Offshore) Limited. Coupling including a tubular coupling member to be coupled to a flange. 4,202,567, Cl. 285-18.000.

Pampus, Gottfried: *See—*
Beck, Manfred; Schnetger, Jochen; Serini, Volker; and Pampus, Gottfried, 4,202,949, Cl. 525-92.000.

Pan, Yen-Chi; and Batzold, John S., to Exxon Research & Engineering Co. Production of hydrogen. 4,202,744, Cl. 204-129.000.

Panametrics, Inc.: *See—*
Kovac, Michael G.; Chleck, David J.; and Goodman, Philip, 4,203,087, Cl. 338-35.000.

Paoli, Albano: *See—*
Armbruster, Franz; Paoli, Albano; Bassler, Gerd; Sitka, Hans-Peter; and Schmidt, Gunter, 4,203,020, Cl. 219-93.000.

Papantoniou, Andre; and Papantoniou, Kostas, to Pita Baking Company. Method of preparing pocket pita bread. 4,202,911, Cl. 426-502.000.

Papantoniou, Kostas: *See—*
Papantoniou, Andre; and Papantoniou, Kostas, 4,202,911, Cl. 426-502.000.

Paquin, Patrick J., to Spectra-Strip. Apparatus for making twisted pair multi-conductor ribbon cable with intermittent straight sections. 4,202,722, Cl. 156-436.000.

Paraisten Kalkki Oy-Pargas Kalk AB: *See—*
Ahonen, Esko M., 4,202,658, Cl. 425-64.000.

Parish, Edward J.: *See—*
Schroepfer, George J., Jr.; Parish, Edward J.; and Kandutsch, Andrew A., 4,202,891, Cl. 424-242.000.

Parker, Jack C., Jr.: *See—*
Bishop, Larry D.; and Parker, Jack C., Jr., 4,203,141, Cl. 361-18.000.

Parker, Robert R., to Bell & Howell Company. Projector apparatus and control arrangement. 4,202,611, Cl. 352-179.000.

Parkinson, Derek; and Goose, Jack, to Dresser Europe S.A. Hammer mill. 4,202,503, Cl. 241-194.000.

Parrack, Alvin L.: *See—*
Johnson, Jay P.; Parrack, Alvin L.; and Lunsford, Delbert R., 4,203,161, Cl. 367-40.000.

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Roullier, Lucien; and Pastourel, Dominique, 4,202,578, Cl. 296-37.160.

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Pederson, Harold T., Jr., 4,202,909, Cl. 426-239.000.

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De Longe, Harry C.; and Fabian, Woolfe S., 4,202,768, Cl. 210-62.000.

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Hill, Robin E. T.; Mann, Alan W.; McDonald, Ean L.; and Perdrix, John L., 4,202,128, Cl. 43-43.140.

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Boyesen, Eyvind, 4,202,298, Cl. 123-73.00R.
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Watkin, Theodore, 4,202,623, Cl. 355-30.000.

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Frohman-Bentchkowsky, Dov; Mar, Jerry; Perlegos, George; and Johnson, William S., 4,203,158, Cl. 365-185.000.

Perrin, Remi D.: *See—*
Marcovich, Herbert, S.; and Perrin, Remi D., 4,202,736, Cl. 203-10.000.

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Newell, Richard G.; and Perry, Dale C., 4,202,706, Cl. 148-6.170.

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Loos, John F.; and Petty, James C., 4,202,520, Cl. 248-68.0CB.

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Wocher, Berthold; and Pfendler, Thomas, 4,203,112, Cl. 343-13.00R.

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Kita, Donald A.; Gagne, John W.; and Fenton, Dennis M., 4,202,942, Cl. 435-262.000.

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Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,620, Cl. 355-10.000.
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,202,913, Cl. 430-106.000.

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de la Burde, Roger Z.; Aument, Patrick E.; and Utsch, Francis V., 4,202,357, Cl. 131-140.00R.

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Coltrin, Michael E.; and Wu, Yulin, 4,202,992, Cl. 568-575.000.
Vanderveen, John W., 4,202,636, Cl. 366-319.000.

Piazza, John, Jr. Skateboard. 4,202,559, Cl. 280-87.04R.

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Dalamangas, Chris A.; Piccirillo, Thomas P.; and Seip, Donald P., 4,202,588, Cl. 339-59.00M.

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Cook, John B.; and Pike, Melvin, 4,202,649, Cl. 405-282.000.

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Tomura, Yoshihiro, 4,202,641, Cl. 401-32.000.

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Hoerauf, Werner; Pirzer, Hans; Guenther, Ernst; Neumann, Eckart; and Dietrich, Ernst, 4,202,375, Cl. 138-39.000.

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Papantoniou, Andre; and Papantoniou, Kostas, 4,202,911, Cl. 426-502.000.

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Schubert, Keith E., 4,202,489, Cl. 235-101.000.

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Lowe, James N., 4,202,857, Cl. 264-333.000.

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Mohs, Thomas J.; and Engel, Richard C., Jr., 4,202,464, Cl. 220-339.000.

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Allain, Albert; Buret, Jacqui; and Plagnard, Andre, 4,202,729, Cl. 176-30.000.

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Priest, Christopher C. A., 4,203,092, Cl. 340-347.0AD.

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Taylor, Lloyd D., 4,202,694, Cl. 430-215.000.

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Gordon, James P.; Nahory, Robert E.; Pollack, Martin A.; and Worlock, John M., 4,203,124, Cl. 357-13.000.

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Lee, Cedric; and Burrage, Martin E., 4,202,746, Cl. 204-181.00C.

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Simon, Ulrich; Werner, Klaus-Dieter; and Pontani, Bernd, 4,202,731, Cl. 176-37.000.

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Johnson, Carl B., 4,202,580, Cl. 297-84.000.

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Tattersall, Graham D., 4,203,009, Cl. 179-16.0AA.

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Wilson, Stanley, Jr., 4,203,095, Cl. 340-506.000.

Powell, Kenneth F.: *See—*
Miertschin, Gary N.; and Powell, Kenneth F., 4,202,849, Cl. 264-0.500.

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Dowbenko, Rostyslaw, 4,202,926, Cl. 428-304.000.

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Krolopp, Otto C.; and Haluch, Leonard M., 4,202,759, Cl. 209-234.000.

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Mascia, Ray C., 4,203,006, Cl. 179-2.00C.

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Ritze, Lyle W., 4,202,878, Cl. 424-49.000.
Shelton, David L., 4,202,879, Cl. 424-66.000.

Prospa S.A.: *See—*
Schnek, Arthur G.; Looze, Yvan-Roger-Jean; and Deconinck, Marc M., 4,202,884, Cl. 424-94.000.

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Lauton, Alain; Putzar, Roland; Berendt, Hans-Ulrich; and Scherer, Gustaaf, 4,202,838, Cl. 260-505.00C.

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Ellson, Allan H., 4,202,200, Cl. 73-23.000.

Quebe, Herbert O., to W-K-M Wellhead Systems, Inc. Seal testing arrangement for wellheads. 4,202,410, Cl. 166-88.000.

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Haigh, John M., deceased; and Quinlan, Joyce E., administrator, 4,202,663, Cl. 8-471.000.

R. Alkan & Cie: *See—*
Hasquenoph, Jean H.; and Coutin, Pierre F., 4,202,576, Cl. 294-83.00R.

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Doe, Lester A., Jr.; and Brooks, Lester A., 4,202,782, Cl. 252-51.50A.

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Ebensberger, Matthaus; Hesse, Jurgen; and Raab, Lothar, 4,203,068, Cl. 324-97.000.

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Clearwaters, Walter L.; Einstein, Lloyd T.; Radics, Paul F., Jr.; and Soderberg, John W., 4,203,162, Cl. 367-122.000.

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Monks, Reginald; and Riley, Anthony L. M., 4,202,876, Cl. 424-1.500.

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Moore, William T., 4,202,597, Cl. 350-6.600.

Rappold, Franz: *See—*
Steigerwald, Karl-Heinz; Scheffels, Wilhelm; Anderl, Peter; Konig, Dieter; Hiller, Walther; and Rappold, Franz, 4,203,023, Cl. 219-121.0EB.

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Homann, Reimer; and Raptopoulos, Prodromos, 4,203,046, Cl. 310-93.000.

Rau, Peter: *See—*
Jung, Wilfried; Peehs, Martin; Rau, Peter; Krug, Wolfgang; and Stechemesser, Horst, 4,202,732, Cl. 176-37.000.

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Hirsch, Leon C.; Rawson, Paul O.; and Nagy, Louis E., 4,202,353, Cl. 128-724.000.

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Hambrick, William H., Sr.; and Raybon, Charles L., 4,202,425, Cl. 181-120.000.

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Chambers, Derek; and Masterman, Hugh C., 4,203,055, Cl. 315-375.000.

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Razgulov, Mikhail M.; and Razgulova, Tamara A., 4,202,479, Cl. 227-8.000.

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Christopher, Todd J.; and Lin, Tsan H., 4,203,134, Cl. 358-128.500.
Coleman, Clyde F.; and Stewart, Myron C., 4,202,594, Cl. 339-147.00R.
Harwood, Leopold A.; Wittmann, Erwin J.; and Shanley, Robert L., II, 4,203,131, Cl. 358-34.000.
Loeb, Paul; and Magasiny, Irving P., 4,203,063, Cl. 318-603.000.
Nossen, Edward J., 4,203,002, Cl. 375-116.000.
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Zuber, John R.; and Foxman, Herbert, 4,202,703, Cl. 134-2.000.

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Talbot, Tully W.; Barrows, George T.; and Thompson, Granville B., 4,202,887, Cl. 424-154.000.

Redmayne, William L. Refuse container lid lock. 4,202,574, Cl. 292-228.000.

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Guimond, Roy A.; Reed, Nanci W.; and Gulliksen, John E., 4,202,936, Cl. 429-163.000.

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Phelps, Thomas C.; and Reese, Clifford J., 4,202,749, Cl. 204-195.00G.

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Roullier, Lucien; and Pastourel, Dominique, 4,202,578, Cl. 296-37.160.

Rehnmark, Stig L.: *See—*
Gerst, Carl W.; Hair, Hugh A.; and Rehnmark, Stig L., 4,203,114, Cl. 343-100.0SA.

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Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,203,067, Cl. 324-58.50C.

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Rennard, Raymond J.: *See—*
Acheson, Willard P.; Morris, Richard A.; Rennard, Raymond J.; and Viswanathan, Thiagarajan, 4,202,168, Cl. 60-39.060.

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Stoner, Glenn E.; and Cahen, George L., Jr., 4,202,740, Cl. 204-130.000.

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Osborn, John J., 4,202,352, Cl. 128-719.000.

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Hughes, Richard J., 4,202,073, Cl. 15-306.00A.

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Luther, Hans W.; and Marwitz, Hartmut, 4,202,270, Cl. 102-43.00R.

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Taya, Miguel M.; Aedo, Dionisio M.; and Ricard, Rene, 4,202,825, Cl. 260-345.200.

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Coulter, Alton R.; Hubbard, Lonnie G.; Johnston, Vincent P.; and Rich, Michael H., 4,202,145, Cl. 52-169.100.

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Bitrolf, Ehrenfried, 4,202,338, Cl. 128-303.150.

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Suggitt, Robert M.; Gilmer, William N.; and Richter, George N., 4,202,167, Cl. 60-39.020.

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Okamoto, Toyoo, 4,203,144, Cl. 361-234.000.

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Delgado, Manuel M.; and Riise, Harold N., 4,202,322, Cl. 126-425.000.

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Monks, Reginald; and Riley, Anthony L. M., 4,202,876, Cl. 424-1.500.

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Howell, Bryan G.; and Ringrose, Gordon H., 4,202,450, Cl. 206-459.000.

Ritchie, Robert T.: *See—*
Lammers, Gerald B.; and Ritchie, Robert T., 4,202,542, Cl. 271-276.000.

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Schertz, Charles W.; and Ritter, Edward H., 4,202,246, Cl. 89-41.0EA.

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Manning, John J., 4,203,097, Cl. 340-566.000.

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Waddell, Bruce A., 4,202,418, Cl. 175-361.000.

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Armbruster, Franz; Paoli, Albano; Bassler, Gerd; Sitka, Hans-Peter; and Schmidt, Gunter, 4,203,020, Cl. 219-93.000.
Elsasser, Walter; and Hofmann, Werner, 4,203,085, Cl. 336-210.000.
Frohlich, Michael; and Stahle, Walter, 4,202,183, Cl. 64-1.00C.
Jundt, Werner; and Bodig, Bernd, 4,202,304, Cl. 123-148.00E.
Wocher, Berthold; and Pfendler, Thomas, 4,203,112, Cl. 343-13.00R.

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Bechtel, Jon H., 4,203,052, Cl. 315-209.0CD.
Brakebill, Harold G., 4,202,524, Cl. 251-28.000.

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Johnson, Gary W.; and Robinson, Carl J., 4,202,207, Cl. 73-119.00A.

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Pruckmayr, Gerfried; and Robinson, Ivan M., 4,202,964, Cl. 528-482.000.

Robinson, John W.: *See—*
Wilcox, Brian N.; and Robinson, John W., 4,202,236, Cl. 84-1.030.

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Beningfield, Harley W.; and Sparks, Ward L., 4,203,072, Cl. 455-223.000.
Frikken, Bert R.; and Halcomb, Ronald G., 4,202,856, Cl. 264-221.000.
Heinz, Theodore A., 4,202,605, Cl. 350-292.000.

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Taya, Miguel M.; Aedo, Dionisio M.; and Ricard, Rene, 4,202,825, Cl. 260-345.200.

Rogozhin, Sergei V.: *See—*
Nesmeyanov, Alexandr N.; Rogozhin, Sergei V.; Tolstoguzov, Vladimir B.; Misjurev, Vladimir I.; Ershova, Vera A.; and Braudo, Evgeny E., 4,202,908, Cl. 426-72.000.

Rohm and Haas Company: *See—*
De Witt, Walter G., III, 4,202,924, Cl. 428-201.000.
Shimizu, Hiroshi, 4,202,737, Cl. 210-32.000.

Rohner AG Pratteln: *See—*
Wegmann, Jacques, 4,202,815, Cl. 260-42.210.

Rohner, Joachim, to W. Schlafhorst & Co. Device for monitoring thread travel. 4,202,506, Cl. 242-36.000.

Rohrig, Adalbert, to Concast AG. Transfer device for billets and blooms of a multistrand continuous casting installation for metals. 4,202,402, Cl. 164-263.000.

Rolls-Royce Limited: *See—*
Snell, Leonard S., 4,202,554, Cl. 277-53.000.

Roman, Charles A., to Dayco Corporationp. Wall covering and method of making same. 4,202,716, Cl. 156-79.000.

Romer, Gerhard: *See—*
Claas, Helmut; Romer, Gerhard; and Weddeling, Otger, 4,202,262, Cl. 100-4.000.

Romo, Edgar A., to International Telephone and Telegraph Corporation. Bridge circuit. 4,202,218, Cl. 73-766.000.

Roob, Josef: *See—*
Blaschke, Kurt; and Roob, Josef, 4,202,416, Cl. 175-94.000.

Rood, William E., Jr. Selective down cotton retrieving belt. 4,202,157, Cl. 56-28.000.

Rosaen, Oscar E. Rotary engine. 4,202,313, Cl. 123-212.000.

Rose, Larry A. Air circulation system. 4,202,492, Cl. 236-49.000.

Rosenau, Richard A.: *See—*
Jacoby, Lawrence J.; Rosenau, Richard A.; Carter, Dorothy P.; Nielsen, Ralph H.; and Ash, Kenneth C., 4,202,862, Cl. 423-70.000.

Ross, Joseph A.: *See—*
Di Matteo, Paul L.; Ross, Joseph A.; Stern, Howard K.; and Waszak, Lawrence, 4,202,612, Cl. 353-28.000.

Roth, Zdenek; and Altmann, Josef, to Skoda, oborovy podnik. Circuit arrangement for regulating the level of liquid in vessels. 4,202,367, Cl. 137-187.000.

Rothert, Horst: *See—*
Gerking, Luder; Stahlmann, Dirk; Rothert, Horst; and Karasiak, Wolf, 4,202,855, Cl. 264-210.200.

Rotilio, James V. Flexible conveyor system. 4,202,438, Cl. 198-524.000.

Roullier, Lucien; and Pastourel, Dominique, to Regie Nationale des Usines Renault. Device for automatic lifting of the rear panel of an automobile equipped with a tailgate. 4,202,578, Cl. 296-37.160.

Roussel Uclaf: *See—*
Heymes, Rene; and Lutz, Andre, 4,202,893, Cl. 424-246.000.
Prost-Marechal, Jacques; and Tessier, Jean, 4,202,835, Cl. 260-465.00F.

Roux, Jean-Pierre: *See—*
Bourgeois, Michel; Manevy, Georges; and Roux, Jean-Pierre, 4,202,861, Cl. 423-19.000.

RP Rorprodukter AB: *See—*
Forsell, Bror I., 4,202,376, Cl. 138-89.000.

Rullier, Noel; and Benel, Michel, to Societe Anonyme dite: Ela Medical. Sealed electrical connectors. 4,202,592, Cl. 339-116.00R.

Rumell, James A. Rail mounting method and apparatus. 4,202,494, Cl. 238-83.000.

Ruppert, Juergen: *See—*
Sauer, Gerhard; Hauser, Helmut; Haffer, Gregor; Ruppert, Juergen; Eder, Ulrich; and Wiechert, Rudolf, 4,202,991, Cl. 560-255.000.

Rusay, Ronald J., to Stauffer Chemical Company. 2-1-(2-Hydroxy alkyl imino)-ethyl-1-hydroxy-4,4,6,6-tetramethyl cyclohexen-3,5-diones. 4,202,685, Cl. 71-121.000.

Rusay, Ronald J.: *See—*
Gray, Reed A.; Tseng, Chien K.; and Rusay, Ronald J., 4,202,840, Cl. 260-438.100.

Rusco Industries, Inc.: *See—*
Riegelman, Harry M., 4,202,136, Cl. 49-449.000.

Ruskin, Arnold M., to Occidental Oil Shale, Inc. Thermally metamorphosing oil shale to inhibit leaching. 4,202,412, Cl. 166-256.000.

Russo, Leonard. Dental plate cushion. 4,202,098, Cl. 433-168.000.

Rutner, Herman: *See—*
Akerkar, Anandrao S.; and Rutner, Herman, 4,202,874, Cl. 424-1.000.

Rutten, Pierre L.; and Danel, Francois H., to Compagnie Nationale d'Amenagement de la Region du Bas-Rhone et du Languedoc; and Assistance Industrielle Dauphinoise S.A. Volumetric valve with independent display and resetting. 4,202,467, Cl. 222-20.000.

Ruuskanen, Erkki. Refiner. 4,202,505, Cl. 241-247.000.

Ruzicka, Harry L., Jr.: *See—*
Polastri, Robert S.; and Ruzicka, Harry L., Jr., 4,202,539, Cl. 269-70.000.

S & C Electric Company: *See—*
Opfer, John C.; and Vojta, Karel E., 4,203,083, Cl. 335-174.000.

S.E.C.A. Societe Anonyme Societe d'Entreprises Commerciales et Aeronautiques: *See—*
Geirnaert, Marcel, 4,202,251, Cl. 91-472.000.

S.I.C.E. Societa Italiana Costruzioni Elettromeccaniche S.p.A.: *See—*
Toriselli, Franco, 4,202,213, Cl. 73-487.000.

S & S Corrugated Paper Machinery Co., Inc.: *See—*
Leskiw, Alexander; and Graubert, Seth, 4,202,541, Cl. 271-132.000.

Sabatella, Robert J.; M'Sadoques, Andre J.; and Rich, Joseph F., to General Electric Company. Multiple metering panelboard assembly. 4,203,146, Cl. 361-361.000.

Sabol, Albert R.; and Baughman, Ernest H., to Standard Oil Company (Indiana). Process for making molybdenum phosphosulfurized hydrocarbon composition. 4,202,781, Cl. 252-32.7HC.

Sachs, Klaus, to Anton Piller KG. Battery/mains generator set for the production of interruption-free current. 4,203,041, Cl. 307-67.000.

Sacks, Alvin H. Method and apparatus for determining blood pressure. 4,202,347, Cl. 128-677.000.

Sada, Charles A.; and McKamie, William F., to Santa Fe International Corporation. Derrick escape system. 4,202,427, Cl. 182-2.000.

Sade, Moshe E.; Soffa, Albert; Vilenski, Dan; and Wing, William, to Kulicke & Soffa Industries, Inc. Solenoid actuated wire feed and tearing apparatus. 4,202,482, Cl. 228-4.500.

Sado, Ryoichi; and Nakamura, Akio, to Shin-Etsu Polymer Co., Ltd. Pressure-sensitive multiple resistor elements. 4,203,088, Cl. 338-114.000.

Safonov, Anatoly V.: *See—*
Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,202,174, Cl. 60-413.000.

Sahar, Raphael. Spinning top. 4,202,133, Cl. 46-67.000.

Sahulka, Richard J.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Sahulka, Richard J.; and Tuchman, Walter L., 4,203,166, Cl. 375-2.000.

Saida, Toyoyasu: *See—*
Ono, Hiroshi; Saida, Toyoyasu; and Fukumura, Kunimitsu, 4,202,766, Cl. 210-40.000.

Saint-Gobain Industries: *See—*
Jaeger, Erwin; and Tiefels, Wilhelm, 4,202,448, Cl. 206-392.000.

St. Jean, William A. Lathe tool holder. 4,202,651, Cl. 407-91.000.

St. Regis Paper Company: *See—*
Roberts, John P., 4,202,721, Cl. 156-358.000.

Saito, Mamoru: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

Saito, Tsukasa: *See—*
Inouye, Hiromasa; Otsuki, Tomonari; and Saito, Tsukasa, 4,202,595, Cl. 339-174.000.

Saito, Tsuyoshi: *See—*
Asano, Kiro; Saito, Tsuyoshi; Tanaka, Hiromitsu; and Enomoto, Satoru, 4,202,885, Cl. 424-95.000.

Sakai Chemical Industry Co., Ltd.: *See—*
Matsumoto, Seiji; Koga, Tadashi; Fukai, Kiyoshi; and Nakatani, Shinya, 4,202,871, Cl. 423-632.000.

Sakakibara, Naoji; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Automobile speed control system. 4,202,424, Cl. 180-176.000.

Sakamaki, Hisashi: *See—*
Kawatsura, Yoshihiro; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,202,622, Cl. 355-14.00C.

Sakurai, Tokio: *See—*
Abe, Tsutomu; Ikeda, Akihiko; and Sakurai, Tokio, 4,202,775, Cl. 210-287.000.

Saleck, Wilhelm: *See—*
Philippaerts, Herman A.; Pollet, Robert J.; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; von Konig, Anita; Gauss, Walter; Moll, Franz; and Ghys, Theofiel H., 4,202,695, Cl. 430-8.000.

Salk Institute for Biological Studies, The: *See—*
Lindstrom, Jon M., 4,202,875, Cl. 424-1.000.

Sama, Stephen L.: *See—*
Kitchener, William R.; and Sama, Stephen L., 4,203,029, Cl. 235-92.0PC.

Sanders Associates, Inc.: *See—*
Ballard, Samuel S.; and Vanham, Ernest E., 4,203,109, Cl. 340-850.000.

Sandhu, Mohammad A.: *See—*
Merrill, Stewart H.; Hartman, Susan E.; Noonan, John M.; Sandhu, Mohammad A.; and Santilli, Domenic, 4,202,785, Cl. 430-106.000.

Sandoz, Inc.: *See—*
Babington, Ronald G.; and Harrington, F. Eugene, 4,202,897, Cl. 424-250.000.

Sankin Industry Co., Ltd.: *See—*
Murayama, Kentaro; and Nakano, Kazuyuki, 4,202,687, Cl. 75-134.00C.

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Sada, Charles A.; and McKamie, William F., 4,202,427, Cl. 182-2.000.

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Merrill, Stewart H.; Hartman, Susan E.; Noonan, John M.; Sandhu, Mohammad A.; and Santilli, Domenic, 4,202,785, Cl. 430-106.000.

Santucci, Nicola: *See—*
Galperin, Alexandr L.; Serebryannikov, Albert S.; Onikov, Eduard A.; Zabotin, Alexandr A.; Loschilin, Evgeny D.; and Santucci, Nicola, 4,202,383, Cl. 139-436.000.

Sanyo Electric Co., Ltd.: *See—*
Sasaki, Takashi, 4,203,135, Cl. 358-149.000.

Sanyo Trading Co., Ltd.: *See—*
Onizawa, Masao, 4,202,952, Cl. 525-374.000.

Saridakis, Nikolaus, to Volkswagenwerk Aktiengesellschaft. Positive cobalt electrode for alkaline storage batteries and process for its production. 4,202,789, Cl. 252-182.100.

Sasa, Kozo: *See—*
Asai, Yoshiyuki; Makiguchi, Nobuyoshi; Arita, Masanobu; Nakamura, Mitsuyoshi; and Sasa, Kozo, 4,202,905, Cl. 426-1.000.

Sasaki, Takashi, to Sanyo Electric Co., Ltd. External synchronizing signal generating circuit for a color television camera. 4,203,135, Cl. 358-149.000.

Sashin, Donald: *See—*
Gur, David; Sashin, Donald; and Sternglass, Ernest J., 4,203,037, Cl. 250-505.000.

Sato, Hisato; Takatsu, Haruyoshi; and Tazume, Masayuki, to Dainippon Ink & Chemicals Inc. Nematic liquid crystalline materials. 4,202,791, Cl. 252-299.000.

Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Anti-skid brake control device and associated method. 4,202,584, Cl. 303-105.000.

Sato, Masaaki, to Olympus Optical Co., Ltd. Coil support for disc rotor of coreless motor. 4,203,048, Cl. 310-268.000.

Sato, Masaki; Kawasaki, Takao; and Nagane, Yasushi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Antidermatomycotic agent. 4,202,877, Cl. 424-43.000.

Sato, Yoshinori: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, 4,202,906, Cl. 426-3.000.

Satoh, Hiroshi: *See—*
Fukuzuka, Toshio; Shimogori, Kazutoshi; Satoh, Hiroshi; Kamikubo, Fumio; and Hara, Tatsuo, 4,202,751, Cl. 204-197.000.

Sattlegger, Hans: *See—*
Moretto, Hans-Heinrich; de Montigny, Armand; Steinberger, Helmut; Sattlegger, Hans; and Larking, Ingrid, 4,202,807, Cl. 260-29.1SB.

Satzinger, Gerhard: *See—*
Hartenstein, Johannes; and Satzinger, Gerhard, 4,202,980, Cl. 546-75.000.

Sauer, Gerhard; Hauser, Helmut; Haffer, Gregor; Ruppert, Juergen; Eder, Ulrich; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Novel bicycloalkane derivatives and the production thereof. 4,202,991, Cl. 560-255.000.

Sauter Feinmechanik GmbH: *See—*
Thumm, Helmut, 4,202,227, Cl. 82-36.00A.

Sawyer, Thomas F.: *See—*
Gigliotti, Michael F. X., Jr.; and Sawyer, Thomas F., 4,202,400, Cl. 164-251.000.

Saxon, Robert: *See—*
Chang, Eugene Y. C.; and Saxon, Robert, 4,202,845, Cl. 525-302.000.

Scannell, James P.: *See—*
Kellett, Martha; Pruess, David; and Scannell, James P., 4,202,819, Cl. 260-245.300.

Scapa Dryers, Inc.: *See—*
Westhead, William T., 4,202,382, Cl. 139-383.00A.

Schadlich, Gunther: *See—*
Moraw, Roland; and Schadlich, Gunther, 4,202,693, Cl. 430-50.000.

Schadlich, Wolfgang: *See—*
Muller, Fritz; Kenner, Jurgen; and Schadlich, Wolfgang, 4,202,526, Cl. 251-51.000.

Schafer, Klaus: *See—*
Schmitt, Alfons; Schafer, Klaus; and Utz, Diether, 4,203,132, Cl. 358-101.000.

Schall, Robert A., to Dorr-Oliver Incorporated. Flow distribution means for screening apparatus. 4,202,777, Cl. 210-405.000.

Scharpf, Mike A. Apparatus for washing and drying phonograph records. 4,202,071, Cl. 15-302.000.

Schasteen, Thomas C. Thread gauge. 4,202,109, Cl. 33-199.00R.

Scheffels, Wilhelm: *See—*
Anderl, Peter; Scheffels, Wilhelm; Steigerwald, Karl H.; Monch, Clauspeter; Koy, Johannes;; and Konig, Dieter, 4,203,021, Cl. 219-121.0EB.
Steigerwald, Karl-Heinz; Scheffels, Wilhelm; Anderl, Peter; Konig, Dieter; Hiller, Walther; and Rappold, Franz, 4,203,023, Cl. 219-121.0EB.

Scheidl, Franz: *See—*
Korbanka, Helmut; and Scheidl, Franz, 4,202,830, Cl. 260-429.700.

Schenk, Peter, to Dzus Fastener Co., Inc. Slip-on receptacle. 4,202,390, Cl. 151-41.750.

Scherer, Gustaaf: *See—*
Lauton, Alain; Putzar, Roland; Berendt, Hans-Ulrich; and Scherer, Gustaaf, 4,202,838, Cl. 260-505.00C.

Schering Aktiengesellschaft: *See—*
Arndt, Friedrich; and Boroschewski, Gerhard, 4,202,684, Cl. 71-100.000.
Sauer, Gerhard; Hauser, Helmut; Haffer, Gregor; Ruppert, Juergen; Eder, Ulrich; and Wiechert, Rudolf, 4,202,991, Cl. 560-255.000.

Schertz, Charles W.; and Ritter, Edward H., to General Dynamics Pomona Division. Multiple co-axial optical sight and closed loop gun control system. 4,202,246, Cl. 89-41.0EA.

Scheuch, Anton: *See—*
Haussmann, August; Klaissle, Siegfried; Hugger, Hermann; Moser, Bernhard; Muller, Walter; Peetz, Wolfgang; Scheuch, Anton; and Schwarz, Gerhard, 4,202,557, Cl. 279-19.500.

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Schick, John D.: *See—*
Mayer, George L., Jr.; and Schick, John D., 4,202,626, Cl. 355-52.000.

Schiltz, Ronald M.: *See—*
Kristapovich, Paul J.; and Schiltz, Ronald M., 4,202,436, Cl. 198-472.000.

Schiminski, Herbert: *See—*
Turk, Herbert; Schiminski, Herbert; and Lenk, Erich, 4,202,163, Cl. 57-58.950.

Schimitischek, Erhard J.: *See—*
Hammond, Peter R.; Henry, Ronald A.; Trias, John A.; and Schimitischek, Erhard J., 4,202,981, Cl. 546-82.000.

Schinagl, Rudolf: *See—*
Waschk, Fritz; Webersik, Heinz; and Schinagl, Rudolf, 4,202,618, Cl. 355-3.0FU.

Schlak, Ottfried; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Preparation of silanes. 4,202,831, Cl. 556-467.000.

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Armbruster, Franz; Paoli, Albano; Bassler, Gerd; Sitka, Hans-Peter; and Schmidt, Gunter, 4,203,020, Cl. 219-93.000.

Schmidt, Helmut; Strobel, Walter; Treude, Gunter; and Blaser, Paul, to Kienzle Apparate GmbH. Keyboard assembly. 4,202,640, Cl. 400-491.200.

Schmitt, Alfons; Schafer, Klaus; and Utz, Diether, to Licentia Patent-Verwaltungs-G.m.b.H. Method of alignment. 4,203,132, Cl. 358-101.000.

Schmitt, Franz: *See—*
Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,203,067, Cl. 324-58.50C.

Schneider, Louis; and Graham, David E., to GAF Corporation. N-(N'-Methylenepyrrolidonyl)-2-substituted anilines. 4,202,821, Cl. 260-326.50S.

Schneider, Rudolf, to Erowa AG. Method and apparatus for eroding inner and outer walls of work pieces. 4,203,018, Cl. 219-69.00V.

Schnek, Arthur G.; Looze, Yvan-Roger-Jean; and Deconinck, Marc M., to Prospa S.A. Derivative of lysozyme. 4,202,884, Cl. 424-94.000.

Schnetger, Jochen: *See—*
Beck, Manfred; Schnetger, Jochen; Serini, Volker; and Pampus, Gottfried, 4,202,949, Cl. 525-92.000.

Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,202,829, Cl. 260-397.200.

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Stemme, Otto; Schroder, Rolf; Lermann, Peter; and Karl, Horst, 4,202,616, Cl. 354-173.000.

Schroepfer, George J., Jr.; Parish, Edward J.; and Kandutsch, Andrew A. 15-Oxygenated sterol compounds and the use of such compounds to inhibit the biosynthesis of sterols. 4,202,891, Cl. 424-242.000.

Schubert, Keith E., to Pitney Bowes Inc. Register resetting interface. 4,202,489, Cl. 235-101.000.

Schuda, Felix J.: *See—*
Wright, Dave L.; Schuda, Felix J.; and Spranza, Joseph J., III, 4,203,080, Cl. 331-94.50D.

Schuffler, Arnulf: *See—*
Durselen, Heinz; Onnebrink, Franz-Josef; and Schuffler, Arnulf, 4,202,735, Cl. 201-41.000.

Schulte, Heinrich, to Lindemann Maschinenfabrik GmbH. Scrap shearing machines. 4,202,263, Cl. 100-95.000.

Schuman, Edwin K. Fertilizer. 4,202,683, Cl. 71-35.000.

Schuring, Walter: *See—*
vom Braucke, Hans; vom Braucke, Manfred; and Schuring, Walter, 4,202,414, Cl. 172-42.000.

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Schwartz, Herbert. Novel deodorizing method. 4,202,882, Cl. 424-76.000.

Schwartz, Paul: *See—*
Gale, Glen R.; and Schwartz, Paul, 4,202,890, Cl. 424-200.000.

Schwarz, Gebhard: *See—*
Nonnenmann, Manfred; Hauser, Kurt; and Schwarz, Gebhard, 4,202,296, Cl. 123-41.480.

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Haussmann, August; Klaissle, Siegfried; Hugger, Hermann; Moser, Bernhard; Muller, Walter; Peetz, Wolfgang; Scheuch, Anton; and Schwarz, Gerhard, 4,202,557, Cl. 279-19.500.

SCI Systems, Inc.: *See—*
King, Olin B., 4,203,120, Cl. 346-162.000.
King, Olin B., 4,203,121, Cl. 346-162.000.
King, Olin B., 4,203,122, Cl. 346-162.000.

Scott & Fetzer Company, The: *See—*
Cox, Frank H., 4,202,180, Cl. 62-50.000.

Seiberling, Mildred Kelley: *See—*
Seiberling, Theophilus K., 4,202,717, Cl. 156-136.000.

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Kaufmann, Friedrich; Weisenburger, Siegfried; Koschorke, Herbert; Seiffert, Hartmut; Sienel, Dieter; and Weiss, Karl-Heinz, 4,202,792, Cl. 252-301.10W.

Seip, Donald P.: *See—*
Dalamangas, Chris A.; Piccirillo, Thomas P.; and Seip, Donald P., 4,202,588, Cl. 339-59.00M.

Seiz, Wolfgang: *See—*
Habermeier, Jurgen; Moser, Roland; and Seiz, Wolfgang, 4,202,987, Cl. 560-49.000.

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Seltman, Irving E. Cycle safety disc. 4,202,582, Cl. 301-37.0SA.

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Chadda, Madan M., 4,202,916, Cl. 427-82.000.

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Galperin, Alexandr L.; Serebryannikov, Albert S.; Onikov, Eduard A.; Zabotin, Alexandr A.; Loschilin, Evgeny D.; and Santucci, Nicola, 4,202,383, Cl. 139-436.000.

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Serras-Paulet, Edouard. Alphanumeric control keyboard with depressible keys for electric or electronic machines. 4,203,013, Cl. 200-5.00A.

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Smirnov, Boris A.; Busygin, Valery P.; Komina, Lidia S.; Mochalov, Vyacheslav N.; Shagalov, Lev V.; and Gruzdev, Evgeny A., 4,202,314, Cl. 128-218.00F.
Shah, Tilak M.: *See—*
Bonk, Henry W.; and Shah, Tilak M., 4,202,957, Cl. 528-77.000.
Shambhu, Manvendra B.: *See—*
Digenis, George A.; and Shambhu, Manvendra B., 4,202,356, Cl. 131-10.900.
Shamlian, Ralph B. Rechargeable modular component light with quick-disconnect connection. 4,203,150, Cl. 362-183.000.
Shanks, Roy R., to Burroughs Corporation. Thin film memory device employing amorphous semiconductor materials. 4,203,123, Cl. 357-2.000.
Shanks, Scott B.: *See—*
Richter, Gerolf; and Shanks, Scott B., 4,203,019, Cl. 219-72.000.
Shanley, Robert L., II: *See—*
Harwood, Leopold A.; Wittmann, Erwin J.; and Shanley, Robert L., II, 4,203,131, Cl. 358-34.000.
Shapiro, Eugene: *See—*
Crane, Jacob; Shapiro, Eugene; Shapiro, Stanley; and Mravic, Brian, 4,202,688, Cl. 75-153.000.
Shapiro, Stanley: *See—*
Crane, Jacob; Shapiro, Eugene; Shapiro, Stanley; and Mravic, Brian, 4,202,688, Cl. 75-153.000.
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Batjukov, Vladimir I.; Vijugov, Oleg N.; Fadeev, Alexandr I.; Shapkin, Alexandr F.; and Dyatlov, Lev E., 4,202,727, Cl. 176-30.000.
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Sharp, Keith W.; and Sparlin, Derry D., to Baker International Corporation. Acid soluble coating for well screens. 4,202,411, Cl. 166-244.00C.
Shawl, Edward T., to Atlantic Richfield Company. Preparation of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates with Lewis acid catalysts intercalated in graphite. 4,202,986, Cl. 560-25.000.
Shefsiek, Paul K.: *See—*
Lazaridis, Lazaros J.; Miskolczy, Gabor; and Shefsiek, Paul K., 4,202,661, Cl. 432-8.000.
Sheldon, Loren B.; Tomashek, James R.; and Ward, Donald H. Power tongs control arrangement. 4,202,225, Cl. 81-57.350.
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Schuurman, Pieter J., 4,202,672, Cl. 48-77.000.
Shell Oil Company: *See—*
Carr, John B.; and Durham, Harry G., 4,202,902, Cl. 424-298.000.
Durham, Harry G.; and Carr, John B., 4,202,818, Cl. 548-204.000.
Shelley, Edwin F., to New York Institute of Technology. Solar air conditioning apparatus and method. 4,202,179, Cl. 62-2.000.
Shelton, David L., to Procter & Gamble Company, The. Three phase antiperspirant stick. 4,202,879, Cl. 424-66.000.
Shen, Tsung-Ying; and Jones, Howard, to Merck & Co., Inc. Acyl cyanoguanidines for treating rheumatoid arthritis. 4,202,903, Cl. 424-326.000.
Shepard, Franziska M. Low voltage distribution system for miniature structure. 4,203,053, Cl. 315-254.000.
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, to Amax Inc. Cell with multiple anode-cathode chambers for fluid bed electrolysis. 4,202,752, Cl. 204-222.000.
Shibamori, Seiji; and Ishida, Yoji, to Furukawa Aluminum Co., Ltd. Method for manufacturing aluminum or aluminum alloy clad steel sheet or strip. 4,202,709, Cl. 148-11.50Q.
Shibasaki, Hatsuhiko; Omura, Junishi; Tanabe, Tetsuo; and Takamori, Kazumi, to Matsushita Electric Industrial Co., Ltd. Automatic part insertion machine. 4,202,092, Cl. 29-741.000.
Shibayama, Toshiyuki; and Nakakura, Kenji, to Toyo Rubber Industry Co., Ltd., The. Tire for construction vehicle s. 4,202,391, Cl. 152-209.00D.
Shields, James E., to Eli Lilly and Company. Peptides related to somatostatin. 4,202,802, Cl. 260-8.000.
Shikuma, Masao: *See—*
Kawasoko, Yoshiaki; Chiba, Iwane; Yamazaki, Noboru; Chiyonobu, Toshimi; and Shikuma, Masao, 4,202,537, Cl. 266-252.000.
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, to Nippon Kokan Kabushiki Kaisha. Casting vessel having basic lining and usage thereof. 4,202,538, Cl. 266-275.000.
Shimano Industrial Company Limited: *See—*
Ishida, Takuo; and Ban, Masuo, 4,202,508, Cl. 242-84.20G.
Shimizu, Hiroshi, to Rohm and Haas Company. Ion exchange process for desalination. 4,202,737, Cl. 210-32.000.
Shimizu, Katsuichi: *See—*
Kawatsura, Yoshihiro; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,202,622, Cl. 355-14.00C.
Yoshimura, Shigeru; and Shimizu, Katsuichi, 4,202,621, Cl. 355-14.00R.
Shimizu, Norio; and Odawara, Youji, to Hitachi, Ltd. High-efficient activated sludge method. 4,202,763, Cl. 210-14.000.
Shimizu, Senzo; Nomura, Isao; and Harada, Masahiro, to Mitsubishi Gas Chemical Company, Inc. Method for isolating solid polyarylene ester from its organic solvent solution. 4,202,965, Cl. 528-499.000.
Shimizu, Yoshiaki: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,202,941, Cl. 435-190.000.
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Fukuzuka, Toshio; Shimogori, Kazutoshi; Satoh, Hiroshi; Kamikubo, Fumio; and Hara, Tatsuo, 4,202,751, Cl. 204-197.000.
Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi; and Nakamura, Akio, 4,203,088, Cl. 338-114.000.
Shinoda, Midori: *See—*
Yoshimura, Susumu; Murakami, Mutsuaki; and Shinoda, Midori, 4,202,799, Cl. 252-500.000.
Shiraishi, Takeichi: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, 4,202,953, Cl. 526-125.000.
Shlepakov, Valery N.: *See—*
Pokhodnya, Igor K.; Shlepakov, Valery N.; and Suprun, Sergei A., 4,203,024, Cl. 219-146.100.
Shomura, Takashi: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.
Shriver, Joe E.: *See—*
Waldrop, T. William; and Shriver, Joe E., 4,202,154, Cl. 56-2.000.
Sibbett, Donald J.: *See—*
Allen, Richard T.; Moyer, Rudolph H.; Sibbett, Donald J.; Anderson, Howard H.; Martner, Glen R.; and Willis, Don, 4,202,212, Cl. 73-421.50R.
Siemens Aktiengesellschaft: *See—*
Braeckelmann, Walter, 4,203,081, Cl. 333-138.000.
Buehring, Walter, 4,203,111, Cl. 343-7.700.
Condon, Denis M., 4,203,001, Cl. 178-3.000.
Ebensberger, Matthaus; Hesse, Jurgen; and Raab, Lothar, 4,203,068, Cl. 324-97.000.
Haunstetter, Franz; and Koppelmann, Gerhard, 4,203,032, Cl. 250-205.000.
Heinzl, Joachim; Kern, Hans; and Giebler, Fritz, 4,202,267, Cl. 101-364.000.
Tschunt, Edgar, 4,203,036, Cl. 250-445.00T.
Sienel, Dieter: *See—*
Kaufmann, Friedrich; Weisenburger, Siegfried; Koschorke, Herbert; Seiffert, Hartmut; Sienel, Dieter; and Weiss, Karl-Heinz, 4,202,792, Cl. 252-301.10W.
Sifniades, Stylianos: *See—*
Koff, Fred W.; Tunick, Allen A.; Sifniades, Stylianos; and Belden, Reed H., 4,202,765, Cl. 210-31.00R.
Signoretto, Teresio. Rubber composition containing ground graminaceous rice product especially for manufacturing molded panels. 4,202,803, Cl. 260-17.4BB.
Silber, David. Toy utilizing used, discardable items such as bottle caps and beverage cans. 4,202,456, Cl. 215-228.000.
Siler, Ethel J. Doll. 4,202,135, Cl. 46-154.000.
Siliconix, Inc.: *See—*
Yim, Ernest W.; and VanLoon, Paul G. G., 4,203,126, Cl. 357-42.000.
Sillars, Frederick S., to USM Corporation. Can body conveyor with anti-rotation mechanism. 4,202,483, Cl. 228-43.000.
Sillion, Bernard: *See—*
Rabilloud, Guy; Masson, Bernard; Giuliani, Pierre; and Sillion, Bernard, 4,202,960, Cl. 528-271.000.
Silver Engineering Works, Inc.: *See—*
Price, Frank B.; and Vertenstein, Mathieu J., 4,202,527, Cl. 251-58.000.
Silverhardt, Stephen: *See—*
Zall, Michael E.; and Silverhardt, Stephen, 4,202,103, Cl. 433-153.000.
Simon, Ulrich; Werner, Klaus-Dieter; and Pontani, Bernd, to Kraftwerk Union Aktiengesellschaft. Condensation tube for a blow-off device for limiting excess pressure in nuclear power plants, especially in boiling water nuclear power plants. 4,202,731, Cl. 176-37.000.
Simpson, Neville H.; and Dykeman, Fred E., to Amsted Industries Incorporated. Lubricated plastic impregnated aramid fiber rope. 4,202,164, Cl. 57-232.000.
Singer, Barry M.: *See—*
Dalisa, Andrew L.; and Singer, Barry M., 4,203,106, Cl. 340-787.000.
Singer Company, The: *See—*
Ljung, Bo Hans G., 4,202,089, Cl. 29-527.600.
Sinoto, Nori. Pop-open container lid. 4,202,461, Cl. 220-268.000.
Sippel, Nathan J.; Hiser, Earl J.; and Christy, John, to United States of America, Navy. Gelled fuel simulant. 4,202,668, Cl. 44-7.00A.
Siragusa, Epifanio A. Collar construction. 4,202,054, Cl. 2-116.000.
Sitka, Hans-Peter: *See—*
Armbruster, Franz; Paoli, Albano; Bassler, Gerd; Sitka, Hans-Peter; and Schmidt, Gunter, 4,203,020, Cl. 219-93.000.
Sjostedt, Lars L. Loose-leaf binder utilizing stiff covers. 4,202,642, Cl. 402-13.000.
Skay, Frank. Internal combustion engine. 4,202,300, Cl. 123-75.00B.
SKF Kugellagerfabriken GmbH: *See—*
Olschewski, Armin; Brandenstein, Manfred; Krug, Manfred; and Martin, Horst, 4,202,558, Cl. 280-11.280.

Skimovex B.V: *See—*
Middelbeek, Cornelis G., 4,202,778, Cl. 210-522.000.
Skinner, Barrie C., to Lucas Industries Limited. Internal combustion engine system. 4,202,308, Cl. 123-179.00G.
Skinner, Edward A., to Avdel Limited. Fault detector. 4,202,191, Cl. 72-10.000.
Skoda, oborovy podnik: *See—*
Roth, Zdenek; and Altmann, Josef, 4,202,367, Cl. 137-187.000.
Skrzec, Adam E.: *See—*
Feng, Henry H.; D'Acierno, John P.; and Skrzec, Adam E., 4,202,866, Cl. 423-265.000.
Slepchuk, Valery A.: *See—*
Bukhtiyarov, Ivan D.; An, Viktor B.; Demin, Alexei S.; Farshatov, Marat N.; and Slepchuk, Valery A., 4,202,206, Cl. 73-116.000.
Slidex Corporation: *See—*
Namiki, Naokuni, 4,202,122, Cl. 40-158.00B.
SMG Suddeutsche Maschinenbau-Gesellschaft mbH: *See—*
Baltschun, Horst, 4,202,433, Cl. 192-129.00A.
Smirnov, Boris A.; Busygin, Valery P.; Komina, Lidia S.; Mochalov, Vyacheslav N.; Shagalov, Lev V.; and Gruzdev, Evgeny A. Device for injection of medicinal preparations. 4,202,314, Cl. 128-218.00F.
Smith, Curtis P.; and Ulrich, Henri, to Upjohn Company, The. Mixture of bis(2-hydroxyalkyl) N,N-di(lower alkyl)aminomethanephosphonates with polyols. 4,202,779, Cl. 252-8.100.
Smith, Curtis P.; and Ulrich, Henri, to Upjohn Company, The. Fire retardant polyurethanes prepared from hydroxy substituted aminomethanephosphonates. 4,202,946, Cl. 521-169.000.
Smith, Dennis D., to Illinois Tool Works Inc. Temperature-sensitive spiral spring sliding contact device. 4,203,086, Cl. 337-410.000.
Smith, Edward E., to Geode Industries, Inc. Bezel grinding attachment for a dop stick holder. 4,202,138, Cl. 51-229.000.
Smith, Gary: *See—*
Mear, Brian; and Smith, Gary, 4,202,143, Cl. 52-97.000.
Smith, Gerald E. Bridge pin. 4,202,240. Cl. 84-297.00R.
Smith International, Inc.: *See—*
Alther, George A., 4,202,417, Cl. 175-320.000.
Smith, Leland B.; McIntyre, Robert A.; and Pawlak, Raymond M., to Beckman Instruments, Inc. Electroencephalograph. 4,202,354, Cl. 128-731.000.
Smith, Terry G. Amusement device. 4,202,130, Cl. 46-1.00R.
Smith, Thomas H.: *See—*
Tong, George L.; Henry, David W.; Wu, Helen Y.; and Smith, Thomas H., 4,202,967, Cl. 536-17.00A.
Smith, William A.: *See—*
Rodenberger, Phillip R.; and Smith, William A., 4,202,674, Cl. 55-108.000.
Smolyarenko, Volemir D.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.
Smyser, Craig: *See—*
Hobbs, Jim F.; and Smyser, Craig, 4,202,282, Cl. 110-346.000.
Snell, Leonard S., to Rolls-Royce Limited. Brush seals. 4,202,554, Cl. 277-53.000.
Snow Machines, Inc.: *See—*
VanderKelen, James B.; and Dilworth, James L., 4,202,496, Cl. 239-14.000.
Societe Anonyme dite: Ela Medical: *See—*
Rullier, Noel; and Benel, Michel, 4,202,592, Cl. 339-116.00R.
Societe d'Etudes et d'Applications Technologiques-Serat: *See—*
Granier, Pierre M., 4,202,346, Cl. 128-658.000.
Societe d'Usinage des Tubes pour l'Electricite S.U.T.E.: *See—*
Aubert, Rene, 4,202,384, Cl. 140-123.600.
Societe Nationale des Poudres et Explosifs: *See—*
Ragon, Philippe R.; and Van Vooren, Gerard, 4,202,713, Cl. 149-100.000.
Soderberg, John W.: *See—*
Clearwaters, Walter L.; Einstein, Lloyd T.; Radics, Paul F., Jr.; and Soderberg, John W., 4,203,162, Cl. 367-122.000.
Soderstrom, Melvin A.: *See—*
Reavis, Robert P., Jr.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Hughes, Richard L., 4,202,589, Cl. 339-97.00R.
Soffa, Albert: *See—*
Sade, Moshe E.; Soffa, Albert; Vilenski, Dan; and Wing, William, 4,202,482, Cl. 228-4.500.
Sokol, Phillip E., to Gillette Company, The. Capillary type ink. 4,202,652, Cl. 401-196.000.
Solender, Peter E.: *See—*
Eglowstein, Ira; and Solender, Peter E., 4,202,265, Cl. 101-72.000.
Solid Photography Inc.: *See—*
Di Matteo, Paul L.; Ross, Joseph A.; Stern, Howard K.; and Waszak, Lawrence, 4,202,612, Cl. 353-28.000.
Solomon, Jack M.: *See—*
Spiegelman, Gerald H.; Nickles, Harry B.; and Solomon, Jack M., 4,202,755, Cl. 208-5.000.
Sommer, Ruediger: *See—*
Wellendorf, Klaus; and Sommer, Ruediger, 4,203,136, Cl. 358-280.000.
Sony Corporation: *See—*
Watanabe, Yoshimi, 4,203,140, Cl. 360-77.000.
Yamashita, Noriyuki, 4,203,076, Cl. 331-25.000.
Sorenson, Conrad L. Trailer hitch. 4,202,562, Cl. 280-415.00R.
Soto, Jose M. Land vehicle with articulated legs. 4,202,423, Cl. 180-8.00D.
Soundesign Corporation: *See—*
Horiuchi, Harumi, 4,203,139, Cl. 360-62.000.
Soussloff, Dimitri G., to Trantorque Corporation. Mounting device. 4,202,644, Cl. 403-369.000.
Southard, James S.; and Mott, Daniel R., to C. G. Conn, Ltd. Tone generator keyer control system. 4,202,239, Cl. 84-1.260.
Sowa, Kunihiro; and Esaki, Motoharu, to Nippon Soken, Inc. Apparatus for selectively displaying a plurality of indication panels. 4,203,094, Cl. 340-378.500.
Sowter, Brian R., to International Business Machines Corporation. Correction factor signals for cathode ray tubes. 4,203,054, Cl. 315-368.000.
Sowter, Brian R.: *See—*
Hallett, Michael H.; Heneghan, Michael J.; and Sowter, Brian R., 4,203,051, Cl. 315-13.00C.
Sparks, Ward L.: *See—*
Beningfield, Harley W.; and Sparks, Ward L., 4,203,072, Cl. 455-223.000.
Sparlin, Derry D.: *See—*
Sharp, Keith W.; and Sparlin, Derry D., 4,202,411, Cl. 166-244.00C.
Spartus Corporation: *See—*
Jauch, Christian M. J., 4,202,165, Cl. 368-272.000.
Spector, George: *See—*
Bruce, Gary; and Spector, George, 4,202,858, Cl. 422-243.000.
Spectra Physics, Inc.: *See—*
Wright, Dave L.; Schuda, Felix J.; and Spranza, Joseph J., III, 4,203,080, Cl. 331-94.50D.
Spectra-Strip: *See—*
Paquin, Patrick J., 4,202,722, Cl. 156-436.000.
Sperry Rand Corporation: *See—*
McLean, Kenneth W., 4,202,422, Cl. 180-6.480.
Waldrop, T. William; and Shriver, Joe E., 4,202,154, Cl. 56-2.000.
Spetsialnoe Opytnoe Proektno-Konstruktorsko-Tekhnologicheskoe Bjuro Sibirskogo Otdelenia Vsesojuznoi Akademii Selskokhozyaistvennykh Nauk Imeni v.i. Lenina: *See—*
Bukhtiyarov, Ivan D.; An, Viktor B.; Demin, Alexei S.; Farshatov, Marat N.; and Slepchuk, Valery A., 4,202,206, Cl. 73-116.000.
Spevack, Jerome S., to Deuterium Corporation. Process for controlling environmental pollution from steam containing hydrogen sulfide. 4,202,864, Cl. 423-220.000.
Spiegelman, Gerald H.; Nickles, Harry B.; and Solomon, Jack M., to Witco Chemical Corp. Catalytic method for making pitch. 4,202,755, Cl. 208-5.000.
Spilman, Lindsay G.: *See—*
O'Hare, David H.; Brickell, Christopher G.; and Spilman, Lindsay G., 4,203,027, Cl. 219-275.000.
Spranza, Joseph J., III: *See—*
Wright, Dave L.; Schuda, Felix J.; and Spranza, Joseph J., III, 4,203,080, Cl. 331-94.50D.
Springer, William E.: *See—*
Walter, Henry J.; and Springer, William E., 4,203,026, Cl. 219-222.000.
Sproull, Robert F.: *See—*
Lampson, Butler W.; Sproull, Robert F.; Ornstein, Severo M.; and Leung, James Y., 4,203,154, Cl. 364-200.000.
SRI International: *See—*
Tong, George L.; Henry, David W.; Wu, Helen Y.; and Smith, Thomas H., 4,202,967, Cl. 536-17.00A.
Stacey, Eric J.: *See—*
Abbondanti, Alberto; and Stacey, Eric J., 4,203,040, Cl. 307-65.000.
Staebler, David L., to RCA Corporation. Updateable optical storage medium. 4,202,928, Cl. 428-446.000.
Stahl- und Apparatebau Hans Leffer GmbH: *See—*
Blaschke, Kurt; and Roob, Josef, 4,202,416, Cl. 175-94.000.
Stahle, Walter: *See—*
Frohlich, Michael; and Stahle, Walter, 4,202,183, Cl. 64-1.00C.
Stahlmann, Dirk: *See—*
Gerking, Luder; Stahlmann, Dirk; Rothert, Horst; and Karasiak, Wolf, 4,202,855, Cl. 264-210.200.
Stamatovic, Bosko. Motorized work device with flexible shaft. 4,202,067, Cl. 15-28.000.
Stamicarbon, B.V.: *See—*
Alfenaar, Marinus, 4,202,767, Cl. 210-44.000.
Fontein, Freerk J.; and Jennekens, Hubertus F., 4,202,762, Cl. 210-3.000.
Standard Oil Company (Indiana): *See—*
Cahill, Paul J.; and Udelhofen, John H., 4,202,784, Cl. 252-51.50R.
Sabol, Albert R.; and Baughman, Ernest H., 4,202,781, Cl. 252-32.7HC.
Standard Oil Company of Indiana: *See—*
Wang, Chen-Shen; and Koster, Sandra K., 4,202,951, Cl. 525-416.000.
Stanish, Walter F. Retractable pet leash. 4,202,510, Cl. 242-107.40R.
Stann, Klaus: *See—*
den Hartog, Huibert; Stann, Klaus; and Stolze, Lutz, 4,202,194, Cl. 72-78.000.
Statton, Gary L., to Atlantic Richfield Company. Process for preparing polyurethane elastomers. 4,202,950, Cl. 525-123.000.
Stauffer Chemical Company: *See—*
Feng, Henry H.; D'Acierno, John P.; and Skrzec, Adam E., 4,202,866, Cl. 423-265.000.

Gray, Reed A.; Tseng, Chien K.; and Rusay, Ronald J., 4,202,840, Cl. 260-438.100.
Rusay, Ronald J., 4,202,685, Cl. 71-121.000.
Weil, Edward D., 4,202,842, Cl. 260-928.000.

Stechemesser, Horst: *See—*
Jung, Wilfried; Peehs, Martin; Rau, Peter; Krug, Wolfgang; and Stechemesser, Horst, 4,202,732, Cl. 176-37.000.

Steigerwald, Karl H.: *See—*
Anderl, Peter; Scheffels, Wilhelm; Steigerwald, Karl H.; Monch, Clauspeter; Koy, Johannes;; and Konig, Dieter, 4,203,021, Cl. 219-121.0EB.

Steigerwald, Karl-Heinz; Scheffels, Wilhelm; Anderl, Peter; Konig, Dieter; Hiller, Walther; and Rappold, Franz, to Steigerwald Strahltechnik GmbH. Welding pool support device for energy beam welding. 4,203,023, Cl. 219-121.0EB.

Steigerwald Strahltechnik GmbH: *See—*
Anderl, Peter; Scheffels, Wilhelm; Steigerwald, Karl H.; Monch, Clauspeter; Koy, Johannes;; and Konig, Dieter, 4,203,021, Cl. 219-121.0EB.
Steigerwald, Karl-Heinz; Scheffels, Wilhelm; Anderl, Peter; Konig, Dieter; Hiller, Walther; and Rappold, Franz, 4,203,023, Cl. 219-121.0EB.

Stein, Herbert: *See—*
Mills, Harold; and Stein, Herbert, 4,202,344, Cl. 128-644.000.

Steinberger, Helmut: *See—*
Moretto, Hans-Heinrich; de Montigny, Armand; Steinberger, Helmut; Sattlegger, Hans; and Larking, Ingrid, 4,202,807, Cl. 260-29.1SB.

Steinkamp, Walter: *See—*
Tuschy, Eckhard; Wischmeyer, Georg; and Steinkamp, Walter, 4,202,195, Cl. 72-78.000.

Steller, Kenneth E., to Hercules Incorporated. Peroxide blends. 4,202,790, Cl. 252-186.000.

Stellner, Klaus: *See—*
Batz, Hans-Georg; Stellner, Klaus; Linke, Hans-Ralf; and Weimann, Gunter, 4,202,873, Cl. 424-1.000.

Stemme, Otto; Schroder, Rolf; Lermann, Peter; and Karl, Horst, to AGFA-Gevaert, A.G. Film-transport system for photographic still camera. 4,202,616, Cl. 354-173.000.

Stenudd, Sven G. V., to Facit Aktiebolag. Device for pointwise action on an information carrying medium. 4,202,638, Cl. 400-124.000.

Stephenson, Richard G.: *See—*
Isaak, Robert D.; Klund, William E.; Littrell, Woodrow H.; and Stephenson, Richard G., 4,203,164, Cl. 367-134.000.

Sterling Drug Inc.: *See—*
Lewis, Thomas R.; and Michne, William F., 4,202,983, Cl. 546-97.000.
Lewis, Thomas R.; and Michne, William F., 4,202,984, Cl. 546-97.000.

Sterling, Jeffrey: *See—*
Weiner, Ben-Zion; Sterling, Jeffrey; Suchi, Raul; and Yellin, Haim, 4,202,892, Cl. 424-244.000.

Stern, Howard K.: *See—*
Di Matteo, Paul L.; Ross, Joseph A.; Stern, Howard K.; and Waszak, Lawrence, 4,202,612, Cl. 353-28.000.

Sternglass, Ernest J.: *See—*
Gur, David; Sashin, Donald; and Sternglass, Ernest J., 4,203,037, Cl. 250-505.000.

Stevens, Roger C., to Twiflex Couplings Limited. Brake actuating mechanisms. 4,202,430, Cl. 188-171.000.

Stewart, Errol G. Aquatic weed cutter, de-rooter and harvester. 4,202,155, Cl. 56-9.000.

Stewart, Myron C.: *See—*
Coleman, Clyde F.; and Stewart, Myron C., 4,202,594, Cl. 339-147.00R.

Stillman, Neil W., to Diamond Shamrock Corporation. Electrolytic generation of halogen biocides. 4,202,738, Cl. 204-95.000.

Stolze, Lutz: *See—*
den Hartog, Huibert; Stann, Klaus; and Stolze, Lutz, 4,202,194, Cl. 72-78.000.

Stone, James D.: *See—*
Hunter, Don L.; Woods, William G.; Stone, James D.; and LeFevre, Cecil W., 4,202,839, Cl. 260-569.000.

Stoner, Glenn E.; and Cahen, George L., Jr., to Research Corporation. Apparatus and method for disinfecting objects. 4,202,740, Cl. 204-130.000.

Storey, L. Robert; and Hall, Robert C., to Cordis Dow Corp. Apparatus and method for preparation of a hemodialysis solution optionally containing bicarbonate. 4,202,760, Cl. 210-22.00A.

Strader, Don S., to Motor Wheel Corporation. Tandem axle suspension system. 4,202,564, Cl. 280-678.000.

Strand, Jerome E.: *See—*
Thill, Gary A.; and Strand, Jerome E., 4,202,333, Cl. 128-218.00A.

Straub, John D.: *See—*
Kent, Lenore S.; and Straub, John D., 4,202,604, Cl. 350-291.000.

Strickland, C. Gene. Modular pig cage assembly. 4,202,292, Cl. 119-20.000.

Striebig, Ludwig. Device for cutting building panels. 4,202,231, Cl. 83-453.000.

Strobel, Walter: *See—*
Schmidt, Helmut; Strobel, Walter; Treude, Gunter; and Blaser, Paul, 4,202,640, Cl. 400-491.200.

Strom, Torsten E. T., to AB Gustavsberg. Tube joint. 4,202,568, Cl. 285-336.000.

Stroobants, Marcel: *See—*
Van Goethem, Hugo V.; Stroobants, Marcel; and De Winter, Walter F., 4,202,697, Cl. 430-306.000.

Stul, Iosif N.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Suchi, Raul: *See—*
Weiner, Ben-Zion; Sterling, Jeffrey; Suchi, Raul; and Yellin, Haim, 4,202,892, Cl. 424-244.000.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. K.G.: *See—*
Nonnenmann, Manfred; Hauser, Kurt; and Schwarz, Gebhard, 4,202,296, Cl. 123-41.480.

Sugerman, Gerald: *See—*
Monte, Salvatore J.; and Sugerman, Gerald, 4,202,810, Cl. 260-31.20N.

Suggitt, Robert M.; Gilmer, William N.; and Richter, George N., to Texaco Inc. Process for producing power. 4,202,167, Cl. 60-39.020.

Suginuma, Atsushi: *See—*
Kawashima, Kenichi; Arima, Yosiaki; Endo, Yoshihide; Suginuma, Atsushi; Uenishi, Akira; and Miyamoto, Seigo, 4,202,182, Cl. 62-511.000.

Suhara, Manabu: *See—*
Oda, Yoshio; Suhara, Manabu; Goto, Shoziro; Hukushima, Takashi; Miura, Koji; and Hamano, Toshikatsu, 4,202,743, Cl. 204-98.000.

Suhara, Yasuji; Maruyama, Hiromi; Itoh, Sayuri; and Yokose, Kazuteru, to Hoffmann-La Roche Inc. Resolution of a racemate. 4,202,943, Cl. 435-280.000.

Sukkarie, Ghassan A. Method and means for fixation and immobilization of the jaws. 4,202,328, Cl. 128-89.00A.

Sullivan, Barry J. Collapsible baby enclosure. 4,202,065, Cl. 5-99.00A.

Sulzer Brothers Limited: *See—*
Bader, Hartmann, 4,202,380, Cl. 139-368.000.

Sumitomo Chemical Company, Limited: *See—*
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; and Yamamoto, Hisao, 4,202,895, Cl. 424-250.000.
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, 4,202,974, Cl. 544-251.000.

Sumitomo Electric Industries, Ltd.: *See—*
Hirai, Masataka; and Matsuno, Koichiro, 4,202,475, Cl. 225-2.000.
Hirai, Masataka; and Matsuno, Koichiro, 4,202,475, Cl. 225-2.000.

Sundberg-Ferar, Inc.: *See—*
Heck, Richard A.; and Dekker, David J., 4,202,395, Cl. 160-84.00R.

Sundstrand Corporation: *See—*
Linscott, Phillip S., Jr., 4,203,044, Cl. 310-61.000.

Suprun, Sergei A.: *See—*
Pokhodnya, Igor K.; Shlepakov, Valery N.; and Suprun, Sergei A., 4,203,024, Cl. 219-146.100.

Sutherland, Robert L., to Federal Paper Board Company, Inc. Bottle package. 4,202,446, Cl. 206-147.000.

Sutko, Ronald R.: *See—*
Hanas, Walter E.; and Sutko, Ronald R., 4,202,522, Cl. 249-102.000.

Suzki, Akiyoshi; Kano, Ichiro; Yoshinari, Hideki; Tozuka, Masao; Hiraga, Ryozo; Kato, Yuzo; and Ogino, Yasuo, to Canon Kabushiki Kaisha. Photoelectric detecting apparatus. 4,202,627, Cl. 356-71.000.

Suzue, Seigo: *See—*
Irikura, Tsutomu; and Suzue, Seigo, 4,202,977, Cl. 544-362.000.

Suzuki, Atsushi, to Hitachi, Ltd. Data card. 4,202,491, Cl. 235-491.000.

Suzuki, Etsuji; Kashihara, Tomio; Hashimoto, Susumu; Watanabe, Ken; and Kodama, Tsuyoshi, to Tokyo Shibaura Electric Co., Ltd. Method for automatically controlling the position of small objects. 4,203,064, Cl. 318-640.000.

Suzuki, Kiyoshi: *See—*
Suzuki, Masane; and Suzuki, Kiyoshi, 4,202,630, Cl. 356-371.000.

Suzuki, Masane; and Suzuki, Kiyoshi, to Fuji Photo Optical Co., Ltd. Method of and apparatus for recording surface irregularity of object. 4,202,630, Cl. 356-371.000.

Suzuki, Masatoshi: *See—*
Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Suzuki, Masatoshi, 4,202,958, Cl. 526-142.000.

Svitenko, Igor A.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Swiss Aluminium Ltd.: *See—*
Bradford, Donald R.; and White, James E., 4,202,753, Cl. 204-247.000.

Switzer, Robert D. Cartridge loader. 4,202,124, Cl. 42-89.000.

SyntexLaboratories, Inc.: *See—*
Becker, Ronald K.; and Korb, Donald R., 4,202,226, Cl. 82-12.000.

Synthelabo: *See—*
Depoortere, Henri, 4,202,898, Cl. 424-250.000.

Syozi, Toshiaki: *See—*
Nakatani, Mitsuo; Kuroki, Takashi; Syozi, Toshiaki; and Horibe, Yoshiyuki, 4,203,025, Cl. 219-216.000.

Szabo, Arthur D.: *See—*
Buchanan, Lloyd W.; Eberhart, Noah E.; and Szabo, Arthur D., 4,203,045, Cl. 310-68.00C.

Szadkowski, Stanislav; Amory, Daniel; and Thomas, Jean M., to Vesuvius International Corporation. Revolving slide gate mechanism. 4,202,473, Cl. 222-598.000.

Sztuka, Mieczyslaw: *See—*
Demidowicz, Lech; and Sztuka, Mieczyslaw, 4,202,536, Cl. 266-135.000.

Tachibana, Hiromichi: *See—*
Mizutani, Tadashi; and Tachibana, Hiromichi, 4,202,718, Cl. 156-171.000.

Tainton Company, The: *See—*
Clayton, Erith T., 4,202,915, Cl. 427-47.000.

Takahashi, Eiichi: *See—*
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,202,969, Cl. 536-1.000.

Takahashi, Gensho; Miyoshi, Kazuhito; and Tanaka, Yoneharu, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of removing surface tack of cured free radical polymerized resin composition using organic carbonyl compound. 4,202,696, Cl. 430-306.000.

Takahashi, Toshiyori; Ojima, Akihiro; Matsumoto, Teruo; and Kashiwakura, Koji, to Hitachi, Ltd. High density spent fuel storage rack. 4,203,038, Cl. 250-507.000.

Takamatsu, Hiroshi: *See—*
Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, 4,202,584, Cl. 303-105.000.

Takamori, Kazumi: *See—*
Shibasaki, Hatsuhiko; Omura, Junishi; Tanabe, Tetsuo; and Takamori, Kazumi, 4,202,092, Cl. 29-741.000.

Takasago Perfumery Co., Ltd.: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, 4,202,906, Cl. 426-3.000.

Takasue, Takashi: *See—*
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,202,273, Cl. 104-298.000.

Takatsu, Haruyoshi: *See—*
Sato, Hisato; Takatsu, Haruyoshi; and Tazume, Masayuki, 4,202,791, Cl. 252-299.000.

Takatsuki, Akira: *See—*
Tamura, Gakuzo; and Takatsuki, Akira, 4,202,968, Cl. 536-23.000.

Takaya, Shigeo: *See—*
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,940, Cl. 435-101.000.
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,966, Cl. 536-1.000.

Takayama, Satoru: *See—*
Yamaguchi, Nobutaka; Takayama, Satoru; and Fujiyama, Masaki, 4,202,927, Cl. 428-323.000.

Takeda Chemical Industries, Ltd.: *See—*
Marumoto, Ryuji; Furukawa, Yoshiyasu; and Kawai, Kiyohisa, 4,202,975, Cl. 544-255.000.

Takekoshi, Tohru, to General Electric Company. Method for making substantially anhydrous alkali metal bisphenol salts. 4,202,993, Cl. 568-723.000.

Takeuchi, Atsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Device for manually controlling movement of pickup arm in automatic record player. 4,202,549, Cl. 274-9.0RA.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; and Takeuchi, Tomio, 4,202,824, Cl. 260-343.900.

Takimoto, Ichizo: *See—*
Osada, Kazuhiko; Ogawa, Yoshishige; and Takimoto, Ichizo, 4,203,103, Cl. 340-753.000.

Talbot, Tully W.; Barrows, George T.; and Thompson, Granville B., to Redel, Inc. Livestock feed supplement. 4,202,887, Cl. 424-154.000.

Tamura, Gakuzo; and Takatsuki, Akira, to Meiji Seika Kaisha, Ltd. New tunicamine derivatives and their preparation. 4,202,968, Cl. 536-23.000.

Tamura, Tetsuomi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic choke arrangement. 4,202,302, Cl. 123-119.00F.

Tanabe, Tetsuo: *See—*
Shibasaki, Hatsuhiko; Omura, Junishi; Tanabe, Tetsuo; and Takamori, Kazumi, 4,202,092, Cl. 29-741.000.

Tanaka, Hiromitsu: *See—*
Asano, Kiro; Saito, Tsuyoshi; Tanaka, Hiromitsu; and Enomoto, Satoru, 4,202,885, Cl. 424-95.000.

Tanaka, Toru: *See—*
Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Suzuki, Masatoshi, 4,202,958, Cl. 526-142.000.

Tanaka, Yoneharu: *See—*
Takahashi, Gensho; Miyoshi, Kazuhito; and Tanaka, Yoneharu, 4,202,696, Cl. 430-306.000.

Tansi, Hakki M., to Eagle Electric Mgf. Co., Inc. Foldable electrical outlet box. 4,202,457, Cl. 220-3.300.

Tasch, Al F., Jr.: *See—*
Chatterjee, Pallab K.; Taylor, Geoff W.; Tasch, Al F., Jr.; and Fu, Horng-Sen, 4,203,125, Cl. 357-41.000.

Tateishi, Tetsuya, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Method for preventing sedimentation of finely powdered coal in colloidal fuel. 4,202,670, Cl. 44-51.000.

Tattermusch, Peter, to Daimler-Benz Aktiengesellschaft. Independent wheel suspension for motor vehicles, especially for passenger motor vehicles. 4,202,563, Cl. 280-675.000.

Tattersall, Graham D., to Post Office, The. Unbalanced/balanced converter circuits. 4,203,009, Cl. 179-16.0AA.

Taya, Miguel M.; Aedo, Dionisio M.; and Ricard, Rene, to Rogador Sociedad Anonima. Quercetin pentamethyl carbamate and a process for its preparation. 4,202,825, Cl. 260-345.200.

Taylor, Andrew W.; Burton, George; and Clayton, John P., to Beecham Group Limited. Ketenimine cephalosporins. 4,202,973, Cl. 544-21.000.

Taylor, Geoff W.: *See—*
Chatterjee, Pallab K.; Taylor, Geoff W.; Tasch, Al F., Jr.; and Fu, Horng-Sen, 4,203,125, Cl. 357-41.000.

Taylor, James D., to BASF Wyandotte Corporation. Thixotropic isocyanate-terminated prepolymers and use in the preparation of polyurethane coating compositions. 4,202,956, Cl. 528-75.000.

Taylor, Lloyd D., to Polaroid Corporation. Pendant oxime polymers and photographic use thereof. 4,202,694, Cl. 430-215.000.

Tazume, Masayuki: *See—*
Sato, Hisato; Takatsu, Haruyoshi; and Tazume, Masayuki, 4,202,791, Cl. 252-299.000.

Team, Inc.: *See—*
Harrison, George W., 4,202,377, Cl. 138-94.000.

Technical Wire Products: *See—*
Dalamangas, Chris A.; Piccirillo, Thomas P.; and Seip, Donald P., 4,202,588, Cl. 339-59.00M.

Technofast, Inc.: *See—*
Gutshall, Charles E., 4,202,244, Cl. 85-45.000.

Tegge, Bruce R., Jr., to Motorola, Inc. Package and method of packaging semiconductor wafers. 4,203,127, Cl. 357-55.000.

Teledyne Industries, Inc.: *See—*
Jacoby, Lawrence J.; Rosenau, Richard A.; Carter, Dorothy P.; Nielsen, Ralph H.; and Ash, Kenneth C., 4,202,862, Cl. 423-70.000.

Teledyne McCormick Selph: *See—*
Goddard, Terrence P., 4,202,712, Cl. 149-22.000.

Temple, Robert S. Jet type heat exchanger. 4,202,408, Cl. 165-109.000.

Tenneco Chemicals, Inc.: *See—*
Di Bella, Eugene P., 4,202,843, Cl. 260-985.000.
Di Bella, Eugene P., 4,202,844, Cl. 260-985.000.

Ten Pas, Gary C. Spray gun. 4,202,497, Cl. 239-112.000.

Teodorescu, Constantin; Ceauselu, Constantin; and Ardeleanu, Stefan, to Institutul National Pentru Creatie Stiintifica Si Tehnica. Pneumatic transport apparatus and method of propulsion. 4,202,272, Cl. 104-91.000.

Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, to Kyowa Hakko Kogyo, Co. Ltd. Glycerol oxidase and process for the production thereof and method for the quantitative determination of glycerol by glycerol oxidase. 4,202,941, Cl. 435-190.000.

Teramura, Satoshi: *See—*
Washizuka, Isamu; Teramura, Satoshi; and Matsuishi, Masanori, 4,202,607, Cl. 350-338.000.

Terashima, Akira: *See—*
Namiki, Yasushi; Terashima, Akira; and Yoshizawa, Naomi, 4,202,235, Cl. 84-1.010.

Tersteegen, Bernd; and Van Endert, Gunter. Double lumen catheter. 4,202,332, Cl. 128-214.400.

Teshima, Soichi: *See—*
Murakami, Fumiki; Teshima, Soichi; and Yokoyama, Toshihiko, 4,202,990, Cl. 560-217.000.

Tessier, Jean: *See—*
Prost-Marechal, Jacques; and Tessier, Jean, 4,202,835, Cl. 260-465.00F.

Teva Pharmaceutical Industries, Ltd.: *See—*
Weiner, Ben-Zion; Sterling, Jeffrey; Suchi, Raul; and Yellin, Haim, 4,202,892, Cl. 424-244.000.

Texaco Inc.: *See—*
Johnson, Jay P.; Parrack, Alvin L.; and Lunsford, Delbert R., 4,203,161, Cl. 367-40.000.
Suggitt, Robert M.; Gilmer, William N.; and Richter, George N., 4,202,167, Cl. 60-39.020.

Texas Instruments Incorporated: *See—*
Chatterjee, Pallab K.; Taylor, Geoff W.; Tasch, Al F., Jr.; and Fu, Horng-Sen, 4,203,125, Cl. 357-41.000.
Edwards, Jon L., 4,203,093, Cl. 340-365.00L.

Texasgulf Inc.: *See—*
Conroy, Edward H.; Gloster, Arthur; and King, James A., 4,202,667, Cl. 23-302.00T.

Tezuka, Shichigoro: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, 4,202,906, Cl. 426-3.000.

Thatcher, Gordon: *See—*
Duncombe, Edward; and Thatcher, Gordon, 4,202,726, Cl. 176-18.000.

Thermo Electron Corporation: *See—*
Lazaridis, Lazaros J.; Miskolczy, Gabor; and Shefsiek, Paul K., 4,202,661, Cl. 432-8.000.

Thill, Gary A.; and Strand, Jerome E., to Minnesota Mining and Manufacturing Company. Fluid dispensing device. 4,202,333, Cl. 128-218.00A.

Thoese, Klaus, to Hoechst Aktiengesellschaft. Drawing layer for plastic films. 4,202,923, Cl. 428-144.000.

Thomas Broadbent & Sons Limited: *See—*
Jackson, Joseph F.; and Cooper, Edward M., 4,202,488, Cl. 233-24.000.

Thomas Industries of Tennessee Inc.: *See—*
Hamrick, James C., 4,202,531, Cl. 254-134.400.

Thomas, Jean M.: *See—*
Szadkowski, Stanislav; Amory, Daniel; and Thomas, Jean M., 4,202,473, Cl. 222-598.000.

Thompson Bagel Machine Manufacturing Corp.: *See—*
Thompson, Daniel T., 4,202,221, Cl. 74-821.000.

Thompson, Daniel T., to Thompson Bagel Machine Manufacturing Corp. Indexing apparatus. 4,202,221, Cl. 74-821.000.

Thompson, George H. B.; and Lovelace, David F., to ITT Industries, Inc. Injection lasers. 4,203,079, Cl. 331-94.50H.

Thompson, Granville B.: *See—*
Talbot, Tully W.; Barrows, George T.; and Thompson, Granville B., 4,202,887, Cl. 424-154.000.

Thompson, John W.: *See—*
Zannucci, Joseph S.; and Thompson, John W., 4,202,788, Cl. 252-182.000.

Thompson, Thomas K., to Owens-Corning Fiberglas Corporation. Fluid flow apparatus in combination with glass fiber forming apparatus. 4,202,680, Cl. 65-12.000.

Thomson-Brandt: *See—*
Bricot, Claude; and Lehureau, Jean-Claude, 4,203,133, Cl. 358-128.500.

Three Rivers Aluminum Company: *See—*
Randall, Robert P., 4,202,137, Cl. 49-458.000.

Three Sisters Ranch Enterprises: *See—*
Faulstich, George W., 4,202,455, Cl. 215-31.000.

Thumm, Helmut, to Sauter Feinmechanik GmbH. Multiple position tool holder. 4,202,227, Cl. 82-36.00A.

Thuringer, Frieda P. Craft board. 4,202,569, Cl. 289-18.100.

Thwaites, Peter John, to Dufaylite Developments Limited. Structural cellular materials. 4,202,253, Cl. 93-1.00H.

Thyssen Industrie Aktiengesellshaft: *See—*
Bitterberg, Friedhelm, 4,202,275, Cl. 105-61.000.

TIE/Communications, Inc.: *See—*
Coviello, Frank A., 4,203,011, Cl. 179-99.00M.

Tiefels, Wilhelm: *See—*
Jaeger, Erwin; and Tiefels, Wilhelm, 4,202,448, Cl. 206-392.000.

TII Corporation (Telecommunications Industries, Inc.): *See—*
Armstrong, Edward T., 4,202,371, Cl. 137-604.000.

Tilley, Jefferson W.: *See—*
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,202,978, Cl. 544-393.000.

Timberline, Inc.: *See—*
Wilkes, Ted W., Jr.; and Wentworth, Darel L., 4,202,453, Cl. 212-55.000.

Tipe Revent AB: *See—*
Johansson, Leif A. T., 4,202,259, Cl. 99-352.000.

Tipsword, Wilbur M. Automatically signaling mailbox. 4,202,486, Cl. 232-35.000.

Titow, Victor W.: *See—*
Clifton, John D.; and Titow, Victor W., 4,202,359, Cl. 132-5.000.

Toepsch, Hans: *See—*
de Montigny, Armand; Toepsch, Hans; and Buchner, Werner, 4,202,929, Cl. 428-452.000.

Togasi, Mituyuki: *See—*
Hukuzawa, Soiti; Togasi, Mituyuki; and Mori, Toshiro, 4,202,187, Cl. 68-18.00F.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fukuda, Takeo; and Murayama, Hideaki, 4,203,005, Cl. 179-1.0CN.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Katakura, Masayuki, 4,203,043, Cl. 307-254.000.
Osada, Kazuhiko; Ogawa, Yoshishige; and Takimoto, Ichizo, 4,203,103, Cl. 340-753.000.
Seki, Nagataka, 4,203,047, Cl. 307-252.00C.
Suzuki, Etsuji; Kashihara, Tomio; Hashimoto, Susumu; Watanabe, Ken; and Kodama, Tsuyoshi, 4,203,064, Cl. 318-640.000.

Tolle, Gunther: *See—*
Nixdorf, Hans W.; and Tolle, Gunther, 4,202,069, Cl. 15-250.030.

Tolley, William K., to UOP Inc. Separation of iron metal values from titanium metal values. 4,202,863, Cl. 423-82.000.

Tolstoguzov, Vladimir B.: *See—*
Nesmeyanov, Alexandr N.; Rogozhin, Sergei V.; Tolstoguzov, Vladimir B.; Misjurev, Vladimir I.; Ershova, Vera A.; and Braudo, Evgeny E., 4,202,908, Cl. 426-72.000.

Tomashek, James R.: *See—*
Sheldon, Loren B.; Tomashek, James R.; and Ward, Donald H., 4,202,225, Cl. 81-57.350.

Tomura, Yoshihiro, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Multiple-point writing instrument including a mechanical pencil unit. 4,202,641, Cl. 401-32.000.

Tomy Kogyo Co., Inc.: *See—*
Watanabe, Hiroyuki, 4,202,545, Cl. 273-87.00R.

Tong, George L.; Henry, David W.; Wu, Helen Y.; and Smith, Thomas H., to SRI International. N,N-pentamethylene derivatives of daunomycin and adriamycin. 4,202,967, Cl. 536-17.00A.

Torgersen, Gerard J.: *See—*
Oktay, Sevgin; Torgersen, Gerard J.; and Wong, Alexander C., 4,203,129, Cl. 357-82.000.

Toriselli, Franco, to S.I.C.E. Societa Italiana Costruzioni Elettromeccaniche S.p.A. Device for automatically locking motor vehicle wheels on to balancing machines. 4,202,213, Cl. 73-487.000.

Torres, Ismael. Multi-angular radiant energy modulator. 4,202,602, Cl. 350-272.000.

Tosswill, Christopher H., to Galileo Electro-Optics Corporation. Non-uniform imaging. 4,202,599, Cl. 350-96.250.

Toth, Robert L.: *See—*
Mineur, Mark H.; and Toth, Robert L., 4,202,392, Cl. 152-330.00L.

Totsu, Katsuyuki. Control means for the wire wrapping machine. 4,203,057, Cl. 318-285.000.

Touze, Pierre. Openable bath. 4,202,060, Cl. 4-173.00R.

Towsend, Marvin S. Electric power interrupting apparatus. 4,203,101, Cl. 340-635.000.

Toyo Kogyo Co., Ltd.: *See—*
Moriyoshi, Hiroshi, 4,202,311, Cl. 123-195.00C.
Nishikoori, Tsutomu, 4,202,571, Cl. 292-216.000.

Toyo Rubber Industry Co., Ltd., The: *See—*
Shibayama, Toshiyuki; and Nakakura, Kenji, 4,202,391, Cl. 152-209.00D.

Toyoda, Takeharu: *See—*
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kondo, Toshio; Harada, Susumu; Ito, Nobuyuki; and Kobayashi, Nobuyuki, 4,202,295, Cl. 123-32.0EH.
Mori, Kouichi; Igashira, Toshihiko; and Yamaguchi, Shunzo, 4,202,312, Cl. 123-210.000.
Tamura, Tetsuomi, 4,202,302, Cl. 123-119.00F.
Wakita, Nobuaki; and Igarashi, Kohei, 4,202,173, Cl. 60-290.000.

Tozuka, Masao: *See—*
Suzki, Akiyoshi; Kano, Ichiro; Yoshinari, Hideki; Tozuka, Masao; Hiraga, Ryozo; Kato, Yuzo; and Ogino, Yasuo, 4,202,627, Cl. 356-71.000.

Tracor, Inc.: *See—*
Hall, Randall C.; and Ehrlich, Burney J., 4,202,666, Cl. 23-232.00E.

Tradgardshallen i Helsingborg Planteringsvagen: *See—*
Wadenhed, Gustav, 4,202,278, Cl. 108-102.000.

Transver AG: *See—*
Buhrer, Werner, 4,202,443, Cl. 198-831.000.

Trantorque Corporation: *See—*
Soussloff, Dimitri G., 4,202,644, Cl. 403-369.000.

Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin L.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Substituted 1-oxyalkyl-2,6,6-trimethyl-cyclohexene derivatives, organoleptic uses thereof, syntheses for preparing same and intermediates used in said syntheses. 4,202,994, Cl. 568-824.000.

Treude, Gunter: *See—*
Schmidt, Helmut; Strobel, Walter; Treude, Gunter; and Blaser, Paul, 4,202,640, Cl. 400-491.200.

Tri-Tronics, Inc.: *See—*
Gonda, Gerald J.; and Vancza, John, Jr., 4,202,293, Cl. 119-29.000.

Trias, John A.: *See—*
Hammond, Peter R.; Henry, Ronald A.; Trias, John A.; and Schimitischek, Erhard J., 4,202,981, Cl. 546-82.000.

Trio Kabushiki Kaisha: *See—*
Morinaga, Mitsuyoshi, 4,202,550, Cl. 274-23.00R.

Tschunt, Edgar, to Siemens Aktiengesellschaft. X-ray diagnostic apparatus for producing transverse layer images. 4,203,036, Cl. 250-445.00T.

Tseng, Chien K.: *See—*
Gray, Reed A.; Tseng, Chien K.; and Rusay, Ronald J., 4,202,840, Cl. 260-438.100.

Tsuburaya, Yoichi: *See—*
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,940, Cl. 435-101.000.
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,966, Cl. 536-1.000.

Tsukamoto, Keiji: *See—*
Komiyama, Katsuhiko; Kasama, Noriyuki; Tsukamoto, Keiji; and Murakami, Tomomi, 4,202,166, Cl. 368-82.000.

Tsukamoto, Masahide; Nagasawa, Masahiro; and Yamazoe, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Surface acoustic wave filter. 4,203,082, Cl. 333-194.000.

Tsuruoka, Takashi: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.

Tsuruta, Haruki: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, 4,202,906, Cl. 426-3.000.

Tsuyama, Yasuharu: *See—*
Oku, Yuji; and Tsuyama, Yasuharu, 4,202,297, Cl. 123-65.0PE.

Tuccio, Sam A.: *See—*
Hartford, Allen, Jr.; and Tuccio, Sam A., 4,202,741, Cl. 204-158.00R.

Tuchman, Walter L.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Sahulka, Richard J.; and Tuchman, Walter L., 4,203,166, Cl. 375-2.000.

Tuchscherer, Lawrence D., to General Motors Corporation. Roller bank sensor contact system. 4,203,015, Cl. 200-61.45R.

Tummolo, Mauro, to Tummolo, Mauro. Method and machine for dry character transfer. 4,202,637, Cl. 400-118.000.

Tunick, Allen A.: *See—*
Koff, Fred W.; Tunick, Allen A.; Sifniades, Stylianos; and Belden, Reed H., 4,202,765, Cl. 210-31.00R.

Turk, Herbert; Schiminski, Herbert; and Lenk, Erich, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Spinning process and apparatus. 4,202,163, Cl. 57-58.950.

Tuscarora Yarns, Inc.: *See—*
Foil, Martin B., Jr., 4,202,161, Cl. 57-12.000.

Tuschy, Eckhard; Wischmeyer, Georg; and Steinkamp, Walter, to Kabel-und Metallwerke Gutehoffnungshuette AG. Skew rolling mill roller. 4,202,195, Cl. 72-78.000.

Twiflex Couplings Limited: *See—*
Stevens, Roger C., 4,202,430, Cl. 188-171.000.

Twinpak Ltd.: *See—*
Howell, Bryan G.; and Ringrose, Gordon H., 4,202,450, Cl. 206-459.000.

Twyford, Robert H., to Mechanical Enterprises, Incorporated. Electric switch utilizing coil spring torsion biasing in switch operation. 4,203,016, Cl. 200-159.00R.

Tzikas, Athanassios, to Ciba-Geigy Corporation. Process for the production of 1-anthraquinonyl hydrazine. 4,202,827, Cl. 260-378.000.

U.T.I.-Spectrotherm Corporation: *See—*
Holzl, Robert A.; Pickett, Frederick P.; and Lawrence, James L., Jr., 4,202,080, Cl. 29-25.180.

Ube Industries, Ltd.: *See—*
Yamamoto, Shinji; Kaijiri, Kouhei; and Oda, Denichi, 4,202,850, Cl. 264-108.000.

Uchida, Shingo: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.

Uchiyama, Yasushi; and Awamura, Daikichi, to Nippon Jidoseigyo Ltd. Apparatus for detecting defects in patterns. 4,202,631, Cl. 356-394.000.

Udelhofen, John H.: *See—*
Cahill, Paul J.; and Udelhofen, John H., 4,202,784, Cl. 252-51.50R.

Uehara, Itsuki: *See—*
Ishii, Eiichi; Nakane, Masanori; Ishikawa, Hiroshi; Uehara, Itsuki; and Miyake, Yoshizo, 4,202,917, Cl. 427-161.000.

Uenishi, Akira: *See—*
Kawashima, Kenichi; Arima, Yosiaki; Endo, Yoshihide; Suginuma, Atsushi; Uenishi, Akira; and Miyamoto, Seigo, 4,202,182, Cl. 62-511.000.

Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method of producing nitrogen-containing polysaccharides. 4,202,969, Cl. 536-1.000.

Ujita, Katsu: *See—*
Imataki, Mitsumasa; Ujita, Katsu; and Egashira, Tsutomu, 4,203,143, Cl. 361-120.000.

Ulrich, Henri: *See—*
Smith, Curtis P.; and Ulrich, Henri, 4,202,779, Cl. 252-8.100.
Smith, Curtis P.; and Ulrich, Henri, 4,202,946, Cl. 521-169.000.

Ultraflux: *See—*
Multon, Francois; and Allain, Gerard, 4,202,210, Cl. 73-194.00A.

Umetsu, Junji: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; and Umetsu, Junji, 4,202,617, Cl. 354-268.000.

Umezawa, Hamao; Aoyagi, Takaaki; and Takeuchi, Tomio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Physiologically active derivatives of esterastin. 4,202,824, Cl. 260-343.900.

Uni-Cardan Aktiengesellschaft: *See—*
Krude, Werner; and Jordan, Alfons, 4,202,184, Cl. 64-32.00R.

Union Carbide Corporation: *See—*
Fan, You-Ling, 4,202,808, Cl. 260-29.6WB.
Weber, Willis W.; Caglione, Alexander J.; Frost, Albert C.; and Weeks, Thomas J., Jr., 4,202,870, Cl. 423-630.000.

Uniroyal Aktiengesellschaft: *See—*
van der Burg, Sjirk, 4,202,394, Cl. 152-361.00R.

Uniroyal, Inc.: *See—*
Peascoe, Warren J., 4,202,948, Cl. 525-70.000.
Petersen, Henno A., 4,202,801, Cl. 260-5.000.
von Schmeling, Bogislav; and Boos, Walter R., 4,202,904, Cl. 424-330.000.

Uniroyal Ltd.: *See—*
von Schmeling, Bogislav; and Boos, Walter R., 4,202,904, Cl. 424-330.000.

United Kingdom Atomic Energy Authority: *See—*
Duncombe, Edward; and Thatcher, Gordon, 4,202,726, Cl. 176-18.000.

United States Borax & Chemical Corporation: *See—*
Hunter, Don L.; Woods, William G.; Stone, James D.; and LeFevre, Cecil W., 4,202,839, Cl. 260-569.000.

United States of America
Air Force: *See—*
Benser, Earl H., 4,202,516, Cl. 244-3.150.
Viravec, Joseph T.; and Hoyt, Maurice A., 4,202,369, Cl. 137-508.000.
Army: *See—*
Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., 4,202,714, Cl. 149-109.400.
Day, John H., 4,202,271, Cl. 102-247.000.
Hannigan, Joseph F., 4,203,115, Cl. 343-112.00R.
Jacobs, Harold; and Horn, Robert E., 4,203,117, Cl. 343-701.000.
Maxwell, Richard F., Jr., 4,202,515, Cl. 244-3.110.
Merritt, James A., 4,202,104, Cl. 331-94.50G.
Messineo, Joseph R.; and Lehwald, George F., 4,202,269, Cl. 102-8.000.
Energy: *See—*
Brehm, William F.; and McGuire, Joseph C., 4,202,730, Cl. 176-37.000.
Csakvary, Tibor; and Fromson, Robert E., 4,202,739, Cl. 204-129.350.
Newkirk, Lawrence R.; and Valencia, Flavio A., 4,202,931, Cl. 428-662.000.
Rand, Peter B., 4,202,279, Cl. 109-34.000.
Wilder, James A., Jr., 4,202,700, Cl. 106-39.600.
Health, Education and Welfare: *See—*
Gale, Glen R.; and Schwartz, Paul, 4,202,890, Cl. 424-200.000.
Navy: *See—*
Clearwaters, Walter L.; Einstein, Lloyd T.; Radics, Paul F., Jr.; and Soderberg, John W., 4,203,162, Cl. 367-122.000.
Dick, John O., 4,203,110, Cl. 343-7.0PF.
Doherty, John J., 4,203,160, Cl. 367-2.000.
Hammond, Peter R.; Henry, Ronald A.; Trias, John A.; and Schimitischek, Erhard J., 4,202,981, Cl. 546-82.000.
Hillery, Herbert V., 4,203,165, Cl. 367-135.000.
Isaak, Robert D.; Klund, William E.; Littrell, Woodrow H.; and Stephenson, Richard G., 4,203,164, Cl. 367-134.000.
Key, Carroll L., Jr., 4,203,163, Cl. 367-125.000.
Sippel, Nathan J.; Hiser, Earl J.; and Christy, John, 4,202,668, Cl. 44-7.00A.
Young, Robert W.; and Dansbury, Leonard D., 4,202,517, Cl. 244-3.220.

U.S. Philips Corporation: *See—*
Kuus, Gijsbert, 4,203,049, Cl. 313-174.000.
Le Can, Claude J. P. F.; and van den Beemt, Johannes A. C., 4,203,042, Cl. 307-241.000.

United States Steel Corporation: *See—*
Wiesboeck, Robert A., 4,202,283, Cl. 111-6.000.

United States Surgical Corporation: *See—*
Hirsch, Leon C.; Rawson, Paul O.; and Nagy, Louis E., 4,202,353, Cl. 128-724.000.

United Technologies Corporation: *See—*
Jalan, Vinod M., 4,202,934, Cl. 429-40.000.
Preston, John L., Jr., 4,202,865, Cl. 423-244.000.
Reiser, Carl A.; and Landau, Michael B., 4,202,933, Cl. 429-13.000.

University of Florida Board of Regents: *See—*
Carroll, Edward E., Jr., 4,203,034, Cl. 250-280.000.

University of Kentucky Research Foundation: *See—*
Digenis, George A.; and Shambhu, Manvendra B., 4,202,356, Cl. 131-10.900.

University of Pittsburgh: *See—*
Gur, David; Sashin, Donald; and Sternglass, Ernest J., 4,203,037, Cl. 250-505.000.

UOP Inc.: *See—*
Hilfman, Lee, 4,202,996, Cl. 585-377.000.
Loos, John F.; and Petty, James C., 4,202,520, Cl. 248-68.0CB.
O'Hara, Mark J.; Johnson, Russell W.; and Hilfman, Lee, 4,202,758, Cl. 208-143.000.
Tolley, William K., 4,202,863, Cl. 423-82.000.

Upjohn Company, The: *See—*
Ayer, Donald E., 4,202,970, Cl. 542-426.000.
Bonk, Henry W.; and Shah, Tilak M., 4,202,957, Cl. 528-77.000.
Dai, Sheng-Hong A., 4,202,833, Cl. 260-463.000.
Johnson, Roy A., 4,202,972, Cl. 542-426.000.
Kelly, Robert C., 4,202,971, Cl. 542-426.000.
Smith, Curtis P.; and Ulrich, Henri, 4,202,779, Cl. 252-8.100.
Smith, Curtis P.; and Ulrich, Henri, 4,202,946, Cl. 521-169.000.

Upton, Douglas J. Fluid dispensing control system. 4,202,387, Cl. 141-360.000.

Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; and Umetsu, Junji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Shutter release security device in motor drive camera. 4,202,617, Cl. 354-268.000.

USM Corporation: *See—*
Hanson, Raymond, 4,202,066, Cl. 12-142.00R.
Sillars, Frederick S., 4,202,483, Cl. 228-43.000.

Usmar, Ronald A.: *See—*
Bull, Reginald B.; Duffill, Colin; and Usmar, Ronald A., 4,202,216, Cl. 73-639.000.

Usui, Kenji: *See—*
Matsuura, Ryo; Komatsu, Tatsuyoshi; Nomiyama, Yukio; and Usui, Kenji, 4,202,828, Cl. 260-396.00R.

Utsch, Francis V.: *See—*
de la Burde, Roger Z.; Aument, Patrick E.; and Utsch, Francis V., 4,202,357, Cl. 131-140.00R.

Utz, Diether: *See—*
Schmitt, Alfons; Schafer, Klaus; and Utz, Diether, 4,203,132, Cl. 358-101.000.

Uwajima, Takayuki: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,202,941, Cl. 435-190.000.

Vachhani, Vasantrai A.: *See—*
Reavis, Robert P., Jr.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Hughes, Richard L., 4,202,589, Cl. 339-97.00R.

Valencia, Flavio A.: *See—*
Newkirk, Lawrence R.; and Valencia, Flavio A., 4,202,931, Cl. 428-662.000.

Valmet Oy: *See—*
Kankaanpaa, Matti, 4,202,113, Cl. 34-23.000.
Kirjavainen, Alvi, 4,202,724, Cl. 162-272.000.

Vancza, John, Jr.: *See—*
Gonda, Gerald J.; and Vancza, John, Jr., 4,202,293, Cl. 119-29.000.

van den Beemt, Johannes A. C.: *See—*
Le Can, Claude J. P. F.; and van den Beemt, Johannes A. C., 4,203,042, Cl. 307-241.000.

van der Burg, Sjirk, to Uniroyal Aktiengesellschaft. Recapped pneumatic tire. 4,202,394, Cl. 152-361.00R.

VanderKelen, James B.; and Dilworth, James L., to Snow Machines, Inc. Snow making system. 4,202,496, Cl. 239-14.000.

van der Lely, Cornelis. Crop working machine. 4,202,160, Cl. 56-366.000.

Vanderveen, John W., to Phillips Petroleum Company. Mixing device with internal recycle. 4,202,636, Cl. 366-319.000.

Van Endert, Gunter: *See—*
Tersteegen, Bernd; and Van Endert, Gunter, 4,202,332, Cl. 128-214.400.

Van Fossen, Harvey G., to Wheelabrator-Frye Inc. Abrasive particle blast apparatus for surface treatment. 4,202,142, Cl. 51-425.000.

Van Gerpen, Gary W. Muscle manipulating apparatus. 4,202,326, Cl. 128-33.000.

van Gerven, Hans, to Erbe Elektromedizin KG. Cauterizing probes for cryosurgery. 4,202,336, Cl. 128-303.100.

Van Goethem, Hugo V.; Stroobants, Marcel; and De Winter, Walter F., to AGFA-GEVAERT N.V. Production of etch-resist colloid and material suitable therefor. 4,202,697, Cl. 430-306.000.

Vanham, Ernest E.: *See—*
Ballard, Samuel S.; and Vanham, Ernest E., 4,203,109, Cl. 340-850.000.

VanLoon, Paul G. G.: *See—*
Yim, Ernest W.; and VanLoon, Paul G. G., 4,203,126, Cl. 357-42.000.

Van Vooren, Gerard: *See—*
Ragon, Philippe R.; and Van Vooren, Gerard, 4,202,713, Cl. 149-100.000.

Vasiliev, Yakov M.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Veligura, Ilya L.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Vertenstein, Mathieu J.: *See—*
Price, Frank B.; and Vertenstein, Mathieu J., 4,202,527, Cl. 251-58.000.

Vesuvius International Corporation: *See—*
Szadkowski, Stanislav; Amory, Daniel; and Thomas, Jean M., 4,202,473, Cl. 222-598.000.

Vetter, Manfred. Sealing arrangement. 4,202,379, Cl. 138-99.000.

Vickers Limited: *See—*
Kitteridge, John M.; and Armstrong, Robert J., 4,202,699, Cl. 430-302.000.

Victor Company of Japan, Limited: *See—*
Matsumoto, Sigeru, 4,202,220, Cl. 74-471.00R.

Viertel, Lothar; Mahler, Gert; and Nowak, Manfred, to Gebr. Happich GmbH. Sun visor for vehicles. 4,203,149, Cl. 362-144.000.

Vignon, Louis, to Heberlein Hispano SA. Process and apparatus for spinning textile fibres. 4,202,162, Cl. 57-58.890.

Vijugov, Oleg N.: *See—*
Batjukov, Vladimir I.; Vijugov, Oleg N.; Fadeev, Alexandr I.; Shapkin, Alexandr F.; and Dyatlov, Lev E., 4,202,727, Cl. 176-30.000.

Vilenski, Dan: *See—*
Sade, Moshe E.; Soffa, Albert; Vilenski, Dan; and Wing, William, 4,202,482, Cl. 228-4.500.

Viljanmaa, Antti K. Apparatus for hide stretching. 4,202,190, Cl. 69-19.300.

Villari, Frank K.; Ellmann, Norbert W.; and Annis, Larry D., to Kendall Company, The. Compression device with improved fastening sleeve. 4,202,325, Cl. 128-24.00R.

Vimba, Vladimir I.: *See—*
Grigorenko, Anatoly S.; Moroz, Jury A.; Kuznetsov, German N.; Vimba, Vladimir I.; Landyshev, Vladimir V.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,202,174, Cl. 60-413.000.

Vinz, Siegfried. Building roof with solar collector. 4,202,319, Cl. 126-432.000.

Viravec, Joseph T.; and Hoyt, Maurice A., to United States of America, Air Force. Gas relief valve design for low temperature. 4,202,369, Cl. 137-508.000.

Viswanathan, Thiagarajan: *See—*
Acheson, Willard P.; Morris, Richard A.; Rennard, Raymond J.; and Viswanathan, Thiagarajan, 4,202,168, Cl. 60-39.060.
Acheson, Willard P.; Morris, Richard A.; and Viswanathan, Thiagarajan, 4,202,169, Cl. 60-39.120.

Vlasov, Mikhail I.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Vock, Manfred H.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin L.; and Vock, Manfred H., 4,202,994, Cl. 568-824.000.

Vockenhuber, Karl: *See—*
Kittag, Gerd, 4,202,610, Cl. 352-91.00C.

Voelz, Frederick L.; and Jewell, Roy G., to Atlantic Richfield Company. Liquid dispensing, vapor recovery system. 4,202,385, Cl. 141-59.000.

Vojta, Karel E.: *See—*
Opfer, John C.; and Vojta, Karel E., 4,203,083, Cl. 335-174.000.

Voke, Frances S.: *See—*
Seiberling, Theophilus K., 4,202,717, Cl. 156-136.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Saridakis, Nikolaus, 4,202,789, Cl. 252-182.100.

Vollmer, Regis R., to Westinghouse Electric Corp. Apparatus and method for installing rows of U-shaped tubes in a heat exchanger. 4,202,085, Cl. 29-157.30C.

Volna, William M. Solar tracking device. 4,202,321, Cl. 126-425.000.

Volokhonsky, Lev A.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

vom Braucke, Hans; vom Braucke, Manfred; and Schuring, Walter, to Bielefelder Kuchenmaschinen-u. Transport-Geratefabrik vom Braucke GmbH. Lawn cultivating machine. 4,202,414, Cl. 172-42.000.

vom Braucke, Manfred: *See—*
vom Braucke, Hans; vom Braucke, Manfred; and Schuring, Walter, 4,202,414, Cl. 172-42.000.

Von Roll AG: *See—*
Bereiter, Rolf; and Jachimowski, Alexander, 4,202,280, Cl. 110-216.000.

von der Eltz, Hans-Ulrich; and Glander, Siegfried, to Hoechst Aktiengesellschaft. Process for the uniform dyeing of textile material webs with the aid of a uniform pre-drying. 4,202,112, Cl. 34-4.000.

von Konig, Anita: *See—*
Philippaerts, Herman A.; Pollet, Robert J.; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; von Konig, Anita; Gauss, Walter; Moll, Franz; and Ghys, Theofiel H., 4,202,695, Cl. 430-8.000.

von Schmeling, Bogislav; and Boos, Walter R., to Uniroyal, Inc.; and Uniroyal Ltd. Bis(diphenylaminomethane)antimicrobial agents. 4,202,904, Cl. 424-330.000.

Voronin, Alexei E.: *See—*
Latash, Jury V.; Voronin, Alexei E.; Nikolaev, Vladimir A.; Pelts, Boris B.; Volokhonsky, Lev A.; Artemiev, Vladimir D.; Vlasov, Mikhail I.; Chernyak, Alexandr I.; Nikulin, Alexandr A.; Dub, Vladimir S.; Vasiliev, Yakov M.; Stul, Iosif N.; Mukha, Vitaly P.; Orlov, Gennady I.; Khasin, Kim M.; Naryshkin, Jury A.; Belsky, Valentin I; Veligura, Ilya L.; Bogdashich, Vladimir E.; Lisitsin, Vladimir A.; Mischenko, Alexandr V.; Kovalenko, Jury A.; Babin, Vladimir V.; Svitenko, Igor A.; Antonov, Vladimir I.; and Smolyarenko, Volemir D., 4,202,401, Cl. 164-252.000.

Vydrin, Vladimir N.; Dukmasov, Vladimir G.; Davlyatshin, Garifulla; and Kuznetsov, Sergei L., to Chelyabinsky Politekhnichesky Institut. Device for controlling the thickness of strip stock being rolled. 4,202,197, Cl. 72-245.000.

W-K-M Wellhead Systems, Inc.: *See—*
Quebe, Herbert O., 4,202,410, Cl. 166-88.000.

W. Schlafhorst & Co.: *See—*
Koslowski, Gerhard, 4,202,511, Cl. 242-150.00R.
Rohner, Joachim, 4,202,506, Cl. 242-36.000.

Wabash, Inc.: *See—*
Wolf, Ronald J., 4,202,305, Cl. 123-148.0CC.

Wada, Toshihiko: *See—*
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,202,969, Cl. 536-1.000.

Waddell, Bruce A., to Robbins Company, The. Roller cutter mounts. 4,202,418, Cl. 175-361.000.

Wadenhed, Gustav, to Tradgardshallen i Helsingborg Planteringsvagen. Movable distribution container. 4,202,278, Cl. 108-102.000.

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Walden, Jack M.: *See—*
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,203,152, Cl. 364-200.000.

Waldrep, Henry D.: *See—*
Peterman, Paul L.; Peterman, S. F.; and Waldrep, Henry D., 4,202,178, Cl. 60-675.000.

Waldrop, T. William; and Shriver, Joe E., to Sperry Rand Corporation. Crop header for a crop harvesting machine having a crop consolidating component which detachably mounts a plurality of interchangeable crop gathering components. 4,202,154, Cl. 56-2.000.

Walker, Donald H.: *See—*
Burke, Thomas F.; and Walker, Donald H., 4,202,600, Cl. 350-103.000.

Walker, Jerry L.: *See—*
Diehl, Richard C.; and Walker, Jerry L., 4,202,671, Cl. 44-68.000.

Wallerstein, Martin A. Low cost, renewable scraping implement. 4,202,093, Cl. 30-169.000.

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Walter, Henry J.; and Springer, William E., to Clairol Incorporated. Temperature responsive fluid delivery control device for a steam curling iron. 4,203,026, Cl. 219-222.000.

Walton, Charles A. Device for measuring pulse, breathing and running rate for joggers. 4,202,350, Cl. 128-690.000.

Wang, Chen-Shen; and Koster, Sandra K., to Standard Oil Company of Indiana. Branched polyphenylene-polyphenylene sulfide blends. 4,202,951, Cl. 525-416.000.

Wanlass, Frank M. Pseudostatic electronic memory. 4,203,159, Cl. 365-222.000.

Ward, Donald H.: *See—*
Sheldon, Loren B.; Tomashek, James R.; and Ward, Donald H., 4,202,225, Cl. 81-57.350.

Ward, Robert A.: *See—*
Ciko, John D.; Ward, Robert A.; and Cramer, John J., 4,202,800, Cl. 252-543.000.

Warner-Lambert Company: *See—*
Hartenstein, Johannes; and Satzinger, Gerhard, 4,202,980, Cl. 546-75.000.

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Washizuka, Isamu; Teramura, Satoshi; and Matsuishi, Masanori, to Sharp Kabushiki Kaisha. Mirror with information display. 4,202,607, Cl. 350-338.000.

Wason, Satish K., to J. M. Huber Corporation. Rubber containing precipitated siliceous products. 4,202,813, Cl. 260-37.00R.

Waszak, Lawrence: *See—*
Di Matteo, Paul L.; Ross, Joseph A.; Stern, Howard K.; and Waszak, Lawrence, 4,202,612, Cl. 353-28.000.

Watanabe, Hiroshi: *See—*
Ohba, Kazunori; Shomura, Takashi; Ogawa, Yasuaki; Tsuruoka, Takashi; Watanabe, Hiroshi; Hisamatsu, Takashi; Uchida, Shingo; Kojima, Michio; and Inouye, Shigeharu, 4,202,886, Cl. 424-122.000.

Watanabe, Hiroyuki, to Tomy Kogyo Co., Inc. Golf game device. 4,202,545, Cl. 273-87.00R.

Watanabe, Jiro: *See—*
Shimada, Noburo; Miyamoto, Akira; Kobayashi, Motonobu; Kuribayashi, Akio; Toyoda, Takeharu; Kimura, Morihiro; Kyoden, Hiroshi; Hoshino, Toshisuke; and Watanabe, Jiro, 4,202,538, Cl. 266-275.000.

Watanabe, Ken: *See—*
Suzuki, Etsuji; Kashihara, Tomio; Hashimoto, Susumu; Watanabe, Ken; and Kodama, Tsuyoshi, 4,203,064, Cl. 318-640.000.

Watanabe, Nobuhiko: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.

Watanabe, Yoshimi, to Sony Corporation. Helical scan VTR with deflectable head. 4,203,140, Cl. 360-77.000.

Waters, Kenneth L., to Boeing Company, The. Lavatory wastewater disposal system for aircraft. 4,202,061, Cl. 4-317.000.

Waters Manufacturing, Inc.: *See—*
Gass, Ernst, 4,203,074, Cl. 308-181.000.

Waters, Robert W.: *See—*
Mang, Josef; and Waters, Robert W., 4,202,435, Cl. 198-339.000.

Watkin, Theodore, to Perkin-Elmer Corporation, The. Temperature compensated alignment system. 4,202,623, Cl. 355-30.000.

Watkins, Christopher A. Toilet waterfall. 4,202,056, Cl. 4-1.000.

Watson, Paul C. Remote axis admittance system. 4,202,107, Cl. 33-169.00C.

Watson, Robert E.; Walden, Jack M.; and Near, Charles W., to Hewlett-Packard Company. Programmable calculator including key-log printing means. 4,203,152, Cl. 364-200.000.

Watts, Elvert S.: *See—*
Abernethy, Lynn W.; and Watts, Elvert S., 4,202,593, Cl. 339-125.00R.

Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., to American Ecosystems, Inc. Umbrella type collapsible shelter. 4,202,363, Cl. 135-2.000.

Weaver, Dennis R.: *See—*
Bush, Lyman F.; and Weaver, Dennis R., 4,202,378, Cl. 138-96.00R.

Weber, Willis W.; Caglione, Alexander J.; Frost, Albert C.; and Weeks, Thomas J., Jr., to Union Carbide Corporation. Process for producing alumina. 4,202,870, Cl. 423-630.000.

Webersik, Heinz: *See—*
Waschk, Fritz; Webersik, Heinz; and Schinagl, Rudolf, 4,202,618, Cl. 355-3.0FU.

Weddeling, Otger: *See—*
Claas, Helmut; Romer, Gerhard; and Weddeling, Otger, 4,202,262, Cl. 100-4.000.

Wedemeyer, Karlfried: *See—*
Klein, Alfons; Knust, Ernst; Kron, Rudolf; and Wedemeyer, Karlfried, 4,203,145, Cl. 361-317.000.

Weeks, Thomas J., Jr.: *See—*
Weber, Willis W.; Caglione, Alexander J.; Frost, Albert C.; and Weeks, Thomas J., Jr., 4,202,870, Cl. 423-630.000.

Weger, Arland D. Automatic sandwich making apparatus. 4,202,260, Cl. 99-450.400.

Wegmann, Jacques, to Rohner AG Pratteln. Concentrated powder or granular formulations dispersable in aqueous media. 4,202,815, Cl. 260-42.210.

Weiblen, Robert E.: *See—*
Doumit, Joseph A.; and Weiblen, Robert E., 4,203,130, Cl. 358-1.000.

Weil, Edward D., to Stauffer Chemical Company. Copolycondensation products of beta-haloalkyl phosphates and dialkyl phosphonates. 4,202,842, Cl. 260-928.000.

Weimann, Gunter: *See—*
Batz, Hans-Georg; Stellner, Klaus; Linke, Hans-Ralf; and Weimann, Gunter, 4,202,873, Cl. 424-1.000.

Weiner, Ben-Zion; Sterling, Jeffrey; Suchi, Raul; and Yellin, Haim, to Teva Pharmaceutical Industries, Ltd. Biocidal methyladamantyl hydrazines and pharmaceutical compositions containing them. 4,202,892, Cl. 424-244.000.

Weiner, Irving L.; and Gershman, Russell J., to Ortho Diagnostics, Inc. Method and apparatus for discriminating red blood cells from platelets. 4,202,625, Cl. 356-39.000.

Weis, Siegfried K., to C. L. Frost & Son, Inc. Chain pin assembly with captive securing means. 4,202,219, Cl. 74-254.000.

Weisenburger, Siegfried: *See—*
Kaufmann, Friedrich; Weisenburger, Siegfried; Koschorke, Herbert; Seiffert, Hartmut; Sienel, Dieter; and Weiss, Karl-Heinz, 4,202,792, Cl. 252-301.10W.

Weiss, Karl-Heinz: *See—*
Kaufmann, Friedrich; Weisenburger, Siegfried; Koschorke, Herbert; Seiffert, Hartmut; Sienel, Dieter; and Weiss, Karl-Heinz, 4,202,792, Cl. 252-301.10W.

Weiss, Martin J.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,202,989, Cl. 560-118.000.
Wissner, Allan; Weiss, Martin J.; and Bernady, Karel F., 4,202,988, Cl. 560-118.000.

Weissman, Bernard, to Ipco Hospital Supply Corporation. Dental anchor and a plastic shank for holding same. 4,202,101, Cl. 433-225.000.

Wella AG: *See—*
Gross, Paul; Konrad, Eugen; and Mager, Herbert, 4,202,881, Cl. 424-70.000.

Wellendorf, Klaus; and Sommer, Ruediger, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for electro-optically sensing, transmitting and recording pictorial information in particular facsimile transmission systems. 4,203,136, Cl. 358-280.000.

Welsch, Wolfgang: *See—*
Rech, Werner; Welsch, Wolfgang; and Achter, Eugen, 4,203,050, Cl. 313-220.000.

Wentworth, Darel L.: *See—*
Wilkes, Ted W., Jr.; and Wentworth, Darel L., 4,202,453, Cl. 212-55.000.

Wenz, Barry; Karmen, Arthur; and Feng, Chi Shun, to Albert Einstein College of Medicine of Yeshiva University a Division of Yeshiva University. Detection of hepatitis B surface antigen. 4,202,665, Cl. 23-230.00B.

Werner, Klaus-Dieter: *See—*
Simon, Ulrich; Werner, Klaus-Dieter; and Pontani, Bernd, 4,202,731, Cl. 176-37.000.

Wescom, Inc.: *See—*
Bishop, Larry D.; and Parker, Jack C., Jr., 4,203,141, Cl. 361-18.000.

Wessler, Louis E., to Xerox Corporation. Phase locked loop circuit for video hard copy controller. 4,203,075, Cl. 331-1.00A.

Westeel-Rosco Limited Westeel-Rosco Limitee: *See—*
Mills, Roy H., 4,202,532, Cl. 256-24.000.

Western Gear Corporation: *See—*
Moller, Walter H., 4,202,653, Cl. 414-22.000.

Western States Machine Company, The: *See—*
Malinak, Frank J., 4,202,078, Cl. 19-26.000.

Westhead, William T., to Scapa Dryers, Inc. Dryer felts. 4,202,382, Cl. 139-383.00A.

Westinghouse Electric Corp.: *See—*
Abbondanti, Alberto; and Stacey, Eric J., 4,203,040, Cl. 307-65.000.
Buchanan, Lloyd W.; Eberhart, Noah E.; and Szabo, Arthur D., 4,203,045, Cl. 310-68.00C.
Castle, Peter M., 4,202,742, Cl. 204-159.230.
DeBell, David A., 4,203,089, Cl. 367-143.000.
Lehmann, Willi, 4,202,794, Cl. 252-301.40R.

Vollmer, Regis R., 4,202,085, Cl. 29-157.30C.
Westvaco Corporation: *See—*
Chaudhuri, Partha S., 4,202,723, Cl. 156-470.000.
Wheelabrator-Frye Inc.: *See—*
Van Fossen, Harvey G., 4,202,142, Cl. 51-425.000.
White, James E.: *See—*
Bradford, Donald R.; and White, James E., 4,202,753, Cl. 204-247.000.
Whitford, Darryl R., to Flinders University of South Australia, The; and Minister of Transport, The. State of charge sensing means. 4,203,065, Cl. 320-43.000.
Whitmore, Bruce C.: *See—*
Hlinka, Joseph W.; Whitmore, Bruce C.; and Ozgu, Mustafa R., 4,202,397, Cl. 164-82.000.
Wiechert, Rudolf: *See—*
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,202,841, Cl. 424-311.000.
Sauer, Gerhard; Hauser, Helmut; Haffer, Gregor; Ruppert, Juergen; Eder, Ulrich; and Wiechert, Rudolf, 4,202,991, Cl. 560-255.000.
Wieland, Jakob, to Bauer Kassenfabrik AG. Container with replaceable security lock for storage of information carriers. 4,202,587, Cl. 312-219.000.
Wiesboeck, Robert A., to United States Steel Corporation. Process and apparatus for distributing cold ammonia. 4,202,283, Cl. 111-6.000.
Wieting, James H. Apparatus and method for cutting access openings for electrical outlet boxes in wall or ceiling covering panels. 4,202,388, Cl. 144-323.000.
Wilcox, Brian N.; and Robinson, John W., to Kimball International, Inc. Chord pattern generator. 4,202,236, Cl. 84-1.030.
Wild, Peter, to BBC Brown Boveri & Company Limited. Liquid crystal display having integrated bridge contacts. 4,202,606, Cl. 350-336.000.
Wilder, James A., Jr., to United States of America, Energy. Glassy composition for hermetic seals. 4,202,700, Cl. 106-39.600.
Wilder, W. Bryant, Jr.: *See—*
Daniels, R. Gary; Musa, Fuad H.; Wilder, W. Bryant, Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,203,157, Cl. 364-788.000.
Wilderman, Charles L., to Kelly Well Company, Inc. Device for retaining setting cables. 4,202,087, Cl. 24-263.00R.
Wiles, Michael F.: *See—*
Daniels, R. Gary; Musa, Fuad H.; Wilder, W. Bryant, Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,203,157, Cl. 364-788.000.
Wilkes, Ted W., Jr.; and Wentworth, Darel L., to Timberline, Inc. Articulated mine service vehicle. 4,202,453, Cl. 212-55.000.
Wilkie, Arnold E.: *See—*
Howse, Paul T., Jr.; and Wilkie, Arnold E., 4,202,854, Cl. 264-168.000.
Williams, Gordon T., to Incom International Inc. Method of manufacturing spherical bearings and parts therefor. 4,202,082, Cl. 29-149.50B.
Williams, Steven E.: *See—*
Hargraves, David P.; Pauli, Jude A.; and Williams, Steven E., 4,202,373, Cl. 137-625.290.
Williamson, Alex N., to Monsanto Company. Conversion of unsaturated aldehydes to unsaturated nitriles. 4,202,837, Cl. 260-465.900.
Williamson, Shellie O.: *See—*
Hooker, James A.; Martin, Dean W.; and Williamson, Shellie O., 4,202,224, Cl. 81-3.00R.
Willis, Don: *See—*
Allen, Richard T.; Moyer, Rudolph H.; Sibbett, Donald J.; Anderson, Howard H.; Martner, Glen R.; and Willis, Don, 4,202,212, Cl. 73-421.50R.
Wilson, Stanley, Jr., to Potter Electric Signal Co. Monitoring apparatus for direct wire alarm system. 4,203,095, Cl. 340-506.000.
Wilson, Walter A., to National Steel Corporation. Apparatus for controlling the concentration and stability of an emulsion. 4,202,193, Cl. 72-42.000.
Windmoller & Holscher: *See—*
Feldkamper, Richard, 4,202,229, Cl. 83-304.000.
Wing, William: *See—*
Sade, Moshe E.; Soffa, Albert; Vilenski, Dan; and Wing, William, 4,202,482, Cl. 228-4.500.
Wirtzfeld, Alexander; and Bock, Thomas, to Wirtzfeld, Alexander. Cardiac pacemaker. 4,202,339, Cl. 128-419.0PG.
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Tuschy, Eckhard; Wischmeyer, Georg; and Steinkamp, Walter, 4,202,195, Cl. 72-78.000.
Wischniewski, Martin: *See—*
Eckert, Theodor; Kemper, Fritz H.; Wischniewski, Martin; and Hempel, Reinhard, 4,202,888, Cl. 424-182.000.
Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,202,829, Cl. 260-397.200.
Guckel, Henry; and Larsen, Steven T., 4,203,128, Cl. 357-60.000.
Wissner, Allan, to American Cyanamid Company. 1-Hydroxymethyl-1-oxo-prostane derivatives of the F_1 series. 4,202,822, Cl. 260-340.90P.
Wissner, Allan; Weiss, Martin J.; and Bernady, Karel F., to American Cyanamid Company. Prostenoic acids and esters. 4,202,988, Cl. 560-118.000.
Witco Chemical Corp.: *See—*
Spiegelman, Gerald H.; Nickles, Harry B.; and Solomon, Jack M., 4,202,755, Cl. 208-5.000.
Witt, Frank A., to Colite Industries, Inc. Apparatus forming three dimensional sign display character. 4,202,123, Cl. 40-596.000.
Wittmann, Erwin J.: *See—*
Harwood, Leopold A.; Wittmann, Erwin J.; and Shanley, Robert L., II, 4,203,131, Cl. 358-34.000.
Wocher, Berthold; and Pfendler, Thomas, to Robert Bosch GmbH. Method and system for increasing the distance which can be unambiguously measured by a radar system. 4,203,112, Cl. 343-13.00R.
Woitowitz, Friedhelm, to Didier Engineering GmbH. Apparatus for cooling gases from coke plants. 4,202,407, Cl. 165-76.000.
Wolf, Ronald J., to Wabash, Inc. Capacitor discharge ignition system with timing stabilization arrangement. 4,202,305, Cl. 123-148.0CC.
Wong, Alexander C.: *See—*
Oktay, Sevgin; Torgersen, Gerard J.; and Wong, Alexander C., 4,203,129, Cl. 357-82.000.
Wong, Henry: *See—*
Monkovic, Ivo; Bachand, Carol; and Wong, Henry, 4,202,982, Cl. 546-89.000.
Wonso, Alex P.: *See—*
James, William L.; and Wonso, Alex P., 4,202,918, Cl. 427-224.000.
Woodall, Jerry M.: *See—*
Hodgson, Rodney T.; Hovel, Harold J.; and Woodall, Jerry M., 4,202,704, Cl. 136-89.0CL.
Wooding Corporation: *See—*
Wooding, Patrick J., 4,202,997, Cl. 13-31.00R.
Wooding, Patrick J., to Wooding Corporation. Atmospheric control of flux pre-melting furnace. 4,202,997, Cl. 13-31.00R.
Woods, William G.: *See—*
Hunter, Don L.; Woods, William G.; Stone, James D.; and LeFevre, Cecil W., 4,202,839, Cl. 260-569.000.
Worlock, John M.: *See—*
Gordon, James P.; Nahory, Robert E.; Pollack, Martin A.; and Worlock, John M., 4,203,124, Cl. 357-13.000.
Wright, Dave L.; Schuda, Felix J.; and Spranza, Joseph J., III, to Spectra Physics, Inc. Method and apparatus for producing laser plasma tube and product. 4,203,080, Cl. 331-94.50D.
Wright, Larry R.: *See—*
Rae, James W.; and Wright, Larry R., 4,203,073, Cl. 455-311.000.
Wu, Helen Y.: *See—*
Tong, George L.; Henry, David W.; Wu, Helen Y.; and Smith, Thomas H., 4,202,967, Cl. 536-17.00A.
Wu, Yulin: *See—*
Coltrin, Michael E.; and Wu, Yulin, 4,202,992, Cl. 568-575.000.
Wurz, Dieter: *See—*
Ernst, Gunter; Baer, Edmund; and Wurz, Dieter, 4,202,847, Cl. 261-161.000.
Wygant, Gary E.: *See—*
Frahme, Carl E.; and Wygant, Gary E., 4,202,148, Cl. 52-592.000.
Xerox Corporation: *See—*
Chen, Tu; and Charlan, George B., 4,202,932, Cl. 428-667.000.
Lampson, Butler W.; Sproull, Robert F.; Ornstein, Severo M.; and Leung, James Y., 4,203,154, Cl. 364-200.000.
Wessler, Louis E., 4,203,075, Cl. 331-1.00A.
Yagisawa, Hideji, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Method and apparatus for detecting deflect in liquid metal handling instruments. 4,202,202, Cl. 73-40.000.
Yale, William S. Skin graft pressure pad. 4,202,331, Cl. 128-155.000.
Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Suzuki, Masatoshi, to Mitsubishi Chemical Industries, Ltd. Process for the preparation of polyolefins using a reduced vanadium halide catalyst. 4,202,958, Cl. 526-142.000.
Yamaguchi, Kazuyuki: *See—*
Masuda, Teruo; Watanabe, Nobuhiko; Abe, Takeo; Koike, Matsuhiro; Morita, Masayasu; Oguma, Yoshio; Hamaguchi, Yoshiharu; Hirata, Motonobu; Saito, Mamoru; Onoguchi, Kunio; Yamaguchi, Kazuyuki; and Hirose, Akira, 4,202,257, Cl. 99-348.000.
Yamaguchi, Nobutaka; Takayama, Satoru; and Fujiyama, Masaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,202,927, Cl. 428-323.000.
Yamaguchi, Shunzo: *See—*
Mori, Kouichi; Igashira, Toshihiko; and Yamaguchi, Shunzo, 4,202,312, Cl. 123-210.000.
Yamaguchi, Takao; Aoyama, Kenjiro; Nishio, Yukihiro; and Kazino, Sadayosi, to Nippondenso Co., Ltd. Ventilated electromagnetic switch. 4,203,084, Cl. 335-202.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Oku, Yuji; and Tsuyama, Yasuharu, 4,202,297, Cl. 123-65.0PE.
Yamamori, Takahiro; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Passage structure of lock-up torque converter. 4,202,431, Cl. 192-3.290.
Yamamoto, Hisao: *See—*
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; and Yamamoto, Hisao, 4,202,895, Cl. 424-250.000.
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, 4,202,974, Cl. 544-251.000.
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Process for preparing 3,4-dihydro-2(1H)-quinazolinone derivatives. 4,202,974, Cl. 544-251.000.
Yamamoto, Michihiro: *See—*
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; and Yamamoto, Hisao, 4,202,895, Cl. 424-250.000.
Yamamoto, Shinji; Kaijiri, Kouhei; and Oda, Denichi, to Ube Industries, Ltd. Process for producing fiber-reinforced elastic articles. 4,202,850, Cl. 264-108.000.

Yamamoto, Yoshun: *See—*
Haneda, Yoshikazu; Yamamoto, Yoshun; Matsufuji, Akira; Haji, Takashi; and Nakajima, Koe, 4,202,192, Cl. 72-21.000.
Yamasaki, Koyu: *See—*
Makishima, Mamoru; and Yamasaki, Koyu, 4,202,556, Cl. 277-190.000.
Yamashita, Noriyuki, to Sony Corporation. Clock pulse signal generator having an automatic frequency control circuit. 4,203,076, Cl. 331-25.000.
Yamauchi, Yukio; and Homma, Hiroshi, to Hochiki Corporation. Light decrease type smoke sensor. 4,203,100, Cl. 340-630.000.
Yamawaki, Naokuni: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,202,291, Cl. 119-3.000.
Yamazaki, Noboru: *See—*
Kawasoko, Yoshiaki; Chiba, Iwane; Yamazaki, Noboru; Chiyonobu, Toshimi; and Shikuma, Masao, 4,202,537, Cl. 266-252.000.
Yamazoe, Hiroshi: *See—*
Tsukamoto, Masahide; Nagasawa, Masahiro; and Yamazoe, Hiroshi, 4,203,082, Cl. 333-194.000.
Yanagida, Jun; Ishikawa, Souichiro; and Nakazawa, Kazutada. Stapler for broad center beam staples. 4,202,481, Cl. 227-145.000.
Yasui Sangyo Co. Ltd.: *See—*
Hihara, Yukiyoshi, 4,202,214, Cl. 73-487.000.
Yellin, Haim: *See—*
Weiner, Ben-Zion; Sterling, Jeffrey; Suchi, Raul; and Yellin, Haim, 4,202,892, Cl. 424-244.000.
Yim, Ernest W.; and VanLoon, Paul G. G., to Siliconix, Inc. CMOS structure and method utilizing retarded electric field for minimum latch-up. 4,203,126, Cl. 357-42.000.
Yokobayashi, Koji: *See—*
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,940, Cl. 435-101.000.
Misaki, Akira; Takaya, Shigeo; Yokobayashi, Koji; and Tsuburaya, Yoichi, 4,202,966, Cl. 536-1.000.
Yokohama Rubber Co., Ltd., The: *See—*
Ikeda, Ryo; Nogami, Yoichi; and Koizumi, Teruo, 4,202,393, Cl. 152-330.0RF.
Yokose, Kazuteru: *See—*
Suhara, Yasuji; Maruyama, Hiromi; Itoh, Sayuri; and Yokose, Kazuteru, 4,202,943, Cl. 435-280.000.
Yokoyama, Toshihiko: *See—*
Murakami, Fumiki; Teshima, Soichi; and Yokoyama, Toshihiko, 4,202,990, Cl. 560-217.000.
Yonezawa, Noboru: *See—*
Ohmura, Taizo; Yonezawa, Noboru; and Ikuta, Kazuo, 4,202,686, Cl. 75-0.50B.
Yonkers, Edward H. Collapsible bicycle. 4,202,561, Cl. 280-278.000.
Yoshida-Kogyo K.K.: *See—*
Kanzaka, Yoshihiro, 4,202,285, Cl. 112-235.000.
Yoshida, Norio; and Matuyama, Takesi, to Koei Chemical Co., Ltd. Stabilization of chlorine-containing resins. 4,202,806, Cl. 260-23.0XA.
Yoshida, Toshio: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Sato, Yoshinori; Moroe, Michio; Tsuruta, Haruki; and Yoshida, Toshio, 4,202,906, Cl. 426-3.000.
Yoshikumi, Chikao: *See—*
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,202,969, Cl. 536-1.000.
Yoshimura, Shigeru; and Shimizu, Katsuichi, to Canon Kabushiki Kaisha. Recording device. 4,202,621, Cl. 355-14.00R.
Yoshimura, Susumu; Murakami, Mutsuaki; and Shinoda, Midori, to Matsushita Electric Industrial Co., Ltd. Organic-heat-sensitive semiconductive compounds. 4,202,799, Cl. 252-500.000.
Yoshimura, Tooru: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; and Yoshimura, Tooru, 4,202,306, Cl. 123-148.00C.
Yoshinari, Hideki: *See—*
Suzki, Akiyoshi; Kano, Ichiro; Yoshinari, Hideki; Tozuka, Masao; Hiraga, Ryozo; Kato, Yuzo; and Ogino, Yasuo, 4,202,627, Cl. 356-71.000.
Yoshizawa, Naomi: *See—*
Namiki, Yasushi; Terashima, Akira; and Yoshizawa, Naomi, 4,202,235, Cl. 84-1.010.
Young, John J., to Goodyear Tire & Rubber Company, The. Conveyor for a combine harvester. 4,202,159, Cl. 56-364.000.
Young, Robert W.; and Dansbury, Leonard D., to United States of America, Navy. Fluidic interface means. 4,202,517, Cl. 244-3.220.
Youngblood, Thomas F., to Dresser Industries, Inc. Roller cutter with major and minor insert rows. 4,202,419, Cl. 175-374.000.
Yurasko, George, Jr., to Eutectic Corporation. Metallo-thermic powder. 4,202,691, Cl. 75-252.000.
Zabotin, Alexandr A.: *See—*
Galperin, Alexandr L.; Serebryannikov, Albert S.; Onikov, Eduard A.; Zabotin, Alexandr A.; Loschilin, Evgeny D.; and Santucci, Nicola, 4,202,383, Cl. 139-436.000.
Zahnradfabrik Friedrichshafen AG: *See—*
Jablonsky, Erich; and Elser, Dieter, 4,202,249, Cl. 91-422.000.
Zahradnik, George J., to A. B. Dick Company. Staging mechanism for duplexing copy machines. 4,202,266, Cl. 101-218.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; and Takeuchi, Tomio, 4,202,824, Cl. 260-343.900.
Zall, Michael E.; and Silverhardt, Stephen. Matrix band guide and matrix retainer device. 4,202,103, Cl. 433-153.000.
Zannucci, Joseph S.; and Thompson, John W., to Eastman Kodak Company. Stabilization of aqueous p-benzoquinones. 4,202,788, Cl. 252-182.000.
Zemtsov, Mikhail U.: *See—*
Klimkovsky, Bronislav M.; Azikov, Boris A.; Zemtsov, Mikhail U.; Kusch, Sergei A.; and Nalivkin, Nikolai P., 4,202,439, Cl. 198-642.000.
Zentec Corporation: *See—*
Lovercheck, Lawrence R., 4,203,107, Cl. 340-799.000.
Zeuner, Kenneth W.; and Jarman, Alonzo B., to Control Concepts, Inc. Programmed unbalanced load valve system. 4,202,250, Cl. 91-449.000.
Ziemba, Georg. Method for making a spherical mirror. 4,202,715, Cl. 156-71.000.
Zorrilla, Fermin; and Alonso, Agustin M. Anti-corrosive polymeric coating. 4,202,310, Cl. 123-191.00A.
Zuber, John R.; and Foxman, Herbert, to RCA Corporation. Method of stripping photoresist. 4,202,703, Cl. 134-2.000.
Zundel, Arthur P., to National Can Corporation. Method of attaching tab to end panel. 4,202,287, Cl. 113-121.00C.
Zweig, Jack; McLaughlin, William; and Herz, Matthew L. Drug activation by radiation. 4,202,323, Cl. 128-1.100.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MAY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bartholomew, Ralph L.: *See—*
Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., Re. 30,274, Cl. 361-411.000.

Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., to General Electric Company. Method for making a circuit board and article made thereby. Re. 30,274, Cl. 361-411.000.

Eaton Corporation: *See—*
Grebner, Stuart W.; Johnson, James V., Jr.; and Josemans, Leonardus J., Re. 30,273, Cl. 200-42.00T.

General Electric Company: *See—*
Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., Re. 30,274, Cl. 361-411.000.

Grebner, Stuart W.; Johnson, James V., Jr.; and Josemans, Leonardus J., to Eaton Corporation. Rocker switch with integral off lock. Re. 30,273, Cl. 200-42.00T.

Hitzman, Donald O., to Phillips Petroleum Company. Recovery of cellular protein products from microbiological synthesis masses. Re. 30,272, Cl. 426-656.000.

Johnson, James V., Jr.: *See—*
Grebner, Stuart W.; Johnson, James V., Jr.; and Josemans, Leonardus J., Re. 30,273, Cl. 200-42.00T.

Josemans, Leonardus J.: *See—*
Grebner, Stuart W.; Johnson, James V., Jr.; and Josemans, Leonardus J., Re. 30,273, Cl. 200-42.00T.

Lucas, Gary M.: *See—*
Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., Re. 30,274, Cl. 361-411.000.

Phillips Petroleum Company: *See—*
Hitzman, Donald O., Re. 30,272, Cl. 426-656.000.

LIST OF PLANT PATENTEES

Hindla, Louis A. Azalea plant. 4,535, 5-13-80, Cl. 56.000.

Siebenthaler Company, The: *See—*
Siebenthaler, John D., 4,534, Cl. 51.000.

Siebenthaler, John D., to Siebenthaler Company, The. Sugar maple. 4,534, 5-13-80, Cl. 51.000.

LIST OF DESIGN PATENTEES

A/S JAC. Engelbredt: *See—*
Keller, Joergen, 254,938, Cl. D2-268.000.

A-S Royken Jernvarefabrik: *See—*
Hauglin, Bernt O., 254,983, Cl. D21-230.000.

Ahrenskou-Sorensen, Borge, to Svenska Skandex Aktiebolag. Color mixing apparatus. 254,973, 5-13-80, Cl. D15-147.000.

Allison, Terry C. Pendant or the like. 254,966, 5-13-80, Cl. D11-61.000.

Alsman, Bill R. Dual lamp driving light. 254,995, 5-13-80, Cl. D26-35.000.

American Safety Razor Company: *See—*
Chase, David O.; and Pfuhl, Paul H., 254,992, Cl. D28-46.000.

Amfac Foods, Inc.: *See—*
Saunders, Francis R., 254,936, Cl. D1-1.000.

Armstrong, John C.: *See—*
Palson, Richard C.; and Armstrong, John C., 254,986, Cl. D23-150.000.

Ball Corporation: *See—*
Campbell, Arlin L.; and Cannon, Roger B., 254,957, Cl. D9-216.000.

Besford, John, to U.S. Philips Corporation. Kitchen-machine. 254,948, 5-13-80, Cl. D7-153.000.

Besford, John, to U.S. Philips Corporation. Kitchen-machine. 254,949, 5-13-80, Cl. D7-153.000.

Besford, John, to U.S. Philips Corporation. Kitchen-machine. 254,950, 5-13-80, Cl. D7-153.000.

Browning, Albert E. Glider chair. 254,942, 5-13-80, Cl. D6-54.000.

Bunger, Richard E.; and Hancock, Roy J. Flume platform panel for animal confinement pens. 254,993, 5-13-80, Cl. D30-2.000.

Campbell, Arlin L.; and Cannon, Roger B., to Ball Corporation. Beverage container. 254,957, 5-13-80, Cl. D9-216.000.

Cannon, Roger B.: *See—*
Campbell, Arlin L.; and Cannon, Roger B., 254,957, Cl. D9-216.000.

CHA Industries: *See—*
Mahl, Gunard O. B., 254,974, Cl. D15-199.000.

Chase, David O.; and Pfuhl, Paul H., to American Safety Razor Company. Disposable lady's razor. 254,992, 5-13-80, Cl. D28-46.000.

Combi Co., Ltd.: *See—*
Nakao, Shinroku; Kobayashi, Kouichi; and Moriya, Kazuo, 254,969, Cl. D12-129.000.

Delamater, William B. Combined grill cleaner and container opener. 254,953, 5-13-80, Cl. D8-18.000.

Dugan, David R.; and Prince, Kenneth E., to Owens-Illinois Inc. Lid for a packaging container or the like. 254,958, 5-13-80, Cl. D9-254.000.

Everest, Charles E., to Telatemp Corporation. Radiation pyrometer. 254,959, 5-13-80, Cl. D10-57.000.

Falcq, Rene S., to Societe Anonyme Metal Deploye Belge. Corner angle iron for ceiling plasterwork. 254,991, 5-13-80, Cl. D25-74.000.

Florists' Transworld Delivery Association: *See—*
Ribeiro, J. A. Pinto, 254,954, Cl. D9-39.000.

Fratarcangeli, Victor J., to Quaker Oats Company, The. Toy railroad station. 254,982, 5-13-80, Cl. D21-118.000.

Gambrell, Joseph L.; Gilleland, Gene P.; Hawthorne, Allen D.; Hofland, Robert M.; and McCuiston, James A., to International Business Machines Corporation. Convenience collator for a copier. 254,975, 5-13-80, Cl. D16-32.000.

Gedye, Laurence R., to L. R. & N. R. Gedye Pty. Limited. Compost bin. 254,951, 5-13-80, Cl. D7-192.000.

Genal Strap, Inc.: *See—*
Hofman, Bronislaw L., 254,961, Cl. D11-3.000.
Hofman, Bronislaw L., 254,962, Cl. D11-3.000.
Hofman, Bronislaw L., 254,963, Cl. D11-3.000.
Hofman, Bronislaw L., 254,964, Cl. D11-3.000.
Hofman, Bronislaw L., 254,965, Cl. D11-3.000.

Gilleland, Gene P.: *See—*
Gambrell, Joseph L.; Gilleland, Gene P.; Hawthorne, Allen D.; Hofland, Robert M.; and McCuiston, James A., 254,975, Cl. D16-32.000.

Gilley, James E., to Keyes Fibre Company. Tray for packaging containers of yogurt or the like. 254,956, 5-13-80, Cl. D9-184.000.

Goldstein, Morton M.: *See—*
White, David L.; Goldstein, Morton M.; and Kraft, Harry, 254,980, Cl. D21-1.000.

Goyette, Armand J., Jr. Golf club practice head. 254,984, 5-13-80, Cl. D21-234.000.

Gutos Metallschliessenfabrik Bader & Hoch AG: *See—*
Lober, Otto, 254,939, Cl. D2-418.000.

Hancock, Roy J.: *See—*
Bunger, Richard E.; and Hancock, Roy J., 254,993, Cl. D30-2.000.

Hartung, Philip F.; and Tramonti, John J. Bottle. 254,955, 5-13-80, Cl. D9-91.000.

Hauglin, Bernt O., to A-S Royken Jernvarefabrik. Skibinding. 254,983, 5-13-80, Cl. D21-230.000.

Hawthorne, Allen D.: *See—*
Gambrell, Joseph L.; Gilleland, Gene P.; Hawthorne, Allen D.; Hofland, Robert M.; and McCuiston, James A., 254,975, Cl. D16-32.000.

Helm, Patrick J., to Kent-Moore Instrument Company. Digital tachometer design. 254,960, 5-13-80, Cl. D10-98.000.

Hepworth, Paul S., to Plas Plugs Ltd. Hook for a hollow door. 254,943, 5-13-80, Cl. D6-122.000.

Hildebrandt, William J.; and Rathbun, Richard H., to Stanley Works, The. Shears. 254,952, 5-13-80, Cl. D8-5.000.

Hofland, Robert M.: *See—*
Gambrell, Joseph L.; Gilleland, Gene P.; Hawthorne, Allen D.; Hofland, Robert M.; and McCuiston, James A., 254,975, Cl. D16-32.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 254,961, 5-13-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 254,962, 5-13-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 254,963, 5-13-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 254,964, 5-13-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 254,965, 5-13-80, Cl. D11-3.000.

Honzyou, Hiroshi, to Sony Corporation. Wheelchair. 254,970, 5-13-80, Cl. D12-131.000.

International Business Machines Corporation: *See—*
Gambrell, Joseph L.; Gilleland, Gene P.; Hawthorne, Allen D.; Hofland, Robert M.; and McCuiston, James A., 254,975, Cl. D16-32.000.

International Playtex, Inc.: *See—*
Raimondi, Phyllis, 254,937, Cl. D2-24.000.

International Silver Company: *See—*
Knope, William J., 254,947, Cl. D7-150.000.

Jones, Robert H.; and Nylin, Lennard E., to Viking Sauna Company. Hydrotherapy spa. 254,988, 5-13-80, Cl. D24-38.000.

Katz, Michael I. Flower pot. 254,967, 5-13-80, Cl. D11-152.000.

Keller, Joergen, to A/S JAC. Engelbredt. Shoe. 254,938, 5-13-80, Cl. D2-268.000.

Kent-Moore Instrument Company: *See—*
Helm, Patrick J., 254,960, Cl. D10-98.000.

Keyes Fibre Company: *See—*
Gilley, James E., 254,956, Cl. D9-184.000.

Knope, William J., to International Silver Company. Knife or similar article of flatware. 254,947, 5-13-80, Cl. D7-150.000.

Kobayashi, Kouichi: *See—*
Nakao, Shinroku; Kobayashi, Kouichi; and Moriya, Kazuo, 254,969, Cl. D12-129.000.

Kraft, Harry: *See—*
White, David L.; Goldstein, Morton M.; and Kraft, Harry, 254,980, Cl. D21-1.000.

Kramor Industries, Ltd.: *See—*
White, David L.; Goldstein, Morton M.; and Kraft, Harry, 254,980, Cl. D21-1.000.

L. R. & N. R. Gedye Pty. Limited: *See—*
Gedye, Laurence R., 254,951, Cl. D7-192.000.

Lee, Thomas M.; and Seifert, Richard A. Combined change tray and portable calculator support. 254,944, 5-13-80, Cl. D6-181.000.

Lober, Otto, to Gutos Metallschliessenfabrik Bader & Hoch AG. Belt buckle. 254,939, 5-13-80, Cl. D2-418.000.

Mahl, Gunard O. B., to CHA Industries. Vacuum deposition apparatus. 254,974, 5-13-80, Cl. D15-199.000.

McCuiston, James A.: *See—*
Gambrell, Joseph L.; Gilleland, Gene P.; Hawthorne, Allen D.; Hofland, Robert M.; and McCuiston, James A., 254,975, Cl. D16-32.000.

Medina, Conrad R.: *See—*
Villwock, George F.; and Medina, Conrad R., 254,977, Cl. D18-34.000.

Miereanu, Michael; and Miereanu, Renee. Aquarium stand. 254,994, 5-13-80, Cl. D30-12.000.

Miereanu, Renee: *See—*
Miereanu, Michael; and Miereanu, Renee, 254,994, Cl. D30-12.000.

Mobius, Werner. Pencil sharpener. 254,978, 5-13-80, Cl. D19-73.000.

Moore, George C.; Moore, Jodele; and Tipke, James M. Three-wheeled vehicle. 254,968, 5-13-80, Cl. D12-112.000.

Moore, Jodele: *See—*
Moore, George C.; Moore, Jodele; and Tipke, James M., 254,968, Cl. D12-112.000.

Morishita, Yasomatsu, to Ryobi Ltd. Fishing reel. 254,985, 5-13-80, Cl. D22-25.000.

Moriya, Kazuo: *See—*
Nakao, Shinroku; Kobayashi, Kouichi; and Moriya, Kazuo, 254,969, Cl. D12-129.000.

Nakao, Shinroku; Kobayashi, Kouichi; and Moriya, Kazuo, to Combi Co., Ltd. Baby stroller. 254,969, 5-13-80, Cl. D12-129.000.

North American Philips Corporation: *See—*
Rakocy, William J.; and Tsuji, Masao, 254,972, Cl. D15-82.000.

Nylin, Lennard E.: *See—*
Jones, Robert H.; and Nylin, Lennard E., 254,988, Cl. D24-38.000.

Owens-Illinois Inc.: *See—*
Dugan, David R.; and Prince, Kenneth E., 254,958, Cl. D9-254.000.

Palson, Richard C.; and Armstrong, John C., to Pharmasol Corporation, The. Room deodorant dispenser. 254,986, 5-13-80, Cl. D23-150.000.

Pfuhl, Paul H.: *See—*
Chase, David O.; and Pfuhl, Paul H., 254,992, Cl. D28-46.000.

Pharmasol Corporation, The: *See—*
Palson, Richard C.; and Armstrong, John C., 254,986, Cl. D23-150.000.

Plas Plugs Ltd.: *See—*
Hepworth, Paul S., 254,943, Cl. D6-122.000.

Prince, Kenneth E.: *See—*
Dugan, David R.; and Prince, Kenneth E., 254,958, Cl. D9-254.000.

Quaker Oats Company, The: *See—*
Fratarcangeli, Victor J., 254,982, Cl. D21-118.000.

Raimondi, Phyllis, to International Playtex, Inc. Brassiere. 254,937, 5-13-80, Cl. D2-24.000.

Rakocy, William J.; and Tsuji, Masao, to North American Philips Corporation. Ice cream maker. 254,972, 5-13-80, Cl. D15-82.000.

Rathbun, Richard H.: *See—*
Hildebrandt, William J.; and Rathbun, Richard H., 254,952, Cl. D8-5.000.

Ribeiro, J. A. Pinto, to Florists' Transworld Delivery Association. Jar or the like. 254,954, 5-13-80, Cl. D9-39.000.

Richards Manufacturing Co., Inc.: *See—*
Treace, James T.; and Treace, Dan H., 254,987, Cl. D24-33.000.

Riddle, Ronald D. Canopy for pick-up truck bed. 254,971, 5-13-80, Cl. D12-156.000.

Ryobi Ltd.: *See—*
Morishita, Yasomatsu, 254,985, Cl. D22-25.000.

Sandman, Elaine E. House or the like. 254,989, 5-13-80, Cl. D25-17.000.

Saunders, Francis R., to Amfac Foods, Inc. Frozen potato patty. 254,936, 5-13-80, Cl. D1-1.000.

Seifert, Richard A.: *See—*
Lee, Thomas M.; and Seifert, Richard A., 254,944, Cl. D6-181.000.

Simmons, Gregory L. Upholstered stool or the like. 254,941, 5-13-80, Cl. D6-26.000.

Societe Anonyme Metal Deploye Belge: *See—*
Falcq, Rene S., 254,991, Cl. D25-74.000.

Sony Corporation: *See—*
Honzyou, Hiroshi, 254,970, Cl. D12-131.000.

Stanley Works, The: *See—*
Hildebrandt, William J.; and Rathbun, Richard H., 254,952, Cl. D8-5.000.

Svenska Skandex Aktiebolag: *See—*
Ahrenskou-Sorensen, Borge, 254,973, Cl. D15-147.000.

Swingline, Inc.: *See—*
Villwock, George F.; and Medina, Conrad R., 254,977, Cl. D18-34.000.

Tayebi, Ramin. Goblet. 254,946, 5-13-80, Cl. D7-13.000.

Telatemp Corporation: *See—*
Everest, Charles E., 254,959, Cl. D10-57.000.

Thomas, Thomas A. Golf ball and tee caddy. 254,940, 5-13-80, Cl. D2-400.000.

Tipke, James M.: *See—*
Moore, George C.; Moore, Jodele; and Tipke, James M., 254,968, Cl. D12-112.000.

Tramonti, John J.: *See—*
Hartung, Philip F.; and Tramonti, John J., 254,955, Cl. D9-91.000.

Treace, Dan H.: *See—*
Treace, James T.; and Treace, Dan H., 254,987, Cl. D24-33.000.

Treace, James T.; and Treace, Dan H., to Richards Manufacturing Co., Inc. Hip prosthesis. 254,987, 5-13-80, Cl. D24-33.000.

Tsuji, Masao: *See—*
Rakocy, William J.; and Tsuji, Masao, 254,972, Cl. D15-82.000.

U.S. Philips Corporation: *See—*
Besford, John, 254,948, Cl. D7-153.000.
Besford, John, 254,949, Cl. D7-153.000.
Besford, John, 254,950, Cl. D7-153.000.

Valente, Michael J. Musical rhythm instrument. 254,976, 5-13-80, Cl. D17-22.000.

Verbeke, Henry. Bag vending machine. 254,979, 5-13-80, Cl. D20-1.000.

Viking Sauna Company: *See—*
Jones, Robert H.; and Nylin, Lennard E., 254,988, Cl. D24-38.000.

Villwock, George F.; and Medina, Conrad R., to Swingline, Inc. Combined power stapler and desk stapler unit. 254,977, 5-13-80, Cl. D18-34.000.

White, David L.; Goldstein, Morton M.; and Kraft, Harry, to Kramor Industries, Ltd. Combined keno ticket holder with pager and game results display. 254,980, 5-13-80, Cl. D21-1.000.

Winter, Claus. Facade for a furniture store. 254,990, 5-13-80, Cl. D25-59.000.

Wolf, Tobin. Game board. 254,981, 5-13-80, Cl. D21-32.000.

Worrell, James. Chair frame. 254,945, 5-13-80, Cl. D6-191.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 13, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

69.5 4,202,052
84 4,202,053
116 4,202,054

CLASS 3

1.91 4,202,055

CLASS 4

1 4,202,056
144.3 4,202,057
4,202,058
149 4,202,059
173 R 4,202,060
317 4,202,061

CLASS 5

66 4,202,062
81 R 4,202,063
83 4,202,064
99 A 4,202,065

CLASS 8

94.15 4,202,664
444 4,202,662
471 4,202,663

CLASS 12

142 R 4,202,066

CLASS 13

31 R 4,202,997

CLASS 15

28 4,202,067
4,202,068
250.03 4,202,069
300 A 4,202,070
302 4,202,071
4,202,072
306 A 4,202,073

CLASS 16

94 D 4,202,074

CLASS 17

41 4,202,075
48 4,202,076
73 4,202,077

CLASS 19

26 4,202,078
64.5 4,202,079

CLASS 23

230 B 4,202,665
232 E 4,202,666
302 T 4,202,667

CLASS 24

263 R 4,202,087

CLASS 29

25.18 4,202,080
25.41 4,202,081
149.5 B 4,202,082
150 4,202,083
156.8 R 4,202,084
157.3 C 4,202,085
157.3 R 4,202,086
280 4,202,088
417 4,202,090
527.1 4,202,091
527.6 4,202,089
741 4,202,092

CLASS 30

169 4,202,093
276 4,202,094
340 4,202,095
381 4,202,096

CLASS 33

168 R 4,202,106
169 C 4,202,107
189 4,202,108
199 R 4,202,109
299 4,202,110
444 4,202,111
483 4,202,105

CLASS 34

4 4,202,112
23 4,202,113

CLASS 35

11 A 4,202,114
25 4,202,115

CLASS 36

59 R 4,202,116
112 4,202,117

CLASS 37

41 4,202,118
69 4,202,119

CLASS 40

2.2 4,202,120
152.1 4,202,121
158 B 4,202,122
596 4,202,123

CLASS 42

89 4,202,124

CLASS 43

17 4,202,125
4,202,126
42.31 4,202,127
43.14 4,202,128
131 4,202,129

CLASS 44

7 A 4,202,668
40 4,202,669
51 4,202,670
68 4,202,671

CLASS 46

1 R 4,202,130
16 4,202,132
25 4,202,131
67 4,202,133
92 4,202,134
154 4,202,135

CLASS 48

77 4,202,672
86 R 4,202,673

CLASS 49

449 4,202,136
458 4,202,137

CLASS 51

229 4,202,138
393 4,202,139
395 4,202,140
412 4,202,141
425 4,202,142

CLASS 52

97 4,202,143
103 4,202,144
169.1 4,202,145
236.4 4,202,146
245 4,202,147
592 4,202,148
699 4,202,149

CLASS 53

206 4,202,150
378 4,202,151
451 4,202,152
459 4,202,153

CLASS 55

108 4,202,674
118 4,202,675
269 4,202,676
378 4,202,677

CLASS 56

2 4,202,154
9 4,202,155
13.6 4,202,156
28 4,202,157
328 R 4,202,158
364 4,202,159
366 4,202,160

CLASS 57

12 4,202,161
58.89 4,202,162
58.95 4,202,163
232 4,202,164

CLASS 60

39.02 4,202,167
39.06 4,202,168
39.12 4,202,169
39.23 4,202,170
39.28 R 4,202,171
245 4,202,172
290 4,202,173
413 4,202,174
477 4,202,175
600 4,202,176
641 4,202,177
675 4,202,178

CLASS 62

2 4,202,179
38 4,202,678
50 4,202,180
141 4,202,181
511 4,202,182

CLASS 64

1 C 4,202,183
32 R 4,202,184

CLASS 65

2 4,202,679
12 4,202,680
104 4,202,681
136 4,202,682

CLASS 66

203 4,202,185

CLASS 68

3 R 4,202,186
18 F 4,202,187
205 R 4,202,188
4,202,189

CLASS 69

19.3 4,202,190

CLASS 71

35 4,202,683
100 4,202,684
121 4,202,685

CLASS 72

10 4,202,191
21 4,202,192
42 4,202,193
78 4,202,194
4,202,195
137 4,202,196
245 4,202,197
250 4,202,198

CLASS 73

23 4,202,200
40 4,202,201
4,202,202
61.1 R 4,202,203
64.1 4,202,204
65 4,202,205
116 4,202,206
119 A 4,202,207
139 4,202,208
168 4,202,209
194 A 4,202,210
227 4,202,211
421.5 R 4,202,212
487 4,202,213
4,202,214
599 4,202,215
639 4,202,216
727 4,202,217
766 4,202,218

CLASS 74

254 4,202,219
471 R 4,202,220
821 4,202,221

CLASS 75

0.5 B 4,202,686
134 C 4,202,687
153 4,202,688
211 4,202,689
224 4,202,690
252 4,202,691
257 4,202,692

CLASS 76

101 A 4,202,222

CLASS 81

3 R 4,202,223
4,202,224
57.35 4,202,225

CLASS 82

12 4,202,226
36 A 4,202,227

CLASS 83

23 4,202,228
304 4,202,229
345 4,202,230
453 4,202,231
519 4,202,232
745 4,202,233

CLASS 84

1.01 4,202,234
4,202,235
1.03 4,202,236
1.24 4,202,237
1.26 4,202,239
1.27 4,202,238
297 R 4,202,240
422 S 4,202,241

CLASS 85

7 4,202,242
37 4,202,243
45 4,202,244

CLASS 86

36 4,202,245

CLASS 89

41.EA 4,202,246

CLASS 91

364 4,202,247
375 A 4,202,248
422 4,202,249
449 4,202,250
472 4,202,251
483 4,202,252

CLASS 93

1 H 4,202,253

CLASS 98

2.12 4,202,254
42 R 4,202,255

CLASS 99

323.5 4,202,256
348 4,202,257
4,202,258
352 4,202,259
450.4 4,202,260
636 4,202,261

CLASS 100

4 4,202,262
95 4,202,263
269 A 4,202,264

CLASS 101

72 4,202,265
218 4,202,266
364 4,202,267
409 4,202,268

CLASS 102

8 4,202,269
43 R 4,202,270
247 4,202,271

CLASS 104

91 4,202,272
165 4,202,274
298 4,202,273

CLASS 105

61 4,202,275
165 4,202,276
215 C 4,202,277

CLASS 106

39.6 4,202,700
278 4,202,701
288 B 4,202,702

CLASS 108

102 4,202,278

CLASS 109

34 4,202,279

CLASS 110

216 4,202,280
259 4,202,281
346 4,202,282

CLASS 111

6 4,202,283

CLASS 112

217.1 4,202,284
235 4,202,285
286 4,202,286

CLASS 113

121 C 4,202,287

CLASS 118

41 4,202,288
50 4,202,289
211 4,202,290

CLASS 119

3 4,202,291
20 4,202,292
29 4,202,293
78 4,202,294

CLASS 123

32 EH 4,202,295
41.48 4,202,296
65 PE 4,202,297
73 A 4,202,299
73 R 4,202,298
75 B 4,202,300
119 EC 4,202,301
119 F 4,202,302
139 AQ 4,202,303
148 C 4,202,306
148 CC 4,202,305
148 E 4,202,304
169 V 4,202,307
179 G 4,202,308
180 R 4,202,309
191 A 4,202,310
195 C 4,202,311
210 4,202,312
212 4,202,313
249 4,202,315

CLASS 124

24 R 4,202,316

CLASS 125

11 H 4,202,317

CLASS 126

110 R 4,202,318
425 4,202,321
4,202,322
432 4,202,319
447 4,202,320

CLASS 128

1.1 4,202,323
20 4,202,324
24 R 4,202,325
33 4,202,326
78 4,202,327
89 A 4,202,328
130 4,202,329
155 4,202,331
204.18 4,202,330
214.4 4,202,332
218 A 4,202,333
218 F 4,202,314
272 4,202,334
295 4,202,335
303.1 4,202,336
303.14 4,202,337
303.15 4,202,338
419 D 4,202,340
419 PG 4,202,339
4,202,341
4,202,342
438 4,202,343
644 4,202,344
654 4,202,345
658 4,202,346
677 4,202,347
680 4,202,348
689 4,202,349
690 4,202,350
696 4,202,351
719 4,202,352
724 4,202,353
731 4,202,354
774 4,202,355

CLASS 131

10.9 4,202,356
140 R 4,202,357
187 4,202,358

CLASS 132

5 4,202,359
40 4,202,360
123 4,202,361

CLASS 133

4 A 4,202,362

CLASS 134

2 4,202,703

CLASS 135

4,202,363

CLASS 136

89 CL 4,202,704

CLASS 137

13 4,202,364
72 4,202,365
172 4,202,366
187 4,202,367
498 4,202,368
508 4,202,369
585 4,202,370
604 4,202,371
615 4,202,372
625.29 4,202,373
827 4,202,374

CLASS 138

39 4,202,375
89 4,202,376
94 4,202,377
96 R 4,202,378
99 4,202,379

CLASS 139

368 4,202,380
383 A 4,202,382
383 R 4,202,381
436 4,202,383

CLASS 140

123.6 4,202,384

CLASS 141

59 4,202,385
300 4,202,386
360 4,202,387

CLASS 144

323 4,202,388

CLASS 148

6.11 4,202,705
6.17 4,202,706
9 R 4,202,707
11.5 C 4,202,708
11.5 Q 4,202,709
16.5 4,202,710
111 4,202,711

CLASS 149

22 4,202,712
100 4,202,713
109.4 4,202,714

CLASS 150

52 R 4,202,389

CLASS 151

41.75 4,202,390

CLASS 152

209 D 4,202,391
330 L 4,202,392
330 RF 4,202,393
361 R 4,202,394

CLASS 156

71 4,202,715
79 4,202,716

136 4,202,717
171 4,202,718
205 4,202,719
353 4,202,720
358 4,202,721
436 4,202,722
470 4,202,723

CLASS 160

84 R 4,202,395
107 4,202,396

CLASS 162

272 4,202,724

CLASS 164

82 4,202,397
150 4,202,398
203 4,202,399
251 4,202,400
252 4,202,401
263 4,202,402
409 4,202,403
423 4,202,404

CLASS 165

47 4,202,406
76 4,202,407
109 4,202,408
110 4,202,405
122 4,202,409

CLASS 166

88 4,202,410
244 C 4,202,411
256 4,202,412
292 4,202,413

CLASS 172

42 4,202,414
125 4,202,415

CLASS 174

31 R 4,202,998
50.61 4,202,999
92 4,203,000
135 4,203,004

CLASS 175

94 4,202,416
320 4,202,417
361 4,202,418
374 4,202,419
395 4,202,420
410 4,202,421

CLASS 176

5 4,202,725
18 4,202,726
30 4,202,727
4,202,728
4,202,729
37 4,202,730
4,202,731
4,202,732

CLASS 178

3 4,203,001

CLASS 179

1 CN 4,203,005
2 C 4,203,006
6 E 4,203,007
16 AA 4,203,009
82 4,203,010
99 M 4,203,011
170 NC 4,203,012

CLASS 180

6.48 4,202,422
8 D 4,202,423
176 4,202,424

CLASS 181

120 4,202,425
257 4,202,426

CLASS 182

2 4,202,427
22 4,202,428

CLASS 188

71.1 4,202,429
171 4,202,430

CLASS 192

3.29 4,202,431
107 M 4,202,432
129 A 4,202,433

CLASS 198

316 4,202,434
339 4,202,435
472 4,202,436
497 4,202,437
524 4,202,438
642 4,202,439
718 4,202,440
779 4,202,441
820 4,202,442
831 4,202,443

CLASS 200

5 A 4,203,013
38 R 4,203,014
42 T Re.30,273
61.45 R 4,203,015
159 R 4,203,016
339 4,203,017

CLASS 201

1 4,202,733
6 4,202,734
41 4,202,735

CLASS 203

10 4,202,736

CLASS 204

95 4,202,738
98 4,202,743
129 4,202,744
129.35 4,202,739
130 4,202,740
158 R 4,202,741
159.23 4,202,742
180 R 4,202,745
181 C 4,202,746
195 G 4,202,749
195 R 4,202,747
4,202,748
197 4,202,750
4,202,751
222 4,202,752
247 4,202,753
272 4,202,754

CLASS 206

37 4,202,445
147 4,202,446
389 4,202,447
392 4,202,448
453 4,202,449
459 4,202,450
526 4,202,451

CLASS 208

5 4,202,755
8 LE 4,202,756
10 4,202,757
143 4,202,758

CLASS 209

17 4,202,761
234 4,202,759

CLASS 210

3 4,202,762
14 4,202,763
22 A 4,202,760
22 D 4,202,764
31 R 4,202,765
32 4,202,737
40 4,202,766
44 4,202,767
62 4,202,768
83 4,202,769
96.1 4,202,770
130 4,202,771
232 4,202,772
256 4,202,773
274 4,202,774
287 4,202,775
321 B 4,202,776
405 4,202,777
522 4,202,778

CLASS 211

41 4,202,452

CLASS 212

55 4,202,453

CLASS 213

86 4,202,454

CLASS 215

31 4,202,455
228 4,202,456

CLASS 219

69 V 4,203,018
72 4,203,019
93 4,203,020
121 EB 4,203,021
4,203,023
121 P 4,203,022
146.1 4,203,024
216 4,203,025
222 4,203,026
275 4,203,027
384 4,203,028

CLASS 220

3.3 4,202,457
85 B 4,202,458
90.4 4,202,459
218 4,202,460
268 4,202,461
293 4,202,462
307 4,202,463
339 4,202,464
468 4,202,465

CLASS 221

93 4,202,468

CLASS 222

1 4,202,466
20 4,202,467
91 4,202,469
130 4,202,470
153 4,202,471
187 4,202,472
598 4,202,473
609 4,202,474

CLASS 225

2 4,202,475

CLASS 226

119 4,202,476
4,202,478

CLASS 227

8 4,202,479
4,202,480
145 4,202,481

CLASS 228

4.5 4,202,482
43 4,202,483
173 A 4,202,484

CLASS 229

22 4,202,485

CLASS 232

35 4,202,486

CLASS 233

1 A 4,202,487
24 4,202,488

CLASS 235

92 CC 4,203,030
92 PC 4,203,029
101 4,202,489
449 4,202,490
491 4,202,491

CLASS 236

49 4,202,492

CLASS 237

2 B 4,202,493

CLASS 238

83 4,202,494

CLASS 239

1 4,202,495
14 4,202,496
112 4,202,497
156 4,202,498
177 4,202,596
206 4,202,499
533.3 4,202,500
570 4,202,501

CLASS 241

82.5 4,202,502
194 4,202,503
4,202,504
247 4,202,505

CLASS 242

36 4,202,506
46.2 4,202,507
84.2 G 4,202,508
86.5 R 4,202,509
107.4 R 4,202,510
150 R 4,202,511
157.1 4,202,512
189 4,202,513

CLASS 244

3.11 4,202,515
3.15 4,202,516
3.22 4,202,517
12.1 4,202,518
214 4,202,519

CLASS 248

68 CB 4,202,520
98 4,202,521

CLASS 249

102 4,202,522
115 4,202,523

CLASS 250

201 4,203,031
205 4,203,032
252 4,203,033
280 4,203,034
363 S 4,203,035
445 T 4,203,036
505 4,203,037
507 4,203,038

CLASS 251

28 4,202,524
40 4,202,525
51 4,202,526
58 4,202,527

CLASS 252

8.1 4,202,779
12 4,202,780
32.7 HC 4,202,781
51.5 A 4,202,782
4,202,783
51.5 R 4,202,784
102 4,202,786
171 4,202,787
182 4,202,788
182.1 4,202,789
186 4,202,790
299 4,202,791
301.1 S 4,202,793
301.1 W 4,202,792
301.4 R 4,202,794
332 4,202,795
389 A 4,202,796
413 4,202,797
437 4,202,798
500 4,202,799
543 4,202,800

CLASS 254

86 R 4,202,528
89 H 4,202,529
93 H 4,202,514
134.3 FT 4,202,530
134.4 4,202,531

CLASS 256

24 4,202,532

CLASS 260

5 4,202,801
8 4,202,802
17.4 BB 4,202,803
17.4 R 4,202,804
22 CB 4,202,805
23 XA 4,202,806
29.1 SB 4,202,807
29.6 WB 4,202,808
29.7 S 4,202,809
31.2 N 4,202,810
37 R 4,202,813
37 SB 4,202,811
4,202,812
40 P 4,202,814
42.21 4,202,815
45.75 N 4,202,816
239.1 4,202,817
245.3 4,202,819
315 4,202,820
326.5 S 4,202,821
340.9 P 4,202,822
343.6 4,202,823
343.9 4,202,824
345.2 4,202,825
346.75 4,202,826
378 4,202,827
396 R 4,202,828
397.2 4,202,829
429.7 4,202,830
438.1 4,202,840
455 A 4,202,832
463 4,202,833
465 D 4,202,834
465 F 4,202,835
465.4 4,202,836
465.9 4,202,837
505 C 4,202,838
569 4,202,839
928 4,202,842
985 4,202,843
4,202,844

CLASS 261

142 4,202,846
161 4,202,847

CLASS 264

0.5 4,202,849
1 4,202,848
108 4,202,850
113 4,202,851
115 4,202,852
138 4,202,853
168 4,202,854
210.2 4,202,855
221 4,202,856
333 4,202,857

CLASS 266

45 4,202,533
56 4,202,535
135 4,202,536
172 4,202,534
252 4,202,537
275 4,202,538

CLASS 269

70 4,202,539
166 4,202,540

CLASS 271

132 4,202,541
276 4,202,542

CLASS 272

3 4,202,543

CLASS 273

73 R 4,202,544
87 R 4,202,545
93 R 4,202,546
181 A 4,202,547
272 4,202,548

CLASS 274

9 RA 4,202,549
23 R 4,202,550
39 R 4,202,551

CLASS 277

26 4,202,552
41 4,202,553
53 4,202,554
153 4,202,555
190 4,202,556

CLASS 279

19.5 4,202,557

CLASS 280

11.28 4,202,558
87.04 R 4,202,559
96.3 4,202,560
278 4,202,561
415 R 4,202,562
675 4,202,563
678 4,202,564
756 4,202,565

CLASS 282

27.5 4,202,566

CLASS 285

18 4,202,567
336 4,202,568

CLASS 289

18.1 4,202,569

CLASS 292

60 4,202,570
216 4,202,571
217 4,202,572
223 4,202,573
228 4,202,574
347 4,202,575

CLASS 294

83 R 4,202,576

CLASS 296

24 R 4,202,577
37.16 4,202,578
156 4,202,579

CLASS 297

84 4,202,580
440 4,202,581

CLASS 301

37 SA 4,202,582

CLASS 303

22 R 4,202,583
105 4,202,584

CLASS 307

10 R 4,203,039
65 4,203,040
67 4,203,041
241 4,203,042
252 C 4,203,047
254 4,203,043

CLASS 308

181 4,203,074

CLASS 310

61 4,203,044
68 C 4,203,045
93 4,203,046
268 4,203,048

CLASS 312

15 4,202,585
107 4,202,586
219 4,202,587

CLASS 313

174 4,203,049
220 4,203,050

CLASS 315

13 C 4,203,051
209 CD 4,203,052
254 4,203,053
368 4,203,054
375 4,203,055
389 4,203,056

CLASS 318

285 4,203,057
380 4,203,058
446 4,203,059
474 4,203,060
490 4,203,061
571 4,203,062
603 4,203,063
640 4,203,064

CLASS 320

43 4,203,065

CLASS 324

51 4,203,066
58.5 C 4,203,067
97 4,203,068
220 4,203,069

CLASS 331

1 A 4,203,075
25 4,203,076
94.5 C 4,203,077
94.5 D 4,203,080
94.5 G 4,202,104
94.5 H 4,203,079
94.5 PE 4,203,078

CLASS 333

138 4,203,081
194 4,203,082

CLASS 335

174 4,203,083
202 4,203,084

CLASS 336

210 4,203,085

CLASS 337

410 4,203,086

CLASS 338

35 4,203,087
114 4,203,088

CLASS 339

59 M 4,202,588
97 R 4,202,589
107 4,202,590
111 4,202,591
116 R 4,202,592
125 R 4,202,593
147 R 4,202,594
174 4,202,595

CLASS 340

152 T 4,203,090
331 4,203,091
347 AD 4,203,092
365 L 4,203,093
378.5 4,203,094
506 4,203,095
538 4,203,096
566 4,203,097
575 4,203,098
619 4,203,099
630 4,203,100
635 4,203,101
723 4,203,102
753 4,203,103
754 4,203,104
787 4,203,106
799 4,203,107
850 4,203,108
4,203,109

CLASS 343

7 PF 4,203,110
7.7 4,203,111
13 R 4,203,112
14 4,203,113
100 SA 4,203,114
112 R 4,203,115
700 MS 4,203,116
701 4,203,117
727 4,203,118
781 P 4,203,105

CLASS 346

76 PH 4,203,119
162 4,203,120
4,203,121
4,203,122

CLASS 350

6.6 4,202,597
36 4,202,598

96.25 4,202,599
103 4,202,600
159 4,202,601
272 4,202,602
289 4,202,603
291 4,202,604
292 4,202,605
336 4,202,606
338 4,202,607
339 R 4,202,608

CLASS 351

111 4,202,609

CLASS 352

91 C 4,202,610
179 4,202,611

CLASS 353

28 4,202,612
120 4,202,613

CLASS 354

121 4,202,614
152 4,202,615
173 4,202,616
268 4,202,617

CLASS 355

3 FU 4,202,618
3 P 4,202,619
10 4,202,620
14 C 4,202,622
14 R 4,202,621
30 4,202,623
45 4,202,624
52 4,202,626

CLASS 356

39 4,202,625
71 4,202,627
312 4,202,628
335 4,202,629
371 4,202,630
394 4,202,631
427 4,202,632

CLASS 357

2 4,203,123
13 4,203,124
41 4,203,125
42 4,203,126
55 4,203,127
60 4,203,128
82 4,203,129

CLASS 358

1 4,203,130
34 4,203,131
101 4,203,132
128.5 4,203,133
4,203,134
149 4,203,135
280 4,203,136

CLASS 360

31 4,203,137
37 4,203,138
62 4,203,139
77 4,203,140

CLASS 361

18 4,203,141
42 4,203,142
120 4,203,143
234 4,203,144
317 4,203,145
361 4,203,146
386 4,203,147
399 4,203,148
411 Re.30,274

CLASS 362

144 4,203,149
183 4,203,150

CLASS 363

43 4,203,151

CLASS 364

200 4,203,152
4,203,153
4,203,154
473 4,203,155
500 4,203,156
788 4,203,157

CLASS 365

185 4,203,158
222 4,203,159

CLASS 366

79 4,202,633
111 4,202,634
162 4,202,635
319 4,202,636

CLASS 367

2 4,203,160
40 4,203,161
122 4,203,162
125 4,203,163
134 4,203,164
135 4,203,165
143 4,203,089

CLASS 368

82 4,202,166
272 4,202,165

CLASS 370

50 4,203,008

CLASS 375

1 4,203,070
4,203,071
2 4,203,166
116 4,203,002

CLASS 400

118 4,202,637
124 4,202,638
171 4,202,639
491.2 4,202,640

CLASS 401

32 4,202,641
196 4,202,652

CLASS 402

13 4,202,642

CLASS 403

33 4,202,643
369 4,202,644
407 4,202,645

CLASS 404

36 4,202,646

CLASS 405

203 4,202,647
210 4,202,648
282 4,202,649

CLASS 407

46 4,202,650
91 4,202,651

CLASS 414

22 4,202,653

CLASS 415

113 4,202,654

CLASS 416

237 4,202,655

CLASS 417

88 4,202,656

CLASS 418

208 4,202,657

CLASS 422

243 4,202,858
245 4,202,859

CLASS 423

6 4,202,860
19 4,202,861
70 4,202,862
82 4,202,863
220 4,202,864
244 4,202,865
265 4,202,866
301 4,202,867
445 4,202,868
563 4,202,869
630 4,202,870
632 4,202,871

CLASS 424

1 4,202,872
4,202,873
4,202,874
4,202,875
1.5 4,202,876
43 4,202,877
49 4,202,878
66 4,202,879
70 4,202,881
76 4,202,882
78 4,202,880
92 4,202,883
94 4,202,884
95 4,202,885
122 4,202,886
154 4,202,887
182 4,202,888
200 4,202,889
4,202,890
242 4,202,891
244 4,202,892
246 4,202,893
248.4 4,202,894
250 4,202,895
4,202,896
4,202,897
4,202,898
251 4,202,899
4,202,900
263 4,202,901
298 4,202,902
311 4,202,841
326 4,202,903
330 4,202,904

CLASS 425

64 4,202,658
183 4,202,659

CLASS 426

1 4,202,905
3 4,202,906
34 4,202,907
72 4,202,908
239 4,202,909
423 4,202,910
502 4,202,911
615 4,202,912
656 Re.30,272

CLASS 427

38 4,202,914
47 4,202,915
82 4,202,916
161 4,202,917
224 4,202,918
245 4,202,919
386 4,202,920
406 4,202,921

CLASS 428

18 4,202,922
144 4,202,923
201 4,202,924
219 4,202,925
304 4,202,926
323 4,202,927
446 4,202,928
452 4,202,929
539 4,202,930
662 4,202,931
667 4,202,932

CLASS 429

13 4,202,933
40 4,202,934
48 4,202,935
163 4,202,936

CLASS 430

8 4,202,695
50 4,202,693
58 4,202,937
106 4,202,785
4,202,913
215 4,202,694
302 4,202,699
306 4,202,696
4,202,697
418 4,202,698

CLASS 431

328 4,202,660

CLASS 432

8 4,202,661

CLASS 433

7 4,202,100
127 4,202,102
153 4,202,103
168 4,202,098
176 4,202,099
189 4,202,097
225 4,202,101

CLASS 435

10 4,202,938
96 4,202,939
101 4,202,940
190 4,202,941
262 4,202,942
280 4,202,943

CLASS 455

111 4,203,003
223 4,203,072
311 4,203,073

CLASS 521

32 4,202,944
121 4,202,945
169 4,202,946
174 4,202,947

CLASS 525

70 4,202,948
92 4,202,949
123 4,202,950
302 4,202,845
374 4,202,952
416 4,202,951

CLASS 526

125 4,202,953
142 4,202,958
181 4,202,954
272 4,202,955

CLASS 528

75 4,202,956
77 4,202,957
254 4,202,959
271 4,202,960
324 4,202,961
363 4,202,962
374 4,202,963
482 4,202,964
499 4,202,965

CLASS 536

1 4,202,966
4,202,969
17 A 4,202,967
23 4,202,968

CLASS 542

426 4,202,970
4,202,971
4,202,972

CLASS 544

21 4,202,973
251 4,202,974
255 4,202,975
261 4,202,976
362 4,202,977
393 4,202,978

CLASS 546

67 4,202,979
75 4,202,980
82 4,202,981
89 4,202,982
97 4,202,983
4,202,984
176 4,202,985

CLASS 548

204 4,202,818

CLASS 556

467 4,202,831

CLASS 560

25 4,202,986
49 4,202,987
118 4,202,988
4,202,989
217 4,202,990
255 4,202,991

CLASS 568

575 4,202,992
723 4,202,993
793 4,202,199
824 4,202,994
860 4,202,995

CLASS 585

377 4,202,996

CLASSIFICATION OF DESIGNS

D1— 1 254,936
D2— 24 254,937
268 254,938
400 254,940
418 254,939
D6— 26 254,941
54 254,942
122 254,943
181 254,944
191 254,945
D7— 13 254,946
150 254,947
153 254,948
254,949
254,950
192 254,951
D8— 5 254,952
18 254,953
D9— 39 254,954
91 254,955
184 254,956
216 254,957
254 254,958
D10— 57 254,959
98 254,960
D11— 3 254,961
254,962
254,963
254,964
254,965
61 254,966
152 254,967
D12— 112 254,968
129 254,969
131 254,970
156 254,971
D15— 82 254,972
147 254,973
199 254,974
D16— 32 254,975
D17— 22 254,976
D18— 34 254,977
D19— 73 254,978
D20— 1 254,979
D21— 254,980
32 254,981
118 254,982
230 254,983
234 254,984
D22— 25 254,985
D23— 150 254,986
D24— 33 254,987
38 254,988
D25— 17 254,989
59 254,990
74 254,991
D26— 35 254,995
D28— 46 254,992
D30— 2 254,993
12 254,994

CLASSIFICATION OF PLANTS

P.— 51 4,534
56 4,535

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4 :	4,202,499		4,202,289	08 :	4,202,354		4,203,014		4,203,044	25 :	4,202,107
6 :	4,202,080		4,202,290		4,202,527		4,203,034		4,203,058		4,202,226
	4,202,130		4,202,322		4,202,542		4,203,072		4,203,073		4,202,255
	4,202,254		4,202,329		4,202,585	13 :	4,202,283		4,203,083		4,202,370
	4,202,256		4,202,334		4,202,752		4,202,382		4,203,086		4,202,408
	4,202,455		4,202,335		4,202,910		4,202,564	18 :	4,202,142		4,202,441
	4,202,501		4,202,343		4,203,116	16 :	4,202,570		4,202,236		4,202,459
	4,202,504		4,202,344		4,203,152	17 :	4,202,073		4,202,248		4,202,483
	4,202,529		4,202,347	09 :	4,202,054		4,202,083		4,202,305		4,202,561
	4,202,579		4,202,350		4,202,082		4,202,088		4,202,327		4,202,599
	4,202,581		4,202,352		4,202,105		4,202,121		4,202,494		4,202,600
	4,202,602		4,202,355		4,202,353		4,202,126		4,202,594		4,202,619
	4,202,605		4,202,372		4,202,360		4,202,134		4,202,674		4,202,625
	4,202,712		4,202,387		4,202,489		4,202,141		4,202,781		4,202,661
	4,202,787		4,202,412		4,202,523		4,202,224		4,202,802		4,202,694
	4,202,867		4,202,427		4,202,539		4,202,243		4,202,979		4,202,725
	4,202,909		4,202,487		4,202,590		4,202,244		4,203,004		4,202,772
	4,203,006		4,202,520		4,202,623		4,202,266		4,203,134		4,202,883
	4,203,015		4,202,525		4,202,688		4,202,287	19 :	4,202,138		4,202,936
	4,203,098		4,202,562		4,202,722		4,202,288		4,202,233		4,203,035
	4,203,108		4,202,609		4,202,774		4,202,309		4,202,565		4,203,070
	4,203,110		4,202,613		4,202,777		4,202,325		4,202,887		4,203,071
	4,203,123		4,202,655		4,202,779		4,202,330	20 :	4,202,598		4,203,078
	4,203,150		4,202,668		4,202,801		4,202,331		4,202,624		4,203,087
9 :	4,202,093		4,202,671		4,202,833		4,202,364		4,202,657		4,203,113
	4,202,782		4,202,685		4,202,865		4,202,385		4,202,754		4,203,118
	4,203,162		4,202,747		4,202,904		4,202,435		4,202,922		4,203,151
01 :	4,202,324		4,202,818		4,202,933		4,202,437	21 :	4,202,059	26 :	4,202,063
	4,202,714		4,202,839		4,202,934		4,202,476		4,202,124		4,202,120
	4,203,120		4,202,840		4,202,942		4,202,486		4,202,356		4,202,125
	4,203,121		4,202,849		4,202,946		4,202,509		4,202,434		4,202,127
	4,203,122		4,202,875		4,202,947		4,202,521		4,202,553		4,202,201
04 :	4,202,157		4,202,907		4,202,948		4,202,580	22 :	4,202,076		4,202,207
	4,202,293		4,202,912		4,202,957		4,202,611		4,202,077		4,202,219
	4,202,477		4,202,930		4,203,026		4,202,673		4,202,241		4,202,239
	4,202,547		4,202,932		4,203,146		4,202,701		4,202,349		4,202,300
	4,202,675		4,202,967	10 :	4,202,261		4,202,750		4,202,368		4,202,313
	4,203,127		4,202,981		4,202,790		4,202,758		4,202,410		4,202,318
05 :	4,202,245		4,203,003	12 :	4,202,068		4,202,759		4,202,626		4,202,328
	4,202,284		4,203,012		4,202,106		4,202,764		4,202,663		4,202,389
06 :	4,202,056		4,203,053		4,202,119		4,202,784		4,202,708		4,202,395
	4,202,062		4,203,075		4,202,146		4,202,796		4,202,753		4,202,406
	4,202,065		4,203,080		4,202,158		4,202,798		4,203,130		4,202,493
	4,202,098		4,203,090		4,202,310		4,202,800	24 :	4,202,205		4,202,496
	4,202,099		4,203,097		4,202,337		4,202,804		4,202,212		4,202,528
	4,202,136		4,203,107		4,202,342		4,202,863		4,202,512		4,202,572
	4,202,148		4,203,126		4,202,361		4,202,911		4,202,515		4,202,586
	4,202,149		4,203,137		4,202,426		4,202,918		4,202,548		4,202,604
	4,202,177		4,203,148		4,202,507		4,202,939		4,202,652		4,202,649
	4,202,218		4,203,154		4,202,721		4,202,951		4,202,813		4,202,651
	4,202,221		4,203,158		4,202,760		4,202,992		4,202,915		4,202,809
	4,202,246		4,203,159		4,202,854		4,202,996		4,203,089		4,202,811
	4,202,271		4,203,164		4,202,962		4,203,030		4,203,101		4,202,812

	4,202,956		4,202,821		4,202,559		4,202,560		4,202,676		4,202,902
	4,202,970		4,202,834		4,202,569		4,202,660		4,202,678		4,203,093
	4,202,971		4,202,836		4,202,573		4,202,680		4,202,692		4,203,125
	4,202,972		4,202,843		4,202,582		4,202,681		4,202,734		4,203,141
	4,203,039		4,202,844		4,202,612		4,202,702		4,202,739		4,203,157
	4,203,052		4,202,845		4,202,614		4,202,711		4,202,742		4,203,161
	4,203,059		4,202,869		4,202,634		4,202,717		4,202,794		4,203,165
	4,203,138		4,202,882		4,202,637		4,202,738		4,202,924	49 :	4,202,052
27 :	4,202,139		4,202,897		4,202,665		4,202,878		4,202,926		4,202,135
	4,202,321		4,202,901		4,202,691		4,202,879		4,202,945		4,202,209
	4,202,333		4,202,903		4,202,704		4,202,999		4,202,950		4,202,363
	4,202,465		4,202,913		4,202,757		4,203,045		4,202,964		4,202,534
	4,202,480		4,202,925		4,202,768		4,203,096		4,202,986	51 :	4,202,129
	4,202,516		4,202,928		4,202,785		4,203,153		4,202,998		4,202,276
	4,202,706		4,202,935		4,202,810		4,203,155		4,203,037		4,202,277
	4,203,066		4,202,955		4,202,822	40 :	Re.30,272		4,203,040		4,202,357
28 :	4,202,165		4,202,963		4,202,842		4,202,058		4,203,142		4,202,454
29 :	4,202,373		4,202,978		4,202,853		4,202,260		4,203,163		4,202,601
	4,202,683		4,202,994		4,202,864		4,202,484	43 :	4,202,423		4,202,723
	4,203,095		4,202,997		4,202,866		4,202,540	44 :	4,202,114		4,202,740
30 :	4,202,144		4,203,001		4,202,870		4,202,636		4,202,478		4,203,016
	4,202,326		4,203,002		4,202,874		4,202,720	45 :	4,202,123		4,203,115
	4,202,492		4,203,017		4,202,914		4,202,795		4,202,185		4,203,160
	4,202,858		4,203,063		4,202,983		4,202,856		4,202,189	53 :	4,202,061
31 :	4,202,087		4,203,105		4,202,984	41 :	4,202,175		4,202,890		4,202,070
	4,202,159		4,203,117		4,202,988		4,202,544	46 :	4,202,771		4,202,109
	4,202,596		4,203,124		4,202,989		4,202,677	47 :	4,202,104		4,202,172
33 :	4,202,203	35 :	4,202,072		4,202,993		4,202,862		4,202,240		4,202,242
	4,203,022		4,202,279		4,203,011		4,203,060		4,202,524		4,202,369
	4,203,055		4,202,700		4,203,029	42 :	4,202,053		4,202,745		4,202,378
	4,203,109		4,202,931		4,203,099		4,202,085		4,202,788		4,202,418
34 :	4,202,089	36 :	Re.30,274		4,203,106		4,202,137	48 :	4,202,079		4,202,470
	4,202,110		4,202,101		4,203,114		4,202,154		4,202,090		4,202,519
	4,202,217		4,202,103		4,203,129		4,202,168		4,202,178		4,202,574
	4,202,269		4,202,131	37 :	4,202,108		4,202,169		4,202,208		4,202,653
	4,202,301		4,202,167		4,202,161		4,202,193		4,202,225		4,202,730
	4,202,371		4,202,179		4,202,292		4,202,198		4,202,282		4,203,069
	4,202,404		4,202,181		4,202,317		4,202,215		4,202,377		4,203,077
	4,202,438		4,202,211		4,202,531		4,202,250		4,202,388	54 :	4,202,551
	4,202,458		4,202,238		4,202,543		4,202,298		4,202,405	55 :	4,202,071
	4,202,588		4,202,265		4,202,589		4,202,299		4,202,411		4,202,081
	4,202,591		4,202,323		4,202,593		4,202,316		4,202,413		4,202,164
	4,202,620		4,202,345		4,202,749		4,202,320		4,202,417		4,202,429
	4,202,703		4,202,351		4,202,837		4,202,340		4,202,419		4,202,436
	4,202,716		4,202,390	39 :	Re.30,273		4,202,397		4,202,425		4,202,464
	4,202,719		4,202,400		4,202,078		4,202,422		4,202,447		4,202,468
	4,202,741		4,202,409		4,202,153		4,202,442		4,202,452		4,202,497
	4,202,744		4,202,446		4,202,180		4,202,471		4,202,469		4,202,829
	4,202,755		4,202,451		4,202,247		4,202,482		4,202,490		4,202,852
	4,202,765		4,202,456		4,202,264		4,202,510		4,202,583		4,203,033
	4,202,769		4,202,457		4,202,392		4,202,517		4,202,656		4,203,128
	4,202,783		4,202,461		4,202,399		4,202,522		4,202,666	56 :	4,202,145
	4,202,786		4,202,472		4,202,403		4,202,639		4,202,826		4,202,453
	4,202,808		4,202,541		4,202,485		4,202,644		4,202,848		4,202,635
	4,202,819		4,202,546		4,202,530		4,202,650		4,202,891		4,202,667
							4,202,654				

DESIGN PATENTS

04 :	254,993		254,980	12 :	254,940	23 :	254,956		254,981		254,984
06 :	254,944		254,987		254,941	25 :	254,976	36 :	254,961		254,992
	254,945		254,988	17 :	254,977		254,986		254,962	37 :	254,989
	254,946		254,994	18 :	254,957	32 :	254,968		254,963	39 :	254,960
	254,953		254,995		254,958	34 :	254,937		254,964	41 :	254,936
	254,959	09 :	254,947	21 :	254,975		254,972		254,965	44 :	254,955
	254,971		254,952	22 :	254,942		254,979		254,982	45 :	254,966
	254,974										

PLANT PATENTS

36 :	4,535	39 :	4,534				

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UNITED STATES PATENT and TRADEMARK OFFICE

May 20, 1980 Volume 994 Number 3

CONTENTS

	Page
Patent and Trademark Notices	
Patent Cooperation Treaty (PCT) Information	994 OG 20
Patent Suits	994 OG 20
Reissue Applications Filed	994 OG 21
Patent Notices	
Certificates of Correction for the Week of May 20, 1980	994 OG 22
Disclaimers	994 OG 22
Dedications	994 OG 22
National Technical Information Service	994 OG 22
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	994 OG 24
Condition of Patent Applications	994 OG 25
Reissue Patents Granted (30,275)	757
Plant Patents Granted (4,536)	761
Patents Granted	
General and Mechanical (4,203,167)	763
Chemical (4,203,722)	949
Electrical (4,204,082)	1055
Design Patents Granted (254,996)	1125
Index of Patentees	PI 1
Indices of Applicants of Reissues, Plants and Designs	PI 38
Classification of	
Patents (Including Reissues)	PI 41
Designs and Plants	PI 43
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 44
Designs and Plants	PI 46
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Jan. 28, 1980.

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

3,189,984, Franklin Electric Co., Inc., LAMINATED CORE BANDING APPARATUS, filed June 27, 1979, D.C., S.D. Ohio (Dayton), Doc. C-3-79-243, *Lee J. Lakes & Franklin Electric Co., Inc.* v. *Machine Products Corporation.* Complaint and counterclaim dismissed on Feb. 8, 1980.

3,324,869, Henry J. Duda, AWNINGS FOR TRAVEL TRAILERS AND/OR MOBILE HOMES, filed Feb. 12, 1980, D.C., N.D. Tex. (Dallas), Doc. CA3-80-0173-R, *Henry J. Duda* v. *Texas Trimline, Inc.*

3,416,984, Sealed Air Corporation, METHOD AND APPARATUS FOR MAKING CELLULAR MATERIAL FROM THERMOPLASTIC SHEETS, filed Feb. 11, 1980, D.C., S.D.N.Y., Doc. 80-C-828 TPG, *Sealed Air Corporation* v. *Bubble Protek, Inc.*

3,594,762, Stewart-Warner Corporation, DISPLAY SYSTEM; **3,941,926,** same, VARIABLE INTENSITY DISPLAY DEVICE; **4,009,335,** same, GRAY SCALE DISPLAY SYSTEM EMPLOYING DIGITAL ENCODING; **4,148,073,** same, HIGH SPEED VIDEO DISPLAY SYSTEM INCLUDING ZOOM FEATURE, filed Oct. 26, 1979, D.C., W.D. Wash. (Seattle), Doc. C-79-1264M, *American Sign & Indicator Corp.* v. *Stewart-Warner Corp.* Plaintiff filed voluntary dismissal of action on Dec. 17, 1979.

3,734,789, Stephen L. Snyder, RAM AIR GLIDE PARACHUTE, filed Nov. 30, 1979, D.C. Md. (Baltimore), Doc. B-79-2225, *Stephen L. Snyder* v. *Mike Mount.* Defendant is permanently enjoined from infringing plaintiff's patent. Filed Mar. 17, 1980.

3,754,809, Kennametal Inc., CUTTING INSERT AND CLAMPING ARRANGEMENT THEREFOR, filed Feb. 8, 1980, D.C., W.D. Mich. (Grand Rapids), Doc. G80-91 CA1, *Kennametal Inc.* v. *Spec Tool Company, Inc.*

3,758,151, Dual Manufacturing & Engineering, Inc., RECLINING CHAIR; **3,874,724,** same; **Re. 28,210,** same; **Re. 29,483,** same, filed Oct. 20, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4153, *Dual Manufacturing & Engineering, Inc.* v. *Futorian Corporation.*

3,781,859, Albert Hermans, CONTROLLED WAVE PATTERN ULTRASONIC BURGLAR ALARM; **3,846,779,** John Martner, ULTRASONIC TRANSDUCER, filed July 7, 1977, D.C., N.D. Calif. (San Francisco), Doc. C-77-1477, *Galloway et al.* v. *Hermans et al.* Judgment entitling patent containing count at issue to be issued to defendant and also affirming decision of Board of Patent Interferences in favor of defendant and against plaintiffs filed June 27, 1978.

3,846,779. (See 3,781,859.)

3,874,724. (See 3,758,151.)

3,905,599 Martin Mazman, VARIABLE RESISTANCE EXERCISING DEVICE, filed Feb. 25, 1980, D.C. Md. (Baltimore), Doc. JH-80-446, *Universal Gym Equipment, Inc. et al.* v. *Atlantic Health and Fitness Products et al.*

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3,948,556, Strolee of California, CHILD'S CAR SEAT, filed Feb. 7, 1980, D.C., E.D. Mo. (St. Louis), Doc. 80-183C(2), *Welsh Company* v. *California Strolee, Inc., doing business as Strolee of California.*

3,951,352, Western Broadcasting Co., MAGNETIC TAPE GUIDANCE DEVICE, filed Nov. 2, 1979, D.C., N.D. Calif. (San Francisco), Doc. C-79-3088 CBR, *Western Broadcasting Co.* v. *Capital Records, Inc. et al.*

3,973,806, James R. Musselman, ICE STUD FOR SNOWMOBILE TRACKS; **D. 238,764,** Janssen et al., same, filed Feb. 13, 1980, D.C., W.D. Mich. (Grand Rapids), Doc. G80-95 CA1, *Kalamazoo Engineering Co.* v. *James R. Musselman, doing business as International Engineering Co.* Same, filed Mar. 6, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-70971, *James R. Musselman, doing business as International Engineering Co.* v. *Marshall Distributing Inc. et al.*

3,979,525, Multi-National Investment Corp., PROCESS FOR RETARDING MOLD GROWTH IN PARTIALLY BAKED PIZZA CRUSTS AND ARTICLES PRODUCED THEREBY; **4,079,666,** same, APPARATUS FOR TREATING BAKED PRODUCTS IN ORDER TO IMPROVE THE SHELF LIFE THEREOF, filed Aug. 8, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c3272, *Multi-National Investment Corp.* v. *Keebler Company, Inc. et al.* Cause dismissed without prejudice per order dated Feb. 26, 1980.

4,009,335. (See 3,594,762.)

4,020,649, Henry Grossbard, BRILLIANTIZED STEP CUT DIAMOND, filed Feb. 6, 1980, D.C., S.D.N.Y., Doc. 80-C-0744, *Radiant Cut Diamond Corp.* v. *Universal Mines Inc.*

4,027,624, Freund Industrial Co., Ltd., FLUID GRANULATING/COATING APPARATUS UTILIZING SUCTION AIR CURRENT, filed Jan. 4, 1980, D.C. District of Columbia (Wash. D.C.), Doc. 80-0023, *Glatt Air Techniques, Inc.* v. *Freund Industrial Co., Ltd.*

4,079,666. (See 3,979,525.)

4,114,294, Melvin Marmer, ARITHMETIC TEACHING DEVICE, filed Nov. 15, 1979, D.C., S.D. Fla. (Miami), Doc. 79-6629-CIV-ALH, *Melvin Marmer* v. *Jefferson Stores, Inc. et al.*

4,133,304, EMDE Corporation, SYRINGE LIKE APPARATUS WITH REMOVABLE CAPILLARY CARTRIDGE, filed Jan. 15, 1980, D.C. Colo. (Denver), Doc. 80-K-61, *Marquest Medical Products, Inc.* v. *EMDE Corporation.*

4,144,690, Aluma Building Systems Incorporated, CONCRETE FORMING STRUCTURES; **4,156,999,** same, BEAM FOR CONCRETE FORMING STRUCTURES, filed Mar. 10, 1980, D.C. Conn. (Bridgeport), Doc. B-80-138, *Aluma Systems Incorporated* v. *Structural Contours, Inc.*

4,148,073. (See 3,594,762.)

4,153,163, Alderman and Morris, ENVELOPE AND FORM ASSEMBLY, filed Feb. 8, 1980, D.C. Ariz. (Phoenix), Doc. C-80-92-PHX, *Moore Business Forms, Inc.* v. *Norman H. Alderman et al.*

4,153,469, Vladimer I. Alexandrov et al., MONOCRYSTALS BASED ON STABILIZED ZIRCONIUM OR HAFNIUM DIOXIDE AND METHOD OF PRODUCTION THEREOF; filed Feb. 28, 1980, D.C., S.D.N.Y., Doc. 80-C-1165 RLC, *Clayhill Resources Ltd.* v. *MSB Industries Inc.* Same, filed Feb. 28, 1980, D.C., S.D.N.Y., Doc. 80-C-1166 RLC, *Clayhill Resources Ltd.* v. *Yagba Gems, Inc.* Same, filed Feb. 29, 1980, D.C.N.J. (Newark), Doc. 80-570, *Clayhill Resources, Ltd.* v. *Singh Industries et al.*

4,156,999. (See 4,144,690.)

4,157,295, Delbert I. Liller, METHOD AND APPARATUS FOR TESTING AND SEPARATING MINERALS; **4,159,073,** same, METHOD OF MANUFACTURING AND INSTALLING AN INLET LINE DEFLECTOR IN A CENTRIFUGAL CYCLONE FOR WASHING COAL; **4,164,467,** same, A COAL WASHING PLANT EMPLOYING A FEED EQUALIZER AND A CRITICALLY DIMENSIONED DEFLECTOR SURFACE IN THE INLET PIPES OF A PLURALITY OF CYCLONES, filed Mar. 6, 1980, D.C. Md. (Baltimore), Doc. B-80-543, *Delbert I. Liller* v. *Buffalo Coal Co., Inc.*

4,159,073. (See 4,157,295.)

4,161,335, Nix and Davenport, TRUCK BED LINER; **4,181,349,** same, filed Mar. 5, 1980, D.C., S.D. Tex. (Houston), Doc. H-80-481, *Plastics Unlimited, et al.* v. *Fred Davis, doing business as Davis Distributors.*

4,161,449, Airwick Industries, Inc., POWDERED CARPET COMPOSITION, filed Jan. 22, 1980, D.C.N.J. (Newark), Doc. 80-186, *Airwick Industries, Inc.* v. *Certified Chemicals, Inc.* Same, filed Jan. 22, 1980, D.C.N.J. (Newark), Doc. 80-187, *Airwick Industries, Inc.* v. *Sterling Drug, Inc., doing business as Lehn & Fink Products Group.*

4,164,467. (See 4,157,295.)

4,170,420, Gene E. Underwood, FLUID MIXING SYSTEM, filed Mar. 5, 1980, D.C., W.D. Okla. (Oklahoma City), Doc. 80-252-W, *3U Partners et al.* v. *Don E. Gonzales et al.*

4,181,349. (See 4,161,335.)

Re. 28,210. (See 3,758,151.)

Re. 29,483. (See 3,758,151.)

Re. 29,922, Sidney O. Sampson, TRACK SELECTION CONTROL MEANS FOR MAGNETIC SIGNAL RECORDING AND REPRODUCING SYSTEMS, filed Aug. 24, 1979, D.C., S.D.N.Y., Doc. 79-C-4491, *Sidney O. Sampson* v. *Sony Corporation of America.*

D. 230,454, Ray N. Thompson, CUSHION, filed Feb. 20, 1980, D.C., S.D.N.Y., Doc. 80-C-988 KTD, *Olympic Resources, Inc.* v. *J R Toy Sales Corporation.*

D. 238,764. (See 3,973,806.)

D. 251,821, Harvey Levine, COFFEE SERVER, filed Feb. 21, 1980, D.C. Conn. (Bridgeport), Doc. B-80-93, *ACA Products, Inc.* v. *Reuben H. Donnelley Corporation et al.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 250,079, Re. S.N. 091,031, Filed Nov. 5, 1979, Cl. D6/178, WORKBENCH, Ronald Price Hickman, et al., Owner of Record: *Inventors,* Attorney or Agent: Richard G. Berkley, Ex. Gp.: 290

3,460,680, Re. S.N. 120,264, Filed Feb. 11, 1980, Cl. 210/315, FILTER MEDIA SUPPORT WITH FILTER MEDIUM, Keith Raphael Domnick, Owner of Record: *Inventor,* Attorney or Agent: Henry N. Paul, Jr., et al., Ex. Gp.: 176

3,496,258, Re. S.N. 130,654, Filed Mar. 17, 1980, Cl. 264/521, METHOD OF POLYMER MOLDING, Fred E. Wiley, Owner of Record: *Phillips Petroleum Company, Bartlesville, Okla.,* Attorney or Agent: Sidney Neuman, et al., Ex. Gp.: 147

3,714,905, Re. S.N. 112,713, Filed Jan. 31, 1980, Cl. 105/197 DB, DAMPENED RAILWAY CAR TRUCK, Franklin D. Barber, Owner of Record: *Standard Car Truck Co., Chicago, Ill.,* Attorney or Agent: James B. Kinzer, et al., Ex. Gp.: 316

3,817,881, Re. S.N. 046,980, Filed Oct. 1, 1979, Cl. 260/928, FLAME RETARDANT POLYURETHANE FOAM, Richard J. Turley, Owner of Record: *Olin Corporation, New Haven, Conn.,* Attorney or Agent: F. A. Iskander, et al., Ex. Gp.: 122

3,942,487, Re. S.N. 964,797, Filed Nov. 30, 1978, Cl. 123/41.79, INTERNAL COMBUSTION ENGINE—PREFERABLY OF IN-LINE CONSTRUCTION, ESPECIALLY FOR MOTOR VEHICLES, Anton Zink, Owner of Record: *Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 342

3,983,398, Re. S.N. 118,686, Filed Feb. 5, 1980, Cl. 250/445 T, METHOD AND APPARATUS FOR X-RAY OR GAMMA Y-RAY -3D TOMOGRAPHY USING A FAN BEAM, Douglas P. Boyd, Owner of Record: *Board of Trustees of Leland Stanford, Jr. University, Stanford, Calif.,* Attorney or Agent: Paul D. Flehr, Ex. Gp.: 256

4,061,150, Re. S.N. 109,001, Filed Dec. 31, 1979, Cl. 132/7, QUATERNARY AMMONIUM COMPOUNDS IN PRETREATMENT OF HAIR BEFORE SHAMPOOING WITH AN ANIONIC SHAMPOO, George F. Doshe, et al., Owner of Record: *Alberto-Culver Co., Melrose Park, Ill.,* Attorney or Agent: Sidney Wallenstein, et al., Ex. Gp.: 333

4,068,515, Re. S.N. 112,523, Filed Jan. 16, 1980, Cl. 72/115, FLARING TOOL, Leonard J. Kowal, et al., Owner of Record: *Gould Inc., Chicago, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 321

4,077,006, Re. S.N. 116,192, Filed Jan. 28, 1980, Cl. 455/308, BIDIRECTIONAL UNICABLE SWITCHING SYSTEM, Victor Nicholson, Owner of Record: *Inventor,* Attorney or Agent: James C. Wray, Ex. Gp.: 233

4,078,268, Re. S.N. 121,674, Filed Feb. 15, 1980, Cl. 3/1.5, HEART VALVE PROSTHESIS, Zinon C. Possis, Owner of Record: *St. Jude Medical, Inc., Minneapolis, Minn.,* Attorney or Agent: Warren N. Low, Ex. Gp.: 337

4,105,829, Re. S.N. 104,336, Filed Dec. 17, 1979, Cl. 429/15, METAL HALOGEN BATTERIES AND METHOD OF OPERATING SAME, Agustin F. Venero, Owner of Record: *Exxon Research and Engineering Company, Wilmington, Del.,* Attorney or Agent: Donald F. Wohlers, et al., Ex. Gp.: 114

4,151,732, Re. S.N. 117,779, Filed Feb. 1, 1980, Cl. 72/8, PROCESS AND DEVICE FOR BENDING ELONGATED ARTICLES, Marinus J. Hofstede, et al., Owner of Record: *Cojafex B.V., Rotterdam, The Netherlands,* Attorney or Agent: Karl W. Flocks, Ex. Gp.: 321

4,160,791, Re. S.N. 119,204, Filed Feb. 7, 1980, Cl. 525/469, POLYCARBONATE MEMBRANES AND PRODUCTION THEREOF, Willard S. Higley, et al., Owner of Record: *The United States of America, as represented by The Secretary, Department of Health, Education, and Welfare,* Attorney or Agent: Joseph E. Mueth, et al., Ex. Gp.: 143

PATENT NOTICES

Certificates of Correction for the Week of May 20, 1980

3,915,557	4,166,867	4,182,135	4,186,521
3,967,205	4,169,060	4,182,481	4,186,840
3,985,265	4,169,094	4,182,727	4,187,039
4,013,795	4,169,957	4,183,007	4,187,066
4,063,558	4,171,373	4,183,139	4,187,076
4,067,816	4,171,886	4,183,175	4,187,229
4,090,933	4,171,388	4,183,278	4,187,371
4,112,123	4,172,339	4,183,771	4,187,613
4,123,990	4,173,009	4,183,812	4,187,745
4,126,071	4,175,014	4,184,158	4,187,870
4,127,157	4,175,277	4,184,325	4,187,896
4,130,424	4,176,153	4,184,362	4,188,007
4,135,943	4,177,195	4,184,789	4,188,048
4,139,452	4,177,576	4,185,230	4,188,132
4,142,775	4,177,829	4,185,234	4,188,928
4,145,034	4,178,186	4,185,499	4,189,053
4,146,105	4,179,156	4,185,660	4,189,389
4,151,018	4,180,614	4,185,719	4,189,495
4,153,541	4,180,687	4,185,763	4,190,009
4,155,437	4,181,423	4,186,164	4,190,425
4,155,929	4,181,454	4,186,192	4,191,349
4,156,736	4,181,781	4,186,315	4,191,719
4,157,651	4,181,875	4,186,405	4,191,966

Disclaimer

4,127,245.—*Franklin A. Tefft*, Killingworth, *Don L. Adams*, Fairfield and *Lou S. Cotton*, Monroe, Conn. HELICOPTER PITCH RATE FEEDBACK BIAS FOR PITCH AXIS MANEUVERING STABILITY AND LOAD FEEL. Patent dated Nov. 28, 1978. Disclaimer filed Feb. 4, 1980, by the assignee, *United Technologies Corporation*.

Hereby enters this disclaimer to claims 1 through 5 of said patent.

Dedications

3,773,671.—*Ali Ghalib Mohammed Hussain*, Elizabeth, N.J. PRODUCTION OF GRANULAR MIXTURES. Patent dated Nov. 20, 1973. Dedication filed Mar. 20, 1980, by the assignee, *Colgate-Palmolive Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

4,140,724.—*Kayson Nyi*, Sellersville and *Alan W. Kohn*, Schwenksville, Pa. SELECTIVE PREPARATION OF POLYOL MONOETHERS OF DICYCLOPENTADIENE. Patent dated Feb. 20, 1979. Dedication filed Mar. 7, 1980, by the assignee, *Rohm and Haas Company*.

Hereby dedicates to the Public the entire term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY

OTJAG, Chief, Intellectual Property Division, Room 2D 444 Pentagon, Washington, D.C. 20310

Patent application 6-000,041. High-G Gimbal Platform. Filed Jan. 2, 1979.

Patent application 6-000,324. Electronic Correction of Optical Aberrations in a Laser Seeker. Filed Jan. 2, 1979.

Patent application 6-000,325. Holographic Stepwise Zoom Lens for Beamrider Missiles. Filed Jan. 2, 1979.

Patent application 6-000,326. A Holographic Corrector Plate for Laser Designators. Filed Jan. 2, 1979.

Patent application 6-000,327. Gradient Index of Refraction Windows for Missile Seekers. Filed Jan. 2, 1979.

Patent application 6-004,979. A Method and Apparatus for Determining Aerosol Size Distribution. Filed Jan. 22, 1979.

Patent application 6-008,464. Semi-Active Laser Seeker Gyroscope. Filed Feb. 1, 1979.

Patent application 6-008,628. ROACH Generator. Filed Feb. 1, 1979.

Patent application 6-008,808. Binary Integrator for Fixed Cell Radar Alarm Data. Filed Feb. 2, 1979.

Patent application 6-013,947. Optical Beam Scanner. Filed Feb. 22, 1979.

Patent application 6-019,539. Minimum Length Diffuser for Chemical Laser. Filed Mar. 12, 1979.

Patent application 6-021,742. A System for Ripple and Noise Reduction in a Multiple Power Supply. Filed Mar. 19, 1979.

Patent application 6-027,542. Regulating Means for D-C Battery System. Filed Apr. 5, 1979.

Patent application 6-075,470. Fluidic Recoil Buffer for Small Arms. Filed Sept. 14, 1979.

Patent application 6-075,565. Electrolysis of Lead Azide. Filed Sept. 14, 1979.

Patent application 927,324. HCl or DCl Chemical Laser Using Laser Induced Chemistry. Filed July 24, 1978.

Patent application 927,327. HF or DF Chemical Laser Using Laser Induced Chemistry. Filed July 24, 1978.

Patent application 928,219. Tactical Nuclear Slide Rule. Filed July 26, 1978.

Patent application 931,235. Variable Angle of Incidence Reflectometer With a Continuous Read Out. Filed Aug. 7, 1978.

Patent application 933,312. Rocket Detent and Release Mechanism. Filed Aug. 14, 1978.

Patent application 938,560. Tactical Nuclear Slide Rule for a Plurality of Environments. Filed Aug. 31, 1978.

Patent application 941,531. Rate Sensor. Filed Sept. 11, 1978.

Patent application 942,721. A Method for Measuring Range to a Rocket in Flight Employing a Passive Ground Tracker Station. Filed Sept. 15, 1978.

Patent application 944,833. A System Concept for All-Weather Intercept of Tanks From a Helicopter. Filed Sept. 22, 1978.

Patent application 949,325. Coherent Optical Correlator. Filed Oct. 6, 1978.

Patent application 951,925. Liquid Nitrogen Level Indicator. Filed Oct. 16, 1978.

Patent application 954,793. Light Emitting Diode Beacons for Command Guidance Missile Track Links. Filed Oct. 25, 1978.

Patent application 956,137. Unstable Optical Resonators With Tilted Spherical Mirrors. Filed Oct. 30, 1978.

Patent application 961,334. Matrix Nozzle for Mixing Lasers. Filed Nov. 16, 1978.

Patent application 962,273. Smokeless Propellant Compositions Having Polyester or Polybutadiene Binder System Crosslinked With Nitrocellulose and Method of Preparing the Same. Filed Nov. 20, 1978.

Patent application 963,065. High Efficiency Propulsion System. Filed Nov. 22, 1978.

Patent application 964,115 Power Transition Circuit. Filed Nov. 27, 1978.

Patent application 968,131. Polarization Suppression of Parasitic Modes. Filed Dec. 11, 1978.

Patent application 972,178. Frequency Synthesizer Extending Method and Apparatus. Filed Dec. 21, 1978.

Patent application 972,179. Logarithmic Lock-In Amplifier. Filed Dec. 21, 1978.

Patent application 973,367. Light Operated Measuring System. Filed Dec. 26, 1978.

Patent 4,108,721. Axisymmetric Fluidic Throttling Flow Controller. Filed June 14, 1977. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,118,702. Doppler Distance Measuring System. Filed Apr. 22, 1959. Patented Oct. 3, 1978. Not available NTIS.

Patent 4,119,039. Fuze System. Filed May 29, 1961. Patented Oct. 10, 1978. Not available NTIS.

Patent 4,122,776. Dynamic Clamp Circuits. Filed Sept. 3, 1954. Patented Oct. 13, 1978. Not available NTIS.

Patent 4,124,281. Scheme for Terminal Guidance Utilizing Acousto-Optic Correlator. Filed June 7, 1977. Patented Nov. 7, 1978. Not available NTIS.

Patent 4,126,394. Optical Cant Sensor for Mortars. Filed Aug. 9, 1977. Patented Nov. 21, 1978. Not available NTIS.

Patent 4,128,836. Time Delay Computer for Ordnance Fuse. Filed Oct. 14, 1960. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,133,612. Endless Fiber Interferometer Rotary Motion Sensor. Filed July 6, 1977. Patented Jan. 9, 1979. Not available NTIS.

Patent 4,138,893. Hydrostatic Accelerometer. Filed Dec. 9, 1977. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,139,849. Doppler Fuzing System Having a High Resistance to Noise and Jamming. Filed Sept. 3, 1954. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,148,126. Tool and Method for Assembling Threaded Burster Retainer in a Projectile. Filed Mar. 31, 1978. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,150,882. Identification Code Generator for High Speed Motion Picture Photography. Filed Oct. 29, 1976. Patented Apr. 24, 1979. Not available NTIS.

Patent 4,161,348. Preassembled Fiber Optic Security Seal. Filed Aug. 9, 1977. Patented July 17, 1979. Not available NTIS.

Patent 4,163,423. Proximity Fuze. Filed Apr. 18, 1962. Patented Aug. 7, 1979. Not available NTIS.

Patent 4,164,905. Lumped Neutralization Coil Arrangement for Inductance Fuze. Filed Dec. 22, 1971. Patented Aug. 21, 1979. Not available NTIS.

Patent 4,164,961. Fluidic Pressure/Flow Regulator. Filed July 28, 1977. Patented Aug. 21, 1979. Not available NTIS.

Patent 4,165,503. Hydrostatic Seismic Sensor. Filed Dec. 9, 1977. Patented Aug. 21, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 6-061,557. Helical Periodic Magnet. Filed July 27, 1979.

Patent application 6-062,591. Closed Cycle Annular-Return Gas Flow Electrical Discharge Laser. Filed July 31, 1979.

Patent application 6-062,592. Mechanical Heat Transfer Device. Filed July 31, 1979.

Patent application 6-063,499. Gun Alignment Adjusting Device. Filed Aug. 3, 1979.

Patent 4,166,416. Obturating Split Disc. Filed Apr. 28, 1978. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,166,597. Stowable and Inflatable Vehicle. Filed May 9, 1974. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,166,598. Vehicle Enshrouding Apparatus. Filed May 30, 1974. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,168,473. Internal Arrester Beam Clipper. Filed Nov. 18, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,170,009. Multiple Channel Electronic Countermeasures Receiver System. Filed Dec. 3, 1963. Patented Oct. 2, 1979. Not available NTIS.

Patent 4,170,025. Low Contrast Measurement Apparatus. Filed June 6, 1978. Patented Oct. 2, 1979. Not available NTIS.

Patent 4,168,501. Method and System for Moving Target Elimination and Indication. Filed Mar. 10, 1972. Patented Sept. 18, 1979. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-081,245. Precooked Potato Products. Filed Oct. 2, 1979.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 934,768. Process for Producing Hydrogen from Water Using Cobalt and Barium Compounds and Compositions Useful Therein. Filed Aug. 17, 1978.

Patent application 936,459. Method for Exploring and Discovering Uranium Deposits Within a Petrofluid System. Filed Aug. 24, 1978.

Patent application 936,460. Preparation of U_3O_8. Filed Aug. 24, 1978.

Patent application 966,522. Method for Immobilizing Radioactive Iodine. Filed Dec. 4, 1978.

Patent application 966,710. Clock Distribution System for Digital Computers. Filed Dec. 5, 1978.

Patent application 970,842. Gaseous Trace Impurity Analyzer and Method. Filed Dec. 18, 1978.

Patent 4,148,612. Method and Apparatus for Detecting and Measuring Trace Impurities in Flowing Gases. Filed Sept. 7, 1977. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,155,832. Hydrogenation Process for Solid Carbonaceous Materials. Filed Dec. 23, 1977. Patented May 22, 1979. Not available NTIS.

Patent 4,156,758. Electrolyte Composition for Electrochemical Cell. Filed Aug. 9, 1978. Patented May 29, 1979. Not available NTIS.

Patent 4,157,528. Wellbore Pressure Transducer. Filed Nov. 8, 1977. Patented June 5, 1979. Not available NTIS.

Patent 4,158,720. Lithium-Aluminum-Iron Electrode Composition. Filed Dec. 28, 1977. Patented June 19, 1979. Not available NTIS.

Patent 4,158,772. Device for Collecting and Analyzing Matrix-Isolated Samples. Filed May 2, 1978. Patented June 19, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW.
Washington, D.C. 20240

Patent application 6-047,541. Recovery of Metal Values From Lead Smelter Matte. Filed June 11, 1979.

Patent application 6-048,408. Capacitance Probe Sensor Device. Filed June 14, 1979.

Patent application 6-055,216. Mine Face Ventilation System. Filed July 6, 1979.

Patent application 6-060,101. Method of In Situ Mining. Filed July 24, 1979.

Patent 4,163,393. Void Detector Systems. Filed Aug. 4, 1978. Patented Aug. 7, 1979. Not available NTIS.

Patent 4,165,042. Rotary Jaw Crusher. Filed Apr. 12, 1978. Patented Aug. 21, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-023,043. Processor-Aided Fire Detector. Filed Mar. 22, 1979.

Patent application 6-054,048. Dismountable Inductively-Coupled Plasma Torch Apparatus. Filed July 2, 1979.

Patent application 6-060,943. Method to Eliminate Fiber Interferometer Reflections. Filed July 26, 1979.

Patent application 6-066,200. Supercorroding Galvanic Cell Alloys for Generation of Heat and Gas. Filed Aug. 13, 1979.

Patent application 6-066,201. Portable Diver Heat Generating System. Filed Aug. 13, 1979.

Patent application 6-066,944. Simulated Oxygen Breathing Apparatus. Filed Aug. 16, 1979.

Patent application 6-067,977. Beamformer for Arrays With Rotational Symmetry. Filed Aug. 20, 1979.

Patent application 6-068,999. Dual Ground Plane Coplanar Fed Microstrip Antennas. Filed Aug. 23, 1979.

Patent application 6-075,631. Polyphthalocyanine. Filed Sept. 14, 1979.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent application 6-067,595. A Hydraulic Actuator Mechanism to Control Aircraft Spoiler Movements Through Dual Input Commands. Filed Aug. 17, 1979.

Patent application 6-070,366. Small Conductive Particle Sensor. Filed Aug. 28, 1979.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent 3,632,774. Method of Treating Rheumatoid Arthritis With Histidine. Filed Mar. 30, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,867,539. Method of Producing Anorexia as a Treatment for Obesity. Filed Apr. 27, 1973. Patented Feb. 18, 1975. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library. Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 19, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-8-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-19-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	8-20-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	2-18-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-23-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	9-5-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-19-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-9-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-8-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	11-28-78

Expiration of patents: The patents within the range of numbers indicated below expire during April 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,083,367 to 3,088,113, inclusive
Plant Patents..... Numbers 2,244 to 2,257, inclusive

REISSUES

MAY 20, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

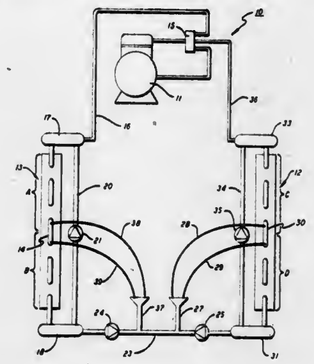
Re. 30,275
HEAT EXCHANGER

James J. del Toro, North Syracuse, and Rudy C. Bussjager, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Original No. 4,057,976, dated Nov. 15, 1977, Ser. No. 720,722, Sep. 7, 1976. Application for reissue Jan. 5, 1979, Ser. No. 1,323

Int. Cl.² F25B *1/00, 13/00;* F28F *27/02*

U.S. Cl. 62—115 10 Claims



18. A method of routing refrigerant through the heat exchanger arranged to serve as a condenser when the flow of refrigerant to the exchanger is in one direction and as an evaporator when the flow to the exchanger is in the opposite direction, the steps including

dividing the heat exchanger into a plurality of heat transfers zones arranged so that when air flows through the heat exchanger, the air flows through the zones in parallel paths,

directing refrigerant in series flow progression through each of the heat transfer zones when the flow to the exchanger is in one direction,

rerouting the refrigerant through each of the heat transfer zones simultaneously when the flow to the exchanger is in the opposite direction, and

arranging the heat transfer zones such that each subsequent zone in the direction of flow in said one direction has less circuits than the previous zone.

Re. 30,276
APPARATUS FOR STOPPER REMOVAL

Vernon C. Rohde, Newtown, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,068,798, dated Jan. 17, 1978, Ser. No. 728,001, Sep. 29, 1976. Application for reissue Apr. 20, 1978, Ser. No. 898,445

Int. Cl.² B04B *5/02*

U.S. Cl. 233—26 5 Claims



1. Apparatus for removing stoppers from test tubes using a centrifuge having a swinging bucket-type carrier comprising, in combination,

a rack to be placed in said bucket-type carrier and having upper and lower separable members,

said upper member having an upper surface defining plural apertures receiving said test tubes,

at least a portion of each said stopper having an enlarged portion with an outside diameter greater than the diameter of its associated test tube, thereby to permit said test tubes to hang from said upper surface supported only by their respective stoppers,

said lower member having a bottom,

supporting means associated with said lower member for supporting said test tubes against lateral movement, and

the spacing between the bottom of said test tubes and said lower member bottom being greater than the length of the stoppers along the axis of said tubes in contact with said tubes, whereby subjecting said rack to centrifugal force separates said test tubes from said stoppers to rest on said lower member bottom such that said stoppers can be discarded and access had to the contents of said test tubes by removing said upper member from said lower member.

Re. 30,277
ELECTRICAL TAB RECEPTACLE

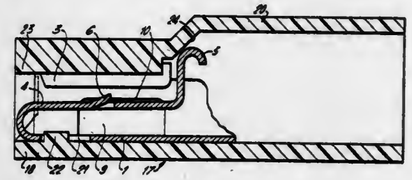
Reginald J. Simmons, South Harrow, England, assignor to AMP Incorporated, Harrisburg, Pa.

Original No. 3,976,348, dated Aug. 24, 1976, Ser. No. 572,500, Apr. 28, 1975. Application for reissue Feb. 10, 1978, Ser. No. 876,584

Claims priority, application United Kingdom, May 3, 1974, 19542/74

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—74 R 17 Claims



5. An electrical connector, comprising:

a. a first terminal formed from sheet metal and having a conductor receiving end and an opposite channel-shaped, mating end for making electrical engagement with a complementary second terminal, a tongue on the first terminal having means thereon for releasably engaging the second terminal with the free end of the tongue being located intermediate the conductor receiving end and the mating end; and

b. a housing of insulating material having a passage therein in which the first terminal is located, retaining means on the housing for retaining the first terminal in the passage and for permitting limited axial movement therebetween, and release means on the housing positioned to engage the free end of the tongue

whereby movement of the housing relative to the first terminal causes said release means to engage the tongue free end to thereby release the first terminal from a complementary second terminal.

Re. 30,278

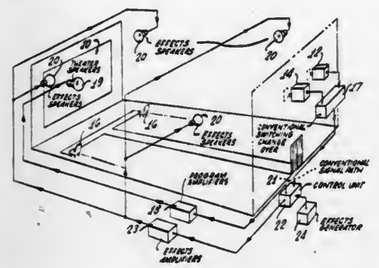
SPECIAL EFFECTS GENERATION AND CONTROL SYSTEM FOR MOTION PICTURES

Richard J. Stumpf, Woodland Hills; Waldon O. Watson, Universal City, and Robert J. Leonard, Northridge, all of Calif., assignors to MCA Systems, Inc., Universal City, Calif.

Original No. 3,973,839, dated Aug. 10, 1976, Ser. No. 5,3 7,194, Dec. 30, 1974. Application for reissue May 19, 1978, Ser. No. 907,838

Int. Cl.³ G03B *31/00*

U.S. Cl. 352—5 **47 Claims**



1. A method of *realistically* simulating a specified physiological and psychological sensation *relating to physical movement associated with low frequency impact and shock wave phenomena,* in an audience viewing a visual display [in] *of such phenomena within* a theater *space,* said method comprising the steps of:

generating *a band of simultaneously present frequency spectrum components including* random frequencies and transients having *simultaneous plural* components in at least the infrasonic frequency range; and

applying, in synchronism with said visual display, said frequencies and transients to acoustic transducers located [in] *within* said theater *space, to provide acoustical output including said random frequencies and transients,* at sufficient power levels to induce *in the theater audience* the specified sensation [in the audience] *of substantial physical movement corresponding to low frequency impact and shock wave phenomena.*

Re. 30,279

PROCESS FOR PREPARING ALKYL OR ARYL PHOSPHORUS HALIDES AND MIXED ISOMERS THEREOF

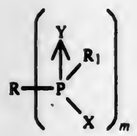
Arthur D. F. Toy, Stamford, Conn., and Eugene H. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

Original No. 3,897,491, dated Jul. 29, 1975, Ser. No. 151,955, Jun. 10, 1971. Application for reissue Jan. 4, 1979, Ser. No. 854

Int. Cl.² C07F *9/42*

U.S. Cl. 260—543 P **51 Claims**

1. A method for preparing compounds of the formula:



wherein R is a C_1 to C_{20} alkyl radical, cycloalkyl of 5–6 carbons in the ring, an aryl radical of up to 3 fused rings, and biphenyl, R_1 represents a C_1 to C_{20} alkyl radical, cycloalkyl of 5–6 carbons on the ring, an aryl radical of up to 3 fused rings, biphenyl, or a halogen of chlorine, or bromine, X is a halogen of chlorine or bromine, and Y is a chalcogen of oxygen or sulfur, and m is an integer between 1 and n, defined hereinafter, inclusive, comprising reacting, under at least an autogenous pressure *in a reaction zone capable of withstanding elevated pressure* at a temperature of from about 200° C. to about 450° C. an alkyl or aryl halide of the formula:

$$RX_n$$

wherein R is as defined above, and X is a halogen of chlorine, or bromine, and n is an integer and represents the number of halogens attached to the R group, with a trivalent phosphorus compound of the formula

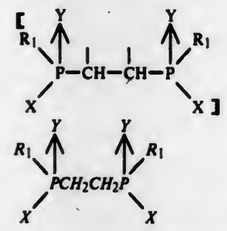
$$R_1P(X)_2$$

wherein R_1 and X are as defined above, in the presence of a phosphorus compound of the formula:

$$P_4Y_{10}$$

wherein Y is a chalcogen of oxygen or sulfur.

44. A process for preparing compounds of the formula:



wherein R_1 is a C_1 to C_{20} alkyl radical, cycloalkyl of 5–6 carbons in the ring, an aryl radical of up to 3 fused rings, biphenyl, or a halogen of chlorine or bromine, Y is a chalcogen of oxygen or sulfur, and X is a halogen of chlorine, or bromine, [the free valence bonds being satisfied by hydrogen or C_1—C_4 alkyl,] comprising reacting *ethylene,* under at least autogenous pressure *in a reaction zone capable of withstanding elevated pressure,* at a temperature of from about 200° C. to about 450° C. [an ethylenically unsaturated compound of the formula:]



with a phosphorus compound of the formula:

$$R_1P(X)_2$$

in the presence of a phosphorus compound of the formula

$$P_4Y_{10}$$

R_1, X and Y being as defined hereinbefore.

Re. 30,280

MODULAR OPERATING CENTERS AND METHODS OF BUILDING SAME FOR USE IN ELECTRIC POWER GENERATING PLANTS AND OTHER INDUSTRIAL AND COMMERCIAL PLANTS, PROCESSES AND SYSTEMS

Paul A. Berman, Plymouth Meeting; Theodore C. Giras, Pittsburgh, and Roy E. Crews, Allison Park, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Original No. 3,925,679, dated Dec. 9, 1975, Ser. No. 399,582, Sep. 21, 1973. Application for reissue Sep. 22, 1977, Ser. No. 835,569

Int. Cl.² B65D *85/00*

U.S. Cl. 290—1 R **20 Claims**

1. A method of building an operating center for a plant designed to produce goods or services, the steps of said method comprising:

loading each of a plurality of transportable room-size building modules with predetermined electrical control system equipment units at a factory site, such building modules constituting structural parts of a unitary operating center building and such control system equipment units constituting parts of a system for use in monitoring and/or controlling the operation of the production plant;

establishing at the factory site predetermined intramodule connections among the control equipment units within each building module;

establishing at the factory site predetermined intermodule connections among the control system equipment units in different ones of the building modules;

establishing at the factory site predetermined connections to the control system equipment units for ultimate attachment from one or more of the modules to the production plant at predetermined plant points;

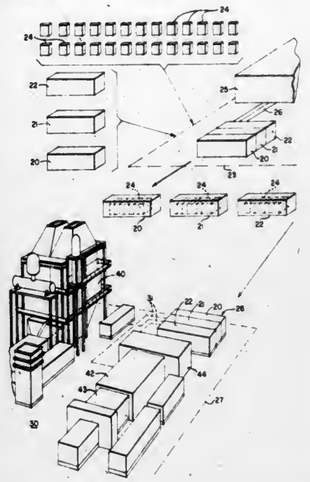
employing a plurality of conductors to establish the intramodule connections;

employing a plurality of cables having a plurality of conductors to establish the intermodule and plant connections through cable connection points;

testing the control system equipment at the factory site, such testing including the combined testing of the control system equipment interconnected by the intermodule cable connections;

preparing the loaded building modules for transportation to the plant installation site including disconnecting the intermodule and any test connections at the cable connection points;

transporting the modules to the plant site;



and installing the modules and establishing the cable connections from the modules to the plant points and reestablishing the intermodules cable connection.

PLANT PATENTS

GRANTED MAY 20, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,536

AFRICAN VIOLET CULTIVAR NAMED GRACE

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 26, 1979, Ser. No. 15,310
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct African violet, substantially as herein shown and described, characterized by its distinct light blue flowers borne in clusters on sturdy stems to the side and somewhat above dark shiny green foliage which, in turn, is characterized by pink under sides.

4,537

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Jan. 26, 1979, Ser. No. 6,644
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by its upright, free blooming plant, Chrome Yellow changing to Geranium Lake flower color, its ability to maintain flower form throughout the life of the flower and by its very slight fragrance.

PATENTS

GRANTED MAY 20, 1980

ERRATA

For CLASS	See PATENT NO.
433-189	4,203,216
433-220	4,203,217
433-176	4,203,218
433-074	4,203,219
433-228	4,203,220
433-117	4,203,221
433-129	4,203,222
433-075	4,203,223
368-073	4,203,278
368-243	4,203,279
368-187	4,203,280
368-124	4,203,281
368-180	4,203,282
410-067	4,203,372
074-335	4,203,375
228-001 A	4,203,531
371-024	4,203,543
244-003.23	4,203,569
273-336	4,203,592
430-067	4,203,764
430-252	4,203,765
430-243	4,203,766
430-376	4,203,767
430-388	4,203,768
430-631	4,203,769
430-270	4,203,770
435-284	4,203,801
435-188	4,203,802
548-194	4,203,899
548-239	4,203,900
556-401	4,203,913
556-428	4,203,914
568-379	4,203,924
568-362	4,203,925
568-319	4,203,926
568-401	4,203,927
568-424	4,203,928
585-022	4,203,930
525-004	4,203,931
525-398	4,204,052

ERRATA—Continued

For CLASS	See PATENT NO.
260–243.3	4,204,061
370–095	4,204,093
371–025	4,204,114
375–025	4,204,163
455–135	4,204,164
455–226	4,204,165
455–289	4,204,166
455–231	4,204,167
455–330	4,204,168
455–175	4,204,169
367–154	4,204,188
364–200	4,204,249
364–200	4,204,250
364–200	4,204,251
364–200	4,204,252
364–200	4,204,253
364–200	4,204,254
364–425	4,204,255
364–431	4,204,256
364–474	4,204,257
364–494	4,204,258
364–497	4,204,259
364–554	4,204,260
364–607	4,204,261
364–822	4,204,262
363–068	4,204,263
363–071	4,204,264
363–071	4,204,265
363–098	4,204,266
363–085	4,204,267
363–135	4,204,268

PATENTS

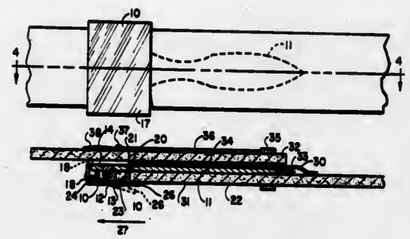
GRANTED MAY 20, 1980

GENERAL AND MECHANICAL

4,203,167
SIMULATED BELT BUCKLE AND APPENDAGE

Walter W. Collins, Rock Hill, S.C., assignor to Jenkins Metal Corporation, Gastonia, N.C.

Filed Dec. 1, 1978, Ser. No. 965,563
Int. Cl.[2] A41F *9/00*
U.S. Cl. 2—322 8 Claims

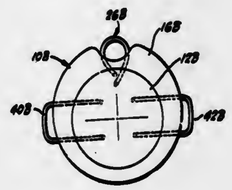


1. A simulated belt buckle and appendage comprising a decorative plate having a free end, an appendage including an elongated portion extending beyond the free end of the decorative plate, a sheath for housing the appendage, means normally retaining the appendage within the sheath, and means pivotally interconnecting the decorative plate and the appendage to permit relative movement between the decorative plate and the appendage during removal of the appendage from the sheath, whereby said removal is facilitated.

4,203,168
INTRAOCULAR LENS

Edgar A. Rainin, 5747 Tamarack Way, Concord, Calif. 94526, and Emery Major, Larkspur, Calif., assignors to Edgar A. Rainin, Danville, Calif.

Continuation of Ser. No. 867,806, Jan. 9, 1978, abandoned, which is a division of Ser. No. 632,834, Nov. 17, 1975, Pat. No. 4,085,467. This application Oct. 2, 1978, Ser. No. 947,353
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.[2] A61F *1/16, 1/24*
U.S. Cl. 3—13 3 Claims



1. An intraocular lens device intended for insertion within the eye, the iris of the eye having at least an opening therethrough comprising:

a. a lens portion intended for placement against one side of the iris, said lens portion adapted for covering at least a portion of the pupil;

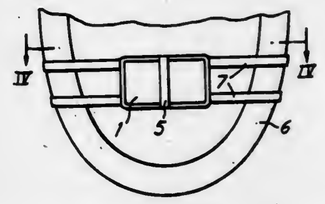
b. means for stabilizing said lens portion, said lens portion stabilizing means being affixed to said lens portion and intended to extend through the pupil of the eye to the other side of the iris opposite the one side thereof against which said lens portion is placed; said lens portion stabilizing means comprising two loops each being fixed to said lens portion and extending therefrom to generally opposite peripheral regions of said lens portion;

c. means for anchoring said lens portion, said lens portion anchoring means intended for extending through the iris opening and being affixed to said lens portion such that said lens portion lies over the pupil of the eye, said anchoring means comprising flexible resilient loop means for passing through said iris opening when compressed into an elongated body and prevented from passing back through said iris opening when compression is released and said loop means resiliently expands to an original shape which defines a terminous having a dimension greater than the width of said iris opening through which said loop means is intended to be passed, thereby facilitating anchoring of said lens within the eye.

4,203,169
URINE COLLECTION DEVICE

Gerald Dale, Chelmsford, England, assignor to Medeci Developments Limited, London, England

Filed Sep. 14, 1978, Ser. No. 942,353
Claims priority, application United Kingdom, Sep. 14, 1977, 38418/77
Int. Cl.[2] A47K *11/00*
U.S. Cl. 4—144.1 8 Claims



1. A mid-stream urine collection device comprising:

receptacle means having an interior and edge means surrounding an aperture communicating with said interior, resilient sheet material covering said aperture and having two edge portions, urine soluble adhesive adhesively connecting together said two edge portions, said adhesive means being adapted to release said edge portions when wetted with urine, and means securing said sheet material to said receptacle means so as to close said aperture, said sheet material extending over said aperture under tension and around said edge means in the direction toward the bottom of said receptacle means, with said edge portions within the area of said aperture,

whereby when said edge portions separate in response to impingement of urine on said adhesive means said sheet material moves to open said aperture away from said receptacle means interior, thereby diverting therefrom urine previously received on said sheet material.

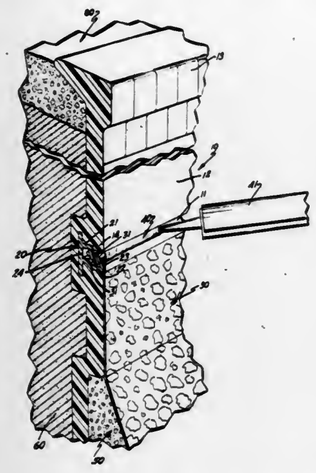
4,203,170
VINYL LINER AND SEALING GROOVE ASSEMBLY FOR POOLS

Jay A. Lankheet, 579 Ottawa Ave., Holland, Mich. 49423

Filed Nov. 7, 1978, Ser. No. 958,449
Int. Cl.[2] E04H *3/16*
U.S. Cl. 4—172 12 Claims

1. A plastic pool wall having a groove in its face which includes a separate embedded channel receiving the bead of a plastic pool liner, the improvement comprising: said channel including spaced upper and lower walls joined by a base wall,

said upper wall terminating short of said pool wall face such that the upper surface of said groove is defined in part by said channel upper wall and by the plastic material of said pool wall, said lower wall of said channel being bent up to define a lip at the end of said lower wall to catch said bead, the relative size of said bead and the distance between said lip and said leading edge of said upper wall of said channel being such that



said bead catches on said lip and abuts the lower surfaces of said upper wall of said channel whereby said bead is locked in place solely through contact with said channel, grout sealant located in said groove between said plastic liner and said plastic portion of the upper surface of said groove, whereby when said liner bead is placed in said channel and grouted within said groove, grout seals between said plastic pool liner and said plastic of said pool wall.

4,203,171

SHOWER CABINETS

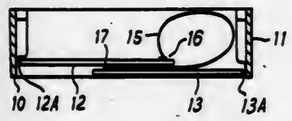
John A. Bolt, Beaconsfield, England, assignor to Terrapin International Limited, London, England

Filed Oct. 28, 1975, Ser. No. 626,458

Claims priority, application United Kingdom, Nov. 7, 1974, 48287/74

Int. Cl.[2] A47K 3/23, 3/24

U.S. Cl. 4—146 **1 Claim**



1. A shower cabinet comprising a pair of doors hinged on vertical hinges, said doors overlapping each other when closed and a front curtain support including a horizontally elongated band which has a thin dimension in a transverse horizontal direction and which has a wide dimension in a vertical direction, which is rigid vertically and curvilinearly flexible in a horizontal plane in all positions of the doors, wherein the band is made of synthetic plastics material 0.75 to 1.5 inch deep and one sixteenth to one eighth inch thick, each end of the band is fixed in a first hinge member which is hinged to a second hinge member that is fixed to the door the ends of the band being secured to said hinge members on the inside surfaces of the doors near their free vertical edges at the upper ends thereof such that when the doors are opened so as to be approximately parallel to each other, the band will extend between them in a horizontal plane and when the doors are closed the band will remain in said horizontal plane and will be hidden from view behind these doors and a curtain mounted on said band, the band and the curtain being automatically curved and straightened with opening and closing of the doors, so that when the doors are closed a first part of the band and curtain lie in a generally flat vertical plane between the doors and a second part of the curtain and band lie in a curved condition behind the doors.

4,203,172

SUPPORT FOR TOILET BOWL DEODORIZER BLOCK

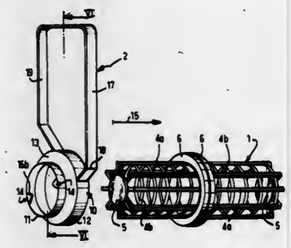
Antonin Goncalves, Groslay, France, assignor to L'Oreal, Paris, France

Filed Jun. 5, 1978, Ser. No. 912,748

Claims priority, application France, Jun. 20, 1977, 77 18865

Int. Cl.[2] A61L 3/00; B01J 4/00; E03D 9/02

U.S. Cl. 4—231 **12 Claims**



1. A support for a block of a product for the disinfection and/or deodorisation of a toilet bowl comprising: (a) a foraminous cage for holding a block of said product and having plural openings in its wall; (b) hook means attached to the cage in the central zone thereof to enable the cage to be suspended on the edge of a toilet bowl; (c) connection sleeve means integrally formed with said hook means and adapted to be fitted on to the assembled cage; and (d) means for securing said connection sleeve means to the cage; wherein said securing means comprise (da) means defining a rim in relief in the central zone of the cage, and (db) catch engagement means provided in relief on the inner wall of said connection sleeve means to engage within any one of said plural openings in the foraminous wall of the cage and shaped to allow the connection sleeve means to slide along the cage in one axial direction but to hold the connection sleeve means against movement along the cage in the opposite direction.

4,203,173

OVERFLOW INHIBITOR FOR PLUMBING FIXTURES

Earl L. Morris, Whittier; Walter V. Hafner, Industry, and Theodore J. Sally, Whittier, all of Calif., assignors to Acorn Engineering Co., Industry, Calif.

Filed May 14, 1979, Ser. No. 38,451

Int. Cl.[2] E03D 11/02, 11/18

U.S. Cl. 4—427 **8 Claims**

1. A plumbing fixture with a toilet bowl, the toilet bowl having a P-trap coupled to the waste outlet thereof, including a toilet bowl overflow inhibiting means, comprising:

(a) a toilet bowl having a water supply pipe operably coupled therewith;

(b) an electrically-controlled flushing valve operably associated with said supply pipe for controlling the flow of water to the toilet bowl;

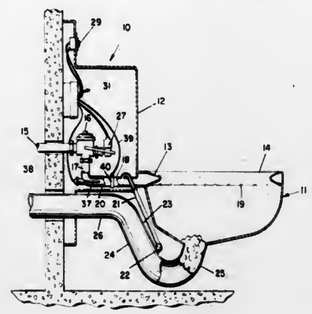
(c) a source of electricity for operating said valve;

(d) electrical switch means operably associated with the source of electricity for controlling the delivery of electricity to the valve for actuation thereof;

(e) an insulated electrical probe mounted in said water supply pipe;

(f) said electrical probe operably associated with a detection circuit means whereby said detection circuit disconnects said source of electricity when water is in said supply pipe and completes the circuit between said electrical probe and electrical ground;

(g) a blow-out jet pipe having an entrance and an outlet thereto, the entrance thereto being coupled in fluid com-



munication with said supply pipe at the upper portion thereof and the outlet being coupled in fluid communication with the P-trap of the toilet bowl at the uprising portion thereof; and

(h) means within said blow-out jet pipe for preventing the draining of water from the toilet bowl into the water supply pipe and into the blow-out jet pipe.

4,203,174

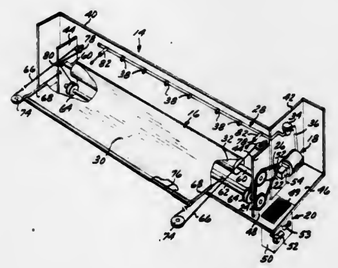
AUTOMATIC SWIMMING POOL COVER AND COVER WASHER

Neal Shults, 2844 Knoxville Ave., Long Beach, Calif. 90815

Filed Aug. 10, 1978, Ser. No. 932,523

Int. Cl.[2] E04H 3/19; B08B 3/02

U.S. Cl. 4—172 **10 Claims**



1. In an automatic motorized device for selectively and reversibly drawing an expansive cover laterally across a swimming pool by lines attached thereto which are coiled on takeup reels, and alternatively retracting said cover onto a roller, the improvement comprising a single electric motor for moving said cover having a shaft rotatable in a single direction and coupled in electrical isolation to a nonconductive belt drive that rotates separate roller driving means and reel driving means in a common drive line, separately actuable electrical clutch means associated, respectively, with said roller driving means and said reel driving means, an alternating current input circuit of at least 110 volts coupled through motor contact means to said electric motor, step-down transformer means connected to said alternating current input circuit with a low voltage output circuit to provide low voltage current through clutch contact means to alternatively actuate only one of said electric clutch means, separately manually actuable switches and clutch contact actuating means, associated with each of said electric clutch means to couple a selected one of said electrical clutch means to said low voltage output circuit and to lock out said other electric clutch means therefrom, and motor contact actuating means operable by both of said manually actuable switch closure means to energize said electric motor, and further characterized in that limit switches are provided at opposite ends of said pool employing magnets which are forced in longitudinal movement responsive to movement of said cover, and reed switches are located in longitudinal registration with said magnets and arranged in circuit to operate said clutch contact actuating means and open said motor contact actuating means when said magnets are carried into proximity therewith, whereby said motor is used to alternatively cover and uncover said pool cover spraying means for spraying a cleansing spray of water onto said cover at said roller as said cover is retracted and passes downward at a vertical tangent as it is rolled onto said roller, and said cover spraying means is equipped with valve means and electrically actuated solenoid means for controlling said valve means, and said solenoid means is electrically coupled to said low voltage output circuit for operation by one of said manually actuable switches for initiating retraction of said cover, and a delay circuit is coupled in circuit with said solenoid means for delaying actuation of said solenoid means, whereby a head of water is allowed to build up in said cover spraying means before said solenoid means is allowed to open said valve means.

4,203,175

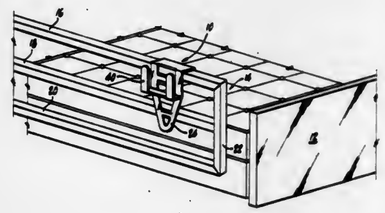
SLIPPER HOLDER

Charles A. Heine, 730 Vera Dr., Arnold, Mo. 63010

Filed Sep. 8, 1978, Ser. No. 940,725

Int. Cl.[2] A47B 53/00; A43D 5/00

U.S. Cl. 5—503 **3 Claims**



1. A slipper holder for a hospital bed including upper and lower spaced bed rails, comprising:

(a) an upper bed rail,

(b) a lower bed rail disposed in spaced relation below said upper rail,

(c) a unitary body including:
1. an upper portion having rearwardly extending and downwardly depending hook means engageable with said upper bed rail and freely, upwardly removable from said rail, and
2. a lower depending portion integrally formed with said upper portion and having a rear bearing means disposed in spaced relation from said upper portion and engageable with said lower bed rail, and

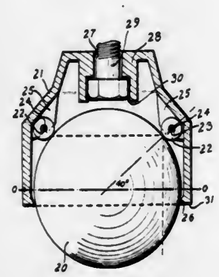
(d) a slipper support means including a pair of spaced upwardly extending finger portions disposed in fixed side-by-side relation and means connecting said portions with said body portion above the bearing means.

4,203,176
Patent Not Issued For This Number

4,203,177
CASTOR

Jack P. Kegg, 12/104 St. George Crescent, Drummoyne, N.S.W., Australia (2047); Colin A. Fuller, 25 Awatea Rd., St. Ives, Sydney, N.S.W., Australia (2075), and Geoffrey E. Kegg, 40 Boundary Rd., Wahroonga, Sydney, N.S.W., Australia (2076)

Continuation-in-part of Ser. No. 804,114, Jun. 6, 1977, abandoned. This application Jul. 19, 1978, Ser. No. 926,044
Int. Cl.² B60B *33/08*
U.S. Cl. 16—24 **6 Claims**

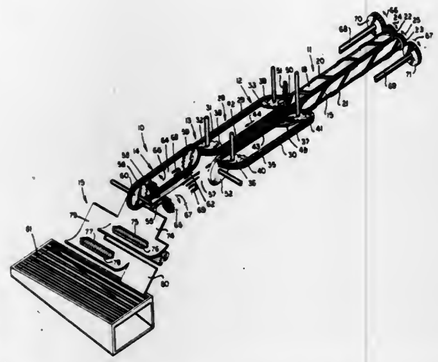


1. A castor comprising a socket member defined by a base portion and a cup portion extending from the base portion, the base portion being adapted to be affixed to the underside of an article, and the cup portion defining a generally dome-shaped cavity therein, and a ball receivable in the cavity in a manner to be freely rotatable in any direction in the cavity, the cup portion having six equally spaced rollers mounted in a cage in a manner to be arranged uniformly about the wall of the cavity in a plane which is tranverse to the axis of the cavity, whereby to be engageable with the ball and support the latter for rotatable movement within the cavity, the rollers being each supported on an axle which in turn is mounted at each end in complementary retaining portions in the cage, with the rollers being respectively freely rotatable in slots formed through the wall of the cage, the cage being adapted to be supported within the cavity of the socket member with the rotational axis of each roller being generally parallel to the tangent at the point of contact with the surface of the ball and being oblique to the axis of the cavity, while the points of contact between the rollers and the ball being no greater than 45° with respect to the equatorial plane of the ball, the cup portion having an annular rim defining an open end of the cavity through which a portion of the ball, when it is mounted in the cavity, outwardly projects, and means adjacent the annular rim to maintain the ball within the cavity.

4,203,178
GIZZARD PROCESSING SYSTEM

Jocobus E. Hazenbroek, Burg. De Zeeuwstaat 52, Numansdorp, Netherlands

Filed Jul. 25, 1978, Ser. No. 927,825
Int. Cl.² A22C *21/00*
U.S. Cl. 17—50 **6 Claims**



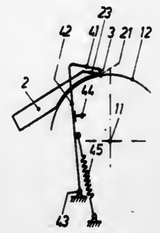
1. A method of processing poultry gizzards comprising moving the gizzards in sequence on a pair of oppositely rotating spirally threaded rolls along a rectilinear path first with entrails suspended freely below the gizzards, and as the gizzards move along the path beyond the rolls engaging the gizzards on opposites sides of the gizzards with a pair of side-by-side chain conveyor means and moving the gizzards along the path with the pair of chain conveyor means, and while the gizzards are moved along the path by the pair of chain conveyor means cutting the entrails away from the gizzards, and cutting upwardly into the lower portion of the gizzards, releasing the gizzards with the pair of chain conveyor means, engaging the gizzards from above with a chain conveyor means and moving the gizzards along the path with the chain conveyor means, and while the gizzards are moved along the path by the chain conveyor means separating the portions of the gizzards cut apart by the upward cut into the gizzards and removing loose matter from inside the gizzards.

4,203,179
MACHINE FOR SKINNING FISH OR FISH FILLETS

Horst K. H. Braeger, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co KG, Lübeck, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,748
Int. Cl.² A22B *5/16*
U.S. Cl. 17—62 **14 Claims**

1. A machine for skinning fish or fish fillets, comprising a skinning knife, a driven skinning roller having a circumferential surface adapted to support said fish or fish fillets and carry the same in a feeding path to said skinning knife, said skinning knife having a cutting edge formed by a presser face extending downstream from said cutting edge and forming with said circumferential surface of said skinning roller a narrow space for receiving the fish skin and for coacting with said circumferential surface to effect a skin gripping and pulling action, and by a back face disposed at an acute angle to said presser face, and a catching face formed on catching face carrying means arranged above said back face adjacent said cutting edge and resiliently displaceable substantially in the direction of travel of said fish or fish fillets, said catching face carrying means including biasing means urging said catching face in a direction opposite to the direction of travel of said fish to a position in which it overlies and covers over said cutting edge of said skinning knife with said catching face being positioned in said feeding path to be initially engaged by said fish or fish fillet as

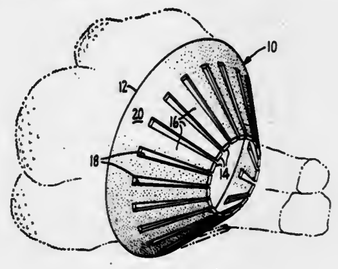


the latter approaches said skinning knife, and being adapted to block the leading end of the fish or fish fillet and force the skin thereof beneath said cutting edge and into said space between the knife presser face and the skinning roller surface, said catching face being then movable in the opposite direction against the face of said biasing means to a position in which it uncovers and exposes said cutting edge.

4,203,180
HOLDER FOR VEGETABLES SUCH AS BROCCOLI

Charles D. Striplin, c/o Striplin Machine & Engineering Co., P.O. Box 515, Benicia, Calif. 94510

Filed Mar. 9, 1979, Ser. No. 19,106
Int. Cl.² B65D *67/02*
U.S. Cl. 24—17 B **6 Claims**



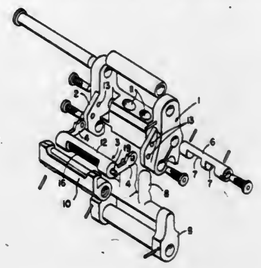
1. A holder for vegetables or the like, comprising a structure having in its unstressed condition a relatively thin side wall in the form of a truncated cone and with the side wall divided into a plurality of inward-sloping flexible fingers leading from a solid base of the cone to the terminal ends of the fingers whereby said structure can be forced over an irregular article and the fingers will conform to the shape of the irregular article and hold the same.

4,203,181
CANOPY RELEASE MANIPULATING HANDLE

John A. Gaylord, San Diego, and Kenneth A. Marks, Cherry Valley, both of Calif., assignors to H. Koch & Sons Division, Gulf & Western Manufacturing Company, Anaheim, Calif.

Filed Aug. 21, 1978, Ser. No. 935,166
Int. Cl.² B64D *17/30*; A44B *11/25*
U.S. Cl. 24—230 A **9 Claims**

1. In a manipulating handle for a releasable strap connector, said strap connector having a female member with spaced ears, and having socket holes therethrough to receive male connector members, an oscillatable locking bar intersecting said socket holes and being adapted to engage said male members in one position and to release said male members in another position, and a lever between said ears connected to the locking bar for oscillating the same between said engaging and releasing positions,
the improvement of
a manipulating handle on the lever including
a hollow member on said lever,
said ears having a keeper socket at least in one of said ears,
at least one bolt element axially reciprocable in said hollow member, a portion of said bolt element being insertable in said keeper pocket for interlocking said handle member

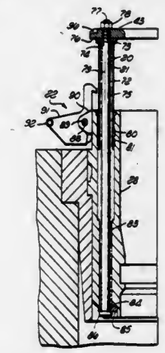


and said ear in said engaging position of said lever and of said oscillatable bar,
a rotatable manipulating member in said hollow member being at least partially exposed to the exterior of said hollow member to an extent sufficient for manual engagement for rolling manipulation,
and connecting means between said bolt element, said hollow member and said manipulating member for reciprocating said bolt element upon rotation of said rotatable manipulating member thereby to withdraw said bolt element from said keeper pocket and thereby to permit manipulating of said lever.

4,203,182
SLIP ASSEMBLY

George I. Boyadjieff, Anaheim, Calif., and Jerry A. Gill, Houston, Tex., assignors to Varco International, Inc., Orange, Calif.

Continuation of Ser. No. 877,309, Feb. 13, 1978, abandoned. This application Jan. 15, 1979, Ser. No. 3,293
Int. Cl.² A44B *21/00*
U.S. Cl. 24—263 D **32 Claims**



1. A slip assembly comprising:
a slip bowl structure adapted to be received and supported within an opening in a well drilling rotary table in a relation to turn with the table;
a carrier structure mounted to said bowl structure for upward and downward movement relative thereto;

a plurality of slips which have inner faces for gripping a well pipe and which are connected to said carrier structure for movement upwardly and downwardly therewith relative to said bowl structure between lower active positions and upper retracted positions;

said bowl structure and said slips having engaging wedge surfaces acting to cam the slips inwardly into tight gripping engagement with a well pipe upon downward movement of the slips to said active positions;

latch means for releasably retaining said carrier structure and slips in said lower active positions; and

yielding means urging said carrier structure and slips upwardly and acting to return them to said upper retracted positions when said latch means are released.

4,203,183

MACHINE FOR TRIMMING CASTINGS

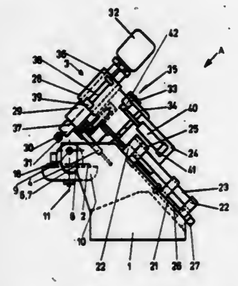
Rudolf Pavlovsky, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Switzerland

Filed Sep. 29, 1978, Ser. No. 946,868

Claims priority, application Switzerland, Oct. 19, 1977, 12723/77

Int. Cl.² B23P *17/00*

U.S. Cl. 29—33 A **13 Claims**



1. A machine for processing cast workpieces to remove flashing, core burrs, sprues and risers comprising the combination of

a base;

a worktable supported by said base for supporting a workpiece to be processed;

a milling assembly mounted on said base, said milling assembly having a milling cutter movable to contact the workpiece; and

impact cutting tool means for contacting and cutting away portions of the workpiece, said impact tool means including

an oscillating reciprocatory cutting tool, and

mounting means for supporting said impact tool means on said milling assembly for movement between an operating position in which said cutting tool can contact the workpiece and a rest position, said cutting tool being substantially parallel with the central axis of said milling cutter in said operating position and being angularly separated from said milling cutting by an angle of about 90° in said rest position.

4,203,184

BEARINGS

Stuart A. B. Gray, Kilmarnock, Scotland, assignor to The Glacier Metal Company Limited, Middlesex, England

Filed Jul. 28, 1978, Ser. No. 928,966

Int. Cl.² B21D *53/10*

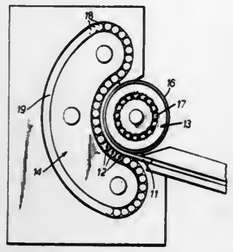
U.S. Cl. 29—149.5 DP **2 Claims**

1. A method of forming a partly-cylindrical bearing in a device utilizing a plurality of small rollers, a relatively large roller and a backing member having a kidney-shaped track formed therein which comprises:

spacing said plurality of small rollers around said large roller so as to define an arcuate passage therebetween;

positioning said small rollers within said track and adjacent said large roller such that said large roller is concentric with said concave portion of said kidney-shaped track;

feeding a strip of bearing material to said arcuate passage while moving said small rollers and rotating said large roller;



progressively deflecting said strip into an arcuate shape as said strip encounters said small rollers;

removing from said arcuate passage a length of said formed strip; and

pressing said formed strip to form a finished partly-cylindrical bearing.

4,203,185

METHOD OF SEALING TUBE PLATE APERTURES, AND REPAIR SET FOR USE THEREIN

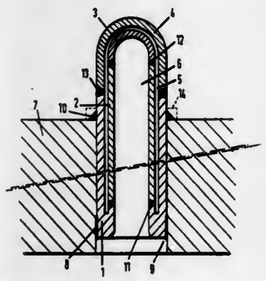
Nico H. H. Beyer, Heemstede; Johannes H. Huigen, Nootdorp, and Johan K. van Westenbrugge, Schiedam, all of Netherlands, assignors to B.V. Neratoom, The Hague, Netherlands

Filed Feb. 27, 1978, Ser. No. 881,716

Claims priority, application Netherlands, Mar. 11, 1977, 7702668

Int. Cl.² B23P *15/26*

U.S. Cl. 29—157.3 C **5 Claims**



1. In a method of sealing an aperture through a tube plate of a heat exchanger, the tubeplate having a tube side and an accessible side, said method including sealingly installing one end of a tube member into the aperture from the accessible side of the tube plate, the other end of the tube member extending outwardly from the accessible side, and securing a sealing cap to said other end of the tube member, the improvement wherein the step of sealingly installing a tube member comprises: sealingly installing a double-walled tube member having concentric, spaced apart inner and outer tubes joined at the one end of the tube member, and the step of securing a sealing cap to the other end of the tube member comprises securing a first sealing cap to the other end of the inner tube and then securing a second sealing cap to the other end of the outer tube, so as to produce a sealing tube member having an annular thermally insulating space between the interior of the inner tube member and the outer tube member.

4,203,186

HEAT TRANSFER

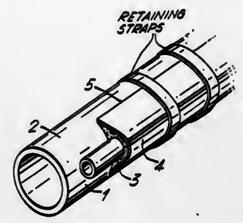
Ian M. Horner, Southampton, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 657,571, Feb. 12, 1976, Pat. No. 4,123,837. This application Jul. 31, 1978, Ser. No. 929,807

Claims priority, application United Kingdom, Feb. 7, 1975, 5305/75

Int. Cl.² B21D *53/00*; B21K *29/00*; B23P *15/26*

U.S. Cl. 29—157.3 R **1 Claim**



1. A method of enhancing heat transfer between a heating or cooling element and a conduit or vessel, comprising the following steps in sequence: applying heat transfer cement material in a mouldable state on a surface of the conduit or vessel; pressing at least part of the heating or cooling element towards the said surface so that the said part of the element is at least partly embedded in the heat transfer cement material and the heat transfer cement material is continuous between at least a portion of the part of the element and the surface; applying additional heat transfer cement material in contact with and around the part of the element so that all the surface of said part, other than any surface which contacts the conduit or vessel, is contacted and surrounded by heat transfer cement material; applying the relatively rigid recessed retaining member around the heat transfer cement material so that edges of the retaining member substantially abut the conduit or vessel whereby coherence takes place between said conduit or vessel, said heating or cooling element and said retaining member, and said member maintains said coherence and slight compression of the heat transfer cement material enclosed in the volume defined between the retaining member and the conduit or vessel; and securing the retaining member and conduit or vessel relative to each other to maintain said coherence and slight compression.

4,203,187

FASTENER APPLYING TOOL

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Jun. 15, 1978, Ser. No. 915,721

Int. Cl.² B23Q *1/00*

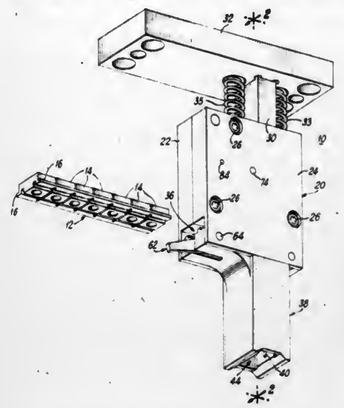
U.S. Cl. 29—283.5 **20 Claims**

1. A tool for applying fasteners such as pierce nuts and the like into a workpiece comprising

a housing,

a punch reciprocally mounted in said housing for punching said fasteners from a strip into a workpiece, said punch including an elongated slot, and

a feed plate slideably mounted in said housing for advancing said pierce nuts to be engaged by said punch, said plate passing through said slot to remove any fasteners adhering



to said punch upon return of said punch from engagement with said fastener.

4,203,188

METHOD OF PRODUCING WELDING WIRE CONSTITUTED BY A CORE OF WELDING POWDER ENCLOSED BY A MANTLE OF METAL

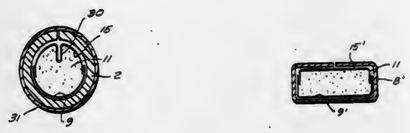
Jacques Blanpain, Gentbrugge, and Leon Delehouzee, Wondelgem, both of Belgium, assignors to Acieries Reunies de Burbach-Eich-Dudelange S.A. Arbed, Luxembourg, Luxembourg

Division of Ser. No. 823,460, Aug. 10, 1977, Pat. No. 4,137,446, which is a continuation-in-part of Ser. No. 572,636, Apr. 29, 1975, Pat. No. 4,048,705. This application Jun. 12, 1978, Ser. No. 914,984

Claims priority, application France, May 22, 1974, 74 17830

Int. Cl.² B22F *3/24*; B23K *35/02*; B23P *17/00*

U.S. Cl. 29—420 **11 Claims**



1. A method of producing a welding wire constituted by a core of welding powder enclosed by a mantle of metal, comprising the steps of forming an elongated upwardly open channel composed of an outer metal channel of substantially U-shaped cross-section having lateral flanks of predetermined height and upper edges extending in longitudinal direction of the channel and an inner metal channel of substantially U-shaped cross-section abutting with the outer surface thereof against the inner surface of the outer channel and having lateral flanks of a height about half of said predetermined height and upper edges parallel to said upper edges of said outer channel; introducing into said inner channel a stream of welding powder to fill said inner channel with a loose strand of said powder; covering the loose strand of powder introduced into said inner channel by a metal band having downwardly curved borders engaging the flange of said inner channel to thereby enclose said powder by said inner channel and said metal band; and closing the outer channel by bringing the upper edges thereof in abutment with each other.

4,203,189

METHOD AND MECHANISM FOR APPLYING THERMOPLASTIC HEELS TO SHOES

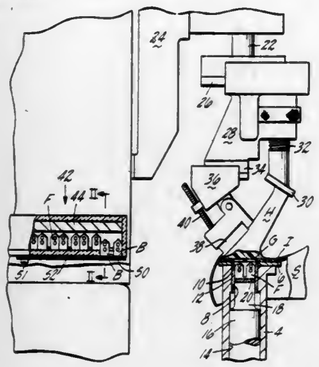
Francis F. H. Rawson, Loughborough, England, assignor to USM Corporation, Farmington, Conn.

Filed Apr. 20, 1978, Ser. No. 898,180

Claims priority, application United Kingdom, Oct. 22, 1977, 44052/77

Int. Cl.[2] B23P *11/00*

U.S. Cl. 29—432 5 Claims



1. The method of attaching a heel formed of thermoplastic material to a shoe having an insole and a reinforceing shank, which method comprises:

heating a fastener which has a head and at least two shank portions each of which has at least one hole therethrough to a temperature above the softening point of the thermoplastic material of the heel;

positioning the heel and the shoe for attachment;

and then inserting the fastener into the material of the heel so that its shank portions extend through the insole, one on each side of the reinforcing shank of the shoe, at least a portion of the thermoplastic material being softened by heat from the fastener to allow the shank portions to enter the material and become embedded therein with thermoplastic material extending into the holes in the shank portions.

4,203,190

METHOD FOR CONNECTING SEWER PIPES TO MANHOLES

Lowell D. Temple, 2415 Meyer Rd., Fort Wayne, Ind. 46803, and Richard L. Williams, 9180 Parker Rd., Harrod, Ohio 45850

Filed Jun. 15, 1978, Ser. No. 915,770

Int. Cl.[2] B23P *11/02*

U.S. Cl. 29—451 7 Claims

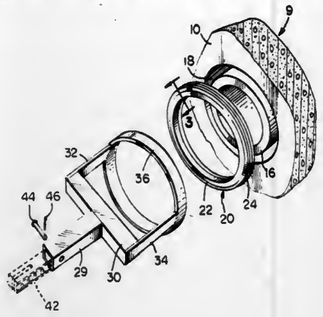
1. The method of connecting a pipe to a manhole or the like comprising:

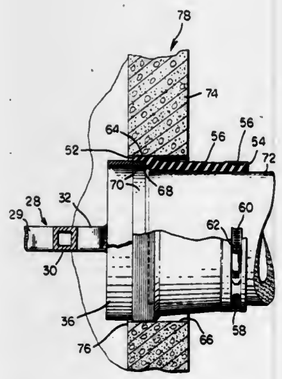
inserting one end of the pipe into an opening in the manhole, said opening having a diameter greater than the outer diameter of the end of the pipe, said manhole having a wall opposite the opening,

providing an annular elastomeric gasket having an inner diameter approximately equal to the outer diameter of the end of the pipe, said gasket including a face normal to the axis of the gasket,

positioning the gasket over the end of the pipe that is within the manhole opening,

bracing an extensible jack against the wall of the manhole opposite the opening and extending the jack to engage the face of the gasket and to exert force thereon in a direction parallel to the axis of the pipe so as to press the gasket simultaneously over the end of the pipe and into the opening to a position concentric with the pipe and opening,





said gasket being tightly compressed between the pipe and opening.

4,203,191

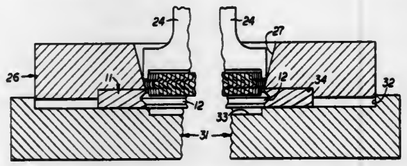
PROCESS AND APPARATUS FOR ASSEMBLING SPIRAL WOUND GASKETS INTO GAUGE RINGS

Vernon W. Gibson, Sr., Birmingham, Ala., assignor to SEPCO Corporation, Birmingham, Ala.

Filed Aug. 31, 1978, Ser. No. 938,655

Int. Cl.[2] B23P *11/02, 19/02*

U.S. Cl. 29—451 6 Claims



1. The process of assemblying a spiral wound gasket of the king embodying a metal strip having a longitudinal channel forming a circumferential, outwardly projecting bead, into the opening of a gauge ring comprising:

(a) simultaneously exerting forces about the outer periphery of the bead and on an outer area of the gasket axially displaced from the bead which reduce the external diameter of the gasket sufficiently for the same to be placed into the opening in the gauge ring, and

(b) removing the forces acting on the bead of said gasket prior to removing the forces on the area displaced from the bead, whereby the bead portion of the gasket may be placed at least partly in the gauge ring opening while the gasket is still held in reduced diameter condition.

3. In apparatus for assemblying a spiral wound gasket into the opening of a gauge ring comprising,

(a) a holder having a conical shaped passage therethrough, the major and minor diameters of which passage are respectively larger than the gasket in released condition and smaller than the opening in the gauge ring,

(b) a mandrel disposed to engage the gasket about a portion of the axial extent of its exterior circumference and push it through the holder and out of the minor diameter end of said passage, and

(c) means adjacent the minor diameter end of the passage to hold the gauge ring in position to receive the gasket as it emerges from the holder.

4,203,192

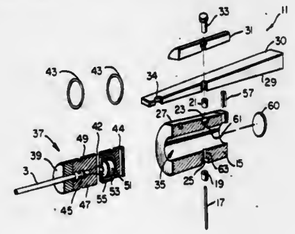
METHOD OF ANCHORING A VIBRATING WIRE INTO A HOLLOW GAUGE BODY

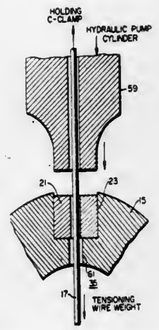
Ivor Hawkes, Lyme, N.H., assignor to The United States of Americas as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 502,265, Sep. 3, 1974, Pat. No. 4,159,641. This application Oct. 23, 1978, Ser. No. 953,394

Int. Cl.[2] B21D *39/00*

U.S. Cl. 29—452 6 Claims





1. A method of anchoring a vibrating wire into a hollow gauge body comprising the steps of:

inserting the wire into two aligned countersunk holes in and through the gauge body;

tensioning the wire;

placing an anchoring tube over one end of the wire on the outside of the gauge body;

punching the tube into one hole of the gauge body against an end wall of the countersunk portion to extrude the tube over the wire and into the sides of the hole;

placing a second anchoring tube over the other outside end of the wire in the other hole; and

punching the second tube into its second hole against an end wall of the countersunk portion such that it is extruded over the wire and into the hole until a desired wire tension is reached.

4,203,193

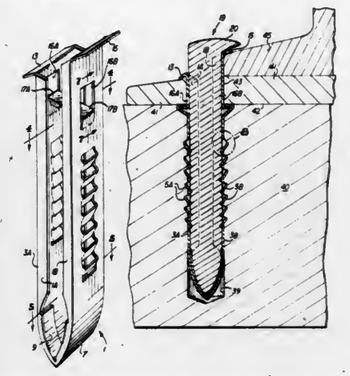
METHOD OF ATTACHING A RAIL AND A TIE PLATE TO A CROSS TIE

David M. Arthur, 4020 N. 14th Ave., Phoenix, Ariz. 85013

Filed Nov. 15, 1978, Ser. No. 960,961

Int. Cl.[2] B23P *19/00*

U.S. Cl. 29—526 R 4 Claims



1. A method of attaching a rail and a tie plate to a cross tie, the rail having a flanged base, the tie plate having an aperture therein, the cross tie having a hole therein, said method comprising the steps of:

a. aligning the aperture in the tie plate with the hole in the cross tie and the flanged base of the rail;

b. inserting a spike retainer having a flange through the aperture of the tie plate and into the hole in the cross tie by means of a removable insertion tool until the flange engages the flanged base of the rail;

c. removing the insertion tool from the spike retainer;

d. inserting a spike having an enlarged head into the spike retainer;

e. engaging the tie plate with the spike retainer to prevent substantial upward movement of the spike retainer with respect to the tie plate by means of a wedge-like element extending from the spike retainer;

f. engaging the spike with the cross tie by

i. deformably engaging the spike with the spike retainer to resiliently resist removal of the spike from the spike retainer; and

ii. deformably engaging the spike retainer with the cross tie to resiliently resist removal of the spike retainer from the cross tie;

g. inserting the spike into the spike retainer until the enlarged head of the spike engages the flange of the spike retainer to force the flange of the spike retainer against the flanged base of the rail, and clamp the tie plate and the flanged base of the rail together between the flange and the wedge-like element.

4,203,194

BATCH METHOD FOR MAKING SOLID-ELECTROLYTE CAPACITORS

N. Christian McGrath, Strafford, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jul. 17, 1978, Ser. No. 925,127

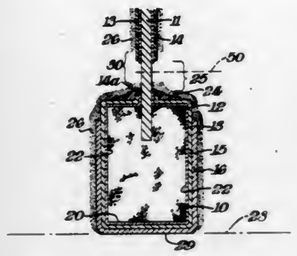
Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—570 13 Claims

1. A batch method for making solid-electrolyte capacitors including providing a plurality of porous valve-metal pellets each having one end face from which a wire of said valve-metal extends, an opposite end face and at least one side face being contiguous with said two end faces; suspending said

pellets by their respective wires from a holding bar; anodically forming an oxide film over the surfaces of each said porous pellet; disposing a solid electrolyte over said film of said each pellet; and depositing a conductive counterelectrode layer overlying said solid electrolyte of said each pellet in a region over said at least one side face and extending over said opposite end face thereof; wherein the improvement comprises:

(a) bringing said suspended pellets to a fluidized bed of a fusible insulative resin powder and applying a high d.c. voltage to said holding bar with respect to said fluidized bed to electrostatically form a powder coating on said suspended pellets and on said wires;



(b) selectively removing said powder coating from said opposite end face of said each pellet to expose said counterelectrode layer;

(c) heating said suspended pellets to fuse and cure the remaining portions of said powder coatings;

(d) subsequently forming an anode terminal over said one end face of each said pellet in contact with the corresponding of said wires, and forming a cathode terminal spaced from said anode terminal over said opposite end face of each said pellet in contact with said counterelectrode; and

(e) severing said wires to separate said pellets from said bar.

4,203,195

METHOD OF PRODUCTION OF VIBRATION ABSORBING METALLIC MATERIAL

Hideo Nakae, Kashiwa; Toshinori Ozaki, Minorimachi; Kazunori Nakane, Tokaimura, and Takashi Shimaguchi, Shimoinayoshi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 20, 1977, Ser. No. 862,623
Claims priority, application Japan, Oct. 21, 1977, 52-125739
Int. Cl.² B21D *39/00*; B23P *11/00*
U.S. Cl. 29—505 **5 Claims**



1. A method of production of vibration absorbing metallic material comprising the steps of:

placing at least one layer of wire netting over at least one layer of a metallic raw material in plate form in vertically stacked relation, wherein said metallic raw material is an ordinary structural rolled steel; and

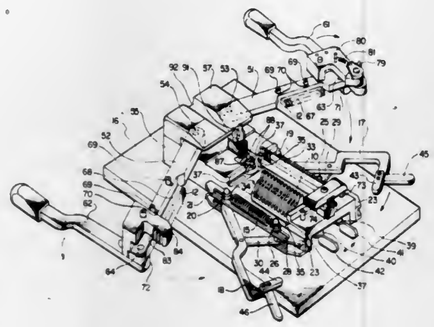
subjecting the stack of wire netting and metallic raw material to rolling, thereby forming friction interfaces between said metallic raw material and said wire netting or within the wire netting, whereby a vibration absorbing material having a vibration damping capacity larger than said metallic raw material is formed.

4,203,196

WIRE INSERTION TOOL

Hiroyuki Fukushima; Minoru Yoshida, both of Tokyo, and Hiromasa Inoue, Musashino, all of Japan, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 790,629, Apr. 25, 1977, abandoned.
This application May 25, 1978, Ser. No. 909,581
Claims priority, application Japan, Jun. 4, 1976, 51-052425
Int. Cl.² H01R *43/04*
U.S. Cl. 29—566.3 **12 Claims**



1. A wire insertion tool for inserting a plurality of wires in respective non-deforming insulation-piercing terminals retained in a terminal retaining body, said tool comprising:

a base;

terminal retaining body support means connected to said base for releasably supporting a terminal retaining body in a fixed position on said base;

wire holding means connected to said base for releasably holding a plurality of wires adjacent a terminal retaining body supported by said support means;

first and second releasing handles cooperating to release the terminal retaining body from said support means and the plurality of wires from said holding means;

wire guiding means for guiding each of the plurality of wires toward one of a plurality of terminals in the terminal retaining body;

first and second insertion handles, each of said handles having a first end pivotally connected to said base;

a plurality of wire insertion means for engaging respective ones of the plurality of wires, said wire insertion means being mounted on at least one of said insertion handles at a point remote from said first end, such that relative movement of said inserton handles in a first direction effects a corresponding movement of said plurality of insertion means and insertion of each of the wires in a respective terminal;

means for prohibiting movement of said insertion handles in a direction counter to said first direction during engagement of said insertion means with said wires until said wires are completely inserted within said terminals;

cutting means adjacent said guiding means and cooperating with said insertion means for cutting each of the wires at a predetermined point; and

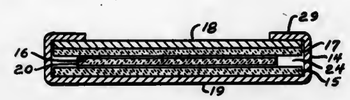
wherein said first and second releasing handles are mounted such that relative movement of said releasing handles in a first direction effects the substantially simultaneous release of said terminal retaining body from said support means and of the plurality of wires from said holding means.

4,203,197

METHOD FOR MAKING A CERAMIC BOND HEATER

Walter R. Crandell, Addison, Ill., assignor to Fast Heat Element Mfg. Co., Inc., Elmhurst, Ill.

Continuation of Ser. No. 668,292, Mar. 18, 1976, abandoned.
This application Feb. 21, 1978, Ser. No. 879,169
Int. Cl.² H05B *3/00*
U.S. Cl. 29—611 **7 Claims**



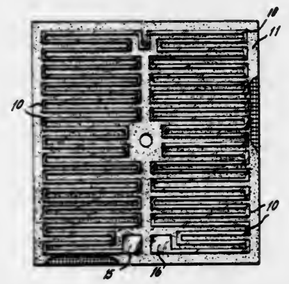
1. In a method for fabricating a unitary electric ceramic band heater comprising the steps of assembling resistance wire on an uncured sheet of ceramic particles impregnated to a high density and bound together in heat dissipatable binder material, arranging said assembled wire and uncured sheet between uncured sheets of insulator particles bound together in heat dissipatable binder material, compressing said arranged assembled wire and uncured sheet and said uncured insulator sheets together to substantially eliminate air voids between said sheets, and heating said compressed arranged assembly at a temperature sufficient to substantially dissipate said binder materials and cure said ceramic and insulator particles into an integral mass.

4,203,198

METHOD OF CONSTRUCTION OF ELECTRICAL HEATING PANELS

Barrie H. Hackett, Gray, and Rudolph W. Wissley, Portland, both of Me., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 965,754
Int. Cl.² H05B *3/36*
U.S. Cl. 29—611 **12 Claims**



1. The method of making an electricl heating panel, comprising the steps of:

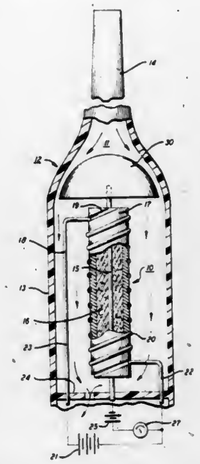
silk screening at least one resistive array pattern on a given surface of a thin metallic foil, curtain coating the other surface of said foil with a polymer compound, etching said screened array to remove all foil not within said pattern to form a resistive foil array, positioning a first sheet of fiber glass cloth over said given surface of said array to form a composite structure, placing said structure in a magnetic field while stripping said polymer coating from said array, placing a second sheet of fiber glass on said other surface which contained said polymer coating, binding said array between said first and second sheets by applying a binder including colloidal silica spheres, to form a composite heating panel structure.

4,203,199

SOLID STATE SENSOR

Michael J. Morgan, Syracuse, N.Y., assignor to Inficon Leybold-Herneus, Inc., East Syracuse, N.Y.

Division of Ser. No. 841,285, Oct. 12, 1977, Pat. No. 4,171,341.
This application Oct. 2, 1978, Ser. No. 947,824
Int. Cl.² H01C *7/02*
U.S. Cl. 29—612 **6 Claims**



1. The method of forming a solid state sensing device for detecting the presence of given gases and vapors in an atmosphere including

providing a hollow ion shield formed of a material that is deplete in alkali metal ions,

centering an elongated electrode along the axis of the shield,

packing a granulated reactive material of an alkali metal compound into the shield under sufficient pressure to hold the material tightly between the electrode and the inner wall of the shield.

4,203,200

METHOD AND APPARATUS FOR MAKING AN ENCAPSULATED PLUG-IN BLADE FUSE

Gerald L. Wiebe, 18 W. 077 Williamsburg La., Villa Park, Ill. 60181

Continuation-in-part of Ser. No. 922,151, Jul. 7, 1978, Pat. No. 4,164,726, which is a continuation-in-part of Ser. No. 820,555, Aug. 1, 1977, Pat. No. 4,164,725. This application Nov. 2, 1978, Ser. No. 957,137
Int. Cl.² H01H *69/02*
U.S. Cl. 29—623 **20 Claims**

1. The method of making an encapsulated, three-piece solderless plug-in fuse comprising the steps of:

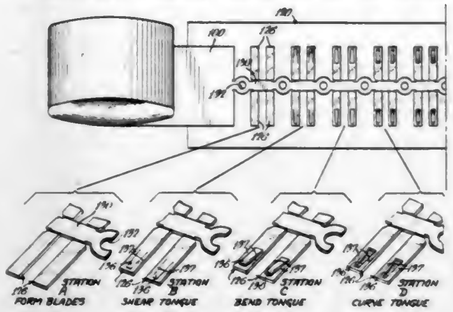
providing a pair of blades, each blade having at one end a terminal portion for being connected into an electrical circuit and at the other end a fusible link supp ort spring clip;

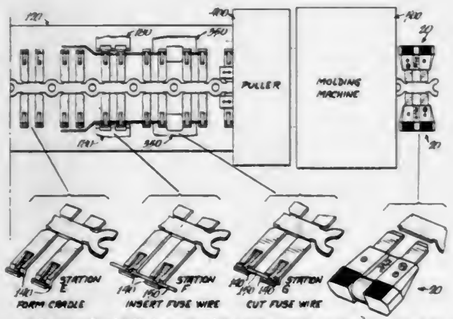
arranging said blades in spaced-apart, generally parallel relationship;

inserting a fusible link into the spring clip of each of said pair of blades; and

encapsulating said fusible link and the fusible link support

spring clip of each of said blades with a solid unitary body of electrically insulating material so that the external





surfaces of said link and said blade spring clip portions are in intimate contact with said material.

4,203,201

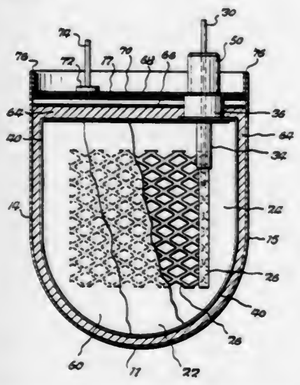
METHODS FOR MAKING LITHIUM-IODINE CELL

Ralph T. Mead, Kenmore; Wilson Greatbatch, Clarence; Frank W. Rudolph, Depew, and Norbert W. Frenz, Jr., North Tonawanda, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Division of Ser. No. 812,641, Jul. 5, 1977, Pat. No. 4,128,703. This application Jul. 5, 1978, Ser. No. 921,905

Int. Cl.[2] H01M *6/18*

U.S. Cl. 29—623.1 **11 Claims**



1. A method of making a lithium-iodine cell comprising the steps of:

a. providing a casing of electrically conducting material having an inner surface;

b. providing a lithium anode having an operative surface;

c. providing a solid element comprising a charge transfer complex of an organic electron donor material and iodine having a predetermined shape to fit relatively closely between said lithium anode operative surface and said casing inner surface;

d. placing said solid element in operative association with a lithium anode in said casing; and

e. heating said element while in said casing to a temperature causing said complex to flow into maximum operative contact with said anode operative surface and said casing inner surface.

7. A method of making a lithium-iodine cell comprising the steps of:

a. providing a casing of electrically conducting material having an inner surface and having an opening at one end thereof;

b. providing a subassembly comprising the combination of a lithium anode assembly having an anode operative surface and a lid of electrically conducting material mechanically connected to said anode assembly and electrically insulated thereform;

c. preparing cathode material by heating a mixture of iodine and an organic electron donor material to a temperature greater than the crystallization temperature of said iodine;

d. pouring said heated cathode material into said casing through said opening so as to contact said inner surface;

e. placing said subassembly including said lithium anode into said casing through said opening in a manner such that said anode operative surface is contacted by said heated cathode material and simultaneously placing said lid in said opening of said casing as said lithium anode is placed into said casing to be contacted by said heated cathode material; and

f. sealing the opening in said casing by welding said lid to said casing around the periphery of said lid.

4,203,202

METHOD OF MAKING STANDBY PRIMARY CURRENT SOURCES

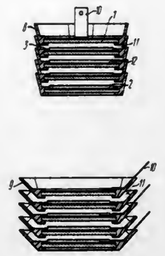
Levon P. Esaian, prospekt Mira, 182, korpus 3, kv. 9, Moscow; Valery S. Sokolov, ulitsa Ordzhonikidze, 55/39, kv. 24, Kalinin; Dina V. Kurygina, prospekt Mira, 99, kv. 39, Moscow; Fedor F. Zubanov, Leningradskoe shosse, 54/2, kv. 26, Kalinin; Valentin N. Aleshin, ulitsa Fabrichnaya, 7, kv. 32, Moskovskaya oblast, poselok Pravdinsky; Gennady V. Bolshov, ulitsa Bogdanova, 24-a, kv. 21, Kalinin; Igor S. Kuzyko, Yaroslavskoe shosse, 67, kv. 83, Moscow; Oleg A. Fedotov, ulitsa Tomary Ilinoi, 7, kv. 43, Kalinin; Ninel K. Belysheva, ulitsa Akademika Komarova, 13, kv. 52, Moscow; Alexei M. Anosov, Proletarskaya naberezhnaya, 11, kv. 196, Kalinin; Alexei I. Antonov, ulitsa Erofeeva, 8, kv. 4, Kalinin; Viktor I. Terentiev, Volokolamsky prospekt, 43, kv. 17, Kalinin; Viktor A. Naumenko, ulitsa Novo-Alexeevskaya, 48, kv. 12, Moscow, and Boris V. Akimov, prospekt Lenina, 75 "A", kv. 30, Leninsk-Kuznetsky Kemerovskoi oblasti, all of U.S.S.R.

Filed Feb. 23, 1978, Ser. No. 880,497

Int. Cl.[2] H01M *6/44*

U.S. Cl. 29—623.2 **2 Claims**

1. A method of producing standby water-activated primary current sources, comprising the steps of: hermetically sealing, with a water-repellent insulant, ends and edges of each of a plurality of negative electrodes forming part of a bipolar electrode; shaping a flanged rim along the perimeter of each of said negative electrodes concurrently with said hermetical sealing of said ends and edges of each of said negative electrodes, said flanged rim forming a continuous inclined surface with respect to the electrode surface and its height exceeding the thickness of the bipolar electrode and of a separator; forming at least one inclined shoulder on the flanged rim for passage of water and gases and for current leadout, concurrently with said shaping of said flanged rim, said inclined shoulder being formed at an angle different from the angle of inclination of the flange rim; providing current leadouts on at least two electrodes; interlaying said bipolar electrodes with separators in such a way that the negative part of one bipolar electrode is insulated with the separator from the positive part of an adjacent bipolar electrode; stacking said bipolor electrodes such that the inclined



surfaces of the flanged rims of adjacent bipolar electrodes are in contacting relationship; welding together the adjoining surfaces of the flanged rims into an integral block of bipolar electrodes, said welding occuring along opposed inclined surfaces of the flanged rims.

4,203,203

ELECTRICAL CONNECTOR AND METHOD OF MANUFACTURE

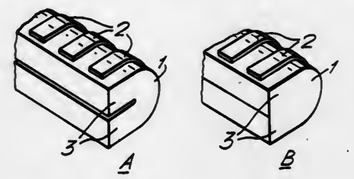
Hermanus P. J. Gilissen, Esch; Petrus R. M. van Dijk, and Ludovicus C. van der Sanden, both of 's-Hertogenbosch, all of Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 20, 1978, Ser. No. 944,212

Claims priority, application United Kingdom, Sep. 24, 1977, 39854/77

Int. Cl.[2] H01R *43/00*

U.S. Cl. 29—846 **3 Claims**



1. A method of forming a connector for use between printed circuit boards or the like and having spaced contact portions at opposed surfaces of an elastomeric body, the contact portions on the opposed surfaces being interconnected by conductive paths, the method comprising the steps of;

a. forming conductive paths on one surface on a lamina of elastomeric material;

b. folding the lamina in generally U-shaped fashion to bring the other surface of the lamina into abutting engagement and with the conductive paths extending along the distal surfaces and around the fold, the portion of the paths between the fold and ends of the lamina providing flat portions adapted to be contacted by the printed circuit boards or the like; and

c. bonding the abutting surfaces together.

4,203,204

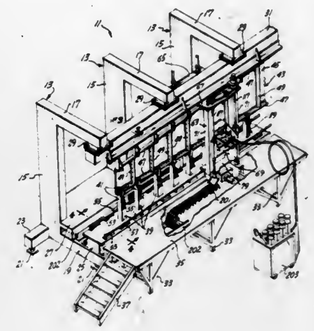
APPARATUS FOR THE AUTOMATED ASSEMBLY OF MAJOR SUBASSEMBLIES

Richard J. Murphy, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 2, 1979, Ser. No. 915

Int. Cl.[2] B23P *11/00, 21/00*

U.S. Cl. 29—703 **29 Claims**



1. An automated assembly machine for major subassemblies comprising:

(a) support means for supporting the components of a major subassembly in a predetermined location;

(b) first and second carriage mechanisms mounted on said support means so as to be located on opposite sides of the components of a major subassembly supported by said support means, each of said first and second carriage mechanisms comprising:

(1) a main carriage movable in a predetermined plane adjacent to said predetermined location;

(2) a secondary carriage mounted on said main carriage for movement toward and away from said location and generally perpendicular to said predetermined plane, said secondary carriages including an apertured projection, said apertured projections positioned so as to face one another;

(3) a shuttle carriage mounted on said secondary carriage for aligning drilling-fastening tools mounted on said shuttle carriage with said apertured projection;

(4) drilling-fastening tools; and,

(5) mounting means for mounting said drilling-fastening tools on said shuttle carriage for movement toward and away from the aperture in said apertured projection; and,

(c) control means connected to said first and second carriage mechanisms for:

(1) positioning said main carriages such that said apertured projections are aligned with one another where a fastener is to be installed;

(2) moving said secondary carriages toward one another so that the components of said major subassembly where a fastener is to be installed are clamped together by said apertured projections; and,

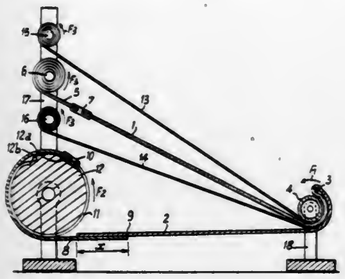
(3) controlling said shuttle carriages, said mounting means and said drilling-fastening tools such that a fastener is installed in said components by sequentially moving said drilling-fastening tools into positions aligned with the aperture in said apertured projection, moving said tools toward and away from said aperture in said apertured projection; and, powering said tools as required.

4,203,205

METHOD AND APPARATUS FOR THE MANUFACTURE OF A HEAT EXCHANGER

Etienne Jouet, Lamorlaye, France, assignor to Spirec l'Echangeur Spirale Ever Clean, Paris, France

Filed Dec. 27, 1977, Ser. No. 864,796
Claims priority, application France, Dec. 27, 1976, 76 39149
Int. Cl.[2] B23P *15/26*
U.S. Cl. 29—727 **8 Claims**



1. An apparatus for the manufacture of a heat exchanger which includes at least one first band and a second band fixed to said first band and forming a casing for said heat exchanger, said apparatus comprising a frame upon which is mounted a mechanism including:

a means for winding said bands into a spiral, said means having an axis and being driven by a motor;

an unwinding device in the form of a drum having an axis which is parallel to that of said means for winding;

at least one elongated windable member fixed at one end to said drum and removably fixed at another end to one end of said second band and adapted to connect said drum with said second band;

a second motor for rotating said drum; and

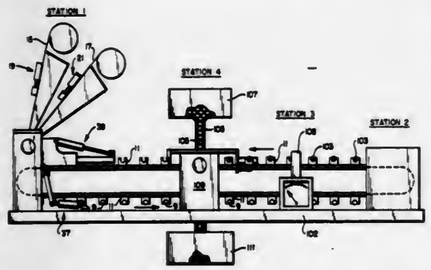
an adjustable braking device acting on said drum.

4,203,206

ASSEMBLY MACHINE

Jesse L. Morris, Archer, and Raymond K. Sugalski, Gainesville, both of Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Mar. 31, 1977, Ser. No. 783,087
Int. Cl.[2] H01M *2/10*
U.S. Cl. 29—731 **13 Claims**



1. A machine for winding strip plate and separator materials into a coil and for assembling the coiled materials into a container comprising:

(a) a coil winding station,

(b) transport means including a conveyor and a plurality of nests fixed to said conveyor and sequentially positionable at said winding station, each nest having a cylindrical opening oriented transverse to the direction of motion of said conveyor,

(c) means for sequentially advancing said conveyor to position said nests, one after the other, at said coil winding station,

(d) an arbor having two segments oriented parallel to the longitudinal axis of said nest opening and mounted for reciprocal movement along said longitudinal axis from the opposite ends of said nest opening for insertion into said nest opening when the nest opening is at said winding station,

(e) means for reciprocating said arbor segments and means for synchronously rotating said segments when said segments are in said nest opening,

(f) means for feeding a positive plate, a negative plate, and separator material to said nest and said arbor when said nest is positioned at said winding station,

(g) a canning station,

(h) means for moving said nest with said positive plate, said negative plate and said separator material coiled therein to said canning station, and

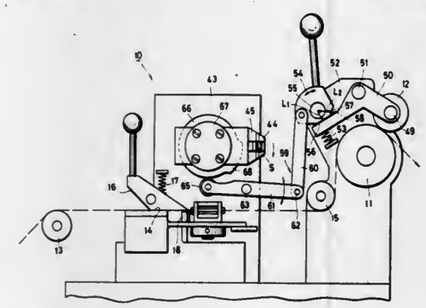
(i) means at said canning station for moving a coiled roll unit from said nest positioned at said canning station into a can in said canning station.

4,203,207

APPARATUS FOR AUTOMATICALLY APPLYING TOP END STOPS TO A SLIDE FASTENER CHAIN

Yoshio Oyama, Asahi, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Sep. 28, 1978, Ser. No. 946,547
Claims priority, application Japan, Oct. 6, 1977, 52-120295
Int. Cl.[2] B21D *53/52*
U.S. Cl. 29—767 **4 Claims**



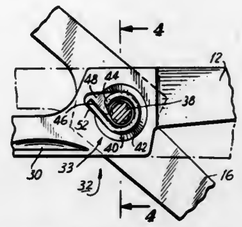
1. Apparatus for automatically applying top end stops on a fastener chain moving unidirectionally along a path of travel and having a pair of continuous stringer tapes provided along opposed inner edges thereof with groups of fastener elements and provided with blank tape portions between the groups of elements, each group of fastener elements being interlocked with and having a leading element shifted out of registry with a leading element of a corresponding group on the opposite tape, comprising in combination: a fastener chain drive operable to drive the fastener chain unidirectionally along said path and comprising a feed roller and a pinch roller normally urged into engagement with said feed roller; means for stopping corresponding pairs of blank tape portions at a predetermined position in said path of travel; a pair of tape grippers provided in said position one on each side of said path of tape travel, each gripper being adapted to grip the respective stringer tape and to spread said tapes apart along a limited region; a top stop carrier mounted above said predetermined position for arcuate movement into and out of said path in the region where the tapes are spread by said tape grippers for delivering and clamping top end stops onto the fastener chain; and means responsive to said arcuate movement of said top stop carrier in timed relation therewith for bringing said pinch roller into and out of engagement with said feed roller so as to allow said opposite leading elements to be brought closely adjacent to said top end stops being delivered by said top end stop carrier while said fastener chain is released from said fastener chain drive.

4,203,208

BIASED POCKET KNIFE SCISSORS

Jay Tausendfreundt, Portsmouth, and Albert Gentile, Warwick, both of R.I., assignors to Imperial Knife Associated Companies, Inc., New York, N.Y.

Filed Feb. 14, 1979, Ser. No. 11,810
Int. Cl.[2] B26B *13/16*
U.S. Cl. 30—155 **6 Claims**



1. A scissors biased to an open position by a concealed spring means which comprises a first rectilinear blade, a second rectilinear blade, pivot means, said first blade being pivotally secured to said second blade at a point intermediate the ends of said blades by said pivot means, and means for biasing said blades to open position in which said blades are at an acute angle to one another, said biasing means including a spring means mounted about said pivot means, said spring means comprising a single flat coil which spans an arc of slightly less than 360°, one end of said coil having an integral leg substantially perpendicular to the plane of the coil, said leg being parallel to and adjacent said pivot means, the other end of said coil extending tangentially away from the arc of the spring means, one of said blades having a pocket adjacent said pivot means, said pocket including an extension, the other of said blades having a pocket adjacent said pivot means, said leg being located in said second named pocket, said spring means being disposed in said pockets with the coil of said spring means extending about said pivot means, and the other end of said coil in conjunction with said leg biasing said blades to said open position, said other end of said coil bearing against a side of the extension in said first named pocket.

4,203,209

ATTACHMENT FOR HAND GLASS CUTTER

Thomas A. Insolio, Bristol, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.

Filed Jan. 8, 1979, Ser. No. 1,917
Int. Cl.[2] C03B *33/10*
U.S. Cl. 30—164.95 **4 Claims**



1. An attachment for use with a glass cutter of the type having an upwardly extending handle with a flattened lower finger engageable portion of generally tapered rectangular cross section, which lower handle portion is so tapered that the wider cross section is toward the lower end of the handle, said attachment comprising a one-piece formed member having a lower sleeve defining portion with side walls defining a tapered sleeve opening to snugly receive said tapered handle portion, said tapered sleeve opening having a front side which is open and defined only by flanges integrally formed on said side walls to define a front opening to receive the smaller upper end of the handle during assembly, said one-piece member having an upwardly extending portion formed by an integral extension of a rear side of said sleeve defining portion, and said upwardly extending portion having a cantilevered free end portion curving away from the handle to which said member is adapted to be attached, said curving free end portion shaped to contact the palm of a user gripping the glass cutter in such a manner that one of his fingers abuts the wider cross sectional portion of the handle adjacent the lower end thereof whereby the glass cutter is more comfortable and secure in his hand during use.

4,203,210

SHINGLE STRIPPER

Paul E. Hadlick, Jr., 11527 Monticello Ave., Silver Spring, Md. 20902

Filed Oct. 12, 1978, Ser. No. 950,557
Int. Cl.[2] A47L *13/02*
U.S. Cl. 30—172 **10 Claims**



1. A roof stripping tool, comprising:

a blade, including a forward flat section and a rear section of approximately equal length forming an interior angle of greater than 0 degrees but less than 45 degrees with the plane of said forward section;

said forward section of said blade including a plurality of nail shank engaging "V" shaped grooves across the front edge thereof; and

a fulcrum means secured to the underside of said rear section of said blade, said fulcrum means spanning approximately the total width of said rear section of said blade and extending down from said rear section of said blade to meet but not pass the plane of said forward section for positioning said forward section parallel to the roof plane.

4,203,211

FAUCET STEM NUT SPLITTER

Thomas R. Quick, 2640 SW. 61, Oklahoma City, Okla. 73159

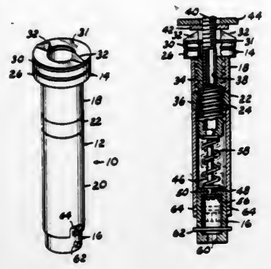
Filed Oct. 24, 1978, Ser. No. 954,156
Int. Cl.[2] B26B *7/00*
U.S. Cl. 30—272 R **5 Claims**

1. A nut splitting tool for splitting a faucet nut surrounding an intermediate portion of a vertically disposed externally threaded tubular faucet stem adjacent a sink flange, comprising:

sleeve means including an outer sleeve having internal threads intermediate its ends and having diametrically opposed J-slots formed in its depending end, and,

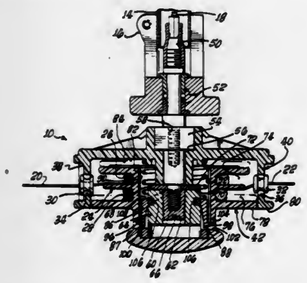
an inner sleeve having internal threads engaging said

faucet stem for supporting said tool thereon and having external threads engaging said outer sleeve threads;
blade means interposed between said sleeve means and said faucet nut;



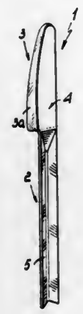
bearing means interposed between said sleeve means and said blade means permitting angular rotation of said sleeve means relative to said blade means; and,
means engageable with the J-slots for angularly rotating said outer sleeve relative to said inner sleeve and the faucet stem and moving said outer sleeve toward said faucet nut.

4,203,212
FLAIL FEEDOUT MECHANISM FOR A ROTARY MOWER
Raymond E. Proulx, 5837 Cameo St., Alta Loma, Calif. 91701
Filed Jul. 13, 1978, Ser. No. 924,234
Int. Cl.[2] A01G *3/06*
U.S. Cl. 30—276 **8 Claims**



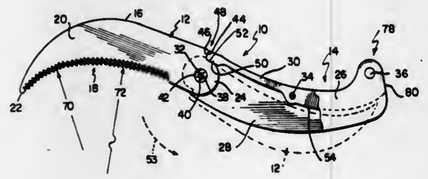
1. In a mower having at least one cutting flail which extends outwardly from a spinning assembly including two major assemblies, a cap assembly and a spool assembly having a bumper for engagement with the ground and means to allow predetermined lengths of flail to feed outwardly in response to the striking of the bumper on the ground, the improvement comprising:
a cam member having a serpentinous cam slot therein connected to one of said assemblies,
a follower member connected to the other of said assemblies and having at least one cam follower thereon positioned to ride in said slot, and
bias means acting between said cam member and said follower member tending to urge said cam follower into stable positions on said serpentinous cam slot when undisturbed by force applied to said bumper and adapted to be overcome by suitable force applied to said bumper, said serpentinous cam slot having at least one ramp portion and at least one portion generally parallel to the force applied by said bias means.

4,203,213
KNIFE FOR TABLEWARE AND KITCHEN USE
Francesco Mollica, Varese, Italy, assignor to Mollica S.r.l., Varese, Italy
Filed Jul. 3, 1978, Ser. No. 921,296
Claims priority, application Italy, Feb. 17, 1978, 20391 A/78
Int. Cl.[2] B26B *3/02*
U.S. Cl. 30—343 **7 Claims**



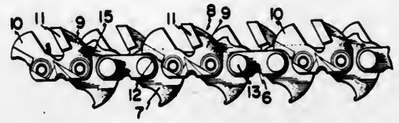
1. A knife comprising an elongate support member made of plastic material and including an elongate handle portion and a substantially flat elongate holding portion aligned and integral therewith, an elongate lamellar element made of metal and extending over a length substantially corresponding to the length of said elongate holding portion, said lamellar element being embedded in said holding portion and having a substantially flat cutting portion projection from said holding portion in a plane substantially parallel to said substantially flat elongate holding portion along one side thereof to define a cutting edge, and means for firmly holding said lamellar element within said elongate holding portion.

4,203,214
KNIFE
James W. Fogle, Indianapolis, Ind., assignor to Saran Industries, Inc., Indianapolis, Ind.
Filed Aug. 7, 1978, Ser. No. 931,298
Int. Cl.[2] B26B *9/02*
U.S. Cl. 30—355 **4 Claims**



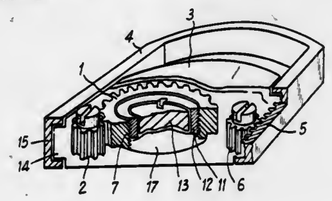
1. A knife having a handle and a blade, said blade including a pair of side surfaces and a cutting surface, said cutting surface including a first continuous cutting edge on one of said side surfaces, and a second cutting edge located between said side surfaces, said second cutting edge being integral with and intersecting said continuous cutting edge, said first and second cutting edges slanting toward said handle.

4,203,215
ENDLESS CHAIN FOR A CHAIN SAW
Hiroyoshi Ochiai, Miyazaki, and Masao Nakamoto, Fukuoka, both of Japan, assignors to Hideaki Taniguchi, Miyazaki, Japan
Filed Jun. 19, 1978, Ser. No. 916,618
Claims priority, application Japan, Jul. 8, 1977, 52-91327[U]
Int. Cl.[2] B27B *17/02, 33/14*
U.S. Cl. 30—383 **7 Claims**



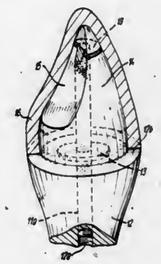
1. In an endless chain for a chain saw comprising a plurality of pivotally connected cutter links, joint links and sprocket teeth links, the improvement wherein:
(a) the cutter link has a saw adjusting portion forming a first inclined section and a saw tooth portion forming a second inclined section, said saw adjusting portion and said saw tooth portion being integrally joined to form an inclined U-shape construction,
(b) a cutting edge provided at the top of said saw tooth portion,
(c) said saw adjusting portion having a lower edge section, and means defining a recess formed in said lower edge section,
(d) said joint link having a forward and a rear end portion, said rear end portion having a semi-circular configuration,
(e) said cutter link and said joint link being disposed such that said recess in said cutter link engages said semi-circular rear end portion of said joint link to thereby support said cutter link on said joint link.

4,203,216
MAGNETIC PROSTHETIC ELEMENT
Jean-Antoine E. Deguemp, 20 rue de Vintimille, 75009 Paris, France
Filed Jun. 2, 1978, Ser. No. 911,871
Claims priority, application France, Jun. 2, 1977, 77 16822
Int. Cl.[2] A61C *13/00, 13/22*
U.S. Cl. 32—2 **7 Claims**



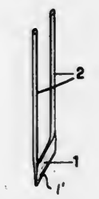
1. A magnetic device for retaining a prosthetic element, in particular, a dental prosthesis, on a bone segment, in particular the jawbone, the device comprising an internal magnetic or magnetizable material, preferably seated in removable manner in a cavity fashioned in said bone, said internal magnetic or magnetizable material interacting with an external magnetic or magnetizable material seated in the prosthesis, a frame rigidly fixed to the prosthesis, a support mounted in said frame and housed within its thickness, said external material being solidly fastened to said support; and means to control, preferably in continuous manner, the relative position of said support in said frame, on one hand in a plane parallel to that of the front face of said material so as to adjust the relative position of the axes of the internal and external materials, and on the other hand in a direction perpendicular to this plane so as to adjust the magnitude of the gap between pole pieces.

4,203,217
ATTACHMENT OF TOOTH CROWNS
Peter F. Kurer, Cheadle, England, assignor to Pinnockchoice Limited, Manchester, England
Filed Aug. 30, 1978, Ser. No. 938,021
Claims priority, application United Kingdom, Sep. 9, 1977, 37690/77
Int. Cl.[2] A61C *5/08*
U.S. Cl. 433—220 **3 Claims**



1. A method of attaching a tooth crown to a natural tooth root having a prethreaded root canal comprising the steps of:
engaging a threaded post with the previously prepared prethreaded tooth root canal,
locating a plurality of collars screw threadedly engaged with the post axially on the post and in requisite spaced disposition thereon,
tightening one of the collars against the tooth root face,
positioning the other collar outwardly of the tooth root face in spaced relationship with such collar tightened against the tooth root face,
creating an in situ shaped head on the post and the collars, and
securing a crown to the shaped head.

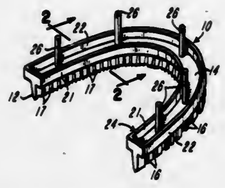
4,203,218
ENDOSSEAL IMPLANT FOR DENTAL PROSTHESIS
Giorgio Dal Pont, Piazza Mazzini 19, 32100 Belluno, Italy
Filed Jun. 9, 1978, Ser. No. 914,181
Claims priority, application Italy, Jun. 10, 1977, 84132 A/77
Int. Cl.[2] A61C *8/80*
U.S. Cl. 433—176 **5 Claims**



1. An endosseal implant for dental prosthesis which requires no incising and pre-drilling of the gum tissue and jaw bone comprising a unitary surgical round metal wire section having a diameter of about one millimeter including a pair of bendable and trimable substantially parallel and substantially equal length segments, and a flattened chisel-like transverse anchor portion integrally joined to corresponding ends of said parallel segments and having a straight sharpened edge along that side of the anchor portion away from said segments, the anchor portion being formed from the same unitary wire section used to form the parallel segments and being produced solely by

flattening and sharpening such wire section, said anchor portion adapted to be driven by impact into the bone structure forming the alveolar crest.

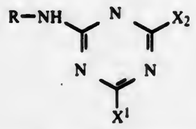
4,203,219
DENTAL MODEL ASSEMBLY AND PRODUCTION METHOD
Joseph Wiener, Dayton, Ohio, assignor to Carl Dorf, Walnut Creek, Calif.
Filed Aug. 8, 1978, Ser. No. 931,943
Int. Cl.[2] A61C *13/00*
U.S. Cl. 433—74 **22 Claims**



1. A die locator for use in making a dental model assembly, comprising an elongated generally U-shaped body of solid material, said body including a longitudinally extending generally U-shaped rib portion having converging opposite side surfaces forming a tapering cross-sectional configuration, said rib portion adapted to project into a molded dental model and being releasable therefrom, said body including means for rigidly connecting said rib portion to a base disposed to support the model, and said rib portion having means for precisely locating individual sections of the dental model after the model is cut into sections and for preventing longitudinal movement of each section on said rib portion.

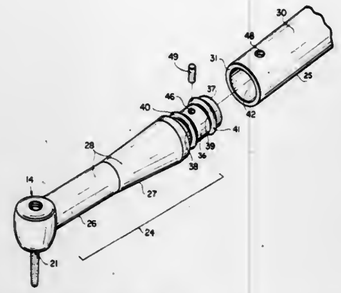
4,203,220
TRIAZINES AND THEIR USE IN BONDING RESINS TO BIOLOGICAL TISSUE
Peter J. Cranfield, London, England, assignor to National Research Development Corporation, London, England
Filed Jul. 8, 1976, Ser. No. 703,660
Claims priority, application United Kingdom, Jul. 9, 1975, 28927/75
Int. Cl.[2] A61K *5/06*
U.S. Cl. 433—228 **12 Claims**

1. A method of bonding a clinically tolerated resin having polymerisable olefinic double bonds to a surface of a biological tissue which comprises contacting the biological tissue with a compound of the general formula



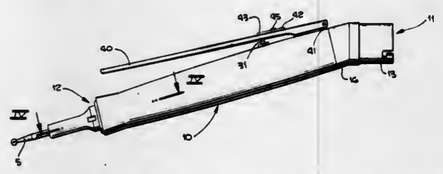
wherein R is an organic group containing a polymerisable olefinic double bond and X^1 and X^2 independently represent F or Cl or Br so as to react at least one of X^1 and X^2 with a reactive group present on the surface of the biological tissue to form a reaction produce containing a group R, contacting the resin with the reaction product and copolymerising the resin with the olefinic double bond in the group R in the reaction product.

4,203,221
GAS-DRIVEN HANDPIECE HAVING VIBRATION ISOLATING MEANS
Arthur A. Knopp, Chalfont; John E. Nash, Downington, and Richard P. Lewis, Springfield, all of Pa., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Sep. 29, 1978, Ser. No. 947,214
Int. Cl.[2] A61C *1/10*
U.S. Cl. 433—117 **18 Claims**



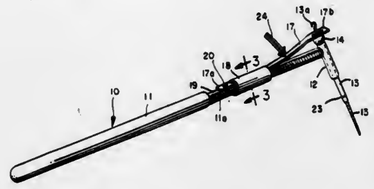
1. A dental handpiece comprising:
a handle portion having a proximal end and a distal end;
a housing for a gas driven motor connected to said handle portion at said distal end;
said handle portion including a first handle member having an outer wall and an end wall and a second handle member having an outer wall and an end wall, said first and second handle members connectable to each other at a junction so as to form a substantially continuous elongated handle portion with said outer walls providing a surface for gripping said handpiece;
means for forming a substantially rigid connection between said first handle member and said second handle member adjacent the junction, when said first and second handle member end walls are in proximate abutting relationship;
said means for forming the substantially rigid connection including resilient means interposed between said first and said second handle members such that said first and second handle members are not in direct contact with each other, said resilient means substantially inhibiting the transfer of vibration between said first and second handle members.

4,203,222
AUTOMATIC CHUCK FOR DRILL
Terry M. Mattchen, Van Nuys, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.
Continuation of Ser. No. 712,729, Aug. 9, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,657
Int. Cl.[2] A61C *1/10*
U.S. Cl. 433—129 **20 Claims**



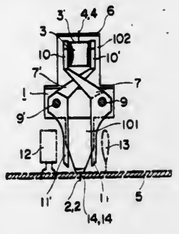
1. In a surgical tool having a pneumatically driven motor in a motor housing, a source of air under pressure to drive the motor, output means for being rotated by the motor and transmitting it to a rotating implement and securing means for securing the implement to the output means, the improvement comprising the provision of:
the securing means comprising transmission means for receiving air under pressure from the source of air and for converting the pressure to a force acting on the implement to grip the implement and passage means through the motor housing for directing air from the source of air to the transmission means.

4,203,223
PERIODONTAL PROBE
Eugene P. Lautenschlager, Skokie; Peter J. Robinson, Kenilworth, and Randall M. Vitek, Brookfield, all of Ill., assignors to Northwestern University, Evanston, Ill.
Filed Jan. 12, 1979, Ser. No. 3,130
Int. Cl.[2] A61C *3/00*
U.S. Cl. 433—75 **13 Claims**



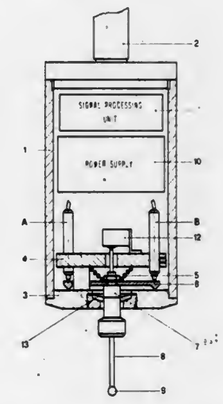
1. A periodontal probe comprising an elongated handle having a head end provided with a generally transversely-extending sleeve; a probe shaft slidably supported by said sleeve, said shaft including an elongated tip at one end thereof and bearing means at the opposite end thereof; a leaf spring having one end secured to said handle and an opposite end engaging said bearing means for urging said shaft in one direction to extend said tip away from said sleeve, the force exerted by said spring upon said shaft progressively increasing as said shaft is displaced in a direction opposite from said one direction; stop means for limiting the extent of movement of said shaft in said one direction; and means provided by said shaft and sleeve for indicating when said shaft is retracted to a point at which said spring exerts an extending force of predetermined magnitude upon said shaft.

4,203,224
INSERTION SPACE CHECKING JIG FOR ELECTRONIC COMPONENTS
Kazubiko Narikiyo, Neyagawa; Eiji Itemadani, Sakai, and Yoshinobu Maeda, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 20, 1978, Ser. No. 971,213
Claims priority, application Japan, Dec. 27, 1977, 52/177313[U]
Int. Cl.[2] G01B *5/14*
U.S. Cl. 33—149 R **4 Claims**



1. An insertion space checking jig for electronic components with two parallel lead wires, comprising
a frame having a below extended member with two parallel guide pins on its bottom face with a specified gap between each other and having on its top part a reference plate with two holes with the same gap as the said specified gap for inserting the lead wires therein,
a pair of levers pivotted on said frame in a crosswise relation with each other, upper ends of the levers forming a pair of holding levers for holding the electronic components and lower ends of the levers forming a pair of detection levers, respectively.

4,203,225
POSITION INDICATOR FOR CONTROL MEASUREMENTS OF SURFACES
Gunnar Nilsson, Eskilstuna, Sweden, assignor to AB CE Johansson, Eskilstuna, Sweden
Filed Sep. 18, 1978, Ser. No. 943,108
Claims priority, application Sweden, Sep. 20, 1977, 7710507
Int. Cl.[2] G01B *7/00, 7/28*
U.S. Cl. 33—174 L **4 Claims**



1. A position indicator to be used for control measurements of surfaces which have been subjected to treatment by a machine tool or the like, comprising;
a housing having an end wall provided with an opening therein;
a measuring probe movably mounted in the housing and projecting outwardly through said opening, the relative movement between the probe and the housing constituting a measurement of the discrepancy of the surface from the desired shape;
the mounting for the probe comprising a plate attached to the probe transversely of the axis thereof;
biassing means urging the periphery of said plate into abutting contact with the inner side of said end wall, whereby the probe is axially displaceable by contact with a surface and tiltable in all directions about the periphery of said plate, and;
a plurality of indicator means for generating output signals corresponding to the displacement of the periphery of the plate with respect to the end wall of the housing.

4,203,226
PATH TRACING DEVICE FOR SPREADING OR SPRAYING AGRICULTURAL TREATMENT PRODUCTS OR THE LIKE
Denis Hasquenoph, Bussy-Saint-Georges par Lagny, France, assignor to AGRAM, Saint-Denis, France
Filed Jul. 26, 1978, Ser. No. 927,993
Claims priority, application France, Nov. 15, 1977, 77 34228; Jun. 30, 1978, 78 19620
Int. Cl.[2] G01B *3/00*
U.S. Cl. 33—185 V **18 Claims**

1. A device adapted to be connected to a tractor for tracing on the ground lines of a path to be followed for spreading or spraying treating material along parallel lanes of relatively great width, said device comprising a frame adapted to be fastened at one end to the front end of a tractor; a jib having a

length equal to the width of the lanes to be traced; means connecting one end of said jib to said frame for pivoting movement about a vertical pivot axis so that said jib can freely pivot in front of said tractor in one and the other direction; a ground engaging member on the other end of said jib to trace each line to be followed during the subsequent spreading or spraying operation; and retaining means for limiting the liberty of move-



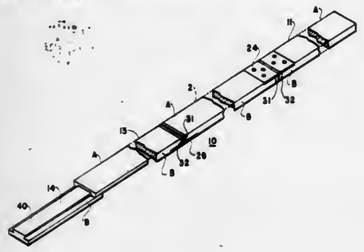
ment of the jib between two operating positions in each of which said jib extends laterally outwards on one or the other side of the tractor and at 90° to the median line thereof, said retaining means comprising a rope interconnecting a portion of said jib spaced from said frame to a portion of said frame spaced further from said one end of said frame than said vertical pivot axis.

4,203,227

TELESCOPIC STRAIGHT EDGE

Hector Giroux, Box 8131, Calgary, Alberta, Canada (T2J2V3)

Filed May 19, 1978, Ser. No. 907,881
Int. Cl.[2] G01B *3/06, 3/08*
U.S. Cl. 33—458 1 Claim



1. A foldable straight edge comprising

a plurality of hinged members pivotally joined together so as to be foldable about hinges from an extended position to a folded position,

said hinges flush mounted in the attached members, with

said hinged members each of a size and shape such that when assembled together, a first straight edge of each hinged member lies in a common plane in both the folded and the extended position and in all intermediate positions between said folded and said extended positions, with

the butt end of each hinged member adjacent a hinged joint, fitted with magnetic means to detachably latch to the adjacent butt end of the hinged member joined to the said hinged joint in the extended position of the two said hinged members, so as to latch the hinged members in said extended position, in which

the magnetic means comprises a magnet that is fixed to the butt hinged end of one hinged member and a magnetically attractable bar that is fixed to the butt hinged end of the other hinged member joined to a common hinge, in which

said hinged members are each of a size and shape that a bottom surface of each member that is at a substantial angle to the first edge of each said member lies along a common plane in the extended position of the hinged members, with each said bottom surface lying in parallel planes in the folded position of said hinged members, in which

a slidable member is joined to an end hinged member by a tongue and groove joint formed in the said members, with an end portion of said end hinged member formed with a recess so that the slidable member fits into said recess in the retracted position and with said end hinged member and said slidable member shaped so that a bottom surface of said slidable member lies along a common plane with a bottom surface of the portion of the end hinged member adjoining said end portion in both the retracted and the extended positions of said slidable member, in which

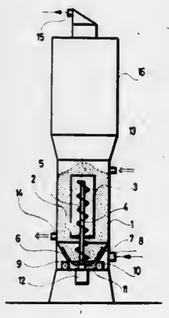
a first edge of the end hinged member slidably joined to the slidable member and a first edge of the slidable member lie in a common plane in all relative assembled positions of said members.

4,203,228

CONTACTING AND DRYING OF MATERIAL IN A SPOUTED SYSTEM

Emil Aradi; Tibor Blickle; Endre Monostori; Jenő Németh; Ivanne Pallai, all of Budapest, and János Varga, Mosonmagyaróvár, all of Hungary, assignors to MTA Müszaki Kémiai Kutató Intézet, Veszprém and Keszthelyi Agrártudományi Egyetem, Keszthely, both of, Hungary

Filed Jun. 26, 1978, Ser. No. 919,300
Int. Cl.[2] F26B *3/08, 7/00*
U.S. Cl. 34—10 17 Claims



1. An apparatus for at least partially drying a first material selected from the group consisting of granular material, powdered material, material in solution, material in suspension, paste-like material, and a fluid, and for mixing said first material with a second material selected from the group consisting of granular material, powdered material, material in solution, material in suspension, and paste-like material,

comprising in combination:

a container,

a longitudinal conveyor having its direction of elongation arranged substantially vertically, and being disposed in said container,

a tube having its direction of elongation arranged substantially vertically and being disposed in said container, said conveyor being at least partially disposed in said tube, and

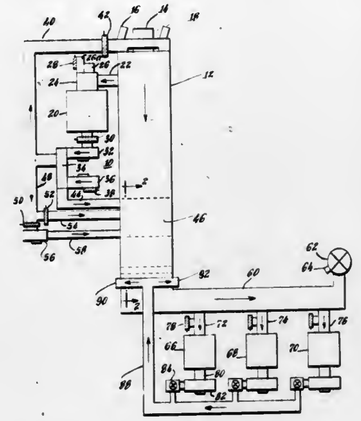
air supply means for blowing air at least in part upwardly through said tube into the mixed first and second materials, said mixed materials being at least partially loosenable and dryable by the at least partially upwardly moving air blown thereinto, and being operatively movable at least partially in an upward direction by said conveyor, and upon completion of the upwards motion being movable downwards within said container.

4,203,229

DRYER SYSTEM AND METHOD OF CONTROLLING THE SAME

Ronald W. Southworth, Atlanta, Ga., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 3, 1977, Ser. No. 838,561
Int. Cl.[2] F26B *21/10*
U.S. Cl. 34—46 6 Claims



1. A dryer system for reducing the moisture content of wood products to predetermined levels comprising:

a heat source for producing heated gases having a known constant temperature, said heat source having at least one inlet for admitting fuel thereto and an outlet;

a control stack capable of maintaining a constant negative pressure in the heat source and a constant gas temperature at said stack;

a supply plenum connecting said outlet from said heat source to said control stack, said supply plenum being adapted to receive the heated gases from said heat source;

at least one dryer for receiving the wood products to be dried, said dryer having inlet and outlet plenums and being connected to said supply plenum through said dryer inlet plenum; and

means for adding ambient air at said dryer inlet plenum to temper the heated gases so as to maintain a fixed temperature at the dryer outlet while varying the dryer inlet temperature as a function of the amount of moisture to be removed.

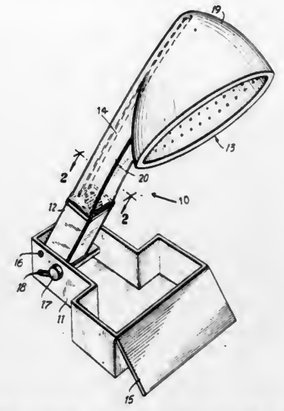
4,203,230

HAIR DRYER WITH COMPACTABLE BONNET

Raymond W. Kunz, Monroe, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,993
Int. Cl.[2] A45D *20/32*
U.S. Cl. 34—99 3 Claims

1. A device for drying hair comprising a self-supported hair dryer, a bonnet through which heated air from the hair dryer is directed onto a person's hair to be dried, said bonnet including a stem plenum portion and a head surrounding portion and an extensible bonnet support member attached to the hair dryer by being inserted into a slot therein, and extending through said stem plenum portion and said head surrounding portion of the bonnet, said support member being a flexible metal of a tape measure type structure having sufficient rigidity to support the bonnet and being rolled up into a coiled position when the hair dryer is not in use and is positioned for storage



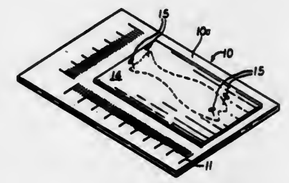
and being in an extended, uncoiled position when the bonnet is in place on the person's head.

4,203,231

DISSECTING BOARD AND PROCESS FOR DISSECTING A SPECIMEN

Richard Van Note, 456 Woodfield Trail, Roselle, Ill. 60172

Filed Jan. 11, 1978, Ser. No. 868,710
Int. Cl.[2] G09B *23/36*
U.S. Cl. 35—20 2 Claims



1. A dissecting board comprising a glass base having a flat top surface, and a plastic pad on top of said base, said pad covering only a portion of said base leaving an edge portion of said base uncovered, said uncovered edge portion having thereon a scale for measuring specimens used in dissection, said pad having a thickness of at least ¼ inch and a hardness of from 55 to 65 durometer.

4,203,232

NIGHT EFFECTS SIMULATOR

Lindsay C. Knight, Albury, Australia, and Roy E. Casey, Columbia, S.C., assignors to Australasian Training Aids Pty. Ltd., Albury, Australia

Filed Jan. 31, 1978, Ser. No. 873,924
Claims priority, application Australia, Feb. 2, 1977, PC8916
Int. Cl.[2] F41G *3/26*
U.S. Cl. 35—25 51 Claims

1. A night effects simulator to permit night firing, comprising

(a) at least one target, and means for supporting said target at a predetermined distance from a firing line,

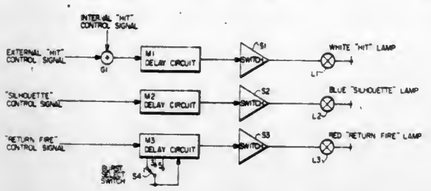
(b) first means for at least momentarily illuminating said target for observance by a trainee for firing purposes;

(c) hit detection means for sensing a target hit;

(d) second means for illuminating said target responsive to said target hit, said second illuminating means displaying

on said target a light visually distinguishable from the light provided by said first illuminating means, and

(e) third illuminating means for simulating return fire from said target, said third illuminating means displaying on said target a light visually distinguishable from the light



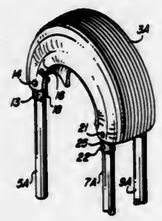
provided by said first and second illuminating means, wherein said first illuminating means is positioned behind said target, relative to said firing line, to provide a silhouette effect on said target, and said second and third illuminating means are mounted in front of said target.

4,203,233

CALF-TYING PRACTICE DUMMY

Charles J. Crane, Rte. 1, Box 63D, Tolleson, Ariz. 85353

Filed Jun. 23, 1978, Ser. No. 918,499
Int. Cl.[2] A63B *69/04*
U.S. Cl. 35—29 R **4 Claims**



1. A practicing dummy for assisting a person in practicing for rodeo calf-tying events, said device comprising in combination:

(a) a front leg member;

(b) first and second hind leg members; and

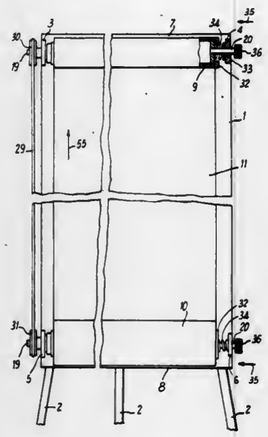
(c) body means connected to said front leg member and said first and second hind leg members for supporting and orienting said front leg member and said first and second hind leg members approximately perpendicularly to an axis of said body means and applying resisting forces tending to counteract any forces displacing said front leg member and said first and second hind leg members from said perpendicular orientations thereof, said counteracting forces being sufficient in magnitude to untie an insecurely tied calf-tying competition knot, said body means flexing in an approximately natural manner during scooping of said first and second hind leg members and crossing said first and second hind leg members over said front leg member during said practicing, wherein said body means is composed of a half of an automobile tire, said front leg member being bolted to one end of said half-tire and said first and second rear leg members being bolted to opposed side walls of the other end of said half-tire.

4,203,234

ROLLABLE CHART

Christian Thenon, Chatillon-sur-Cluses, France, assignor to De Visu International, Igny Zai, France

Filed Jul. 7, 1978, Ser. No. 922,530
Claims priority, application France, Jul. 8, 1977, 77 21396
Int. Cl.[2] G09B *29/06*
U.S. Cl. 35—76 **3 Claims**



1. A rollable chart comprising

a base

a first rotatable support on said base,

a second rotatable support on said base in spaced parallel relation to said first support,

a web of flexible material wound on the first support and the second support and having an exposed portion between the supports

a first pulley adjacent said first rotatable support,

a second pulley adjacent said second rotatable support

an endless flexible band extending around said pulleys, said band being exposed and comprising means for manually rotating said pulleys in response to manual manipulation of said band,

first unidirectional driving means for connecting said first pulley to said first rotatable support to wind said web onto said support in response to manual movement of said band in a first direction, and second unidirectional driving means for connecting said second pulley to said second rotatable support in response to manual movement of said band in the opposite direction, each unidirectional driving means comprising

an internally toothed surface near one end of a support,

a disc fixed to a pulley for rotation therewith, said disc being axially adjacent said toothed surface, an inclined cam groove formed in said disc,

a sliding pawl having a pin extending into said cam groove, and

means for guiding the pawl radially toward and away from the internally toothed surface,

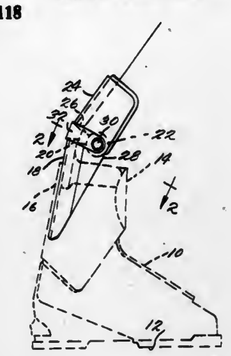
said cam groove forcing said pawl into driving engagement with said internally toothed surface in response to rotation of its pulley in one direction, and maintaining said pawl spaced from the internally toothed surface in response to rotation of its pully in an opposite direction.

4,203,235

SKI TRAINING DEVICE

R. Harrison Van Pelt, Jr., 679 S. Reed Ct., A-2, #401, Lakewood, Colo. 80226

Filed Feb. 15, 1978, Ser. No. 877,941
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—118 **8 Claims**



1. An accessory device for canting the leg of a user relative to a ski comprising an abutment member including a pair of ear portions located on opposite sides of said abutment member, said abutment member and ear portions being located adjacent the upper rear portion of a ski boot,

a canting member having a leg engaging portion, an abutment surface at one end of said leg engaging portions and a pair of ear portions each located on opposite sides of said abutment surface,

each ear portion on opposite sides of said abutment member being pivotally connected, respectively, to an ear portion of said pair on the opposite sides of said abutment surface so that said canting member is pivotable relative to said abutment member to move said abutment surface toward and away from said abutment member,

limit means attached to said canting member so as to be insertable between said abutment member and surface, said limit means including at least two surfaces which converge from a base toward each other, one of said converging surfaces being engageable by said abutment member and the other of said converging surfaces being engageable by said abutment surface when said limit means is inserted between said abutment member so that, when said abutment surface is moved toward said abutment member, the closest distance assumable between said abutment member and surface is determined by the extent to which said surfaces of said limit means are positioned therebetween,

said limit means further including means for locking said surfaces in a selected position relative to said abutment surface and member.

4,203,236

FOLDABLE SNOW SHOE

Alfred C. Erickson, 329 Black Oak Dr., Michigan City, Ind. 46360, and Clyde W. Erickson, Box 184, Sperry, Iowa 52650

Filed Oct. 2, 1978, Ser. No. 948,039
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—123 **13 Claims**

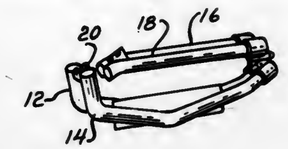
1. A snowshoe including

(a) a showshoe frame;

(b) webbing secured to said frame to provide a supporting surface;

(c) a first set of joint means attached to said snowshoe frame at longitudinally opposite ends thereof to allow said snowshoe frame to fold about its longitudinal axis; and

(d) a second set of joint means attached to said snowshoe frame at transversely opposite points thereof to allow said



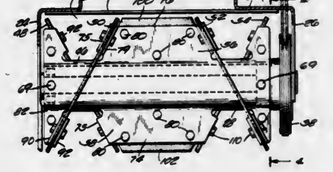
snowshoe frame to fold about a transverse axis passing therethrough.

4,203,237

SNOWBLOWER

Edward W. Enters, Fredonia, and Weldon R. Kuhn, Plymouth, both of Wis., assignors to Gilson Brothers Company, Plymouth, Wis.

Filed Jun. 15, 1978, Ser. No. 915,663
Int. Cl.[2] E01H *5/00*
U.S. Cl. 37—43 E **22 Claims**



1. A snowblower comprising,

a forwardly opening auger housing defining an auger chamber having opposite side walls, and a discharge opening in an upper portion thereof,

a wheel for supporting said housing for movement on the ground,

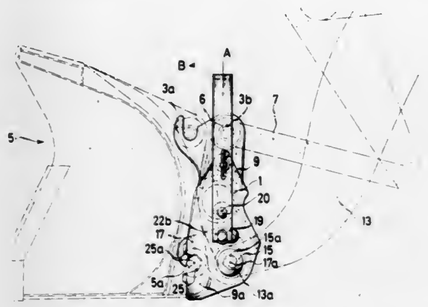
a prime mover supported by said housing, and

a rotatable auger rotatably drivingly connected to said primer mover, said rotatable auger including an auger cylinder having opposite ends and being rotatably supported in said auger housing for rotation about an axis, said auger being comprised of a pair of opposed stamped metal plates secured together and including opposed facing semi-cylindrical halves defining said auger cylinder, at least a pair of spaced apart auger flights, one of said auger flights supported by one of said ends of said cylinder and the other auger flight supported by the other of said ends of said cylinder, means for releasably securing said auger flights to said auger cylinder, and a radially extending impeller blade removably secured to said auger cylinder for rotation therewith for propelling snow through said discharge opening, said impeller blade having opposite ends, one of said impeller blade ends adjacent one of said auger flights and the other of said impeller blade ends adjacent the other of said auger flights.

4,203,238
RAPID-CHANGE DEVICE FOR ATTACHMENTS ON EARTH MOVING MACHINES

Hans Bangert, Sprockhövel, and Georg Fengler, Bergkamen-Oberaden, both of Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,693
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734972
Int. Cl.[2] E02F 3/00
U.S. Cl. 37—118 R 7 Claims



1. A rapid-change device for attachments on earth moving machines for connection between a lifting frame chassis which is hydraulically actuated from a carrier vehicle and an attachment implement, for instance a loading shovel having holding bolts, by means of holding claws and locking latches, comprising

a lifting frame chassis having lift arms,

stay arms formed with holding claws, respectively,

hubs are fixedly connected on said stay arms, respectively, said hubs are formed with bores,

locking latches are pivotally mounted on the outer periphery of said hubs, respectively, defining pivot points,

said lift arms of the lifting frame chassis are coaxially pivotally mounted in said bores of said hubs,

said stay arms are formed with semicircular recesses of said holding claws adapted to receive holding bolts of the loading shovel, respectively,

the center points of the semicircular recesses of said holding claws and said pivot points of said locking latches are coordinated with respect to each other such that the line of action of reaction forces introduced by the loading shovel extends through said pivot points for said locking latches and at lowest through said center points of said semicircular recesses.

4,203,239
PICTURE HOLDER

Alice J. Williams, 19 Marlton, and Martha D. Gregory, 18 Marlton, both of Gibbsboro, N.J. 08026

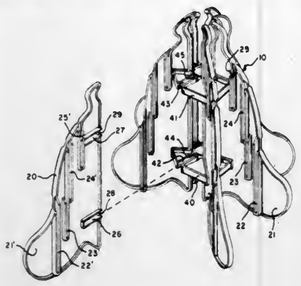
Filed Jul. 25, 1977, Ser. No. 818,452
Int. Cl.[2] G09F 1/10, 1/12
U.S. Cl. 40—152.1 8 Claims

1. A picture holding device for holding transparent sleeves in which pictures may be inserted, comprising:

(a) six to eight profile members, each member having two faces,

(b) an interconnecting means to connect the profile members to form a unit wherein the profile members project radially outward to form spaces between adjacent pairs of profile members, the interconnecting means comprising two identical discs, each with six to eight slots, equal to the number of profile members to be interconnected, these slots interconnecting with two complimentary slots on each profile member.

(c) three to five sleeve holding channel pairs on opposing faces of the adjacent profile member faces comprising two

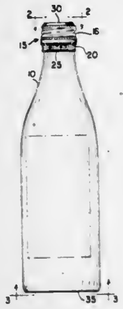


essentially vertical sidewalls extending outwardly from the faces of the adjacent profile members, the channels forming a plane tangent to the circumference of a circle centered about the central axis of the picture holding device.

4,203,240
CONTAINER WITH RELATED INDICIA

George I. Goodwin, 3395 E. Point La., Bloomfield Hills, Mich. 48013

Filed Oct. 21, 1976, Ser. No. 734,458
Int. Cl.[2] G09F 3/00
U.S. Cl. 40—310 1 Claim

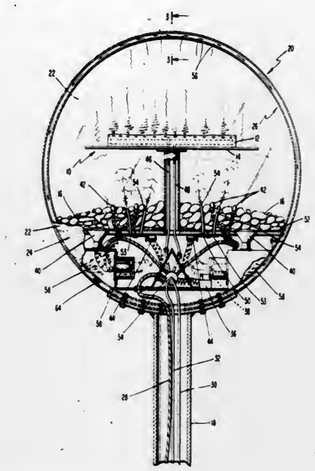


1. A returnable bottle having a closure cap for sealing said bottle in a fluid-tight manner, said closure cap including an upper removable sealing portion and a lower portion, said lower portion detaching from said sealing portion on the removal of said sealing portion from said bottle, and remaining with said bottle, said upper portion having a first tamper-proof indicia and said lower portion having a second tamper-proof indicia relating to said first indicia, said related indicia being different from indicia or similar bottles whereby said second indicia on said lower closure portion upon return of said bottle retaining said lower closure portion to a redemption center is matchable with said related first indicia on said detachable sealing closure portion to encourage the users of said beverage bottle to return said beverage bottle and said closure sealing portion to said redemption center for recycling thereof.

4,203,241
ACTION SIGN

Charles W. Wallace, Rte. #10, Marion, Ky. 42064

Filed Aug. 2, 1977, Ser. No. 821,141
Int. Cl.[2] G09F 19/00, 13/44
U.S. Cl. 40—406 9 Claims



1. A three-dimensional action sign comprising a three-dimensional tableau of a product to be advertised and independent means for producing at least two separate visible actions in said sign, said independent means comprising means for producing a flame and means for producing smoke,

said tableau is of a simulated piece of meat disposed on a grill over a simulated charcoal fire;

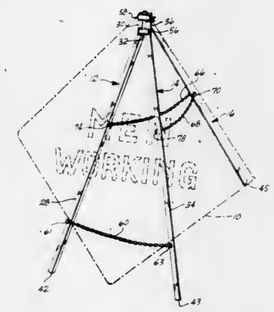
said means for producing a flame causes a flame to rise from said piece of meat; and

said means for producing smoke causes smoke to rise from simulated charcoal fire.

4,203,242
SIGN STANDARD

Kenneth E. Griffin, 6304 - 204th SW., Lynnwood, Wash. 98036

Filed Dec. 7, 1978, Ser. No. 967,113
Int. Cl.[2] F16M 11/10, 11/16
U.S. Cl. 40—610 13 Claims



1. A portable, retractable sign standard comprising:

(a) a formed first leg having a major lower section and a minor upper section, said two sections being angularly disposed relative to each other about a first medial juncture;

(b) a formed second leg having a major lower section and a minor upper section, said two sections being laterally angularly disposed relative to each other about a second medial juncture in a manner oppositely to said first leg;

(c) a rearwardly positionable third leg disposed between said first and second legs;

(d) arcuate joiner means interconnecting said three legs, said joiner means being fixedly attached to the upper end portion of one of said three legs;

(e) transverse openings being defined by the upper end portions of the other two legs for receiving said joiner means;

(f) said joiner means being lengthwise slidable through said two openings to permit said first, second and third legs to shift laterally between:

a closed position wherein said first leg lower section, said second leg lower section and said third leg being aligned adjacent to each other with said third leg being disposed between said first leg lower section and said second leg lower section, and said first leg upper section and said second leg upper section each extending upwardly and oppositely, laterally outwardly from said first and second medial junctures, respectively, and

an open position for supporting a sign wherein said upper sections of said first and second legs being aligned adjacent each other with the upper end portion of said third leg being disposed therebetween, and said lower sections of said first and second legs each extending downwardly and oppositely, laterally outwardly from said first and second medial junctures, respectively, while the lower portion of said third leg extending rearwardly of said first and second legs;

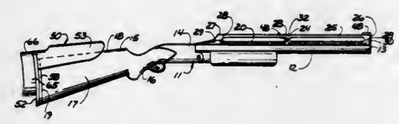
(g) a cross member fixedly attached to one of said first and second legs, said cross member being cantilevered generally laterally from its point of attachment to bear against the other of said first and second legs to restrain said first and second legs from pivoting about their respective longitudinal axis when said first and second legs being in open position; and

(h) means for supporting a sign mounted on said first and second legs.

4,203,243
RAISED RIB AND STOCK ELEVATOR ATTACHMENT FOR SHOTGUNS

Jack L. Hickman, 1809 Plaza Way, Walla Walla, Wash. 99362

Filed Jul. 17, 1978, Ser. No. 925,100
Int. Cl.[2] F41C 23/00; F41G 1/42
U.S. Cl. 42—73 12 Claims



1. A raised rib and stock elevator attachment for a shotgun having a barrel, a muzzle at a forward end of the barrel, a receiver at a rearward end of the barrel, a stock rearward of the barrel, a comb along a top side of the stock, and a butt plate at a butt end of the stock; said raised rib and stock elevator attachment comprising:

an elongated rib member having a forward end and a rearward end;

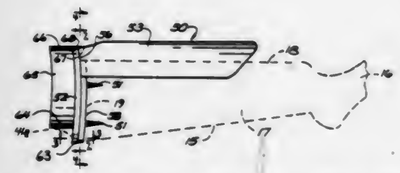
a first bracket member adapted to receive the rearward end of the rib member and mount it to the shotgun upwardly adjacent the barrel at the receiver thereof;

a second bracket member adapted to receive the forward end of the rib member and mount it to the shotgun upwardly adjacent the barrel at the muzzle thereof;

wherein the first and second bracket members each include first clamp means for adjustably securing the rib member to the respective bracket members, and second clamp

means adapted to securely mount the rib and bracket members to the shotgun;
a recoil plate;
a stock elevator member on the recoil plate and extending forwardly therefrom;
the stock elevator member having a concave comb receiving surface adapted to engage the comb of the shotgun stock; and
mounting means for adjustably securing the recoil plate and stock elevator to the butt plate of the shotgun stock;
wherein the rib member includes a horizontal sighting surface thereon and the stock elevator includes a cheek rest surface mountable to the shotgun at an elevation thereon such that the associated shotgun may be held in a shooting position with the user's eye in horizontal alignment with the sighting surface when his cheek rests against the cheek rest surface.

4,203,244
GUNSTOCK ELEVATOR ATTACHMENT
Jack L. Hickman, 1809 Plaza Way, Walla Walla, Wash. 99362
Filed Jul. 17, 1978, Ser. No. 925,101
Int. Cl.² F41C *23/00*
U.S. Cl. 42—73 **8 Claims**



1. A gunstock elevator attachment for a rifle or shotgun having a stock with a butt plate and a comb extending forwardly from the butt plate, said elevator attachment comprising:
a recoil plate;
a stock elevator member on the recoil plate extending forwardly therefrom;
said stock elevator having a concave comb receiving surface adapted to engage the comb of an associated shotgun or rifle; and
mounting means for adjustably securing the recoil plate to the butt plate of a shotgun or rifle with the stock elevator member overlying the comb of the shotgun or rifle.

4,203,245
FISHING LURE HOLDER
Jay B. Peterson, Rte. 3, Hudson, Wis. 54016
Filed Jun. 19, 1978, Ser. No. 916,562
Int. Cl.² A01K *97/06*
U.S. Cl. 43—25.2 **2 Claims**

1. Storage packet for fishing lures mounted on a fishing rod which comprises,
(a) a sheet of relatively thick flexible material adapted to resist penetration of a fishhook upon unforced contact,
(b) an elongated channel shaped clip having the exterior of one side wall affixed to one edge of the sheet with the channel opening outwardly away from the sheet, whereby the sheet may be first wrapped sidewise around a lure positioned against the exterior of the bottom wall of the clip and then engaged against the outside of the other side wall of the clip,
(c) the said other side wall of the clip and the side of the sheet engaging the lure both having strips of material mounted thereon adapted to adhere to each other to secure the sheet around the lure and against the clip, and
(d) the said strip on the sheet extending substantially along the entire width of the sheet perpendicular to the channel



to permit adherence of said strips at different places to secure lures of different sizes.

4,203,246
FISHING LURE SOUND PRODUCER
Max Sacharnoski, Sr., 112 Glenwood Dr., Paducah, Ky. 42001
Division of Ser. No. 260,334, Jun. 6, 1972, Pat. No. 3,988,851. This application Apr. 9, 1975, Ser. No. 566,404
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.31 **1 Claim**

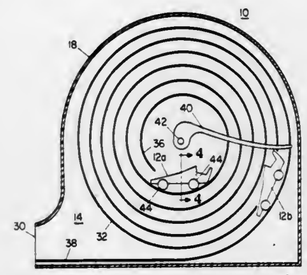


1. A noise making artificial fishing lure comprising:
an elongated worm-like body of soft flexible material;
a fish hook mounted to said body;
a glass capsule with opposite sealed ends mounted within said body having an inner wall defining a cavity; and,
a plurality of metal balls positioned in said cavity of said capsule, said balls being sized to rattle against said inner wall producing noise as said worm-like body and said capsule are moved.

4,203,247
TOY VEHICLE LAUNCHER AND TOY VEHICLE FOR USE THEREWITH
Walter Moe, Los Angeles; Lawrence A. Bernstein, Malibu, and David Heller, Los Angeles, all of Calif., assignors to Diker-Moe Associates, West Los Angeles, Calif.
Filed Jan. 30, 1978, Ser. No. 873,433
Int. Cl.² A63H *33/00*
U.S. Cl. 46—1 K **4 Claims**

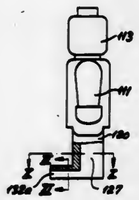
1. A toy comprising, in combination, a toy vehicle and a toy vehicle launcher, the toy vehicle launcher including:
first and second spaced, generally parallel sidewalls each having an inner surface and an outer surface,
a first spiral retainer member attached to the inner surface of the sidewall,

a second spiral retainer member attached to the inner surface of the second sidewall, the second spiral retainer member being opposed to the first spiral retainer member,
each of the spiral retainer members comprising a predetermined number of turns and having a first end near the center of the sidewalls of the toy vehicle launcher and a second end near the periphery of the toy vehicle launcher,
at least one of the sidewalls of the toy vehicle launcher having an aperture therein near its center through which the toy vehicle can be placed into contact with the first



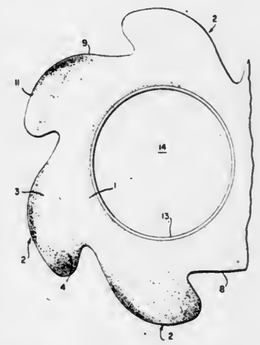
and second spiral retainer members near the first ends thereof,
a second aperture in the toy launch vehicle adjacent the second ends of the first and second spiral retainer members, and
drive means for driving the toy vehicle along the first and second spiral retainer members from the first ends thereof towards the second ends thereof,
the toy vehicle including means to engage the spiral retainer members of the toy vehicle launcher.

4,203,248
TOY FIGURE WITH CHANNELED LEG MEMBERS
Erik P. Tapdrup, Sorgenfri near Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland
Division of Ser. No. 935,761, Aug. 22, 1978. This application Oct. 27, 1978, Ser. No. 955,257
Claims priority, application Denmark, May 2, 1978, 1902/78
Int. Cl.² A63H *33/08*
U.S. Cl. 46—22 **2 Claims**



1. A toy figure, adapted to be detachably mounted on a base plate pertaining to a building set and having a plurality of coupling studs uniformly spaced apart in both longitudinal and transverse directions, so that two pairs of adjacent studs define a square in which the distance between the axes of adjacent studs is equal to the module m of the building set, said toy figure comprising a head, a body, a pair of arms, and a leg assembly comprising a connecting piece adapted to be mounted on the body and including a pair of sidewardly extending pivots, a pair of identical leg members mounted on said pivots, said leg members having substantially flat rear faces (calves) and foot parts having a plane bottom face (sole), wherein the improvements consist in the provision of recesses in the form of channels extending lengthwise of the flat rear face (calf) of the leg members and recesses in the bottom face (sole) of the foot parts, each of said recesses having a width substantially equal to the width of the coupling studs of the base plate and being disposed symmetrically with respect to an axis extending in the lengthwise direction of the leg member and foot part respectively, the distance between the said axes of symmetry, in the position of the leg members wherein the planes of their flat rear faces (calves) coincide, being equal to the module m of the building set.

4,203,249
FLYING SAUCER OR THROWING DISK USED IN SPORTS GAMES
Hans-Peter Böhm, Welfenstrasse 7, 75 Karlsruhe, Fed. Rep. of Germany
Filed Feb. 21, 1978, Ser. No. 879,757
Int. Cl.² A63H *27/00*
U.S. Cl. 46—74 D **19 Claims**



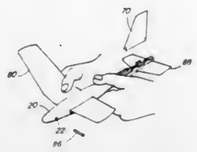
1. A throwing disk comprising:
(a) a substantially planar, central ring part having an aperture, an inner edge, and an outer circumference;
(b) a plurality of wings distributed about said outer circumference; each of said wings comprising:
(1) a substantially planar first wing section directly adjoining said outer circumference and being substantially co-planar with said central ring part;
(2) a second wing section with a free outer rim, said second wing section adjoining said first wing section and extending, with respect to said outer circumference, essentially in a peripheral direction and being bent with respect to said first wing section; and
(3) a further free rim adjoining the first wing section; wherein:
(i) said second wing section is bent in such manner that said bend is located along an edge of said first wing section which forms an angle of between 40°–50° with a chord of the outer circumference of said central ring portion, said cord originating at the ending point of the first wing section and terminating at the starting point of the first wing section with respect to said outer circumference of the central ring part and;
(ii) said further free rim of said first wing section is bent in a direction opposite to the bend of said second wing section such that when said central ring part is in a horizontal position, the bends of said free rim and said second wing section extend in respective upward and downward directions.

4,203,250

MOLDED MODEL AIRPLANE

Vito M. Garofalo, Chicago, Ill., assignor to The Hi-Flier Manufacturing Company, Decatur, Ill.

Filed Jan. 5, 1979, Ser. No. 1,173
Int. Cl.[2] A63H *27/00*
U.S. Cl. 46—79 8 Claims



1. A model airplane fuselage molded from plastic foam comprising:
a main body with a major axis and a top surface having a center line and a rear portion,
said body including a linear series of vertical projections rising from said rear top surface portion, in a nonoverlapping arrangement as viewed from the side of said fuselage,
said projections having vertical wall surfaces spaced from said center line, at least one of said vertical wall surfaces being on one side of said center line and at least another of said vertical wall surfaces being on the other side, to form a rudder slot to receive a rudder.

4,203,251

TOY BALL WITH GEAR-DRIVEN FIGURE

Jack H. Malek, Westbury, N.Y., and Herman M. Siegel, Stamford, Conn., assignors to CBS Inc., New York, N.Y.

Filed May 8, 1978, Ser. No. 904,041
Int. Cl.[2] A63H *15/00*
U.S. Cl. 46—107 8 Claims



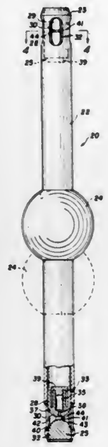
6. A toy comprising a rigid, hollow transparent ball, a figure within said ball, a first gear fixed to the inner periphery of said ball, said first gear being an annular gear having teeth on its inner periphery, a second gear meshed with said first gear and rotatable relative thereto, said second gear being within said first gear and being fixedly secured to said figure, means defining a bearing for said figure within said sphere, said bearing being generally diametrically opposite said first gear.

4,203,252

SOUND ADMITTING AERIAL TOY

Wilbert A. Howie, 602 Thetis Place, Richmond, British Columbia (V7C 2N3)

Filed May 24, 1978, Ser. No. 909,291
Int. Cl.[2] A63H *5/00*
U.S. Cl. 46—178 13 Claims



1. A toy comprising an elongate body dimensioned to be held in the hand,
means responsive to the passing of air to produce a sound, said means comprising a chamber having a restricted passageway opening outwardly from the toy, said means being positioned at each end of the elongate body whereby throwing the body through the air produces the sound, and
a weight at the center of balance of the body to facilitate cartwheeling of the body when the toy is thrown upwardly.

4,203,253

PROCESS FOR INCREASING OLEORESIN SYNTHESIS IN PINUS SPECIES

Karl E. Wolter, Evansville, Wis.; William J. Peters, Lake City, Fla.; Donald R. Roberts, Gainesville, Fla.; Robert D. McReynolds, Lake City, Fla.; Junior Broomfield, and Ernest R. Crews, both of Olustee, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 869,891, Jan. 16, 1978, abandoned. This application Jan. 16, 1979, Ser. No. 3,700
Int. Cl.[2] A01G *23/10;* A01N *5/00, 9/36*
U.S. Cl. 47—10 5 Claims

1. A method of chemically inducing the deposition of increased quantities of naval stores products within living pine trees by stimulating lightwood formation in large areas of said pine trees with an effective amount of a mixture of a bipyridilium salt and an ethylene releasing chemical; permitting the so-treated pine trees to grow for a time sufficient for lightwood development; harvesting the resulting pine trees; and extracting naval stores from the harvested tree.

4,203,254

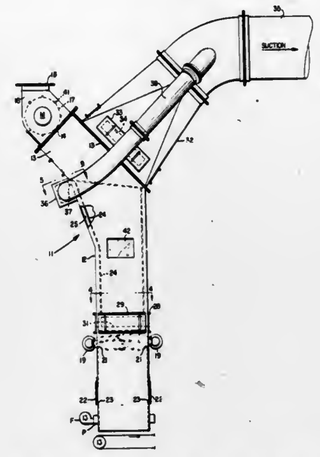
FLAME TREATMENT APPARATUS

James D. Downing, Scott, Miss., assignor to Delta and Pine Land Company, Scott, Miss.

Filed Nov. 6, 1978, Ser. No. 957,817
Int. Cl.[2] F26B *19/00*
U.S. Cl. 47—58 13 Claims

1. In flame treatment apparatus for delinting cottonseed

means providing a passage for traverse by a stream of seed to be delinted, means for controllably effecting substantial separation of incoming seed and distribution across the passage, means operatively connected to said passage for positively



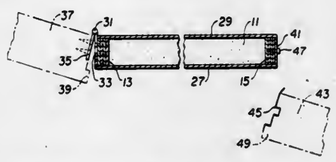
providing movement of air through said passage countercurrent to seed movement, and means providing a transverse curtain of flame across said passage whereby fibrous material on the seeds is ignited and at least partially burned off as the seeds travel through said passage.

4,203,255

FIRE-RESISTANT COMPOSITE WOOD STRUCTURE PARTICULARLY ADAPTED FOR USE IN FIRE DOORS

Edwin N. Naslund, and Ian MacDonald, both of Santa Rosa, Calif., assignors to Cal-Wood Door, Santa Rosa, Calif.

Continuation-in-part of Ser. No. 800,785, May 26, 1977, Pat. No. 4,104,828. This application Aug. 4, 1978, Ser. No. 931,259
Int. Cl.[2] E04B *1/94;* B27K *3/18*
U.S. Cl. 49—399 9 Claims



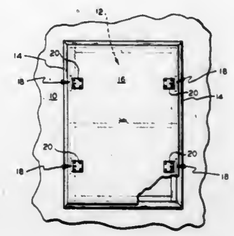
1. A fire-resistant wood based structural material comprising:
a first layer of material being formed from a slurry mixture of wood chips, ground bark and a fire-retardant chemical that is formed into a board by pressure and drying,
a second layer of material being formed from a slurry mixture of individual wood fibers and a fire-retardant chemical that is formed into a board by heat and pressure, said first and second material layers being firmly adhered to each other in their dry states, thereby forming a composite structural material,
a third layer of material of the same type and substantially the same thickness as said second layer, said third layer is firmly adhered to said second layer on a side opposite from that adhered to said first layer.

4,203,256

STORM WINDOW ASSEMBLY

Dale A. Mowry, 166 R. E. Maple St., Clyde, Ohio 43410

Continuation-in-part of Ser. No. 831,181, Sep. 7, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,699
Int. Cl.[2] E05C *21/02*
U.S. Cl. 49—465 6 Claims



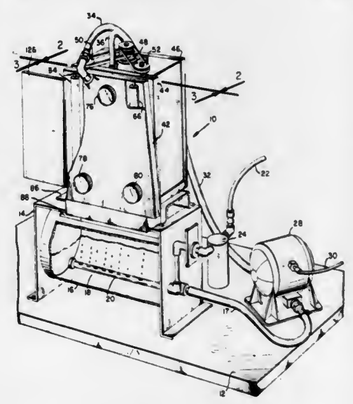
1. A storm window assembly for attachment to a window opening frame comprising:
a planar sheet of transparent material;
cooperating window opening frame engaging means including at least one arm having one end extending outwardly toward a marginal edge of said planar sheet and adapted to frictionally engage a planar portion of the window opening frame;
means for pivotally mounting the other end of said cooperating window opening frame engaging means to said planar sheet of transparent material including at least one upstanding mounting brace; and
means for imparting movement of the one end of the arm of said engaging means relative to the one surface of said planar sheet including a threaded shank extending through said planar sheet and the arm so as to cause the one end of the arm to frictionally engage a planar portion of the window opening frame.

4,203,257

PRINTED CIRCUIT BOARD HOLE CLEANER

John W. Jamison, Mission Viejo; William R. Welty, Fullerton, both of Calif., and Vincent A. Masciello, deceased, late of Rowland Heights, Calif. (by Doris E. Masciello, heir), assignors to Hughes Aircraft Company, Culver City, Calif.

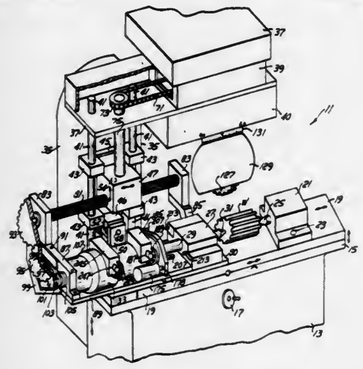
Continuation of Ser. No. 801,936, May 31, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,315
Int. Cl.[2] B24B *19/22*
U.S. Cl. 51—2 R 7 Claims



1. A machine for cleaning holes through a flat board, said machine comprising:

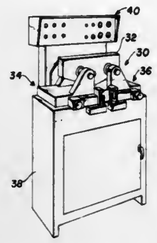
a first manifold having liquid slurry distribution channels therein;
a second manifold having liquid slurry distribution channels therein;
supply means connected to both said manifolds for supplying an abrasive carrying liquid slurry through said manifolds and to said liquid slurry distribution channels in both of said manifolds for delivery to a board facing said manifold for passage of the slurry through the holes in the board for the cleaning of the holes; and
outlet channels in each of said manifolds, said outlet channels of said second manifold facing said distribution channels of said first manifold and said outlet channels of said first manifold facing said distribution channels of said second manifold.

4,203,258
GEAR FINISHING MACHINE
Gerhard R. Held, 22644 Shiell Dr., Mt. Clemens, Mich. 48043
Filed Dec. 22, 1978, Ser. No. 972,207
Int. Cl.² B24B 5/00
U.S. Cl. 51—95 GH **25 Claims**



1. In a gear finishing machine having a base, a vertically adjustable table support, a horizontally reciprocal table having a head stock and tail stock to axially and rotatively support a workpiece gear to be finished, a pedestal on said base including a top plate overlying said table and mounting a motor-operated transmission, and a machine head depending from said transmission rotatably adjustable upon a vertical axis, and mounting a powerdrive abrasive honing or other type finishing gear rotatable upon a horizontal axis and connected to said transmission, said table support and head being relatively adjustable vertically to bring the workpiece teeth into operative engagement with the teeth of said finishing gear; the improvement comprising:
a first gear train connecting said transmission to said finishing gear for rotation thereof at a predetermined speed;
a drive spindle journalled through said head stock adapted for axial drive engagement with the workpiece gear to be finished;
and a second gear train connecting said transmission to said drive spindle for rotation at a second predetermined speed; said first gear train having an accumulated back lash therein; said second gear train having an accumulated back lash therein;
and a back lash compensator mounted on said table and connected to said gear train, for equalizing the accumulated backlash in the gear trains, and modifying the accumulated backlash in said second gear train.

4,203,259
APPARATUS FOR EDGING OPHTHALMIC LENSES
Fred Haddock, Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.
Filed May 17, 1978, Ser. No. 906,883
Int. Cl.² B24B 9/14
U.S. Cl. 51—97 NC **11 Claims**

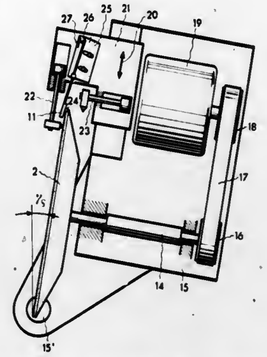


1. An apparatus for grinding an edge configuration upon at least one ophthalmic lens comprising:
abrading wheel means mounted for rotation about a first axis;
means connected to said abrading wheel means for rotating said abrading wheel means about said first axis;
means for rotatably mounting at least one lens to be edge ground about a second axis;
motor means for translating said second axis toward and away from said first axis for engaging a peripheral portion of said at least one lens with a peripheral portion of said abrading wheel means;
means for rotating said at least one lens about said second axis;
electronic machine means for determining radial dimensions of said at least one lens at predetermined angular positions about the periphery of said at least one lens for a selected lens shape; and
means operable in response to a signal from said electronic machine means for controlling the radial position of a peripheral portion of said at least one lens with respect to a peripheral portion of said abrading wheel at said predetermined angular position about the periphery of said at least one lens, said means for controlling the radial position of said at least one lens including,
motor means responsive to signals from said electronic machine means,
contact means mounted for reciprocation upon a base portion of said apparatus for grinding an edge configuration and being movable in response to said motor means responsive to signals from said electronic machine means;
switch contact means mounted upon said means for rotatably mounting said at least one lens and being positioned adjacent said contact means, and
means responsive to contact of said contact means with said switch contact means for controlling rotation of said at least one lens and the radial position thereof with respect to said abrading wheel.

4,203,260
APPARATUS FOR GRINDING CYLINDRICAL GEARS
Daniel A. Fivian, Horgen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland
Division of Ser. No. 828,500, Aug. 29, 1977, Pat. No. 4,142,333.
This application Apr. 10, 1978, Ser. No. 895,347
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641554
Int. Cl.² B23F 5/02
U.S. Cl. 51—123 G **5 Claims**

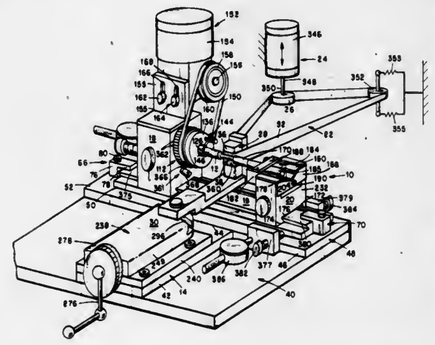
1. An apparatus for grinding gears by means of a generating method, comprising:
means for machining a right tooth flank and a left tooth flank

of a gear comprising a pair of grinding wheels, each having a substantially point-shaped contact zone disposed at a respective lateral edge of each grinding wheel, each grinding wheel being rotatable about a respective axis;
a respective grinding support upon which there is mounted an associated one of the grinding wheels; and



means for pivotably mounting each grinding support about a pivot axis, said pivot axis being arranged transversely of the rotational axis of the associated grinding wheel, said pivotable mounting means being positioned such that said pivot axis substantially intersects the point-shaped contact zone of the associated grinding wheel.

4,203,261
ABRASIVE BELT MACHINING APPARATUS
David L. Davies, Cuiaba, Brazil, assignor to Tasco, Inc., Oak Ridge, Tenn.
Filed Mar. 14, 1977, Ser. No. 777,470
Int. Cl.² B24B 21/02
U.S. Cl. 51—141 **17 Claims**



1. An abrasive belt apparatus adapted for machining a workpiece comprising: a frame, means mounted on said frame for positioning said workpiece along a predetermined axis; endless abrasive belt means disposed in a plane substantially aligned with the axis of the workpiece, means engaging said belt means for driving said abrasive belt means; contact means defining a precisely machined contoured face which engages a section of said abrasive belt means for guiding said belt means along a predetermined path, means mounted on said frame for supportably engaging said contact means, means for moving said contact means along an axis substantially perpendicular to said axis along which said workpiece is positioned, said means for moving said contact means including means for precisely controlling the position of said contact means whereby a preselected contour and finish is produced by movement of said contact means to bring said abrasive belt into contact with said workpiece said means for precisely moving said contact means serving to advance said contact means towards the axis of said workpiece, thereby imparting the contour of said contact means face into said workpiece as stock is removed from said workpiece such that the finished workpiece incorporates a surface having a preselected contour which is substantially identical to the contoured face of said contact means.

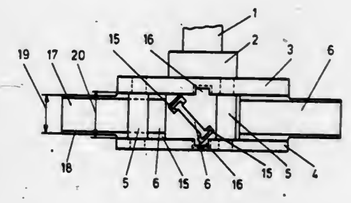
4,203,262
ABRASIVE DRILL
Bruce W. Dunnington, Wilmington, Del., and William B. Gernert, St. Davids, Pa., assignors to The Glennel Corporation, Chester Springs, Pa.
Continuation-in-part of Ser. No. 731,039, Oct. 8, 1976, abandoned. This application May 23, 1978, Ser. No. 908,704
The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.
Int. Cl.² B24D 17/00
U.S. Cl. 51—204 **12 Claims**



1. A cylindrical micro-drill having a diameter on the order of tenths of a millimeter to about a millimeter in extent, comprising a solid non-abrasive filamentary cored portion concentric with the longitudinal axis of the drill, and a surrounding solid contiguous portion disposed concentrically about the solid cored portion and comprising abrasive particles in a metallic matrix.

5. Method of forming a cylindrical drill of at most about one millimeter diameter, comprising providing a taut filamentary mandrel concentric with the intended longitudinal axis of the drill and being in lateral extent from about one-twentieth to one-third of the intended drill diameter, and depositing metallic matrix material containing abrasive particles entrained therein uniformly onto the filamentary mandrel to obtain a cylindrical drill body contiguous therewith and extending to the intended diameter.

4,203,263
SLINGING WHEEL FOR CENTRIFUGAL JET MACHINES
Jindrich Fiala, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Switzerland
Filed Oct. 31, 1978, Ser. No. 956,289
Claims priority, application Switzerland, Nov. 17, 1977, 14040/77
Int. Cl.² B24C 5/06
U.S. Cl. 51—434 **8 Claims**



1. A centrifugal blasting wheel comprising
first and second discs having uniformly distributed, radially extending grooves in inwardly facing surfaces thereof, said grooves and said discs defining a central cylindrical volume of predetermined diameter;

spacer means for maintaining said discs in substantially parallel relationship; and

a plurality of blades releasably mounted to and between said discs, each of said blades having

a disc-engaging end portion with rib means shaped and dimensioned for engaging said grooves, each said end portion having a length smaller than said predetermined diameter, and

a remaining portion with a maximum transverse dimension smaller than a minimum distance between said inwardly facing surfaces of said discs;

whereby each of said blades may be radially inserted between said discs from outside the periphery of said discs in an orientation rotated from its installed position until said end portion occupies said central volume, be rotated about its longitudinal axis and be extracted radially to engage selected ones of said grooves.

4,203,264

FIREPROOF BUILDING ELEMENT

Werner Kiefer; Dieter Krause, both of Mainz-Mombach; Herwig Scheidler, Finthen; Hans-Wilhelm Schulze, Main, and Klaus Kristen, Wiesbaden, all of Fed. Rep. of Germany, assignors to JENAer Glaswerk, Schott, Fed. Rep. of Germany

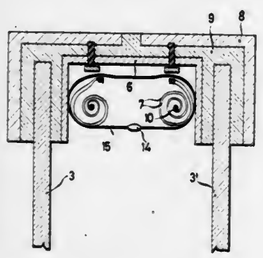
Continuation of Ser. No. 679,851, Apr. 23, 1976, abandoned.

This application Feb. 16, 1978, Ser. No. 878,530

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2519176

Int. Cl.² E04B *1/92*; E06B *9/02*

U.S. Cl. 52—1 **21 Claims**



1. Fire proof building element with a multi-sheet glazing unit of glass or glass ceramic characterized in that at least one of the glass sheets of the multi-sheet glazing unit is a fire resistant glass sheet consisting of a glass whose product of the thermal expansion unit α (20°–300° C.) and elasticity module E is between 1 and 5 (kg/cm^2.°C.), the distance between the sheets being between 2 mm and 150 mm, and characterized in that the building element contains one or more high heat reflective foils arranged between the sheets at a distance from the fire resistant glazing unit, the high heat reflective foil reflecting over 90% of the radiation, and also characterized in that the high heat reflective foil is put in a rolled up form or in a folded form between the two sheets of the building element such that the visible area is not covered and which can, in the event of a fire, be spread out completely between the glass sheets.

4,203,265

HUB AND STRUT SYSTEM FOR GEODESIC DOMES

Robert P. Ivers, and Mark J. Thimsen, both of Minnetonka, Minn., assignors to Geodesic Shelters, Inc., Minnetonka, Minn.

Filed May 12, 1978, Ser. No. 905,227

Int. Cl.² E04B *1/32*

U.S. Cl. 52—81 **8 Claims**

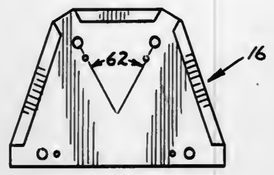
1. A hub and strut system for geodesic domes comprising:

(A) a generally flat polygonal hub plate, said plate having an inner and outer face,

(B) a plurality of spaced apart rabbets recessed into at least some of the polygonal edges of the plate in the outer face thereof, said rabbets corresponding in number to the triangular dome segments converging at the hub,

(C) a plurality of fastener-receiving apertures extending through the plate spaced inwardly from the edges thereof adjacent the ends of said recessed rabbets and along generally radial lines,

(D) a plurality of elongated struts converging upon said hub, said struts being of generally rectangular cross section and having inner and outer faces,



(E) a rabbet recessed into each of the opposite edges of at least said outer strut faces and extending the length of the strut,

(F) a hub-engaging surface at each end of said struts,

(G) a fastener-receiving aperture extending through each of said struts adjacent the ends thereof, and

(H) fastening means extending through the apertures in said hub and said struts to secure the same together.

4,203,266

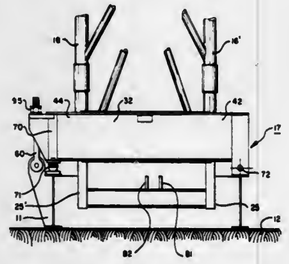
MAST LEVELING AND SUPPORT APPARATUS

Thomas R. Hollier, Vidor, and Robert E. Johnson, Beaumont, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 15, 1977, Ser. No. 860,668

Int. Cl.² E04H *12/34*

U.S. Cl. 52—116 **4 Claims**



1. An apparatus for aligning a mast assembly used with earth boreholes, comprising:

a skid unit;

a platform having first and second opposing end portions, the first said end portion being pivotally attached to said skid unit to pivot about an axis lying along one side of said skid unit and the second said end portion being movable with respect to said skid unit;

a hinged mast attached to said platform to pivot about an axis generally perpendicular to the pivotal axis of said platform and said skid unit and being adapted to be pivoted for raising to an erect position for use with respect to said platform;

means attached between said mast and said platform for raising said mast;

means for causing said platform to pivot with respect to said skid unit including an upwardly facing shoulder on an upper surface portion of said skid unit;

a downwardly facing shoulder on a lower surface portion of said platform substantially vertically positioned above said skid unit upwardly facing shoulder;

a jack screw mounted between said shoulders and operable to control the minimum distance between said shoulders and thereby effect pivoting of said platform relative to said skid unit; and

means, independent of said means for causing said platform to pivot, to rigidly secure said platform from pivotal motion relative to said skid unit including an upwardly facing surface portion on said platform having an opening therethrough and an upwardly facing shoulder around said openings;

a bolt mounted with said skid unit and extending upwardly through said opening; and

a nut threadedly mounted on the upper end portion of said bolt and engaged with said platform upwardly facing shoulder and thereby operable to limit pivoting movement of said platform away from said skid unit and secure said platform in place against said jack screw.

4,203,267

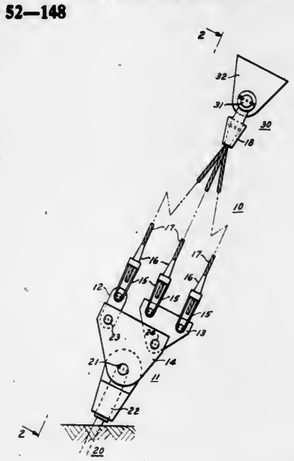
MULTIPLE STRAND TOWER GUY ASSEMBLY

Winfield S. Langhorst, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jul. 31, 1978, Ser. No. 929,612

Int. Cl.² E04H *12/20*

U.S. Cl. 52—148 **4 Claims**



1. A multiple strand guy assembly comprising:

(a) a plurality of wire strand lengths each length having a first end and a second end,

(b) a first anchor means,

(c) tension equalizer means connected to the first anchor means and to the first end of each of the plurality of wire strand lengths, and

(d) a second anchor means spaced from the first anchor means and including a single wire rope socket having the second end of each of the plurality of wire strand lengths anchored together in a socketing material selected from a group consisting of resin and zinc in the single wire rope socket.

4,203,268

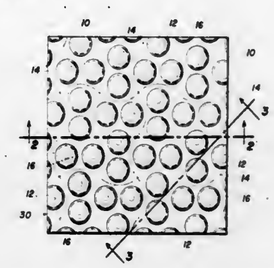
STRUCTURAL MEMBER AND COMPOSITE PANEL INCLUDING SAME

Robert S. Gladden, Jr., Severna Park; Richard J. Johnson; Michael J. Karmazyn, both of Baltimore, and Donald L. Tate, Severna Park, all of Md., assignors to Tate Architectural Products, Inc., Jessup, Md.

Filed Mar. 13, 1978, Ser. No. 885,991

Int. Cl.² E04C *2/32*

U.S. Cl. 52—630 **25 Claims**



1. A sheet of structural material having formed therefrom a plurality of similar dome-like projections extending from the plane of said sheet and of which at least a major portion of the configuration of each projection is circular in plan view, said projections in the plane of said sheet being arranged in a structurally strategic geometric pattern in which rows of equally-spaced pairs of in-line projections are interwoven perpendicularly with other such rows of pairs in a basket weave fashion so that the portion of a centerline of a row of pairs of projections that lies between two aligned pairs bisects the pairs thereof in transverse rows and has sufficient pattern density to block straight lines of clear vision repeatedly in all directions across said sheet to form a one-piece rigid structural member capable of resistance to flexure and the portions of said member which are intermediately between said projections comprising continuous structural ribbonlike stress sections of fluctuating width and arcuate in plan view capable of optimizing stress-resisting integrity.

4,203,269

PACKAGING APPARATUS

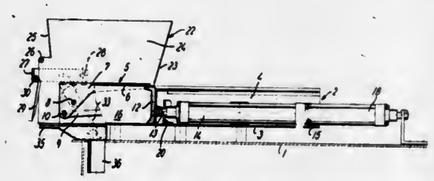
Gunnar C. Petersen, No. 14 Rødkildevanget, 5230 Odense, Denmark

Filed Jan. 18, 1979, Ser. No. 4,543

Claims priority, application Denmark, Jan. 27, 1978, 408/78

Int. Cl.² B65B *57/12*, *43/36*

U.S. Cl. 53—77 **7 Claims**



1. Apparatus for the batch-wise transfer of articles from an apportioning device to a receptacle, comprising a frame,

an elongate tray of U-shaped, upwardly open cross-section, means for reciprocating the tray longitudinally on the frame between a retracted position in which the front end of the tray is located opposite the mouth of an open receptacle, and an advanced position in which the tray has been inserted in the receptacle,

a closure flap pivotable on a transverse axis adjacent the front end of the tray between an operative position which it assumes when the tray is retracted and in which it closes

the front end of the tray, and an inoperative position in which it leaves said front end open,

a pusher connected to the tray and movable relative thereto in the longitudinal direction of the tray, which pusher, when retracted relative to the tray, forms the rear wall of an open-top compartment within the tray,

means for introducing a portion of articles into the compartment in the retracted position of the tray,

means for shaking the tray in the longitudinal direction thereof, and

a stationary abutment means adapted to cooperate with an upward extension of the closure flap for pivoting the flap from its operative position to its inoperative position during insertion of the tray into the receptacle.

4,203,270

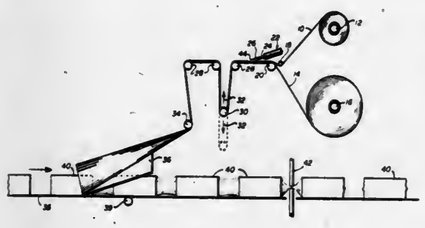
HIGH SPEED TEAR TAPE APPLICATOR FOR SHRINK WRAP FILM PACKAGING

Harold Forman, P.O. Box 363, Conshohocken, Pa. 19428

Filed May 19, 1978, Ser. No. 907,798

Int. Cl.² B32B *31/00*; B31F *5/00*; B31B *1/22*; B65B *61/18*

U.S. Cl. 53—133 **4 Claims**



1. Apparatus for forming an adjustable tear tape with tab opening means in a continuous shrink wrapper film application comprising:

(a) guide means for positioning an advancing wrapper film web;

(b) guide means for adjustably positioning an advancing continuous tear strip tape against the surface of said advancing film web;

(c) punch cutting means including a proximal longitudinally extending tubular shank and an integral distal nib as a cutting blade, said nib defining a portion of the exposed edges of said shank lying along a surface generally diagonal to the longitudinal axis of said shank, said punch cutting means being positioned at a pre-fixed distance and angle with respect to said film surface so that in operation, advancing film and tape are severed to form a generally arcuate tab at pre-fixed intervals on said film by penetration thereof by said nib;

(d) a support plate co-operating with said cutting means for receiving and positioning said film and tape thereon during punch cutting, said plate including an opening of sufficient size to allow passage therethrough of said punch cutter nib; and,

(e) tab roller means mounted to receive and adjustably prefix the position of said advancing tab-cut film and tape with reference to an article to be wrapped so that said tab's position on said package may be controlled.

4,203,271

INDEXING APPARATUS FOR CASE PACKER

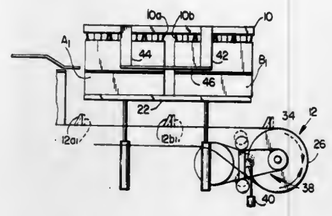
John L. Raudat, Madison, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Filed Nov. 24, 1978, Ser. No. 963,368

Int. Cl.² B65B *43/48*

U.S. Cl. 53—250 **4 Claims**

4. In a cyclically operable case packer for packing cases with slugs of articles, the combination comprising means for simultaneously raising at least one case for loading at a packing station where the articles are adapted to be dropped into the case, case infeed means including an intermittently driven endless chain conveyor means having pushers for indexing cases cyclically along its upper run so that at least one case at a time can be raised at said packing station, said conveyor means including sprocket means at opposite ends of said endless chain conveyor, one of said sprocket means at the downstream end thereof being driven, drive means for said one sprocket means and including a drive chain and idler sprocket means engageable with said drive chain to hold it in a normal drive orientation, and means for selectively shifting said idler sprocket means to shift the drive chain between its normal drive orientation to a second position to backup said drive sprocket means and hence the pushers on said intermittently driven endless chain conveyor.



4,203,272

MECHANISM FOR CLOSING EGG CONTAINERS

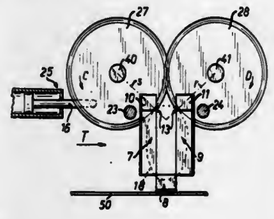
Aimé Minéry, Hesingue, France, assignor to Toni Casutt, Zollikon, Switzerland

Filed Mar. 8, 1979, Ser. No. 18,798

Claims priority, application Switzerland, Mar. 9, 1978, 2559/78

Int. Cl.² B65B *7/20*

U.S. Cl. 53—374 **8 Claims**



8. A machine for mechanically closing egg containers comprising:

means for conveying said egg containers, when the container is folded into U-shape with a middle corrugation strip at the bottom of the U, in a direction of transport perpendicular to the length of said strips and of said containers;

a pair of bending tools (23, 24) for bending or folding said sheet material, said tools being respectively movably parallel to the length of said strips; and

means (25, 27, 28) for driving said tools in a direction intersecting the location of the upstanding terminal strips of said container prefolded in said U-shape, when the container is on said conveyor at a location which is intermediate of the rest position of said tools, so as to cause said tools by moving towards each other to fold said terminal strips of the container towards and against each other and thereafter to cause said tools to move out of the path of transport of said containers in order to allow another of said containers to be conveyed to said location.

4,203,273

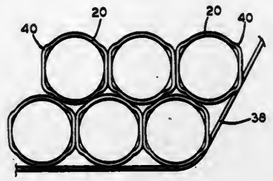
TUBING WITH FORMED ENDS FOR HEAT EXCHANGERS

David A. Edgecombe, Alliance, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 794,449, May 6, 1977, abandoned. This application Mar. 17, 1978, Ser. No. 887,581

Int. Cl.² B65B *13/00, 27/10*

U.S. Cl. 53—399 **2 Claims**



1. A method of preparing a group of straight length round tubes of equal outside diameter for shipment after being strapped in a bundle, comprising, arranging the tubes parallel to each other in a compact and contacting array and producing triangular-like spaces having curved sides between the tubes, strapping the tubes in a bundle for shipment, and then forming on one end of each tube a projection in one of the spaces between the tubes, produced by cold forging dimples in the tube ends, thus deforming the tube ends, and maintaining for the bundle so formed the same cross-sectional area as a bundle of an equal number of tubes without end projections.

4,203,274

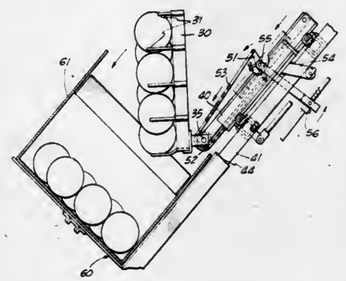
APPARATUS FOR PACKING ARTICLES OF FRUIT INTO BOXES

Aaron J. Warkentin, Orange Cove, and Jacob Hiebert, Reedley, both of Calif., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 8, 1977, Ser. No. 858,821

Int. Cl.² B65B *35/30*

U.S. Cl. 53—537 **17 Claims**



1. An apparatus for packing articles of fruit in a predetermined pattern into containers which comprises: a transfer rack adapted to receive articles of fruit from a feed means, a movable carriage on which the transfer rack is pivotally mounted; and an assembly for pivoting said transfer rack to deposit the fruit in a container, said assembly having a first rotational member pivotally mounted to said carriage, a second rotational member fixedly connected to said transfer rack where said rack is pivotally mounted to said carriage, means for causing said first rotational member to rotate when said carriage and transfer rack reach a predetermined position, and means for transmitting the rotation of said first rotational member to said second rotational member for causing said transfer rack to tilt to deposit the articles of fruit in the container.

4,203,275

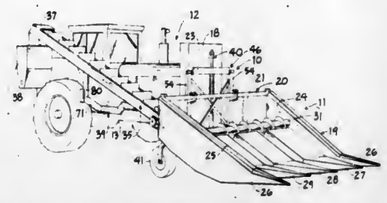
TRACTOR MOUNTED HARVESTER UNIT

Gary J. Vermeer, Box 200, Pella, Iowa 50219

Filed Aug. 4, 1978, Ser. No. 931,192

Int. Cl.² A01D *45/02*

U.S. Cl. 56—15.8 **3 Claims**



1. A tractor mounted corn harvester unit mountable on a tractor vehicle and having a rear portion, opposite side frame members, and ground engaging wheel means, said harvester unit including means for mounting said unit on said tractor, said mounting means comprising:

(a) means for mounting said unit on the tractor including means for pivotally connecting the opposite side frame members of said harvester unit to said tractor vehicle,

(b) a support member rigidly mounted on the lower front portion of said tractor vehicle, and

(c) an upright hydraulic power means connected between said support member and the upper rear portion of said harvester unit for vertically raising and lowering said unit between a raised position therefor wherein said ground engaging wheel means provide substantially no support for said harvester unit, and a lowered position therefor wherein said wheel means provide at least partial support for said harvester unit, said power means having:

(1) a hydraulic cylinder having a closed end secured to one of said support member or said harvester unit, and a piston rod; and

(2) spring means mounted about said piston rod for engagement with the other of said support member or said harvester unit to provide a resilient support for said harvester unit at all moved positions therefor.

4,203,276

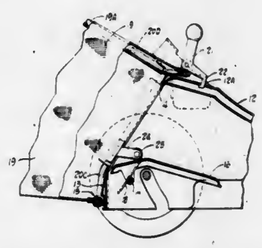
LAWN MOWER AND GRASS CATCHER

Gerhard R. Plamper, Valley City, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Aug. 7, 1978, Ser. No. 931,768

Int. Cl.² A01D *35/22*

U.S. Cl. 56—202 **11 Claims**



1. In a lawn mower having grass cutting means, a housing for the grass cutting means, the housing having a wall and a discharge port in said wall through which cut grass is discharged outwardly of the housing, the combination of a movable closure carried by the housing for blocking said discharge opening when in closed position and for opening said discharge port when in opened position, said closure being hingedly connected to the housing adjacent to lower edge portion of the closure and being biased to swing upwardly and rearwardly to

a generally upright position to close said discharge port and to swing downwardly and forwardly into said housing upon overcoming of the said bias, a collector for collecting cut grass discharged through said discharge port upon being mounted upon the said housing adjacent the said discharge port to receive cut grass blown by the cutting means through the discharge port when the discharge port is open, and an operating arm carried by the collector and extending forwardly therefrom to protrude into said discharge port upon the mounting of the collector on the said housing and to press against the said closure to cause the closure to swing in opposition to said bias downwardly and forwardly into the housing for opening said discharge port.

4,203,277

FORKLESS HAYMAKING MACHINE

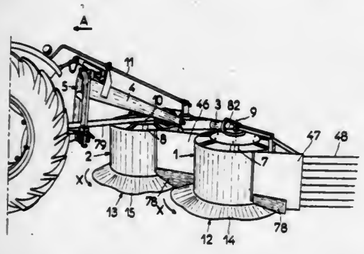
Pierre Kaetzel, Saverne, France, assignor to Samibem, S.A., Marmoutier, France

Filed Oct. 10, 1978, Ser. No. 950,300

Claims priority, application France, Oct. 7, 1977, 77 30787; Jun. 23, 1978, 78 20085; Jul. 27, 1978, 78 22906

Int. Cl.² A01D *81/00*

U.S. Cl. 56—377 **97 Claims**



1. A haymaking machine for the windrowing of fodder or the turning of windrows or for tedding, comprising at least one drum rotating about a substantially vertical or inclined axis, said drum (1, 2) carrying at its base a thin flexible and deformable skirt (12, 13) which plunges beneath the fodder to be displaced while closely following the variations of level of the ground, and which transports the said fodder over its upper face.

4,203,278

ALARM ELECTRONIC TIMEPIECE

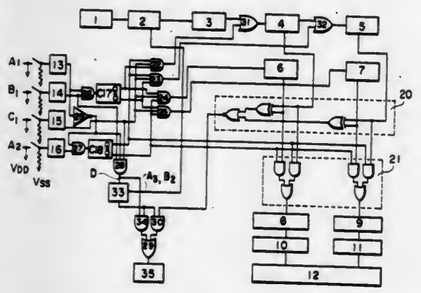
Kenichi Kondo, and Shojiro Komaki, Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Nov. 15, 1977, Ser. No. 851,787

Claims priority, application Japan, Nov. 15, 1976, 51-137162

Int. Cl.² G04B *23/10*

U.S. Cl. 368—73 **5 Claims**



1. An alarm electronic timepiece, comprising: an oscillator circuit for developing a time standard signal; a dividing circuit for dividing the time standard signal and for developing a plurality of divided output signals; a time counting circuit for counting one of the divided output signals and for developing a count representative of present time; a memory circuit for storing a signal representative of an alarm time; a coincidence detecting circuit for detecting coincidence between present time represented by the count developed by said time counting circuit and the signal stored in said memory circuit and representative of the alarm time and for developing an output coincidence signal; a display for displaying present time represented by the count developed by said counting circuit and for displaying alarm time represented by the signal stored in said memory circuit; alarm means responsive to a divided signal developed by said dividing circuit for generating an alarm sound in response thereto; and alarm operating means operable at will and automatically operative in response to the coincidence signal developed by said coincidence detecting circuit for applying one of the divided signals to said alarm means for generating an alarm sound, said alarm operating means includes a plurality of external switches manually operable by a user of the timepiece for selecting among the divided signals by simultaneous operation of at least a pair of said external switches to set the alarm sound generated by said alarm means according to the divided signal selected.

4,203,279

TIMEPIECE WHICH PERMITS FREELY ADJUSTING THE LEVEL OF SOUNDS PRODUCED THEREIN AND GIVEN OUT THEREOF

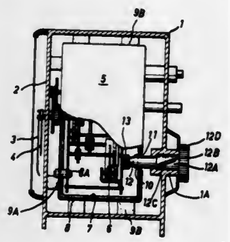
Minoru Kamiya, 46-3, 2-chome, Minami Otsuka, Toshima-ku, Tokyo, Japan

Filed Mar. 15, 1978, Ser. No. 886,932

Claims priority, application Japan, Oct. 31, 1977, 52/130646

Int. Cl.² G04B *37/00, 23/10*

U.S. Cl. 368—243 **9 Claims**



1. In a timepiece equipped with a mechanical unit including sound producing means for producing a time-ticking sound, such as an escapement having isochronism,

the improvement comprising,

an outer casing;

a sound proof inner casing within said outer casing, said inner casing containing said mechanical unit; buffer means supporting said inner casing in spaced relation to said outer casing, said buffer means accoustically isolating said inner casing from said outer casing;

sound level adjusting means for conveying sound produced by the mechanical unit from said inner casing, said sound level adjusting means including means for freely adjusting the level of the sound conveyed from said inner casing in a range from a condition of essentially silence to a predetermined level; and

means for enlarging the sound conveyed from the inner casing.

4,203,280

TOUCH SENSITIVE DEVICE FOR A TIMEPIECE

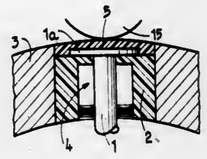
Jacques Ziegler, Bienne; Ali Schneiter, Neuchatel, and Remy Grandjean, Fontainemelon, all of Switzerland, assignors to Ebauches, S.A., Switzerland

Filed Nov. 21, 1978, Ser. No. 962,780

Claims priority, application Switzerland, Nov. 22, 1977, 14371/77

Int. Cl.² G04B *37/00*; G08C *1/00*

U.S. Cl. 368—187 **6 Claims**



1. A touch sensitive device for controlling at least one function of an electronic timepiece, the timepiece including a casing, the device comprising:

an element of the timepiece casing, the element having an opening therethrough from the outside to the inside of the timepiece;

mounting member means formed of electrically insulating material and traversing the opening in the casing element for providing a passageway therein electrically insulated from the casing element;

a stem formed of electrically conductive material traversing the passageway in the mounting member means and being fixed in a position therein, the stem including a head on an end of the stem with a surface adjacent an outside surface of the timepiece to form one electrode of a condenser;

a thin layer of an electrically insulating material covering the outside surface of the stem head to form a dielectric of the condenser;

conductive layer means fixed on a side of the dielectric opposite the outside surface of the one electrode and spaced from the casing element for forming a second electrode of the condenser such that the capacity of the condenser is independent of the area of the stem head covered by a contact to control a function of the timepiece.

4,203,281

ASSEMBLY COMPRISING A TIMEPIECE PALLET ANCHOR AND ITS FRAME

Pierre Béguin, Rochefort, Switzerland, assignor to Portescap, La Chaux-de-Fonds, Switzerland

Filed Apr. 20, 1978, Ser. No. 898,522

Claims priority, application Switzerland, Apr. 21, 1977, 4940/77

Int. Cl.² G04B *15/00*

U.S. Cl. 368—124 **5 Claims**



1. An assembly comprising an escapement timepiece pallet anchor and a frame, said pallet anchor being in the form of one piece of plastic material having a body and three arms extending from said body and being rotatably housed in said frame for rotation about an axis, the assembly further comprising means for limiting the angle of rotation of said pallet anchor relative to said frame, said means comprising two appendices to said pallet anchor situated in at least one space overlying the space occupied by said pallet anchor body, each of said appendices having at least one wall parallel to said axis, said means further comprising at least one fixed part integral with the frame disposed to cooperate with said appendices.

4,203,282

ELECTRIC PENDULUM CLOCK WITH TORSION SPRING

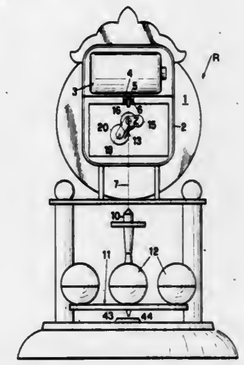
Bruno Radzun, Steibewies 7, 7022 Gottmadingen, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 926,202

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732667

Int. Cl.² G04B *17/10*

U.S. Cl. 368—180 **24 Claims**



1. In an electrical pendulum clock having a clock movement with a driven shaft and a dummy pendulum driven from the shaft independently of the time keeping function of the clock, the pendulum having a torsion spring with an axis of twist and a pendulum body suspended from the torsion spring, the torsion spring having a projection means adapted for being driven from the shaft of the clock movement and for undergoing pendulous travel with the pendulum body, the improvement comprising drive means driven by the clock movement for twisting the torsion spring including a first toothed element driven in rotation by the shaft of the clock movement, a turnable element loosely suspended for pendulum movement, a second toothed element loosely supported on said turnable element and in mesh with the first toothed element, said second toothed element being positioned in the path of movement of the projection means for being locked with the turnable element thereby, and then to undergo angular movement with the first toothed element to impart the pendulous movement to the pendulum body via the projection means and the torsion spring.

4,203,283

COMBUSTION CHAMBER, ESPECIALLY ANNULAR REVERSE-FLOW COMBUSTION CHAMBER FOR GAS TURBINE ENGINES

Wolfgang Weller, Dachau, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,464

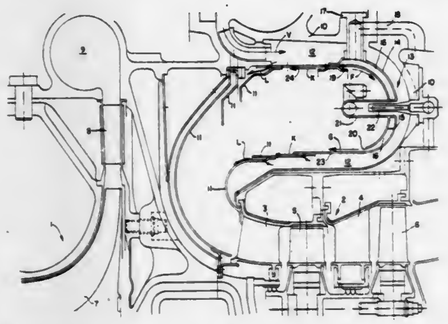
Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723546

Int. Cl.² F02C *7/00, 7/12*

U.S. Cl. 60—39.36 **5 Claims**

1. An annular reverse-flow combustion chamber for gas

turbine engines provided with at least one heat exchanger and a compressor, an annular chamber formed between an outer casing of the combustion chamber and a flame tube, the annular chamber is supplied with preheated air from the heat exchanger with the preheated air being directed to the flame tube for combustion, cooling or other purposes, characterized in that the flame tube includes a flame tube head arranged in a primary combustion zone area of the combustion chamber, the flame tube head includes, as viewed in a direction of flow of the preheated air, a forward wall section and a rearward wall section spaced from each other so as to define therebetween a further annular chamber, means are provided for communicating said further annular chamber to an air bleed line at a discharge end of the compressor such that air is taken directly



from the compressor and supplied to the further annular chamber including radially extending air ducting members projecting through said first-mentioned annular chamber, at least one vaporizer pipe member is disposed at the flame tube head, at least one of the forward wall section or the rearward wall section is welded to the vaporizer pipe member, means are provided at said flame tube for forming a cooling film along at least portions of an inner wall of the flame tube including at least one means for communicating a downstream end of said further annular chamber with the interior of the flame tube, said air ducting members are formed in locating bolts for locating the combustion chamber relative to a casing of the engine, and the locating bolts are arranged on the forward wall section of the flame tube head.

4,203,284

COMBUSTION CHAMBER FOR A RAMJET AND BOOSTER ROCKET

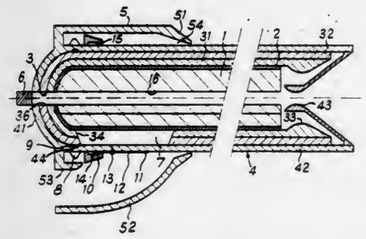
Bernard Luscan, Merignac, and Michel Reichard, Pessac, both of France, assignors to Societe Europeenne de Propulsion, Puteaux, France

Filed Sep. 6, 1978, Ser. No. 940,146

Claims priority, application France, Sep. 7, 1977, 77 27097; Mar. 28, 1978, 78 08958

Int. Cl.[2] F02K *9/04*

U.S. Cl. 60—245 **14 Claims**



1. In a so-called ramjet and booster rocket, a combustion chamber presenting a first speed of propulsion of the rocket type, called launching speed, obtained by the reaction of a fuel and a supporter of combustion disposed in the combustion chamber, and a second speed of propulsion, called cruising speed, for which the supporter of combustion is constituted by atmospheric air, said combustion chamber comprising an inner envelope provided with upstream lateral ports for the inlet of air and a downstream nozzle for ejecting the combustion gases, to allow functioning of the rocket at cruising speed; an outer envelope, concentric to the inner envelope and closed, with the exclusion of a single rear port for the ejection of the gases, to allow functioning of the rocket at launching speed, and separating means for separating from the combustion chamber at least a part of the outer envelope, at the end of the launching phase, in order to ensure the clearance of the upstream lateral ports of the inner envelope.

4,203,285

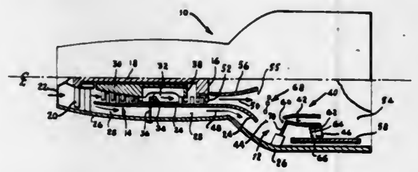
PARTIAL SWIRL AUGMENTOR FOR A TURBOFAN ENGINE

Kurt J. Hanloser, North Palm Beach; Raymond J. Bruchez, Lake Park, and James T. Gill, Jr., North Palm Beach, all of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 6, 1978, Ser. No. 875,664

Int. Cl.[2] F02K *3/10*

U.S. Cl. 60—261 **5 Claims**



1. In a turbofan engine having a casing enveloping a compressor, combustor and turbine in axial flow relationship, the improvement therein being in the form of a partial swirl augmentor for providing an additional thrust to said turbofan engine positioned downstream of said turbine, said partial swirl augmentor consisting of a combustion chamber, an inner fairing and an outer fairing, an annular duct formed between said inner fairing and said outer fairing for directing swirling hot gases emanating from said turbine into said combustion chamber, cooler gases being directed between said outer fairing and said casing into said combustion chamber for mixing with said swirling hot gases, means located within said combustion chamber for injecting fuel into said combustion chamber in a preselected manner, a flameholder system, said flameholder system consisting of a vee-gutter pilot and a plurality of radial vee-gutters attached to said pilot, said pilot being located directly adjacent the outer edge of said swirling hot gases and situated substantially in line with said outer fairing and substantially radially disposed from the central longitudinal axis of said duct, said vee-gutters penetrating into said cooler gas and a spark ignition system located adjacent said vee-gutter pilot.

4,203,286

COOLING APPARATUS FOR AN EXHAUST NOZZLE OF A GAS TURBINE ENGINE

Robert E. Warburton, Lake Park, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 718,271, Aug. 27, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 956,305

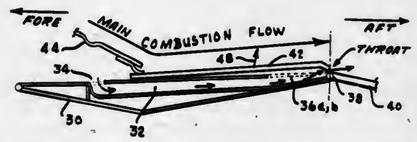
Int. Cl.[2] F02K *1/12*

U.S. Cl. 60—266 **7 Claims**

1. In a jet engine exhaust nozzle, a cooling apparatus comprising in combination:

a. a plurality of flap strings moveable attached to said exhaust nozzle,

a plurality of seal strings moveable attached to said exhaust nozzle, said plurality of seal strings slideably engaging and covering said plurality of flap strings, each seal string being alternately positioned between and on a flap string of said plurality of flap strings, said plurality of flap strings and seal strings being circumferentially disposed about the aft end of said exhaust nozzle to form a controllable convergent/divergent exhaust nozzle, each of said plurality of flap strings in the convergent portion of said convergent-/divergent exhaust nozzle having a cooling passage therein, said cooling passage having an inlet opening and a pair of outlet openings, said inlet opening being in the forward portion of said convergent portion and said pair



of outlet openings being in the aft portion of said convergent portion, and,

means for controlling said plurality of seal and flap strings, said control means respectively converging and diverging said plurality of seal and flap strings to close said exhaust nozzle to a minimum jet area and to open said exhaust nozzle to a maximum jet area, said plurality of seal strings closing said outlet openings when said exhaust nozzle is closed to minimum jet area, said plurality of seal strings uncovering fully said outlet openings when said exhaust nozzle is opened to maximum jet area, said inlet opening receiving a cooling medium, said cooling medium flowing through said cooling passageway to said outlet openings, said cooling medium flowing out of said outlet openings in proportion to the opening size thereof.

4,203,287

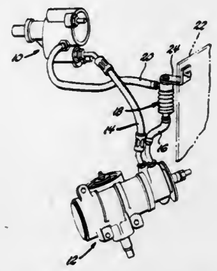
POWER STEERING HYDRAULIC SYSTEM WITH A LOW PRESSURE EXPANSIBLE RESERVOIR

Jack L. Bennett, Reese, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 9, 1979, Ser. No. 19,119

Int. Cl.[2] F15B *21/04*

U.S. Cl. 60—329 **1 Claim**



1. An improvement in power steering systems having a hydraulic pump and a steering apparatus with a high pressure hose for delivering fluid from the pump to the steering apparatus and a low pressure return line for directing fluid from the steering apparatus to the pump, said improvement comprising: an expansible chamber in the low pressure return line which changes in storage capacity in response to changes in the volume of fluid in the system occurring as a result of temperature changes whereby said power steering system can be sealed from the atmosphere, said expansible chamber having a fluid outlet; and aspirator means disposed within said expansible chamber adjacent said fluid outlet.

4,203,288

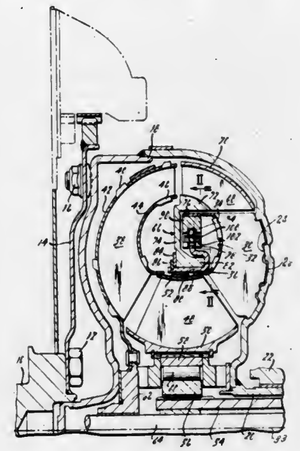
HYDROKINETIC TORQUE CONVERTER MECHANISM WITH COMPOUND IMPELLER

Robert W. Nichols, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1978, Ser. No. 966,974

Int. Cl.[2] F16D *33/00*

U.S. Cl. 60—345 **12 Claims**



1. A hydrokinetic torque converter for use in an automotive vehicle driveline having an engine and a torque delivery gear system, said converter comprising an impeller, a turbine and a stator arranged in toroidal fluid flow relationship in a torus circuit, said impeller being connected to said engine, said turbine being connected to a torque input element of said gear system, said impeller comprising a main impeller section and an auxiliary impeller section, each section having flow directing blades, the auxiliary section being located radially outward with respect to the main impeller section, and centrifugally operated clutch means for connecting drivably the auxiliary impeller section with the main impeller section, said clutch means comprising a first clutch element carried by said main impeller section, a second radially movable clutch element having formed thereon a friction surface and an annular internal clutch surface carried by said auxiliary blade section in proximity to the friction surface of said second clutch element, means for urging said second clutch element in a radially inward direction thus tending to disengage the clutch means, said second clutch element being moved radially outwardly at speeds greater than a predetermined value to effect friction engagement of said friction surface with said clutch surface.

4,203,289

HYDRODYNAMIC CONTROL COUPLING

Horst Muschelknautz, Crailsheim, Fed. Rep. of Germany, assignor to Voith Turbo GmbH & Co., KG, Crailsheim, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,037

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748386

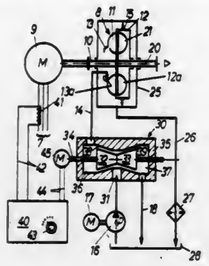
Int. Cl.[2] F16D *33/06*

U.S. Cl. 60—358 **14 Claims**

1. A hydrodynamic coupling, comprising:

a primary bladed wheel; a secondary bladed wheel, which together with said primary wheel defines a toroidal work-

ing chamber; a draining device for draining working fluid from said working chamber;
a filling pump for supplying working fluid to said working chamber;
a valve between said filling pump and said working chamber for varying the filling flow to said working chamber; said valve being a flow divider type valve, and comprising:
two interconnected valve means, each comprising a valve chamber with a valve seat defined in it and a valve element relatively movable in said valve chamber between a position on and off its respective said valve seat;



both said valve means being arranged and connected such that, as one said valve element shifts off its respective said valve seat for allowing greater flow through its said valve chamber, the other said valve element shifts toward its respective said valve seat for reducing the flow through its said valve chamber; in each said valve means, at least one of said valve element and said valve seat tapers narrower in shape; one said valve means chamber having an outlet communicating with said working chamber and the other said valve means chamber having an outlet communicating elsewhere than with said working chamber.

4,203,290

STEERING VALVE FOR HYDROSTATIC DRIVE

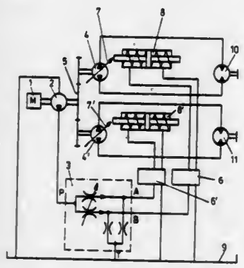
Dieter Burckardt, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,109

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752226

Int. Cl.² F15B *13/06, 13/09*

U.S. Cl. 60—420 **5 Claims**



1. A steering valve assembly (3) for a vehicle having a steering-by-driving system, including flow divider valve means (15) through which flow is divided under control of a manually operated actuating mechanism (21-23) to operate adjusting devices (7, 7') for pumps (4, 4') supplying fluid to fluid motors (10 and 11), said flow divider valve means including a central portion connected to the actuating mechanism and throttling passage means (16, 17) for dividing inflow into two divided flow streams, a pair of conduits (13, 14) conducting said divided flow streams to the pump adjusting devices, and means connected to said conduits for maintaining a constant ratio between the flow rates of said divided flow streams, including variable flow restricting passages (33, 34) connected to the conduits downstream of the throttling passage means, and secondary throttling means (37, 38) interconnecting the conduits for regulating pressure therein.

4,203,291

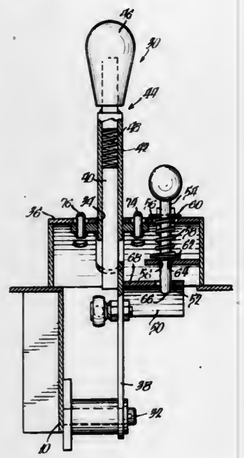
CONTROL MECHANISM FOR HYDROSTATIC PUMP

Stephen A. Youngers, Clearwater, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 29, 1979, Ser. No. 25,019

Int. Cl.² F15B *11/16*

U.S. Cl. 60—433 **14 Claims**



1. In a vehicle having a reversible pump supplying hydraulic fluid to at least two motors controlling separate functions with selector means between said motors and said pump for selecting one function, said pump having a control arm movable in opposite directions from a neutral position, a control unit including a control lever pivoted on a fixed axis on said vehicle and having said arm connected thereto, releasable interlock means between said control lever and said vehicle defining a neutral position for said arm, a control console adjacent said control lever, said control console and control lever having a first position defining means defining a plurality of positions on one side of said neutral position for operating one selected motor at a plurality of levels of operation and second position defining means on an opposite side of said neutral position for operating the other selected motor at a plurality of levels of operation.

4,203,292

HYDRAULIC AUXILIARY POWER STEERING WITH ENERGY SUPPLY ARRANGEMENT

Horst Deininger, Bettringen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,130

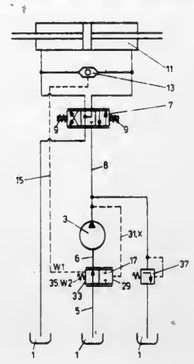
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742621

Int. Cl.² F16H *39/46*

U.S. Cl. 60—445 **10 Claims**

1. In a power steering system having a fluid supply which includes an intake duct (5, 6) connected to a high pressure pump (3, 3*a*) supplying operating fluid limited to a maximum discharge pressure by a pressure limiting valve (37, 37') and a control valve (7) displaceable from a flow-blocking position by an actuating mechanism to operate a servomotor (11) having operating pressure chambers, the improvement residing in

regulator means (17, 17', 17*a*) connected to the intake duct for controlling the discharge pressure of the high pressure pump as a function of one influence (x) balanced by the sum of two command variables (W1, W2), and signal means for establish-



ing a higher one of said variables (W1) normally corresponding to the operating pressure prevailing one of the pressure chambers of the servomotor, the other of said variables (W2) corresponding to a relatively lower adjustable idling bias.

4,203,293

CONTROLS FOR COMBINED HYDROSTATIC AND MULTIPLE SPEED RANGE TRANSMISSION UNITS WITH AUTOMATIC SPEED CONTROL AND BRAKING FUNCTIONS

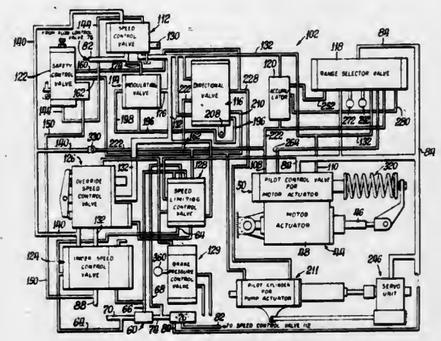
Thomas J. Bubula, Joliet; Maurice F. Franz, East Peoria; Gordon W. Johnson, Peoria, and James D. Rinaldo, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 609,637, Sep. 2, 1975, Pat. No. 4,080,850.

This application Oct. 25, 1977, Ser. No. 844,662

Int. Cl.² F16H *39/10*

U.S. Cl. 60—490 **8 Claims**



1. A control assembly for regulating operation of a hydrostatic transmission including a hydraulic pump having infinitely variable displacement and a hydraulic motor also having infinitely variable displacement, the hydrostatic transmission providing a coupling between a prime mover and a primary output shaft within a drive train, the control assembly comprising
a manually operable control means producing a modulated signal representative of a desired rate of operation for the drive train, and
a directional selector means operatively coupling the manually operable control means with both of the hydraulic pump and hydraulic motor within the hydrostatic transmission, the directional selector means including
means for selectively establishing the direction of travel for the primary output shaft through operation of the hydrostatic transmission in both forward and reverse modes,
means to sequence displacement variation of the hydraulic pump and hydraulic motor, and
means to selectively establish a deceleration rate toward an intervening neutral condition when the hydrostatic transmission is shifted between forward and reverse operating modes in order to permit such shifts from forward to reverse and from reverse to forward without necessarily resetting the manually operable control means.

4,203,294

SYSTEM FOR THE CONVERSION OF SEA WAVE ENERGY

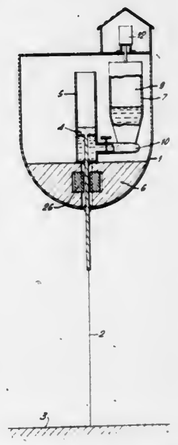
Kjell Budal, Planetvegen 33 B, and Johannes Falnes, Planetvegen 52, both of 7000 Trondheim, Norway

Filed Mar. 16, 1978, Ser. No. 887,128

Claims priority, application Norway, Mar. 22, 1977, 771013

Int. Cl.² F03B *13/12*

U.S. Cl. 60—497 **6 Claims**



1. Apparatus for conversion of sea wave energy comprising a water displacing member which is adapted to be at least partially submerged in the sea, means for mechanically connecting said water displacing member to a fixed reference point, said connection means between said member and said reference point includes a locking mechanism adapted to hold said water displacing member at least approximately stationary relative to said reference point during selected time periods of each cycle of such waves to which the apparatus is subjected.

4,203,295

SPACE REVERSIBLE DIFFERENTIAL TEMPERATURE ENGINE

Israel Siegel, 351 W. 71 St., New York, N.Y. 10023

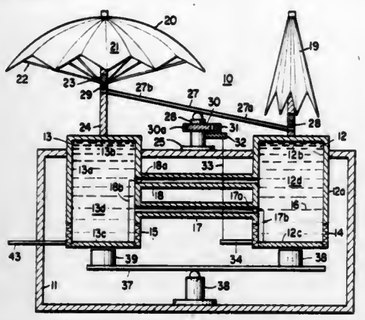
Filed Sep. 23, 1977, Ser. No. 835,984

Int. Cl.² F03G *7/02, 7/06*

U.S. Cl. 60—531 **2 Claims**

1. A reversible differential temperature engine comprising at least two chambers,
inside of said chambers being sealed from the outside environment,
a supply of evaporating liquid disposed within said chambers to exert a vapor pressure within said chambers,
each of said chambers having a moveable member responsive to the vapor pressure changes within the chambers,
vapor connecting means for the intermittent placing of the respective vapor portions of the chambers into communication,
valve means for opening and closing said vapor communication,

means to alternately synchronize the operation of said valve means with the movement of each moving member of each chamber,



and means to alternately heat and cool each chamber to obtain a reversible temperature differential between the chambers.

4,203,296

SUPERCHARGED INTERNAL COMBUSTION ENGINE

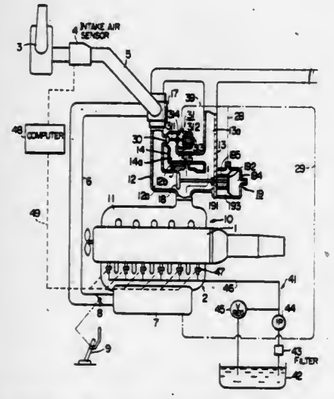
Eizi Tanaka, Anjo; Akira Nishimatsu, Okazaki, and Michiniro Ohashi, Handa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 19, 1978, Ser. No. 907,859

Claims priority, application Japan, May 23, 1977, 52/60314; Jun. 27, 1977, 52/76776

Int. Cl.² F02B *37/00*

U.S. Cl. 60—602 **5 Claims**



1. A supercharged internal combustion engine comprising:
an intake system including an intake duct for feeding air into engine cylinders;
a throttle valve pivotally mounted in said intake duct to control the rate of air flow therethrough;
an exhaust system for discharging engine exhaust gases into the atmosphere;
said exhaust system including an exhaust pipe;
a supercharger mounted on said exhaust pipe and driven by the flow of the engine exhaust gases therethrough to produce and feed pressurized air into the engine cylinders;
said exhaust system further including a bypass exhaust pipe bypassing said supercharger and having an upstream end connected to said exhaust pipe at a point upstream of said supercharger;
means disposed in said exhaust system adjacent to said point and being operative to open and close said exhaust pipe and said bypass exhaust pipe for thereby controlling the flow of engine exhaust gases into sand through said exhaust pipe and said bypass exhaust pipe; and
control means operatively associated with said exhaust gas flow controlling means and being responsive to variation in the intake pressure in said intake system downstream of said throttle valve to actuate said exhaust gas flow controlling means;
said control means being operative such that, when the intake pressure is not greater than a first predetermined value, said exhaust gas flow controlling means is actuated to fully close said exhaust pipe and, when said intake pressure becomes greater than a second predetermined value, said exhaust gas flow controlling means is actuated to fully close said bypass exhaust pipe.

4,203,297

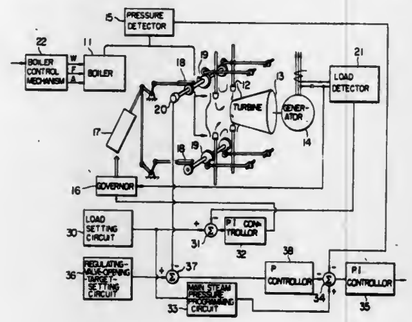
GOVERNING SYSTEM FOR USE IN SLIDING-PRESSURE TYPE TURBINE POWER PLANT

Akira Sakai, Tokyo, and Jube Matsumura, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 30, 1978, Ser. No. 910,346

Int. Cl.² F01K *13/02*

U.S. Cl. 60—660 **7 Claims**



1. A governing system for use in a sliding-pressure turbine power plant, wherein steam is introduced from a boiler via two or more regulating valves to a turbine so as to drive said turbine, comprising;
first means for generating a main-steam-pressure-target value in response to a given function corresponding to a load demand;
second means for setting a target value for the opening of each regulating valve;
third means for generating a signal to correct an output of said first means, depending on a deviation of the actual opening from a target value of the opening of each regulating valve;
fourth means for controlling the operating mechanism of a boiler in a manner that a corrected value of an output of said first means according to an output of said third means may be brought into coincidence with a detected value of the main steam pressure;
fifth means for generating a valve positioning signal, commensurate with a deviation of an actual load from a load demand;
sixth means for driving respective regulating valves in a manner that two or more regulating valves may be opened at least to respective warming openings at a time, commensurate with the magnitude of an output of said fifth means, after which respective regulating valves may be opened one after another in an opening range beyond said warming opening.

4,203,298

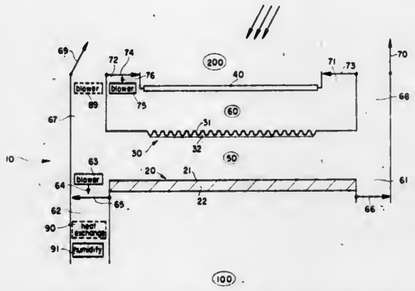
SOLAR AIR CONDITIONING METHOD AND APPARATUS

William E. Glenn, Jr., Ft. Lauderdale, and Carl A. Ludeke, Dania, both of Fla., assignors to New York Institute of Technology, Old Westbury, N.Y.

Division of Ser. No. 768,058, Feb. 14, 1977, Pat. No. 4,121,428. This application Jun. 5, 1978, Ser. No. 912,429

Int. Cl.² F25B *27/00*

U.S. Cl. 62—2 **14 Claims**



1. A method for cooling internal environment air using energy from the sun, comprising the steps of:
circulating internal environment air over a desiccant to dry the internal environment air;
cooling the dried room air by performing a heat exchange operation with external environment air;
adding moisture to the dried internal environment air which was subjected to the heat exchange operation;
heating the desiccant with solar energy so as to remove moisture from the desiccant; and
cooling the desiccant by performing a heat exchange with external environment air.

4,203,299

APPARATUS FOR METERING SMALL AMOUNTS OF A LOW BOILING LIQUEFIED GAS

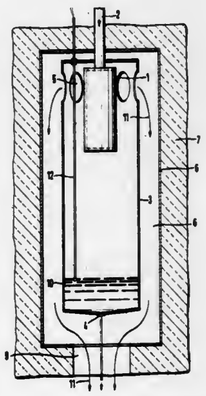
Gunter Dinglinger, Kaarst, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,184

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732318

Int. Cl.² F17C *7/02*

U.S. Cl. 62—49 **6 Claims**



1. In an apparatus for metering from a metering position small amounts of a low boiling liquefied gas which are returned by means of a pipeline to the metering position, the improvement being said pipeline exiting in an internally hollow sintered metal body, said body being mounted inside an inner container, said inner container having a drain hole for liquefied gas at its bottom and at least one discharge opening for evaporated gas in its upper portion thereof, said inner container being surrounded by an outer container, said outer container being provided with an insulation, an intermdiate space being between said containers, and said space communicating with a gas discharge opening in said outer container underneath said drain hole for liquefied gas.

4,203,300

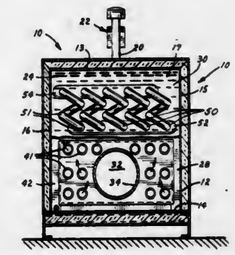
HORIZONTAL DIRECT FIRED WATER BATH PROPANE VAPORIZER

Robert C. Hanson, Excelsior, and Leon C. Hanson, Bloomington, both of Minn., assignors to Energy Systems Incorporated, Eden Prairie, Minn.

Filed Oct. 25, 1977, Ser. No. 844,634

Int. Cl.² F22B *1/16*; F17C *9/02*

U.S. Cl. 62—52 **1 Claim**



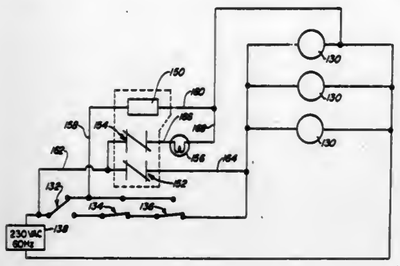
1. A heat transfer unit for delivering heat energy to a fluid, said unit including:
A. a horizontal water vaporizer chamber having a major horizontal longitudinal dimension and a lower, heat receiving portion open to an upper heat delivering portion, said vaporizer chamber being partially defined by first and second parallel, upright, longitudinally extending side walls;
B. a water bath filling said vaporizer chamber;
C. means including horizontally and longitudinally extending heat sources in said lower portion of said vaporizer chamber and surrounded by said water bath for delivering heat energy to said water bath;
D. a heat exchange network of hollow, generally horizontally and longitudinally extending mutually substantially parallel heat transfer pipes in said upper portion of said vaporizer chamber and surrounded by said water bath, each of said pipes forming a part of a series connected heat transfer coil, each such coil extending from a lower inlet coil end thereof progressively upward to an upper outlet coil end;
E. an inlet pipe extending from outside the vaporizer chamber to connect with the inlet coil end of each of such heat transfer coils to carry a fluid to be heated into said network;
F. an outlet pipe extending from each of said outlet coil ends to the outside of the vaporizer chamber to carry said fluid away from said network after it has been heated; and
G. the effective average path of fluid through each of said coils being from position adjacent the bottom of the upper portion of the vaporizer chamber and nearer to said first vaporizer chamber side wall to position closer to the top of said upper portion and nearer to said second vaporizer chamber side wall.

4,203,301

CONTROL CIRCUIT FOR REFRIGERATOR FAN

Harnek S. Gill, Huntsville, and Charles R. Turner, Decatur, both of Ala., assignors to Schaefer Corporation, Madison, Ala.

Filed Feb. 16, 1979, Ser. No. 12,617
Int. Cl.[2] F25D 17/06; F25B 49/00
U.S. Cl. 62—131 8 Claims



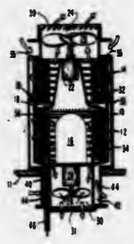
1. In a refrigerator of a type comprising a cabinet, means to refrigerate contents of a chamber within said cabinet, a door mounted to said cabinet for access to said chamber, a fan disposed in said cabinet and operable to force air to circulate within said chamber, and a switch mounted for operation of said switch with said door so as to switch to a first mode wherein said switch enables said fan when said door is closed and so as to switch to a second mode wherein said switch disables said fan when said door is opened, an improvement wherein a relay, of a type having a set of contacts arranged to be closed after a delay of preset duration from energization of said relay and to be opened upon deenergization of said relay, is connected so as to be energized in the second mode of said switch, so as to be deenergized in the first mode of said switch, and so as to enable said fan whenever said contacts are closed.

4,203,302

FLOOR MOUNTED AIR CONDITIONER

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Jul. 14, 1978, Ser. No. 924,823
Int. Cl.[2] F25D 23/12; F25B 47/00; F25D 21/14
U.S. Cl. 62—259 6 Claims



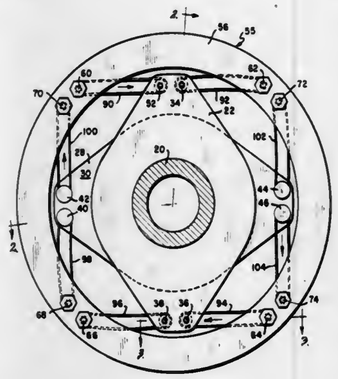
1. A floor mounted air conditioner comprising:
a housing having a lower portion and an upper portion, the lower portion of the housing including a cylindrical wall insertable into a mounting opening in the floor of a room to be cooled, the upper portion of the housing being disposable above the floor and having a cold air exhaust duct upwardly extending from the upper portion and terminating in an upper cold air exhaust port;
an annular inlet at the top of the upper portion of said housing for drawing air from the room into the housing for cooling, said annular inlet surrounding and spaced from said upper cold air exhaust port;
a hot air exhaust duct in the lower portion of said housing terminating in a lower hot air exhaust port at the bottom end of the lower housing portion below the mounting floor;
an annular duct in the lower housing portion defined by the wall of the lower housing portion and the hot air exhaust duct and having inlet openings in the wall of the lower housing portion into which air is drawn from below the floor into the housing for cooling;
a compressor within the housing;
cylindrical condenser coils disposed about a vertical axis in the housing;
cylindrical evaporator coils disposed about said vertical axis in said housing and above said condenser coils;
a drip pan in said housing separating said condenser and evaporator coils and including one or more openings arranged to discharge condensate onto said condenser coils;
a condenser fan in said hot air exhaust duct for blowing hot air from said housing out of said lower hot air exhaust port into the space below the floor;
an evaporator fan disposed in the upper cold air exhaust duct for blowing cooled air out of said upper cold air exhaust port into the room; and
an annular duct in the upper housing portion in communication with the annular duct in the lower housing portion for directing air from the annular inlet over the evaporator coils and air from the inlet openings in the wall of the lower housing portion over the evaporator coils.

4,203,303

TORQUE-BALANCED VIBRATIONLESS ROTARY COUPLING

Donald M. Miller, Sunnyside, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 28, 1978, Ser. No. 929,134
Int. Cl.[2] F16D 3/50
U.S. Cl. 64—12 3 Claims



1. A coupling for transmitting rotary motion from one shaft to another comprising,
two spaced, axially aligned, shaft-engaging hubs, each provided with diametrically opposed flanges, said flanges being at right angles,
a pair of spaced, parallel rings having an inner diameter greater than the outer diameter of the flanged hubs disposed surrounding the hubs,
a plurality of right, circular cylindrical pins joining said rings one to the other,
right, circular cylindrical pins having a lip at the edge thereof extending inwardly from the flanges on each of said hubs toward the other hub,
strong, flexible lightweight belts of equal length connecting the pins on the flanges with the pins joining the rings, said belts being essentially all in a single plane,

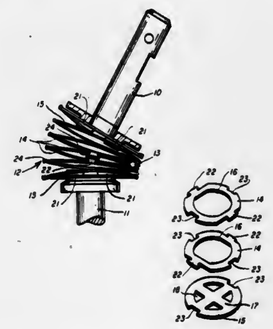
said pins and belts being constructed and arranged to be slack when not under tension and, when under tension, to provide equal, tangential pull on opposite sides of the coupling.

4,203,304

FLEXIBLE SHAFT COUPLING

Herbert Decker, Lauf, Fed. Rep. of Germany, assignor to Triumph Werke Nurnberg A.G., Nuremberg, Del.X

Filed Nov. 8, 1978, Ser. No. 958,686
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750988
Int. Cl.[2] F16D 3/78
U.S. Cl. 64—13 3 Claims



1. For use in small precision applications a flexible coupling between a drive shaft and a driven shaft for transmitting torque from said drive shaft to said driven shaft while allowing a change in the axial orientation of said driven shaft relative to the axis of said drive shaft,
said flexible coupling comprising an axially stacked series of interconnected flexible discs, the interconnection between adjacent discs being at oppositely spaced peripheral points with the interconnection of one disc to a neighboring disc on one side being displaced 90° from its interconnection with a neighboring disc on its other side
said interconnections comprising interfitting peripheral formations on said discs directly interlockingly connecting said discs to one another.
and central formations on said first and last discs in the series for connection to said drive shaft and driven shaft, respectively.

4,203,305

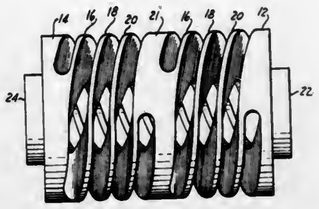
FLEXIBLE COUPLING

Richard H. Williams, 18320-4 Oxnard St., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 752,111, Dec. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 643,231, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 454,602, Mar. 25, 1974, abandoned. This application Dec. 13, 1978, Ser. No. 968,997
Int. Cl.[2] F16D 3/52
U.S. Cl. 64—15 R 4 Claims

1. A flexible coupling for torque transmission comprising
a unitary structure having a pair of ends and drive shafts attached to the ends;
a plurality of helical beams integral with one of said ends and extending to the other of said ends and being integral therewith, each of said beams being formed about a common axis so as to have an inner diameter face having a first predetermined thickness and an outer diameter face having a second predetermined thickness, and having a beam depth defined by the distance between the inner and outer faces of said beams, said beams spiralling outwardly from the one of said end to which a shaft to drive the coupling is to be attached, said spiral being in a first rotational sense which is opposite to a second rotational sense; and
in which the ratio of thicknesses of the inner diameter faces to the outer diameter faces is selected to be within the range of from 2:1 to 3:1, the ratio of beam depth to mean beam thickness is about 13.5:1, and the depths and beam thicknesses are defined by the equation

$$d_o/d_i=(b_i/b_o)^{1.55}$$



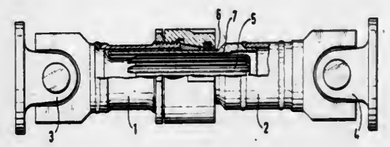
wherein
d_o is the outer diameter of the helical beam,
d_i is the inner diameter of the helical beam,
b_o is the thickness of the beam at its outer diameter,
b_i is the thickness of the beam at its inner diameter, and mean beam thickness is defined by $(b_i+b_o)/2$;
whereby the coupling will fail elastically and in buckling substantially simultaneously when rotated in the first rotational sense.

4,203,306

TELESCOPING POWER TAKE-OFF SHAFT WITH LOCKABLE LENGTH ADJUSTMENT

Gerd Sehlbach, and Ditmar Klischat, both of Essen, Fed. Rep. of Germany, assignors to Gelenkwellenbau GmbH, Essen, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,323
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747319
Int. Cl.[2] F16D 3/06
U.S. Cl. 64—23 8 Claims



1. Telescoping power take-off shaft comprising a first swivel joint, a second swivel joint spaced from said first swivel joint, an axially extending telescoping shaft extending between said first and second swivel joints and a yoke on each end of said shaft for interconnecting said shaft to said joints, said telescoping shaft comprises an inner shaft connected to said yoke adjacent said first swivel joint, and an outer shaft connected to said yoke adjacent said second swivel joint, said outer shaft having an axially extending hollow portion forming a bore into which said inner shaft extends, each of said inner shaft and outer shaft has an axially extending spline section for interconnecting said shafts and affording longitudinal adjustment of the interconnection, wherein the improvement comprises an adapter sleeve attached to said yoke adjacent said first swivel joint and extending therefrom and laterally enclosing at least an axially extending part of said outer shaft, said adapter sleeve having a free end spaced axially from said yoke to which it is attached, a clamp nut laterally enclosing and in threaded engagement with the free end of said adapter sleeve, said clamp nut extending axially from the free end of said adapter sleeve

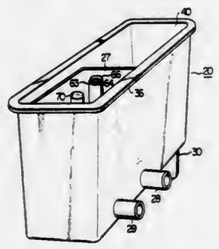
toward said yoke adjacent said second swivel joint, a retainer ring encircling and mounted on said outer shaft and located within said clamp nut, said retainer ring having an axial bore with the surface of the bore in contact with the outer surface of said outer shaft, said retainer ring having a first end extending transversely of the axis of said telescoping shaft and located closer to the yoke adjacent said first swivel joint and a second end extending transversely of the axis of said telescoping joint and located closer to the yoke adjacent said second swivel joint, said first end disposed in contact with said free end of said adapter sleeve, said retainer ring having a radially outer surface extending between the first and second ends thereof and said outer surface is disposed at an acute angle to the axis of said telescoping shaft with said outer surface converging toward the axis in the direction toward the yoke adjacent said second swivel joint, and said clamp nut having an inner surface complementary to and in contact with said outer surface of said retainer ring.

4,203,307

DETERGENT SUPPLYING DEVICE OF A WASHING MACHINE

Yukio Obata, and Masayuki Fujisaki, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed May 9, 1979, Ser. No. 37,507
Claims priority, application Japan, May 10, 1978, 53/54520
Int. Cl.[2] D06F *39/02*
U.S. Cl. 68—17 R **5 Claims**



1. A detergent supplying device of a washing machine comprising:

a detergent container containing a detergent;

a fabric conditioner container disposed in said detergent container and containing a fabric conditioner;

a first water passage having a first inlet and a first outlet, said first inlet being connected to a first water supplying valve, while said first outlet being connected to said detergent container;

a second water passage having a second inlet and a second outlet, said second inlet being connected to a second water supplying valve, while said second outlet being connected to a discharging passage, said second water passage crossing said first water passage;

a water conduit having an intake port and a third outlet, said intake port being disposed in a crossing passage where said first and second water passages cross each other, while said third outlet being connected to said fabric conditioner container, said intake port being adapted not to take the water into said water conduit when the water is supplied through either one of said first and second passages but to take the water into said water conduit when the water is supplied simultaneously through both of said first and second water passages, the water taken into said water conduit being supplied to said fabric conditioner container;

a siphon device disposed in said fabric conditioner container and adapted to discharge the water into said discharging passage when the water level in said fabric conditioner container has come to exceed a predetermined level;

a third water passage connected between said detergent container and said discharging passage; and

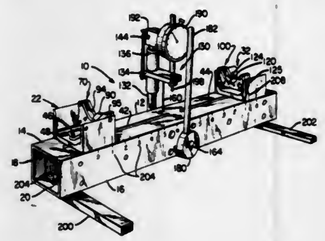
a fourth water passage adapted to introduce the water discharged into said discharging passage to a washing basin.

4,203,308

APPARATUS FOR TESTING AND STRAIGHTENING ARROW SHAFTS AND THE LIKE

Duane L. Davis, 1712 Spruce Ave., Longmont, Colo. 80501

Filed Mar. 7, 1978, Ser. No. 884,114
Int. Cl.[2] B21D *3/16*
U.S. Cl. 72—34 **19 Claims**



1. In arrow straightener apparatus having press means adapted to apply a pressure on the shaft of an arrow in a direction normal to the longitudinal axis of said shaft and in a direction to straighten said shaft, and deflection indicator means in proximity to said press means for measuring and indicating the deviation of the arrow shaft from its normally straight longitudinal axis, the improvement comprising:

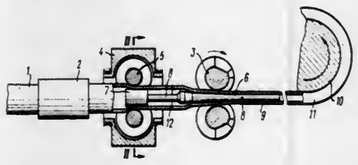
a pair of arrow supports in axially spaced-apart relation to each other, each of said supports including a a pair of bearings with circular cylindrical peripheral surfaces mounted in tandem in a mounting block on respective axes parallel to each other and to a vertical plane extending through both of said supports between said bearings in each of said supports, the peripheral surfaces of said bearings being adapted to support the arrow shaft during straightening operation, and said mounting block being adapted to swivel about an axis normal to said vertical plane to permit said bearing peripheral surfaces to be aligned flush with the surface of said arrow shaft.

4,203,309

METHOD OF PILGER ROLLING OF TUBES

Vladimir E. Ermakov, ulitsa Osipenko, 52a, kv. 1, Moscow; Viktor B. Makarov, ulitsa Zelenaya, 4, kv. 12, Khimki Moskovskoi oblasti; Fikrat S. O. Seidaliev, ulitsa Golovacheva, 17, kv. 125, Moscow; Alexandr M. Nikiforov, ulitsa Zamshina, 25, kv. 21, Leningrad; Alexandr V. Bushev, ulitsa Sevanskaya, 7, korpus 2, kv. 324, Moscow, and July K. Dozortsev, ulitsa Sadovaya, 16, kv. 4, Vidnoe Moskovskoi oblasti, all of U.S.S.R.

Filed Oct. 20, 1977, Ser. No. 843,821
Int. Cl.[2] B21B *17/06, 17/12, 21/00*
U.S. Cl. 72—96 **5 Claims**



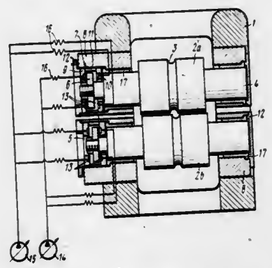
1. A method of pilger rolling of tubes, comprising the steps of feeding a billet in portions into pilger rolls and working said billet on a mandrel during each rolling period with said billet being positively turned about the rolling axis both in one direction and in the opposite direction over the entire rolling period during its deformation and in the off-contact time, when said billet comes out of engagement with said rolls; whereby the rolling of tubes of hard-to-form metals and alloys is practicable and whereby their properties are enhanced.

4,203,310

MILL STAND ROLL ASSEMBLY

Nikolai I. Krylov, 1 Novokuzminskaya ulitsa, 25, kv. 26, Moscow; Ilya A. Toder, Ljubertsy, Oktyabrsky prospekt, 339-a, kv. 8, Moskovskaya oblast; Oleg F. Sidorov, ulitsa Kravchenko, 10, kv. 90, Moscow; Gennady I. Tarabaev, Elektrostal, Juzhny prospekt, 3, korpus 4, kv. 74, Moskovskaya oblast, and Gennady I. Pinsky, ulitsa Parkovaya, 38, kv. 37, Cherepovets, all of U.S.S.R.

Filed Dec. 28, 1978, Ser. No. 973,869
Int. Cl.[2] B21B *31/18*
U.S. Cl. 72—247 **1 Claim**



1. A roll assembly comprising: a roll housing; chocks secured on said housing; thrust hydrostatic bearings mounted in said chocks; grooved rolls having necks formed with thrust shoulders and mounted in said thrust hydrostatic bearings, said thrust shoulders having end faces; drive means for said grooved rolls; thrust disks of said thrust hydrostatic bearings each provided on said faces of said thrust shoulder substantially parallel thereto; opposite sides of said thrust disks facing said end faces of said thrust shoulder; hydrostatic pockets formed on said opposite sides of said thrust disks; a variable delivery fluid source, said fluid source communicating with said hydrostatic pockets of one of said thrust disks of one of said thrust hydrostatic bearings of one of said grooved rolls and of the oppositely disposed other of said thrust disks of another of said thrust hydrostatic bearings of another of said grooved rolls; another fluid source of adjustable delivery; said another fluid source communicating with said hydrostatic pockets of the remaining of said thrust disks of one and another said thrust hydrostatic bearings; by varying the delivery of said fluid source and the delivery of said another fluid source, it is possible to adjust mutually the disposition of each of said thrust shoulders with respect to the corresponding one of said thrust disks for effecting an adjustment of the mutual disposition of said grooved rolls.

4,203,311

TUBULAR ARTICLES OF MANUFACTURE AND METHOD OF MAKING SAME

Joseph M. O'Connor, Chicago, and Stephen F. Pasternak, Park Ridge, both of Ill., assignors to Peerless of America, Inc., Chicago, Ill.

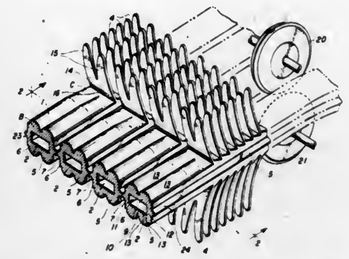
Filed Mar. 27, 1978, Ser. No. 890,539
Int. Cl.[2] B21D *53/06*
U.S. Cl. 72—254 **6 Claims**

1. The method of making a tubular article of manufacture comprising

a. forming an elongated tubular member comprising

(1) a plurality of elongated tubes extending longitudinally of said tubular member and disposed in side-by-side relation to each other, and

(2) connector means extending between adjacent ones of said tubes for holding said tubes together to form a single unitary structure, and



b. thereafter forming fins on the exteriors of said tubes, and

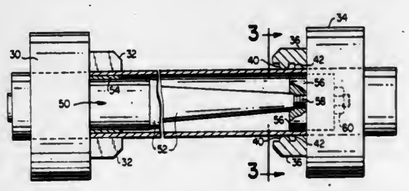
c. thereafter separating at least certain of said tubes from each other along said connector means extending therebetween.

4,203,312

CORRUGATED TUBING WITH VARIABLE DEPTH CORRUGATIONS AND METHOD OF MAKING THE SAME

Robert W. Perkins, Hamden, Conn., assignor to Spiral Tubing Corporation, New Britain, Conn.

Division of Ser. No. 837,718, Sep. 29, 1977. This application Oct. 3, 1978, Ser. No. 948,256
Int. Cl.[2] B21D *15/00*
U.S. Cl. 72—299 **7 Claims**



1. A method of forming helical corrugations of varying depth in a tube comprising the steps of:

providing a tube having a deformable tube wall disposed about a tube axis;

stressing the tube wall at a plurality of locations in a plane transverse to the tube axis;

positioning an elongated mandrel tapered along one portion of its length within the tube with the tapered portion located inside at least one section of the tube; and

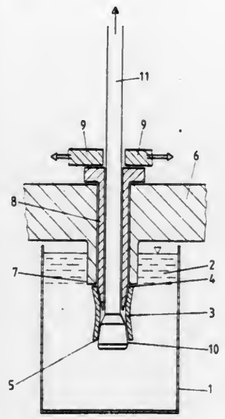
simultaneously twisting and applying axially directed forces to the tube while the tapered portion of the mandrel is axially held in position in said one section of the tube to cause the tube wall to deform and progressively develop helical corrugations in final form at the stressed locations of the tube wall and then along the tube in the tube section overlying the tapered portion of the mandrel whereby the tapered portion of the mandrel makes contact with and limits the inward deformation of the tube wall in said one section of the tube only after the final depth of the corrugations is reached, and varies the final depth of the corrugations along said one section of the tube.

4,203,313

METHOD AND APPARATUS FOR THE EXPANSION OF A HOLLOW ARTICLE

Roland Kunzli, Mellingen; Keith Melton, Busslingen, and Olivier Mercier, Ennetbaden, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 20, 1978, Ser. No. 971,634
Claims priority, application Switzerland, Nov. 1, 1978, 264/78
Int. Cl.[2] B21D *31/04*
U.S. Cl. 72—364 **13 Claims**



1. A process for expanding a joining sleeve formed from a hollow article, said process comprising the steps of:

mounting said hollow article between a pair of mandrels having opposing tapers and moveable towards each other, the inner surface of said hollow article being contacted at opposite ends by said mandrels;

inserting said mandrels and hollow article into a coolant until said hollow article reaches its deformation temperature; relatively moving said mandrels toward each other in said coolant to expand said ends;

moving one of said mandrels completely through said hollow article while supporting said hollow article in said coolant by a stop so as to completely expand said hollow article; and

permitting said hollow article to remain in said coolant following the expansion by said mandrels.

4,203,314

POSITIVE TRANSFER MEANS BETWEEN TWO INDEPENDENTLY DRIVEN MECHANICAL PRESSES

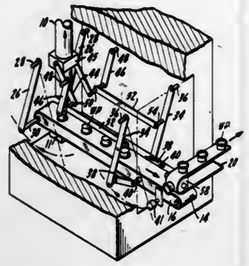
Robert P. Vandlik, Mt. Prospect, and Frank J. Herdzina, Schaumburg, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed May 19, 1978, Ser. No. 907,487
Int. Cl.[2] B21D *45/04*; B30B *15/32*
U.S. Cl. 72—427 **5 Claims**

1. In a cyclically operable machine where a starting blank of metal is worked into a work product at a work station by complementally configured punch and die members of which one member is reciprocal vertically between a lowered working position where the metal blank is deformed and an elevated position where the work product is ejected:

a driven, endless delivery conveyor belt supported by a frame for receiving and delivering the ejected product out of the work station; a plurality of suspension arms mounted on fixed pivots, said suspension arms comprising a first pair of arms pivotally connected directly to the end of the frame adjacent the work station, and a second pair of arms connected to the frame near its delivery end by lost motion swing links, said second pair of suspension arms supporting said frame for movement along a generally horizontal path so that one end of the endless delivery conveyor belt may be swung into and out of receiving positon beneath said one member to receive and deliver the ejected product, with the delivery end of the frame being slidably engaged in fixed, horizontal guide tracks;

a receiving conveyor belt adjacent the end of the delivery conveyor belt opposite the work station, and means for



transferring the product from the delivery conveyor to the receiving conveyor; and

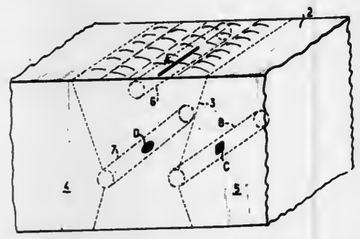
a drive link system so connected between the suspension arms and said one member that vertical movement of said one member is translated into oscillation of the delivery conveyor frame into and out of said work station.

4,203,315

REFERENCE PART, ESPECIALLY FOR NONDESTRUCTIVE TESTING BY ULTRASONIC VIBRATIONS, AND A METHOD FOR THE FABRICATION OF SAID PART

Alain Vieu, Longueil Ste. Marie, and Christian Flambard, Aumont-Senlis, both of France, assignors to Framatome, Courbevoie and Centre Technique des Industries Mechaniques, Senlis, both of, France

Filed Apr. 6, 1979, Ser. No. 27,985
Claims priority, application France, Apr. 19, 1978, 78 11474
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—1 R **12 Claims**



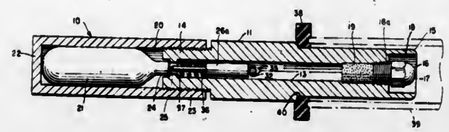
1. A reference part, especially for nondestructive testing by ultrasonic vibrations, wherein said part is fitted with an element having a surface of revolution and provided with a predetermined defect, said element being inserted within said part so as to be applied in intimate contact therewith around its entire periphery.

4,203,316

DEVICE AND METHOD FOR CALIBRATING PULMONARY FUNCTION TESTING EQUIPMENT

William C. Jones, Oak Brook, Ill., assignor to Jones Medical Instrument Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 947,195, Sep. 29, 1978, abandoned. This application May 9, 1979, Ser. No. 37,409
Int. Cl.[2] G01F *25/00*
U.S. Cl. 73—3 **37 Claims**



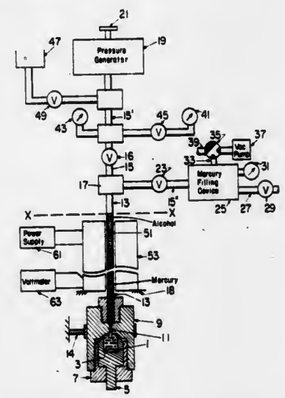
1. A device for calibrating pulmonary function testing equipment comprising a container defining a chamber for containing a predetermined volume of gas at a preselected pressure, gas discharge conduit means communicating with said container and including a flow-restricting orifice of predetermined size for the discharge of gas from said chamber, and means normally preventing said discharge of gas but being selectively operable to release said gas through said flow-restricting orifice at reproducible and substantially exponentially diminishing flow rates into a spirometer for calibrating the same.

4,203,317

POROSIMETER

Krishna M. Gupta, F-24, Lansing West, Ithaca, N.Y. 14850

Filed Jun. 20, 1978, Ser. No. 917,347
Int. Cl.[2] G01N *15/08*
U.S. Cl. 73—38 **20 Claims**



1. A porosimeter comprising, in combination:

(a) an opaque, sample chamber constructed of metal for holding a sample of material whose porosity is to be measured;

(b) an opaque, non-horizontal tube constructed of metal having an upper end and a lower end, the lower end of said tube being connected to said chamber;

(c) means connected to said tube for filling said chamber and said tube with a liquid which is non-wettable with respect to said sample;

(d) means connected to said upper end of said tube for applying a fluid at various pressures to the upper end of said tube, said fluid having a lower density than said liquid;

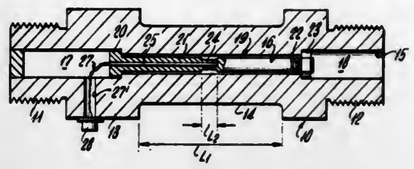
(e) means for measuring the height of the upper of said liquid in said tube during application of said various pressures; whereby the porosity of said sample in said chamber may be determined from the height measurements and the respective, various pressures.

4,203,318

STRAIN GAGE LOAD CELL

Alexander Yorgiadis, 12 Union Hill Rd., W. Conshohocken, Pa. 19428

Filed Aug. 16, 1978, Ser. No. 934,190
Int. Cl.[2] G01L *1/22*
U.S. Cl. 73—141 A **5 Claims**



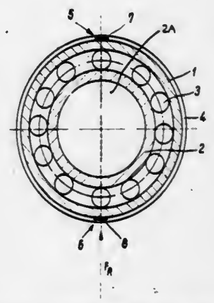
1. A strain gage load cell for sensing axial compression and elongation of load carrying members comprising a primary elongated load carrying member having a central axial opening extending lengthwise from at least one end thereof, said member having a portion of reduced section positioned between the ends thereof, said central opening extending beyond the ends of said portion of reduced section, a secondary load carrying member having a central section of slightly smaller diameter than said opening disposed within said opening and a length greater than the length of said portion of reduced section, said central section of said secondary member having a portion of reduced section with the length thereof being materially shorter than the length of the first said reduced section, the ends of said secondary member being fixedly secured to said primary load carrying member and at least one strain gage secured to a wall of the last said portion of reduced section whereby an amplified indication of axial strain is sensed by said strain gage with little if any error resulting from bending or torsional strains.

4,203,319

APPARATUS FOR MEASURING BEARING FORCES

Gerhard B. Lechler, Muehlenstrasse 58, 1000 Berlin 46, Fed. Rep. of Germany

Filed Oct. 11, 1978, Ser. No. 950,464
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1977, 2746937
Int. Cl.[2] G01L *5/12*
U.S. Cl. 73—141 A **11 Claims**



1. An apparatus for measuring forces by means of at least one roller bearing having at least two rings, at least one of said rings being an inner ring and at least one of said rings being an outer ring, and at least a first and a second strain gauge mounted to said roller bearing at different points of said roller bearing to record the forces to be measured, first and second amplifiers electrically coupled to said first and second strain

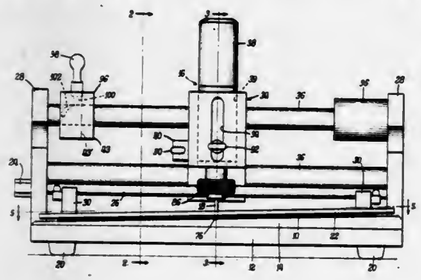
gauges respectively for individually amplifying the resistance variations of said first and second strain gauges respectively, said apparatus characterized in that said roller bearing is preloaded and that the apparatus includes a first and a second rectifier electrically coupled to the outputs of said first and second amplifiers respectively so that the measured values from at least two measuring points on the roller bearing are individually rectified, and a subtractor electrically coupled to the outputs of said first and second rectifiers for subtracting the signals from said first and second rectifiers, wherein the results of said subtraction of said individually amplified and rectified signals results in a signal which is proportional to the external forces to be measured and said resulting signal does not include components of the individually amplified and rectified signals due to internal forces of said roller bearing.

4,203,320

TESTING APPARATUS FOR MULTIPLE COPY FORM SETS

Alfred Walter, Schlieren, Switzerland, assignor to Alfred Walter AG, Schlieren, Switzerland

Filed Apr. 23, 1979, Ser. No. 32,237
Claims priority, application Switzerland, May 3, 1978, 4852/78
Int. Cl.² G01M *19/00*; G01N *33/00*
U.S. Cl. 73—150 R **5 Claims**



1. A testing apparatus for multiple copy form sets comprising a supporting plate for supporting on its upper surface a form set to be tested, a carriage movably disposed above said supporting plate so as to be displaceable along a path of movement, said path of movement being inclined with respect to the surface of said supporting plate, a writing instrument carried by said carriage and including a writing implement movable perpendicularly to said surface, means for biasing said writing implement toward said surface so as to cause the writing implement to contact the form set, whereby movement of the carriage in the direction of reduced distance between said surface and said path of movement causes a line to be drawn upon the form set which is variable as a result of the reduced distance.

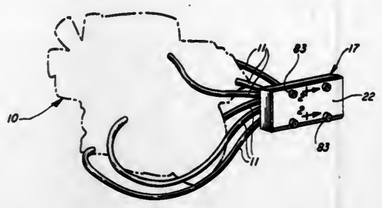
4,203,321

METHOD AND APPARATUS FOR TESTING HYDRAULIC AND PNEUMATIC SYSTEMS

Gerrard N. Vyse, Bedford, and Horise M. Cooke, Weatherford, both of Tex., assignors to Stratoflex, Inc., Fort Worth, Tex.

Filed Jan. 16, 1978, Ser. No. 869,661
Int. Cl.² G01M *19/00*
U.S. Cl. 73—168 **11 Claims**

1. Apparatus for testing a plurality of pneumatic and/or hydraulic systems, comprising a length of hose connected in each of said systems, a valved fitting attached to each length of hose, each of said fittings including a normally closed valve, center member means attached to all of said fittings, a test fixture adapted to be connected to diagnostic test equipment for performing separate tests of said systems, said test fixture



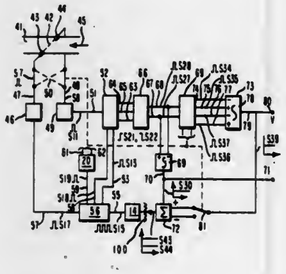
being attachable to said center member means and including valve means for automatically opening said valved fittings.

4,203,322

APPARATUS FOR THE ULTRASONIC MEASUREMENT OF THE FLOW VELOCITY OF FLUENT MEDIA

Alvin E. Brown, Claremont, and William E. Van Over, Monrovia, both of Calif., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1977, Ser. No. 837,843
Int. Cl.² G01F *1/66*
U.S. Cl. 73—194 A **4 Claims**



1. Apparatus for measuring the flow rate of a fluid stream by repetitively transmitting and receiving ultrasonic signals upstream and downstream over preselected distances and a timing function generator having a frequency related output signal related to sound speed in said fluid stream for controlling the times at which ultrasonic signals are so transmitted, said apparatus comprising:

control means responsive to the upstream and downstream transit times over said preselected distances of said ultrasonic signals and to said generator for providing first and second control signals that are related, respectively, to the flow velocity of said stream and the speed of sound in said fluid stream, and

means including said generator responsive to said control signals for increasing the repetition rate at which said ultrasonic signals are transmitted and hence the apparent speed of sound in said fluid stream, whereby said control means associates each said received ultrasonic signal with a transmitted ultrasonic signal following that which actually initiated said received signal.

4,203,323

FLOWMETERING METHOD AND DEVICE

Olof L. Thorsell, Hallstahammar, Sweden, assignor to Bulten-Kanthal AB, Hallstahammar, Sweden

Filed Nov. 22, 1978, Ser. No. 962,889
Claims priority, application Sweden, Nov. 23, 1977, 7713241
Int. Cl.² G01F *3/00*
U.S. Cl. 73—194 E **4 Claims**

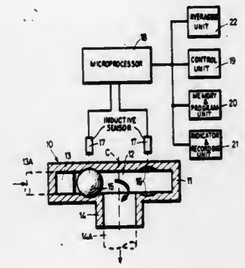
1. A method of volumetrically measuring a fluid stream in a conduit, which comprises

causing the fluid stream to move a follower element cyclically past at least one sensing point at a frequency proportional to the volume flow rate of the fluid stream,

producing passage signals in response to the follower element passing the sensing point,

detecting the passage signals, and

determining the total volume of the fluid that flows past a measuring point along the stream during a measuring period using the repetition rate of the detected passage signals as a parameter, wherein the improvement comprises



continually measuring the passage signal repetition rate throughout the measuring period,

determining from stored data representing the volume of fluid flowing past the measuring point per passage signal—said volume being herein termed the incremental volume—as a function of the repetition rate the incremental volume associated with each detected passage signal, and

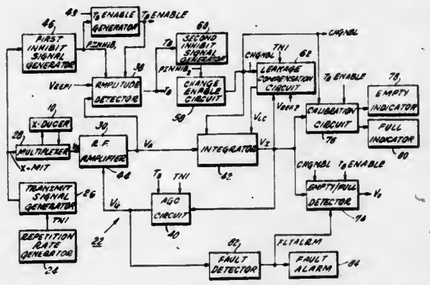
summing the incremental volumes associated with the passage signals detected during the measuring period.

4,203,324

SONIC LIQUID LEVEL DETECTOR

Joseph Baumoel, 107 Columbia Dr., Jericho, Long Island, N.Y. 11753

Continuation-in-part of Ser. No. 822,199, Aug. 5, 1977, Pat. No. 4,144,517. This application Jan. 24, 1979, Ser. No. 6,183
Int. Cl.² G01F *23/00*
U.S. Cl. 73—290 V **33 Claims**



1. Apparatus for determining a fluid condition adjacent an inner wall boundary of a fluid container of the type which includes a wall having said inner and an outer wall boundary, said apparatus comprising:

(A) transducer means, including a sonic transducer, for:

(1) applying a sonic pulse to said outer wall boundary after said sonic transducer is placed in contact with said outer wall boundary such that said sonic pulse enters said wall and is reflected between said inner and outer wall boundaries, the magnitude of said sonic pulse decreasing each time it is reflected off of said inner wall boundary by an amount which varies as a function of said fluid condition adjacent said inner wall boundary;

(2) generating an electrical reflection pulse whose magnitude is representive of the instantaneous magnitude of said sonic pulse each time said sonic pulse is reflected off of said outer wall boundary whereby said transducer means generates a train of electrical reflection pulses responsive to each sonic pulse applied to said outer wall boundary;

(B) integration means for integrating said train of electrical reflection pulses during an integration period and for generating an integration output signal whose value varies as a function of said fluid condition; and

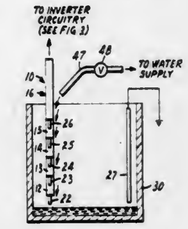
(C) output means for comparing said integration output signal to a predetermined value to determine said fluid condition.

4,203,325

LIQUID LEVEL SENSING APPARATUS

Arthur L. Cowles, River Falls, and Thomas C. Ensign, Hudson Township, St. Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 27, 1978, Ser. No. 890,672
Int. Cl.² G01F *23/26*
U.S. Cl. 73—304 R **11 Claims**



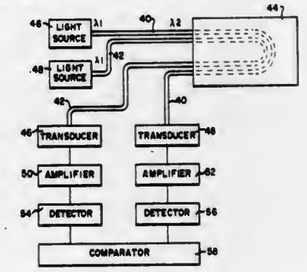
1. A liquid level multiple sensing electrode structure including a flat cable having a plurality of conductors terminated at various lengths at one end of said cable, said conductors having insulation extending the length of each conductor, except for a short terminating end portion of each conductor at said one end of said cable wherein each terminating end portion provides a sensing electrode and wherein the outer surface of said insulation is hydrophilic.

4,203,326

METHOD AND MEANS FOR IMPROVED OPTICAL TEMPERATURE SENSOR

Milton Gottlieb, and Gerald B. Brandt, both of Pittsburgh, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 26, 1979, Ser. No. 6,860
Int. Cl.² G01K *1/00*
U.S. Cl. 73—339 R **8 Claims**



5. An optical fiber temperature sensor for use in sensing an approximate temperature in an environment by detecting

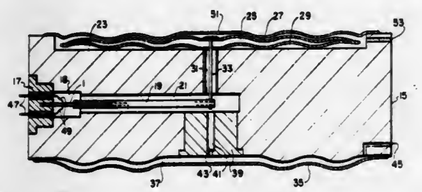
changes in attenuation of light comprising an optical fiber light conductor having a first end and a second end and including an optical fiber core, cladding material around said core, and a jacket surrounding said core and said cladding material, said core exhibiting an evanescent field which extends through said cladding material into said jacket at first selected range of optical wavelengths, said cladding material having a thickness whereby light attenuation in said conductor below a first temperature range is less than light attenuation in said conductor above said first temperature range, a light source for applying light at a first wavelength within said selected range of optical wavelengths to one end of said conductor, and detector means for detecting light at said first optical wavelength at the other end of said conductor.

4,203,327

PIEZORESISTIVE SILICON STRAIN SENSORS AND PRESSURE TRANSDUCERS INCORPORATING THEM

Gurnam Singh, Willow Grove, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 29, 1978, Ser. No. 920,538
Int. Cl.² G01L 9/06
U.S. Cl. 73—721 **12 Claims**



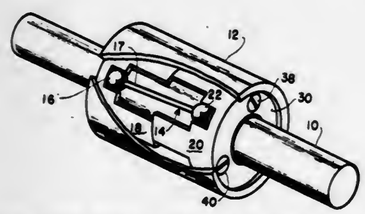
12. A pressure to electrical signal transducer including
a spinel beam having a pair of oppositely disposed faces and having an epitaxially grown layer of silicon in the form of a piezoresistive resistor on one of said faces,
support means attached to one end of said beam to cantilever said beam from said support means,
means responsive to fluid pressure connected to the other end of said beam to deflect said other end and to strain said beam and said resistor by an amount dependent upon said pressure, and
terminals electrically connected to said resistor, between which terminals the resistance is dependent upon the extent of said deflection and straining of said beam and said resistor.

4,203,328

ROTARY-TO-LINEAR-MOTION CONVERTER

William L. DeBoynton, South Pasadena, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 15, 1978, Ser. No. 942,570
Int. Cl.² F16H 21/16
U.S. Cl. 74—25 **8 Claims**



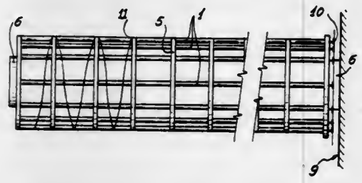
1. An adjustable pitch rotatable shaft-to-linear converter for imparting motion to a member having a cylinderical bore coaxial with a rotatable shaft and parallel with the direction of said motion, said converter comprising:
at least three drive rollers each having an enlarged end section of circular cross-section and each of said ends separated and connected to its opposite end by a connecting shaft, said rollers being equally spaced about the rotatable shaft and the cylindrical bore to the movable member;
first and second cages for encaging the first and second enlarged ends respectively of said drive rollers, each of said cages being mounted within said cylindrical bore and having a longitudinal aperture for the passage of said rotatable shaft, each of said cages having a plurality of equally spaced legs and having counterbored portions between said legs for the caging of said enlarged end sections, the ends of said legs of said first cage abutting ends of the legs of said second cage, said first and second cages being rotatably adjustable with respect to each other to adjust the pitch angle of said rollers; and
means for clamping together said first and second cages.

4,203,329

DEVICE FOR CONVERTING A UNIFORM CIRCULAR MOVEMENT INTO A VARIABLE OR UNIFORM LONGITUDINAL MOVEMENT

Manuel A. Lopez, Madrid, Spain, assignor to Technoresinas Espanola, S.A., Madrid, Spain

Filed Aug. 8, 1977, Ser. No. 822,713
Claims priority, application Spain, May 4, 1977, 458.456
Int. Cl.² F16H 27/02
U.S. Cl. 74—89.2 **3 Claims**



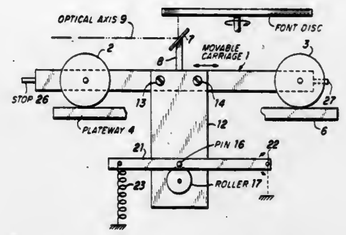
1. A device for converting a uniform circular movement selectively into a variable or a uniform longitudinal movement, said device comprising:
an assembly of elongated circular rods spatially located at the generatrices of a right cylinder, said rods being capable or respective rotation about their own axes with all said rods rotating about their own axes at a constant angular speed,
each rod having circular grooves respectively provided around its periphery, said grooves being selectively spaced from each other along each rod,
said grooves on said rods being arranged respectively from one to another to provide a helicoidal alignment around the assembly of rods,
wire means housed in said grooves and being helically wound about said assembly or rods in said helicoidal alignment of said grooves,
whereby the rotating of said rods about their own axes generates a longitudinal movement of said wire means, said longitudinal movement being uniform when portions of said rods have the grooves equidistantly spaced from each other, and said longitudinal movement being variable when the distance between the grooves varies in accordance with differential elements such that a longitudinal movement is obtained whose velocities with respect to time vary from zero to a maximum and then back to zero so that a distribution of speeds is achieved which responds to a preestablished law of velocities.

4,203,330

PHOTOTYPESETTER CARRIAGE DETENT MECHANISM

Peter R. Ebner, South Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Dec. 27, 1977, Ser. No. 864,307
Int. Cl.² G05G 5/06
U.S. Cl. 74—527 **11 Claims**



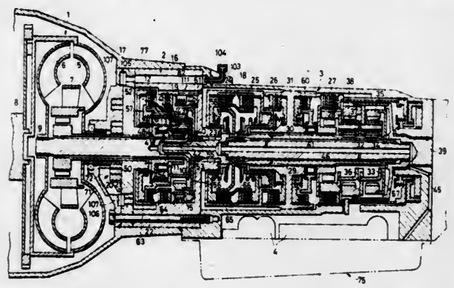
1. In a phototypesetter having a machine frame:
a. an elongated way member;
b. a moveable carriage having a carriage support means for supporting said moveable carriage with respect to said way member and for facilitating a lateral shift of said moveable carriage between a first carriage position and a second carriage position;
c. first detent member support means coupled to said moveable carriage for supporting a first detent member thereon;
d. a second detent member coupled to said machine frame for coacting with said first detent member; and
e. spring means for mechanically biasing said first and second detent members against each other and simultaneously mechanically biasing said carriage support means against said way member.

4,203,331

AUTOMATIC TRANSMISSION WITH OVERDRIVE

Yoshio Shindo, Aichi, and Hiroshi Ito, Ima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichiken, Japan

Filed Sep. 28, 1977, Ser. No. 837,192
Claims priority, application Japan, Apr. 27, 1977, 52-47876
Int. Cl.² F16H 57/02, 37/00
U.S. Cl. 74—606 R **4 Claims**



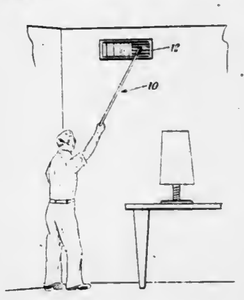
1. An automatic transmission comprising: a fluid torque converter; an overdrive gear mechanism having an input side operably connected to said torque converter; an oil pump having a pump chamber defined by an oil pump body and an oil pump cover and generating a hydraulic pressure; an underdrive gear mechanism operably coupled to an output side of said overdrive gear mechanism, said overdrive gear mechanism thus being located between said torque converter and said underdrive gear mechanism; an overdrive case encompassing said overdrive gear mechanism in cooperation with said oil pump cover; a transmission case extending to encompass the sides of said underdrive gear mechanism in cooperation with said overdrive case; a breather port in communication with the outside atmosphere; oil supply means located generally beneath said underdrive gear mechanism; oil supply passage means defining an oil supply and return system through said automatic transmission between said oil supply means and said oil pump for delivering oil to the operative elements of said automatic transmission; means defining through said overdrive case a plurality of oil supply and return passages formed as part of said oil supply and return system, said passages extending generally axially through said case and being generally located toward the outer circumferential regions thereof; a breather passage extending axially through said overdrive case in communication between said breather port and said oil pump; and a plurality of radially extending communicating holes arranged in flow communication between selected ones of said plurality of oil supply and return passages defined through said overdrive case to eliminate in said automatic transmission the need for further breather passages in said automatic transmission.

4,203,332

ADJUSTING TOOL FOR AIR DELIVERY REGISTER

Sheryll L. Corsetti, P.O. Box 473, Delray Beach, Fla. 33444

Filed Aug. 28, 1978, Ser. No. 937,144
Int. Cl.² B25B 9/00; A47F 13/06
U.S. Cl. 81—3 R **4 Claims**



2. A tool for adjusting external and internal dampers in a register used in an air delivery system, comprising:
a handle means to reach registers at a distance,
an adjusting means attached to an end of said handle means including a base for attaching said adjusting means to said handle means
a body attached to said base, said body having a front gripping portion and a rear gripping portion, said portions in generally flat parallel spaced relationship to adjust said external dampers,
each said portion having a longitudinal slot separating each said portion into two members, said longitudinal slots being in parallel alignment with each other allowing adjustment of said internal dampers,
each said member having a distal transverse edge with a shallow indent to grip external dampers and prevent slippage and an outward longitudinal edge having a plurality of angular indents to adjust said external dampers, said longitudinal edge and said distal transverse edge forming outwardly extending arms for initial opening of said dampers.

4,203,333

COAXIAL CABLE STRIPPING DEVICE

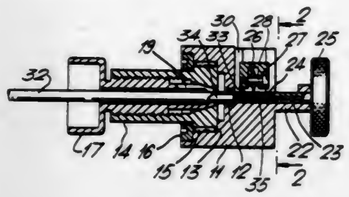
Luigi Campari, Turin, Italy, assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 812,926, Jul. 5, 1977, abandoned. This application Oct. 4, 1978, Ser. No. 948,446

Claims priority, application United Kingdom, Jul. 2, 1976, 27556/76

Int. Cl.² H02G 1/12

U.S. Cl. 81—9.5 A **3 Claims**



1. A device for stripping insulation from between inner and outer conductors of coaxial cables, comprising, means having an axial channel of constant arcuate cross-section, open at both ends with one end adapted to receive and rigidly support a coaxial cable and the other end adapted to rotatably receive a tubular bit mounted concentrically with the channel axis and spaced inwardly from the channel wall, said bit having at one end a bore of substantially equal cross-sectional size to the conductor of a coaxial cable which may be inserted in said channel, and a helical thread of substantially equal height to the insulation thickness between the inner and outer conductors of said coaxial cable, said bit being mounted in generally exact alignment with the coaxial cable for non-gyrotory rotary and reciprocal rectilinear movement relative to the axis of the end portion to bore out the insulation between the inner and outer conductors without substantial deformation of the conductors.

4,203,334

PROCESS AND APPARATUS FOR CUTTING SHEETS INTO INDIVIDUAL SHEETS AND SUBSEQUENT ORDERLY STACKING OF THE INDIVIDUAL SHEETS

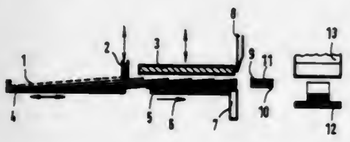
Franz Zettler, Alpenstrasse 5, 8930 Schwabmuenchen, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,481

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2731023

Int. Cl.² B65H 5/24

U.S. Cl. 83—23 **14 Claims**



1. A process for cutting sheets each into a plurality of sheets and thereby forming an orderly stack of said cut individual sheets, comprising:

partially overlapping sheets to be cut and conveying the partially overlapped sheets by a conveyor means towards a cutting means;

cutting the partially overlapped sheets where they overlap, after conveying same through the cutting means by the width of a said individual sheet to separate a stack of individual sheets from the partially overlapping sheets; and

adding further sheets to partially overlap those on said conveyor means as successive stacks of individual sheets are cut off.

4,203,335

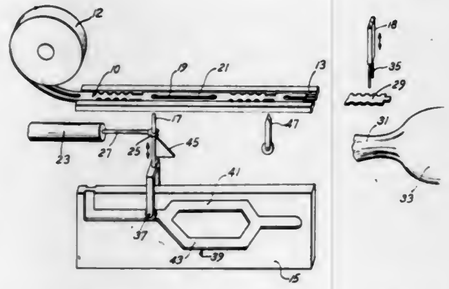
DEVICE TO FEED A RIBBON OF SAUSAGE SUPPORT LOOPS INTO CLIP ATTACHMENT APPARATUS

Rufus G. Coffey, Hazelwood, N.C., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,251

Int. Cl.² B26D 5/20; B65H 17/40

U.S. Cl. 83—232 **6 Claims**



1. A device for feeding a continuous ribbon of individual sausage loops to a clip attachment apparatus, comprising, in combination:

a body member, said body member including a guide track for the ribbon;

a movable ribbon guide pin member mounted in the body member;

a follower connected to the guide pin member;

a cam track defined in the body member, said track having a run for movement of the pin from a null position to a ribbon engagement and subsequent advance position and a separate connected run for ribbon disengagement and pin member movement from the advance to the null position; and

reciprocating drive means for incrementally driving the pin member follower and engaged ribbon in run of the cam track between the null position and the advance position for advancing the ribbon into the clip attachment apparatus and for driving the follower in the connected run for disengaging the pin member from a ribbon when the pin member is retracted from the null position to the advance position.

4,203,336

PUNCH CHANGE MECHANISM FOR A DOUBLE PRESSURE PIN PRESS

Friedrich Boettger, Haan; Walter Engster, Ratingen; Walter Lenssen, and Bodo Missmahl, both of Dusseldorf, all of Fed. Rep. of Germany, assignors to Malmadie & Co. Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

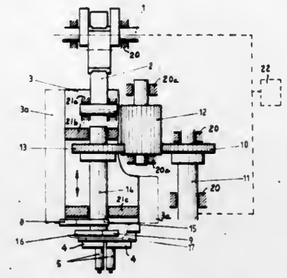
Filed Sep. 27, 1978, Ser. No. 946,183

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750536

Int. Cl.² B26F 1/02

U.S. Cl. 83—550 **8 Claims**

1. In a double pressure press having a pressure carriage supported by and reciprocable with respect to fixed structure, a punch holder plate on the carriage carrying two punches, the punch holder plate being cyclically movable in a plane at a substantial angle with respect to the direction of reciprocation of the carriage, and means for driving the carriage and the punch holder plate and for maintaining them in synchronism, the improved means for driving the carriage and the punch holder plate and for maintaining them in synchronism which comprises a drive train including a first spur gear rotatably mounted on the fixed structure with its longitudinal axis parallel to the direction of reciprocation of the carriage, a second spur gear rotatably mounted on the carriage for reciprocation therewith with respect to the first spur gear, the second spur gear having its axis parallel to the direction of reciprocation of



the carriage, the teeth of one of the first and second spur gears over its entire axial length being constantly in mesh with the teeth of the other spur gear, and the means for driving the carriage and the punch holder plate and for maintaining them in synchronism includes means drivingly connecting the second spur gear with the punch plate holder.

4,203,337

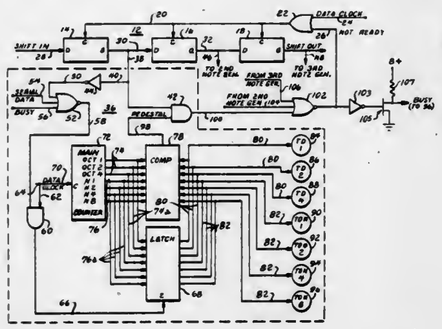
LARGE SCALE INTEGRATED CIRCUIT CHIP FOR AN ELECTRONIC ORGAN

Harold O. Schwartz, Elburn, and Dennis E. Kidd, Sycamore, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Jun. 20, 1978, Ser. No. 917,313

Int. Cl.² G10H 1/06, 5/06, 5/10

U.S. Cl. 84—1.01 **12 Claims**



1. A large scale integrated circuit chip for use in an electronic organ or the like having a keyboard including a plurality of keys and a plurality of key switches respectively controlled by said keys, comprising a plurality of frequency generating means responsive to the actuation of said keyswitches for generating frequencies corresponding to musical tones, each of said generators being capable of generating a frequency corresponding to any note of said electronic organ or the like, means interconnecting said frequency generators with said keyswitches for selectively causing said generators to generate frequencies corresponding to musical tones, a plurality of groups of keying means connected to said frequency generators for keying frequencies out of said chip, separately controllable attack and decay controlling means for each group of said keying means, and said attack and decay controlling means being further responsive to each frequency generator means independently of the other said keying means within each group thereof.

4,203,338

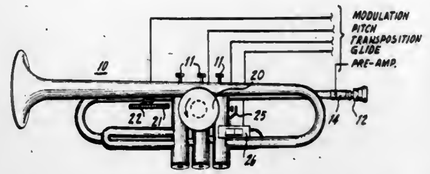
TRUMPET AND SYNTHESIZER APPARATUS CAPABLE OF POLYPHONIC OPERATION

Pat Vidas, 3778 Dunhill Rd., Wantagh, N.Y. 11793

Filed Jun. 4, 1979, Ser. No. 45,594

Int. Cl.² G10H 3/02

U.S. Cl. 84—1.14 **10 Claims**



1. A combination adapted for use with a valve controlled brass instrument of the wind type and a synthesizer module associated therewith, with said instrument providing said synthesizer control signals for operating the same, with a first potentiometer mounted on said instrument and controllable in resistance by means of a first rotatable wheel coupled to said potentiometer for providing a variable resistance change manifesting a pitch control signal for said synthesizer, a second potentiometer mounted on said instrument with a second wheel coupled to said second potentiometer, with said second wheel positioned transverse to said first wheel for varying the resistance of said second potentiometer manifesting a modulation control signal for said synthesizer.

4,203,339

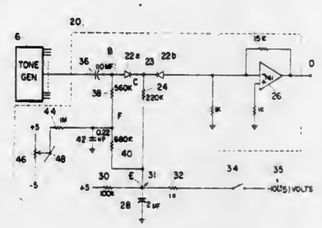
BRASS KEYER SYSTEM FOR ELECTRONIC ORGAN

Alan B. Welsh, and John W. Robinson, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Apr. 6, 1978, Ser. No. 893,872

Int. Cl.² G10H 1/02, 5/10

U.S. Cl. 84—1.19 **23 Claims**



1. A brass keyer system for an electronic musical instrument comprising:

an output,

tone generator means for supplying a square wave signal to said output, and

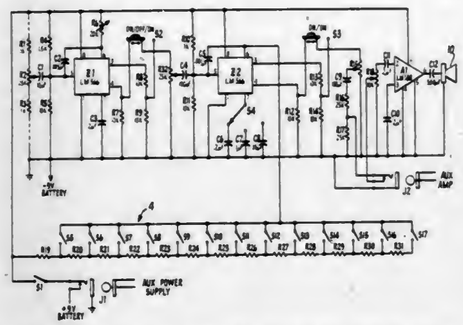
control means interposed between said tone generator means and said output for controlling the amplitude and duty cycle of the square wave signal supplied to said output such that the amplitude increases to a substantially final value and the duty cycle decreases to a substantially final value over a period of time with the decrease in duty cycle lagging the increase in amplitude so that the final value of the duty cycle is reached some time after the final value of the amplitude is reached.

4,203,340

ELECTRONIC MUSICAL INSTRUMENT

David E. Ostrom, Walnut Creek, Calif., assignor to O/R Inc., Walnut Creek, Calif.

Filed Jan. 26, 1979, Ser. No. 6,726
Int. Cl.[2] G10H *1/02, 5/00*
U.S. Cl. 84—1.26 6 Claims



1. An electronic instrument for producing musical tones comprising

tone effect control means selectively controllable by an operator of the instrument to provide an alternating current output signal having selectably differing waveform characteristics and selectively varying rise and decay times and selectively varying amplitude and frequency;

manually operable tone frequency control means having both a selectively variable electrical resistance characteristic and a selectively variable capacitance characteristic, one of said characteristics being variable among logarithmically spaced increments and the other said characteristic being variable among linearly spaced increments; and

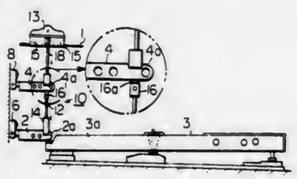
tone signal generating means operatively connected both to the output of said tone effect control means and to said tone frequency control means for generating an output tone signal having a frequency proportional to both the selected resistance and the selected capacitance of said tone frequency control means and having a waveform corresponding at least partially to said tone effect control means output signal.

4,203,341

DAMPER ASSEMBLY OF PIANOS

Hiroyoshi Takahashi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Sizuoka, Japan

Filed Apr. 18, 1978, Ser. No. 897,404
Claims priority, application Japan, Apr. 26, 1977, 52/52181[U]
Int. Cl.[2] G10C *3/22*
U.S. Cl. 84—255 3 Claims



1. An improved damper assembly of pianos comprising:

a lower lever having one end pivoted to a fixed support and having a free end operationally related to the rear end portion of an associated key, such that motion of the key causes the rear end portion thereof to pivot said lower lever; an upper damper lever having a respective one end pivoted to a fixed support and being spaced from and arranged over said lower damper lever;

a motion transmitting damper wire carried at the bottom end thereof by the free end of said upper damper lever, said damper wire being relatively short and fixedly connected with said upper damper lever so that said damper wire is raised and lowered by said upper damper lever; and as it is raised and lowered, said damper wire also maintains the same tilt orientation as said upper damper lever as said upper damper lever pivots, an upwardly held damper head raisable off and lowerable onto an associated string for respectively permitting and damping vibration of that string, and said damper wire at the upper end thereof holding said damper head for movement to raise and lower said damper head as said damper wire is raised and lowered, respectively, and

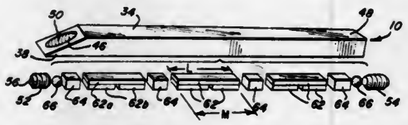
a linking element interposed between said upper and lower damper levers for linking said levers to pivot together, said linking element being fixedly connected to said lower lever at one end thereof and having a rounded cap at the other end thereof, the free end of said upper damper lever resting on and supported by said rounded cap, whereby said linking element does not move rigidly with the said upper damper lever with respect to which said linking element is pivotable.

4,203,342

DEVICE FOR AFFECTING DEFLECTION CONTROL OF AN ELONGATED MUSICAL INSTRUMENT SHAFT

John R. Montgomery, 1020 Spruce St., Winnetka, Ill. 60093, and James S. Richards, 945 E. Kenilworth, #330, Palatine, Ill. 60067

Filed Sep. 25, 1978, Ser. No. 945,306
Int. Cl.[2] G10D *3/00*
U.S. Cl. 84—293 16 Claims



1. A device for affecting deflection control of an elongated musical instrument member, comprising a sleeve adapted to extend along and be carried by the elongated member, sleeve deflection means of predetermined shaped, and selectively and removably positioned within said sleeve, and adjustable control means mounted on said sleeve and selectively coacting with said sleeve deflection means to affect controlled directional and locational deflection of said sleeve and the elongated member carrying said sleeve.

4,203,343

SNARE DRUM CONTROL MECHANISM

Harry Bargeman, 56 Park Gardens, Hawkwell, nr. Hockley, Essex, England

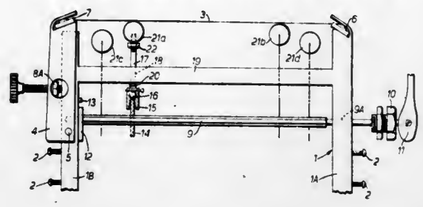
Filed Nov. 3, 1978, Ser. No. 957,208
Int. Cl.[2] G10D *13/02*
U.S. Cl. 84—415 7 Claims

1. A drum snare control mechanism comprising

a frame for location within the shell of a snare drum,

a snare mounted under tension on said frame,

snare-support means on said frame movable into and out of a position in which they engage the snare at two spaced apart positions thereon leaving the length of snare therebetween free to vibrate, and tone-varying means operable at will to change the distance between said positions thereby to change the tone of the drum by a desired amount, said snare-support means comprising a first pair of snare-support members spaced apart by a first distance and a second pair of snare-support members spaced apart by a second distance within said first distance, and said tone-varying means comprising a mechanism operable to move the first and second pairs of members alternately into engagement with the snare.

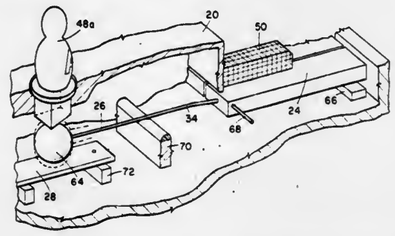


4,203,344

MUSICAL EDUCATION TOY

Teresa A. Krosnick, 1645 B Waverly Way, Baltimore, Md. 21239

Filed Mar. 9, 1979, Ser. No. 19,238
Int. Cl.[2] G09B *15/04*
U.S. Cl. 84—470 R 13 Claims



1. In a toy for musical education comprising means defining respectively corresponding pluralities of: notes in scale positions, keys in a keyboard, hammers, and tone bars associated with said hammers, the improvement comprising: a plurality of tokens having respective identifying means, each token having correspondence to a respective one of said notes, first means for sounding each tone bar by dropping a respective token at a scale position thereabove; and means for associating said tone bar, token identity and scale position with position of a said key independent of visible key alignment with said scale position.

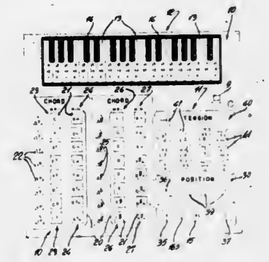
4,203,345

AUTOMATIC VISUAL TEACHING DEVICE FOR THE LEARNING OF MUSIC OR COMPONENT PARTS THEREOF

Maurice Collin, 620 Rue Robichaud Charlesbourg; Michel Lapointe, 1672 Ave. Colmar Orsainville, and André Collin, 1525 Leduc Bourg Royal, all of Quebec City, Quebec, Canada

Filed Jan. 24, 1978, Ser. No. 871,973
Claims priority, application Canada, Nov. 15, 1977, 290883
Int. Cl.[2] G09B *15/02*
U.S. Cl. 84—478 16 Claims

1. An automatic visual music teaching device for displaying the exact structure of coded musical chords or scales snd permitting finger placement on a visual keyboard, said device comprising a first group of actuable switches for selecting a desired major and minor coded chord to be visually displayed, circuit means associated with said switches for providing binary signals indicative of said desired coded chord or scale, a decoding circuit for decoding said signals and providing a coded message signal, said coded message signal constituting an output address line signal which activates predetermined memory circuits of a memory system, said memory circuits feeding coded signals to matrix decoders to select proper x-y lines in said matrix, and display means having a plurality of light sources each associated with an intersecting x-y line of said matrix to visually indicate a composite part associated with one of said actuable switches representative of said desired coded chord, said display means further having a keyboard having visual coded markings thereon corresponding to the structure of all coded markings on particular ones of said actuable switch means representing the selected coded chord and modification thereof, each light source being associated with each said visual coded markings whereby to indicate the position of said composite parts of said coded chord in association with said keyboard; a second group of actuable switches representative of individual tensions of a selected chord of said first group of switches for altering, by augmenting or diminishing the said selected chord, the structure of said selected chord to display a modified selected chord; a third group of switches representative of the fundamental and three inversions of said selected chord to select the position of said selected chord on the keyboard and while maintaining the structure of said selected chord, said second and third group of switches also having circuit means to provide coded message signals to said memory circuit.

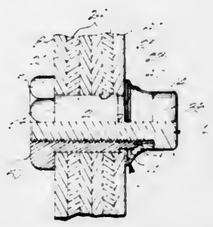


4,203,346

BLIND BOLT FASTENER FOR LOW BEARING STRENGTH MATERIALS

David E. Hall, Costa Mesa, and Edgar L. Stencel, Huntington Beach, both of Calif., assignors to VSI Corporation, Pasadena, Calif.

Continuation of Ser. No. 806,302, Jun. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 730,738, Oct. 8, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 867,008
Int. Cl.[2] F16B *13/06, 13/10*
U.S. Cl. 85—70 14 Claims



1. An improvement in a blind fastener of the type having a nut with a manufactured head to abut a setting side of a pair of sheets, a shank of the nut integral with and axially adjacent the manufactured head, the shank being for receipt in aligned holes in the sheets, an internally threaded bore of the nut, and a nose of the nut integral with the shank and on an end of the nut opposite the manufactured head, a sleeve for developing a blind side bulb against a backside of the sheets and to cooperate with the manufactured head in holding the sheets together, the

sleeve having an axial bore and a limited outside diameter for passing through the aligned holes, a threaded core bolt for receipt in the bore of the sleeve and having a head for compressive engagement with an end of the sleeve opposite the nose of the nut, the core bolt head having a diameter for passing through the aligned holes, the improvement comprising:

(a) a relieved section of the nose of the nut extending axially from the nose end of the nut to a radial shoulder at an interior end of the relieved section, the relieved section having a diameter less than the diameter of the shank;

(b) a thin-walled and tapered section of the sleeve having an internal diameter for receipt on the relieved section of the nut, an outside diameter that is substantially constant and equal to the diameter of the shank, a free end for compressive bearing on the shoulder at the interior end of the relieved section, the taper being an internal taper and converging in a direction away from the free end of the thin-walled section so that the wall thickness of the thin-walled section is always thinner at the backside of the sheets than anywhere else in the thin-walled section in a direction away from the sheets, a maximum outside diameter substantially equal to the diameter of the shank, and an axial length greater than the axial length of the relieved section of the nut;

(c) a thick-walled section of the sleeve axially adjacent the thin-walled section, the thick-walled section having an internal diameter less than the internal diameter of the thin-walled section, and an outside diameter substantially equal to the outside diameter of the thin-walled section, the thick-walled section having the end of the sleeve which compressively bears with the head of the core bolt; and

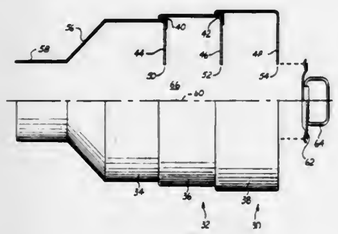
(d) the thin-walled section being capable of receipt in the hole in the backside sheet and in extending from such sheet, and of collapsing to form a bulb at the backside sheet in response to being compressed between the head of the core bolt and the shoulder of the nut upon the tightening of the core bolt in the nut to draw the head of the core bolt towards the shoulder of the nut.

4,203,347

SHOCK SUPPRESSING APPARATUS AND METHOD FOR A ROCKET LAUNCHER

George T. Pinson, and Alex B. Hunter, both of Huntsville, Ala., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 10, 1978, Ser. No. 895,247
Int. Cl.[2] F41F *3/04*
U.S. Cl. 89—1.816 39 Claims



1. A method of suppressing a shock wave generated by a rocket launching device, wherein the rocket launching device comprises an elongate launch tube having a longitudinal axis, a forward end from which a rocket is fired, and a rear exhaust end through which exhaust gases exit during firing of the rocket; said exhaust end having a predetermined cross-sectional area and diameter, said method comprising:

a. providing a substantially enclosed expansion chamber having a diameter and cross-sectional area substantially greater than the diameter and cross-sectional area of the exhaust end of the launch tube,

b. providing annular baffle means extending in said chamber radially inwardly toward the longitudinal axis of the launch tube,

c. providing in said baffle means longitudinally aligned opening means to permit rearward ejection of a nozzle plug from a rocket mounted in said launch tube and to permit rearward discharge of gaseous exhaust from said rocket,

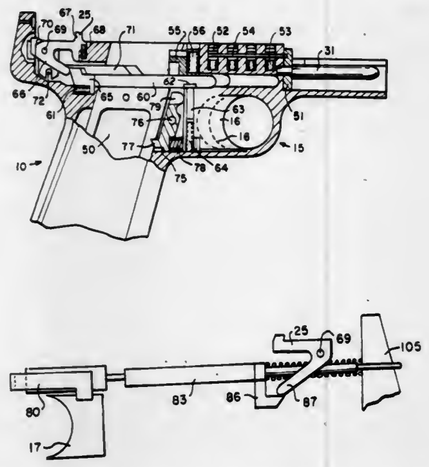
d. suppressing a shock wave generated by firing the rocket in the launch tube by partially absorbing the shock wave by the baffle means, and partially reflecting the shock wave back toward the launch tube by the baffle means, thereby suppressing the shock wave.

4,203,348

FIREARM APPARATUS

Paul J. Sokolovsky, 641 Torrington Dr., Sunnyvale, Calif. 94087

Filed Dec. 9, 1977, Ser. No. 859,047
Int. Cl.[2] F41C *17/08*
U.S. Cl. 89—148 18 Claims



1. In a firearm having a firing mechanism, a safety mechanism comprising: a self-retracting safety trigger member and a movable safety assembly having a safety-on and a safety-off position responsive to successive finger pullings of the safety trigger member, a first of such pullings inhibiting and a second of such pullings enabling the operation of said firing mechanism in the firearm.

4,203,349

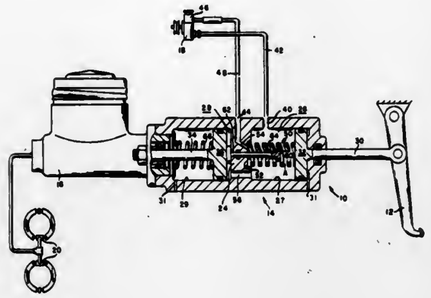
BRAKE BOOSTER

Earl A. Sheridan, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 3, 1978, Ser. No. 892,574
Int. Cl.[2] F15B *13/02*; B60J *13/12*
U.S. Cl. 91—47 2 Claims

1. In a brake booster, the combination of a housing having an inlet and a return, said housing having a pair of bores leading to an inner wall, an input member movably disposed within one of said bores, an output member movably disposed within said other bore and cooperating with said inner wall to define a pressure chamber, said inlet and said return opening into said one bore to provide fluid pressure within said one bore, said inner wall including a passage communicating said one bore with said pressure chamber to communicate fluid pressure from said one bore to said pressure chamber, a resilient member extending between said inner wall and said input member and defining a central space, said return being substantially disposed within said inner wall and opening into said central space, said input member being movable toward said inner wall

to contract said resilient member to restrict communication from said inlet to said return via said central space in order to increase the fluid pressure in said one bore and said pressure chamber, and a push member disposed within said central space and extending through said inner wall to oppose said input member and said output member but normally spaced from said input member, said push member providing a rigid connection between said input member and said output member when said output member remains substantially stationary after a predetermined amount of movement of said input member.

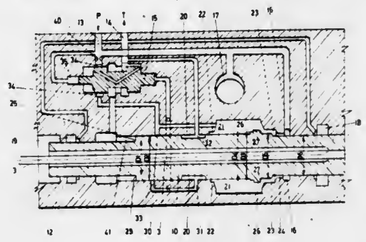


4,203,350

HYDRAULIC PERCUSSIVE MACHINES

Trevor E. Wallace, Bryanston, South Africa, assignor to The Steel Engineering Company Limited, Roodepoort, South Africa

Filed Feb. 28, 1978, Ser. No. 882,218
Claims priority, application South Africa, Mar. 7, 1977, 77/1338
Int. Cl.[2] F01B *7/18, 11/02*; F01L *25/06*
U.S. Cl. 91—235 5 Claims



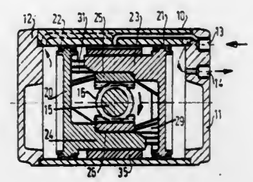
1. A hydraulic percussive machine comprising: a piston, a cylinder in which the piston is caused to reciprocate, a cushioning flange on the forward end of the piston, a cavity in the cylinder in which the cushioning flange normally moves, a dashpot at the forward end of the cavity into which the cushioning flange can move on overtravel of the piston during the power stroke of the piston to trap fluid in the dashpot, a rear space in the rear of the cylinder, a shoulder on the backward end of the piston operating in the rear space, a control valve for admitting pressure fluid to the rear space on the working stroke and exhausting pressure fluid from the rear space on the return stroke, an inlet to the dashpot at its forward end, means to supply pressure fluid to said inlet from a source outside said cylinder whereby the last-named fluid first enters the dashpot and then proceeds to said cavity, and an outlet from the cavity leading to the control valve so that when that valve admits fluid to the rear space fluid from the cavity flows into the rear space.

4,203,351

FLUID MOTOR ACTUATOR FOR ROTATING A SHAFT BACK AND FORTH

Heinz G. Schwind, Hengelo, Netherlands, assignor to Griesel B.V., Hengelo, Netherlands

Filed Feb. 14, 1978, Ser. No. 877,717
Int. Cl.[2] F01B *7/02*
U.S. Cl. 92—69 R 6 Claims



1. A fluid motor actuator for rotating a shaft back and forth, comprising a cylinder in which two pistons provided with extensions facing one another and carrying racks are movable towards and away from one another, said racks facing one another and engaging a common spur gear on a transverse shaft projecting from the cylinder, said pistons each being provided with at least two auxiliary extensions, describing together with the former extensions carrying the racks one common cylindrical outer surface, and said extensions and auxiliary extensions of one piston and those of the other piston are alternating.

4,203,352

PISTON FOR MULTI-STAGE OPERATION

Waldemar Schuster, Grossglocknerstr. 2d, D-8135 Söcking-Gartenstadt, and Max G. Hohn, Prinzenweg 5, D-8130 Starnberg, both of Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,501
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2631013
Int. Cl.[2] F01B *19/00*
U.S. Cl. 92—94 8 Claims



1. In a combined air and spring-loaded brake cylinder, the combination of a plunger, a piston having a peripheral portion surrounding a body portion of a resilient material, one side of said body portion being acted upon by one of said plunger and air pressure, a diaphragm between said piston and said plunger, said piston body portion having a central portion which is capable of elastic deformation when subjected to a force exceeding a predetermined level, a pressure plate contacting the other side of said piston, spring means for urging said pressure plate in contact with said piston, and a piston rod to be coupled to a brake operating mechanism and connected to said

pressure plate, said piston movable as a unit along a predetermined distance when acted upon by one of said plunger and air pressure to permit additional travel of the plunger upon deformation of said body portion.

4,203,353

PISTON MEANS FOR PISTON-CYLINDER ARRANGEMENTS

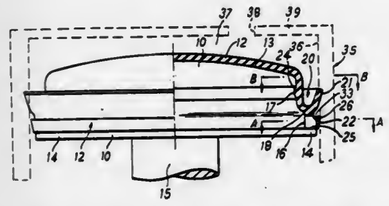
Jack Burnham, Melksham, and Jack Washbourn, London, both of England, assignors to Avon Industrial Polymers Limited, Melksham and Westinghouse Brake & Signal Co. Ltd., London, both of, England

Filed Sep. 19, 1977, Ser. No. 834,441

Claims priority, application United Kingdom, Sep. 24, 1976, 39681/76

Int. Cl.² F01B *31/10*; F16J *9/08*

U.S. Cl. 92—159 **7 Claims**



1. A piston-cylinder arrangement comprising a cylinder member and piston means mounted slideably therein, the piston means comprising a piston member and a packing member including first and second axially spaced radially outer surfaces dimensioned such that each contacts slidingly against the wall of said cylinder, the piston means comprising a lubricant reservoir in communication with the space between said surfaces, said space being substantially closed by said cylinder wall and the packing member further comprising a ring portion the radially outer surface of which constitutes said second outer surface and which has a diameter greater than the maximum diameter of the piston member to prevent "hammering" of the piston means in the cylinder member, and further comprising a lip portion having a radially outer surface constituting said first outer surface, the lip portion and ring portion being formed as a unit integral with one another in axially spaced relation such that the radially outer surface of the lip portion cooperates with an opposed space defining surface of said ring portion to define said space, the space defining surface of the ring portion and the radially outer surface of the ring portion forming an acute angle and a single scraper ring for lubricant recovery being formed on the outermost edge of the space defining surface of the ring portion, said lip portion extending in a direction away from said scraper ring.

4,203,354

HYDRAULIC PISTON WITH METALLIC O-RING GROOVE AND NON-METALLIC SLIDABLE SURFACES

Joseph A. Cunningham, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 752,366, Dec. 20, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,305

Int. Cl.² F16J *1/00, 9/08, 11/04*

U.S. Cl. 92—169 **2 Claims**

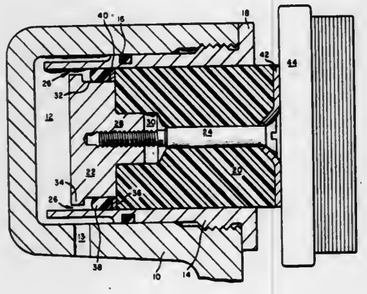
1. A fluid pressure actuated piston assembly comprising:

a housing having a cavity therein, said cavity having at least one closed end;

a metallic cylindrical member fixed to said housing and extending into said cavity, said cylindrical member having a bore therein connected to said cavity, said bore defining a first fluid pressure sealing surface;

a non-metallic piston located in said bore and cooperating with said housing to define a pressure chamber in said cavity, said non-metallic piston having a peripheral surface directly engaging said first fluid pressure sealing surface in said metallic cylindrical member, said peripheral surface being non-metallic attenuating wear of said metallic first fluid pressure sealing surface, said non-metallic piston having a first face with a hole therein and located in said bore and a second face located outside said housing;

a metallic piston located in said pressure chamber having a first diameter section separated from a second diameter section by a first shoulder and a third diameter section separated from said second diameter section by a second shoulder, said first diameter section being smaller than said first fluid pressure sealing surface, said second diameter section being smaller than said first diameter section, and said third diameter section being smaller than said second diameter section;



fastener means for holding said second diameter section of said metallic piston against said first face of said non-metallic piston to establish a second sealing surface on said second diameter section and a third sealing surface on said first face, said third diameter section being positioned in said hole in engagement with the walls thereof, said fastener means, said third diameter section and said non-metallic piston cooperating to hold said first diameter section concentric to said bore to prevent the first diameter section from contacting said first fluid pressure sealing surface; and

sealing means located between said first and second fluid pressure sealing surface, said sealing means responding to fluid pressure in said pressure chamber by moving into engagement with said third sealing surface and thereafter being compressed to radially expand into a fluid-tight engagement with said first and second fluid pressure sealing surfaces to prevent fluid from being communicated from said pressure chamber through said bore.

4,203,355

PACKAGING STRUCTURE AND APPARATUS USEFUL IN ITS ASSEMBLY

George L. Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 7, 1978, Ser. No. 884,193

Int. Cl.² B31B *1/22*

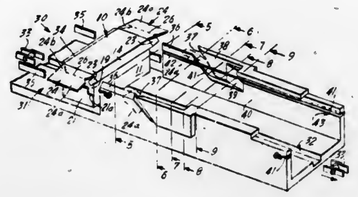
U.S. Cl. 93—58 R **7 Claims**

1. Apparatus for use in the assembly of a partially erected carton of the type having at least one flap having one end hingedly attached to said carton and an opposite free end, said flap being adapted for intimate contact with portions of one wall of said carton for closing and sealing the same, said apparatus comprising:

means for moving said carton along a travel path, with said flap extending in a direction transverse to the travel path;

means adjacent said travel path for folding said flap against the main body of said carton as it is moved along said travel path;

means for forcing said flap into intimate contact with said wall portions, for bonding thereto, after said flap is folded against said wall portions;



and means disposed adjacent said travel path for severing said flap along a line between said one end and said free end thereof after said flap is folded to the closing and sealing position.

4,203,356

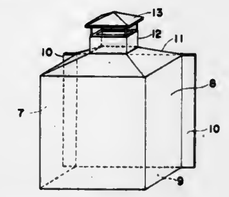
BAFFLE FOR GAS HEATER VENTS

Lawrence J. Pieschke, Box 171, Woodslee, Ontario, Canada (N0R 1V0)

Filed Nov. 30, 1978, Ser. No. 965,080

Int. Cl.² F23L *17/02*

U.S. Cl. 98—66 R **1 Claim**



1. A baffle for enclosing the part of the vent of a gas heater which is located on the outside of a wall of a building containing the gas heater, said baffle comprising a sheet metal enclosure having a front rectangular wall, a side rectangular wall extending from each vertical edge of said front wall and bent at right angles thereto, an upper trapezoidal cover extending from the top edge of said front wall toward the building, second and third upper trapezoidal covers extending from the top edges of said side wall toward the other side wall, and a fourth upper cover extending from the rear wall of the building toward said front rectangular wall, the upper edges of said four upper covers terminating in a short chimney of rectangular horizontal cross section, a cover of generally pyramidal shape spaced above said chimney and extending beyond the four sides thereof, and means spacing said cover above said chimney to enable the escape of combustion gases but to prevent rain and snow from entering the chimney.

4,203,357

OSCILLATING COOKING APPARATUS

Marcel Vaussanvin, Tournus, France, assignor to Manufacture Metallurgique de Tournus, Tournus, France

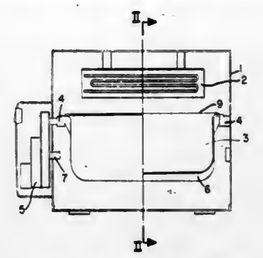
Filed May 17, 1979, Ser. No. 39,947

Claims priority, application France, Jan. 9, 1979, 79 01165

Int. Cl.² A47J *37/04, 37/12*

U.S. Cl. 99—340 **9 Claims**

1. An oscillating cooking apparatus comprising, a fixed frame, a heat source mounted adjacent the top of said frame, an open-topped receptacle for holding food to be cooked, means on said frame mounting said receptacle for free rotation about its longitudinal horizontal axis below said heat source, said receptacle being of prismatic form and having a polygonal base



in the form of an inset dihedron, and means for oscillating said receptacle in a rocking motion about said axis.

4,203,358

DEVICE FOR COOKING FOODSTUFFS

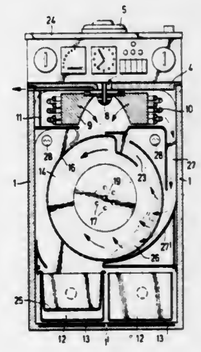
Hans Vogt, 8391 Erlau, Passau, Fed. Rep. of Germany

Continuation of Ser. No. 724,732, Sep. 20, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,223

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1975, 2541718

Int. Cl.² A47J *27/00*

U.S. Cl. 99—352 **13 Claims**



1. A device for cooking food which comprises:

an insulated housing;

a heat source;

a gas penetrable hollow cylinder adapted to receive and carry food while the food is being cooked, said cylinder being mounted within said housing for rotational movement in two opposite directions about a horizontal axis, said cylinder being constructed such that food accumulates at a generally fixed location on the interior of said gas penetrable cylinder when said cylinder is rotated in a first direction, said cylinder being further constructed such that it includes a permanently open food receiving and discharging slot-like opening extending along the longitudinal axis of said cylinder and arranged to permit the discharge of said food only during rotation of said cylinder in a second direction opposite to said first direction;

means for rotating said gas penetrable hollow cylinder in said two opposite directions, including means for reversing the rotational direction of said cylinder from said first to said second direction after the expiration of a defined cooking period; and

heat supply means for supplying a heated gas stream from said heat source to the inside of said hollow cylinder, comprising:

a downwardly directed passageway which places said heat source into communication with said cylinder such that

heated gas is delivered to said generally fixed location on said cylinder where food accumulates when said cylinder is rotated in said first direction; said passageway being bordered at one end by an arcuate deflector arranged such that said deflector and the wall of said cylinder converge to reduce the cross section of said passageway in the vicinity of said fixed location to direct a flow of heated air towards said fixed location on said cylinder and into contact with said accumulated food to be cooked.

4,203,359

HYDRAULICALLY DRIVEN PRESS

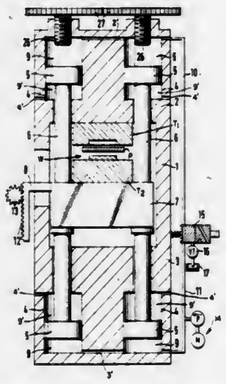
Horst Baltschun, Rülzheim, Fed. Rep. of Germany, assignor to SMG Süddeutsche Maschinenbau-Gesellschaft mbH, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,957

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739340

Int. Cl.² B30B 15/16

U.S. Cl. 100—209 11 Claims



1. A hydraulically operated press which includes a press frame having a first and second cross beam between which a press ram is displaceable by at least two cylinder-piston means operable in two directions by a pressure medium supplied from at least one pressure medium source, characterized in that each cylinder-piston unit includes a cylinder arranged in the first cross beam and in the second cross beam, a piston is displaceably guided in each of the cylinders, each of the pistons has an effective piston surface upon which the pressure medium impinges so as to displace the respective pistons in one direction, and piston rod means connected to the press ram for joining together the pistons of the respective cylinder-piston units, wherein a working space is provided between the press ram and the first cross beam and between the press ram and the second cross beam, characterized in that the press ram executes a working stroke in two directions of movement, an auxiliary drive means is provided for driving the press ram in idle strokes preceding each working stroke in both directions of movement, each cylinder-piston unit includes a cylinder chamber means in the first and second cross beams for accommodating the pressure medium, means are provided for communicating the cylinder chamber means of one of the cylinder-piston units with the cylinder chamber means of the other cylinder-piston unit in the respective cross beams, at least one control valve means is provided for selectively controlling a flow of the pressure medium from the pressure medium source between the cylinder chamber means in the respective cross beams, a first pressure medium conduit means is arranged between the control valve means and the cylinder chamber means of the first cross beam, a second pressure medium conduit means is arranged between the control valve means and the cylinder chamber means of the second cross beam, said control valve means being constructed such that one of the pressure medium conduit means and the cylinder chamber means associated with the respective working stroke directions are selectively connected to the pressure medium while the other pressure medium conduit means associated with the other cylinder chamber means is relieved of the pressure medium.

4,203,360

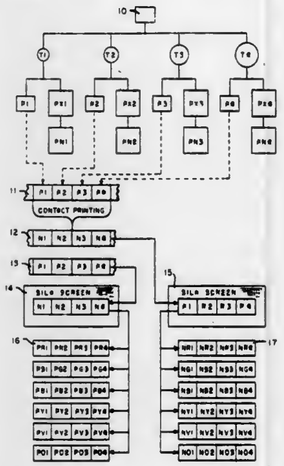
METHOD FOR SILK-SCREEN PRINTING

Steven R. Madwed, 11 Woody La., Fairfield, Conn. 06430

Filed May 5, 1977, Ser. No. 794,064

Int. Cl.² B41N 1/24

U.S. Cl. 101—129 9 Claims



1. A method of making a multicolor silk screen print of a subject transparency of an image which includes the step of exposing said subject transparency for a plurality of time periods to make a series of trial transparencies of different intensities corresponding to the exposed time period, assemblying said trial transparencies of varying intensity onto a film strip, forming a negative transparency strip and a positive transparency strip of said trial transparency on said film strip, making a plurality of monochromatic color trial transparencies strips from each of said negative and positive transparency strips by silk screen printing wherein each of said color trial transparency strips has thereon a plurality of image of varying intensities of like monochromatic color formed thereon, and superposing said negative color transparency trial strips and positive color transparency trial strips on one another for viewing any combination of superimposed images thereon to form a desired composition of said superposed images.

3. A method of making a multicolored print of a subject transparency of an image which includes the step of exposing said subject transparency for a plurality of time periods to make a series of trial transparencies of different intensities corresponding to the exposed time period, assemblying said trial transparencies of varying intensities onto a film strip, forming a negative transparency strip and a positive transparency strip from said trial transparency film strip; making a screen of each of said negative and positive transparency strips; making a plurality of monochromatic color trial transparency strips from each of said screens by printing through said screen the appropriate color media wherein each of the trial transparency strips has thereon a plurality of images of varying intensities of like monochromatic color thereon; and superposing said trial transparency strips one on the other for viewing any combination of superimposed images thereon to form a desired composition of said superimposed images.

4,203,361

SHEET-FED ROTARY PRINTING MACHINE

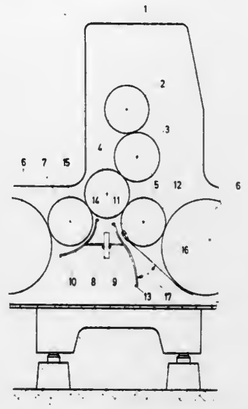
Gerhard Pollich, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,451

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724856

Int. Cl.² B41F 7/10, 21/00; B65H 5/12

U.S. Cl. 101—177 2 Claims



1. Sheet-fed rotary printing machine having a plurality of rotatable sheet transfer drums forming a sheet travel path between respective printing units of the machine having a respective rotary impression cylinder, comprising a plurality of stationary sheet guide plates disposed below the sheet transfer drums and extending across substantially the entire width thereof, the impression cylinder being disposed in the sheet transfer path downstream of one of the sheet transfer drums and upstream of another of the sheet transfer drums, the one sheet transfer drum being a sheet turning drum disposed directly upstream of the impression cylinder in the sheet transfer path, said stationary sheet guide plates including a first sheet guide plate extending toward the periphery of the one sheet transfer drum in direction of rotation thereof, and a second sheet guide plate extending away from the periphery of the another sheet transfer drum in direction of rotation of the another sheet transfer drum, the plurality of sheet transfer drums including a third drum disposed immediately upstream of the one sheet transfer drum in the sheet transfer path, said first sheet guide plate approaching toward the periphery of the one sheet transfer drum in rotary direction of the one sheet transfer drum and extending substantially equidistantly from the periphery of the one sheet transfer drum in vicinity of the impression cylinder, said first sheet guide plate having a substantially sinusoidal shape over the length thereof and having an end portion facing toward the third sheet transfer drum and extending downwardly and substantially radially to the one sheet transfer drum so as to form, during rotation of the respective sheet transfer drum at any speed, an air cushion between the respective sheet guide plate and the underside of a sheet being transferred on the respective sheet transfer drum thereabove.

4,203,362

ADJUSTABLE SELF-INKING STAMPING DEVICE

James L. Underwood, Kennesaw, Ga., and Sol Shapiro, Charlotte, N.C., assignors to Adjusta-Mounts, Inc., Atlanta, Ga.

Filed Nov. 2, 1978, Ser. No. 957,138

Int. Cl.² B41F 1/38

U.S. Cl. 101—327 7 Claims

1. A manual self-inking stamping device comprising:

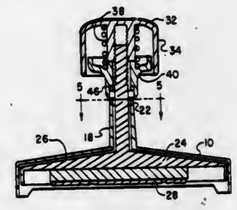
(a) base means for contacting material to be stamped, said base means having a downwardly open recess therein,

(b) stamp pad means disposed within said recess of said base means for relative vertical movement with respect thereto, said stamp pad means having a shaft fixed thereto and extending outwardly through said base means,

(c) handle means mounted at the extending end of said shaft for vertical movement therewith, said handle means being selectively positionable along the length of said shaft;

(d) stop means disposed in the vertical path of movement of said handle means for abutment therewith during downward vertical movement thereof,

(e) biasing means disposed intermediately of said handle means and said base means for urging said handle means away from said stop means and said base means, and for normally biasing said stamp pad means upwardly within said recess of said base means, and



(f) selectively operable locking means associated with said shaft for movement between an operating disposition in which said locking means simultaneously engages said handle means and said base means to lock said handle means against said positioning movement thereof along said shaft, whereby said handle means may be depressed against the biasing force of said biasing means to cause said stamp pad means to contact the material to be stamped, and an adjusting disposition in which said handle means may be selectively positioned along said shaft to vary the effective length of said shaft between said handle means and said stop means and thereby vary the distance said handle means may be moved vertically downwardly before abutting said stop means so that the resulting stamping pressure exerted against the material to be stamped is correspondingly varied.

4,203,363

SHEET GRIPPER FOR PRINTING CYLINDER AND THE LIKE

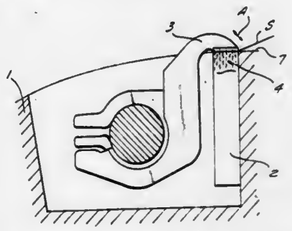
Siegfried Walter, Radebeul; Michael Schneider, Dresden, and Hartmut Nagel, Coswig, all of German Democratic Rep., assignors to Polygraph Leipzig Kombinat fuer Polygraphiscje Maschinen und Ausrüstungen, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 780,245, Mar. 22, 1977, abandoned. This application Apr. 6, 1977, Ser. No. 785,085

Claims priority, application German Democratic Rep., Mar. 22, 1976, 4119195

Int. Cl.² B41F 21/04

U.S. Cl. 101—409 7 Claims



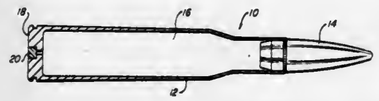
1. In a sheet gripper for a sheet-displacing apparatus wherein

a pair of gripper elements have faces engageable with each other to grip a sheet, the improvement wherein at least one of said gripper elements is formed at its respective face of a relatively soft elastomeric material in which is embedded a multiplicity of relatively hard but flexible fibers extending from the respective face toward the other face.

4,203,364
CARTRIDGE FOR REDUCING BORE EROSION AND EXTENDING BARREL LIFE

Herbert H. Dobbs, 23 Dupont Way, Wright-Patterson AFB, Ohio 45433

Filed Jun. 16, 1978, Ser. No. 916,167
Int. Cl.² F42B *31/02*
U.S. Cl. 102—38 WR **2 Claims**

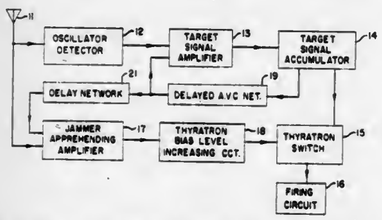


1. An ammunition cartridge for firearms, whereby the use of said cartridge results in reduced bore erosion and extended barrel life, said cartridge comprising:
an exterior casing,
said casing having a projectile at one end and detonating means at the other end,
said casing being substantially filled with an explosive propellant,
said cartridge having a rupturable coolant-lubricant containing capsule positioned immediately behind said projectile within said casing, said capsule being substantially cylindrical and having front and rear walls and a coolant-lubricant contained therebetween,
said front wall being very thin so as to rupture and release said lubricant when said cartridge is detonated,
said rear wall being comparatively thick and biconcave in cross section so as to resist collapse when said cartridge is detonated,
said capsule, when ruptured, serving as a piston to keep powder gases separated from said liquid around the base of said projectile and forcing said liquid to flow between said projectile and the surface of the bore of the firearm barrel.

4,203,365
JAMMER APPREHENDING AMPLIFIER FOR PROXIMITY FUZES

Bradshaw Burnham, Rochester, N.Y., and Charles F. Nichols, Webster, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1956, Ser. No. 611,084
Int. Cl.² F42C *13/04*
U.S. Cl. 102—214 **9 Claims**

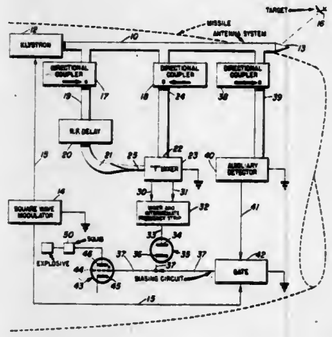


1. A device for exploding a vehicle in proximity to a target, a proximity control circuit comprising a source of electromagnetic energy, means connected to said source for radiating said energy into space and for intercepting electromagnetic energy therefrom, including any portion of said radiated energy reflected from a target, first circuit means connected to said source and being selectively responsive to said reflected energy for generating an initiating signal, normally ineffective electroresponsive means connected to said last named means for actuating a firing mechanism upon being rendered effective by said initiating signal, and second circuit means connected to said source and to said electroresponsive means being selectively responsive to intercepted energy other than said reflected energy for maintaining said electroresponsive means ineffective until a predetermined time after interception of said other energy.

4,203,366
FM FUZE CIRCUIT

Gilbert Wilkes, Gerrardstown, W. Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 1, 1957, Ser. No. 637,846
Int. Cl.² F42C *13/04*
U.S. Cl. 102—214 **6 Claims**

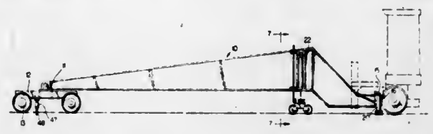


1. A microwave proximity fuze for a missile, comprising, a radio transmitting-receiving system including a waveguide having at one end a klystron with a repeller electrode and an antenna at the other end thereof, means including a square wave modulator for sending a predetermined sequence of voltage pulses to the repeller of said klystron to produce corresponding but well-defined frequency changes in the output signals from said klystron, said output signals being transmitted through said waveguide and radiated by said antenna into free space and intercepted and reflected back to said antenna by a target, a pair of directional couplers, one of said couplers being responsive only to transmitted signals and the other said coupler being responsive to received signals reflected from said target, means including a balanced mixer having its input channels connected to receive said signals from said couplers, means including crystal detectors mounted in the output channels of said balanced mixer, means including an intermediate frequency amplifier for receiving the output signals from said crystal detectors, means including a diode for receiving a unidirectional voltage signal from said intermediate frequency amplifier, an auxiliary detector, a third directional coupler associated with said waveguide for transmitting outgoing signals to said auxiliary detector, said auxiliary detector producing a rectified transmitted signal, means including a gate electrically associated with said auxiliary detector and said diode as well as said square wave modulator to give a negative bias on the cathode of said diode, said bias on said cathode of said diode being determined jointly by the voltage derived from the rectified transmitted signal from said auxiliary detector and the voltage from said square wave modulated, and a firing circuit for said fuze including a squib and a thyratron tube having an anode, a cathode and a control grid for also receiving said negative bias, said thyratron causing detonation of said squib whenever the negative bias of said control grid becomes reduced sufficiently to permit a discharge to occur between its anode and cathode.

4,203,367
LIFT AND LINE BEAM EXTENSION

John K. Stewart, and Helmuth von Beckmann, both of Columbia, S.C., assignors to Canron Corp., Columbia, S.C.

Continuation of Ser. No. 663,194, Mar. 1, 1976, abandoned, which is a continuation of Ser. No. 572,707, Apr. 29, 1975, abandoned, which is a continuation-in-part of Ser. No. 397,817, Sep. 17, 1973, abandoned. This application Apr. 30, 1979, Ser. No. 34,950
Int. Cl.² E01B *33/06*
U.S. Cl. 104—7 B **26 Claims**

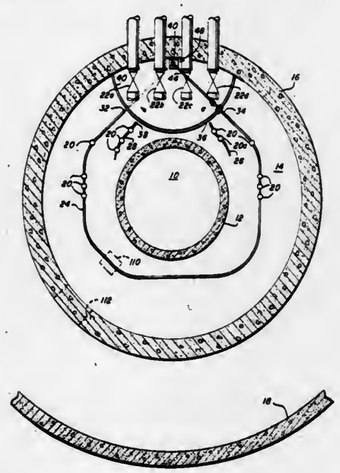


1. A device for lifting and aligning a railroad track, said device comprising a beam member for extending longitudinally of the track and having track engaging wheels mounted at a first end of said beam member and a pair of reaction blocks, one for each rail, on said beam member in the region of the second end of said beam member, each reaction block having a laterally facing flange for engaging a side of a rail head; a track position correcting frame, including means for laterally shifting the track, carried on said beam member between said reaction blocks and said first end and closer to said reaction blocks than to said first end; and means to connect said second end of said beam member to a propelling vehicle and including a mounting for said second end of said beam member adapted to maintain the rail engaging reaction blocks slightly clear of the rail heads when the beam member is unloaded and which permits the reaction blocks to engage the rail heads to react to an applied load.

4,203,368
LOAD HANDLING SYSTEM

Albert R. Haskins, 1621 Walnut St., Park Ridge, Ill. 60008

Filed Jan. 21, 1977, Ser. No. 761,148
Int. Cl.² B61B *3/00*
U.S. Cl. 104—92 **7 Claims**

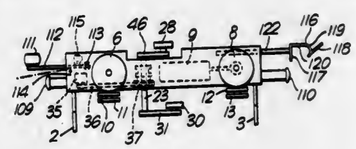


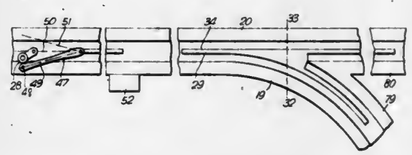
1. In a load-handling system of the type wherein monorail tracks are suspended from overhead support means to overlie a service area having a perimeter defined by the wall of a building, said system including a transfer track having one end disposed adjacent said wall, pivot support means pivotally mounting said one end of the transfer track adjacent said wall above said service area, the other end of said transfer track extending into and overlying said service area and being movable along an arcuate path overlying a substantial portion of said service area as the transfer track is pivoted about said pivot support means, means for supporting said other end of said transfer track including an arcuate support track suspended from said overhead support means in general alignment with said arcuate path, and carrier means movably interconnecting said other end of said transfer track with said arcuate support track, said system further including a plurality of tracks suspended from said overhead support means and individually overlying said service area, each of said tracks having an end terminating adjacent said arcuate support track and with all of said track ends converging toward a common point coaxial with said pivot support means, said arcuate support track and said plurality of tracks each being individually suspended directly from said overhead support means, and means for effecting a coupling between said other end of said transfer track and the end of a selected one of said tracks, whereby a load supported on one of said tracks can be moved onto said transfer track for movement to another one of said tracks.

4,203,369
TRANSPORTATION SYSTEMS

Francis C. Perrott, The Manor House, South Cerney, Cirencester, Gloucestershire, England

Filed Sep. 27, 1977, Ser. No. 837,213
Claims priority, application United Kingdom, Sep. 28, 1976, 40122/76; Jan. 15, 1977, 1639/77
Int. Cl.² E01B *7/04, 25/26*
U.S. Cl. 104—130 **11 Claims**





1. A transportation system comprising a guideway, a diverging junction on said guideway, a vehicle movable along said guideway, guidance means for affording guidance to said vehicle for travel thereof to either side of said junction, vehicle-mounted track selection means for selecting which side of the junction the vehicle is to follow, an on-board operating member, an on-guideway operating member and means whereby said track selection means is, at all times, independently operable alternatively by said on-board operating member and by said on-guideway operating member, and retained in position to select a chosen side of the junction until changed by either of said operating members, whereby the setting of the track selection means at any time depends solely on which of the operating members has most recently been encountered.

8. A transportation system comprising a guideway, a diverging junction on said guideway, two vehicles movable along said guideway, guidance means for affording guidance to said vehicles for travel thereof to either side of said junction, vehi-

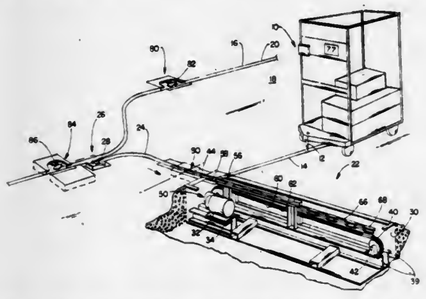
cle mounted track selection means for selecting which side of the junction each vehicle is to follow, and an on-board operating member for operating said track selection means, wherein each vehicle has a buffer and a coupling member at one end. one of the coupling members comprises a roller with a part-spherical surface and a vertical axis, and the other coupling member has a part-cylindrical surface which is a portion of a cylinder having a radius of curvature in a vertical plane which is substantially the same as that of the part-spherical surface and adapted to be engageable therewith when the coupling formed thereby is in tension, the sides of the part-cylindrical surface of said other coupling member being unbounded whereby if the vehicles select and follow different sides of a junction, they automatically become uncoupled by the transverse relative motion of said roller relative to said part-cylindrical surface.

4,203,370

IN-FLOOR TOWLINE AUTOMATIC RE-ENTRY SPUR

Martin B. Sapila, Belle Mead, N.J., assignor to Rapistan Incorporated, Grand Rapids, Mich.

Filed Feb. 6, 1978, Ser. No. 875,374
Int. Cl.² B60M 1/08; B61B 13/00
U.S. Cl. 104—162 **14 Claims**



8. A system for transferring a towline cart of the type including a towpin from a non-powered spur line to a main line of an in-floor towline conveyor, said main line including a powered towline chain having a plurality of longitudinally spaced pusher dogs, said system comprising:

a main line re-entry switch positioned adjacent said main line;

a transfer channel extending from said spur line to said re-entry switch at said main line;

empty pusher dog spotter means positioned adjacent said main line upstream of said re-entry switch for spotting an empty pusher dog and generating a signal in response thereto;

transfer means positioned adjacent said spur line and including a flexible, extendable and compressible transfer member having ends, said transfer means being engageable with a cart towpin and movable between a first position adjacent said spur line to a second position adjacent said main line for transferring a towcart from said spur line along said transfer channel to said main line re-entry switch in response to the empty pusher dog signal generated by said spotter means; and

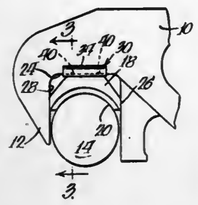
a towpin spotter means positioned adjacent said main line downstream of said re-entry point of said main line for sensing receipt of the towpin of said transferred cart in a main line pusher dog and generating a signal in response thereto indicating that the cart has been transferred to said main line and causing return of said transfer member to said first position.

4,203,371

RESILIENT PEDESTAL WEAR PLATE

Carl E. Tack, Elmhurst, Ill., assignor to Transdyne, Inc., Chicago, Ill.

Filed Jul. 7, 1978, Ser. No. 922,749
Int. Cl.² B61F 5/32, 5/38, 5/50
U.S. Cl. 105—225 **7 Claims**



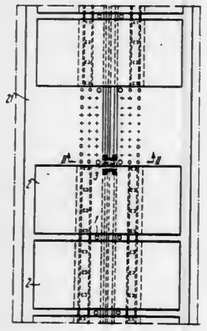
1. An improved wear plate for installation on a downwardly facing flat surface in the pedestal opening of the side frame of a railway truck, said wear plate comprising a U-shaped member for covering and protecting said surface, a pair of lips extending upwardly from opposite sides of a base, said lips being resiliently engageable in clamped relation with opposite sides of the side frame above said flat surface of said pedestal opening to hold said base in position, said base having a slight convex shape relative to said downwardly facing surface prior to the installation thereof, such that after installation, said base reliably conforms to said flat surface.

4,203,372

CONTAINER SECURING DEVICE

Jury N. Ivanov, Oruzheiny pereulok, 5-9, kv. 60; Konstantin V. Artemov, Nizhegorodskaya ulitsa, 21, kv. 29; Leonid I. Suris, Smolnaya ulitsa, 31, kv. 85, and Jury F. Bozhenov, Leningradsky prospekt, 50, kv. 30, all of Moscow, U.S.S.R.

Filed Dec. 14, 1977, Ser. No. 860,372
Int. Cl.² B60P 7/08; B61D 45/00; B61J 1/22; B64D 9/00
U.S. Cl. 410—67 **3 Claims**



1. Apparatus for transporting containers in a storage compartment and releasably fixing the containers in individual storage positions comprising,

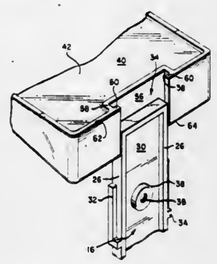
a track along which containers are transported individually and on which the containers are removably stored, a carriage movable in opposite directions along a path defined by said track for transporting the containers sequentially to a respective storage position and for removal from the storage position for removal thereof from said compartment, a plurality of paired tubular stops spaced along said track defining the storage positions of the individual containers and against which individual containers bear, said paired stops holding individual containers stationary in the storage position thereof, each said stop comprising a tubular rod biased to an extended position extending above the level of said track to hold the containers stationary between each two successive stops, each tubular rod having an internal spring biasing it to said extended position, lock means on each said stop actuated by said carriage when travelling in said one direction for retracting the individual stop to said retracted position, lock means automatically releasably locking the stops individually when actuated to said retracted position, means for releasing each said lock means under control of said carriage to allow the corresponding stop to assume its extended position when said carriage travels in an opposite direction.

4,203,373

SHELF DISPLAY SYSTEM

Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 11, 1978, Ser. No. 933,007
Int. Cl.² A47B 5/00, 9/00
U.S. Cl. 108—152 **2 Claims**



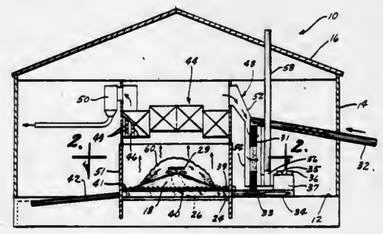
1. A shelf display system adapted to be wall mounted and including a bracket having at least one pair of laterally positioned projections protruding therefrom each projection incorporating at one end thereof a lip, a reversible shelf unit including a substantially planar member bounded by extended side wall elements, said elements projecting well above one surface of the member and having at least one slot of a T configuration along one side thereof, said slot being engaged and retained upon the bracket by said projections and lips.

4,203,374

METHOD AND MEANS FOR BURNING CORNCOBS AND CORN

Charles V. Frederick, Rte. #5, New Virginia, Iowa 50219

Filed Jul. 17, 1978, Ser. No. 924,995
Int. Cl.² F23G 7/00
U.S. Cl. 110—258 **15 Claims**



1. A device of the type described, comprising, a support means,

a floor means extending over a portion of said support means,

said floor means extending upwardly and inwardly from the pripheral portion thereof to an open central portion,

a first conveyor means having its intake end in operative communication with the material to be burned and its discharge end in communication with said open central portion for conveying the material to be burned upwardly through said central opening for deposit on said floor means around said central opening in a mound which substantially terminates short of the peripheral portion of said floor means,

said floor means including multiple perforations which are large enough to permit the upward flow of air therethrough but small enough to substantially resist the downward passage of material to be burned and ashes therethrough,

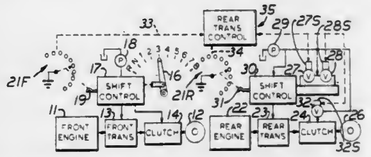
and a second conveyor means extending around the periphery of said floor means for conveying the ashes of the burned material away from said floor means.

4,203,375

ELECTRONIC SWITCHING CONTROL FOR REAR TRANSMISSION

Robert G. Miller, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 11, 1977, Ser. No. 823,768
Int. Cl.² B60K 20/16; F16H 37/06
U.S. Cl. 74—335 **44 Claims**



1. In a vehicle having a first engine driving a first ground-engaging member through a master transmission and a second engine driving a second ground-engaging member through a slave transmission and clutch and wherein each transmission has a shift control wherein each transmission may be shifted to provide a plurality of drive ranges, a system for coordinating said transmissions comprising:

first signal-generating means operatively associated with said master transmission for generating signals indicative of the particular drive range existing in said master transmission, said signals being uniquely different for each of the drive ranges of said master transmission,

second signal-generating means operatively associated with said slave transmission for generating signals indicative of the particular drive range existing in said slave transmission, said signals being uniquely different for each of the drive ranges of said slave transmission,

signal-responsive means responsive to the signals from said first and second signal-generating means for generating an up signal if the drive range indicated by the signal from said first signal-generating means is higher than the drive range indicated by the signal from said second signal-generating means and for generating a down signal if the drive range indicated by the signal from said first signal-generating means is lower than the drive range indicated by the signal from said second signal-generator,

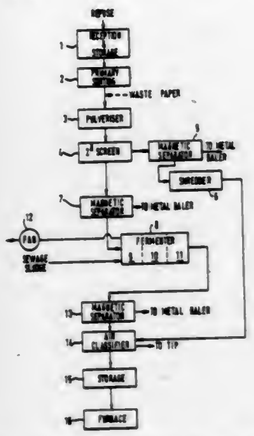
an up solenoid operatively associated with the slave transmission shift control for upshifting said slave transmission when said up solenoid is energized,

a down solenoid operatively associated with the slave transmission shift control for downshifting said slave transmission when said down solenoid is energized,

means responsive to the presence of said up signal for energizing said up solenoid,

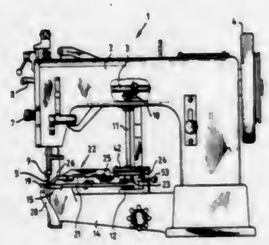
means responsive to the presence of said down signal for energizing said down solenoid.

4,203,376
TREATMENT OF WASTE
Peter Hood, Weybridge, England, assignor to Refuse Derived Fuels (London) Limited, London, England
Continuation of Ser. No. 752,660, Dec. 21, 1976, abandoned.
This application Sep. 18, 1978, Ser. No. 943,602
Claims priority, application United Kingdom, Dec. 24, 1976, 52853/76
Int. Cl.² F23G 5/06
U.S. Cl. 110—346 8 Claims



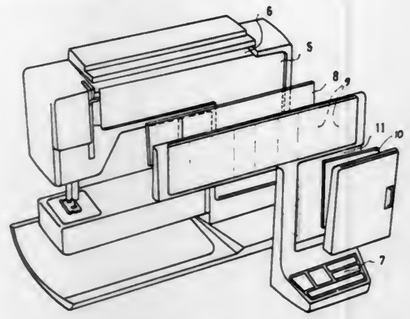
1. A method for the production of heat which comprises composting solid organic waste by tumbling the waste for an average time of from 12 to 48 hours and subsequently burning the composted waste.

4,203,377
SEWING OF A BEAD SEAM WITH LOOSE THREAD LOOPS
Rolf Ladwig, Bielefeld, Fed. Rep. of Germany, assignor to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany
Filed Sep. 28, 1978, Ser. No. 946,804
Int. Cl.² D05B 15/00
U.S. Cl. 112—58 6 Claims



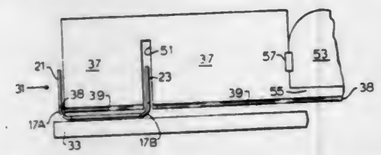
1. In a sewing machine for sewing together two workpiece parts by means of a bead seam, means for providing each stitch with an additional amount of thread for forming said bead seam with loose loops, said means comprising: a loop supporting member located behind the needle of said sewing machine and in the path of stitch formation, and means for imparting loop releasing motions to said loop supporting member after each stitch formation; the motion of said loop supporting member serving only for loop releasing motion and being free of thread measurement.

4,203,378
SEWING MACHINE WITH DATA CIRCUITS
Hannes Giesselmann, and Kenneth Skogward, both of Husqvarna, Sweden, assignors to Husqvarna Aktiebolag, Huskvarna, Sweden
Filed Jun. 29, 1977, Ser. No. 810,946
Claims priority, application Sweden, Jul. 7, 1976, 7607750
Int. Cl.² D05B 3/02, 75/00
U.S. Cl. 112—158 E 1 Claim



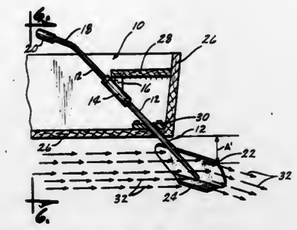
1. A domestic sewing machine having a machine frame comprising a post, arms, and bed, and a memory unit including a code word determining the length of the stitch and being associated with at least one specific seam pattern, the machine including a front panel defining an outer surface of the machine, a recess in said outer surface and connecting means in said recess for said memory unit, said memory unit comprising a plug-in unit detachably mounted in said recess and a further recess in the front portion of the machine frame's overarm section, said front panel being a separate element from the machine and fitted within said further recess.

4,203,379
METAL TUB MADE FROM FLAT METAL SHEETS
Theodore C. Lambertson, 2 Lombardi, Millbrae, Calif. 94030
Filed Jul. 27, 1978, Ser. No. 928,354
Int. Cl.² B21D 51/18
U.S. Cl. 113—120 B 7 Claims



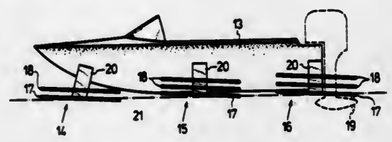
1. In a method of making a metal tub from a flat metal sheet having a bottom panel and four side panels with each side panel attached along one edge to the bottom panel, said method comprising,
pressing a first side panel from the flat position to an upright position with respect to the bottom panel,
pressing a second side panel which is immediately adjacent to the first side panel from the flat position to an upright position with respect to the bottom panel,
performing the second pressing step with a press having the same upper die for the second pressing step as used for the first pressing step, said upper die having a slot which receives and permits movement of the first upright side panel within the slot during the second pressing step, and
connecting the adjacent edges of the upright side panels.

4,203,380
RUDDER ASSEMBLY
Keith B. Borglum, 218 Loma, Waterloo, Iowa 50701
Filed Mar. 14, 1978, Ser. No. 886,413
Int. Cl.² B63H 25/00
U.S. Cl. 114—144 R 5 Claims



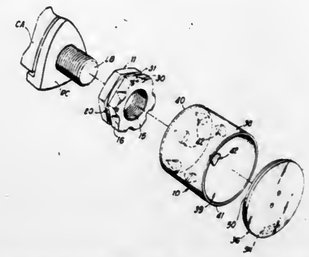
1. A rudder assembly for a boat comprising;
a rudder shaft, said rudder shaft being inclined downwardly and rearwardly;
means for rotatably mounting said rudder shaft to said boat;
a rudder blade attached to the lower end of the said rudder shaft;
a plate attached to the lower edge of said rudder blade and disposed normal thereof; and
said rudder blade is disposed at an oblique angle to the axis of rotation of said rudder shaft, so that said rudder blade passes through several horizontal planes as said rudder blade is rotated by said rudder shaft.

4,203,381
WATER FOIL
Felix Wankel, Fraunhoferstr. 10, 899 Lindau (B), Fed. Rep. of Germany
Continuation of Ser. No. 697,780, Jun. 21, 1976, abandoned, which is a division of Ser. No. 588,519, Jun. 19, 1975, abandoned. This application Nov. 18, 1977, Ser. No. 852,680
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1974, 2429669; Aug. 20, 1974, 2439822
Int. Cl.² B63B 1/24
U.S. Cl. 114—274 1 Claim



1. A body for movement over the surface of the water, said body having a plurality of foil structures for supporting said body on the surface of the water, which are formed of longitudinal foil strips, each strip not exceeding 100 mm. in width and having a length much greater than its width, and extending in the direction of movement, said foil structures including two structures on each side of said body and spaced longitudinally in the direction of movement with the structures on opposite sides transversely spaced, at least two of said structures opposite each other on the opposite sides being adjacent one end of the body, each of said two opposite, transversely spaced structures being formed by a plurality of said foil strips transversely spaced and parallel to each other, with the foil strips also vertically spaced so said strips of each of said two opposite structures lie at different levels, the strip closest to the body being at the lowest level.

4,203,382
TIRE REMOVAL INDICATOR DEVICE
James P. Mullen, P.O. Box 815, Roswell, Ga. 30075
Filed Dec. 14, 1978, Ser. No. 969,341
Int. Cl.² B60R 13/00, 25/00
U.S. Cl. 116—28 R 8 Claims

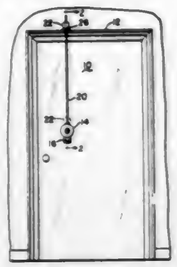


1. A device for indicating that a rim and tire assembly has been removed from the lug bolts on a vehicular hub by removal of the lug nuts holding the rim and tire assembly on the lug bolts comprising:
at least one grooved lut nut defining a peripheral locking groove therearound intermediate its ends and lying in a plane generally normal to the central axis of the lug nut adapted to be screwed onto one of the lug bolts to keep the rim and tire assembly on the vehicular hub; and
frangible indicator means operatively associated with said grooved lug nut after said grooved lug nut has been tightened onto the lug bolt to mount the rim and tire assembly so that removal of said grooved lug nut from the lug bolt for removal of the rim and tire assembly results in the destruction of said frangible indicator means beyond reuse so that the rim and tire assembly can be removed but said frangible indicator means cannot again be operatively associated with the lug bolt and said grooved lug nut after the lug nut is screwed back on the lug bolt to remount a rim and tire assembly on the vehicular hub, said frangible indicator means including a frangible tubular member of limited resilience, and sized to fit over and around the lug nut, said frangible member including a plurality of locks on the inside thereof having a size and shape such that said locks on said tubular frangible member can be forced over said grooved lug nut until said locks engage said peripheral locking groove around the lug nut, the resiliencey of said frangible tubular member being sufficient to force said locks into engagement with said peripheral locking groove around the lug nut so that said tubular member cannot be removed from around the lug nut without fracturing said frangible member so as to prevent reestablishment of said tubular frangible member around the lug nut.

4,203,383
BURGLAR ALARM
Michael D. Hill, P.O. Box 701, Columbia, Tenn. 38401
Filed Jan. 12, 1979, Ser. No. 2,847
Int. Cl.² G08B 13/08
U.S. Cl. 116—95 6 Claims

1. An assembly of components in a kit, said assembly being adapted for assembly together and affixing to a door and door frame as a burglar alarm, said assembly comprising (1) a mechanical bell adapted to be fastened to the inside of a door, (2) a bracket having a slot therein, said bracket being adapted to be

fastened to the top of said door frame, (3) an object having a hole therethrough and adapted to rest on said bracket and (4)



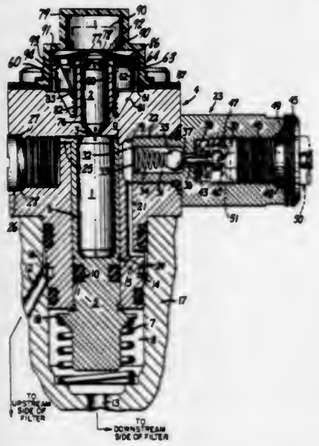
a rod to be joined at one end thereof to said bell and to project through said slot and said hole toward the other end thereof.

4,203,384

MAGNETIC PRESSURE INDICATOR WITH DEACTUATOR FOR BIMETALLIC TEMPERATURE-SENSITIVE ELEMENTS

Bernard F. Silverwater, Plainview, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,669
Int. Cl.[2] G01L 7/16
U.S. Cl. 116—267 **20 Claims**



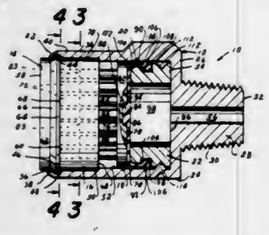
1. A magnetic pressure indicator having provision for testing of the indicating capability thereof without interference by a bimetallic temperature sensitive element with actuation of the device, comprising a housing and, disposed in combination in the housing, a first magnetic means spaced from and arranged to attract or repel a second magnetic means or keeper so long as the two means or the first means and keeper are within their mutual magnetic fields of force; first bias means to retain the first magnetic means towards or away from the second magnetic means or keeper; the second magnetic means being normally retained in a first position; and second bias means to propel the second magnetic means from the first position to an indicating position whenever the spacing distance between the two magnetic means is changed; the first magnetic means being movable in response to changes in pressure, and normally biased toward or away from the second magnetic means by a predetermined force, and the second magnetic means being normally biased by the bias means in a direction away from the first means by a force capable of overcoming the force of magnetic attraction for the first means or the keeper whenever the first and second magnetic means are spaced by a predetermined distance; at least two fluid line connections, one connection leading to one side of the first magnetic means and another connection leading to another side of the first magnetic means, pressure in said line connections tending to move the first magnetic means in opposite directions; at least one sampling port in fluid flow connection with one of the magnetic means for adjustment of fluid pressure to change the spacing distance between the two magnetic means and simulate actuation of the indicator for testing of the indicating capability of the indicator; a bimetallic temperature-sensitive element actuated at a predetermined temperature to engage one of the first and second magnetic means and prevent movement of the second magnetic means to an indicating position; and deactuating means for moving the bimetallic temperature-sensitive element into a non-actuating position during said testing.

4,203,385

FLUID PRESSURE INDICATOR

Robert W. Mayer, Hackettstown, and Adam Smorzaniuk, West Millington, N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Dec. 12, 1978, Ser. No. 968,765
Int. Cl.[2] G01L 7/08
U.S. Cl. 116—270 **22 Claims**



1. A fluid pressure indicator for providing visual indication whether or not the magnitude of a fluid pressure condition is above a predetermined minimum value, said indicator comprising a matrix member having a light receiving face which is exposed to view and a rear face and a hole in open communication with both said faces, a pin member including a pin element having a free end facing in the same direction as said light receiving face, said pin member movable between a first extreme position in which said free end is not visible at said light receiving face and a second extreme position in which said pin element is in said hold and said free end is visible at said light receiving face, and a diaphragm having a fixed portion and a resiliently deformable portion affixed to said pin member and movable in response to changes in the magnitude of said fluid pressure condition, said pin member thus movable with said resiliently deformable portion, such that whenever the magnitude of said condition is not in excess of said minimum value, said resiliently deformable portion holds said pin member in its said first position, but a predetermined increase in the magnitude of said condition above said minimum value will deform said deformable portion resiliently, thus to move said pin member to its said second position.

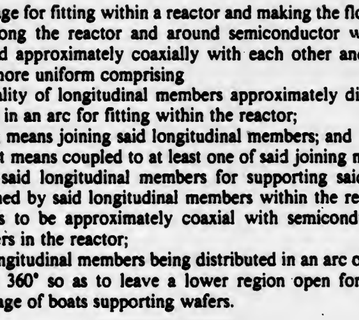
4,203,386

ELECTROSTATIC COPIER WITH INSERTABLE DEVELOPER MODULE

Hanns Blöchl, Unterhaching; Georg Fryda, Munich; Erich Schlick, Riedmoos, and Günther Schnall, Eching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jun. 5, 1978, Ser. No. 913,023
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1977, 2729349
Int. Cl.[2] G03G 15/08, 15/09
U.S. Cl. 118—653 **15 Claims**

1. In an electrostatic copier wherein an original to be copied is imaged onto the photosensitive surface of an endless rotating charge carrier to form a latent electrostatic image thereon which is then developed by attraction of toner particles to the latent image, a combination comprising a housing; a shaft



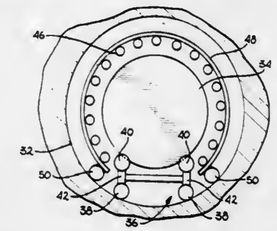
mounting the charge carrier for rotation; and a developing unit insertable in toto into said housing in a position proximal to the charge carrier, said developing station comprising bearing means which embraces said shaft of the charge carrier.

4,203,387

CAGE FOR LOW PRESSURE SILICON DIOXIDE DEPOSITION REACTORS

James McMullen, San Jose, and James Vokac, Oakland, both of Calif., assignors to General Signal Corporation, Stamford, Conn.

Filed Dec. 28, 1978, Ser. No. 973,736
Int. Cl.[2] C23C 13/08
U.S. Cl. 118—715 **10 Claims**



1. A cage for fitting within a reactor and making the flow of gasses along the reactor and around semiconductor wafers positioned approximately coaxially with each other and the reactor more uniform comprising

a plurality of longitudinal members approximately distributed in an arc for fitting within the reactor;

joining means joining said longitudinal members; and

support means coupled to at least one of said joining means and said longitudinal members for supporting said arc defined by said longitudinal members within the reactor so as to be approximately coaxial with semiconductor wafers in the reactor;

said longitudinal members being distributed in an arc of less than 360° so as to leave a lower region open for free passage of boats supporting wafers.

4,203,388

ANIMAL LITTER AND PROCESS

Louis R. Cortigene, and Robert G. Wright, both of Portage, Mich., assignors to Brown Company, Kalamazoo, Mich.

Filed Mar. 31, 1976, Ser. No. 672,471
Int. Cl.[2] A01K 29/00
U.S. Cl. 119—1 **4 Claims**

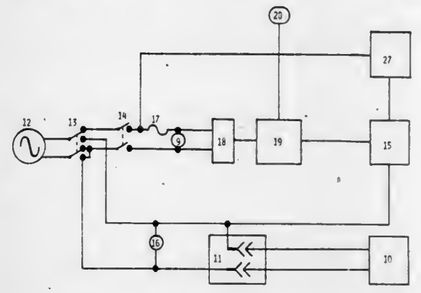
1. Animal litter comprising pelleted and dried cellulose-containing rejects of a paper-making fiber plant and a deodorizer material, said rejects comprising at least about 50 percent of the waste rejects of a secondary paper-making fiber plant consisting essentially of cellulose and mineral filler, and in which said rejects comprise a mixture of said waste rejects and paper broke.

4,203,389

DISSOLVED OXYGEN REGULATOR

Martin J. Gasper, Jr., and Theodore W. Black, both of Allentown, Pa., assignors to Rodale Resources, Inc., Emmaus, Pa.

Filed Oct. 13, 1978, Ser. No. 950,990
Int. Cl.[2] A01K 63/00
U.S. Cl. 119—3 **13 Claims**



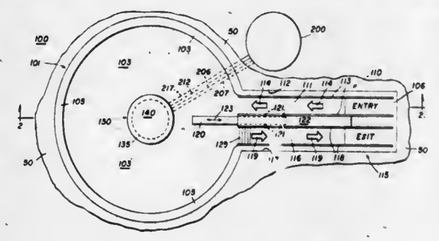
1. An apparatus for controlling the oxygen level in a body of water, comprising: an oxygen sensor means for producing a voltage representative of the amount of oxygen in said body of water; an aerator for spraying water from said body of water over the surface of said body of water; a control means responsive to said oxygen sensor for selectively energizing said aerator; a regulator for producing a first control voltage in response to said output voltage of said oxygen sensor equalling or exceeding a predetermined value and producing a second control voltage when said oxygen sensor output voltage is less than said predetermined value; and switch means responsive to said first and second control voltages for selectively activating and deactivating said aerator.

4,203,390

AQUATIC EXERCISE FACILITY WITH ISLAND

Carl L. Brazelton, Bonfield, Ill., assignor to Stran Corporation, Bradley, Ill.

Filed Jun. 12, 1978, Ser. No. 914,499
Int. Cl.[2] A01K 15/02
U.S. Cl. 119—29 **62 Claims**



1. An aquatic exercise facility for animals comprising a container for a pool of water having an animal entry area and an animal exit area, a hollow island mounted in said container generally centrally with respect to said pool of water and extending upwardly therefrom, at least a portion of said pool around said island having a depth sufficient to require an animal to swim therein from said animal entry area to said animal

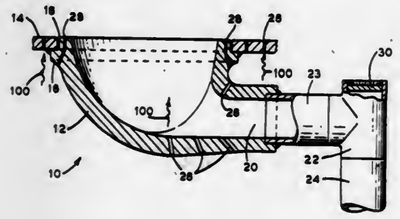
exit area, whereby an animal entering said pool at said animal entry area must swim at least part way around said island across said deep portion and to said exit area thus to exercise the animal, means mounted within said island for establishing a current of water flowing from the upper portion of said pool of water into the upper end of said island and from the lower end of said island and back into the lower portion of said pool of water, and water filtering mechanism in said island for filtering the current of water flowing through said island thus to clean the water in said pool of water.

4,203,391

FLUIDIZED BED FUEL FEEDER

Paul S. Knoebel, Clinton, and Jerald M. Wennerstrom, Canal Fulton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 31, 1978, Ser. No. 929,862
Int. Cl.² F22B *1/02*
U.S. Cl. 122—4 D **3 Claims**



1. In combination with a vapor generator having a furnace fired by a fluidized bed of granular material, perforated plate means for introducing fluidizing air into the furnace, underfeed means for supplying the material through the plate means comprising at least one discharge conduit, at least one material supply conduit, the discharge conduit having one end communicating with the supply conduit and at least one end communicating with the bed, the discharge conduit having a total cross-sectional flow area substantially greater than the cross-sectional flow area of the supply conduit to substantially reduce the velocity of the granular material entering the furnace, the discharge conduit including a nozzle disposed above the plate means, the nozzle having at least one leg arranged to discharge the material into the furnace transversely to the perforations in the plate means, and a perforated housing enclosing the nozzle, the perforations in the housing promoting fluidization of the bed and cooling of the nozzle.

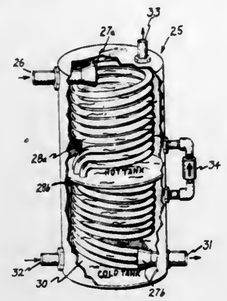
4,203,392

HEAT EXCHANGER

Jack S. McLane, 5589 Crestview Dr., Acworth, Ga. 30101

Filed Mar. 3, 1978, Ser. No. 883,207
Int. Cl.² F22B *5/00*
U.S. Cl. 122—17 **1 Claim**

1. A heat exchanger comprising a tank enclosure having an uppermost end and a lowermost end, a medium to be heated flowing through the tank, heat exchange tubing located within the tank enclosure and in heat exchange relationship with the medium to be heated, said tubing configured into a spiral to substantially fill the tank enclosure, one end of the tubing having a burner manifold connected therewith and mounted at the uppermost end of the tank enclosure, the other end of the tubing mounted at the lowermost end of the tank enclosure, a source of heat connected directly to the burner manifold for supplying heat to the interior of the spiral tubing, means associated with the end of the tubing at the lowermost end of the tank enclosure for drawing the heat within the tubing downwardly there through and for exhausting cooled and spent heat to the exterior of the tank enclosure, wherein the tank enclosure is divided into two separate fluid tight compartments comprising a super heat compartment and a reserve compartment, the spiral tubing comprising at least three parallel individual tubes connecting the burner manifold at the uppermost end of the tank enclosure with the lowermost end of the tank enclosure, whereby the medium being heated and the source of heat to the heat exchanger are at their respective greatest



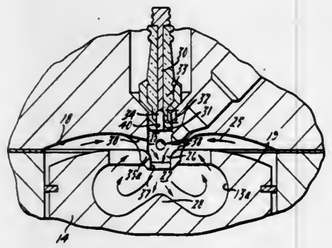
relative temperatures at the uppermost end of the tank enclosure and at their lesser relative temperatures at the lowermost end of the tank enclosure thereby extracting the maximum heating value from the source of heat prior to exhausting thereof.

4,203,393

PLASMA JET IGNITION ENGINE AND METHOD

Dante S. Giardini, Dearborn Hts., Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1979, Ser. No. 957
Int. Cl.² F02B *17/00, 19/08*
U.S. Cl. 123—30 D **14 Claims**



1. An apparatus for carrying out combustion in an internal combustion engine, said engine having a piston and cylinder effective to define a variable volume space and a main combustion chamber residing as a cavity in the top of the piston and communicating with the variable volume space, said cylinder having an intake port oriented to induce a swirl motion to air inducted into said variable volume space, and said space being varied in volume by said piston during compression to induce a high radially inwardly squish motion to said air to form a circulatory path having an air column entering and extending into the central region of said main combustion chamber and exiting therefrom along the sides, said swirl motion and squish motion cooperating to impart a circulatory transfer motion to charge elements in said main chamber, the improvement comprising:

(a) means defining a shock wave chamber integral with said cylinder and having walls extending into said piston cavity when said piston is in a substantially top dead center condition, said shock wave chamber having an exit and an entrance respectively aligned with the path of the circulatory transfer motion of said charge elements;

(b) means defining a plasma cavity in communication with said shock wave chamber, said plasma cavity having an orifice communicating with said shock wave chamber at a side opposite from said exit, said orifice being aligned with the exit of said shock wave chamber,

(c) means for injecting fuel into said shock wave chamber during compression so that the charge elements are forced to enter said plasma cavity momentarily prior to ignition,

(d) means for applying a high energy discharge about 200 millijoules, through said plasma cavity causing the charge elements forced thereinto to be shock heated to an ionized condition and increased in pressure so that the ionized gas is ejected as a directed body of combusted ionized gases through said orifice, said ionized plasma jet igniting the mixture within said shock wave chamber and extending outwardly from the exit thereof preceded by said shock wave to additionally ignite the gaseous mixture in the main combustion chamber, said plasma jet extending through said shock wave cavity into the air column extending through said main combustion chamber.

4,203,394

CLOSED-LOOP EMISSION CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE WITH A CIRCUIT FOR GENERATING OFFSET VOLTAGE THAT CANCELS ERROR INTRODUCED DURING USE

Shigeo Aono, Seki, and Akio Hosaka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 11, 1977, Ser. No. 769,871
Claims priority, application Japan, Feb. 12, 1976, 51-13250
Int. Cl.² F02B *3/00*
U.S. Cl. 123—32 EE **7 Claims**

1. A closed loop mixture control system for an internal combustion engine having an exhaust gas sensor for generating a signal representative of the concentration of a predetermined constitutent of the exhaust gases from said engine, said gas sensor having a tendency to vary its operation characteristic as a function of aging, a catalytic converter disposed downstream of said exhaust gas sensor for converting the exhaust gases into harmless waste products when the concentration of said constituent gas is maintained within a predetermined range, and means for supplying mixture at a desired air-fuel ration in response to a feedback control signal, comprising:

a first feedback circuit having an input terminal connected to said exhaust gas sensor, an averaging circuit and a first differential amplifier connected in series thereto for generating a first signal representative of the deviation of a mean value of said concentration representative signal from a reference level representing said desired air-fuel ratio;

a second feedback circuit having an input terminal connected to a portion of said first feedback circuit and a control circuit to derive a second signal representative of the deviation of said concentration representative signal from a reference level representing said desired air-fuel ratio, said second signal being modified in amplitude in accordance with a predetermined control characteristic;

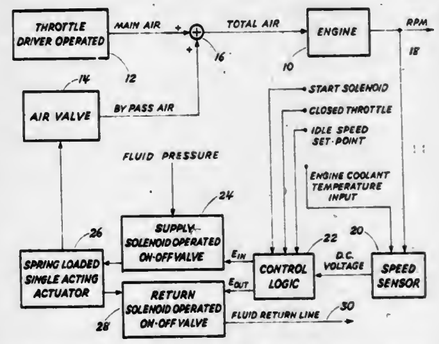
a second differential amplifier having two input terminals connected respectively to the output terminals of said first and second feedback circuits for generating a third signal representative of the difference between said first and second signals, the output terminal of said second differential amplifier being connected to said mixture supplying means to apply said second third signal thereto as said feedback control signal.

4,203,395

CLOSED-LOOP IDLE SPEED CONTROL SYSTEM FOR FUEL-INJECTED ENGINES USING PULSE WIDTH MODULATION

Joseph C. Cromas, Newport News, Va., and Thomas P. Green, South Bend, Ind., assignors to The Bendix Corporation, Troy, Mich.

Filed Sep. 16, 1977, Ser. No. 833,779
Int. Cl.² F02D *1/04*
U.S. Cl. 123—32 EA **10 Claims**



8. In an electronic fuel injection system for an engine having an engine-driven distributor and wherein said injection system includes a main air passage and a throttle controlling the main air supply to said engine through said air passage and a fuel pump for providing a source of fuel,

an idle speed control including an air valve for controlling a source of air to said engine bypassing said main air passage, a spring-loaded actuator for said air valve in which said spring is opposed by a fluid pressure derived from said source,

electrohydrualic means for controlling fuel pressure from said source to said actuator and from said actuator to a line returning fuel to its source, said electrohydraulic means includes a return solenoid-operated on-off valve connected to control the flow of fuel from said actuator to the return side of said source and a supply solenoid-operated on-off valve connected to control the flow of fuel from said source to said actuator,

means responsive to said distributor for producing a series of pulses varying with the speed of said engine,

means producing a voltage varying with engine coolant temperature,

circuit means receiving said pulses and said temperature-varying voltage producing a direct current voltage varying with engine rotational speed modified with changes in coolant temperature,

a source of regulated direct current voltage and means comparing said regulated direct current voltage with the output of said circuit means,

said comparing means including separate summing amplifiers connected to each of said return and supply solenoid-operated on-off valves, and pulse width modulation means connected to each of said summing amplifiers, said modu-

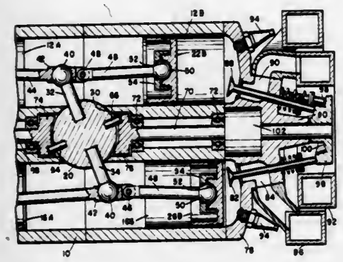
lation means including an oscillator, said comparing means being operative to convert the output of said summing amplifiers to a series of pulses at said oscillator frequency with the width of said pulses being proportional to the magnitude of the outputs of said summing amplifiers.

4,203,396

BARREL ENGINE WITH ROCKING BALL DRIVE

Alfred H. Berger, 4143 Nemaha Dr., San Diego, Calif. 92117

Filed Oct. 19, 1978, Ser. No. 952,620
Int. Cl.[2] F02B 75/26
U.S. Cl. 123—58 B 9 Claims



1. An engine, comprising:
a block having a plurality of opposed pairs of cylinders spaced around and parallel to a common axis;
pistons reciprocally mounted in said cylinders and coupled in axially aligned pairs;
said block having opposed fixed spherical seats substantially at the center thereof on said common axis;
a ball element rotatably mounted in and supported by said seats;
arms extending substantially radially from said ball on angularly spaced axes, each of said arms being coupled to one of said pairs of pistons;
a drive pin projecting from said ball and spaced from said arms;
an output shaft rotatably mounted in and extending from said block, said shaft having an eccentric drive connection to said drive pin;
and timing means for controlling sequential operation of said pistons to rock said ball element alternately about different axes.

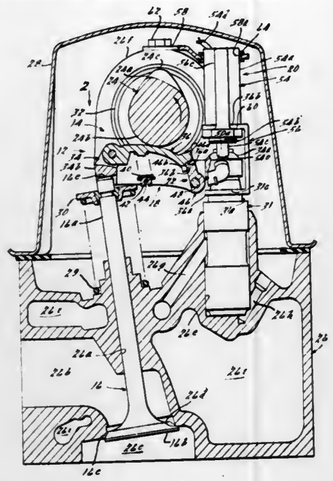
4,203,397

ENGINE VALVE CONTROL MECHANISM

Raymond A. Soeters, Jr., West Bloomfield Township, Oakland County, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 14, 1978, Ser. No. 915,476
Int. Cl.[2] F01L 1/34; F02D 13/06
U.S. Cl. 123—90.16 20 Claims

1. In an internal combustion engine including at least one cylinder valve; a lash adjuster having a moveable portion for controlling valve train lash in the engine; a camshaft mounted for rotation in the engine and including a circumferential surface defining a first surface portion and a cam lobe projecting radially outward from the circumferential surface and axially adjacent to the first surface portion; a rigid link means supported on its end by the valve and lash adjuster and defining on a surface thereof a first follower means in direct contact with the first surface portion of the camshaft; a second follower means disposed adjacent the first follower means, moveable relative to the rigid link means, and in direct contact with the cam lobe; and latch means selectively moveable to a first position preventing movement of said second follower means relative to the link and a second position allowing such relative movement; wherein the improvement comprises:



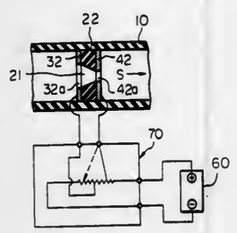
actuation means mounted on the moveable portion of the lash adjuster and selectively operative to move said latch means between said first and second positions.

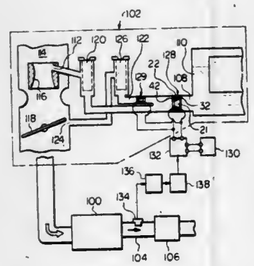
4,203,398

ELECTROSTATIC APPARATUS FOR CONTROLLING FLOW RATE OF LIQUID

Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 5, 1977, Ser. No. 794,137
Claims priority, application Japan, May 8, 1976, 51-51694; Jun. 24, 1976, 51-73874; Jun. 28, 1976, 51-75585
Int. Cl.[2] F15C 1/04; F02B 51/04
U.S. Cl. 123—119 EC 7 Claims





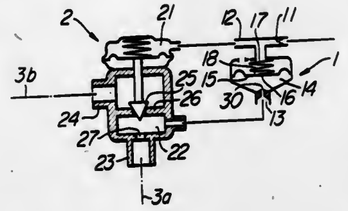
1. Apparatus for controlling the volume rate of flow of a liquid in a liquid passage, comprising:
a body of an electrically insulating material fixedly disposed in said liquid passage to occupy and block a section of a definite length of said liquid passage, said body being formed with a through hole having generally the shape of a truncated cone with its axis in the direction of liquid flow and having a largest cross-sectional area and a smallest cross-sectional area respectively at an upstream end and at a downstream end thereof such that said through hole constitutes a flow-constricting orifice which regulates liquid flow through said passage and determines a base flow rate of liquid therethrough;
a first plate electrode affixed to the upstream end of said body and having a circular aperture axially in alignment with said through hole of said body and of a cross-sectional area not smaller than said largest cross-sectional area of said through hole;
a second plate electrode affixed to the downstream end of said body and having a circular aperture axially in alignment with said through hole of said body and of a cross-sectional area not smaller than said smallest cross-sectional area of said through hole; and
an electric circuit which is connected to said first and second electrodes to produce an electric field in the liquid between said first and second electrodes to thereby impose a propulsive stress on the liquid toward one of said first and second electrodes, and to thereby vary the flow rate of said liquid from said base flow rate, said circuit including a control means for varying at least one of the magnitude and the polarity of a DC voltage impressed across said first and second electrodes.

4,203,399

EXHAUST GAS RECIRCULATION SYSTEM

Shigefumi Nakamura, Oobu; Hiromi Tokuda, Nagoya, and Hidetaka Nohira, Mishima, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 6, 1978, Ser. No. 922,589
Claims priority, application Japan, Jul. 11, 1977, 52/91718
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—119 A 7 Claims



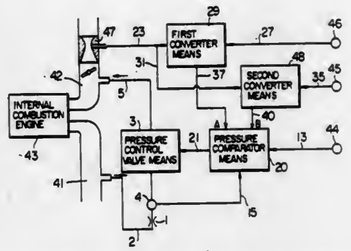
1. An exhaust gas recirculation system comprising:
an exhaust gas recirculation passage for recirculating part of the exhaust gases discharged from an engine from an exhaust system to an intake system of the engine;
a control valve for controlling the flow rate of the exhaust gases to be recirculated in response to a pressure signal, said control valve having an internal passage which is part of said exhaust gas recirculation passage, a valve head placed in said internal passsage for changing the flow rate of the exhaust gases to be recirculated and a constant pressure chamber upstream of said valve head;
a modulator valve for applying said pressure signal to said control valve, said modulator valve having a diaphragm chamber for controlling said pressure signal, a conduit for connecting said constant pressure chamber with said diaphragm chamber for applying the pressure of the exhaust gases in said constant pressure chamber to said diaphragm chamber; and an orifice means located between said diaphragm chamber and said conduit for controlling the resistance to the flow of the exhaust gases from said diaphragm chamber to said constant pressure chamber to be higher than the resistance to the flow from said constant pressure chamber to said diaphragm chamber.

4,203,400

EXHAUST GAS RECIRCULATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Keigo Yorioka, Oobu, Japan, assignor to Aisan Industry Co., Ltd., Obbu, Japan

Filed Dec. 6, 1978, Ser. No. 967,153
Claims priority, application Japan, Dec. 13, 1977, 52/149673
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—119 A 10 Claims



1. An exhaust gas recirculation system for an internal combustion engine comprising
(a) exhaust gas recirculation means for recirculating the exhaust gases from an exhaust pipe to an intake pipe, said means including a fixed restriction, a pressure chamber and a pressure control valve means having a pressure control valve arranged in the order named,
(b) first amplification means for amplifying the negative pressure created in a venturi in a carburetor in response to the quantity such as the negative pressure in said intake pipe which represents the variations in load on said engine,
(c) second amplification means for amplifying said venturi negative pressure in response to the quantity such as the negative pressure in said intake pipe which represents the variations in load on said engine,
(d) comparator means for receiving the output pressures from said first and second amplification means and the pressure in said pressure chamber so as to produce the combined pressure of said output pressures which is in proportion to said venturi negative pressure and to compare said combined pressure with said pressure from said pressure chamber, and
(e) control means which cooperates with said comparator means so as to control said pressure control valve, thereby establishing the equilibrium between said combined pressure and said pressure in said pressure chamber.

4,203,401

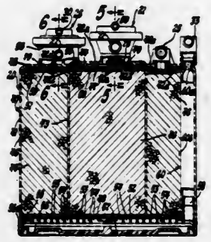
EVAPORATIVE EMISSIONS CANISTER

Charles A. Kingsley, Sterling Heights; James R. Spaulding, Troy, both of Mich., and William E. Gifford, Spencerport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 29, 1979, Ser. No. 7,490
Int. Cl.[2] F02M 37/00, 33/02
U.S. Cl. 123—136 3 Claims

1. A fuel vapor storage canister for use with a motor vehicle engine and the fuel system therefor to control emission of fuel vapors, said canister including a housing defined by a cylindrical outer wall, a closed lower end wall and an upper end wall, an air-vapor permeable support means operatively positioned to peripherally abut said outer wall in axial spaced apart relation to said lower end wall to define therewith an air chamber; a cylindrical partition wall depending from said upper end wall to said support means to divide said housing above said support

means into an inner canister chamber containing vapor adsorbent material located so as to provide a first vapor chamber adjacent said upper end wall and into an annular outer canister chamber containing vapor adsorbent material located so as to provide an annular second vapor chamber adjacent said upper end wall; air passage means operatively connected to said housing for supplying external atmospheric air to said air chamber; a first vent passage in said upper end wall to said first vapor chamber adapted for connection to the fuel bowl of the carburetor for the engine; a second vent passage in said upper end wall to said second vapor chamber adapted for connection to the fuel tank for the engine; and, a vapor purge valve operatively connected to said upper end wall, said vapor purge



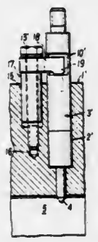
valve having a first orifice inlet and a second orifice inlet, each of a preselected size through said upper end wall for communication with said first vapor chamber and said second vapor chamber, respectively, said vapor purge valve further having a vapor outlet with a purge orifice passage therein connectable to the induction system of the engine and, a vacuum actuated valve means controlling flow of vapor flowing through said first orifice inlet and said second orifice inlet to said vapor outlet, said first canister chamber being in flow communication with said second canister chamber via said atmospheric pressure chamber whereby to effectively reduce vapor back purge between said canister chambers during diurnal purge of vapor from the fuel tank.

4,203,402

MEANS FOR SECURING AN INJECTION NOZZLE

Fritz Freyn, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Aug. 23, 1977, Ser. No. 826,998
Claims priority, application Austria, Aug. 26, 1976, 6346/76
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AW **4 Claims**



1. Means for attaching an elongated injection nozzle to a cylinder head of an injection-internal combustion engine, which head includes means presenting a nozzle receiving bore in a surface thereof, said attachment means comprising:

means in said head presenting a guide hole disposed adjacent said bore and extending generally in the same direction as said bore, and a threaded bore at the end of said guide hole;

abutment means on said nozzle including a surface extending transversely of the longitudinal axis of the nozzle and facing away from said head;

elongated clamp means having a member at one end disposed in contact with said surface and collar means at the other end presenting an opening disposed in alignment with said guide hole; said collar means integrally including a sleeve-like element elongated in the direction of said guide hole and extending into the latter, said element and said guide hole cooperating to limit movement of said clamp means in directions other than parallel to said guide hole; and

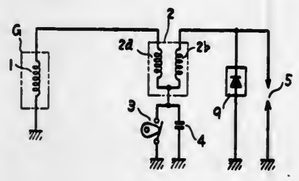
screw means extending through said sleeve-like element and into threaded engagement with the threads of said threaded bore for forcing the member of the clamp means, and thereby said nozzle, toward said head.

4,203,403

IGNITION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Hideo Fujii, and Minoru Kato, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 463,429, Apr. 23, 1974, Pat. No. 4,028,844. This application Nov. 8, 1976, Ser. No. 739,800
Claims priority, application Japan, Apr. 28, 1973, 48/51468
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 AC **3 Claims**



1. For a 2-cycle internal combustion engine having at least one spark plug, an ignition device having a generating coil and at least a four-poled rotor for generating a plurality of positive and negative half waves in one rotation cycle and providing a plurality of magnetically neutral points during said cycle;

an ignition coil having a primary winding connected in series with said generating coil and a secondary winding;

breaker contacts connected in series with said primary winding;

cam means synchronized with said engine during a forward rotation of said engine for opening said breaker contacts at the start of said cycle at one of said neutral points while one half wave of said negative and positive waves is being generated at said generating coil to produce an ignition spark at said spark plug and maintaining said breaker contacts open until closing them at a time between the last two of the said magnetically neutral points in a cycle; and

a rectifier connected with said ignition coil so as to prevent voltage being induced in said secondary winding by the other half wave of said positive and negative half waves.

4,203,404

DISTRIBUTORLESS IGNITION METHOD AND SYSTEM FOR A MULTICYLINDER INTERNAL COMBUSTION ENGINE

Robert E. Canup, Poughkeepsie, N.Y., assignor to Texaco Inc., White Plains, N.Y.

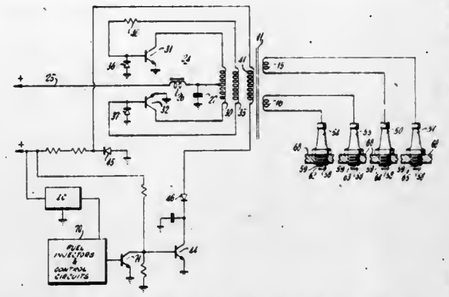
Filed Mar. 13, 1978, Ser. No. 885,844
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 ND **5 Claims**

1. An ignition system for a multi-cylinder internal combustion engine which operates with a combustible mixture in only one cylinder at a time, said cylinders each having a spark plug for igniting said mixture, said system comprising

a transformer having a low voltage primary winding and a plurality of high voltage secondary windings,

said secondary windings each having an independent magnetic path coupling it to said primary winding,

means for controlling current flow in said primary winding in accordance with engine timed conditions related to said cylinders, and



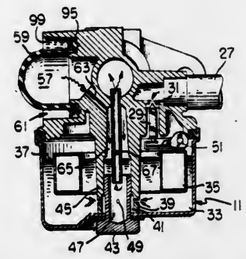
circuit means for directly connecting at least one of said spark plugs to each of said secondary windings for developing simultaneous sparks at all of said spark plugs as determined by said primary winding current control means.

4,203,405

PRIMER

Curtis L. Schultz, Grafton, and Thomas G. Guntly, Hartford, both of Wis., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 25, 1977, Ser. No. 854,816
Int. Cl.² F02M *1/16*
U.S. Cl. 123—187.5 R **12 Claims**



1. The method of supplying an initial charge of fuel-air mixture to a conventionally carbureted internal combustion engine for the purpose of starting that engine comprising:

providing a quantity of fuel within a float regulated fuel supply chamber,

providing a priming fuel chamber within the float regulated chamber, the priming fuel chamber containing a small quantity of fuel and a volume of air overlying the small quantity of fuel,

providing a conduit disposed within and extending upwardly from the surface of the fuel and surrounded by the volume of air in the priming fuel chamber,

manually and abruptly displacing a discrete volume of air from a variable volume chamber, by decreasing the volume thereof, into the priming fuel chamber at a point over the surface of the fuel in the priming fuel chamber so as to displace a discrete quantity of fuel from the priming fuel chamber into the throat of the carburetor in response to an increase in the priming fuel chamber air volume caused by the entry of the air from the variable volume chamber, the volume of air in the priming fuel chamber being less than the volume of the variable volume chamber, and

replenishing the displaced fuel in the second chamber by gravity fuel flow from the float regulated fuel supply chamber.

6. A carburetor for providing a combustible fuel-air mixture to a conventionally aspirated internal combustion engine comprising:

a float regulated fuel supply chamber,

a fuel well within the float regulated chamber and gravity fed from the float regulated chamber, said fuel well having a smaller volume that the float regulated chamber,

a float mechanism within said float regulated chamber for maintaining a predetermined fuel level in said float regulated chamber and said fuel well,

conduit means disposed within and extending upwardly from below to above the fuel level in said fuel well for conveying fuel from the fuel well to air passing through the carburetor and into the engine during normal engine operation, a portion of said conduit means above the fuel level in the fuel well being surrounded by a volume of air,

an air filled variable volume chamber having a normal volume larger than the volume of said fuel well above the fuel level thereof,

operator actuable means for abruptly displacing a discrete volume of air therefrom,

a passageway interconnecting the variable volume chamber and the well above the fuel level whereby a decrease in the chamber volume forces air into the well so as to abruptly lower the fuel level therein and force fuel from the well upwardly through the conduit means, and

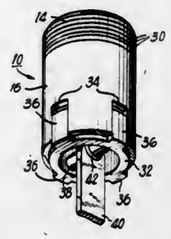
means biasing the operator actuable means to return the variable chamber volume to its predecreased volume without drawing fuel from the well into the variable volume chamber.

4,203,406

EXPANDING PISTON

William T. Smith, P.O. Box 23, Pratt Station, Brooklyn, N.Y. 11205

Filed Dec. 30, 1977, Ser. No. 866,046
Int. Cl.² F02B *75/30*
U.S. Cl. 123—197 A **6 Claims**



1. In combination, an internal combustion engine having a block with at least one cylinder in said block, a crankshaft, a piston with a crown and a skirt, and a connecting rod connecting the crankshaft to the piston, that improvement comprising:

a sleeve forming part of the piston, said skirt and said sleeve being in a telescoping relationship, the end of said skirt spaced away from said piston crown being provided with a plurality of spaced apart annular vertical slots, said sleeve being provided with a plurality of spaced apart annular vertical tabs, each of said tabs extending into one of said slots, and

means kinematically linking the piston and sleeve to each other and to said crankshaft so that said crown is raised to a maximum elevation relative to said sleeve both at the end of the compression stroke of said piston and the end of the expansion stroke of said piston,

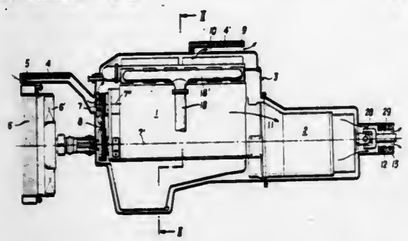
said crown and skirt being lowered to a lower elevation relative to said sleeve as it approaches the center of the stroke and being raised as it leaves the center of the stroke.

4,203,407

INTERNAL COMBUSTION ENGINE WITH A SOUND-REDUCING ENCAPSULATION

Heinz Fachbach; Gerhard Thien, and Karl Kirchweger, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Aug. 14, 1978, Ser. No. 933,606
Claims priority, application Austria, Aug. 18, 1977, 5989/77
Int. Cl.² F02B 77/00
U.S. Cl. 123—198 E **5 Claims**



1. An internal combustion engine having a spaced sound-reducing encapsulation, at the encapsulation being provided at least each one air inlet and one air outlet opening, a blower arranged between said openings for ventilation of the interspace between the engine and the encapsulation, an exhaust system being connected to the engine comprising at least an exhaust manifold being arranged outwardly of the engine encapsulation and exhaust manifold connecting branches, and an exhaust pipe casing being joined to the encapsulation, said casing having air outlet openings at its upper side, at least a part of the exhaust manifold connecting branches also being located outwardly of the engine encapsulation and being enclosed by said exhaust pipe casing, at the exhaust pipe casing there being provided an air discharge duct through which the exhaust pipe extends, said exhaust manifold connecting branches forming in the range of penetration through the side wall of the engine encapsulation each an annular gap with said side wall, in the range of the air outlet openings at the upper side of the exhaust pipe casing there being arranged means to prevent air-transmitted sound from escaping to the surroundings.

4,203,408

LUBRICATING OIL DETECTOR FOR AN INTERNAL COMBUSTION ENGINE

Yoshinobu Yamaguchi, and Hitoyuki Takasu, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1978, Ser. No. 961,020
Int. Cl.² F02B 77/08
U.S. Cl. 123—198 DC **12 Claims**

1. A lubricating oil detector for an internal combustion engine, comprising:

a lubricating oil reservoir adapted to be disposed in a chamber of an internal combustion engine wherein pressure pulsations are produced by reciprocating movement of a piston of the engine;

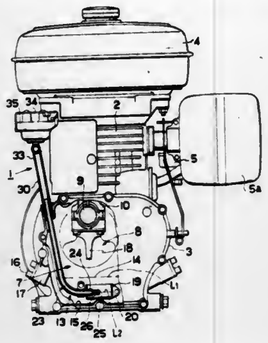
an oil level detecting pipe adapted to extend to the exterior of a crank case of the engine;

said pipe including one end thereof opening in said reservoir;

a pressure detecting actuator adapted to be mounted on the case of the engine, said actuator including valve means;

a connecting tube adapted to connect said valve means of said pressure detecting actuator to said detecting pipe;

said one end of said pipe being disposed in alignment with a predetermined lowest allowable level of oil in said reservoir such that when the oil level in said reservoir falls below said predetermined level said one end of said pipe becomes substantially exposed above the surface of the oil to communicate with said chamber of said engine, whereby the pulsating pressure in said chamber acts through said detecting pipe and said connecting tube to open and close said valve means of said pressure detecting actuator;



said actuator including a first chamber cooperating with said valve means such that pressure is built up therein in response to opening and closing of said valve means; and

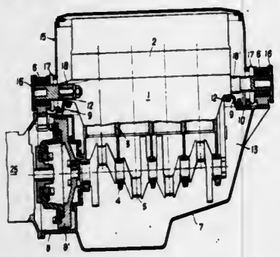
said actuator further including means for stopping operation of said engine in response to pressure built-up in said first chamber of said actuator when the oil level in said reservoir falls below said predetermined level.

4,203,409

LOW-NOISE-LEVEL INTERNAL COMBUSTION ENGINE

Heinz Fachbach; Gerhard Thien, and Peter C. Meurer, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Nov. 16, 1978, Ser. No. 961,411
Claims priority, application Austria, Nov. 23, 1977, 8415/77
Int. Cl.² F02B 77/00
U.S. Cl. 123—198 E **8 Claims**



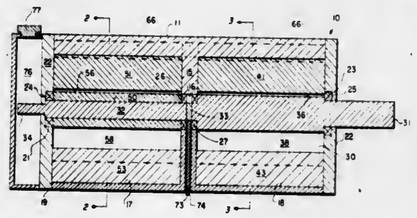
1. A low-noise-level internal combustion engine comprising a crankshaft and crankshaft main bearings which are engine parts directly affected by body resonance and sound vibration, an engine unit support which supports said crankshaft main bearings, a cylinderhead mounted on said engine unit support, auxiliary units rigidly connected to the engine unit support and to the cylinderhead, and further comprising a crankcase and a flywheel case connected with the crankcase, said engine parts which are directly affected by sound vibration being connected to said crankcase and flywheel case in a resonance-absorbing manner, the engine comprising further a sealing element located between said engine parts which are directly affected by sound vibration and said acoustically insulated engine parts, said sealing element dividing the engine into a lower oil-wetted engine region and an upper dry engine region which is oil-tightly sealed against said lower engine region by means of said sealing element, the resonance-absorbing connection between the engine unit support and the crankcase being made by at least three resonance-absorbing elements located entirely outside said oil-wetted region and secured to the crankcase, said sealing element surrounding the engine unit support being attached to the engine unit support and to the crankcase having no supporting function and being highly resilient.

4,203,410

METHOD FOR OPERATING A ROTARY ENGINE

James L. Ramer, 401 W. Newhall Ave., Waukesha, Wis. 53186

Continuation of Ser. No. 740,270, Nov. 9, 1976, abandoned. This application Jun. 7, 1978, Ser. No. 913,415
Int. Cl.² F02B 53/08, 53/10
U.S. Cl. 123—205 **3 Claims**



1. A method of operating a rotary engine having first and second rotors each rotating in a separate chamber, each rotor carrying radially movable vanes, and each chamber having peripherally extending configured walls to determine the extent of radial movement of the vanes said method comprising:

(a) introducing air into a first chamber,

(b) compressing said air upon rotation of said first rotor,

(c) adding fuel into said first chamber,

(d) igniting the compressed air and fuel,

(e) discharging the combustion products from said first chamber without expansion thereof in said first chamber,

(f) introducing the discharged combustion products into said second chamber,

(g) adding additional fuel to the combustion products in said second chamber,

(h) driving said second rotor by expansion of the combustion products and additional fuel in said second chamber, and

(i) exhausting expanded combustion products from said second chamber.

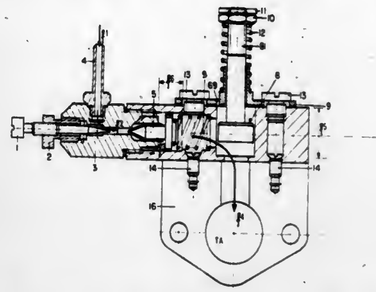
4,203,411

ADDITIONAL CARBURETOR

Jean-Pierre J. Y. Vieille-Mecet, 57, rue du President Coty, Ambares (Gironde), France

Continuation of Ser. No. 633,016, Nov. 17, 1975, abandoned. This application Jan. 13, 1978, Ser. No. 869,293
Claims priority, application France, Nov. 18, 1974, 74 37967
Int. Cl.² F02M 31/00
U.S. Cl. 123—127 **3 Claims**

1. A carburetor system for reducing fuel consumption in internal combustion engines comprising a main carburetor mounted on an intake passageway and having a running jet sized to supply an adequate flow of fuel to the intake passageway for a predetermined level of power, a body mounted on said intake passageway downstream of said main carburetor and having an inlet passageway for receiving fuel under pressure, valving means for opening or closing the inlet passageway, pressure intake means communicating with the intake passageway downstream of the main carburetor for opening said inlet passageway to the intake passageway when the pressure in the intake passageway downstream of the main carburetor is above a predetermined pressure and closing the inlet passageway when the pressure is lower than said predetermined pressure and means for opening the valving means to provide additional fuel to the engine in response to opening of said inlet passageway to the intake passageway by said pressure intake means.

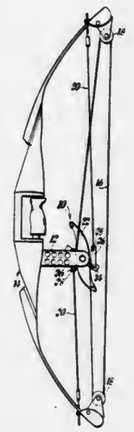


4,203,412

COMPOUND ARCHERY BOW

Lawrence C. Rickard, 116 Pine Tree Ave., Lake Worth, Fla. 33460

Filed May 22, 1978, Ser. No. 907,909
Int. Cl.² F41B 5/00
U.S. Cl. 124—23 R **1 Claim**



1. An archery bow in which the draw weight is greatly reduced at maximum draw string displacement comprising:

a bow frame having a pair of bow limbs;

a primary draw string connected to said bow limbs;

a supporting arm connected to said bow frame;

first and second levers rigidly fixed together and rotatably mounted on said supporting arm;

the primary draw string connected intermediate its ends to said limbs and at each end thereof to the respective ends of said first lever;

a pair of limb tensioning strings that are tensioned by operation on said primary draw string, each said tensioning string being connected intermediate its ends to one of said bow limbs and to said second lever ends;

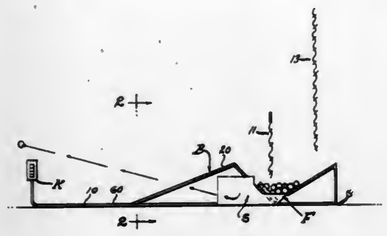
first and second rollers each said roller being pivotally attached to an end of said second lever arm, and said bow frame including an inclined surface rigidly coupled to said support arm to receive one of said rollers when the primary draw string has reached its maximum displacement.

4,203,413

TENNIS BALL FEEDER AND RANDOM SERVER

Kenneth M. Hodges, 3750 Grandview Blvd., Los Angeles, Calif. 90066

Continuation-in-part of Ser. No. 664,376, Mar. 5, 1976, Pat. No. 4,025,071. This application May 23, 1977, Ser. No. 799,283
Int. Cl.[2] F41B 3/04
U.S. Cl. 124—78 14 Claims



6. A feeder and server for tennis balls of conventional diameter and for emitting said balls to be returned by a player and including; a "V"-shaped feed trough comprised of upwardly divergent back and front walls to receive said balls, a disc-shaped feed plate of substantially lesser thickness than the ball diameter and on an inclined axis normal to and spaced from said front wall of the trough, at least one ball receiver opening through a marginal portion of the feed plate, and the feed plate having a rim projecting therefrom in a direction away from the front wall of the trough a distance substantially half the diameter of the conventional tennis ball, a feed opening through the front wall of the trough and underlying the marginal portion of the feed plate, a motor means revolving the feed plate to sequentially align the said at least one receiver opening with the said feed opening whereby a ball is dropped through the feed opening, and emitter means aligned with the said opening to serve the dropped ball.

4,203,414

STONE CUTTING APPARATUS

Harold F. McClain, 9840 Aberdeen, Leawood, Kans. 66206

Filed Jan. 8, 1979, Ser. No. 1,422
Int. Cl.[2] B28D 1/32
U.S. Cl. 125—23 C 18 Claims



1. In a stone cutting apparatus having a cutting position with an introducing conveyor for moving a stone to the cutting position and a removal conveyor for moving cut stone therefrom, a cutting apparatus at said cutting position in transverse relation to said conveyors and having spaced columns and upper and lower carriages with cutting chisels carried thereby, said carriage being movable for cutting stone between the chisels, the improvement being stone positioning apparatus including:

(a) a stop member extending transversely of the removal conveyor;

(b) means adjustably supporting said stop member for selective positioning from the chisels the width of a cut piece of stone;

(c) a turntable under a path of stone on the introducing conveyor for engaging stone approaching the cutting position and facilitating turning of the stone;

(d) a walker apparatus between the introducing conveyor and cutting position and having a plurality of stationary bars laterally spaced apart and extending toward the cutting position and a plurality of movable bars between the stationary bars; and

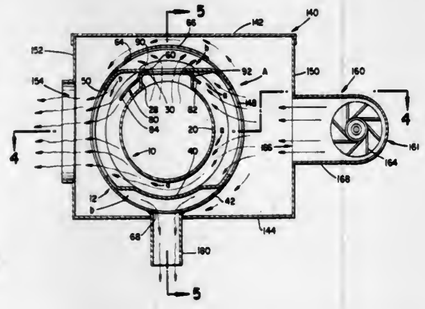
(e) means operatively connected to the movable bars to selectively move the movable bars up and down and toward and away from the cutting position and cooperate with the turntable in maneuvering a stone into engagement with the stop member and in suitable position for cutting a selected piece therefrom.

4,203,415

HEAT EXCHANGER

Thomas J. Gruber, 7700 Fairmount Rd., Novelty, Ohio 44072, and Harris W. Smith, 16839 Savage Rd., Bainbridge, Chagrin Falls, Ohio 44022

Filed Apr. 17, 1978, Ser. No. 896,881
Int. Cl.[2] F24H 3/02
U.S. Cl. 126—110 R 13 Claims



9. A forced air heating system comprising in combination:

a heating system housing including at least a heated air flow outlet;

a heat exchanger recieved in said housing including an inner shell having a side wall, a closed inner end and an outer end for defining a heating chamber with an open ended outer shell generally coaxially disposed around said inner shell and radially spaced therefrom so as to define an air flow passage therebetween over the axially cooperative lengths thereof, said outer shell further including at least a pair of elongated slot areas extending therethrough from one terminal end toward the other terminal end in registry with said inner shell and means for exhausting products of combustion generated in said heating chamber, said exhausting means and heating chamber being placed in gaseous flow communication with each other across said air flow passage by a cross over member;

a fuel burner in operative communication with the outer end of said heating chamber;

means for supplying fuel to said burner to facilitate combustion within said heating chamber; and,

means for directing a flow of air to be heated from a first temperature to a second temperature elevated from the first within said system housing and through said air flow passage in one of an axial and transverse direction relative to said heat exchanger and then outwardly of said housing through said outlet wherein in said axial direction said directing means and heat exchanger are disposed such that at least a portion of said flow of air is directed from adjacent said heating chamber outermost end axially through said air flow passage and wherein in said transverse direction said directing means and heat exchanger are disposed such that at least a portion of said flow of air is directed transversely through said air flow passage between said pair of elongated slot areas in said outer shell.

12. A forced air heating system comprising in combination:

a heating system housing including at least a heated air flow outlet;

a heat exchanger received in said housing including a generally cylindrical inner shell having a side wall, a closed inner end and an outer end for defining a heating chamber with an open ended generally cylindrical outer shell generally coaxially disposed around said inner shell and radially spaced therefrom so as to define an air flow passage therebetween over the axially cooperative lengths thereof, said outer shell further including at least a pair of openings extending therethrough in registry with said inner shell and means for exhausting products of combustion generated in said heating chamber, said exhausting means and heating chamber being placed in gaseous flow communication with each other across said air flow passage by a cross over member;

a thin air flow deflector surrounding said cross over member in said air flow passage intermediate said inner and outer shells, said deflector having a generally arcuate configuration over the lateral dimension thereof and being disposed in a generally parallel relationship over the surface thereof relative to said inner and outer shells for promoting laminar air flow around said cross over member both axially and transversely of said heat exchanger;

a fuel burner in operative communication with the outer end of said heating chamber;

means for supplying fuel to said burner to facilitate combustion within said heating chamber; and,

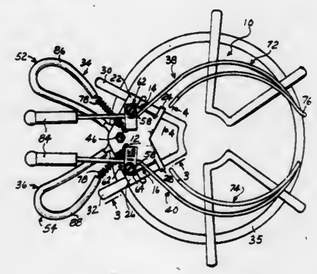
means for directing a flow of air to be heated from a first temperature to a second temperature elevated from the first within said system housing and through said air flow passage in one of an axial and transverse direction relative to said heat exchanger and then outwardly of said housing through said outlet.

4,203,416

MEANS FOR HOLDING A COOKING VESSEL IN POSITION ON A BURNER GRATE

Ralph E. Simpson, Upland, and Michael L. Simpson, Ontario, both of Calif., assignors to Simpson Enterprises, Upland, Calif.

Filed Nov. 25, 1977, Ser. No. 855,026
Int. Cl.[2] F24C 15/10
U.S. Cl. 126—212 10 Claims



1. Holding means particularly suitable for holding a cooking vessel in position over a range burner grate of the type having a plurality of radial bars, said holding means comprising, in combination:

generally flat deck means with lateral edge configurations that interfit with a neighboring pair of the radial bars so as to support the holding means thereon and permit the deck means to span the space therebetween;

a pair of locking levers adapted to pivot about a common pivot point intermediate their ends and means cooperating with said deck means to pivotally support the locking levers at such a point to permit lateral pivoting movement thereof below the deck means;

each of the pivoted locking levers being shaped to extend forwardly from said pivot point and terminate in a foot positioned and adapted to swing laterally outwardly under a separate one of the neighboring pair of radial bars until coming into contact with that bar as the locking levers swing to an open position about said pivot point, each of said locking levers also being shaped to extend rearwardly from the pivot point to form a handle therebehind;

a pair of clamping members respectively secured to a pair of cooperating brackets, and a pair of cooperating pivot means affixed to said deck means, said brackets being respectively mounted on said pivot means in pivoting relationship thereabout;

said clamping members having portions extending forwardly from said brackets in the form of arms adapted to embrace a cooking vessel and each clamping member having a portion extending rearwardly from its cooperating bracket in the shape of a handle;

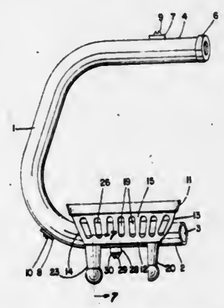
spring means interconnecting said brackets and the handles of said locking levers in such manner as to normally exert simultaneous closing force on the clamping members above said deck means and opening force on the locking levers below said deck means whereby the handles of the locking levers can be squeezed together, against the pulling force of said spring means, until the feet of the locking levers are brought together to fit between a neighboring pair of said radial bars, and whereby said deck means can then be interfitted with the radial bars and the locking lever handles released to permit lateral movement of said feet, under the influence of said spring means, until the feet contact the bars to secure the holding means in position on said grate, and whereby the handles of said clamping members can then be squeezed together to open their forwardly extending arms to receive a cooking vessel, after which the clamping member handles can be released to permit said arms to close around such a vessel placed therebetween, under the pulling influence of said spring means, and thereby hold the vessel in position on said grate.

4,203,417

FIREPLACE HEATER AND GRATE

Donald A. Boyd, Euclid, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio

Filed Nov. 2, 1977, Ser. No. 847,756
Int. Cl.[2] F23H 13/02
U.S. Cl. 126—165 5 Claims



1. In combination with a fireplace heater comprising a series of vertically-extending laterally spaced convection tubes having air inlet lower portions and air outlet upper portions, a grate of basket-like configuration having supporting legs adapted to support said grate in spaced relation to the floor of a fireplace, said grate having upstanding front and back walls, said lower portions of said tubes extending through said front and back walls, and being in heat-exchanging relationship with fuel in said grate, and means for securing said grate to said

tubes, said means comprising a bar or bracket extending substantially tangentially of the lower portions of said tubes.

4,203,418

EXOTHERMIC COMPOSITION AND HOT PACK

William R. Donnelly, 1237 W. High St., Piqua, Ohio 45356

Filed Aug. 21, 1978, Ser. No. 935,256
Int. Cl.[2] C09K 5/00; F24J 1/02
U.S. Cl. 126—263 10 Claims

1. Particulate material for producing an exothermic reaction when contacted by water, consisting essentially of, in parts by weight, about 90 to about 140 parts anhydrous calcium chloride and about 20 to about 40 parts anhydrous sodium sulfate.

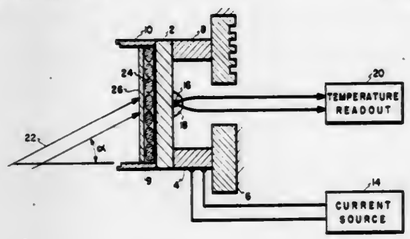
2. A composition including the particulate material of claim 1 and together therewith a solution of anhydrous sodium acetate in water placed in juxtaposition to the particulate material but normally sealed therefrom until a time of use, said composition forming a gel upon contact of said particulate material by said solution and producing a temperature in the environment thereof up to 235° F. by exothermic reaction, the reaction extending for a period of time from about 30 minutes to one hour.

4,203,419

SOLAR CELL

Dale O. Ballinger, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 647,126, Jan. 7, 1976, abandoned. This application Jun. 14, 1977, Ser. No. 806,536
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—430 5 Claims



1. A solar cell comprising

a thermal energy collecting means having at least one generally planar surface and

a thermal energy absorbing means in thermal energy transfer contact with said planar surface of said thermal energy collecting means and exposed to incident electromagnetic energy to be converted into thermal energy, said thermal energy absorbing means including an electromagnetic energy admitting web member having a plurality of electromagnetic energy admitting capsules substantially uniformly distributed therein with each capsule containing an electromagnetic energy admitting fluid medium and a suspension of a plurality of magnetic field responsive, flake-like, and highly reflective particles in said medium and uniformly oriented and retained at an angle of less than 90° with respect to said planar surface.

4,203,420

PORTABLE SOLAR HEAT TUBE

James L. Schoenfelder, 415 5th St., Coralville, Iowa

Filed Nov. 25, 1977, Ser. No. 854,667
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—426 3 Claims

1. In combination,

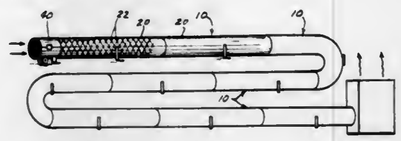
a flexible and inflatable portable solar heat tube having intake and discharge ends,

said solar heat tube having a cylindrical configuration,

the intake end of said heat tube being operatively connected to a source of air for moving air through said heat tube,

the discharge end of said heat tube being operatively connected to an installation requiring heat,

said heat tube comprising a first flexible outer tubular member having high solar transmittance capabilities; a second flexible tubular member positioned within said first tubular member and having heat insulation qualitites; and a flexible absorber tubular member positioned within said second flexible tubular member,



said first flexible outer tubular member being in direct contact with said second tubular member about substantially the entire circumference thereof and said second flexible tubular member being in direct contact with said flexible absorber tubular member about substantially the entire circumference thereof,

said absorber tubular member adapted to convert the incoming sunlight into heat and transfer the heat to the air passing through said heat tube.

4,203,421

SOLAR HEAT COLLECTOR

David M. Bencic, 2731 Galloway Rd., Batavia, N.Y. 14020

Filed Sep. 8, 1977, Ser. No. 831,423
Int. Cl.[2] F24J 3/02; F28F 3/14
U.S. Cl. 126—444 21 Claims



1. A solar heat collector which comprises a thin flexible first wall member, a second wall member conforming in shape to said first member, said members forming major walls of the solar heat collector and spaced apart from each other so as to form a plurality of passageways for flow therethrough of a heat transfer fluid, spacing material, having a plurality of open areas therein, between the first and second wall members to prevent the walls from pressing against each other so fully as to prevent circulation of a fluid through the passages, wherein the first wall member conforms in shape with the spacing material, having depressions matching the open areas thereof, so as to improve heat transfer fluid contact between them, diminish the volume of heat transfer fluid in the passages and rigidify the walls and the solar heat collector.

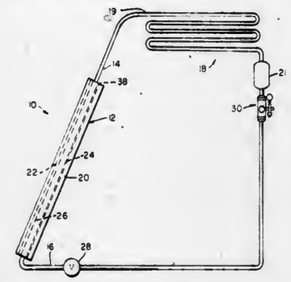
4,203,422

SOLAR HEATING SYSTEM AND COMPONENT

Edward W. Bottum, 9357 Spencer Rd., Brighton, Mich. 48116

Filed Feb. 8, 1978, Ser. No. 876,022
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—417 8 Claims

1. A closed solar heating system comprising a solar collector structure, heat dissipating structure, and means for producing the circulation of a refrigerant heat transfer medium in gaseous form from the collector structure to the heat dissipating structure to the collector structure, all connected together in operative relationship, a refrigerant heat transfer medium in the system, said heat dissipating structure having a volume capacity sufficient to store all of the refrigerant heat transfer medium in the system when said medium is in liquid form, a thermostatically operated valve provided in the means for producing the circulation of a refrigerant heat transfer medium in liquid form from the heat dissipating structure to the collector structure,



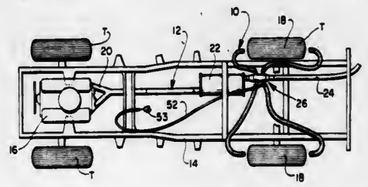
said thermostatically operated valve including means to normally hold the valve in the open position when the temperature of the liquid refrigerant passing therethrough is below a predetermined level, said thermostatically operated valve including means responsive to temperature to cause closing of the valve when the temperature of the liquid refrigerant passing therethrough rises above the predetermined level, said solar collector being located to receive sun rays, said heat dissipating structure being effective to transfer heat to a heat receiving medium during periods of sunlight.

4,203,423

VEHICLE SAFETY DEVICE

Donald C. Ricci, Warwick, R.I., assignor to Sno-Go Inc., Warwick, R.I.

Continuation-in-part of Ser. No. 810,367, Jun. 27, 1977, abandoned. This application Aug. 3, 1978, Ser. No. 930,876
Int. Cl.[2] B60B 39/00; F24J 3/00
U.S. Cl. 126—271.1 1 Claim



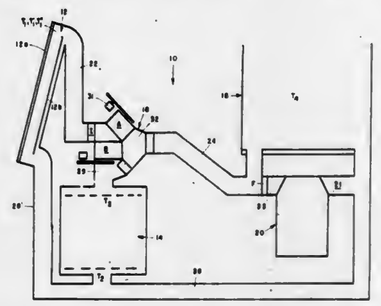
1. A safety device for use with a motor vehicle having an engine, a pair of driving wheels operatively associated therewith, an engine exhaust system including an exhaust pipe for receiving and discharging hot exhaust gases from said engine and a muffler connected to said exhaust pipe at an intermediate point thereof comprising, a valve assembly adapted for mounting within said exhaust system, said valve assembly including a body having an inlet for receiving a portion of said exhaust pipe downstream from said muffler, said body also having an outlet for receiving another portion of said exhaust pipe for discharging said exhaust gases from said exhaust system, pairs of conduits terminating at an end thereof adjacent to the tread surfaces of the tires mounted on each of said driving wheels, each of said pair of conduits connected at the other ends thereof to said body in a common connection for communication with the interior of said body, a pair of valve members positioned in said body upstream of the common conduit connections, said valve members being movable to an inclined position with respect to the normal direction of flow of said exhaust gases for directing said exhaust gases through said conduits, and means for operating said valve members for moving them to their inclined position wherein exhaust gases are diverted through said conduits and for returning said valve members to the normal positions thereof, wherein said exhaust gases are discharged through said exhaust pipe, said valve members normally being located in planes parallel to the flow of said gases to said exhaust pipe and being movable by said operating means to the inclined position relative to the flow of said gases, wherein said valve members act to divert said exhaust gases into said conduits, said operating means including a pair of shafts on which said valve members are mounted for movement therewith, said shafts extending through said body exteriorly thereof, a first set of arms joined to said shafts, spring means interconnecting said arms and being operable to normally locate said valve members in the position that closes communication to said conduits, a second set of arms joined to said shafts, and a flexible cable interconnected to said second set of arms for pivotally moving said second set of arms, wherein said shafts are rotated to move said valve members to the position that diverts said gases into said conduits.

4,203,424

SOLAR HEAT AIR SYSTEM

DeWayne Coxon, and Timothy P. Gates, both of Cedar Springs, Mich., assignors to Jordan College, Cedar Springs, Mich.

Filed Jan. 3, 1978, Ser. No. 866,546
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—422 5 Claims

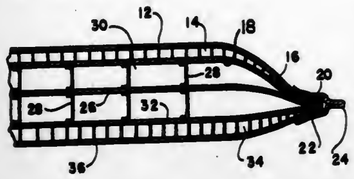


1. In a forced air solar heating system for an environmental space, including a solar collector and a heat storage unit; an air flow handler and mixer control having a first chamber communicable with said solar collector, a second chamber communicable with said heat storage unit, and a third mixing chamber communicable with said environmental space; a first air propulsion unit for said first chamber, arranged to draw heated air from said solar collector; a second air propulsion unit for said second chamber arranged to draw heated air from said heat storage unit; said first and second air propulsion units being arranged to selectively discharge heated air into said mixing chamber; means for selectively operating said first propulsion unit, said second propulsion unit, or both said propulsion units, and means for selectively controlling flow from said first and second propulsion units, whereby heated air can be alternately supplied to said environmental space from said solar collector by said first propulsion unit, or from said storage unit by said second propulsion unit, or mixed from both said solar collector and said storage unit in said mixing chamber by both said first and said second propulsion units.

4,203,425
INFLATABLE SOLAR COLLECTOR

Dana A. Clark, Washburn Rd., Barre, Mass. 01005

Filed Jul. 31, 1978, Ser. No. 929,217
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—426 3 Claims



1. An inflatable solar heat collector unit in which air may be circulated under pressure as a heat collecting medium and a means of inflating the collector unit, comprising an assembly of flexible plastic sheets joined together by spacers formed of flexible plastic sheet material such that the said flexible plastic sheets are spaced apart from each other to bound a continuous air chamber when the assembly is inflated, comprising

a first insulating outer section formed of a first pair of spaced transparent plastic sheets, said first pair of spaced plastic sheets joined together by a plurality of spacers of transparent plastic so as to form a multiplicity of separate sealed air pockets,

a second insulating outer section formed of a second pair of spaced transparent plastic sheets, said second pair of spaced plastic sheets joined together by a plurality of spacers of transparent plastic so as to form a multiplicity of separate sealed air pockets except as noted herein, said first and second insulating outer sections being each joined by flexible plastic spacers to opposed sides of a central heat collecting flexible plastic sheet which is of an opaque color, such as black, so as to absorb radiant solar heat; said spacers joined to the said central sheet being of different lengths located so as to form at least one continuous passage of consecutive air channels in an air chamber on each side of the central sheet,

said air chambers being joined so as to form one continuous passage for air which is fed into a first said air chamber from an inlet joined to said chamber and led from the second air chamber from an outlet connected thereto,

an adjustable constriction valve mounted to said outlet so as to create a controlled amount of back pressure in said first and second chambers so as to cause the said chambers to be inflated with a desired volume of air so as to space the central heat collector sheet from both outer insulating sections when air is pumped into the inlet of said first chamber by pump means, such that the air pumped into the device by the said pump means serves to inflate the structure while the air is heated by radiant energy absorbed by the central sheet, with said heated air then led from said outlet and serving to transfer heat from the central sheet to exterior exchange means.

4,203,426
SOLAR ENERGY CONVERTER CAROUSEL MOUNTED RACK

William C. Matlock, and Patricia Matlock, both of 510 S. 52nd St., #101, Tempe, Ariz. 85281

Filed Aug. 11, 1978, Ser. No. 933,097
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—425 5 Claims

1. An exchange means comprising:

a rack,

said rack being mounted on a substantially horizontal platform having an arcuate configuration,

said platform being positioned for rotatable movement through an arcuate path,

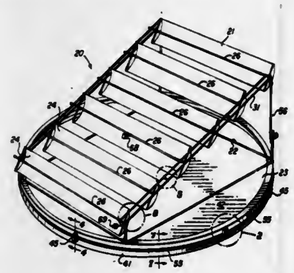
at least a pair of juxtapositioned reflectors mounted on said rack in a parallel arrangement,

each of said reflectors comprises a trough having a parabolic reflecting surface,

means for pivotally mounting each of said reflectors in a parallel arrangement on said rack,

a fluid bearing tube extending longitudinally of each of said reflectors on said rack and approximately disposed with the axis of a portion of said tube in the focal zone of an associated reflector.

a first electric means for moving said reflectors on said rack in unison through a similar arc partially around the portion of the tube associated with each of the reflectors for maintaining said reflectors with the axis of their curvature approximately in a plane containing the sun's center,



a second electric means mounted on said support for sensing the position of the sun for moving said platform to orient and maintain said rack and reflectors with their axes of curvature of their reflective surfaces approximately in a plane containing the sun's center.

said second electric means comprising an electric motor for driving said platform sequentially back and forth around an arcuate track,

said second electric means sensing the position of the sun and tracking the sun in an azimuth mode,

whereby the reflection of the sun's rays are concentrated by said reflectors in a line image along said portions of said tubes, and

means for selectively varying the angular position of said rack to said platform.

4,203,427
PORTABLE SOLAR/NON-SOLAR COOKER

Lee V. Way, Jr., Rte. 4, Box 185F, Sumter, S.C. 29150

Filed Dec. 26, 1978, Ser. No. 972,967
Int. Cl.[2] F24J 3/02; F24C 1/16; F28F 7/00
U.S. Cl. 126—451 4 Claims

1. A portable cooker adapted for utilizing both solar and non-solar sources of heat comprising:

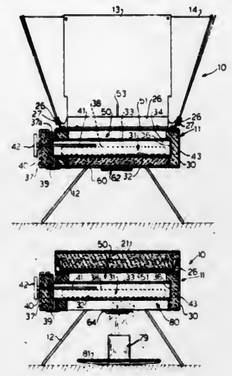
(a) a housing including an internally insulated removable base member and structurally associated internally insulated front, rear and side wall portions defining an opening in the side of said housing opposite said base member;

(b) a solar energy trapping shield member extending between said wall portions parallel to said base member and covering the opening defined thereby;

(c) an oven compartment formed with fixedly positioned heat conductive bottom and top walls parallel to said shield member, said oven compartment being enclosed within the lower portion of said housing and positioned to provide a heat trapping compartment below said shield member and above said top wall and having positionable door means providing access to said oven compartment through one side thereof;

(d) a light reflecting assembly removably positionable on the wall portions of said housing adjacent the edges of said shield member and adapted to direct solar radiation impinging thereon to said shield member to heat said heat trapping and over compartments;

(e) securing means detachably securing said base member to said housing below said oven compartment enabling said base member in a first mode to be positioned below and to insulate said oven compartment bottom wall and in a



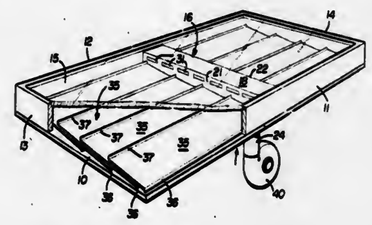
second mode to be positioned to expose a major portion of said oven compartment bottom wall accessible for being heated by an external source of heat applied thereto; and

(f) a cover detachably securable to said housing and adapted to cover said opening to reduce heat loss above said oven compartment when said light reflecting assembly is removed during utilization of said external source of heat.

4,203,428
SOLAR HEATER

Joseph E. Fodor, 712 Shore Dr., Boynton Beach, Fla. 33435

Filed Jun. 29, 1978, Ser. No. 920,465
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—449 7 Claims



1. In a solar heater having:

a housing with a top cover which passes solar radiation into the interior of the housing;

a plurality of inclined solar radiation-absorbing sheets of high heat conductivity material inside said housing which partially overlap each other in succession and are spaced apart to provide air passages between neighboring sheets;

and means for passing air from outside the housing through said air passages to be heated by said sheets and for withdrawing the heated air from the housing for utilization;

the improvement wherein:

said sheets have a thickness of not more than substantially 0.010 inch each where they overlap;

the spacing between neighboring sheets at said air passages where they overlap is not more than substantially 0.025 inch;

and said solar heater further comprising:

a plenum enclosure located centrally in said housing between a plurality of said partially overlapping sheets at one side and a plurality of said partially overlapping sheets at the opposite side;

means providing an air inlet leading into said plenum enclosure;

means providing an air outlet spaced from said inlet and leading from the interior of said plenum enclosure;

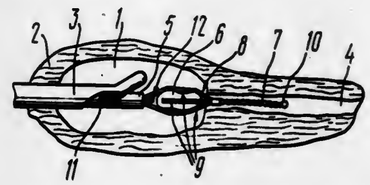
and an interior baffle in said plenum enclosure blocking said air inlet from said air outlet;

said plenum enclosure having openings on one side of said baffle leading into the space between said sheets on both sides of the plenum enclosure for passing air thereto from said air inlet.

4,203,429
METHOD OF REMOVING CONCRETIONS FROM THE URETER

Petr N. Vasilevsky, bulvar Druzhby Narodov, 8, kv. 27; Jury G. Ediny, prospekt 40-letia Oktyabrya, 88, kv. 67, and Ivan V. Parfinenko, ulitsa Kochubeevskaya, 12, kv. 1, all of Kiev, U.S.S.R.

Filed Oct. 11, 1977, Ser. No. 840,762
Int. Cl.[2] A61B 19/00, 17/00
U.S. Cl. 128—1 R 1 Claim



1. A method for removing concretions from the ureter with the use of a disintegrating instrument and an extractor having a holder with wire arms which form a stone-catching basket which is provided with a guiding rod having a rounded body attached to its end, said method comprising the steps of:

inserting said extractor with said wire arms and said guiding rod, having said rounded body attached to its end, into the ureter via the urethra and the bladder by means of a cystoscope until said wire arms contact the concretion;

capturing the concretion in said stone-catching basket by turning said wire arms with the purpose of enveloping the concretion;

passing the concretion from the ureter into the bladder by removing said extractor until said stone-catching basket with the concretion captured therein enters the bladder while letting said guiding rod of said wire arms remain in the ureter meatus;

inserting said disintegrating instrument into the bladder until one end of said instrument comes into contact with the concretion;

disintegrating the concretion in the bladder by means of said disintegrating instrument while the concretion is being held suspended by said wire arms;

withdrawing said disintegrating instrument from the bladder;

closing said stone-catching basket of said extractor by bringing said wire arms together;

inserting said closed stone-catching basket of said extractor into the ureter meatus;

opening said stone-catching basket by moving said wire arms apart;

inserting a catheter into the ureter to a position proximate the location where said concretion was previously captured;

withdrawing said extractor from the ureter and the bladder through said cystoscope;

withdrawing said cystoscope from the bladder and the urethra;

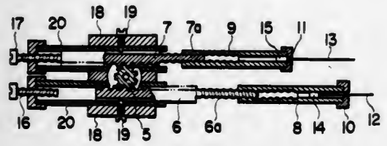
withdrawing said catheter from the ureter through the ure-

thra following the catherterization after the mucous membrane of he ureteral walls has healed; and
removing concretion fragments by flushing the bladder.

4,203,430
DEVICE FOR CONTROLLING CURVATURE OF AN END SECTION IN AN ENDOSCOPE

Nagashige Takahashi, Tokiwadai Green Haitsu 602, No. 28-10, Tokiwadai 3-chome, Itabashi-ku, Tokyo, Japan

Filed Oct. 28, 1977, Ser. No. 846,473
Claims priority, application Japan, Dec. 16, 1976, 51/168782
Int. Cl.² A61B 1/00
U.S. Cl. 128—4 **3 Claims**

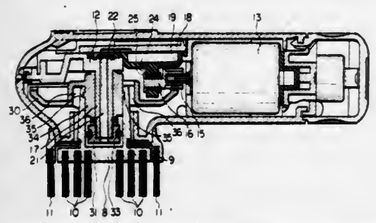


1. In an endoscope of the type having a curvable end section adapted to be inserted into a part to be examined, a flexible connecting pipe connecting the curvable end section to a manual operating section, and two actuating wires extending through the flexible connecting pipe and connecting the curvable end section to a device in the manual operating section for controlling the curvature of the curvable end section, said device comprising:
an angle operating knob and two parallel sliding members, said angle operating knob being operatively coupled to said two sliding members so that rotation of said angle operating knob produces movements of said two sliding members in opposite directions,
tension control members attaching said two wires to respective ones of said two sliding members, said tension control members being adjustable to regulate the tensions of said two wires, and
adjustment members provided in the movement ranges of said two sliding members and adjustable to define the maximum movement positions of said two sliding members.

4,203,431
FACIAL TREATMENT DEVICE

Yoshinori Abura; Yuritugu Toyomi, and Motohisa Nishino, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 27, 1978, Ser. No. 900,797
Claims priority, application Japan, May 6, 1977, 52-52396
Int. Cl.² A61H 1/00
U.S. Cl. 128—39 **12 Claims**

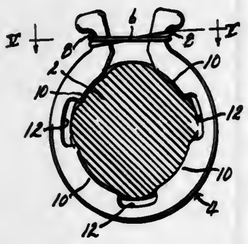


1. A facial treatment device in combination with detachable sucking and rotary attachments, said device comprising a housing, a rotary power source housed in said housing and including an output shaft, an air pumping means housed in the housing to be driven by said rotary power source, a stationary shaft disposed at right angles to said output shaft and forming an axial air-flow path communicated at one end with air-intake side of said pumping means and at the other end with the exterior of the housing, and a rotary member including a rotary shaft supported coaxially relative to said stationary shaft to be rotated thereabout by the rotary power source, an end of the stationary shaft on the side of said other end of the air-flow path projecting beyond said rotary shaft, said end of said stationary shaft and said rotary shaft of said rotary member being accessible on a single side of the housing for selectively mounting and detaching the sucking attachment to and from said end of the stationary shaft and the rotary attachment to and from said rotary shaft, said sucking attachment communicating with said air flow path when attached.

4,203,432
MALE THERAPEUTIC DEVICE

Edward G. Koch, 716 Benton Blvd., Kansas City, Mo. 64124

Filed Dec. 4, 1978, Ser. No. 965,831
Int. Cl.² A61F 5/00
U.S. Cl. 128—79 **5 Claims**



1. A therapeutic device for assisting in the maintenance of erection in the male penis, and comprising:
a. a ring of flexible but relatively inelastic material adapted to encircle the base of the penis closely adjacent the body, and having angularly spaced apart, radially inwardly projecting lugs at the inner periphery thereof, said lugs alternating with recessed notches, one of said notches being disposable at the ventral side of the penis whereby to avoid constriction of the urethra, and
b. constricting means operable to contract said ring resiliently about the penis to press said lugs firmly against the penis, whereby said lugs constrict and reduce veinal flow of blood in the portions of the penis periphery engaged thereby, but not in the portions of said periphery not engaged thereby.

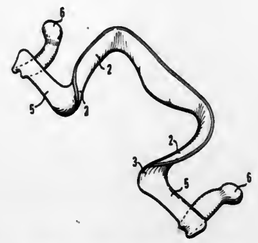
4,203,433
SPREADING DEVICE FOR TREATMENT OF HIP DYSPLASTIES

Gertraud Prahl, Rullstorf, Fed. Rep. of Germany, assignor to A. Nattermann & Cie. GmbH, Cologne, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,766
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806173
Int. Cl.² A61F 3/00
U.S. Cl. 128—80 A **3 Claims**

1. A spreading device for the treatment of hip dysplasties, comprising
a back support portion for engagement with a patient's back in the area of the sacrum,
a pair of side portions extending forwardly from said back portion along opposite sides of the patient,
a pair of arch portions joined to the forward ends of said side portions, said arch portions extending forwardly and inwardly and arranged for engagement between the pelvis and thigh of the patient, and
a pair of thigh splint portions each resiliently flexibly connected to a forward end of one of said arch portions in the manner of a leaf spring, said thigh splints arranged for

engagement diagonally with inner sides of the thighs from an upper front portion to a lower rear portion of each thigh, leaving open and unobstructed the general area of the patient's perineum and rump,

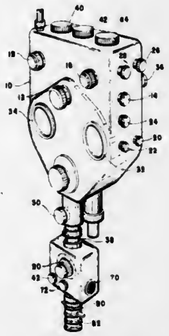


the lower end of each thigh splint including a generally dish-shaped support for engagement with a thigh of the patient at or above the ham.

4,203,434
TIMING ASSEMBLY FOR OXYGEN RESPIRATION UNITS

Lula M. Brooks, 5038 N. Kenmore, Chicago, Ill. 60640

Filed Apr. 5, 1978, Ser. No. 893,901
Int. Cl.² A61M 16/00
U.S. Cl. 128—205.24 **8 Claims**



1. A device for controlling the duration of a pre-set timed period in which a predetermined amount of gas mixture containing dry oxygen is delivered to a patient during inhalation and exhalation cycling, respectively, from the outlet tube of a respirator unit to a patient, said device fitted with means to permit said predetermined amount of gas mixture containing dry oxygen to flow from the respirator unit during inhalation cycling and exhalation cycling, respectively, to the patient for said pre-set timed period, and upon termination of said pre-set timed period, said means acting to shut off the flow of said dry oxygen gas mixture to the patient and substitute a flow of air from the atmosphere to the patient at the conclusion of said pre-set timed period, comprising
a housing fitted with a first inlet tube with means on said inlet tube to detachably engage the outlet tube of a respirator in a sealed engagement, said housing fitted with a second inlet tube leading from a source of atmospheric air,
valve means in said housing, said first and second inlet tubes each joined in the housing to said valve means, an outlet tube in said housing, said valve means is also connected to said outlet tube of the housing, said outlet tube of the housing fitted with means to detachably join a tube that may be employed to connect to a face mask secured to a patient for supply of the dry oxygen gas mixture from the respirator unit,
said valve means being moveable from a first position in which the housing outlet tube is connected only to the first inlet tube, to a second position in which the housing outlet tube is connected only to the second inlet tube, with
a timer device mounted to said housing means to manually actuate said timer device and initiate said pre-set timed period, said timer device is fitted with means to cause the valve to move from the said first position to the said second position, at the conclusion of said pre-set timed period of time after the timer device has been manually actuated.

4,203,435
WOUND DRESSING

Manfred Krull, Heiligkreutzsteinach; Holger Buchwald, Hemsbach, and Wilhelm Kirsch, Birkenau, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

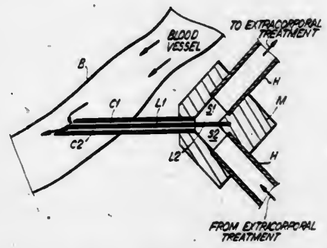
Filed Feb. 9, 1978, Ser. No. 876,308
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1977, 7703897[U]
Int. Cl.² A61L 15/00
U.S. Cl. 128—156 **1 Claim**

1. A wound dressing comprising at least five layers needled together into an integral structure, the two outer layers being permeable and non-adherent to a wound, the next two layers being absorbent layers substantially free of channels and comprising cellulosic fibers in the form of absorbent cotton, a nonwoven fleece or fabric, the absorbent layers being separated by a distribution layer comprising a powder of modified starch, the outer layers comprising polypropylene, polyethylene, polyester or polyamide in the form of a fibrous nonwoven fleece, knit or woven fabric or a perforated plastic sheet thermally bonded to form fuzz-free surfaces.

4,203,436
ASSEMBLY FOR DIVIDING A HOLLOW HYPODERMIC NEEDLE INTO TWO SEPARATED FLOW CONDUITS

Lars Grimsrud, P.O. Box 1379, Salmou, Id. 83467

Filed Mar. 28, 1978, Ser. No. 891,045
Claims priority, application Norway, Apr. 5, 1977, 771208
Int. Cl.² A61M 5/00
U.S. Cl. 128—214 R **3 Claims**



1. Assembly for dividing a hollow hypodermic needle into two separated flow conduits and connecting said conduits with associated pipe coupling means for, respectively, discharge of blood for extracorporal treatment from a blood vessel punctured by the needle and returning said blood to the punctured vessel, said assembly comprising an elongated tongue member having a first portion dimensioned for insertion into the inner cavity of the needle in sealing contact with the cavity wall and a second portion wider than the first portion and designed to protrude from the rear end of the hypodermic needle when the first portion is inserted in said inner cavity, a pair of pipe stubs for hose connection and shaped for sealing bearing against opposite sides of the protruding second portion of the elongated tongue member and the rear end of the needle in order to provide flow communication for each pipe stub with an indi-

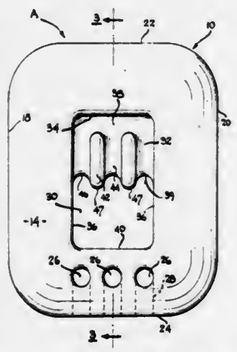
vidually associated one of the two separated flow conduits formed by said insertion of the first portion of the tongue member into the inner cavity of the needle, the second portion of the tongue member, said pipe stubs and the rear end of the needle being at least in part embedded in a curable mass after the insertion of the first portion of the tongue member into the inner cavity of the needle and mounting the pipe stubs in sealing bearing against the second portion of the tongue member and the rear end of the needle.

4,203,437

APPARATUS AND METHOD FOR ALLEVIATING PHYSIOLOGICAL CONDITIONS BY DIRECTED SPRAY OF LIQUID TOWARD BODY TISSUE

Matlock M. Mims, Pacific Palisades, Calif., assignor to Gregory Bernard Bergeron, Los Angeles and Robert James Heiner, Play Del Rey, both of, Calif.

Filed Mar. 10, 1978, Ser. No. 885,124
Int. Cl.² A61M *3/00*
U.S. Cl. 128—229 **52 Claims**



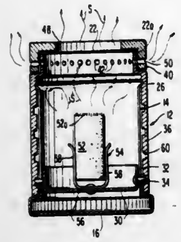
1. A therapeutic spray device for treating groin and anal areas of human beings to relieve at least prostate or vaginal or anal ailments and conditions thereof, said device comprising:
(a) a pad formed of a relatively rigid foam-like plastic material and having a pair spaced apart elongate members connected by a pair of spaced apart transverse members forming a relatively large opening therebetween, said elongate members having relatively flat surfaces and being sized so they are capable of supporting the buttocks of an individual in an approximate sitting position with said relatively flat surfaces on said pad supporting portions of the thighs of such individual, or in a position where the knees of the individual are supported on said relatively flat surfaces when in an approximate kneeling position,
(b) means forming a nozzle receiving aperture in one of said transverse members of said pad and which is spaced fowardly of said opening,
(c) a nozzle capable of being disposed in said aperture and capable of being connected to a source of liquid under pressure, said nozzle having at least one aperture located to be directed toward the groin and anal areas of a person sitting or kneeling on said pad, said nozzle being located relative to a person disposed on said pad so that it is not readily adaptable for insertion in a body cavity and is capable of emitting a spray of said liquid toward said anal or groin areas to treat or alleviate at least prostrate or vaginal or anal aliments and with the waste liquid passing through said opening, and
(d) connection means on said nozzle for connection to a source of liquid under pressure.

4,203,438

MOXA BURNER AND MOUNT FOR MULTIPLE MOXA BURNERS

Desmond K. Shiu, 660 Elm St., Montpelier, Vt. 05602

Filed Feb. 8, 1979, Ser. No. 10,346
Int. Cl.² A61F *7/00*
U.S. Cl. 128—254 **4 Claims**



1. A moxa burner for applying the smoke and heat generated by burning of a moxa roll to a limited surface area of the human body about an acupuncture point or the like, said moxa burner comprising:
a tubular outer housing bearing spiral grooves on the inner wall thereof,
a tubular inner housing having a diameter slightly less than the diameter of said tubular outer housing and concentrically mounted therein,
a plurality of parallel, longitudinal slots within said tubular inner housing, at circumferentially spaced positions,
a circular platform having a diameter less than that of said tubular inner housing, being mounted coaxially therewithin and bearing pins projecting radially from the platform periphery at circumferentially spaced positions corresponding to said tubular inner housing slots, being received by said slots and projecting within said spiral grooves of said tubular outer housing; whereby, rotation of said tubular inner housing with respect to said tubular outer housing causes said platform to move longitudinally,
a closure overlying one end of said tubular outer housing and being apertured centrally to permit the moxa smoke and heat to be discharged axially from said moxa burner for contact with the human body,
vent means for venting the interior of said tubular inner housing to the atmosphere for controlling burning of the moxa roll, and
means for mounting said moxa roll on said platform facing said cover and movable with said platform towards and away from said opening within said cover.

4,203,439

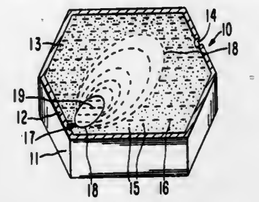
OSMOTIC SYSTEM WITH VOLUME AMPLIFIER FOR INCREASING AMOUNT OF AGENT DELIVERED THEREFROM

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 743,974, Nov. 22, 1976, abandoned. This application Oct. 11, 1978, Ser. No. 950,515
Int. Cl.² A61M *31/00*
U.S. Cl. 128—260 **15 Claims**

1. An osmotic system for the controlled delivery of a beneficial agent to an environment of use, said system consisting essentially of:
(a) a shaped wall permeable to the passage of an external fluid present in the environment of use and substantially impermeable to the passage of agent, the wall surrounding and forming;
(b) a compartment having a single internal space;
(c) an agent formulation in the compartment that exhibits an osmotic pressure gradient across the wall against the external fluid;

(d) a volume amplifier in the compartment for increasing the amount of agent delivered from the compartment, said amplifier consisting essentially of an expandable semipermeable membrane surrounding a gas generating couple, said couple consisting essentially of an acidic component and a basic component that in a fluid environment react and generate a gas;
(e) a passageway in the wall that communicates with the interior of the compartment and the exterior of the system for delivering agent from the system; and,
(f) wherein in operation, when the system is in the environment of use, fluid from the environment is imbibed



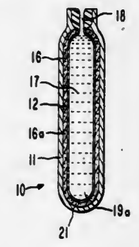
through the wall into the compartment in a tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall, which fluid (1) forms a composition containing agent formulation, and (2) activates the amplifier to imbibe fluid from within the compartment, said fluid wetting the couple in the amplifier causing it to react, generate gas and increase the volume of the amplifier, urging it to expand and continuously fill the compartment, whereby through the combined action of (1) and (2) agent is delivered through the passageway from the system at a controlled rate over a prolonged period of time.

4,203,440

DEVICE HAVING VARIABLE VOLUME CHAMBER FOR DISPENSING USEFUL AGENT

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Oct. 23, 1978, Ser. No. 953,489
Int. Cl.² A61M *31/00*
U.S. Cl. 128—260 **17 Claims**



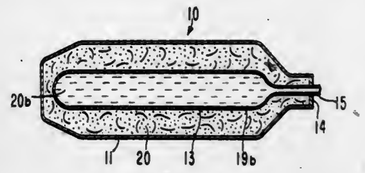
1. A device for delivering a useful agent to an environment of use, comprising:
(a) a useful agent;
(b) a housing having a shape retaining wall defining an internal space, the housing having at least one opening connecting the space with the exterior of the device;
(c) a variable volume chamber in the housing, said chamber comprising a flexible wall surrounding a reservoir for storing the agent, and a passageway for delivering the agent from the chamber to the exterior of the device;
(d) a pressure generating member in the housing positioned between the housing and the chamber, said member formed of a semipermeable polymer having therein a swellable, insoluble hydrophilic polymer; and,
(e) wherein, in operation when the device is in the environment of use, the member imbibes fluid admitted into the device, causing the member to expand, generate and exert pressure on the chamber which decreases the volume of the chamber thereby delivering agent through the passageway from the device at a controlled rate over a prolonged period of time.

4,203,441

OSMOTICALLY TRIGGERED DEVICE WITH GAS GENERATING MEANS

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Dec. 18, 1978, Ser. No. 970,537
Int. Cl.² A61M *31/00*
U.S. Cl. 128—260 **15 Claims**



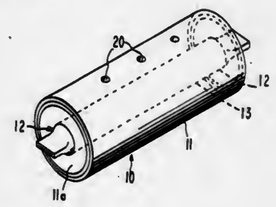
1. A device for delivering a useful agent to an environment of use, comprising:
(a) a useful agent;
(b) a housing comprising a shape-retaining wall formed of a semipermeable polymer that defines an internal space and has an opening that connects the space with the exterior of the device;
(c) a container in the housing, said container comprising a flexible wall surrounding a reservoir for storing the agent, and a passageway that passes through the opening for delivering the agent from the container to the exterior of the device; and,
(d) means for generating a gas in the device interposed between the housing and the container, said means generating gas in response to fluid admitted into the device, which gas exerts pressure on the container causing it to decrease in volume and correspondingly delivers agent through the passageway from the device in a unit time.

4,203,442

DEVICE FOR DELIVERING DRUG TO A FLUID ENVIRONMENT

Alan S. Michaels, San Francisco, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 828,473, Aug. 29, 1977. This application Jan. 4, 1979, Ser. No. 972
Int. Cl.² A61M *31/00*
U.S. Cl. 128—260 **7 Claims**



1. A drug delivery device comprising:
(a) a drug;
(b) a housing having a shape-retaining wall defining an internal space;

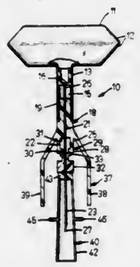
(c) a multiplicity of holes in the housing for admitting exterior fluid into the device;
(d) a container in the housing, said container formed with a collapsible wall surrounding a reservoir for storing the drug and a passageway that extends through the housing for delivering drug from the container to the exterior of the device; and,
(e) a laminate in the housing surrounding the container comprising a lamina of an absorbent material and a lamina of a swellable hydrophilic polymer, said laminate capable of imbibing fluid through the holes into the housing, thereby causing the laminate to expand and exert pressure on the container which collapses said container and concomitantly pumps drug through the passageway form the device at a controlled rate over a prolonged period of time.

4,203,443

ADDITIVE TRANSFER UNIT WITH INTERLOCKING MEANS

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, Chicago, Ill.

Filed Dec. 8, 1977, Ser. No. 858,495
Int. Cl.² A61J *1/00*
U.S. Cl. 128—272.3 **4 Claims**



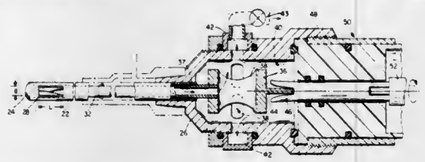
1. An additive transfer device for storing and transferring of a medicament to a solution container having a pierceable closure comprising:
an additive container for storing the medicament to be transferred, said container having a tubular neck portion defining a flow path into said container;
a pierceable sealing element positioned in sealing engagement with the passageway in the additive container;
a piercing guide member having a projecting tubular portion adapted to be seated in said tubular neck portion;
a guide passageway extending through said guide member;
a piercing member having a channel therethrough for the flow of said medicament and a piercing point on both ends thereof, a portion of said piercing member in slidable contact with said guide passageway;
interlocking means operatively associated with said piercing guide member and said piercing member, said interlocking means defined by expandable finger portions providing an orifice and a compartment member and an annular projection receivable through said orifice and into said compartment member;
wall means extending from either said piercing guide member or said piercing member in a direction opposite said projecting tubular portion and coextensive with a portion of said piercing member except for the end portion defining said one point; and
a needle guard member slidably received over said piercing member and surrounding said other piercing point with said annular projection including a contact member and carried by said piercing member and said expandable finger portions and compartment carried by said piercing guide, said needle guard member contacting said contact member opposite said orifice;
said interlocking means constructed and arranged in conjunction with said piercing member so that with said projecting tubular portion seated in said tubular neck portion one of said piercing points will be spaced from said pierceable sealing element, so that upon movement of said piercing member in said guide passageway and upon engagement of said interlocking means said one of said piercing points will puncture said pierceable sealing element and upon entry of the other piercing points through said closure of said solution container a pathway between the containers is provided and the medicament will flow into the solution container.

4,203,444

SURGICAL INSTRUMENT SUITABLE FOR CLOSED SURGERY SUCH AS OF THE KNEE

Leonard J. Bonnell, Medford; Edward H. McHugh, Southboro; Douglas D. Sjostrom, Wakefield, all of Mass., and Lanny L. Johnson, Okemos, Mich., assignors to Dyonics, Inc., Woburn, Mass.

Filed Nov. 7, 1977, Ser. No. 848,982
Int. Cl.² A61M *1/00*; A61B *17/32*
U.S. Cl. 128—276 **55 Claims**



1. A surgical instrument for a joint space of the body characterized in that the instrument comprises an intra-articular shaver comprising an external stationary tube sized for insertion into said joint space, said external tube having a closed distal end and defining a side-facing, axially extending shaving port on the periphery only of said external tube and an internal member with close running fit with said external tube, defining an internal, rotary blade at said shaving port, said blade during each cycle constructed to open said port to the interior of the instrument and said blade having an axially extending edge adapted to co-act in shearing action with a cooperative axial edge defined by said external tube at said port to produce a succession of discrete shavings with progressive revolutions of said blade, said internal member having radial bearing portions at both proximal and distal ends of said blade, rotatably supported by corresponding portions of said external tube and effective to maintain said blade and edge in shearing relation, a vacuum conduit for drawing fluid and articles to be shaved into said shaving port and to draw said discrete shavings through the instrument, and a drive motor adapted to rotate said blade at a shearing speed of the order of 200 rpm or below that enables degenerated cartilage and synovial tissue of the joint to enter and be severed by said blade into discrete shavings for being transported away in succession through said vacuum conduit.

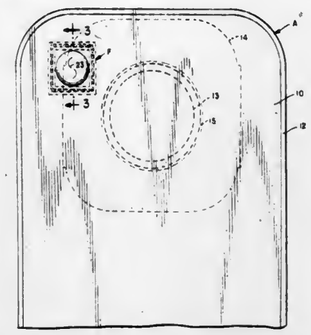
4,203,445

GAS-VENTING FILTER ASSEMBLY FOR COLLECTION DEVICE

James L. Jessup, Elk Grove Village, and Eugene W. Elliott, Barrington, both of Ill., assignors to Hollister Incorporated, Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,445
Int. Cl.² A61F *5/44*
U.S. Cl. 128—283 **14 Claims**

1. In combination with a collection appliance formed of fluid and odor impermeable thermoplastic sheet material, said appliance including panels defining an enclosure and having an opening therein for receiving body discharge, and attachment means for forming a temporary seal about said opening so that body discharge passes into said enclosure, a gas-venting filter assembly comprising:
(a) a recess provided in one of said panels, the portion of said one panel providing said recess being displaced outwardly from the plane of said one panel;
(b) a generally planar filter unit bridging said recess with its peripheral portion sealed to said one panel around said recess; and



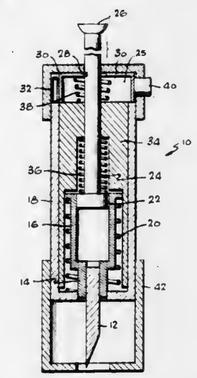
(c) gas outlet aperture means formed in said outwardly displaced panel portion, said aperture means being of sufficient size so as to be essentially non-flow restricting with respect to the vented gas, and said outwardly displaced panel portion in which said gas outlet aperture means is formed being normally spaced from said filter unit.

4,203,446

PRECISION SPRING LANCET

Wilhelm A. Höfert, Kollnau; Peter F. Schlüssel, Freiburg; Anton H. Sutor, Freiburg, and Georg J. Ullrich, Freiburg, all of Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Aug. 29, 1977, Ser. No. 828,711
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642896
Int. Cl.² A61B *17/34*
U.S. Cl. 128—329 R **8 Claims**



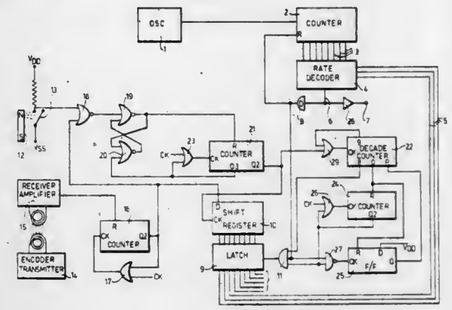
1. An improved lancet holder for the creation of standard puncture wounds in the skin for diagnostic purposes of the type having a housing, a lancet mounted for motion in the housing, means for urging the lancet into contact with the skin, a trigger for activating the urging means, and means for withdrawing the lancet from the skin after contact therewith, wherein the improvement comprises:
means for preventing recoil of the lancet holder in response to the activation of the urging means wherein the recoil preventing means includes a mass mounted for motion in the housing in opposition to the motion of the lancet upon activation by the trigger.

4,203,447

SECURITY MAINTENANCE FOR PROGRAMMABLE PACER REPROGRAMMING

John W. Keller, Jr., Miami, Fla.; Dennis Digby, Brooklyn Park, and Alan Coombes, New Hope, both of Minn., assignors to Biotronik Mess- und Therapiegeräte GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 917,130
Claims priority, application United Kingdom, Aug. 19, 1977, 34911/77
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 PG **13 Claims**



1. A programmable, implantable body function control apparatus comprising: control means for influencing a function of the body by providing a train of stimulation pulses in accordance with a selected program, said control means including means for changing the selected program in order to vary at least one parameter of the stimulation pulses; program storage means for storing a predetermined number of bits representing the currently selected program and connected to said means for changing for supplying the currently selected program to said control means; program detection means connected to receive and temporarily store a predetermined number of bits representing a newly selected program, said detection means including output means connected to said program storage means for supplying the bits received by said detection means; signal conduction means connected to receive bit signals provided by a source outside the body and to supply a corresponding sequence of bits, representing such newly selected program, to said program detection means in a pattern independent of that of the train of stimulation pulses being provided by said control means; and program change enable means connected to said program storage means for supplying a program change signal which causes the bits temporarily stored in said detection means to be transferred into said program storage means to replace the bits previously stored in said program storage means, said program change enable means being composed of: first counter means connected for providing a count of the number of bits supplied to said program detection means, and for supplying a first enabling signal only when its count is equal to, and does not exceed, the predetermined number of bits; timer means connected for responding to the first bit supplied to said program detection means and for supplying a second enabling signal at the end of a given period of time after response to such first bit; synchronizing means connected to said control means for supplying a third enabling signal in synchronism with each stimulation pulse provided by said control means; and gating means connected to said counter means, said timer means and said synchronizing means for supplying such program change signal to said program storage means only when said first, second and third enabling signals

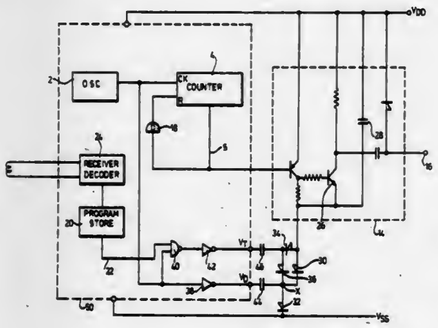
are present in time coincidence, whereby the bits temporarily stored in said program detection means can be transferred into said program storage means only when precisely the predetermined number of bits has been supplied to said program detection means within the given period of time and at a point in time which is in synchronism with a stimulation pulse provided by said control means.

4,203,448

PROGRAMMABLY VARIABLE VOLTAGE MULTIPLIER FOR IMPLANTED STIMULATOR

John W. Keller, Jr., Miami, Fla., assignor to Biotronik Mess- und Therapiegeräte GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 917,140
Claims priority, application United Kingdom, Aug. 19, 1977, 34916/77
Int. Cl.² A61N 1/36
U.S. Cl. 128—419 PG 3 Claims



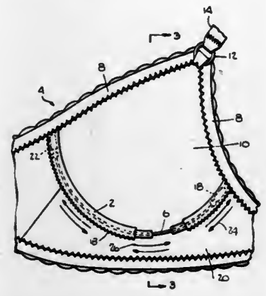
1. In a programmable pacer system having a remote source of program control signals, an implantable pacer comprising:
(a) a voltage supply;
(b) oscillator means for producing a pulse signal having a fixed frequency;
(c) counter means for generating a pacer output control signal upon each occurrence of a predetermined plurality of oscillator pulses;
(d) memory means for receiving from said source and for storing a program control signal representative of a desired multiplication factor of said supply voltage for pacer stimulation signals;
(e) output means, responsive to said output control signal, for generating pacer stimulation signals, said output means including:
(i) a first capacitor coupled on one side to said supply, and
(ii) transistor means, connected in parallel with said capacitor and enabled by said output control signal, for generating stimulation signals having an amplitude of the voltage on said capacitor at the time of occurrence of said control signal;
(f) capacitor means, enabled by said stored program control signal, and charged by a plurality of successive excursions in one direction of said oscillator pulse signal, for supplying added charge increments to the other side of said first capacitor during successive excursions in the opposite direction of said oscillator pulse signal.

4,203,449

STRETCHABLE UNDERWIRE CASING FOR BREAST POCKETS

Leo L. Winzelberg, Hamden, Conn., assignor to The Strouse, Adler Company, New Haven, Conn.

Filed May 1, 1978, Ser. No. 901,508
Int. Cl.² A41C 1/14
U.S. Cl. 128—473 12 Claims



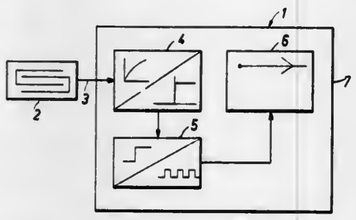
1. A foundation garment comprised of:
(a) breast pockets formed of stretchable elastic material;
(b) an underwire casing formed of stretchable elastic material;
(c) a stretchable elastic frame member adjacent the underwire casing;
(d) zig-zag stitching securing the casing to the breast pockets and stretchable frame member; and
(e) an underwire slidably arranged within the underwire casing.

4,203,450

APPARATUS FOR MONITORING AND INDICATING THE ONSET OF PARTURITION

Werner Kegel, 4543 Lienen Hoeste 45, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,245
Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719698
Int. Cl.² A61B 5/00
U.S. Cl. 128—630 10 Claims



1. Apparatus for monitoring and indicating the onset of parturition in animals such as horses, comprising means responsive to a sweat-inducing change in state occurring in the body of an expectant animal at the onset of parturition, said means including a measured value pick-up detecting element for contact with the skin or coat of the animal which produces a signal depending on sweat humidity secreted by the animal, signal transmitting means comprising a limiting value transmission means coupled to the detecting element to receive said signal therefrom, and a code signal generating transmitter controlled by said limiting value transmission means for producing a transmitted coded signal indicative of onset of parturition, and a parturition indicator including signal receiving means tuned to the code signal generating transmitter and

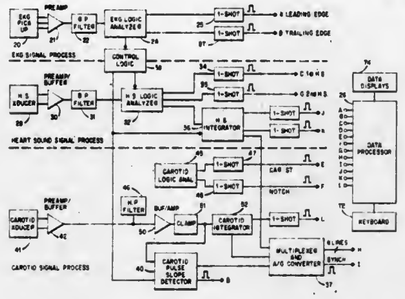
means controlled by the signal receiving means for providing a warning of the onset of parturition.

4,203,451

CARDIOVASCULAR ANALYSIS, METHOD AND APPARATUS

Joseph J. Panico, 8 Farrington St., Arlington, Mass. 02174

Filed Mar. 17, 1978, Ser. No. 887,505
Int. Cl.² A61B 5/02
U.S. Cl. 128—672 9 Claims



1. A method of obtaining LVEDP (left ventricular end diastolic pressure) in a mammalian body comprising:
(a) measuring diastolic and systolic pressures;
(b) detecting the start of the electrocardiograph QRS complex;
(c) detecting the start of the first carotid pulse after the start of said QRS complex;
(d) detecting the start of the first heart sound after the start of said QRS complex;
(e) determining the carotid pulse slope by:
(1) sensing the carotid artery pressure by a transducer secured against the neck;
(2) converting the pressure variations sensed to electrical voltage signals;
(3) amplifying said voltage signals;
(4) adjusting the amount of said amplifying to calibrate the swing of said voltage signals to a predetermined level;
(5) processing said signals as amplified to obtain carotid pulse slope time by the time it takes said voltage signals to pass between two fixed reference levels;
(6) processing said carotid pulse slope time with said diastolic and systolic pressures to obtain carotid pulse slope; and,
(f) calculating LVEDP by processing the equation:

$$LVEDP = DIA - (73 - T2)CS$$

Where:
DIA = diastolic pressure at a brachial artery
T3 = Time from start of QRS complex to start of carotid pulse
T2 = Time from start of QRS complex to start of first heart sound
CS = Carotid pulse slope.

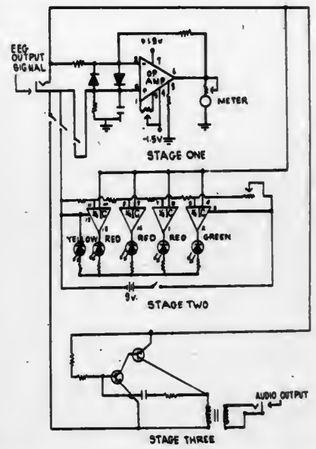
4,203,452

EFFICIENCY OF HUMAN LEARNING EMPLOYING THE ELECTROENCEPHALOGRAPH AND A LONG-TERM LEARNING DIAGNOSTIC-REMEDIAL PROCESS

David B. Cohen, 704 W. McMinn Ave., Dade City, Fla. 33525

Filed Aug. 10, 1977, Ser. No. 823,431
Int. Cl.² A61B 5/04
U.S. Cl. 128—732 2 Claims

1. A method for distinguishing between short-term and long-term learning in a human subject to thereby improve the efficiency of learning in the said human subject, comprising:
pre-determining a threshold value of potential for comparison with the individual's evoked potential representative of the brain wave pattern of a human subject,
presenting educational material as a stimulus for learning by the subject,
sensing the amplitude of the brain wave potential evoked from the subject by said learning stimulus,



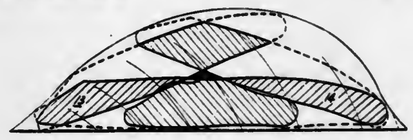
comparing the sensed brain wave amplitude with the said pre-determined threshold potential,
activating an indicator when the said evoked potential value exceeds the pre-determined threshold potential as an indication of the duration in which long-term learning is occurring.

4,203,453

PROCESS FOR THE REPETITIVE AND OPTIMALIZED LAYOUT OF SHAPES HAVING THE DETERMINED CONTOUR OF A CIGAR WRAPPER WITHIN EACH OF THE ELEMENTS OF A SERIES OF TOBACCO LEAVES

Jean-Francois Leclerc, Orleans, and Pierre Waegaert, Bordeaux, both of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Jun. 29, 1978, Ser. No. 920,152
Claims priority, application France, Jul. 4, 1977, 77 20437
Int. Cl.² A24C 1/00; A24B 7/00
U.S. Cl. 131—20 R 8 Claims



1. A process for the repetitive and optimalised layout of shapes having the determined contour of a cigar wrapper within each of the elements of a series of tobacco leaves or half-leaves (having an irregular shape and defects), with a view to cutting out and removing from said elements wrappers having said shapes, in which process at least one sample leaf is determined having dimensional characteristics inferior to those of the whole section of the series of the leaves to be cut out, then, for each of the sample leaves, cut out pattern cards are drawn up, each comprising the outline of a possibility, distinct from the others, of cutting a leaf similar to the sample leaf into said shapes of determined contour, wherein said pattern cards relating to the same sample leaf are graded into groups, as a function of their decreasing yield of wrappers, the pattern cards within the same group are graded as a function of at least

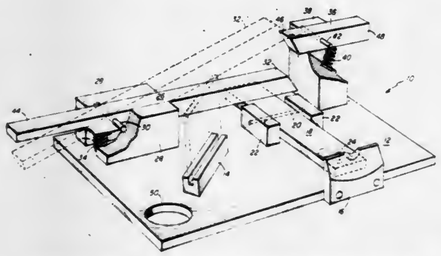
one criterion other than that of yield and relative to the interest of use presented by said pattern cards, there are superposed in turn, on each of the leaves to be cut out having dimensional characteristics at least equal to those of a sample leaf, the pattern cards corresponding to this latter sample leaf in the above order of grading, and the first pattern card is retained as cut out pattern for each leaf, on which the outlined shapes of wrappers, constituting the domain of said card, are not superposed on a defect in the leaf to be cut.

4,203,454

SNUFF PROJECTOR

Johann H. Wutscher, 141 Brown St., Waltham, Mass. 02154

Filed Apr. 3, 1978, Ser. No. 892,624
Int. Cl.[2] A24F *47/00*
U.S. Cl. 131—170 R **5 Claims**



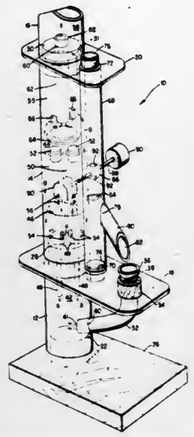
1. A device for the projection of snuff into the nostrils of a user comprising:
a base;
a nose positioning member secured to the front edge of said base;
said nose positioning member being a vertical member whose upper edge is contoured to fit under the base of the nose of the user when upper lip of the user is positioned against its vertical face such that the nostrils of the user overhang the nose positioning member;
a snuff projection means positioned adjacent to said nose positioning member such that snuff may be projected from said snuff projection means into nostrils positioned over said nose positioning member;
said snuff projection means comprising:
an elongated, rearwardly extending, pivotally mounted snuff projection lever;
a fulcrum for said snuff projection lever positioned rearward of its center point;
pivot blocks mounted on said base to support said fulcrum;
the forward edge of said snuff projection lever normally sloping downward toward and almost abutting said vertical nose positioning member;
a pair of spaced apart depressions near the forward edge of said snuff projection lever;
each of said depressions of a size sufficient to hold a pinch of snuff and spaced to be located under nostrils overhanging said nose positioning member;
striking means to cause said snuff projection means to project snuff upward into the nostrils of the user;
restraining means to restrain said striking means when said striking means is in a spring loaded pre-striking position;
means to release said striking means to strike said projection means resulting in the projection of snuff into the nostrils of the user.

4,203,455

LIQUID-COOLED SMOKING DEVICE

Erwin S. Byrd, Jr., 1202 Livingston St., Wheaton, Md. 20902

Filed Sep. 13, 1978, Ser. No. 942,127
Int. Cl.[2] A24F *1/30*
U.S. Cl. 131—173 **13 Claims**



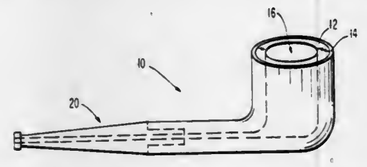
1. A liquid-cooled smoking device comprising:
housing means for defining at least two, vertically superposed chambers;
means for containing a supply of tobacco to be smoked;
means interconnecting said tobacco container and a first upstream one of at least two chambers for introducing smoke into said first chambers;
a second downstream chamber having a liquid coolant disposed therein;
means fluidically connected with said second chamber for withdrawing said smoke from said device;
means sealingly separating said first and second chambers; and
means within said second chamber for defining a sinusoidal liquid-cooling smoke flow path, said sinusoidal means including at least one pair of concentric tubes, the inner one of said concentric tubes having at least one aperture in its wall, said inner tube aperture facing the central axis of said second chamber and positioned at an elevational level above the surface of said coolant, the outer one of said concentric tubes having at least one aperture in its wall, said outer tube aperture positioned at an elevational level below the surface of said coolant, said separating means and said sinusoidal means acting together to permit said smoke to travel from said first chamber to said second chamber by said flow path and to prevent said coolant from entering said first chamber.

4,203,456

SMOKING PIPE

Richard T. Miller, Cedar La., Ossining, N.Y. 10562

Filed Aug. 26, 1977, Ser. No. 828,222
Int. Cl.[2] A24F *1/32*
U.S. Cl. 131—230 **15 Claims**



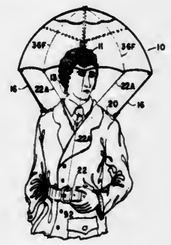
1. An article of manufacture being a smoking pipe having a bowl for holding tobacco, said bowl being comprised of a lightweight concrete hardened from a mixture of Portland cement and water and at least one aggregate material selected from the group consisting essentially of perlite, pumice, molecular sieve materials, and mixed oxides of calcium, silicon and aluminum, where the ratio of said aggregate to said Portland cement is in the range of about 3/1 to about 8/1 by volume, said concrete having a density in the range of about 40-80 lbs./ft.[3], where the pore size of the hardened water and Portland cement mixture is substantially the same as the pore size of said aggregate.

4,203,457

ATTACHABLE PORTABLE UMBRELLA

Meyer Friedman, deceased, late of Flushing, N.Y., and by Elizabeth Friedman, administrix, 56-59 Hollis Court Blvd., Flushing, N.Y. 11365

Filed Mar. 13, 1978, Ser. No. 885,811
Int. Cl.[2] A45B *11/02*
U.S. Cl. 135—5 C **5 Claims**



1. A collapsible umbrella which is detachably mounted to a garment of a wearer so as to be supported, in use, in the opened position of the umbrella above the head of the wearer, comprising
an umbrella assembly formed of ribs radially fastened at a first end of each rib to a top section of a post,
a tubular handle section telescopically slidably mounted about said post,
means joining said handle section and said ribs so as to cause said ribs to extend away from said post when the handle is moved to a first position towards the top section of said post and to draw towards said post in a collapsed position of the umbrella when the handle section is moved to a second position away from the top section of the post,
a flexible covering externally fastened to said ribs,
two compression members, each pivotally mounted to a second end of each of two ribs, and
two flexible tension members, each fastened to a second end of each of two other ribs, together with
means to detachably fasten the said compression members to a garment, together with
a pair of first brackets each adaptable for mounting externally on the shoulder section of a coat and each fitted with means for detachable fastening to one of the compression members.

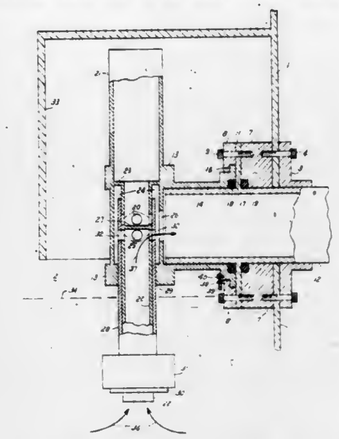
4,203,458

NEGATIVE GRAVITY SWIVEL DEVICE

Alfred J. Barrett, Littleton, and Samuel M. Warner, Aurora, both of Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 5, 1978, Ser. No. 939,753
Int. Cl.[2] F16K *17/36*
U.S. Cl. 137—38 **4 Claims**

1. A fluid gathering apparatus operable in either a positive or negative "g" environment, comprising:
(a) an outer cylinder;
(b) an inner cylinder substantially coaxial with the outer cylinder, attached at one end to the inner surface of the outer cylinder by a flange therebetween;
(c) an upper port in the wall of the inner cylinder;
(d) a lower port in the wall of the inner cylinder;
(e) a baffle plate inside the inner cylinder separating the segments of the cylinder containing the upper and lower ports;
(f) a coaxial intermediate cylinder slidably mounted between the inner and outer cylinders to form a seal therebetween;
(g) a port in the intermediate cylinder, located so that it aligns with the lower port of the inner cylinder when the slidable intermediate cylinder is in a first position, and aligns itself with the upper port of the inner cylinder when the slidable intermediate cylinder is in a second position;
(h) an opening through the walls of the outer cylinder communicating with the port in the intermediate cylinder, irrespective of whether the intermediate cylinder is in its first or second positions;
(i) a means for limiting the downward travel of the intermediate cylinder to a location no further than the first position; and
(j) a means for limiting the upward travel of the intermediate cylinder to a location no further than the second position.

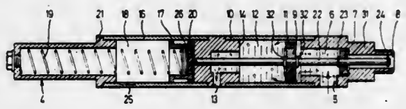


4,203,459

CONTROLLING MECHANISM FOR SPRINKLER SYSTEM

Marcel Boschung, Schmitten, Switzerland, assignor to Firma Marcel Boschung, Schmitten, Switzerland

Filed Jan. 20, 1978, Ser. No. 870,946
Claims priority, application Switzerland, Jan. 27, 1977, 1013/77
Int. Cl.[2] F16K *11/10, 31/36*
U.S. Cl. 137—119 **9 Claims**



1. In a sprinkler system a mechanism for controlling the passage of predetermined quantities of pressure liquid from a supply comprising a body having a first cylinder and a second cylinder joined coaxially together, a common piston rod running through both cylinders in the axial direction thereof, said piston rod having a piston in each cylinder mounted rigidly on said rod for axial displacement in its associated cylinder with axial displacement of said rod between opposite first and second limit positions, and a second piston mounted on said rod in

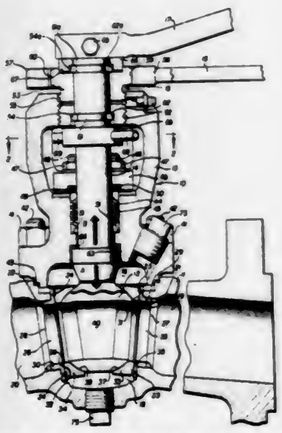
the first one of said cylinders, the pistons in said first cylinder being valving pistons, the first one of said cylinders comprising an inside wall defining at least one cavity having first and second outlet openings for liquid on opposite sides of the valving pistons, and one inlet opening between said outlet openings and connected to said supply, the first outlet opening being positioned to be engaged and closed by said rigidly-mounted valving piston when said rod is in said first limit position, and the second opening being positioned to be engaged and closed by said second valving piston when said rod is in said second limit position, the second valving piston engaging said second outlet opening to maintain it closed during a predetermined axial displacement of said rod away from said second limit position toward said first limit position and disengaging said second outlet opening to open it when said rod moves into said first limit position to engage said first valving piston with said first opening after said predetermined displacement, circumferential surfaces of both said valving pistons being spaced from said inside wall to afford limited flow of pressure liquid past one of said valving pistons in the cavity toward the open outlet opening, the spacing of the circumferential surfaces from the inside wall and the diameters of said valving pistons providing a greater pressure liquid force on said first valving piston than on said second valving piston whereby the pressure of said supply liquid in said inlet displaces said rod to its first limit position, the second cylinder comprising a dash pot having a cavity, the rigidly-mounted piston in said second cylinder comprising a dash-pot piston secured to said common piston rod for axial travel in said cavity, and means to regulate the rate of travel of said piston in said cavity, and thereby the axial displacement of said two valving pistons.

4,203,460

BALL VALVE WITH COMPOUND CLOSURE MOVEMENT

Werner K. Priese, Barrington, Ill., assignor to Hills-McCanna Company, Carpentersville, Ill.

Filed Mar. 15, 1978, Ser. No. 886,649
Int. Cl.[2] F16K 3/36
U.S. Cl. 137—240 **10 Claims**



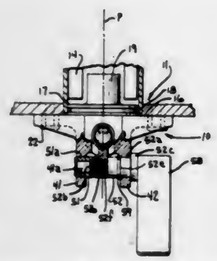
1. A flushable ball valve unit for high pressure fluid control comprising: body means defining a valve chamber including a pair of passages having respective openings communicating with said valve chamber and adapted for connection to a service line; seal support means comprising substantially flat annular surfaces about said passage openings into the valve chamber, said surfaces converging in a first direction; rotary ball means within said valve chamber including a through bore for connecting said passages when said ball means is in the valve open position; annular seal means disposed between said seal support means and said rotary ball means for establishing a fluid seal therebetween; port means formed in said body means providing a circulating system for flushing said chamber around said rotary ball means; means for rotating said rotary ball means between a valve open and a valve close position comprising stem means connected with said ball and supported by said body means for rotative movement; and operating means coupled to said stem means for moving said stem means and correspondingly said rotary ball means and said seal means in said first direction to a first, seated position, said seal means moving relative to said converging seal support surfaces with the converging nature of said surfaces forcing said seal means into firm sealing contact with said ball means and said surfaces, said operating means also being operable to move said stem means, ball means and seal means in a second direction opposite said first direction for movement of said ball to a second, unseated position thereby decreasing the sealing contact, such that movement from the seated position can be employed prior to rotative movement of the ball means thereby facilitating said rotative movement, with movement back to the fully seated position being effected once the desired rotative position of the ball means is attained; and said seal means being formed of a non-yieldable material, with said stem means being rigidly affixed to said ball means to preclude relative movement therebetween, such that when said ball means is in the valve closed, fully seated position, said ball means is precluded from movement axially with repect to said passages under the influence of high line pressure, thereby insuring the continuity of the sealing engagement and preventing line fluid from entering said chamber, such that flushing of said valve chamber can be accomplished without mixing the flushing medium and the fluid product in the service line.

4,203,461

FREEZER DOOR FOR A SOFT-SERVE FREEZER

Stephen W. Schwitters, Rockford, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 967,961
Int. Cl.[2] F16K 31/60, 1/00, 31/44; A23G 9/00
U.S. Cl. 137—343 **5 Claims**



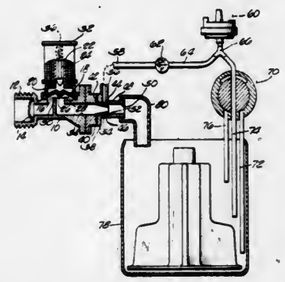
1. In a freezer door for a soft-serve freezer including a valve cylinder in the door having a product inlet and a product outlet, a valve member slidable in the valve cylinder to control flow from the product inlet to the product outlet, means on the door providing a pair of actuator supports spaced from relatively opposite sides of a plane through the longitudinal axis of the valve cylinder, and a manually operable valve actuator pivotally mounted on the actuator supports and engaging the valve member to slide the same in the cylinder, the improvement comprising: said actuator supports having aligned bearing openings therein, said valve actuator including a first shaft member shorter than the spacing between said actuator supports and having a first pivot portion adjacent one end rotatably received in the bearing opening in one of said actuator supports and an actuator portion integral with and extending laterally of the first shaft member adjacent its other end for engagement with the valve member, said valve actuator including a second shaft member having a second pivot portion intermediate its ends rotatably received in the bearing opening in the other of said actuator supports when one end thereof is adjacent said other end of the first shaft member and a handle portion integral with and extending laterally of the other end of the second shaft member, and shaft connecting means on the adjacent ends of said first and second shaft members for detachably and non-rotatably interconnecting the first and second shaft members in a plurality of different angular positions relative to each other for turning in unison.

4,203,462

WATER LEVEL CONTROL SYSTEM

W. E. Beller, Park Ridge, Ill., assignor to The Singer Company, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,498
Int. Cl.[2] F15C 1/18; H01H 35/34
U.S. Cl. 137—393 **4 Claims**



1. A control system for sensing the water level in a container and effecting a control function in response thereto, the system including a valve controlling flow into the container, a pressure switch having a diaphragm operated switch responsive to pressure in a chamber, characterized by,

a Venturi on the outlet of said valve,

a conduit connected to the low pressure point of the Venturi and having an end terminating at the level in said container to be sensed whereby air is aspirated through the conduit into the Venturi so long as the end of the conduit is above the level in the container,

said conduit being connected to said chamber so the chamber pressure drops to actuate the switch when the container level reaches the end of the conduit preventing further aspiration through the conduit, said switch being actuated in the oppostie sense upon restoration of atmospheric pressure in the chamber through said end of the conduit and check valve in the conduit between the pressure switch and the venturi preventing flow from the venturi to the pressure switch.

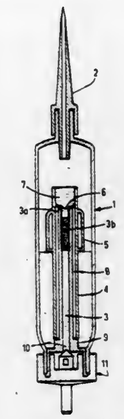
4,203,463

FLOW-REGULATING DEVICE FOR PERFUSION-TRANSFUSION APPARATUS

Victor Ponlot, and Jacques Ponlot, both of 2, Rue Saint Marceaux, Paris 17, France

Filed Apr. 6, 1978, Ser. No. 894,618
Claims priority, application France, Apr. 8, 1977, 77 10711
Int. Cl.[2] F16K 21/16
U.S. Cl. 137—403 **11 Claims**

1. A system of flow-rate regulation for perfusers-transfusers commonly known as visual apparatus, comprising a chamber of transparent synthetic material having an upper portion provided with a perforator for admission of liquid into said chamber, a fixed central tube in said chamber, said tube having an upper inlet for fluid and a lower outlet for the fluid, a cylindrical sleeve surrounding said tube, float means operatively associated with said sleeve and tube for producing closure of said upper inlet of said tube when liquid in said chamber drops below a predetermined level, said sleeve and tube defining an annular passage therebetween, said sleeve having an open lower end through which liquid is admitted and flows upwardly through said annular passage and then downwardly through said upper inlet in said tube with the latter open when the liquid in the chamber is above said predetermined level as detected by said float means, said cylindrical sleeve being freely slidable on said fixed central tube and including a flexible diaphragm which closes said upper inlet of said tube when the



liquid in the chamber drops below said predetermined level and said sleeve having an upper end with a cavity located above said flexible diaphragm.

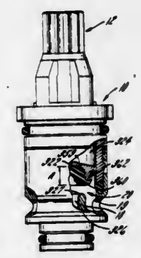
2. A flow-rate regulator system according to claim 1 wherein said cavity is positioned below the perforator for receiving admitted liquid and for containing the liquid until the cavity is filled whereafter the liquid overflows the cavity and enters the chamber.

4,203,464

DIAPHRAGM VALVE FOR FAUCETS

Gerald J. Farrell, Elmhurst, and Rudy Y. Bisonaya, Oaklawn, both of Ill., assignors to Elkay Manufacturing Company, Broadview, Ill.

Continuation-in-part of Ser. No. 711,551, Aug. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 633,445, Nov. 19, 1975, abandoned. This application Mar. 10, 1978, Ser. No. 885,280
Int. Cl.[2] F16K 11/14, 7/12
U.S. Cl. 137—454.2 **17 Claims**



1. A dry stem, faucet valve assembly, comprising:

a valve body having upper and lower sections,

said lower section having an outlet chamber and an inlet for water extending into said outlet chamber, and terminating in an annular valve seat,

said upper section having a cylindrical chamber, aligned with said valve seat,

a cylindrical valve plunger non-rotatably and reciprocably supported in said upper section chamber for movement

along the axis of said valve seat between valve open and valve closed positions, said plunger having a tubular end portion concentric with and having a larger inside diameter than the inside diameter of said valve seat and leaving a clearance space adjacent the outer edge of said valve seat in the closed position of the valve plunger,

a stem projecting from one end of the valve body and extending into said upper section thereof,

cam means carried within said upper section connected for rotation by said stem and operable upon rotation of the stem to push said plunger toward said valve seat,

and a diaphragm of resilient rubber like material mounted at its periphery between said valve body sections, said diaphragm providing a fluid barrier between said outlet chamber and said upper section chamber for maintaining said plunger, cam plate and stem dry,

said diaphragm having a raised portion received in said tubular end portion of said valve plunger and a valve closure portion which is held by said valve plunger in alignment with the valve seat, and pressed against said valve seat in the valve closed position of said plunger, and which has clearance with the valve seat in the valve open position of said plunger to admit water from said inlet to the outlet chamber, and a supporting section extending outwardly from said closure portion through said clearance space to said periphery, including a portion having loops which rolls without stretching beyond the fatigue limit of said material during the stroke of the valve plunger between said positions,

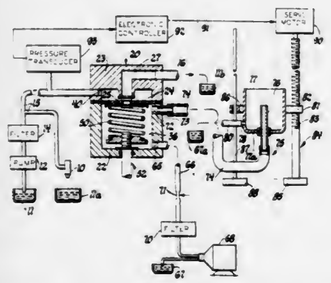
said lower section of said valve body including a second outlet chamber and a second inlet terminating in a second valve seat, said inlets being separate and provided for supply of hot and cold water respectively, a common outlet passage for mixed hot and cold water communicating with both said outlet chambers, a second plunger supported for reciprocation along the axis of said second valve seat, and a second diaphragm mounted between said valve body sections, each of said diaphragms having a valve closure portion adjacent the respective valve seat and adapted to be pressed against the respective valve seat by one of said plungers, said rotary cam plate having separate hot and cold water cam surfaces engaging said plungers respectively, and operable upon rotation of the stem and cam plate to reciprocate said plungers and in combination to move said closure portions of said diaphragms relative to said valve seats to proportion the mixture into said common outlet passage of hot and cold water from said separate inlets.

4,203,465

PRECISION PRESSURE CONTROL VALVE

Paul Rissi, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1979, Ser. No. 24,409
Int. Cl.² F16K *31/12*
U.S. Cl. 137—487.5 **2 Claims**



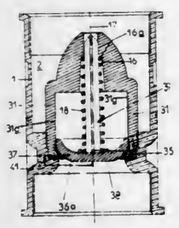
1. In a diaphragm controlled pressure regulator of the type wherein the diaphragm defines with the regulator housing a pressure chamber on one side of the diaphragm and a control chamber on its opposite side, the diaphragm having a closure member associated therewith for cooperating with a valve seat encircling a discharge passage to control fluid discharge from the pressure chamber out through the discharge passage; the improvement comprising an inlet passage in the regulator housing opening at one end into the control chamber and being connectable at its opposite end to a source of fluid; an outlet passage in the regulator housing from the control chamber; a variable height standpipe connected at one end to the opposite end of said outlet passage and having an overflow for fluid at its opposite end; and, a controlled actuator means operatively connected to said standpipe for regulating the effective height thereof as a function of the pressure of fluid in the pressure chamber whereby a regulated control trim fluid pressure can be maintained in the control chamber to control movement of the diaphragm and of the closure member associated therewith relative to the valve seat so as to maintain the pressure of fluid within the pressure chamber substantially constant.

4,203,466

NON-RETURN VALVE

Daniel Hager, Farges les Chalon, Chagny-Saone et Loire, France

Filed Oct. 5, 1977, Ser. No. 839,638
Claims priority, application France, Oct. 5, 1976, 76 30676
Int. Cl.² F16K *15/06*
U.S. Cl. 137—543 **12 Claims**



1. A non-return valve, comprising:

a one-piece metal chamber;

an obturator disposed within said chamber;

said obturator having an obturating head and a reverse axial stem;

an obturator guide member disposed within said chamber for axially guiding said obturator at said head and said stem;

said chamber being provided with an internal shoulder;

an L-shaped flexible and elastic annular seal member having a radially-extending annular lip thereof retained between at least a portion of said shoulder and said guide member, and a substantially axially-extending lip thereof disposed adjacent to an inner wall of said obturator guide member;

said guide member having a forward end portion and a rear end portion distal to said forward end portion;

said forward end portion being disposed adjacent to said shoulder;

said rear end being connected to said forward end by a plurality of arms;

each said arm having a substatially straight portion adjacent said forward end portion and a curved portion adjacent said rear end;

a hub having a bore therethrough disposed at said rear end and connected to said arms for guiding said reverse axial stem;

the inner surfaces of said straight portions of said arms forming a bore for guiding said obturator head;

said curved portions of said arms forming a rear fairing to facilitate the flow of a fluid through said non-return valve;

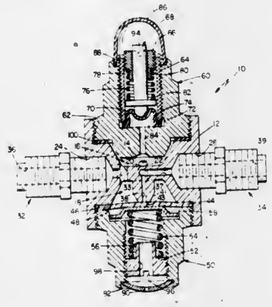
a return spring disposed co-axially around said reverse axial stem between said hub and said obturator head for pressing said obturator head towards said shoulder; said obturator head having a forward peripheral surface defining a leading face from which extends a curved lateral wall portion being curved so as to define a substantially axially-extending portion thereof and wherein a portion of said curved lateral wall sealingly bears against said axially-extending lip of said seal member in the closed position of said valve.

4,203,467

PRESSURE EQUALIZING VALVE

Paul Cardi, 1375 Park Ave., Cranston, R.I. 02920

Filed Aug. 4, 1978, Ser. No. 931,202
Int. Cl.² E03B *7/07*
U.S. Cl. 137—557 **12 Claims**



1. A pressure equalizing valve, comprising:

a housing defining a chamber,

said housing having first and second passages therethrough opening into said chamber;

a valve seat in said chamber surrounding the opening of said second passage thereinto;

a diaphragm having its periphery sealed to said housing and forming a wall of said chamber adjacent to said valve seat;

resilient means on the side of said diaphragm opposite said valve seat for urging said diaphragm against said seat with a predetermined force, to seal said second passage from said chamber, and hence from said first passage; and

an indicator mounted on said housing and having a pressure responsive portion in communication with said chamber for indicating when the air pressure therein is below a predetermined value just sufficient to overcome said predetermined force and unseal said second passage,

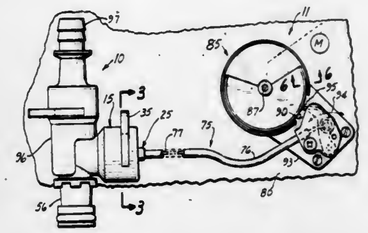
said valve further comprising a partition dividing said chamber into first and second compartments respectively communicating with said diaphragm and said pressure responsive portion of said indicator, said partition having a permanently open third passage therethrough connecting said compartments.

4,203,468

COUPLING FOR JOINING PARTS OF FLUID CONVEYING AND FLUID CONTROLLING DEVICES, AND VALVES UTILIZING SAID COUPLINGS

William A. Dietz, Los Angeles, Calif., assignor to Schurz Corporation, Los Angeles, Calif.

Filed Jan. 30, 1978, Ser. No. 873,356
Int. Cl.² F16K *31/46*
U.S. Cl. 137—624.11 **2 Claims**



1. Cam-actuated fluid flow controlling and coupling apparatus, comprising:

a receptacle, an internal receptacle wall, an internal peripheral sealing surface on said receptacle wall, said receptacle wall having a slit therethrough, and a flow passage to and a sealing seat facing into the region bounded by the respective sealing surface;

a coupled member, a peripheral sealing surface on said coupled member, a retention shoulder on said coupled member, said coupled member being insertable into said receptacle with the sealing surfaces in sealing contact and the retention shoulder past the slit, and further including a poppet;

a coupler engageable to the receptacle, said coupler including a key which passes through the slit to engage the receptacle and the retention shoulder whereby to hold the coupled member in the receptacle; and

actuator means to move said poppet toward and away from said seat, said actuator means comprising a cable that includes a sheath and a cable inside the sheath, said poppet being attached to said cable for movement therewith, cam means for shifting the cable in the sheath, said cam means comprising an anchor member and a camming member, the cable being attached to the camming member, and the sheath being attached to said anchor member and to said coupled member, a timer, a cam driven by said timer and contactible by the camming member, whereby to establish the position of the poppet as a function of the cam contour and position, and thereby also as a function of time as determined by the timer.

4,203,469

FOUR WAY REVERSING VALVE FOR AIR CONDITIONING SYSTEMS

James T. Gates, 1611 Kirkley Rd., Columbus, Ohio 43221

Filed Jun. 9, 1978, Ser. No. 914,666
Int. Cl.² F16K *31/16, 11/085*
U.S. Cl. 137—625.43 **5 Claims**

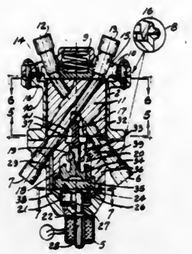
1. A reversing valve including a sealed housing having two inlet ports and two exit ports,

a cylinder plate valve contained in said housing and terminating in two parallel surfaces,

means forming four holes through said plate, each said hole having an opening at each parallel surface, the centerline of each opening being spaced at 90° at each surface,

the two inlet ports being located at one end of the housing and spaced 180° apart, the two exit ports being located at the other end of the housing and spaced 180° apart, the exit and inlet ports being 45° out of rotational phase, two of said holes exit 135° out of phase with their entrance

holes and two of said holes to exit 45° out of phase with their entrance holes,



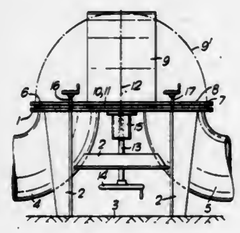
means for rotating said plate and aligning either of two of said entrance holes with either of the two inlet ports.

4,203,470

SAFETY VALVE FOR GAS PIPES

Oddmund Sanne, Oslo, Norway, assignor to Sanne & Wendel A/S, Oslo, Norway

Filed Jul. 24, 1978, Ser. No. 927,437
Claims priority, application Norway, Aug. 5, 1977, 772763
Int. Cl.² F16K *11/02, 25/00, 39/00*
U.S. Cl. 137—625.46 **4 Claims**



1. A safety valve for use on board tankers for simultaneously cutting off a gas pipe and closing the ends of said pipe to prevent gas leakage therefrom, comprising in combination:

a lower fixed plate mounted on the tanker's deck;

a first pair of openings in said fixed plate;

two main pipe lines permanently connected to said openings in said fixed plate;

an upper movable plate rotatably mounted on an axis extending at right angles to said fixed plate;

a second pair of openings in said movable plate;

a 180° pipe bend mounted on said movable plate and terminating in said second pair of openings;

four gaskets respectively arranged around each of said openings in said fixed plate and midway between said openings to create a space between said fixed and movable plates;

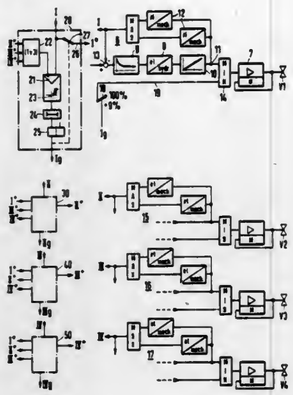
means for raising the movable plate on its axis in relation to the fixed plate so that the movable plate can be rotated from an open position where the openings in the fixed plate are aligned with the openings in the movable plate to a cut-off position where the openings in the movable plate are displaced with respect to the openings in the fixed plate and the movable plate seals the openings in the fixed plate.

4,203,471

MONITORING DEVICE FOR STEAM-TURBINE VALVES

Ernst-Günter Egener, and Wolfgang Kindermann, both of Mülheim, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Aug. 18, 1978, Ser. No. 934,675
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737969
Int. Cl.² F01D *17/24*
U.S. Cl. 137—637 **6 Claims**



1. Monitoring device for steam-turbine valves having respective electrohydraulic servocontrol devices for directly controlling the valves individually, comprising means for monitoring operability of the respective servocontrol devices, said operability monitoring means including means for comparing a value of a variable of each one of the servocontrol devices determining a setting of the respective valve with a mean value of corresponding variables of others of the servocontrol devices determining respective settings of valves associated with the other servocontrol devices and for establishing from the comparison if a permissible deviation from said mean value is exceeded by said variable value of the respective one of the servocontrol devices, and means for controlling a valve drive associated with the respective valve controlled by the respective one of the servocontrol devices for driving it in closing direction thereof when said permissible deviation from said mean value is exceeded.

4,203,472

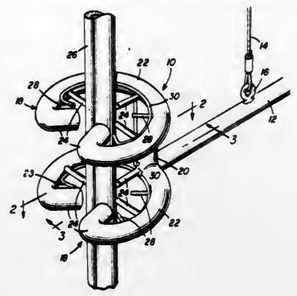
DEVICE FOR STOPPING FLUID FLOW FROM A PIPE

Burrell C. Dulaney, 806 Invader St., Sulphur, La. 70663

Filed Jun. 20, 1978, Ser. No. 917,303
Int. Cl.² F17D *1/16*
U.S. Cl. 137—828 **12 Claims**

5. An apparatus for stopping well fluid blowout from the upper end of a well pipe comprising: support means extending peripherally about at least a substantial portion of the well pipe in surrounding relation thereto, said support means being spaced from the periphery of the well pipe and having one opening formed therein for enabling said support means to be moved laterally of said well pipe into and out of said surrounding relation; at least one heat exchange fluid discharge means mounted on said support means, said discharge means being directed toward the well pipe for discharging heat exchange

fluid onto the peripheral surface of the well pipe to reduce the temperature of well fluids passing theretlirough to a tempera-



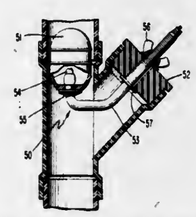
ture below their solidification temperature whereby stopping flow thereof from the upper end of the well pipe.

4,203,473

CLOSURE PLUG ASSEMBLY

Walter H. Roberson, Sr., 808 Second St., Altamonte Springs, Fla. 32701

Division of Ser. No. 741,369, Nov. 12, 1976, Pat. No. 4,122,869.
This application Apr. 26, 1978, Ser. No. 900,146
Int. Cl.² F16L *55/12*; G01M *3/00*
U.S. Cl. 138—93 **7 Claims**



1. A closure plug assembly for the pressure testing of liquid drain and vent systems having a Y-test section with a test opening, said test assembly comprising:

(a) an inflatable body portion having an inner surface and an outer surface,

(b) a rigid holder portion having a rigid hollow stem section and an expandable plug section having a portion which engages said test opening,

(c) said rigid hollow stem section having an opening directed into the interior of the body portion at one end thereof and extending through the expandable plug section at the other end thereof,

(d) tightening means for securing said plug section in place in said test section throughout the operation of the assembly,

(e) stem end means for connecting the body portion to the rigid holder portion at said one end thereof which end includes a right angled curve, and

(f) valve means being located at said other end of said hollow stem section for inflating the body portion through the hollow stem section,

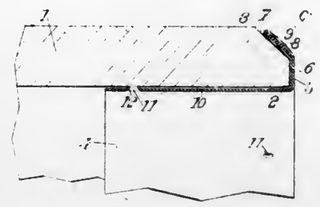
(g) said other end of the hollow stem section including a further angled curve to fit said assembly to said Y-test section.

4,203,474

DEVICE FOR MECHANICALLY PROTECTING THE ANNULAR EDGE OF A TUBE

Christian Lequeux, 94, Avenue de Strasbourg, 57000 Metz, and Henri Chapuis, 14, Allee de la Liberation, 57100 Thionville, both of France

Filed Jan. 6, 1978, Ser. No. 867,443
Claims priority, application France, Jan. 7, 1977, 77 00354
Int. Cl.² B65D *59/00, 59/06*
U.S. Cl. 138—96 R **8 Claims**



1. A device for mechanically protecting from impacts the annular edge of a smooth tube end having a diameter greater than 20 cm, said device comprising:

a metal ferrule for mounting the tube end and having a first flap turned radially outwardly and back for covering the tube edge;

a second flap extending from the end of said first flap and turned back to extend radially towards the axis of said ferrule to be disposed between the tube end and said first flap; and

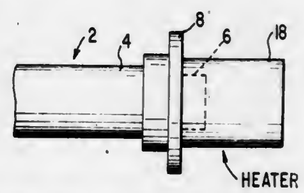
said ferrule being formed by a length of a single blade bent in an arc of a circle, and including shaped plates attached to the internal faces of the two ends of said blade so as to define respectively the two lateral slightly convergent cheeks of a gutter for receiving a flat trapezoidal key introduced therein in the axial direction, said two cheeks being directed so that introduction of said key results in said ferrule being expanded and being forcibly applied against the inner surface of the tube end, and said circular arc extending slightly more than 360° so that said blade two ends overlap.

4,203,475

METHOD FOR LINING A FLANGE FACE FOR LINED PIPE AND PRODUCT OF METHOD

Kenneth J. Corey, Fullerton, Calif., assignor to Donald J. Lewis, Irvine, Calif.

Filed Jun. 2, 1978, Ser. No. 912,043
Int. Cl.² B29C *17/10, 27/02*
U.S. Cl. 138—109 **6 Claims**



1. A flanged lined pipe provided with a fusible facing bonded to a fusible inner lining of said lined pipe and adjacent the pipe flange of said lined pipe, said fusible facing for said inner lining being formed by cutting a lined pipe such that the inner lining projects a predetermined distance out of an outer pipe of said lined pipe, said predetermined distance being less than a thickness of a fusible flange ringe, said facing being formed from a flange ring having a stepped bore with a first portion with a first diameter substantially equal to an outer

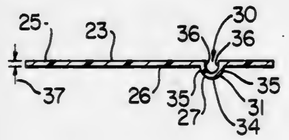
diameter of said inner lining and a second portion having a second diameter equal to an inner diameter of said inner lining, said first portion being of a depth equal to said predetermined distance, heating an outer surface of the inner lining which projects out of the lined pipe and simultaneously heating an inside surface of said first portion of said bore of said flanges ring until the outer surface of the inner lining and the inner surface of said first portion of the flange ring melts and placing the flange ring on the heated inner lining adjacent the pipe flange to form a permanent bond between the inner lining and the first portion of the flange ring.

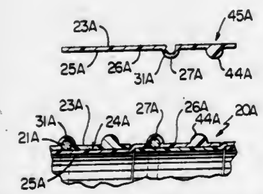
4,203,476

WIRE REINFORCED HOSE

Frank A. Vitellaro, Trenton, N.J., assignor to Dayco Corporation, Dayton, Ohio

Filed Jan. 5, 1979, Ser. No. 1,126
Int. Cl.² F16L *11/08*
U.S. Cl. 138—122 **11 Claims**





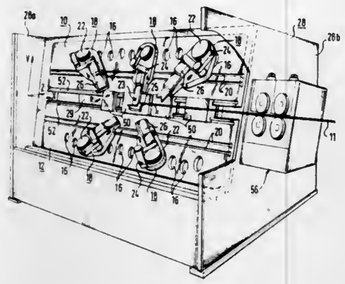
1. In a wire-reinforced hose defined by a helically wound strip of pliable material which has adjoining turns thereof with portions in overlapping relation and a reinforcing wire sandwiched between said portions, the improvement wherein said pliable material is a strip of polymeric material having a flat side portion adjoined by a convoluted side portion which has an integral preformed convolution therein, said convolution defining a groove relative to one surface of said strip and a bead relative to an opposite surface thereof, said wire being disposed in said groove with said strip in its helically wound relation with said bead defining an integral helical bead along said hose, said overlapping portions being defined by said convoluted side portion disposed in wound relation against said flat side portion with said wire sandwiched therebetween and disposed in said groove to thereby define said hose having a substantially smooth tubular inside surface defined solely by adjoining turns of said flat side portion with said wire being concealed when viewing said tubular inside surface, said preformed convolution having a roughly U-shaped cross-sectional configuration defined by a bight and a pair of legs extending in parallel relation from opposite ends of said bight, said legs having inside surfaces which define corresponding surfaces of said groove and said inside surfaces engage said wire and hold same in a precise helical path.

4,203,477

MATERIAL WORKING MACHINE MOUNTING TOOLS IN SEVERAL PLANES

Eduard Brüller, Trimbach, Switzerland; Reiner Augenstein, and Otto Bihler, both of Halblech, Fed. Rep. of Germany, assignors to Otto Bihler Maschinenfabrik GmbH & Co. KG, Halblech, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,271
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741576
Int. Cl.² B21F *1/00*
U.S. Cl. 140—105 **27 Claims**



1. Material working machine such as an automatic punching and bending machine comprising a workplate unit said workplate unit comprising two workplate sections, said workplate sections being spaced from one another and forming a longitudinal slot therebetween extending across at least a part of the area of said workplate unit, at least one material working unit mounted on each of said workplate sections for movement in the plane of said workplate section on which it is mounted about an axis extending through the plane of said workplate section on which it is mounted, said working unit including a tool carrier mounted thereon for movement along a rectilinear path, means for moving a material to be worked over the planes of said workplate sections along a path substantially extending along the longitudinal direction of said slot and forming a working area into or through which said tool carrier is movable, wherein the improvement comprises that at least one further workplate unit arranged in a plane parallel to the longitudinal direction of said slot and defining an angle with the plane of each of said workplate sections, a further working unit mounted on said further workplate unit and being movable in the plane of said further workplate unit and about an axis extending through said further workplate unit, and a tool carrier on said further working unit and being oriented for movement toward said slot and the working area.

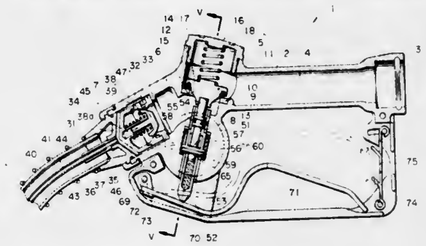
4,203,478

AUTOMATIC SHUT OFF DISPENSING NOZZLE

Yoshio Saito, Urawa; Yoshio Shibata, Yokohama, and Satosi Fujiie, Kawasaki, all of Japan, assignors to Tokico, Ltd, Kawasaki, Japan

Filed Aug. 17, 1978, Ser. No. 934,601
Claims priority, application Japan, Aug. 20, 1977, 52-099947
Int. Cl.² B65B *3/26*
U.S. Cl. 141—206 **8 Claims**

1. An automatic shut off dispensing nozzle comprising:
(a) a nozzle main body having therein a substantially straight fluid passage;
(b) a discharge pipe disposed downstream of said fluid passage;
(c) a valve mechanism comprising a main valve lying on a valve seat in said fluid passage for opening and closing said fluid passage and having an auxiliary passage therein which connects the upstream side with the downstream side of said fluid passage, an auxiliary valve for opening and closing said auxiliary passage, both valves having the same axial line crossing said fluid passage, and a means for biasing said main and auxiliary valves to a normally closed condition;
(d) a lever provided on said main body for operating said valve mechanism;
(e) a first sliding shaft engaged with said lever and axially aligned with said valve mechanism;
(f) a second sliding shaft slidably fitted in said main body and axially aligned with said first sliding shaft for operating said valve mechanism;
(g) a first shoulder formed on at least one of said second sliding shaft and said main valve;
(h) a roller means providing engagement between said sliding shafts;
(i) a diaphragm for normally retaining said roller means in a position where said sliding shafts are engaged by said roller means;
(j) a negative pressure chamber including said diaphragm;



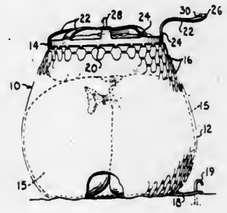
(k) means for supplying a negative pressure to said negative pressure chamber;
(l) a port provided on said discharge pipe and a conduit for introducing atmospheric pressure from said port to said negative pressure chamber to keep said diaphragm in a position where said sliding shafts are normally engaged by said roller means
(m) said second sliding shaft being responsive to movement of said first sliding shaft by said lever to first open said auxiliary valve and thereafter abut said main valve via said first shoulder to open said main valve, said negative pressure being supplied to said negative pressure chamber when said atmosphere introducing port is closed by fluid to displace said diaphragm and disengage said first and the second sliding shafts engaged by said roller means to automatically close said main and auxiliary valves by said means for biasing.

4,203,479

TRASH BAG PROTECTOR

Arlene L. Mathews, 7634 Long, Shawnee Mission, Kans. 66216

Filed May 8, 1978, Ser. No. 903,826
Int. Cl.² B65D *33/24*
U.S. Cl. 150—3 **8 Claims**



1. A trash bag protector comprising:
a body section having a collapsible mesh frame and presenting an open top for trash bag insertion and withdrawal therethrough,
a continuous rim,
means connecting said open top to said rim at spaced points of attachment therearound,
a closure for said open top provided with a plurality of straps having inner and outer ends, and means attaching said outer ends to said rim at spaced zones of attachment thereon, and
said inner ends having cooperating parts for releasably securing said inner ends of said straps to one another, centrally of said rim to cause the straps to converge upon one another at their inner ends and span said top, whereby said straps preclude said trash bag insertion and withdrawal through said open top when said inner ends are secured.

4,203,480

PNEUMATIC VEHICLE TIRE

Julius Peter, Hanover; Peter Johannsen, Hannover-Herrenhausen, and Gerhard Mauk, Wunstorf, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,883
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734213
Int. Cl.² B60C *11/00, 9/20*
U.S. Cl. 152—209 NT **6 Claims**



1. A slightly bulged outwardly arched pneumatic vehicle tire which includes:
a carcass;
bead sections;
sidewalls having sections which are essentially cylindrical;
a tread centrally arranged between said sidewall sections and having a width which is narrow in relation to the overall width of said tire; and
reinforcing means located between said carcass and said tread and sidewall sections and pull-resistant in the circumferential direction of said tire, and being intended for effecting lateral stabilization of said tire, said reinforcing means comprising a first belt portion located coaxially mainly below said tread and having at least one threaded ply, the threads of which extend at an angle to the circumferential direction of said tire, and additional second belt portions respectively located projecting essentially axially as an extension of said first belt portion and widening laterally beyond said tread into said sidewall sections and having extending thread at a considerably smaller angle to the circumferential direction of said tire than do the threads of said at least one ply.

4,203,481

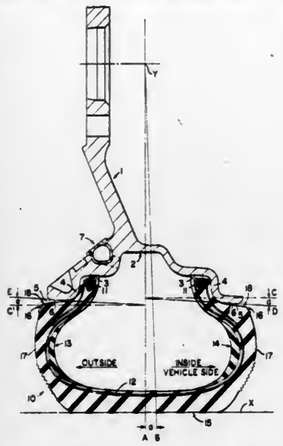
PNEUMATIC TIRE, RIM AND COMBINATION THEREOF

William J. Ranik, Jr., Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 11, 1978, Ser. No. 968,542
Int. Cl.² B60C *17/00*
U.S. Cl. 152—330 RF **17 Claims**

1. In combination, a pneumatic tire and rim wherein said tire comprises an annular road-engaging tread surface, sidewalls connecting the lateral edges of said tread surface to annular beads and reinforcing plies connecting said beads and passing through said sidewalls and radially inward of said tread surface, said rim comprising an annular drop center area having bead seats extending axially outward from each lateral edge

thereof, rim flanges located axially outward of each said bead seat and rim flange extensions extending axially outward from each rim flange, the improvement comprising an asymmetric sidewall construction in said tire wherein each said sidewall has an insert of high modulus, low hysteresis rubber compound located on its inner periphery, the insert on the sidewall designed to be mounted on the inside of the vehicle having a greater bulk than the corresponding insert on the sidewall



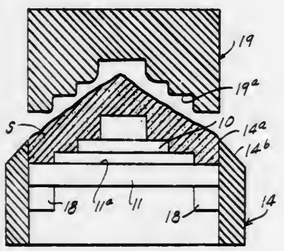
designed to be mounted on the outside of the vehicle, said rim flange extensions forming angles, as measured from a plane parallel to the axis of rotation of said rim, wherein said angle has a negative value on the side of the rim designed to be mounted on the inside of the vehicle and a positive value on the side of the rim designed to be mounted on the outside of the vehicle, whereby when the tire is run flat said rim flange extensions are both parallel to the road surface and each sidewall is equally loaded.

4,203,482

PROCESS FOR PRODUCING CORE OR MOLD PARTS FROM SAND

Leo J. LeBlanc, 3837 Shellmar La., Bloomfield Hills, Mich. 48013

Filed Feb. 27, 1978, Ser. No. 881,770
Int. Cl.² B22C *9/12, 15/00*
U.S. Cl. 164—12 **3 Claims**



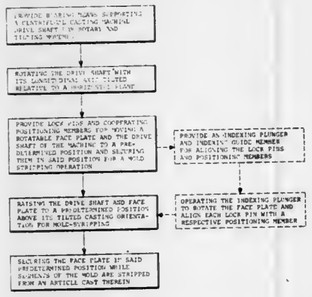
1. The process of producing core or mold parts useable in the foundry art comprising:
(a) coating sand with a polymerizable resin in an amount which when polymerized binds the sand particles into a useable mass,
(b) placing a pattern mounted on a pattern plate in a walled, open top enclosure with the top of the pattern plate at a predetermined distance below the tops of said walls,
(c) covering the thus confined pattern with a mound of the resin-coated sand until said sand overflows the tops of said walls with the height of said sand mound with respect to the top of the pattern being determined by the angle of least repose of the coated sand and by the highest point of the pattern plate with respect to the tops of said walls,
(d) pressing downwardly onto the sand mound overlying the pattern a squeeze head having a shape conforming generally to the shape of the pattern, thus to compact the sand about the pattern, and
(e) polymerizing the resin in the thus compacted body thereby to produce a useable sand part having a casting surface corresponding to the pattern.

4,203,483

METHOD OF POSITIONING COMPONENTS OF A CENTRIFUGAL CASTING MACHINE FOR A MOLD STRIPPING OPERATION

Frederick W. Baumann, Scotia, and Bernard C. Kaczkowski, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 795,757, May 11, 1977, Pat. No. 4,139,049.
This application Jan. 10, 1979, Ser. No. 2,416
Int. Cl.² B22D *13/10, 29/04, 33/04*
U.S. Cl. 164—116 **4 Claims**



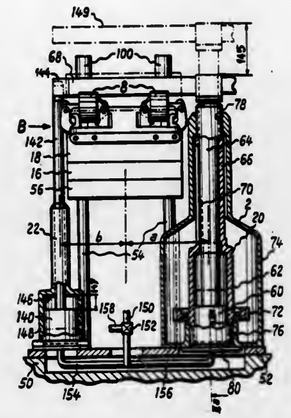
1. A method for accurately positioning a centrifugal casting machine having an articulated mold mounted on a face plate that is rotatable on a drive shaft and within a housing that supports pulling means for moving segments of the mold in a radial direction to alternately form a mold receptacle for receiving castable material or to separate the mold segments to enable removal of a cast article therefrom, comprising the steps of:
(a) providing bearing means to support said drive shaft for rotation about its longitudinal axis while allowing the drive shaft to tilt along its axis within a predetermined angular range determined by said bearing means,
(b) providing lock pins mounted on said housing for moving said face plate to a predetermined position relative to its axis of rotation following a casting cycle of its operation,
(c) providing positioning members on said face plate to cooperate with said lock pins to move the face plate to said predetermined position and secure it there while segments of the mold are pulled radially away from one another to remove them from a cast article formed in the mold, and
(d) providing means for operating each of the lock pins to move them into positioning engagement, respectively, with each of said positioning members after the face plate has been rotated and stopped to align the positioning members to receive therein said lock pins, whereby said lock pins are effective to force said positioning members and the face plate to a predetermined position relative to the axis of rotation of the face plate thereby to facilitate removal of the mold segments from an article cast therein.

4,203,484

FOUNDRY MOLDING MACHINE FOR THE PRODUCTION OF MOLD HALVES IN MOLD BOXES

Erwin Bührer, Vögelinglisschen 40, 8200 Schaffhausen, Switzerland

Filed Jul. 13, 1978, Ser. No. 924,250
Claims priority, application Switzerland, Jul. 22, 1977, 9108/77
Int. Cl.² B22C *17/00*
U.S. Cl. 164—227 **6 Claims**



1. A foundry molding machine for producing mold members in mold forming assemblies including a pattern device and mold boxes, said machine comprising means for separating said mold members from said pattern devices, said separating means including generally vertically extending main cylinder means having piston rod means operable to be raised and lowered by operation of said cylinder means, extension means connected to said piston rod means, clamping means including clamping levers on said extension means, said clamping levers being arranged in pairs to hold said molding boxes in clamping engagement, and at least one auxiliary cylinder means including piston means arranged in generally parallel relationship with said main cylinder means and located in laterally spaced relationship therewith in operative position on a side of said mold member opposite said main cylinder means, said auxiliary cylinder means being operatively associated with said main cylinder means and acting on said extension means to provide support during separation of said mold members from said pattern device.

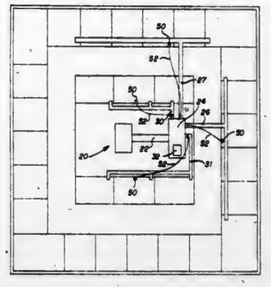
4,203,485

MULTIZONE AIR TERMINAL

Andre H. Zilbermann, 6421 Lavendale, and Melvin S. Aronoff, 11230 Shelterwood La., both of Dallas, Tex. 75230

Continuation of Ser. No. 751,734, Dec. 17, 1976, abandoned.
This application Nov. 13, 1978, Ser. No. 960,584
Int. Cl.² F24F *13/04*
U.S. Cl. 165—2 **18 Claims**

11. A method for controlling the temperature in first and second volumes comprising:
generating a supply of cool air for delivery to the first plenum of a central terminal having first and second plenums;
delivering return air, under pressure, from one of the volumes to the second plenum of said central terminal;
directing air from the first and second plenums throufh a plurality of mixing dampers attached to the first and second plenums, each communicating with one of a plurality of first volumes to be conditioned;
controlling each mixing damper to control the mixture of air from the first and second plenums to the first volumes;
directing air from the first plenum through control dampers attached to the first plenum, each communicating with one of a plurality of second volumes; and



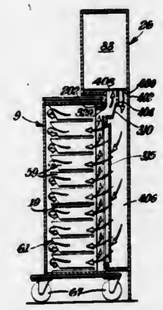
varying the volume of air flow from the first plenum through the control dampers to the second volumes to provide a volume of cool air to the second volumes.

4,203,486

FOOD PREPARATION APPARATUS AND PROCESS

Harry A. Rubbright, Lancaster, Ohio, and Donald A. Springer, North Ridge, Calif., assignors to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. 758,454, Feb. 21, 1979, abandoned. This application Jan. 3, 1978, Ser. No. 866,631
Int. Cl.² F25B *29/00*; F24C *7/10*
U.S. Cl. 165—48 R **33 Claims**



1. Apparatus for preparing meals for hospitals, airlines and the like comprising a food and beverage cabinet having access doors and a back panel, a rack having heater shelves in said cabinet which support food trays, spaced individual heater surfaces supported by said shelves, air inlet means in said back panel of said cabinet, air outlet means in said back panel of said cabinet, an environmental control unit in the form of a housing having a plenum chamber and a front panel therefor disposed toward said back panel of said cabinet, normally closed air outlet means in said front panel of said plenum chamber, normally closed air inlet means in the said front panel of said plenum chamber, means for circulating chilled air in a first closed loop pattern in said environmental control unit through said plenum chamber when its said inlet means and outlet means are closed, means for coupling said environmental control unit to said food and beverage cabinet so that said back panel of said cabinet is flush with said front panel of said plenum chamber in sealed relationship therewith, said outlet means of said plenum chamber mating with said inlet means of said cabinet and said outlet means of said cabinet mating with said inlet means of said plenum chamber when said cabinet and said environmental control unit are coupled together, means supported by said environmental control unit for opening said outlet means and said inlet means of said cabinet and of said

plenum chamber when said environmental control unit and said cabinet are being coupled together whereby chilled air is continuously circulated through the coupled cabinet and said plenum chamber in a second closed loop pattern which is larger than and includes said first closed loop pattern, and means connected with said heater shelves for heating said spaced heater surfaces on said shelves.

4,203,487

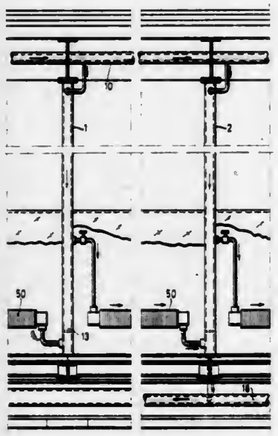
CLIMATIZING APPARATUS

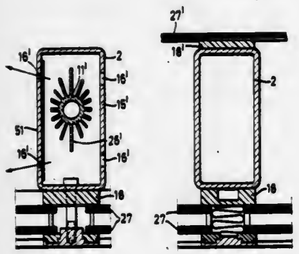
Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Firma Josef Gartner & Co., Gundelfingen, Fed. Rep. of Germany

Continuation of Ser. No. 709,209, Jul. 27, 1976, abandoned. This application Jul. 27, 1978, Ser. No. 928,568

Int. Cl.² F24F 3/00; F24D 5/10

U.S. Cl. 165—50 **18 Claims**





17. A method of climatizing rooms of a building embodying one or more facade elements in wall structure bounding a room thereof including the steps of providing a frame within said room wall structure to be covered and/or bridged by the facade element or elements, providing that at least a portion of the segments of said frame are hollow and interconnected to define a circulation path extending vertically of and transverse of the facade element or elements, bridging said frame with conduit means providing separate passages which respectively serve for introduction and passage of a first and a second fluid, one adjacent the other, one of which passages communicates with the interior of said hollow segments defining said circulation path which follow said one passage in said path, passing said first fluid the temperature of which has been pre-set at a desired level to move in entry to said conduit means first to and through said one of said passages in a passing heat exchanging relation to said second fluid introduced in an adjacent second of said separated passages and then through said circulation path and discharging said second fluid from said second of said separated passages to flow to, over and adjacent surface portions of the facade element or elements, to provide a two part climatizing system, one part of which is provided by a major heat exchange between said fluids and the direction of said second fluid the temperature of which has been adjusted by said major heat exchange to flow to, over and adjacent the said facade element or elements which are in bridging and/or covering relation to said frame and the other part of which is slow acting and comprised of the means defining said one passage and said hollow frame segments which together therewith define a circulation path for said first fluid and a lesser heat exchange between said first fluid and said hollow frame segments.

4,203,488

SELF-FASTENED HEAT SINKS

Philip A. Johnson, Melrose, Mass., and Alfred F. McCarthy, Belmount, N.H., assignors to Aavid Engineering, Inc., Laconia, N.H.

Filed Mar. 1, 1978, Ser. No. 882,364

Int. Cl.² H01L 23/40

U.S. Cl. 165—80 B **2 Claims**



1. Self-fastened heat-sink apparatus comprising first and second broad-area heat-transfer elements of bendable and resilient sheet metal each having a substantially flat broad-area side shaped to abut closely with one of two oppositely-disposed spaced surfaces of a body from which heat is to be withdrawn and dissipated, each of said elements having first and second connection means each integral therewith and projecting therefrom substantially in opposite directions from laterally-opposite edges thereof, the first connection means making an unbroken integral loop-shaped connection between nearby edges of said elements and orienting said elements toward one another for abutting engagements of the broad-area sides thereof with the spaced surfaces of a body therebetween while being resiliently bendable to allow said elements to be spread apart angularly in jaw-like fashion to admit a body therebetween and to be moved toward one another for said abutting engagements, said loop-shaped connection being elongated and forming an open passageway alongside a body held between said elements which exposes it to the ambient environment along both its sides through substantially all of its length, at least one of said elements having a plurality of spaced heat-dissipating projections integral therewith along edges between said laterally-opposite edges, and the second connection means being disposed at the edges laterally opposite said one of said nearby edges and including two separate clasp parts each integral with an edge of a different one of said elements and shaped and disposed to detent and catch with one another when said elements are moved toward one another to produce the said abutting engagements, whereby said elements are movable apart to accommodate insertion of a body therebetween and may then be clasped and locked together while maintaining resilient abutting engagements with surfaces of the body therebetween.

4,203,489

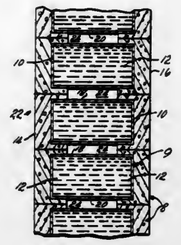
THERMAL ENERGY STORAGE SYSTEM

Stanley F. Swiadek, 2712 W. Alhambra Rd., Alhambra, Calif. 91802

Filed May 31, 1977, Ser. No. 801,632

Int. Cl.² F28D 21/00

U.S. Cl. 165—104 S **12 Claims**



1. A modular thermal energy storage system comprising:

a plurality of individual thermal energy storage elements, each element having a core for storing thermal energy, a thermally diffusing layer adjacent at least a portion of the exterior surface of the core, and duct means for conducting relatively warmer air for transfer of its thermal energy to the core independently of transfer through the thermally diffusing layer, the core having a greater capacity to store thermal energy per unit of volume than the thermally diffusing layer, the thermally diffusing layer having a lower thermal conductivity than the core and a thickness that will slowly and controllably release, through the thermally diffusing layer to the exterior of the element, the thermal energy stored in the core,

means for assembling the thermal energy storage elements as a unit having an outer wall formed by the thermally diffusing layers, the duct means extending through the unit to transfer thermal energy to the individual cores to store such thermal energy in the cores, the outer wall providing a means for controllably releasing the thermal energy stored in the cores of such elements,

means for passing relatively warmer air through the duct means,

means forming a passage adjacent said outer wall, and

means for passing relatively cooler air through the passage to draw away heat released through the outer wall.

4,203,490

HEAT EXCHANGER CORE HAVING FIN MEMBERS SERVING AS SACRIFICIAL ANODES

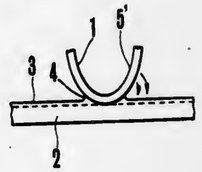
Shiro Terai; Zenichi Tanabe, both of Nagoya, and Toshiyasu Fukui, Toyoake, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Oct. 20, 1978, Ser. No. 953,114

Claims priority, application Japan, Oct. 21, 1977, 52-125858

Int. Cl.² F28F 19/06

U.S. Cl. 165—134 R **8 Claims**



1. In a heat exchanger core comprising a fluid passage member within which a fluid is adapted to flow and outside of which another fluid is adapted to flow, and fin members mounted on the external surface of said fluid passage member, said fluid passage member being made of a brazing sheet consisting essentially of an internal layer made of a core metal and defining the internal layer of said fluid passage member and an external layer made of a cladding metal and defining the external layer of said fluid passage member, the improvement which comprises: said core metal is a material selected from the group consisting of aluminum and corrosion-resistant aluminum alloy, and is effective to maintain said internal layer in a cathodic state relative to said external layer of said cladding metal and said fin members; said cladding metal is an aluminum alloy containing from 6 to 14 weight percent of Si and effective to maintain said external layer in an anodic state relative to said internal layer in a temperature range of from room temperature to 100° C.; and said fin members are made of aluminum alloy containing from 0.02 to 0.09 weight percent of Sn, said fin members being soldered to said external layer and being effective as sacrificial anodes to protect said fluid passage member from corrosion.

4,203,491

CHEMICAL FLOOD OIL RECOVERY WITH HIGHLY SALINE RESERVOIR WATER

Joseph Reisberg, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 5, 1978, Ser. No. 939,521

Int. Cl.² E21B 43/22

U.S. Cl. 166—274 **6 Claims**

1. A process for recovering oil from an oil reservoir in which the salinity of the predominant water phase is at least about 9% by weight and the oil is displaced by injecting into the reservoir, ahead of a relatively low mobility aqueous drive fluid, an aqueous surfactant system in which the surfactant consists essentially of at least one alkylaryloxypolyethoxyethane sulfonate surfactant dispersed within an aqueous liquid which is the same as the aqueous liquid contained in the reservoir or is substantially equivalent to that liquid in salinity, which process comprises:

employing as said surfactant a reservoir-tailored compound or mixture of one or more alkylaryloxypolyethoxyethane sulfonates providing an arrangement of the size and structure of alkyl groups and proportion of ethoxy groups such that, when the reservoir-tailored surfactant is dispersed in said aqueous liquid at the reservoir temperature, the dispersion (a) exhibits an effective optimum or near-optimum oil-displacing activity at a surfactant concentration as low as about 0.1% by weight, (b) is a substantially single-phase system at the reservoir temperature, and (c) is sufficiently viscous by itself or when mixed with noncondensible gas to be capable of exhibiting a mobility at least substantially as low as that of the reservoir oil within the reservoir;

employing as said aqueous liquid one which (a) contains a ratio of about 10 parts by weight of monovalent cation per part by weight of polyvalent cation and (b) is the liquid produced from the reservoir or one that is so similar in salinity as to be capable of maintaining a salinity which is substantially unaltered by ion-exchange reactions which occur when that liquid is flowed within the reservoir;

injecting into the reservoir an aqueous surfactant system consisting essentially of a dispersion of from about 3 to 10% by weight of the reservoir-tailored surfactant within said employed aqueous liquid, with the concentration of the surfactant being sufficient to cause a significant proportion of the injected surfactant system to retain a concentration of at least about 0.1% of the surfactant in spite of the dilution that occurs during the displacement of the surfactant system within the reservoir; and,

injecting into the reservoir immediately behind at least a portion of the injected aqueous surfactant system an aqueous drive fluid consisting essentially of a substantially homogeneous dispersion of noncondensible gas in an aqueous liquid that is the same as the aqueous liquid in which the reservoir-tailored surfactant is dispersed to

form the injected surfactant system or is substantially equivalent to that liquid in salinity, with the injected dispersion being capable, at the reservoir temperature, of exhibiting a mobility within the reservoir at least substantially as low as that of the injected surfactant system.

4,203,492

METHOD FOR ACIDIZING SILICEOUS MATERIALS CONTAINED IN HIGH TEMPERATURE FORMATIONS

David J. Watanabe, Orange, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 885,450, Mar. 10, 1978, Pat. No. 4,148,360. This application Feb. 22, 1979, Ser. No. 14,054
Int. Cl.² E21B *43/26, 43/27*
U.S. Cl. 166—300 29 Claims

1. A method for acidizing siliceous materials contained in a subterranean formation having a temperature above about 250° F., which comprises:

(a) introducing into a well communicating with said formation (1) a noncorrosive aqueous solution containing a water-soluble alkali metal or ammonium fluoride salt, and (2) a substantially anhydrous treating fluid consisting essentially of a first normally liquid acid precursor having a generalized formula:

$$C_xH_yX_z$$

wherein

x=1 or 2;

y=0, 1 or 2, but y≦x; and

z=2x−y+2, and

which is thermally stable under the temperature and pressure conditions to which it is exposed in said well, or mixtures thereof; and

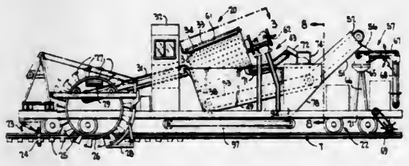
(b) displacing said aqueous solution and said treating fluid from said well and into said formation wherein said acid precursor hydrolyzes in situ to generate a hydrohalic acid which combines with said fluoride salt to acidize said siliceous materials.

4,203,493

RAILWAY BALLAST CLEANING APPARATUS

John R. Miller, Charlotte, N.C., assignor to Southern Railway Company, Washington, D.C.

Filed Nov. 21, 1978, Ser. No. 962,697
Int. Cl.² E01B *27/00*
U.S. Cl. 171—16 20 Claims



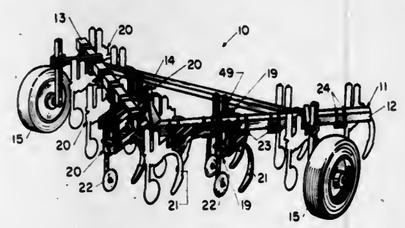
1. In a railway ballast cleaning apparatus including, in combination, means mounted on a railroad car for removing dirty ballast from the vicinity of the track along which said car travels, ballast cleaning means mounted on said car, and means on said car for conveying the dirty ballast from said removing means to said ballast cleaning means, the improvement wherein said ballast cleaning means includes a drum having a perforate cylindrical wall open at opposite ends, a spiral conveyor mounted on an inner surface of said wall and extending between said opposite ends, an open tank mounted on a horizontal surface of said car and containing a quantity of cleaning liquid, said tank being disposed beneath said drum, said drum being mounted for rotation about an axis inclined relative to said horizontal surface, one of said drum ends constituting an inlet end lying at least partially within said tank below the level of cleaning liquid therein, the other of said drum ends constituting an outlet end lying wholly outwardly of said tank at a higher elevation relative to said inlet end, a spoils conveyor operatively disposed in said tank for the removal from said tank of spoils particles separated from the dirty ballast whereby the dirty ballast which includes the spoils particles may be deposited by said conveying means into said drum through said inlet end so as to be cleaned as it is tumbled by said spiral conveyor during drum rotation into and out of the cleaning liquid for cleaning the ballast by separating the spoils particles therefrom, said drum wall having perforations therein of such a predetermined size as to allow only the spoils particles to move through said perforations and into said tank for removal therefrom by said spoils conveyor, the cleaned ballast remaining in said drum being conveyed by said spiral conveyor outwardly of said drum through said outlet end.

4,203,494

TOOL AND DISK MOUNTING ASSEMBLY

Elmer K. Hansen, 801 S. Martha, Sioux City, Iowa 51102

Filed Dec. 11, 1978, Ser. No. 968,374
Int. Cl.² A01B *35/18, 61/04*
U.S. Cl. 172—166 4 Claims



1. A reversible mounting assembly for releasably securing a work tool and a coulter to a tool bar of a soil tilling farm implement for pivotal movement of the tool and coulter from normal soil engaging positions to inoperative positions upon encountering an obstruction during a tilling operation, wherein said work tool has a shank member and said coulter a shank section, said mounting assembly comprising:

(a) a base plate with upper and lower surfaces,

(b) elongated frame means fixed to and extended longitudinally of the lower surface of said base plate and having an end portion projected outwardly from one end of said base plate,

(c) means for attachment of said base plate against the under surface of said tool bar such that in one position the projected end portion of said frame means is located to the front of the tool bar and in a reversed position is located to the rear of the tool bar, with the longitudinal axis of the frame means in each of said positions of the base plate being directed parallel to the direction of travel of said farm implement;

(d) tool support means pivotally connectible to the projected end portion of said frame means and having:

(1) a first socket means disposed at one end of said tool support means to receive said shank member of said tool, and

(2) a second socket means disposed at an opposite end of said tool support means to receive said shank section of said coulter, and

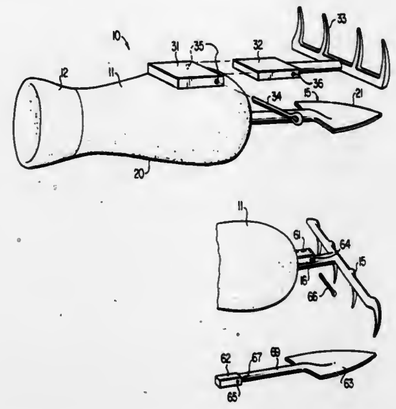
(e) yieldable pressure means that coacts with said frame means and said tool support means to normally hold said tool and said coulter in operative positions therefor.

4,203,495

GLOVE AND TOOL DEVICE WITH TWO TOOL ELEMENTS

Frederick S. Crownover, Rte. 1, Box 27, Columbiana, Ala. 35051

Continuation-in-part of Ser. No. 760,553, Jan. 19, 1977, Pat. No. 4,089,379. This application May 2, 1978, Ser. No. 902,081
Int. Cl.² A01B *1/20*
U.S. Cl. 172—370 7 Claims



1. In a glove and tool device which includes a longitudinally extending glove element having upper and lower portions connected by side portions and an opening at one end thereof for insertion of the hand of a user of the device, and wherein a first tool element is attached to said glove element and extends outwardly from the exterior of said glove element, a bar grip being positioned on the interior of said glove element with its ends fixedly attached to opposite interior portions of said glove element, and including a first longitudinally extending handle member having one end thereof attached to the bar grip and the other end attached to said first tool element, the improvement comprising means attached to said glove element for receiving a second tool element, and a second tool element connected by a second longitudinally extending handle to said receiving means and extending outwardly from the exterior of said glove element, said receiving means being positioned on the upper portion of said glove element on the exterior surface thereof, said first and second tool elements being generally aligned one over the other and said first and second handles of said tool elements extending substantially parallel to the longitudinal axis of said glove element and to each other, so that one of said tool elements is in the operative position when the device is in an upright position and the other tool element is in the operative position when the device is in an inverted position.

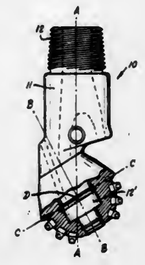
6. In a glove and tool device which includes a longitudinally extending glove element having upper and lower portions connected by side portions and an opening at one end thereof for insertion of the hand of a user of the device, and wherein a first tool element is attached to said glove element through a first longitudinally extending handle member which extends outwardly from the exterior of said glove element, a bar grip being positioned on the interior of said glove element with its ends fixedly attached to opposite interior portions of said glove element, said first handle member having its inner end secured to said bar grip, the improvement comprising means attached to said first handle member for receiving a second tool element, and a second tool element connected by a second longitudinally extending handle to said receiving means and extending outwardly from the exterior of said glove element, said receiving means being positioned on the upper surface of said first handle, said first and second tool elements being generally aligned one over the other and said first and second handles of said tool elements extending substantially parallel to the longitudinal axis of said glove element and to each other, so that one of said tool elements is in the operative position when the device is in an upright position and the other tool element is in the operative position when the device is in an inverted position.

4,203,496

LONGITUDINAL AXIS ROLLER DRILL BIT WITH GAGE INSERTS PROTECTION

William Baker, III, Costa Mesa, and Charles R. Harris, Whittier, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 16, 1978, Ser. No. 951,978
Int. Cl.² E21B *9/08*; E21C *13/01*
U.S. Cl. 175—329 8 Claims



1. A rotary bit for drilling wells comprising:

a bit body rotatable about a first axis, said bit body adapted to be secured to a drill column, said bit body further including a journal pin extending downwardly therefrom, said journal pin having a second axis disposed at an angle with respect to and intersecting said first axis; and

a cutter rotatively mounted on said journal pin to rotate about said second axis, said cutter having an outer surface extending from an apex to an annular gage surface, said gage surface terminating adjacent a base or heel portion of said cutter, said gage surface oriented in such a manner that a plane extending therethrough intersects the point of intersection of the first and second axes, said gage surface having a plurality of cutting elements mounted thereon, each cutting element comprising a cutting surface made of a synthetic diamond material mounted on a base, said cutter further includes raised areas formed on said base or heel portion substantially around the back portions of said cutting elements in order to protect said cutting elements during the non-cutting cycle of the cutting elements

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4,203,497

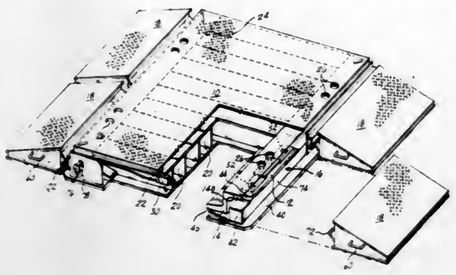
PORTABLE LOAD SCALE FOR MINING TRUCKS AND THE LIKE

Carl R. Harris, Lynnwood, and Robert W. Blaylock, Bothell, both of Wash., assignors to Evergreen Weigh, Inc., Lynnwood, Wash.

Filed Jul. 24, 1978, Ser. No. 927,581
Int. Cl.² G01G *19/02, 21/28*
U.S. Cl. 177—134 25 Claims

1. In a load scale of the type wherein a platform supporting a vehicle and load to be weighed has a plurality of load cells disposed under and across a pair of opposed ends thereof and between said platform and a supporting surface, the improvement comprising a plurality of Z-shaped lateral support beams having an upper flange and a lower flange thereon and extending across each end of said pair of opposed ends of said platform between said platform and said plurality of load cells with said lower flange extending under a portion of said platform, said lower flange carrying same by a region on said beam being relatively massive thereby reducing the total stress in the area

on said beam carrying said platform and being secured to said platform in a region on said beam where forces reacted by the means securing same are low enabling said load scale to carry



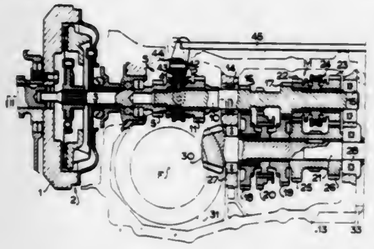
substantially large loads, and wherein the upper flange of said support beams spans the gap between adjacent load cells and rests across the tops thereon.

4,203,498

TRANSMISSION APPARATUS FOR MOTOR VEHICLE

Masayuki Kodama, Tokyo, Japan, assignor to Fugi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1978, Ser. No. 918,336
Int. Cl.[2] B60K *17/06*
U.S. Cl. 180—70 MS 5 Claims



1. Transmission apparatus in a motor vehicle having a front axle, comprising

an engine,

a clutch device,

a clutch housing, said clutch device is disposed in said clutch housing,

a main transmission housing,

a 2-speed sub-transmission operatively connected to said clutch device, and a main transmission operatively connected to said sub-transmission and disposed in said main transmission housing,

a final reduction gear connected to the front axle and to said main transmission,

a final reduction gear housing, said sub-transmission and said final reduction gear directly therebelow with the front axle are disposed in said final reduction gear housing,

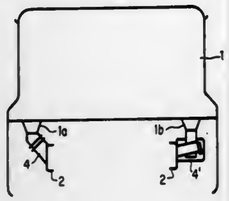
the engine, said clutch housing, said final reduction gear housing and said main transmission housing are disposed substantially horizontally one behind the other.

4,203,499

APPARATUS FOR PREVENTING OR DAMPING VIBRATIONS AND NOISE IN A VEHICLE

Koji Miyata, Kariya, Japan, assignor to Toyota Shatai Kabushiki Kaisha, Aichi, Japan

Filed Dec. 27, 1977, Ser. No. 864,774
Claims priority, application Japan, Dec. 27, 1976, 51/159882; Jan. 26, 1977, 52/8155; Jan. 28, 1977, 52/8917
Int. Cl.[2] B62D *25/00*
U.S. Cl. 180—89.12 8 Claims



1. An apparatus for preventing or damping vibrations and noise in a vehicle body, which comprises:

a vehicle chassis;

at least one pair of laterally spaced mounting units for supporting said vehicle body on said vehicle chassis, which are disposed on opposed sides of the vehicle centerline, each of said at least one pair of mounting units being composed of two bracket members to be fixed to said vehicle body and said vehicle chassis; and

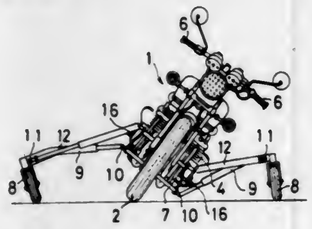
connecting means connecting said two bracket members through a vibration proofing material, said connecting means of each said at least one pair of mounting units exhibiting different dynamic characteristics from each other, said connecting means further causing the phases of vibrations transmitted from said vehicle chassis through said at least one pair of mounting units to become different from each other and causing vibrations transmitted through said at least one pair of mounting units to interfere with each other to prevent or dampen vibrations and noise in the vehicle body.

4,203,500

APPARATUS FOR PREVENTING TURNOVER OF A MOTORIZED TWO-WHEELED VEHICLE

Tadashi Kamiya, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 927,596
Claims priority, application Japan, Jul. 25, 1977, 52-88300
Int. Cl.[2] B62D *61/04*
U.S. Cl. 180—219 7 Claims



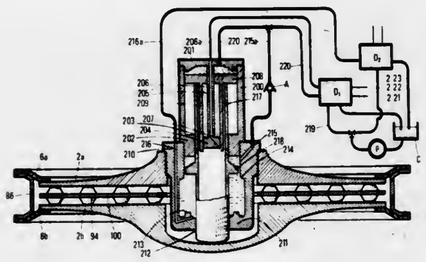
1. Apparatus for preventing turnover of a motorized two-wheeled vehicle comprising a vehicle body, front and rear wheels supporting said body, a drive engine supported on said body between said wheels to provide a center of gravity for the vehicle in the vicinity of the engine, a pair of left and right arms extending laterally from the vehicle body and pivotally connected thereto for upwards and downwards movement, subsidiary wheels supported on said arms, a first and second damper means between the body and respective arms, tube means interconnecting the first and second damper means, and flow control valve means in said tube means for activating said second damper means in response to action on said first damper means, said wheels being positioned by said arms to be disposed on a line extending in the vicinity of said center of gravity.

4,203,501

DEVICE FOR EMITTING ACOUSTIC WAVES IN A LIQUID MEDIUM

Jacques Cholet, Rueil-Malmaison; Jean Laurent, Saint Germain-en-Laye; Pierre Magneville, Vernouillet, and Claude Duconge, Le Vesinet, all of France, assignors to Institute Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 417,570, Nov. 20, 1973, Pat. No. 4,103,280.
This application May 9, 1978, Ser. No. 904,324
Claims priority, application France, Nov. 29, 1972, 72.42515
Int. Cl.[2] G01V *1/04;* F16J *1/10*
U.S. Cl. 181—120 8 Claims



1. A device for emitting acoustic waves in a liquid medium, comprising at least two elements movable in opposite directions, said elements being made of a rigid material and connected with a tightening membrane forming a tight enclosure therewith, each of said elements comprising at least one area for intermittent application against a corresponding contact area of an opposite element, means for moving said areas apart from each other comprising a push-member adapted to bear onto one of the movable elements, releasable means for locking said movable elements in spaced apart position, means for limiting the deformation of said tightening membrane toward the inside of the enclosure, and means for creating in said enclosure a pressure much lower than the pressure to which the enclosure is externally subjected, in operation of the device, wherein the means for moving said areas apart from each other further comprise fluid pressure operated jack means including two cylinders associated with the other of the movable elements for intermittently pushing the push-member in a direction towards said one element, and the releasable locking means comprises a valve member connected with said push-member, pressure means for moving said push-member towards said one element by exerting different fluid forces in one of the cylinders on opposite faces of the valve member in a manner intermittently maintaining said valve member in abutment against an end portion of said one of the cylinders regardless of fluid pressure conditions in the other of the cylinders and means for feeding said cylinders with pressurized fluid for controlling operation of the jack means.

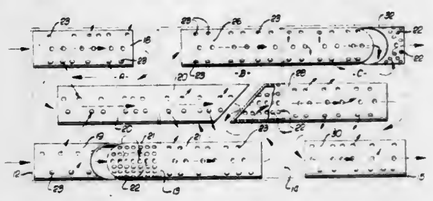
4,203,502

MUFFLER

Walter F. Strader, 7358 Deering Ave., Canoga Park, Calif. 91303

Filed Aug. 28, 1978, Ser. No. 937,143
Int. Cl.[2] F01N *1/08*
U.S. Cl. 181—238 12 Claims

1. A muffler comprising an outer tubular housing adapted to be connected at one end to receive and convey the exhaust gases from an internal combustion engine therethrough; said housing including a muffler core of a preselected configuration comprising a plurality of exhaust chambers for silencing the audible vibrations in the exhaust gas stream, each chamber having a partition at each end defining the longitudinal extent of a closed chamber, each exhaust chamber being arranged in serial arrangement for receiving the exhaust gases adjacent one partition and discharging the gases to the successive exhaust chamber through an aperture arranged at a preselected location in the other partition, each exhaust chamber is characterized as comprising a gas conduit extending through a common partition between a pair of chambers for conveying the gases therebetween, said gas conduit having a closed end at the gas entry end thereof in one chamber and an open end at the gas discharge end thereof in the other chamber, the entry end of the gas conduit being defined with a closed end wall arranged at a preselected angular relationship, other than a right angle, with the longitudinal axis thereof and the portion of the gas conduit extending on the gas entry side of a partition being provided with a multiplicity of closely spaced perforations for conveying and shredding the gas as it enters through the perforations, the gas discharge portion of the gas conduit having a plurality of apertures spaced therearound and longitudinally thereof in a preselected spacing,



first means for conveying a portion of the exhaust gases to be silenced through the gas entry partition at one end of the muffler for impingement with the intra-chamber partition for causing said exhaust gases to reverse their direction of flow,

second means for conveying the remaining portion of the exhaust gases to be silenced through the gas entry partition at one end of the muffler for impingement with the closed end of said gas conduit and to exit the chamber through said multiplicity of closely spaced perforations, the exhaust gases exiting said gas conduit so as to impinge against the partition at the opposite end of the muffler,

third means arranged in the intra-chamber partition for receiving and conveying the exhaust gases discharged into the chamber including by said first means for discharging the exhaust gases into the adjacent chamber, and

means for conveying the silenced exhaust gases from the partition at the opposite end of the muffler.

4,203,503

EXHAUST SILENCER FOR A RAILWAY LOCOMOTIVE

Luigi Franco, Turin, and Giorgio Bertotti, Vinovo, both of Italy, assignors to Centro Richerche Fiat S.p.A., Orbassano, Italy

Filed Apr. 27, 1979, Ser. No. 34,038
Claims priority, application Italy, May 17, 1978, 53326/78[U]
Int. Cl.[2] F01N *1/08*
U.S. Cl. 181—272 7 Claims

1. Exhaust silencer for a railway locomotive having a supercharged diesel engine with six cylinders and a power rating of about 200–250 HP comprising:

a hollow cylindrical body;

respective end-walls closing the opposite ends of said body;

an induction pipe, a portion of which traverses one said end-wall, and

an exhaust gas outlet pipe traversing the other said end-wall, wherein the improvement consists in said silencer body

having an internal diameter of 340 millimeters, a length of 2200 millimeters and comprising:

a first dished baffle-plate located 710 millimeters from said one end-wall;

a first resonance chamber defined by said one end-wall and said first baffle-plate;

a second dished baffle-plate located 200 millimeters from said first baffle-plate;

a second resonance chamber defined by said first and second baffle-plates;

a third dished baffle-plate located 110 millimeters from said second baffle-plate;

a third resonance chamber defined by said second and third baffle-plates;

a fourth dished baffle-plate located 330 millimeters from said third baffle-plate;

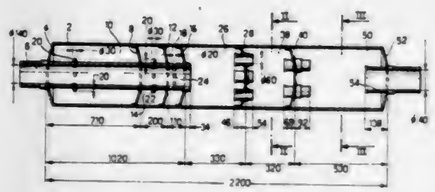
a first gas expansion chamber defined by said third and fourth baffle-plates;

a fifth dished baffle-plate located 320 millimeters from said fourth baffle-plate and 530 millimeters from said other end-wall;

a second gas expansion chamber defined by said fourth and fifth baffle-plates;

a third gas expansion chamber defined by said fifth baffle-plate and said other end-wall;

four tubular ducts supported by said fourth baffle-plate and having respective internal diameters of 60 millimeters and



respective centres equally spaced about a circumference, concentric with the longitudinal axis of said body, with a diameter of 180 millimeters, each of said ducts extending for a length of 46 millimeters into said first expansion chamber and for a length of 54 millimeters into said second expansion chamber;

four tubular ducts supported by said fifth baffle-plate and having respective internal diameters of 60 millimeters and respective centres located upon a circumference, concentric with said longitudinal axis of said body, with a diameter of 180 millimeters and angularly displaced by 45° with respect to said ducts on said fourth baffle-plate, said four tubular ducts on said fifth baffle-plate extending into said second gas expansion chamber for a length of 69 millimeters and into said third gas expansion chamber for a length of 92 millimeters, and wherein:

said resonance and gas expansion chambers are arranged in series longitudinally of the body;

said portion of said induction pipe has an internal diameter of 140 millimeters and extends through said resonance chambers to said first gas expansion chamber, projecting into the latter for a length of 34 millimeters;

said portion of said induction pipe has respective aperture means communicating with the respective said resonance chambers, and

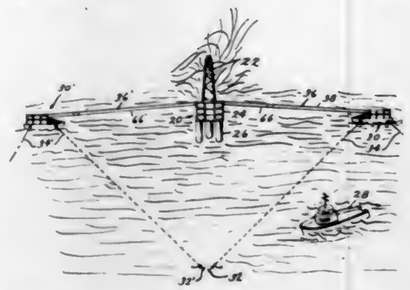
said exhaust gas outlet pipe has an internal diameter of 140 millimeters and a portion which extends into said third gas expansion chamber for a length of 138 millimeters.

4,203,504

METHOD AND SYSTEM FOR ESCAPING FROM AN OFFSHORE DRILLING PLATFORM

Ronald H. Reynoir; Robert A. Flautt, both of New Orleans, La., and Clyde M. Leavitt, Ocean Springs, Miss., assignors to The Reynoir Company, New Orleans, La.

Filed Oct. 16, 1978, Ser. No. 951,460
Int. Cl.² A62B *1/02*; B63C *9/02*
U.S. Cl. 182—10 **32 Claims**



1. Apparatus for escaping from an offshore drilling or production platform, or the like, in emergency situations comprising:

an offshore platform in operative position substantially fixed relative to the marine bottom at an offshore location for engaging in hazardous operations involving combustible and explosive fluids entrapped in said bottom;

a buoyant floating haven positioned near but at a safe distance from said platform;

a plurality of anchors arranged about said haven and engaged with the marine bottom;

cables attached to said anchors and to said haven for maintaining the latter in its said position;

a cableway unsupported between its ends attached to and extending above water between said haven and said platform; and

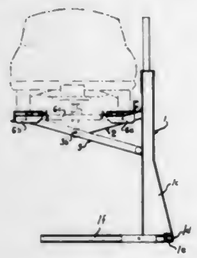
a personnel carrier suspended from and movable along said cableway for transferring personnel from said platform to said haven.

4,203,505

CAR HOIST

Rolf G. Johansson, S 130 11 Saltsjo-Duvnas, Sweden

Filed Jan. 3, 1979, Ser. No. 994
Int. Cl.² B60S *13/00*
U.S. Cl. 187—81.7 **16 Claims**



1. A device for lifting an object, comprising: an upright vertical mast section; a substantially linear lifting motor included within said mast sections; a lifting arm having an inner end slidably mounted onto said mast section and freely extending outwardly therefrom, said inner end being pivotally connected to said motor; and a lifting fork pivotally connected to a free end of said lifting arm; said lifting arm and said lifting fork, in their lowest position, extending horizontally outwardly from said mast section; the inner ends of said arm and said fork being hingedly mounted and vertically-displaceably guided onto said mast section in such a manner that, when said inner end of said lifting arm is first vertically displaced from said lowest position by said lifting motor a given upward distance along said mast section, said lifting arm pivots about its inner end to an outward and downward inclined position and said lifting fork pivots about its inner end to an outward and upward inclined position; said lifting motor thereafter causing the inner end of said lifting arm to travel a further upward distance along said mast section and to cause the displacement of the inner end of said lifting fork while maintaining the relative inclined position of said lifting arm and said lifting fork.

4,203,506

ELEVATOR CONTROL

Sidney Richmon, 5800 W. Club La., Richmond, Va. 23226

Filed Dec. 2, 1977, Ser. No. 856,957
Int. Cl.² B66B *1/36*
U.S. Cl. 187—29 R **5 Claims**



1. A control system for automatically controlling the motion of a body in either of two opposite directions along a track past a plurality of stations including end stations and at least one intermediate station so as to position said body at selected stations comprising:

step indicator means extending along selected first segments of said track, each of said first segments being of a predetermined length;

sensor means on said body comprising at least first, second, and third sensor elements positioned along a line parallel to said track such that each sensor will sense said step indicator means when that sensor is positioned adjacent the step indicator means along a line transverse to said track, the distance between said first and second sensor elements and the distance between said second and third sensor elements each being less than the predetermined length of said first segments and the distance between said first and third sensor elements being greater than the predetermined length of said first segments,

means for disabling said second sensor for as long as either of the first or third sensors senses the step indicator means, but only when that first or third sensor senses the step indicator means before the second sensor senses the step indicator means, and

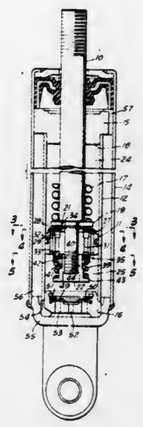
counter means for indicating the station being approached by said body, said counter means counting up when said first and second sensors simultaneously sense said step indicator means and for counting down when said second and third sensors simultaneously sense said step indicator means.

4,203,507

SHOCK ABSORBER

Takao Tomita; Nobuo Anno, and Hitoshi Yamamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 792,203, Apr. 29, 1977, abandoned. This application Nov. 29, 1978, Ser. No. 964,611
Int. Cl.² F16F *9/348*
U.S. Cl. 188—317 **11 Claims**



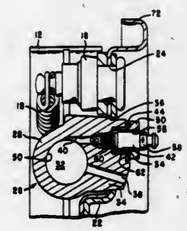
10. In a hydraulic shock absorber, the combination of: a cylinder, a piston mounted to slide in said cylinder and having a plurality of passages extending axially therethrough, a plurality of flexible valve plates held in axial alignment at a second end of said piston, said plurality of flexible plates each having at least one second orifice, said second orifice in each said plate being mutually aligned and in communication with at least one of said plurality of passages, said flexible plates being proressively more flexible away from said piston and said second orifices being progressively smaller away from said piston, and a first check valve spring biasing said flexible plates towards said piston, said first check valve spring extending to hold said flexible plates at an inner periphery thereof such that said flexible plates move axially away from said piston with said first check valve spring during high range piston velocities.

4,203,508

WHEEL CYLINDER ATTACHMENT

Donald F. Borkowski, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 3, 1978, Ser. No. 921,919
Int. Cl.² F16D *65/22*, *51/24*
U.S. Cl. 188—325 **2 Claims**



1. In a drum brake assembly having a backing plate supporting a pair of brake shoes, a wheel cylinder cooperating with the pair of brake shoes to urge the latter to a braking position and connecting means attaching the wheel cylinder to the backing plate, the improvement wherein said connecting

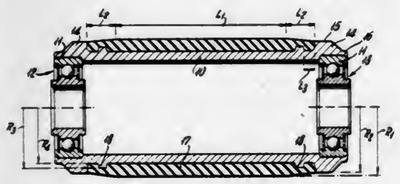
means comprises a flange secured to the backing plate and a nut forming an interlocking fit with the flange, the wheel cylinder including a stepped bore having a small diameter portion and a large diameter portion, the small diameter portion receiving a fitting and the large diameter portion receiving the nut, said nut extending through an opening in said flange to releasably engage said large diameter portion and said nut including an opening for receiving said fitting, said fitting defining an open space with said nut to maintain said fitting in spaced relation thereto.

4,203,509

CARGO ROLLER

Richard T. Thompson, Haddam, and Richard J. Matt, W. Simsbury, both of Conn., assignors to Textron, Inc., Providence, R.I.

Filed Jun. 23, 1978, Ser. No. 918,355
Int. Cl.² B64D 9/00; B65G 13/00
U.S. Cl. 193—37 **17 Claims**



1. A cargo roller comprising, in combination, an elongate rigid tubular body with a radially outward circular flange at each axial end, radial-bearing means having separate outer bearing rings fitted to the axial ends of the bore of said body in substantial axial register with said flange, the outer surface of each body being of lesser radial extent than said flanges and generally cylindrical between said flanges, thereby defining an elongate relatively shallow circumferentially continuous groove between said flanges, a solid circumferentially continuous cylindrical deformable tire of cured hardenable material filling said groove and having a primary elongate cylindrical outer surface of diameter slightly exceeding the diameter of said flanges, the outer surface of said tire being gently tapered at its axial ends into substantially radial conformance with said flanges at adjacency with said flanges, whereby normal loads on said roller are sustained by said bearing rings via the cylindrical outer surface of said tire with said flanges retaining said tire against axial distention, and whereby excessive or overloading loads on said roller are sustained by said bearing rings via said flanges as direct radial loads on said bearing rings.

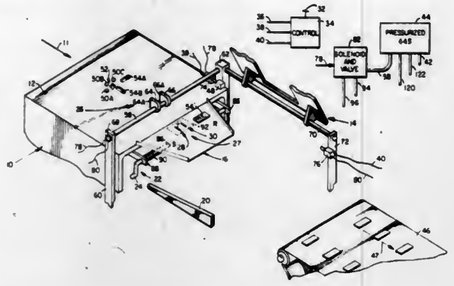
4,203,510

PNEUMATIC DIVERTER FOR HYBRID THICK FILM SUBSTRATE PROCESSING EQUIPMENT

Charles J. Reed, Corrales, N. Mex., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jun. 5, 1978, Ser. No. 912,269
Int. Cl.² B65G 47/26
U.S. Cl. 198—437 **1 Claim**

1. In hybrid thick-film processing equipment wherein processed substrates are sequentially moved to a first location on a raised chute that is subsequently tilted for sliding a processed substrate there in a first direction to a second location on a conveyor belt which transports it away from the equipment in a second direction that may be different from the first direction: the improvement, for locating a substrate at a third location on the belt that is spaced generally transversely of the second location, wherein the chute has a first opening through it at the first location, and including first means selectively producing a supply of pressurized gas under the first opening for passing a stream of gas through it in the direction of and generally at an angle $\theta 1$ with respect to the top surface of the chute which is sufficient for moving a substrate located at the first location and over the first opening in a third direction that is generally transversely of the first direction while on the chute, tilting of the chute causing the moved substrate to be deposited in the third location on the belt; saif first means being selectively operative at one time for producing a supply of gas of a first pressure under the first opening for moving one substrate over it a first distance in the third direction, and is



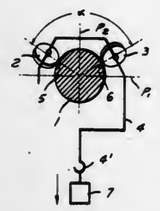
selectively operative at another time for producing a supply of gas of a second pressure under the first opening for moving a subsequent substrate over it a second distance in the third direction which is less than the first distance, such that tilting of the chute places the one and subsequent substrates at transversely spaced-apart positions on the belt, which preclude their overlapping each other.

4,203,511

DEVICE FOR MOVING OBJECTS ALONG A PREDETERMINED PATH

Joachim Uhing, Dorfstede 34, 2300 Molfsee llb Kiel, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,578
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2653009
Int. Cl.² B65G 47/26
U.S. Cl. 198—458 **1 Claim**



1. A device for moving a curtain between an open and a closed position comprising an elongated rotatable shaft having a circular peripheral surface; means for rotating the shaft in one and in an opposite direction; and a plurality of suspension means arranged spaced from each other along and suspended on said shaft and each comprising at least two rolls frictionally engaging said peripheral surface and arranged displaced from each other in the circumferential direction of said peripheral surface and a hook-shaped frame extending only partly about said shaft and carrying said rolls with the axes thereof including fixed angles with the longitudinal axis of said shaft, said frame having a lower end portion below and vertically aligned with the shaft axis and ending in a hook so that successive portions of a curtain may be connected to the hooks of successive suspension means and the curtain be moved between an open and a closed position during rotation of said shaft in the one and the opposite direction, the axes of the rolls on successive suspension means including with the shaft axis an angle which increases from one to the next suspension means so that

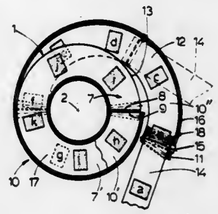
successive suspension means move during rotation of said shaft with increasing speeds.

4,203,512

HELICAL CONVEYOR

Thomas C. M. Ammeraal, Wormer, Netherlands, assignor to Ammeraal Nederland B.V., Wormerveer, Netherlands

Filed Aug. 10, 1978, Ser. No. 932,664
Claims priority, application Netherlands, Aug. 12, 1977, 7708894
Int. Cl.² B65G 37/00, 21/18
U.S. Cl. 198—594 **20 Claims**



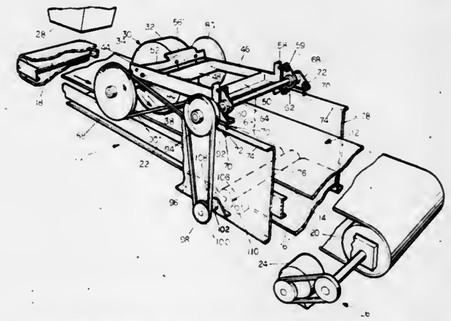
1. A helical conveyor for transporting along a helical stretch, having a substantially vertical central axis and equipped with an endless conveyor belt; an upper run of said conveyor belt following a helical path and ending at a lower end and at an upper end in a substantially horizontal generating line; one end of an intermediate conveyor, which follows a path in a substantially horizontal plane, adjoining the lower end of the upper run of the conveyor belt of the helical conveyor; the other end of said intermediate conveyor being removed farther than its aforementioned end from the vertical central axis of said helical conveyor so that said other end of said intermediate conveyor lies outside the vertical projection of the helical path of said conveyor belt of said helical conveyor on the aforementioned horizontal plane; and a feed or discharge conveyor, displaceable with respect to said intermediate conveyor, joining said intermediate conveyor.

4,203,513

METERING APPARATUS

Lyle W. Scheppele, Dubuque, Iowa, assignor to Toledo Stamping & Manufacturing Company, Toledo, Ohio

Filed Apr. 4, 1978, Ser. No. 893,442
Int. Cl.² B65G 37/00
U.S. Cl. 198—620 **2 Claims**



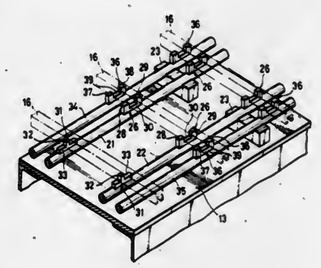
1. Metering apparatus for metering feed comprising a conveyor belt having an upper run and a lower run, a generally cylindrical metering member located above a portion of the upper run of said belt, a shaft extending transversely of said belt on which said generally cylindrical metering member is mounted, a pair of arms having end portions rotatably carrying said shaft, a pivot rod mounted on the other end portions of said arms, means supporting said pivot rod above the upper run of said belt, a driven member mounted on said shaft, an intermediate drive member rotatably mounted on said pivot rod, an intermediate driven member rotatably mounted on said pivot rod and rotatable with said intermediate drive member, a drive member, a drive roller engaged with an upper surface of the lower run of said belt and connected to said drive member to rotate same, a pinch roll on each side of said drive roller with the lower run of said belt extending around said drive roller between said pinch rolls, means connecting said drive member and said intermediate driven member, and means connecting said intermediate drive member and said driven member to rotate said generally cylindrical metering member when said roller is driven by said belt, said metering member being rotated with a peripheral speed substantially equal to the lineal speed of said belt.

4,203,514

APPARATUS FOR FEEDING WORKPIECES INTERMITTENTLY

Mitsuru Hirai, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 28, 1977, Ser. No. 846,364
Claims priority, application Japan, Oct. 30, 1976, 51-130919
Int. Cl.² B65G 47/90
U.S. Cl. 198—774 **6 Claims**



4. An apparatus for feeding workpieces intermittently, comprising:

(a) a table;

(b) a pair of parallel feed rods supported on said table and spaced apart from each other to carry the workpieces jointly thereon, each of said feed rods having thereon a plurality of workpiece holders spaced therealong one from another at an interval;

(c) first means on said table for moving said feed rods axially between advanced and retracted positions for a stroke which is equal to said interval;

(d) second means on said table for alternately (1) both restraining and supporting the workpieces while said feed rods are being moved from said advanced to said retracted positions and (2) disengaging the workpieces while said feed rods are being moved from said retracted to said advanced position, said second means comprising a pair of axially fixed parallel support rods rotatably supported on said table and spaced apart from each other to carry the workpieces jointly thereon, said support rods extending adjacent and parallel to said feed rods, and each of said support rods having thereon a plurality of second workpiece holders spaced therealong one from another at an interval which is equal to said first-mentioned interval; and

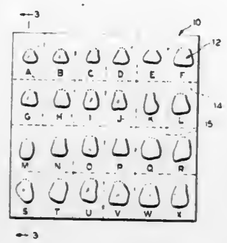
(e) third means on said table for rotating said feed rods about their axes between a first position in which said workpiece holders can engage the workpieces at said retracted feed-rod position and a second position in which said workpiece holders can disengage the workpieces at said advanced feed rod position.

4,203,515

DENTAL CAP PACKAGE

Henry Kahn, 1724 Grand Bahama West, Palm Springs, Calif. 92262, and Sidney M. Libit, Glencoe, Ill., assignors to Henry Kahn, Palm Springs, Calif.

Filed Aug. 10, 1978, Ser. No. 932,510
Int. Cl.[2] B65D *81/00*; A61C *5/08*
U.S. Cl. 206—63.5 **3 Claims**



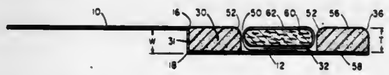
1. A package of cup-shaped shells in various shapes and sizes used in fabrication of dental crowns comprising a base sheet of moldable plastic material having a plurality of said shells in longitudinal and lateral rows protruding from one surface of said sheet in substantially equally-spaced relationships to form a flange around each shell, said shells having walls perpendicular to said sheet and tops of differing dental configurations, the greater portion of the wall periphery of each shell at its juncture with the base sheet being separated therefrom, the remaining portion of said periphery remaining integral with said sheet along a line of weakness for ultimate removal of said shell from its flange, each flange carrying identification indicia for its respective shell and providing a handle for its use after detachment from said sheet.

4,203,516

GREETING CARD

Dorothea E. Stonoga, Norwood, and Virginia K. Flint-Smith, Waltham, both of Mass., assignors to A. Bristol Corporation, Boston, Mass.

Filed Feb. 12, 1979, Ser. No. 11,076
Int. Cl.[2] B65D *85/72, 81/04*
U.S. Cl. 206—216 **3 Claims**



1. A greeting card comprising:

a pair of panels integrally formed with a spine section of finite width, said panels being of the same size and forming front and back panels each hingedly joined to the spine along opposite edges thereof,

a relatively rigid protective block having top, bottom and side surfaces and made of a foam material substantially equal in thickness to the width of the spine section and having width and height dimensions substantially equal to the dimensions of the panels, the bottom surface of said block being secured to the front face of the back panel so as to lie between the panels when the panels are closed, and one side surface being secured to the inner face of the spine so that only the hinge joining the front panel to the spine functions as a live hinge,

a well provided in the block extending from the front face thereof,

a pet product in the well and covered by a wrapper, the plan view of the well conforming in shape to the shape of the product so that the product is held snugly in the well,

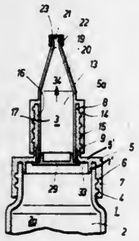
and message bearing indicia relating to the pet for whom the product is designed provided on the front of the front panel.

4,203,517

CONTAINER

Bodo Hildebrandt, Riedstadt; Erich Janele, Hünfeld-Nüst, and Franz Steigerwald, Griesheim, all of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 965,915
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753737
Int. Cl.[2] B65D *25/08, 1/04, 81/32*
U.S. Cl. 206—221 **29 Claims**



1. A container for accommodating two materials separately from one another and mixing the same, comprising

a first wall bounding a wider chamber for accommodating one material;

a second wall bounding a narrower chamber for accommodating another material;

a connecting sleeve member having one portion which extends in a first direction and is sealingly fitted on said first wall bounding said wider chamber, and another portion which extends in a second direction opposite to said first direction and has an outer thread;

a discharge cap fixedly connected with said second wall and having an inner thread which meshes with said outer thread of the other portion of said connecting sleeve member, said discharge cap being screwed on said other portion and movable relative to the latter;

a separating member having a separating portion arranged to disconnect said chambers from one another, and a projecting portion extending into said narrower chamber and being held by said second wall of the latter so that, when said second wall is withdrawn from said projecting portion of said separating member by unscrewing said discharge cap, said separating member is loosened and said chambers communicate with one another, said projecting portion of said separating member having a predetermined length; and

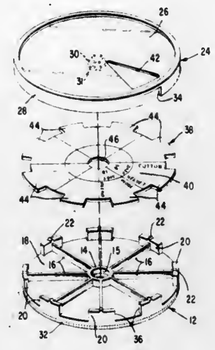
means for retaining said discharge cap on said other portion of said connecting sleeve member during unscrewing of the former, said retaining means including an outer projection which is formed on said second wall in the region adjacent to said wider chamber, and an inner annular groove which is formed in said other portion of said connecting sleeve member also in the region adjacent to said wider diameter and in which said outer projection of said second wall movably engages, said annular groove extending in a direction away from said wider chamber and having a length which is substantially equal to the length of said projecting portion of said separating member.

4,203,518

PACKAGE FOR SEWING MACHINE NEEDLES

Wayne A. Current, Holmdel, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 9, 1979, Ser. No. 19,064
Int. Cl.[2] B65D *85/24*
U.S. Cl. 206—380 **4 Claims**



1. A storage package for sewing machine needles comprising a circular storage disc having a hub containing an aperture passing therethrough formed at the center of said disc and extending perpendicular to said disc; a plurality of walls defining needle storage compartments rising from said circular storage disc and radiating from said hub; arcuate segments formed at the extremity of each of said walls and rising from said circular storage disc a short distance above said walls for defining an extremity of said needle storage compartments and spaced apart peripherally to define access dispensing openings to each of said compartments; an information disc having information sectors containing written needle information corresponding to the contents of respective compartments, said information disc overlying said needle storage compartments and contracting each of said walls and comprising radiating tabs disposed within said openings and abutting said arcuate segments for restraining said information disc from rotation about said hub so that said information disc remains stationary on said storage disc, said information disc having a thickness not greater than the difference of height of said walls and said segments; a base having a circular surface with a center; a base wall rising perpendicular from said base and encircling said base, said base wall having a dispensing slot formed therethrough for cooperation with said arcuate segments of said needle storage compartments to selectively provide a passageway into and out of a selected one of said needle storage compartments upon rotation of said base; an information aperture on said circular surface of said base for selectively exposing the associated one of said information sectors of said information disc upon rotation of said base to open a selected one of said compartments; and means for securing said base in said aperture in said hub.

4,203,519

TAPE CARTRIDGE HOLDER

Roy K. Fujitaki, Altadena, Calif., assignor to Anthony J. Foto, Pasadena, Calif.

Filed Aug. 15, 1978, Ser. No. 933,962
Int. Cl.[2] B65D *85/672*
U.S. Cl. 206—387 **2 Claims**

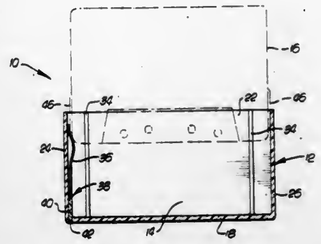
1. In a holder for tape cartridges, or the like, the combination of:

(a) a container provided with transverse cartridge compartments respectively having resilient retainers therein along one side of said container and respectively engageable with edges of cartridges in said compartments to retain the cartridges therein;

(b) said retainers comprising integral parts of a retainer assembly which includes a common retainer base from which said retainers project and with which said retainers are integrally formed;

(c) said container having a wall provided adjacent said one side thereof with a slot within which said retainer base is positioned with said retainers projecting into said compartments along said one side of said container; and

(d) said retainer base in said slot being fixedly secured to said container to support said retainers within said compartments.



4,203,520

RECEPTACLE FOR RECEIVING ARTICLES FOR STORAGE IN STERILIZED CONDITION

Samuel J. Schuster, 617 Vallombrosa, Pasadena, Calif. 91107

Filed Aug. 28, 1978, Ser. No. 937,213
Int. Cl.[2] B65D *33/16*
U.S. Cl. 206—439 **29 Claims**



1. A receptacle for receiving articles for storage in sterilized condition, the receptacle being closed except for an opening for inserting the article, the receptacle comprising facing walls of material impermeable to both sterilizing vapor and microorganisms, and a substantially flat membrane impermeable to microorganisms but highly permeable to sterilizing vapor, the membrane being disposed between the facing walls in parallel relationship thereto, a portion of one surface of the membrane being bonded to at least one of the walls, the membrane being operatively associated with the walls to transfer sterilizing vapor to and from the interior of the receptacle along a path that traverses the surfaces of said membrane following insertion of the article and sealing of the opening by bonding a portion of the other side surface of the membrane to the other wall.

4,203,521

PACKET FOR PROVIDING THERMAL PROTECTION FOR DOCUMENTS

Stanley A. Dunn, Madison, Wis., assignor to J. E. Enterprises, Inc., Madison, Wis.

Filed Aug. 9, 1978, Ser. No. 932,192
Int. Cl.[2] B65D *65/40, 85/00*
U.S. Cl. 206—525 9 Claims



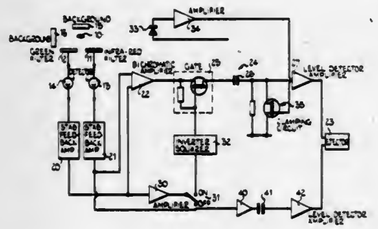
1. A packet containing documents and providing thermal protection for those documents, said packets comprising:
a sacrificial ablative layer comprised of a plurality of layers of paper, and
a metal foil layer enclosing said sacrificial ablative layer shielding the sacrificial ablative layer from surrounding air, said sacrificial ablative layer and said metal foil encasing the documents.

4,203,522

METHOD AND APPARATUS FOR SORTING AGRICULTURAL PRODUCTS

Herbert Fraenkel, London; Patrick B. Gough, Wallington, and William S. Maughan, Burgess Hill, all of England, assignors to Sortex North America, Inc., Lowell, Mich.

Filed Aug. 31, 1978, Ser. No. 938,390
Claims priority, application United Kingdom, Jun. 28, 1978, 28133/78
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—558 12 Claims



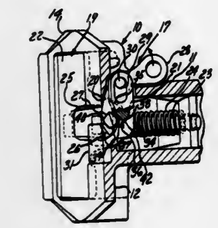
1. A sorting machine for effecting relative separation between desired and undesired agricultural products, the machine comprising first and second detectors which are arranged to receive light from at least one of said products being viewed, said first detector being responsive to light whose wavelength is in a range 6,000 to 15,000 A and the first detector being arranged to produce a first signal, the second detector being responsive to light of a wavelength outside said range and being arranged to produce a second signal, comparator means for comparing the first and second signals and for producing a comparison signal therefrom, separator means for effecting said relative separation, signal transmitting means comprising a gate and a level detector for transmitting the comparison signal from the comparator means to the separator means, and means unaffected by the value of said first signal for supplying to said gate a gating signal which controls the operation of the gate in dependence upon the extent to which the product being viewed is mechanically damaged, whereby the separator means is actuated by comparison signals of a predetermined level only when the extent to which the product is mechanically damaged does not exceed a predetermined value.

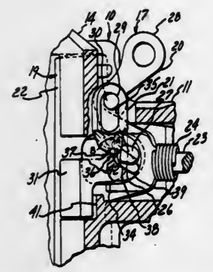
4,203,523

LOCKSETTING MECHANISM FOR A RIGID JAW COUPLER

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 19, 1978, Ser. No. 916,475
Int. Cl.[2] B61G *3/12*
U.S. Cl. 213—100 W 12 Claims





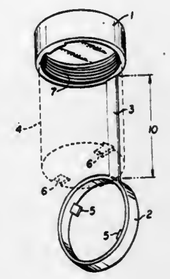
1. A coupler having a shank extending from a chambered head with a buffing face that connects a pair of laterally spaced fixed jaws, and a locking mechanism which comprises:
(a) a spring biased lock disposed within the chambered head and movable generally longitudinally of the coupler shank between a locked position and a lockset position, the lock having an axially elongated slot therein;
(b) a locklifting lever for moving the lock between the locked and lockset positions, the lever having a pair of opposing ends;
(c) means mounting the lever on the coupler head for limited rotation about an axis which is normal to the longitudinal axis of the coupler shank;
(d) a handle at one of the opposing ends of the lever and disposed exteriorly of the coupler head for operating the lever;
(e) a lug and rocker arm disposed within the chambered head at the other of the opposing ends of the lever, the lug and arm extending in opposite directions from the plane of the lever, the arm being received in the slot of the lock and designed to move the lock axially against the biasing spring, when the handle of the lever is rotated in one direction to operate the lever;
(f) a pawl for frictionally engaging the lug and holding the lock in the lockset position, the pawl having a plate at one end thereof for receipt in an opening disposed in the buffing face of the coupler adjacent the lock, the pawl including a cam for slidably engaging the lug and interlocking coaction with the lug when the lock is moved by the lever to the lockset position, the cam being shaped so that the lug lifts and overrides the cam when the handle is rotated in a direction opposite said one direction, to allow the lock to return to the locked position from the lockset position; and
(g) means mounting the pawl for limited movement in a direction which is generally normal to the axial direction in which the lock moves between the locked and lockset positions.

4,203,524

CHILD-PROOF CLOSURE DEVICE

Clarence W. Wieland, 1531 Hyde St. #8, San Francisco, Calif. 94109

Filed Apr. 23, 1979, Ser. No. 32,210
Int. Cl.[2] B65D *55/02, 85/56;* A61D *1/00*
U.S. Cl. 215—216 16 Claims



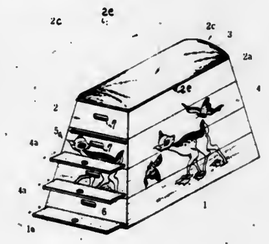
1. An improved closure for a bottle with a bottle cap, said bottle including a bottle bottom and a cap receiving upper lip for mating engagement with said bottle cap, said cap designed to undergo vertical movement towards and away from a sealing disposition on said cap-receiving upper lip, the improvement in said cap comprising: a bottom member for fitting over the bottom of said bottle in releasable snap engagement therewith and configured with respect to said bottle to include means for restraining upward movement of said bottom member relative to said bottle when said bottom member is in place on said bottle bottom; a strap extending between and attached to said bottom member at one portion and said bottle cap at another portion, said strap having a length between said portions long enough to permit said bottom member to be snapped over the bottom of said bottle when said cap is fully seated on said cap-receiving upper lip of said bottle, and short enough to restrain upward excursion of said cap when said bottom member is in place over the bottom of said bottle whereby said cap cannot be removed from said bottle without first removing said bottom member from said bottle bottom.

4,203,525

VAULTING BOX

Yoshikazu Okubo, 837-1 Hachigasaki, Matsudo-shi, Chiba-ken, Japan

Filed Jun. 29, 1977, Ser. No. 811,436
Claims priority, application Japan, Dec. 9, 1976, 51/164101[U]
Int. Cl.[2] B65D *21/02;* A63B *5/12*
U.S. Cl. 220—4 C 11 Claims



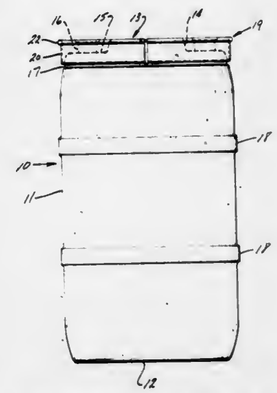
1. A box-like structure comprising a bottom frame member, a top frame member, and at least one intermediate member, each of said frame members having, a plurality of sides inclined inwardly to the vertical defining a truncated pyramid shape of successively reduced size in height, length and width, the upper edge of each frame members having a pyramidal dimension conforming to the pyramidal dimension of the lower edge of the next successive frame member of reduced size enabling said frame members, in one condition, to be stacked successively edge to edge from bottom to top one upon the other to form an enlarged truncated pyramid shape box and in a second condition to be nested successively from top to bottom completely one within the other, the top frame having a cover, and the bottom frame member having a slot in a wall thereof and a closure plate insertable therein to form a bottom wall for retaining the frame members nested therein.

4,203,526

PLASTIC DRUM ASSEMBLY

Andrew J. Stoll, III, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 636,264, Nov. 28, 1975, abandoned, which is a continuation of Ser. No. 635,206, Nov. 25, 1975, abandoned. This application Feb. 22, 1978, Ser. No. 879,841
Int. Cl.[3] B65D *1/46, 6/34, 25/22*
U.S. Cl. 220—71 11 Claims



1. A plastic drum assembly comprising a single-piece molded plastic drum having a top end, a bottom end, and a circumferential sidewall merging with said top and bottom ends, said sidewall including a circumferential recess adjacent said top end, said recess having an upper flat ledge portion facing downwardly and disposed essentially perpendicularly to the longitudinal axis of said drum, and a removable circumferentially disposed split metal collar mounted on said drum, said metal collar having a substantially circumferential inwardly extending projection adjacent its lower margin positioned within and engaging said circumferential recess, said inwardly extending projection including a flat shoulder surface disposed in snug contact with said flat ledge of said recess, said metal collar having an annular bead disposed adjacent the top thereof, whereby said metal collar is grippable by steel drum chime-handling devices enabling lifting and transportation of said drum assembly.

4,203,527

NOVEL SECURE CAP WITH DEPRESSIBLE LOCK

Ernest J. LaChance, Sr., Old Wilton Rd., Milford, N.H. 03055

Filed Apr. 6, 1978, Ser. No. 896,078
Int. Cl.[2] B65D *51/18*
U.S. Cl. 220—253 10 Claims

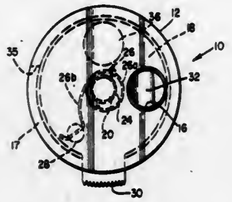
1. A secure closure of the type useful on pill containers, said closure comprising
a top external closure member and a lower internal closure

member which are mounted for vertical and rotational movement relative to one another and which, together, form lock means;

apertures in each of said top and lower members which are positioned to be brought into register by rotation, and to form a pill dispensing port;

biasing means to hold said closure members in a first, normally-closed, position with said apertures maintained in non-registered position

lever means on said internal member forming means to rotate said internal members into a dispensing position, said lever means extending through a slot in said external



member, which slot forms a path in which said lever means is moveable,

said lock means comprising a projection on said internal member and a receptacle for said projection on said external member, which lock means forms means to lock said members against rotational movement, said lock means being releasable in response to depression of said projection

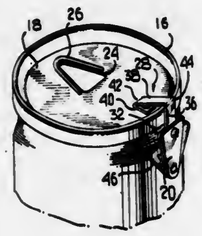
biasing member forming means to return automatically said internal member and said external member to said normally closed rotational position and to return said internal member and said external member to a locked vertical position.

4,203,528

SELF-STORING PULL STRIP FOR EASY OPENING CONTAINERS

Gary K. Hasegawa, Chicago, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,327
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—269 10 Claims



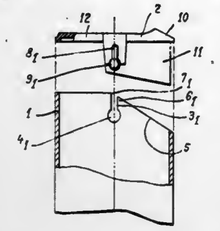
1. A pull strip for use in an easy opening container having a removable panel portion, said pull strip comprising an elongated strap portion, a securing portion and a grip portion; said strip portion being narrower than said securing portion and being divided into a terminal anchoring part, an intermediate part and an extension part by transverse hinge means each having a memory automatically operable to effect a folding of said parts of said strip portion from a planar state towards reversely folded portions.

4,203,529

POURING RECEPTACLE WITH AUTOMATIC CLOSURE

Jean F. Torassa, and Gerard Torassa, both of Les Residences du mont Boron 31 avenue de Mont Boron, 06300 Nice, France

Filed Oct. 11, 1978, Ser. No. 950,396
Int. Cl.[2] B65D *43/14, 51/04*
U.S. Cl. 220—337 9 Claims



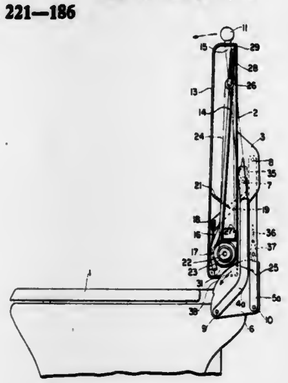
1. A pouring receptacle comprising a casing, a cover swingably mounted on said casing, the material of one of the cover and casing being resiliently deformable whereby swinging movement of the cover on the casing to open position resiliently deforms said material, the deformed material resiliently urging the cover toward closed position, the casing opening upwardly and having diametrically opposed slots adjacent its upper end, the cover having diametrically opposed lugs that rest in said slots in the closed position of the cover, whereby upon swinging movement of the cover to open position, said material is resiliently deformed by pressure of the lugs against the side walls of the slots.

4,203,530

DEVICE TO APPLY A PAPER SHEET TO A CLOSET SEAT

Gerardus M. Tromp, The Hague, Netherlands

Filed Mar. 14, 1978, Ser. No. 886,600
Claims priority, application Netherlands, Dec. 23, 1977, 7714364
Int. Cl.[2] A47K *13/14*
U.S. Cl. 221—186 10 Claims



1. A device to apply a paper sheet to a closet seat, comprising a box-shaped container for a stack of paper sheets fitting the closet seat, a tilting mechanism, means pivotally connecting said container to said tilting mechanism, said tilting mechanism being operable to tilt and hinge said container from a vertical position to a substantially horizontal position, a paper driving roller journalled within the container, a driving mechanism for rotating the roller in one direction when the container is tilted and hinged to the substantially horizontal position, and a pressing mechanism operable to press part of the paper stock on to the paper driving roller, whereby when the container is tilted and hinged from a substantially vertical to a substantially horizontal position, the roller is made to rotate and convey a

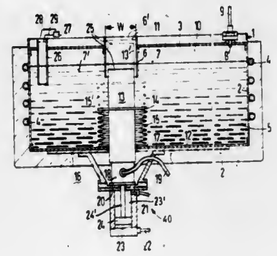
single paper sheet longitudinally off the stack through an opening in the container.

4,203,531

ULTRASONIC SOLDERING BATH HAVING AN ULTRASONIC PROBE EXTENDING INTO THE SOLDER BATH

Hilmar Reichel, Planegg; Guenter Klauke; Karl-Heinz Herting, both of Munich, and Martin Pointner, Kirchseeon, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,791
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728634
Int. Cl.[2] B23K *1/06*
U.S. Cl. 228—1 A 8 Claims



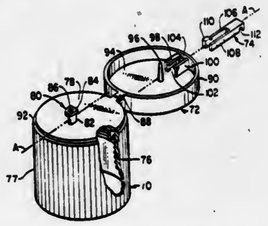
1. In an ultrasonic soldering device having a container to hold a bath of molten solder, an ultrasonic transducer for creating ultrasonic waves, a probe being connected to the transducer and having a sound emitting surface, and means for mounting the probe to extend through a wall of the container with the emitting surface being disposed in the bath, the improvements comprising the container being hermetically sealed at the top by a lid provided with a shaft extending therethrough, said device having means for applying pressure on the surface of the bath of solder material so that the level of the solder in the shaft can be changed, said means for mounting positioning the probe to extend through a bottom wall of the container with the probe being aligned with said shaft and including means for changing the amount of the probe extending into the bath so that the position of the sound emitting surface of the probe in the bath can be changed to be at different heights in said shaft.

4,203,532

SAFETY CONTAINERS

Bob Mar, Stockton, Calif.

Division of Ser. No. 909,332, May 25, 1978, Pat. No. 4,146,146.
This application Mar. 19, 1979, Ser. No. 22,016
Int. Cl.[2] B65D *5/32, 55/02, 25/42*
U.S. Cl. 222—153 4 Claims



1. A safety cap for dispensing liquids from a container having a mouth and a lip surrounding the mouth, the safety cap comprising:

a stopper seat sized to fit over the mouth of the container and having a passage extending through it;

a stopper sized to fit over the stopper seat and having an upper side, an under side, and a neck adapted to rest against the stopper seat, the neck having a recess extending through it, the stopper further having a slide channel extending across its underside and aligned with the recess;

hinge means for connecting the stopper to the stopper seat so that the stopper can be swung from a closed position in which the neck rests against the stopper seat to an open position;

a spout aligned with the slide channel and projecting upwardly from the stopper seat, the spout having a tubular portion, a flange at the upper end of the tubular portion, and a passage extending through the tubular portion and flange which communicates with the passage extending through the stopper seat;

a plug extending from the under side of the stopper, the plug adapted and aligned so that will project into and seal the passage extending through the tubular portion and flange when the stopper is swung to its closed position; and

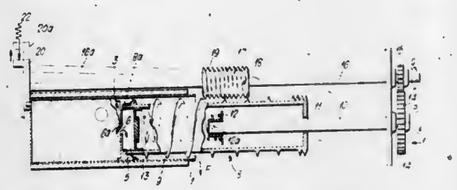
a pin slidable in the recess and the slide channel from an inserted position to an extended position, the pin havng an outer portion and an inner portion, the inner portion including two spaced apart legs which extend on opposite sides of the plug, the legs extending on opposite sides of the tubular portion when the stopper is in its closed position and the pin is slid to its inserted position so that the flange will engage the pin and prevent the stopper from being swung to its open position.

4,203,533

TONER POWDER SUPPLY SYSTEM

Karl G. Zeuthen, Gentofte, Denmark, assignor to Rex-Rotary International/A.S., Birkerod, Denmark

Filed Feb. 2, 1978, Ser. No. 874,393
Claims priority, application United Kingdom, Apr. 14, 1977, 15625/77
Int. Cl.[2] G01F *11/24*
U.S. Cl. 222—241 22 Claims



1. In a dry toner developer unit in a photocopier, for metering toner from a toner supply container, the improvement wherein said supply container is a cylindrical canister and has a toner extractor member axially movably and rotatably mounted therein; and wherein said developer unit further includes:

(a) a cylindrical drive rotor;

(b) means driving said drive rotor for rotation about an axis and for movement along said axis;

(c) a screw flight on the exterior of said drive rotor;

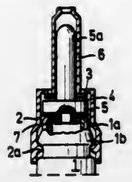
(d) abutment means on one end of the drive rotor for drivably engaging the toner extractor member of said canister to drive it for rotation around, and for axial movement along, said axis;

(e) and means for holding said canister against rotation coaxially around said axis of the drive rotor.

4,203,534
TILTING NOZZLE CLOSURE WITH DUAL SEALING SURFACES

Klaus W. Finke, Finnentrop, Fed. Rep. of Germany, assignor to Robert Finke Kunststoff-Spritzguss-Werk, Finnentrop, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,386
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738243
Int. Cl.[2] B65D *83/14*
U.S. Cl. 222—402.13 10 Claims



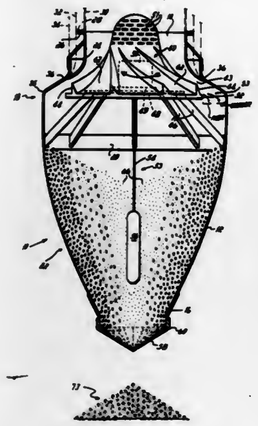
1. A tilting nozzle closure for attachment to the neck of a bottle which forms an outlet from the bottle, comprising a cap formed of a plastics material, said cap having an axially extending annular side wall arranged to extend downwardly around the neck of the bottle and an end wall extending transversely of the axial direction of and across said side wall, a tubular nozzle secured to and extending from said end wall in the opposite direction from said side wall, said side wall having an annular bead on the inner surface thereof and said annular bead arranged to fit downwardly over and in bearing contact with a similar bead on the neck of the bottle, at least a part of said end wall being more resilient than said side wall, and a closure member located within said cap having a first surface arranged to contact the end surface of the neck of the bottle and a second surface projecting in the axial direction of said side wall from said first surface and arranged to fit into and seal the inner surface in the neck of the bottle, said first and second surfaces arranged to form sealing surfaces with the neck of the bottle, said annular bead on said side wall being spaced from said end wall of said cap so that upon attachment of said cap onto the bottle the interengagement of said annular bead with the similar bead on the bottle stresses said side wall in the axial direction and pulls said end wall toward the neck of the bottle to bias said first and second surfaces on said closure member into sealing contact with the neck of the bottle, said closure member being at least partially displaceable from sealing contact with the neck of the bottle by applying force to said nozzle for tilting said nozzle transversely of the flow path therethrough, and said end wall of said cap being deformed for accommodating the tilting displacement of said nozzle and for transmitting the nozzle tilting action to said closure member.

4,203,535
METHOD AND APPARATUS FOR LOW-DUST DISCHARGE OF PARTICULATE MATERIAL THROUGH A NOZZLE

William C. Burnett, 6229 Malloch Dr., Memphis, Tenn. 38138, and John D. Adams, Memphis, Tenn., assignors to William C. Burnett, Memphis, Tenn.

Filed Sep. 12, 1978, Ser. No. 941,382
Int. Cl.[2] G01F *11/20*
U.S. Cl. 222—411 18 Claims

1. A method of discharging particulate material containing heavier and lighter particles, comprising the steps of:
feeding said material as a downwardly moving stream through the inlet of a nozzle,
deflecting said particles outwardly within said nozzle into an annular space, the heavier particles upon such deflection having greater outward momentum than the lighter, finer particles, thereby classifying the stream inside the nozzle with the lighter particles concentrated toward the center and the heavier particles concentrated toward the wall of the nozzle,
accumulating a quantity of the thus classified mass in said nozzle, and
releasing said mass from said nozzle at the bottom thereof,

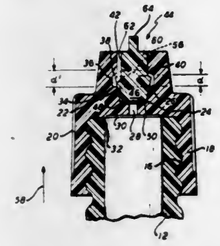


the released mass falling as a stream in which the heavier particles toward the outside curtain the lighter particles toward the center and thereby reduce escape of said lighter particles as dust.

4,203,536
DISPENSING CLOSURE FOR A SQUEEZABLE CONTAINER

William M. Lester, 8 Brayton Rd., Livingston, N.J. 07039

Filed Sep. 11, 1978, Ser. No. 941,142
Int. Cl.[2] B67D *3/00*; B65D *83/14*
U.S. Cl. 222—495 9 Claims

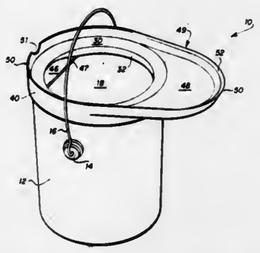


1. A closure for dispensing a fluid stored in a squeezable resilient container comprising:
a housing,
means for securing the housing in fluid communication with the container interior,
an annular tapered valve seat in said housing having a surface at a first smaller diameter which tapers toward a larger second diameter, said smaller diameter being closest to said container interior,
a tapered annular valve member having a bottom surface and a tapered side surface, said side surface complementing said valve seat for providing a substantially fluid tight seal when seated in the closed valve position and for providing a fluid passage at the interface between said member side surface and said seat when in the open valve position, a side of said member opposite said bottom surface being coupled to the ambient,
said bottom surface and said interface being positioned in fluid communication with said stored fluid so that fluid forced against said bottom surface displaces said member to the open valve position and said fluid enters into said interface in an annular continuous ring,
fluid discharge conduit means in fluid communication with and between said interface and the ambient, and
valve member displacement limiting means connected to said housing for limiting the distance said member is permitted to displace from the closed valve position to the open valve position to provide a maximum clearance between said side surface and said seat at that value at which fluid in said interface tends to effectively seal said interface from ambient air when the container interior pressure is less than ambient pressure such that the pressure differential is sufficient to force said valve member to its closed valve position,
said member having a shoulder, said housing having a chamber adjacent said larger diameter, said shoulder being positioned within said chamber, said chamber having an upper wall which abuts said shoulder when said member is displaced to the open valve position for forming said displacement limiting means.

4,203,537
PAINT CAN ACCESSORY

George McAlister, Big Spring, Tex., assignor to Plastic-Craft, Inc., Big Spring, Tex.

Continuation of Ser. No. 827,577, Aug. 25, 1977, abandoned.
This application Nov. 16, 1978, Ser. No. 961,410
Int. Cl.[2] B65D *25/40*
U.S. Cl. 222—570 10 Claims

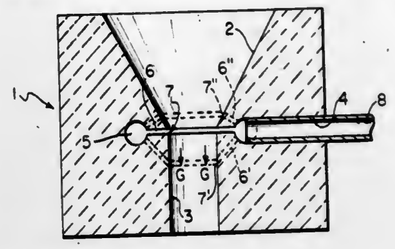


1. A paint can accessory adapted to be removably mounted on the annular rim of a paint can to prevent paint from flowing into the rim channel thereof, comprising:
an annular ring disposed over the rim channel of the paint can, said ring having an outer skirt depending therefrom extending around the outer periphery of the can and an inner skirt depending therefrom extending around the inner periphery of the can;
a pouring spout for pouring paint from the can extending substantially horizontally and in substantially the radial plane of said ring, said spout being substantially planar and having an edge of constantly changing radius, and said spout also being circumscribed by a wall extending substantially around said ring; and
a plurality of leveraging ribs depending axially from the underside of said spout and extending laterally from said outer skirt in substantially parallel spaced apart relation for transmitting leveraging force to a sector of said ring, said ribs being spaced sufficiently far apart and having sufficient axial depth so that the fingers of the hand contact the underside of said spout in the channels formed between said ribs when leveraging force is applied to remove the accessory from the can, the ribs varying in length relative to their lateral dimension to correspond with the changing radius of the spout with the ribs being shorter adjacent the lateral edges of the spout.

4,203,538
REFRACTORY SPOUT BRICK

Ernst Lührsen, Bad Schwalbach, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,427
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731113
Int. Cl.[2] B22D *41/08*
U.S. Cl. 222—603 14 Claims

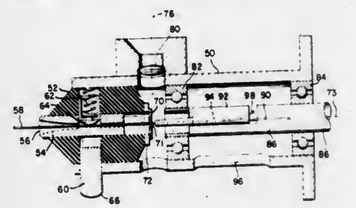


1. A refractory spout brick comprising:
a block of refractory material having extending therethrough a throughflow opening;
an annular gas collecting space within said block at a position surrounding said throughflow opening radially outwardly thereof;
a gas feed duct extending through said block from the exterior thereof, to said gas collecting space; and
at least one annular duct extending radially inwardly from said gas collecting space to said throughflow opening, said at least one annular duct opening into and forming with said throughflow opening at least one slit which extends around the entire periphery of said throughflow opening.

4,203,539
METHOD AND APPARATUS FOR CUTTING OPTICAL FIBERS

Glen E. Miller, Redondo, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 23, 1978, Ser. No. 953,996
Int. Cl.[2] B26F *3/00*
U.S. Cl. 225—2 5 Claims



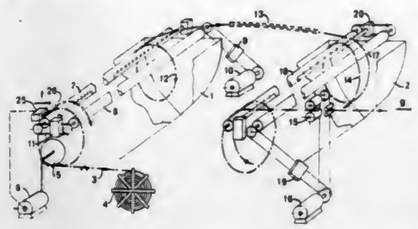
2. A method for cutting an optical fiber along a plane perpendicular to the fiber axis, comprising the steps of:
(a) clamping a fiber at a first location;
(b) retaining the fiber at a third location spaced from the first location;
(c) moving the fiber at a third location in a spiraling path;
(d) scribing the fiber circumferentially at a second location along a plane perpendicular to the fiber axis at the second location by continuing the spiraling movement; and
(e) breaking the fiber by progressively bending and fracturing the fiber about the circumferentially applied scribe at the second location by continuing the spiraling movement.

4,203,540

APPARATUS AND METHOD FOR TREATMENT OF ELONGATED FLEXIBLE MATERIAL

Marcel Giros, Route de Saint-Dizier, Ancerville, France (55170)

Filed Sep. 11, 1978, Ser. No. 941,187
Claims priority, application France, Sep. 22, 1977, 77 29100
Int. Cl.² B65H *17/42*
U.S. Cl. 226—119 **7 Claims**



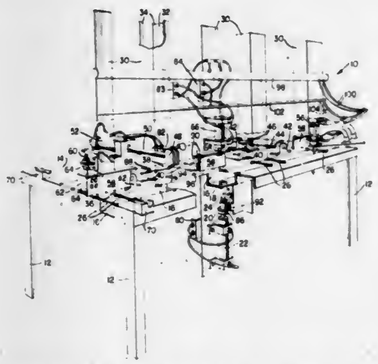
1. An apparatus for treatment of a flexible material of great length in a treatment volume, comprising means for giving the material the form of a helix comprising several turns, means for causing this helix to progress or advance in the treatment volume by being driven by rotating supporting shafts and means for regulating the speed of entry of the material into the volume and also its speed of progression the treatment volume comprising at least two treatment chambers disposed side-by-side, the entry of the material into one chamber being substantially opposite the exit of the material from the following chamber, and means appropriate for guiding the material from one chamber to the following chamber without driving the said material, wherein said means for guiding said material are formed of a tunnel equipped with two trains of idler rollers.

4,203,541

AFFIXING CUSHIONING PADS TO FLOOR SLEEPERS

Robert U. Gravitter, Houghton, and William O. Isaacson, Laurium, both of Mich., assignors to Horner Flooring Company, Dollar Bay, Mich.

Filed Apr. 13, 1978, Ser. No. 896,213
Int. Cl.² B27F *7/02*
U.S. Cl. 227—40 **12 Claims**



1. Apparatus for affixing pads spaced along the length of a floor sleeper comprising:

positioning means to hold a sleeper in a working position for affixation of a plurality of pads spaced along the sleeper including spaced parallel wall means to retain the sleeper along both of its sides to retain it against lateral displacement during pad affixation and lifting means disposed to raise the sleeper from a remote position between said wall means into said working position;

a series of magazines spaced along the length of said positioning means with each magazine adapted to hold a stack of pads;

means associated with each magazine operable to place a pad from the magazine at a predetermined location relative to a sleeper held in said working position by said positioning means; and

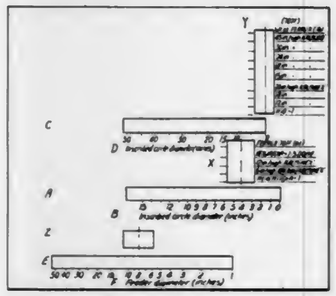
pad affixing means mounted in operative relation to each said location for affixing the pad to the sleeper at each said location.

4,203,542

CALCULATING APPARATUS

Clifford F. Corbett, Tipton, England, assignor to Foseco International Limited, Birmingham, England

Filed Oct. 3, 1977, Ser. No. 838,981
Claims priority, application United Kingdom, Oct. 1, 1976, 40895/76
Int. Cl.² G06C *3/00*
U.S. Cl. 235—85 R **1 Claim**



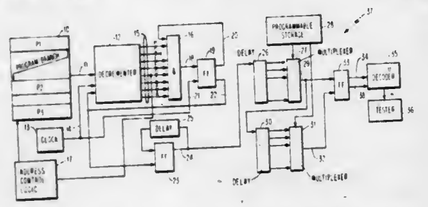
1. Calculating apparatus for use in casting molten metal comprising: a first, body, member; a second, slidable, member, horizontally slidable with respect to said first body member; a first, linear scale being formed on said first member, and having numerical indicia associated therewith corresponding to the diameter of the normalized inscribed circle associated with a casting section to be fed with molten metal, and word character indicia indicating that the scale is for the normalized inscribed circle; a horizontally elongated opening formed in said first member, and a vertically elongated opening formed in said first member; said first scale being disposed along said first horizontally elongated opening formed in said first member; a second, linear, scale having numerical indicia associated therewith corresponding to a feeder head parameter and word character indicia indicating the feeder head parameter, said second scale being formed on said second member; the numerical indicia of said first and second scales being in the same units, with the numerical indicia of the second scale spaced apart a distance greater than the numerical indicia of said first scale are spaced apart; a third, logarithmic, scale having numerical indicia associated therewith corresponding to the casting section weight or volume, and word character indicia indicating that the scale is for casting section weight or volume, said third scale being formed on said second member; said first, second, and third scales being disposed in physical proximity with each other so that they are correlated, the correlated numerical value associated with one of the scales being readily determinable if the numerical value associated with the other two scales is known; a plurality of indicia markings provided along said vertically elongated opening, each indicating a different feeder head parameter; said second and third scales being parallel on said second member, and said second scale positioned so that it is readable through said vertically elongated opening and is adjacent to an indicia marking of said vertically elongated opening indicating a feeder head parameter; a plurality of other scales on said second member parallel to the said second scale, and each cooperating with a said corresponding indicia marking provided along said vertically elongated opening; second and third horizontally elongated openings formed in said first member, and three additional scales corresponding to weight of metal in the feeder, feeder height, and feeder diameter, respectively, formed and positioned on said first and second members and associated with said second and third horizontally elongated openings, said second horizontally elongated opening having one of said feeder height and said feeder diameter scales formed therealong and the third of said horizontally elongated openings being centrally located with respect to, and vertically spaced from, said second horizontally elongated opening; and said scale corresponding to weight of metal in the feeder extending horizontally and being disposed on said second member so that it is visible through said third horizontally elongated opening, and said scale corresponding to the other of said feeder height and said feeder diameter extending horizontally and being disposed on said second member so that it is visible through said second of said horizontally elongated openings.

4,203,543

PATTERN GENERATION SYSTEM

Dieter Staiger, Weil im Schonbuch, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1978, Ser. No. 930,947
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746743
Int. Cl.² G06F *1/04, 11/00*
U.S. Cl. 371—24 **9 Claims**



1. A pattern generator for supplying a series of pulses of varying time periods without transient switching times between the pulses comprising:

a memory,

said memory storing programmed sequences of pulse cycle times, each of said sequences having a respective cycle time,

a clock,

an address control logic circuit,

a decoder,

a tester coupled to said decoder, and

programmable cycle timer means having inputs coupled to said clock and said memory and outputs coupled to said address control logic circuit and said decoder for determining prior to the end of each pulse cycle time in a sequence if a different pulse cycle time is required, and for loading the next programmed pulse cycle time prior to the end of the present cycle time so that upon termination of the present cycle time the next pulse cycle time will be introduced into the tester without any transient switching period between said cycle times.

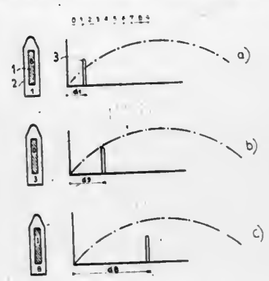
4,203,544

METHOD FOR IDENTIFICATION OF CODED LABELS

Jean L. Guilgue, Vendome, France, assignor to Metalimphy, Paris, France

Filed Feb. 13, 1978, Ser. No. 877,384
Claims priority, application France, Mar. 25, 1977, 77 09110
Int. Cl.² G06K *7/08, 19/06*
U.S. Cl. 235—449 **2 Claims**

1. In a method for identifying an article provided with a numerically coded magnetic member, comprising the steps of creating a detection zone by supplying an exciter coil with an exciting alternating current, passing the article provided with the coded magnetic member through the detection zone whereby to derive at least one signal from the coded magnetic member, and detecting said at least one signal derived from the coded magnetic member using a detector coil whereby to determine the code of the magnetic member; the improvement comprising the steps of providing the magnetic member with at least one of plurality of elements made of magnetic alloys each having a different hysteresis loop, assigning a code value to each type of alloy, successively detecting the elements as



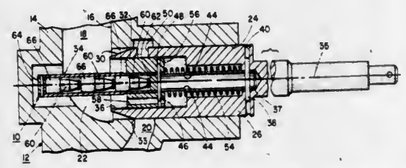
they pass through said detection zone, and decoding the numerical code value of each of the elements by measuring the phase shift of the signal derived using the detector coil relative to the phase of the exciting alternating current, said phase shift being indicative of the type of alloy and of the code value assigned thereto, the number (A) of said elements of magnetic material and the number (B) of different alloys establishing said code of the magnetic member from B^A possibilities, the position of the numerical code value of each element in the number code being determined by the order in which the elements are successively detected in the detection zone.

4,203,545

THERMOSTATICALLY RESPONSIVE VALVE MECHANISM

Kenneth C. Fackler, Gibson City, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Filed Aug. 7, 1978, Ser. No. 931,487
Int. Cl.² G05D *23/12*
U.S. Cl. 236—93 A **5 Claims**



1. In a valve assembly having a valve seat defining a fluid flow passage with an inlet and an outlet to the passage on opposite sides of the seat and a valve member cooperative with the valve seat to regulate fluid flow through the passage, the improvement of a temperature responsive valve member bypass mechanism comprising in combination:

a bypass channel defining a piston chamber in the valve member, said channel connecting the inlet to the outlet and bypassing the valve seat;

a piston slidably mounted in the piston chamber and translatable between closed position in which the bypass channel is closed and an open position in which the bypass channel is open;

means for biasing the piston in a first direction to normally maintain the channel in the closed position;

a heat transmissive probe projecting into the path of fluid flow through the valve assembly on the downstream side

of the valve seat, said probe including thermostatically responsive, expansible means in contact with the piston and expandable in the opposite direction to the first direction whereby the thermostatically responsive, expansible means expand in response to a threshold temperature to translate the piston to the open position whereby fluid flows through the bypass channel.

4,203,546

OSCILLATION DAMPENING SYSTEM FOR A RAILWAY TRACK

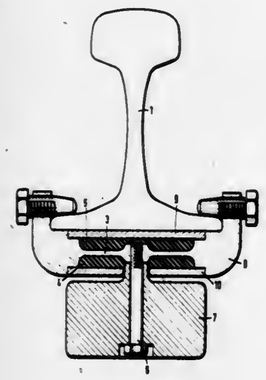
Erwin Raquet, Witten; Gerhard Tacke, Bochum, and Wilhelm Heller, Duisburg, all of Fed. Rep. of Germany, assignors to Fried. Krupp Hüttenwerke AG, Bochum, Fed. Rep. of Germany

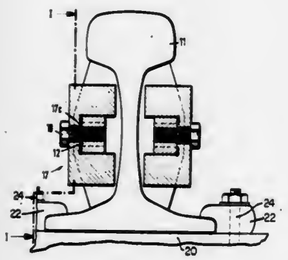
Filed Dec. 20, 1977, Ser. No. 862,331

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657860

Int. Cl.² E01B *26/00, 19/00;* H02G *7/14*

U.S. Cl. 238—1 **19 Claims**





1. In a system for dampening the oscillations of a rail, in which said rail is supported on a railway bed, said rail being incited to oscillate by a wheel running over said rail, and including masses attached to said rail distributed over the length thereof to dampen said oscillations, the improvement comprising:

an oscillating system coupled to said rail,

said rail having a characteristic frequency, and

said oscillating system being tuned to the characteristic frequency of said rail and including a mass, spring means and dampeners

said spring means connected at the ends thereof to said rail and at a location between said ends to said mass, said spring means including means for receiving said dampeners.

4,203,547

RAILWAY LEVEL CROSSING

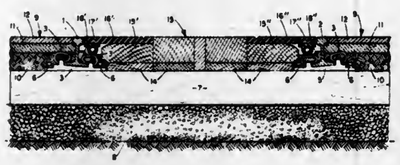
Pieter A. van der Harst, IJmuiden, Netherlands, assignor to Hoogovens IJmuiden, B.V., IJmuiden, Netherlands

Filed Mar. 15, 1978, Ser. No. 886,835

Claims priority, application Netherlands, Mar. 22, 1977, 7703072

Int. Cl.² E01C *9/04*

U.S. Cl. 238—8 **4 Claims**



1. A railway level crossing comprising two spaced apart rails constituting the rail track at the crossing and a road surface between the rails substantially at the level of the top surfaces of the rails, wherein an unyielding bed is provided between the rails and, at least adjacent each of the rails, the said road surface between the rails being provided with at least one flexible plate which is supported by said unyielding bed and has an edge portion extending to closely adjacent the rail, said edge portion not being directly supported by said unyielding bed whereby said edge portion can bend downwardly when engaged by a flange of a flanged wheel passing along the rail, there further being provided resilient means supporting said edge portion of the flexible plate and adapted resiliently to restore said edge portion to its normal position when the flanged wheel has passed, said resilient means comprising at least one gas-filled sealed tube of flexible material extending beneath the said edge portion of the flexible plate parallel to the rail and supported by a base.

4,203,548

MODEL TRACK SECTION

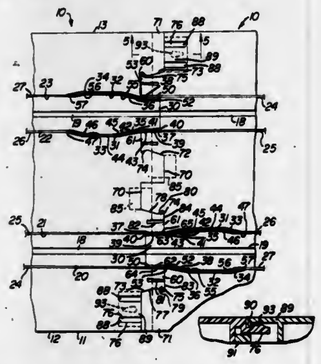
Richard C. M. Cheng, Suite 1604, Austin Center, Austin Ave., Kowloon, Hong Kong (B.C.C.)

Continuation-in-part of Ser. No. 717,581, Aug. 25, 1976, Pat. No. 4,084,746. This application Sep. 8, 1977, Ser. No. 831,377

The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.

Int. Cl.² A63H *19/30*

U.S. Cl. 238—10 F **3 Claims**



1. A track section for a model vehicle, said track section comprising a generally flat longitudinally elongate body having an upper vehicle supporting surface, a first formation on each end of said body having one side facing generally laterally, resilient means on said one side of each first formation disposed oblique to said body and deflectable laterally toward the associated first formation, a complementary formation on each end of said body configured to cooperate with the one side of the first formation of a like track section for deflectable engagement with said resilient means upon longitudinally aligned relative movement between said first mentioned and like track sections, guide means on each end of said body for guiding engagement with like guide means of the like track section to constrain the first mentioned and like track sections to longitudinally aligned relative movement, and releasably interengageable retaining means on each end of said body for interfitting engagement with like retaining means of the like track section, said first formations each having its other side facing generally laterally, additional resilient means on said other side of each first formation disposed oblique to said body and deflectable laterally toward the associated first formation, and an additional complementary formation on each end of said body configured to cooperate with the other side of the first formation of a like track section for deflectable engagement with said additional resilient means upon longitudinally aligned relative movement between said first mentioned and like track sections, said upper body surface being formed with a pair of continuous upwardly facing grooves each having one end opening along a respective side of said first formation and its other end opening along a respective one of said first mentioned and additional complementary formations, and said first mentioned and additional resilient means each comprising an integral continuous conductive strip received in a respective groove with its opposite ends extending beyond the opposite ends of the receiving groove for respective engagement with the like strips of a like track section, said grooves being sufficiently straight to receive said strips without permanently deforming the latter.

4,203,549

RAILWAY SLEEPER

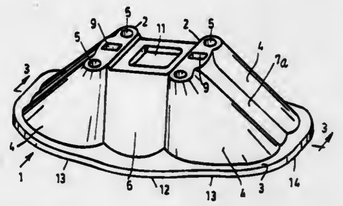
Geoffrey P. Sandford, 2-8/10 Brand St., Artarmon, Sydney NSW, Australia (2064)

Filed Apr. 4, 1978, Ser. No. 893,608

Claims priority, application Australia, Apr. 7, 1977, PC 9710

Int. Cl.² E01B *3/20*

U.S. Cl. 238—111 **2 Claims**



1. A unitary railway sleeper component comprising, an elongated base which is considerably longer than it is wide, a body on the upper surface of the base, a flange portion of the base surrounding and extending beyond the body, an undulating undersurface on the base made up of crests and valleys in the width direction of the base, two pairs of grout cavities extending into the body from the base, the cavities of each pair being aligned in the width direction of the base, two fastening cavities respectively disposed between the cavities of each pair of grout cavities, the pairs of grout cavities being located one pair adjacent each end of the base, a box cavity separating the pairs of grout cavities, openings in the top of the body respectively communicating with the body cavities, a depressed region in the top of the body extending in the width direction of the base to provide two spaced apart raised lands, three openings in each land communicating respectively with a pair of grout cavities and the fastening cavity therebetween, said grout cavities decreasing in cross-section from the base to the body top.

4,203,550

SHOWER HEADS

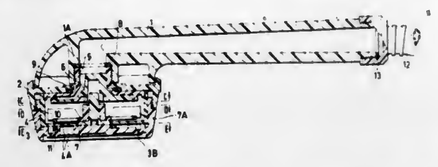
Lo Hou On, Kowloon, Hong Kong, assignor to Hexagear Industries Limited, Shaukiwan, Hong Kong

Filed Dec. 5, 1977, Ser. No. 857,698

Claims priority, application United Kingdom, Dec. 6, 1976, 50781/76

Int. Cl.² B05B *1/08*

U.S. Cl. 239—102 **1 Claim**



1. A shower head having a hollow casing defining a fluid supply conduit; a circular housing having first and second end walls and an annular peripheral wall forming a fluid chamber; said housing having a fluid inlet port in said first end wall communicating with said supply conduit and secured to said casing; a rotor rotatably mounted in said chamber; said rotor having vanes thereon for impelling said rotor from fluid moving through said chamber; said second end wall having first fluid discharge openings therethrough arranged in circumferentially spaced groups and second fluid discharge openings circumferentially spaced from said first openings; said rotor having a base panel adjacent and generally parallel to said second end wall; said base panel having an opening therethrough arranged radially to overlap both said first and second discharge openings; an outer shell having inner and outer portions, the outer portion being cup-like and rotatable about said housing and having a front panel equipped with circumferentially spaced radially inner openings and a plurality of radially outer openings; said inner openings being radially aligned with said openings in said second end wall; means on the inner face of said front panel surrounding each of said inner openings and forming a seal therearound to create a fluid passageway between said inner openings and said first openings in said base panel when said shell is in one circumferential position and to close said first openings when said shell is in a second circumferential position; a chamber between said front panel and said second end wall surrounding said means and forming a chamber communicating with said radially outer openings and with said second openings when said shell is in said second position to redirect fluid to said second openings only; said outer and inner portions of said shell being threadedly joined together; means providing a liquid tight seal between said portions; said inner portion having a radially inwardly extending flange adjacent the inner face of said first end wall of said housing and providing said rotatable mounting of said outer shell on said housing; a seal seated between said flange and the inner face of said first end wall; said outer and inner portions entirely enclosing said housing and providing a circular grip for adjusting the operational characteristics of said shower head.

4,203,551

APPARATUS FOR PRODUCING A PULSATING SPRAY OF WATER

Stewart A. Levine, 30-1 Farm Rd., Somerville, N.J. 08876

Filed Aug. 31, 1978, Ser. No. 938,633

Int. Cl.² B65N *75/00*

U.S. Cl. 239—195 **4 Claims**

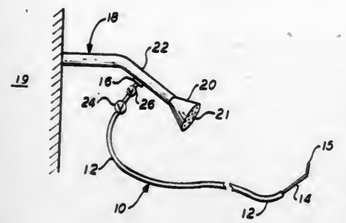
1. Apparatus for producing a pulsating spray of water for lavaging of body orifices, said apparatus for being connected to a water supply system for providing a normal flow of water therethrough, comprising:

a tip;

a flexible tube one end of said tube connected to said tip and

said tube for communicating water from said water supply system to said tip;

connecting means connected to the other end of said flexible tube and for interconnecting said flexible tube to said water supply system so as to simultaneously allow said



normal flow of water through said supply system and a flow of water through said flexible tube and out of said tip; and

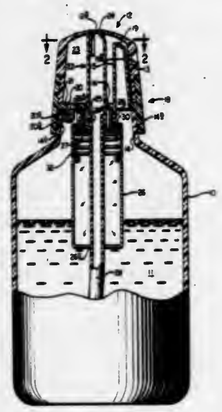
pulsating means positioned intermediate said connecting means and said tip and for pulsating said water communicated through said flexible tube and out of said tip.

4,203,552

PRESSURIZED ATOMIZER

Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 5, 1978, Ser. No. 939,276
Int. Cl.² B05B *3/10*
U.S. Cl. 239—337 **15 Claims**



1. An apparatus for dispensing liquids, comprising:

a. container means for storing said liquids;

b. closure means connectable to said container means, said closure means having a floor means defining an upper chamber means between the interior of cap means and said floor means, said floor means having a hole therein for allowing liquids contained in said upper chamber means to drain downwardly into said container means;

c. gas reservoir means connected to said closure means for supplying gas under pressure to the interior of said container;

d. dip tube means for conveying liquid from said container to said stem means;

e. cap means connected to said closure means, said cap means having first orifice means therein;

f. film forming means connected to said floor of said closure means, said film forming means comprising post means having second orifice means therein alignable with said first orifice means, said post means having a hollow chamber therein which communicates with the interior of said container through said floor of said closure; and,

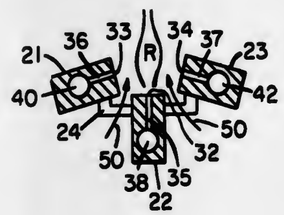
g. stem means slidably connected to said gas reservoir means for controlling the flow of gas from said reservoir, said stem means having third orifice means therein for directing liquids onto said post means, said stem means extending through said floor means and into said chamber means.

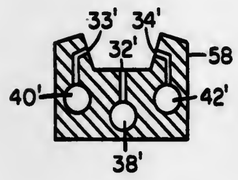
4,203,553

RIBBON BURNER

David L. Bachman, Lindley, and Peter P. Bihuniak, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,055
Int. Cl.² F23D *13/40, 15/00*
U.S. Cl. 239—420 **9 Claims**





1. A burner for producing a flame in which a metal halide vapor undergoes a chemical reaction resulting in the formation of metal oxide particles, said burner comprising

first, second and third housings, said first housing being symmetrically disposed between said second and third housings, said first, second and third housings having first, second and third elongated rectangular faces, respectively, each of said first, second and third faces having first and second elongated edges, the first edge of said first rectangular face being disposed adjacent to the first edge of said second rectangular face and the second edge of said first rectangular face being disposed adjacent to the first edge of said third rectangular face, said second and third rectangular faces making equal angles ϕ with said first rectangular face, wherein $90° \leqq \phi \leqq 177°$,

first, second and third rows of apertures in said first, second and third housings, respectively, said apertures forming first, second and third linear arrays of apertures in said first, second and third faces, respectively, said first array of orifices being centrally disposed lengthwise along said first face, and said second and third arrays of orifices being disposed along said second and third faces, respectively, said first array being equally spaced from said second and third arrays,

means within said first housing defining a first manifold for receiving a supply of combustible gas, said first manifold communicating with said first row of apertures and supplying the same with said combustible gas, whereby a first plurality of streams of combustible gas issue from said first row of apertures,

means within said second and third housings defining second and third manifolds, respectively, for receiving a supply of said metal halide vapor, said second and third manifolds communicating with said second and third rows of apertures, respectively, and supplying the same with said vapor, whereby second and third pluralities of streams of said vapor issue from said second and third rows of apertures, respectively, said second and third pluralities of streams intersecting said plurality of streams of combustible gas, and

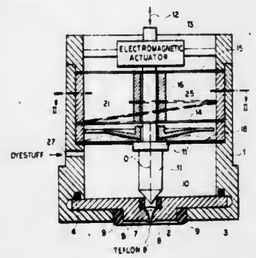
means for supporting said first, second and third housings.

4,203,554

VALVE-NEEDLE MOUNTING FOR DYESTUFF APPLICATOR

Peter Zimmer; Hans Kudlich, both of Kufstein; Karl Schweitzer, Oberlangkampfen, and Walter Mayr, Wiesing, all of Austria, assignors to Maschinenfabrik Peter Zimmer Aktiengesellschaft, Kufstein, Austria

Filed Mar. 17, 1978, Ser. No. 887,833
Claims priority, application Austria, Mar. 24, 1977, 2078/77
Int. Cl.² B05B *1/08*; B05C *5/00*; F16K *31/02*
U.S. Cl. 239—585 **8 Claims**



1. In a dyestuff applicator comprising a nozzle for spraying dyestuff onto a substrate to be patterned, the improvement wherein said nozzle comprises:

a housing forming a dyestuff chamber with an end wall provided with a discharge orifice centered on an axis;

a valve needle in said housing having a tip receivable in said orifice;

actuating means operatively coupled with said valve needle for selectively blocking and unblocking said orifice by displacing said valve needle along said axis; and

mounting means for movably supporting said valve needle on a generally cylindrical part of said housing centered on said axis, said mounting means including at least one membrane of resilient foil material comprising an outer ring centered on said axis and a tongue integral with said outer ring projecting radially inwardly from a sector thereof toward a diametrically opposite sector, said tongue being split into two slender branches which diverge at an acute angle and are interconnected near said opposite sector by an integral web with a re-entrant strip extending radially in a generally triangular gap between said branches and terminating in an inner ring centered on said axis, said valve needle being engaged by said inner ring.

4,203,555

ROTARY FOODSTUFF MILL AND MILLING PROCESS

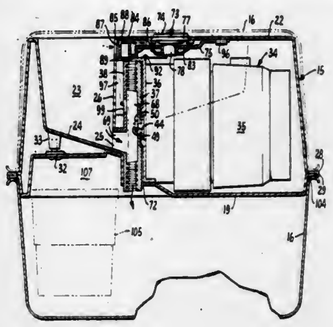
Thomas D. Dickson, Jr., 1099 Del Cambre, San Jose, Calif. 95129

Continuation-in-part of Ser. No. 905,841, May 15, 1978, abandoned. This application Apr. 10, 1979, Ser. No. 28,666
Int. Cl.² B02C *7/09*
U.S. Cl. 241—15 **18 Claims**

1. A process for milling a particulate material comprising:

(a) positioning a first wheel having concentric rows of circumferentially spaced, tapered plane-sided blades extending from one of its faces in spaced axial alignment with a second wheel having concentric rows of circumferentially spaced tapered plane-sided blades extending from one of its faces such that the rows of blades on the first and second wheels are interposed between each other, with the circumferential spacing between blades in the radially innermost row of the interposed rows being at least equal to the maximum nominal particle size of the material to be milled and the circumferential spacing between blades in the radially outermost row of the interposed rows being less than the circumferential spacing between blades in said radially innermost row and being at least equal to the desired maximum nominal particle size of the milled material;

(b) feeding the material into the axial space between the first and second wheels radially inward of said innermost row;



(c) rotating at least the wheel on which the innermost row is located at a speed sufficient to cause the material:

(i) to move through the spaces in the innermost row,

(ii) to be sheared between the blades of the innermost row and the row next adjacent the innermost row, and

(iii) to pass successively outwardly through the spaced between the blades of the interposed rows and be successively comminuted to a smaller particle size as it passes through each row without significant recirculation inwardly; and

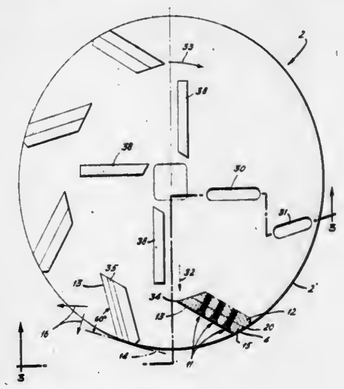
(d) collecting the material once it has passed completely through the interposed rows.

4,203,556

GRINDING DEVICE

William J. Krysiak, Wilmington, and Richard L. Moyer, Newark, both of Del., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Nov. 6, 1978, Ser. No. 958,223
Int. Cl.² B02C *18/18*
U.S. Cl. 241—86.1 **18 Claims**



1. A grinding device comprising:

rotor means rotatable about a rotor axis,

grinding blade means mounted on said rotor means for rotation in a given direction,

shear plate means arranged tangentially with respect to said rotor means, said shear plate means having perforations for shear-cutting material in cooperation with said grinding blade means, and

means for axially feeding material to be ground to said rotor means,

wherein each of said grinding blade means has an inner edge and an outer edge, the inner edge of each blade means being tilted forward of the outer edge thereof in the direction of blade rotation, wherein each of said grinding blade means is supported on said rotor means by a parallel support plate, and wherein each grinding blade means is perpendicularly adjustable with respect to its corresponding support plate.

4,203,557

CONTINUOUS-OPERATION CRUSHING MACHINE

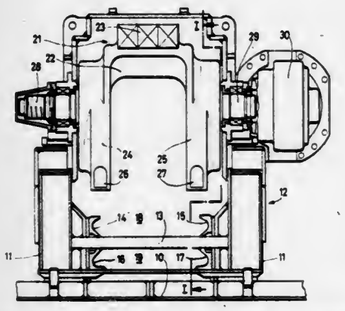
Karl Bühre, Gladbeck, and Reinhold Krohm, Herne, both of Fed. Rep. of Germany, assignors to Klöckner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,137

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741127

Int. Cl.² B02C *13/09*

U.S. Cl. 241—186 R **6 Claims**



1. A crushing machine, particularly for the crushing of pieces of coal which may contain pieces of rock, the machine comprising, in combination, a conveyor guide structure for guiding transported material to be crushed through the machine; a machine housing mounted above the conveyor guide structure; a crushing roller mounted for rotation in the machine housing about a rotation axis and drive means rotating the crushing roller in the direction in which material to be crushed is transported through the machine, the material to be crushed passing through the space intermediate the conveyor guide structure and the crushing roller, the crushing roller having the general configuration of a crankshaft including a central crank pin, two crank webs located to respective axial sides of the central crank pin, and two crank journals each extending from a respective crank web, the crank journals being rotatably supported by the machine housing, and furthermore including crushing implements supported on the crank pin, the crank pin serving as a crushing tool carrier, the space axially intermediate the crank webs being an empty space devoid of crushing roller structure beginning at least in the vicinity of the rotation axis and proceeding all the way radially outwards in the direction away from the crank pin, whereby the empty space permits the passage through the machine housing of large pieces or amounts of coal.

4,203,558

CEREAL MILL

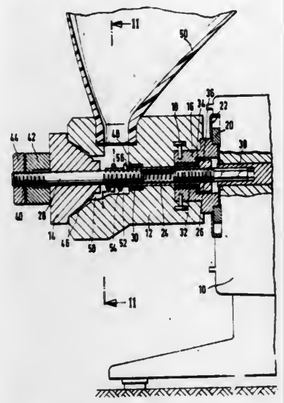
Johann G. Schnitzer, Feldbergstr. 26, 7742 St. Georgen, Fed. Rep. of Germany

Filed Apr. 12, 1978, Ser. No. 895,713

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1977, 2716253

Int. Cl.² B02C *7/18*

U.S. Cl. 241—247 **13 Claims**



1. An improved cereal mill apparatus with stationary and rotating millstones formed as coaxial bodies of revolution, with a driveshaft of the rotating millstone passing through a central orifice within the stationary millstone, the rotating millstone being mounted on said driveshaft for rotational entrainment, and with a supply funnel in communication with a milling gap defined between said stationary and rotating millstones, wherein:

said stationary millstone serves as an external housing and a support for the cereal mill apparatus;

said driveshaft is rotatably mounted in bearing means affixed within said stationary millstone; and

said supply funnel is socketed in an upper surface of said stationary millstone and communicates with said milling gap through a supply channel radially piercing said stationary millstone.

4,203,559

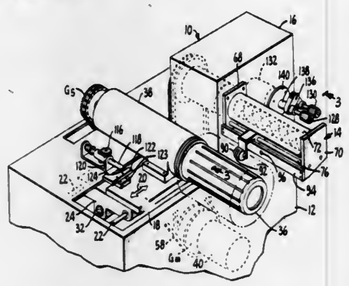
PRECISION WINDER FOR THE DRAWING AND PACKAGING OF SYNTHETIC FIBERS

Charles H. Coggin, Jr., Upland, and Tatsuo R. Sakakura, Gardena, both of Calif., assignors to Nitto Boseki Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 810,430, Jun. 27, 1977, abandoned. This application Feb. 23, 1978, Ser. No. 880,634

Int. Cl.² B65H *54/08, 59/38*

U.S. Cl. 242—18 G **3 Claims**



1. A winder for directly drawing glass fiber from an orifice plate to form a precision wound package, said winder comprising: a traverse mounted in a fixed position, said traverse having a guide disposed for back and forth movement thereacross in a generally rectilinear path; a spindle disposed in parallel relationship to the rectilinear path of the guide; means mounting the spindle for rectilinear movement toward and away from the traverse while maintaining the relative parallel relationship of the spindle with the rectilinear path of the guide, a sensor to sense the distance between the traverse and the peripheral surface of a package of windings on the spindle; motion imparting means coupled to the spindle to move the spindle away from the traverse, said motion imparting means being operatively associated with the sensor to maintain a substantially constant distance between the traverse and the peripheral surface of windings on the spindle; a D.C. motor coupled in driving engagement with the spindle; a D.C. speed control electrically coupled to the D.C. motor to selectively vary the speed of the motor; a linear response speed command potentiometer, wherein the resistance change for each equal increment of potentiometer adjustment is the same, electrically coupled to the D.C. speed control; a cam carried by the means mounting the spindle for rectilinear movement, said cam being disposed for movement with said means and having an operating surface configured so as to provide an unequal increment of movement of the potentiometer for each equal increment of package diameter growth to maintain drawing speed constant as the package grows; a follower engaged with the operating surface of the cam for movement responsive thereto as the mounting means for the spindle moves rectilinearly in response to package growth; and means coupling the follower to the potentiometer to adjust the potentiometer in response to the movement of the follower.

4,203,560

PROCESS AND DEVICE FOR THE WINDING-UP OF TEXTILE YARN

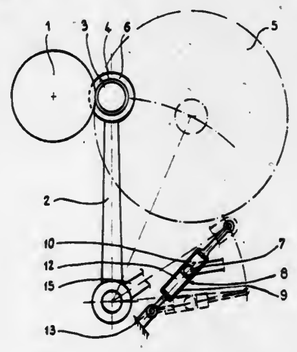
Bernard Isoard, Ecully, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Jan. 18, 1977, Ser. No. 760,451

Claims priority, application France, Jan. 20, 1976, 76 01767

Int. Cl.² B65H *59/38*

U.S. Cl. 242—45 **6 Claims**



1. A winding machine for winding-up textile yarn in a take-up package comprising:

at least one yarn support mounted on a bobbin carrier;

a pilot roller continuously peripherally driving the take-up package until the package reaches a final size;

a gas turbine for axially driving the yarn support;

through means for supplying gas to the turbine through a straight-through valve which is equipped with a gas progressive restricting device which slectively restricts gas flow through the valve; and

means for controlling the restricting device in accordance with the increase in size of the take-up package to progressively reduce gas flow through the valve to zero as the size of the take-up package increases, said means for controlling reducing the gas flow through the valve to zero when the size of the take-up package reaches a predetermined size which is less than the final size of the take-up package, whereby the axial drive provided to the yarn support by the gas turbine is progressively reduced to zero as the size of the take-up package approaches the predetermined size.

4,203,561

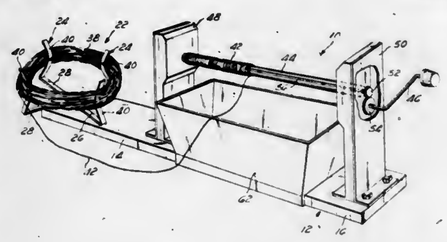
YARN CUTTER

William G. Stillings, 1006 Keats Dr., Vallejo, Calif. 94590

Filed Jul. 31, 1978, Ser. No. 929,107

Int. Cl.² B65H *54/02, 54/56*

U.S. Cl. 242—47 **1 Claim**



1. An apparatus for cutting a plurality identical in length pieces of yarn comprising:

a base formed of two separate base portions;

a yarn holder mounted on one said base portion, said yarn holder being adapted to support a loosely coiled quantity of yarn, said yarn holder comprising a plurality of upstanding arms, each of said arms being angularly spaced apart, said arms being connected together upon a pivot shaft, said pivot shaft being rotatable with respect to said base, each said arm including an elongated slot, said pivot shaft extending through each said slot of each said arm, lineal movement of each said arm relative to said pivot shaft varies the location of each said arm in respect to said pivot shaft, means to fixedly secure the established position of said arms relative to said pivot shaft, each of said arms including an upstanding arm concavely shaped so that the inner surface of each of said upstanding arms forms a convex surface in respect to said pivot shaft, each of said upstanding arms being formed of a material so as to be inherently flexible in a direction towards said pivot shaft, whereby the loosely coiled quantity of yarn is adapted to be placed within the concave area of each of said upstanding arms and the locating and maintaining of such being facilitated by inherent inward flexibility of each of said upstanding arms;

a pair of spaced apart stanchions mounted on the other of said base portions;

means for detachably interlocking said base portions together;

an elongated rod terminating in a pair of ends, one of said ends being rotatably mounted on one of said stanchions, the other of said ends being rotatably mounted on the other of said stanchions, said elongated rod being spaced from said base, the exterior surface of said rod including a longitudinal groove, said longitudinal groove to facilitate cooperation with a cutting instrument to cut yarn wound about said rod;

crank means for rotating said rod to wind an even layer of yarn upon said rod, said crank means being mounted on one of said stanchions; and

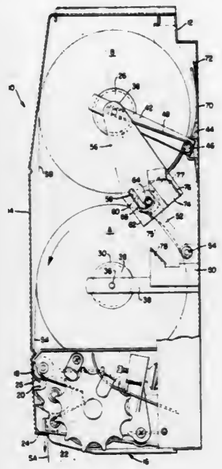
a collecting container mounted on said base between said pair of stanchions, whereby said collecting container is to collect said produced pieces of yarn.

4,203,562

FLEXIBLE SHEET MATERIAL DISPENSING OF ROLLS IN SUCCESSION

Raymond F. DeLuca, Stamford, Conn., and Gene Schwemm, East Dundee, Ill., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Sep. 8, 1977, Ser. No. 831,417
Int. Cl.[2] A47K *10/38*
U.S. Cl. 242—55.3 17 Claims



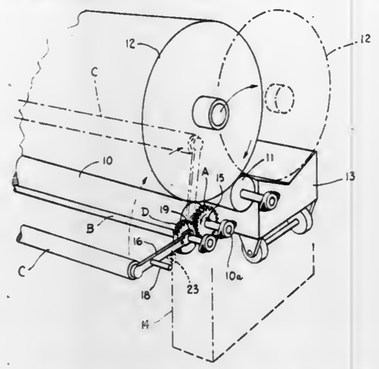
1. A dispenser for flexible sheet material comprising:
a chassis adapted to be attached to a wall at a location for flexible sheet material use,
means secured to said chassis for rotatably supporting an initial roll of flexible sheet material in a dispensing position to supply a web of said material from said initial roll,
support means for rotatably supporting a reserve roll of flexible sheet material in a reserve position spaced from the dispensing position for the initial roll, said support means being pivotally connected to said chassis to enable said support means to swing between the reserve position to a dispensing position for the reserve roll,
latch means connected to said support means having a latch condition for holding the reserve roll carried by the support means in the reserve position and an unlatch condition permitting the support means to swing about its pivotal connection to the chassis and carry the reserve roll to the dispensing position for the reserve roll, said latch means while in said latch condition being operable to gradually move the support means from an upper extermity of the reserve position to a lower extermity of the reserve position just above the dispensing position for the reserve roll, said movement being responsive to gradual depletion of the flexible sheet material of the initial roll so that when the latch means disengages from the latch condition to the unlatch condition, the support means swings only a relatively short distance to move the reserve roll from the reserve position to the dispensing position for the reserve roll,
cam means carried by said chassis engageable with said latch means to disengage the latch means from said latch condition to said unlatch condition when the flexible sheet material of the initial roll is substantially depleted, and
means operatively connected to said chassis for guiding a web of flexible sheet material successively from each of said rolls out of the dispenser to be accessible to a user.

4,203,563

LOOM TAKE-UP CLOTH ROLL DOFFER

William J. Alexander, III, Mauldin; John S. Cooper, Fountain Inn, and Charles E. Moore, Mauldin, all of S.C., assignors to Alexander-Cooper, Inc., Mauldin, S.C.

Filed Oct. 2, 1978, Ser. No. 947,412
Int. Cl.[2] B65H *17/12*
U.S. Cl. 242—66 3 Claims



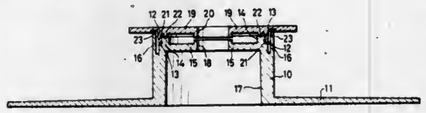
3. A doffing apparatus for removing a full cloth roll from spaced aligned take-up rolls having a motor driving means for driving the take-up rolls for building the cloth roll comprising:
cloth roll engagable means carried in laterally spaced alignment with said take-up rolls;
means mounting said cloth roll engagable means for movement out of said laterally spaced alignment into engagement with said cloth roll removing said cloth roll from said take-up rolls; and
manually engagable drive means carried by said means mounting said cloth roll engagable means and being movable into driving relation with said take-up rolls for so moving said cloth roll engagable means.

4,203,564

TAPE REEL

Tsuneo Nemoto, Sendai, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,718
Claims priority, application Japan, Dec. 16, 1977, 52/168354[U]
Int. Cl.[2] B65H *75/12, 75/18*
U.S. Cl. 242—71.8 11 Claims



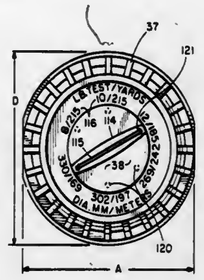
1. A reel formed of molded synthetic resin on which a web is to be wound, said reel comprising a generally cylindrical wall defining a hollow reel hub having an inner surface and a cylindrical outer surface and first and second ends, a generally circular flange integrally connected with, and extending radially outward from said hub at the first end thereof, rib means formed within said hub substantially closing said second end of said hub, a generally circular sub-flange located at said second end of said hub and thermally welded to said rib means wherein dimensional changes of the synthetic resin of said hub flange and said rib means occur after welding of said sub-flange to said rib means, and means for isolating said cylindrical outer surface of said reel hub from deformation due to dimensional changes in said sub-flange and said rib means to prevent said reel hub from causing deformation of a web wound thereon.

4,203,565

FISHING REEL SPOOL LOCKING KNOB

John W. Puryear, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 11, 1978, Ser. No. 932,792
Int. Cl.[2] A01K *89/01*
U.S. Cl. 242—84.1 R 7 Claims



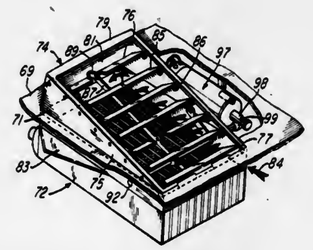
7. In a fishing reel used for storing a fishing line before casting and for storing the fishing line after casting, the reel having a housing, a center shaft mounted in the housing, a spool mounted on the shaft for holding the fishing line, means mounted on the reel for winding the fishing line on the spool, the improvement comprising:
(a) the spool having a circular front flange having an inwardly directed radial edge, the edge projecting towards the center shaft, the diameter of the edge being "B" with the diameter of the spool underneath the edge being a diameter greater than "B"; and,
(b) a substantially circular retainer knob having an overall diameter "D" which is greater than "B" and having two flat portions spaced apart a distance "A" which is smaller than "B", the knob being retained by the spool by pushing the knob underneath the edge in a direction parallel to the flat portions whereby the edge with its diameter "B" retains the knob with its diameter "D" in the spool.

4,203,566

AIR INLET CONTROL FOR AIRCRAFT OR THE LIKE

Thomas J. Lord, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Aug. 21, 1978, Ser. No. 935,557
Int. Cl.[2] B64C *1/14*
U.S. Cl. 244—57 9 Claims



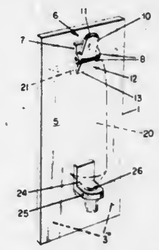
1. An air inlet control in an outer wall surface over which an air stream flows adapted to be raised above said surface to capture and redirect a portion of the flowing air stream, said control including series arranged shutter blades and said control being oriented so that said blades are successively encountered by said flowing air stream, means mounting said blades for rocking motion from a closed position in which said blades are substantially nested in said surface to an open position in the course of which said blades assume tilted positions relative to said surface exposing undersides thereof as deflecting surfaces to said encountered air stream, means achieving automatically in response to opening of said shutter blades a progressively higher elevation of at least portions of said successive shutter blades whereby said successive blades capture and redirect different laminar air layers outwardly of said surface wherein said progressively higher elevation being achieved by tilting a frame of which said shutter blades are a part, said frame and shutter blades being interconnected by linkage means which form part of said mounting means so that a tilting movement of said frame causes by a tilting motion of said shutter blades relative to said frame, said shutter blades in said open position defining a relatively large open area through which air may be inducted in the absence of said air stream, and an actuating mechanism for effecting and controlling rocking movements of said shutter blades from said closed to said open position and back to said closed position.

4,203,567

COLLAPSIBLE TUBE HOLDING BRACKET

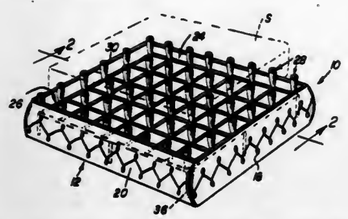
Ivy Featherstone, 3024 Hudson St., Columbus, Ohio 43219

Filed Sep. 14, 1978, Ser. No. 942,384
Int. Cl.[2] B65D *35/56*
U.S. Cl. 248—108 2 Claims



1. A tube holding bracket for supporting a collapsible paste tube having one end sealed and a capped outlet discharge end on a walled surface comprising a flat supporting plate, spaced adhesive areas on a rear surface of said plate for adjustably and removably adhering said plate to said walled surface, spring pressed clip means on a front surface of said plate for clamping said sealed end uppermost thereon and suspending said tube thereon, said clip means including flat base means formed with forwardly extending spaced apertured ears, an upstanding and angularly extending flat tongue on said clip means insertable between said ears and having a transverse bore therethrough alignable with said apertured ears for pivoting said tongue on said base means, said tongue having a lowermost clamping edge thereon, spring means on said pin means and engageable with said tongue for holding said clamping edge in clamping engagement with the sealed end of said tube, and generally L-shaped bracket means on said supporting plate spaced below said clip means and having an aperture therein for receiving and supporting said outlet discharge end therein, said bracket having a flat vertical portion and a flat horizontal portion with said aperture being formed in said horizontal portion, the rear face of said flat vertical portion being adhesively coated for removably and adjustably supporting said bracket on said plate relative to said clip means as hand pressure is applied against said clamped tube to discharge paste therefrom.

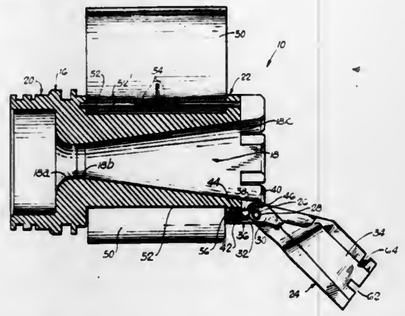
4,203,568
RACK FOR HOLDING SOAP BARS
Yvonne B. Daugherty, 1000 Cortez, Coral Gables, Fla. 33134
Filed Jun. 14, 1978, Ser. No. 915,357
Int. Cl.[2] A47F 5/00
U.S. Cl. 248—309 R 1 Claim



1. A rack assembly for holding soap bars, and the like, comprising, in combination:
(a) tray means forming a liquid retaining receptacle; and
(b) article support means disposed in the tray means for supporting at spaced points an article to be drained, wherein the article support means includes a framework and a plurality of flexible elements mounted on the framework in upstanding orientation for supporting the article being retained, the tray means including a tray having a substantially planar bottom wall and having extending co-directionally therefrom four upstanding side walls, said framework being removably disposed within said tray, at least about one-quarter inch of space being provided between the framework and upstanding walls, whereby the tray is brushable by the flexible elements of the framework and the soap bar is allowed to dry, wherein the framework is in the form of a substantially planar wire grid provided with legs extending co-directionally from the grid and perpendicularly to the plane thereof, the legs being arranged for supporting the grid on the tray means, the wires forming the grid crossing one another with the flexible elements forming bunches or bundles in the form of bristles disposed extending away from the legs and attached to the grid where the wires forming the grid cross one another, wherein the grid is rectangular in plan and forms a plurality of intersections where the wires cross one another, the tray means being rectangular in plan and the four upstanding side walls being connected to adjacent ones of each other, the legs of the framework being disposed removably abutting the bottom wall for being supported by the bottom wall.

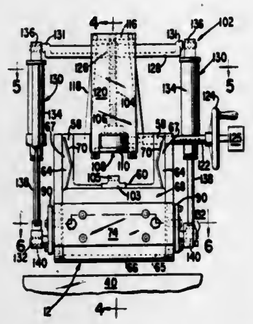
4,203,569
FIN AND NOZZLE UNIT FOR A FREE-FLIGHT ROCKET
William S. Marks, Little Rock, Ark., assignor to BEI Electronics, Inc., Little Rock, Ark.
Filed Oct. 17, 1977, Ser. No. 842,381
Int. Cl.[2] F42B 13/32
U.S. Cl. 244—3.23 14 Claims

2. A fin and nozzle unit for a rocket, comprising
a generally cylindrical nozzle body having rearwardly directed nozzle means thereon for discharging propulsion gases,
said nozzle body having a rear end portion,
a plurality of fins, and
pivot means swingably mounting said fins on said rear end portion of said body for swinging movement between retracted launch positions and extended flight positions in which said fins are swung outwardly from said launch positions through a predetermined angle,
said fins having skewed portions which are positioned opposite said nozzle means and in paths traversed by said propulsion gases when said fins are in said retracted launch positions for causing said propulsion gases to act upon said skewed portions to produce spinning movement of the rocket,
said skewed portions being carried outwardly out of said propulsion gases when said fins are swung outwardly into said extended flight positions to avoid imparting further spin to the rocket when said fins are in said extended flight positions,



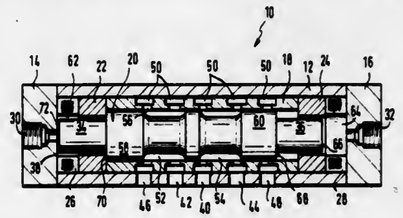
said skewed portions being bent about bend lines which are substantially parallel with the longitudinal axis of said nozzle body when said fins are in their extended flight positions whereby said fins are aerodynamically neutral when in said extended flight positions to avoid imparting further spin to the rocket.

4,203,570
POWER-OPERATED LOADING GATE FOR CENTRIFUGAL MACHINES INCORPORATING AN AUXILIARY DRIVE DEVICE
Donald L. Hurley, Hamilton; Francis H. Wessel, North Bend, and Joseph B. Bange, Hamilton, all of Ohio, assignors to The Western States Machine Company, Hamilton, Ohio
Filed Aug. 23, 1978, Ser. No. 936,117
Int. Cl.[2] F16K 31/163
U.S. Cl. 251—14 12 Claims



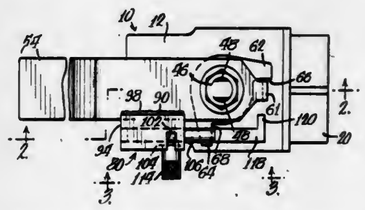
1. In a loading gate assembly for delivering massecuite or like material, including a hollow gate body forming a spout outlet, a gate supporting face on said body, a gate slidable on said face between a closed position covering the outlet and a position opening the outlet for flow of material therethrough, and gate operating means including power operated drive means secured to a relatively fixed support and means drivable by said drive means and connected with said gate for moving the gate between closed and open positions,
the improvement which comprises means normally positioning said support in a fixed location relative to said outlet yet being operable to displace said support in the direction of closing movement of said gate, and secondary drive means connected with and for operating said positioning means to move said gate to closed position by displacement of said support in the even of failure of the power supply to said power operated drive means while the gate is open, said secondary drive means including both a power operable motor and a hand operable means connected with and for operating said positioning means so that the gate is movable to closed position by manual operation in the absence of power supply to said motor.

4,203,571
MULTIWAY SWITCHING VALVE
Erich Ruchser, Stetten, Fed. Rep. of Germany, assignor to Herion-Werke KG, Fellbach, Fed. Rep. of Germany
Filed Jun. 20, 1978, Ser. No. 917,395
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729482
Int. Cl.[2] F16K 11/07, 31/122; F15B 13/042
U.S. Cl. 251—31 2 Claims



1. A valve for use in directing the flow of at least one controlled fluid in response to the flow of a controlling fluid, comprising a magnetically responsive elongated valve body having a first end, a second end, a center intermediate the ends, a central beam elongated along a working axis and extending between the ends, and a plurality of partitions which plurality includes a first partition and a second partition, the partitions extending radially outwardly from the beam perpendicular to the working axis, with the first partition being located near the first end and being spaced therefrom towards the center and the second partition being located near the second end and being spaced therefrom towards the center with the spacings being of equal length and any other partitions in the plurality being located intermediate the first and second partitions; first and second like annular abutment rings, the first abutment ring encircling the beam adjacent the first end of the valve body and the second abutment ring encircling the beam adjacent the second end of the valve body in a manner that the partitions are located intermediate the abutment rings and the valve body is movable back and forth along its working axis until one of the first and second partitions abuts its corresponding abutment ring; first and second like, annular permanent magnets, the first magnet adapted for receiving the first end of the beam when the first partition abuts the first abutment ring and thereby retaining the valve body in that position by magnetic attraction between the first magnet and the first partition and the second magnet adapted for receiving the second end of the beam when the second partition abuts the second abutment ring and thereby retaining the valve body in that position by magnetic attraction between the second magnet and the second partition; and a housing completely surrounding a working cavity in which the entire valve body, the abutment rings and the magnets are all located, the rings and the magnets being secured to the housing and the valve body being movable therein along its working axis in the above-described manner, the housing having a first controlling port adjacent the first end of the valve body to allow a controlling fluid to be introduced into the housing and to press against the first end to thereby urge the valve body away from the first magnet, the housing further having a second controlling port adjacent the second end of the valve body to allow a controlling fluid to be introduced into the housing and to press against the second end to thereby urge the valve body away from the second magnet, and the housing still further having a plurality of controlled ports spaced from each other and communicating with the working cavity and being connectable to and separate from each other via the cavity as a function of the position of the partitions on the valve body with respect to the locations of the controlled ports, whereby the flow of a controlled fluid entering the housing through at least one of the controlled ports may be directed into and blocked off from at least one other one of the controlled ports.

4,203,572
LOCKING BALL VALVE
Ronald D. Coffman, McHenry, Ill., assignor to Coffman Manufacturing Corp., Cary, Ill.
Filed Oct. 12, 1978, Ser. No. 950,588
Int. Cl.[2] F16K 35/00
U.S. Cl. 251—95 9 Claims

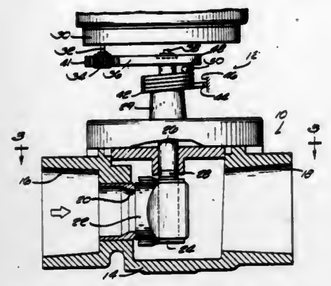


1. In a valve including a housing having a fluid flow passage therethrough, a closure member in said passage movable through a right angle to open or close said passage, a handle connected to move said closure member, stops on said housing situated about 90° apart with respect to the center of rotation of said stops and thereby limit the movement of said handle between said open and closed positions of said closure member; a valve lock comprising a shaft rotatably mounted to said handle for movement about said shaft's axis independent of said handle movement, said shaft having a plate rigidly attached thereto extending to one side of the axis thereof, said shaft being rotatable relative to said handle to a first position where said plate confronts closely a surface of one of said stops when said valve is in either the full open or the closed position wherein the tongue of the handle encounters the stop, at that position, to thereby prevent the displacement of said handle from said open or closed position, and to another position wherein said plate is removed from confrontation with said stop surfaces.

4,203,573
REVERSIBLE MOTOR OPERATED VALVE WITH SPRING ASSIST
Gary R. Boss, New Berlin, Wis., assignor to Erie Manufacturing Company, Milwaukee, Wis.
Filed Oct. 26, 1976, Ser. No. 735,794
Int. Cl.[2] F16K 31/02; F03G 1/06
U.S. Cl. 251—133 3 Claims

1. A motor operated valve comprising:
a valve means including a casing having an inlet, an outlet and a valve seat therein, said valve means further including a valve element movably mounted in said casing to control flow therethrough, said valve member mounted for pivotal movement into and out of sealing engagement with said valve seat by means of a valve stem rotatably mounted in said valve casing and extending through said casing to the exterior thereof; and
a reversible motor driven actuating means for said valve means, said actuating means including a reversible motor drive unit having an output drive shaft which can be driven in both a clockwise and a counterclockwise direction, said actuating means further including a gear means to operatively connect said motor drive shaft to said valve

stem of said valve means so that when said drive shaft of said motor unit is driven in one direction or the other, said valve stem will be rotated to cause said valve element to move between its closed and open position, said actuating means further including a torsion assist spring mounted on the axis of said valve stem, said assist spring adapted to



store energy therein continuously as said valve element is rotated from its closed to its open position and to release such stored energy therefrom continuously as said valve element is rotated from its open to its closed position and said assist spring and said actuating means drive the valve stem in the valve closing direction.

4,203,574

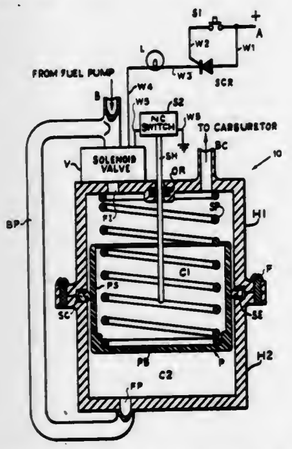
FLUID FLOW MEASUREMENT APPARATUS

Floyd M. Minks, 2700 Partin Settlement Rd., Kissimmee, Fla. 32741

Continuation-in-part of Ser. No. 635,221, Nov. 25, 1975, Pat. No. 4,054,054. This application Sep. 19, 1977, Ser. No. 834,716

Int. Cl.² F16K *31/06*

U.S. Cl. 251—139 **4 Claims**



1. An electrical solenoid actuated fluid valve comprising in combination:

a center tube;

electrically actuated coil means surrounding said center tube;

a slidable piston slidably mounted in said center tube and having a passageway therethrough and a valve element mounted thereon, said piston having first and second positions in said center tube;

a valve seat mounted in said center tube and having an opening therethrough;

seal means attached to said valve seat surrounding the opening therein to seal said valve element against said valve seat when said slidable piston is in said first position upon actuation of said electrically actuated coil and to open a passageway through said valve seat and through said slidable piston when said slidable piston is in said second position, whereby the valve can be opened and closed responsive to the actuation of said coil; and

said valve seat having a seating portion and an annular flange protruding therefrom and having an O-ring attached adjacent to said flange onto said valve seat whereby said O-ring is compressed when said valve element is closed against said valve seat.

4,203,575

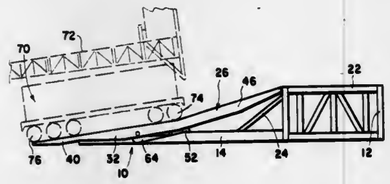
HYDRAULIC ELEVATING RAMP

Earl R. Johnson, Tulsa, Okla., assignor to Loffland Brothers Company, Tulsa, Okla.

Filed Mar. 15, 1979, Ser. No. 20,917

Int. Cl.² E02C *3/00*

U.S. Cl. 254—88 **5 Claims**



1. An elevating ramp for wheeled vehicles and comprising a support base structure having an elevated support element, a ramp assembly extending outwardly from said support base structure and pivotally connected therewith for alternate lowered and raised positions with respect to the surface of the ground, said ramp assembly comprising at least two successive end to end separate sections disposed at planar angles with respect to each other, the angular difference between the two sections being approximately 7°, a first of said sections being of a length at least as great as the wheel base of the vehicle and being disposed adjacent the surface of the ground in the lowered position of the ramp assembly for initially receiving the vehicle thereon and extending at an upward angle of approximately 7° between the surface of the ground and the beginning of the succeeding section, said succeeding section extending upwardly from the first section whereby the vehicle may be driven along the entire length of the ramp apparatus through a total angular elevation of 14° with respect to the surface of the ground while maintaining no driving angle for the vehicle in excess of approximately 7°.

4,203,576

ELEVATING ASSEMBLY FOR AN OFFSHORE PLATFORM

John R. Sutton, P.O. Box 32, Beaumont, Tex. 77704

Filed Jul. 11, 1978, Ser. No. 923,583

Int. Cl.² B66F *7/12*

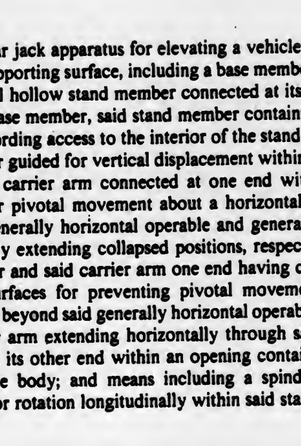
U.S. Cl. 254—89 R **22 Claims**

1. In an offshore platform of the type having a deck and a plurality of ground engaging legs slidably extending through the deck, an improved jacking means for causing relative movement between the deck and the legs comprising:

lifting means including drive means for causing movement between the deck and a leg, releasably connected to the deck, operable in one direction at a first speed, operable in a second direction at a second speed greater than the first speed, including a pair of counterrotating pinions each having an axis, the axes being spaced from one another in a generally horizontal plane;

rack means for engagement with the pair of pinions having a pair of linear tooth profiles received between the pair of pinions and engaged therewith, extending generally parallel to the leg with a length exceeding the sum of platform draft and maximum wave height, and movable relative to the deck by operation of the drive means;

yoke means for selectively engaging the leg at preselected longitudinal positions therealong, pivotally connected to the rack means and movable therewith; and



locking means for fixing the leg relative to the deck, including engagement means for engaging the leg at a second preselected longitudinal position therealong.

4,203,577

CAR JACKS

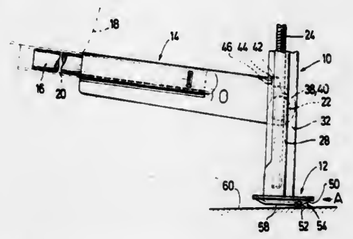
Franz X. Hafner, Wurmlingen, Fed. Rep. of Germany, assignor to E. A. Storz GmbH & Co. KG, Tuttlingen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,837

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751202

Int. Cl.² B66F *3/36*

U.S. Cl. 254—100 **18 Claims**



1. In a car jack apparatus for elevating a vehicle body relative to a supporting surface, including a base member; a generally vertical hollow stand member connected at its lower end with said base member, said stand member containing a vertical slot affording access to the interior of the stand member; a nut member guided for vertical displacement within said stand member; a carrier arm connected at one end with said nut member for pivotal movement about a horizontal pivot axis between generally horizontal operable and generally vertical downwardly extending collapsed positions, respectively, said nut member and said carrier arm one end having cooperating abutting surfaces for preventing pivotal movement of said carrier arm beyond said generally horizontal operable position, said carrier arm extending horizontally through said slot for insertion at its other end within an opening contained within said vehicle body; and means including a spindle member arranged for rotation longitudinally within said stand member and threadably connected with said nut member for vertically displacing said nut member relative to said stand member;

the improvement wherein

said base member (12) includes on its lower surface at least one downwardly depending projection (52, 54, 56, 58, 68, 74, 84, 86, 94) contained in a plane which contains the axes of both said carrier arm and said stand member, each said projection being radially spaced from the axis of said stand member on the opposite side thereof from said carrier arm, thereby to cause said stand member, when said other end of the carrier arm is inserted within the vehicle body opening and said spindle is rotated to vertically displace said nut member relative to said stand member, to be tilted about said projection toward the vehicle body to a pitched orientation relative to the supporting surface.

4,203,578

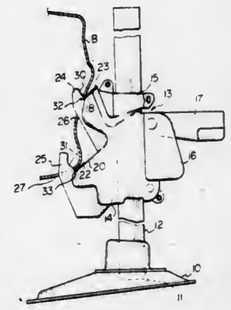
DOUBLE FINGERED BUMPER JACK BODY

Oatway Marguerratt, Orillia, Canada, assignor to Seeburn Metal Products Limited, Beaverton, Canada

Filed Dec. 5, 1978, Ser. No. 966,805

Int. Cl.² B66F *1/04*

U.S. Cl. 254—109 **3 Claims**



1. A bumper jack including a ratchet bar, and a load lifting housing mounted on said bar for movement therealong, said load lifting housing comprising steel side walls surrounding said ratchet bar, with said side walls at one side of said ratchet bar forming therebetween a lower bumper engageable ledge and an upper bumper engageable ledge, said ledges being formed by bending edges of said steel side walls inwardly to form a flat surface sloping downwardly away from the ratchet bar, and said housing also including at the lower edge of each ledge an upwardly projecting finger member with each finger having an upwardly and outwardly sloping upper edge portion adjacent a ledge, forming a trough between the finger and the ledge, said fingers being adapted to extend through a pair of vertically alingned slots in a bumper with the ledges engaging the outer face of the bumper.

4,203,579

INSTALLATION FOR TEMPERING LONG CYLINDRICAL PIECES IN FORM AND IN THIN LAYER

Jean L. Missioux, 55 Boulevard Gambetta, 95110 Sannois, France

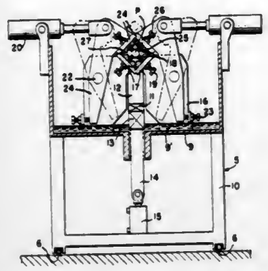
Continuation-in-part of Ser. No. 812,361, Jul. 1, 1977, abandoned. This application Jan. 9, 1979, Ser. No. 2,235

Int. Cl.² C21D *9/30*

U.S. Cl. 266—117 **6 Claims**

1. An installation for tempering in a thin layer shaped long cylindrical workpieces such as drive shafts and cam shafts for automobile engines including means for gripping workpieces in an austenization furnace, a center central tempering unit having a tempering tank and a transfer conveyor for the workpieces, the improvement comprising for said tempering unit a preadjusted and interchangeable support mechanism for the

workpiece in said tank, a movable gripping system for the workpiece, pivoting levers carrying said system, closing jacks actuating said levers on opposite upper sides of said tempering



tank, sealing means for limiting the thickness of the layer of tempering liquid applied to the workpiece to an appropriate value and means for feeding tempering liquid to said unit.

4,203,580

STATIC MIXER FOR THE PRODUCTION OF METAL ALLOYS

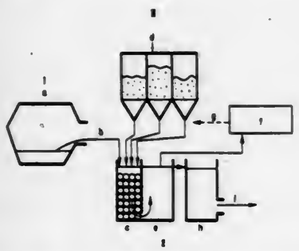
Kurt Buxmann, Sierre, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 901,708, May 1, 1978. This application Mar. 14, 1979, Ser. No. 20,367

Claims priority, application Switzerland, Jun. 2, 1977, 6766/77

Int. Cl.² C21C *1/00*

U.S. Cl. 266—216 **11 Claims**



1. A static mixer for the production of metal alloys which comprises a through-flow container which stands under atmospheric pressure and through which molten metal is passed, and a mechanical proportioning and feed device in communication with said container for making additions of alloying material thereto for dissolving same in the melt, wherein said through-flow container contains an obstacle to the flow of molten metal in the form of an exchangeable bed of head resistant, inert granular particles, said particles filling at least a portion of said container to provide a tortuous path therethrough whereby the components to be mixed are repeatedly divided and united again by said particles as the melt flows through the bed wherein the degree of mixing can be changed by altering the size of the particles, wherein the melt leaves the container intimately mixed.

4,203,581

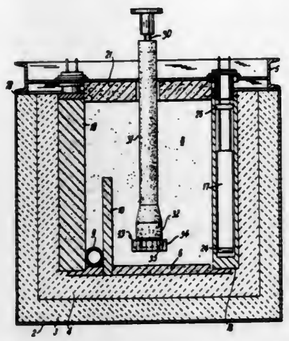
APPARATUS FOR REFINING MOLTEN ALUMINUM

John F. Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,662

Int. Cl.² C22B *9/00*

U.S. Cl. 266—217 **4 Claims**



1. In an apparatus for refining molten metal comprising, in combination:

(a) a vessel;

(b) inlet and outlet means for molten metal and gases; and

(c) at least one rotating gas distributing means disposed in said vessel, said gas distributing means comprising (i) a rotatable shaft coupled to drive means at its upper end and fixedly attached to a vaned circular rotor at its lower end; (ii) a hollow stationary sleeve surrounding said shaft and fixedly attached at its lower end to a hollow circular stator; (iii) an axially extending passageway for conveying and discharging gas into the clearance between the rotor and stator, said passageway being defined by the inner surface of the sleeve and stator and the outer surface of the shaft and (iv) means for providing gas to the upper end of the passageway under sufficient pressure to be injected into the vessel,

the improvement comprising utilizing, in the combination, a smooth outer surface construction for the stator and a ratio of the outside diameter of the stator to the root diameter of the rotor in the range of 1:1 to about 0.8:1, said diameters being measured respectively, at the base of the stator and the base of the rotor closest to each other in the apparatus.

4,203,582

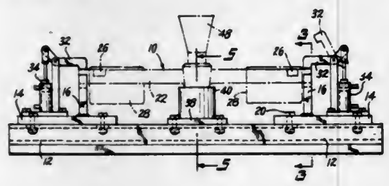
UNIVERSAL JIG FIXTURE FOR CASTINGS

Robert L. Hart, Spartanburg; Frank W. Paul, Seneca, both of S.C., and Wolfgang J. Sauer, Pittsburgh, Pa., assignors to The United States of America as represented by the Department of Commerce, Washington, D.C.

Filed Jun. 12, 1978, Ser. No. 915,068

Int. Cl.² B23Q *3/08*

U.S. Cl. 269—32 **5 Claims**



1. A jig for locating and supporting, in fixed relation to a base structure, a tree casting including a central, elongated runner having longitudinally spaced support portions and a downwardly extending sprue cup between said support portions, each of said support portions having a pair of downwardly and inwardly converging planar sides, said jig comprising

(a) a base structure;

(b) a pair of longitudinally spaced, upstanding support blocks ridigly attached to the base structure, each support block having a longitudinally extending opening in its upper side, the opening having a pair of downwardly and inwardly converging planar sides corresponding in geometry to the planar sides of a respective runner support portion of a casting to be supported in the jig;

(c) means for applying a generally vertical holddown force to a casting to be mounted in the jig area of the support block; and

(d) an upstanding sprue cup holder comprising an annular array of upstanding spring finger elements disposed between said support blocks for engaging the sprue cup of a tree casting thereby to prevent said casting from moving longitudinally relative to said base structure.

4,203,583

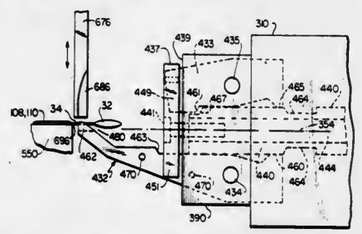
RADIAL LEAD COMPONENT INSERTION MACHINE

Albert W. Zemek, Windsor; Frederick Tomko, Vestal, both of N.Y.; Crawford Matson, Wyalusing, and Burr Darrow, New Milford, both of Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed May 19, 1978, Ser. No. 907,564

Int. Cl.² B25B *5/08*

U.S. Cl. 269—234 **4 Claims**



1. A gripper for holding wire leads, comprising:

a block having first and second primary surfaces with a first surface offset from said first primary surface and a second surface offset from said second primary surface;

a first leaf having a surface, said lead surface being adjacent and generally conforming to said first primary surface, whereby a slot is formed between said first offset surface and said first leaf surface, said slot dimensioned for a press fit against said wire lead when said lead is in said slot and said first leaf surface is pressed toward said first primary surface of said block;

a second leaf adjacent and generally conforming to said second primary surface whereby a second slot is formed; and

releasable means to press said first and second leaves toward said first and second primary surfaces respectively whereby a component having two leads is clasped with each lead in an individual slot.

4,203,584

METHODS AND APPARATUS FOR INTERFOLDING BUNDLES OF INTERFOLDED WEBS

Jesse B. Smaw, East Paterson, N.J., assignor to Marcal Paper Mills, Inc., Elmwood Park, N.J.

Filed Mar. 3, 1978, Ser. No. 883,299

Int. Cl.² B41L *1/30*

U.S. Cl. 270—40 **13 Claims**

1. In an apparatus for interfolding first and second endless bundles of interfolded paper webs, said apparatus being of the type comprising:

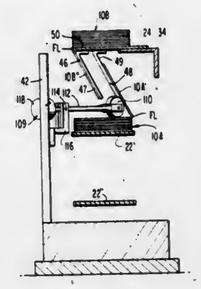
means for forming first and second bundles of interfolded webs;

means for advancing said first and second bundles in vertically spaced relation from one another and in converging directions of travel;

bundles merging means comprising:

a first fold surface for holding an uppermost web half of a bottom one of the bundles in an unfolded position as the bundles are being converged, and

a second fold surface for holding a lowermost web half of a top one of the bundles in an unfolded position as the bundles are being converged,



said uppermost web half normally being continuous and uninterrupted so as to automatically travel over said first fold surface and become unfolded thereby,

said first and second surfaces terminating prior to mergence of said bundles so that said web halves are released into a mutually interfolded condition;

the improvement comprising unfolding means for unfolding a web half which is broken or constitutes part of a new web having no connection with a downstream upper web half, said unfolding means being disposed upstream of said first fold surface for acting upon an upper surface of a section of said uppermost web half which has no connection with a downstream web half, to unfold said uppermost web half for travel along said first fold surface.

4,203,585

DOCUMENT FEED FOR A COPIER MACHINE

Barton H. Kunz, Longmont; Myron F. Shlatz, and Jesse W. Spears, both of Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 21, 1978, Ser. No. 926,979

Int. Cl.² B65H *3/52*

U.S. Cl. 271—4 **3 Claims**



2. In a document copier machine, an automatic document feed device comprising a tray for holding stacks of documents, wave generator document feeding means and nip rollers for receiving documents fed by said feeding means, a method for serially feeding said documents to a document glass at which said documents are held in a stationary manner during the copying operation comprising the steps of:

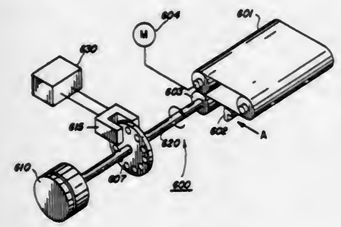
(1) manually loading a stack of documents onto said tray;

(2) activating said feeding means to move said documents in a shingled manner to cause the first topmost document to move up a ramp, across a restraint pad and down into the nip area of said nip rollers;

(3) halting the feeding of said topmost document when the

leading edge thereof is sensed by sensing means at a position just beyond said nip area;
(4) activating said nip rollers to move said topmost document through a guideway toward said document glass, said topmost document being pulled down onto said restraint pad so that subsequent documents, if moved, are directed into said restraint pad;
(5) positioning said document on said glass;
(6) making the requisite number of copies;
(7) during the time frame of step 6, operating said feeding means to move the second topmost document up said ramp, across said restraint pad and down into said nip area until said sensing means senses the leading edge thereof and halts the feeding operation;
(8) after the conclusion of step 6, moving the first document off of said glass;
(9) reactivating said nip rollers to move the second document to said document glass; and
(10) repeating the steps of the method until all documents in said stack have been copied.

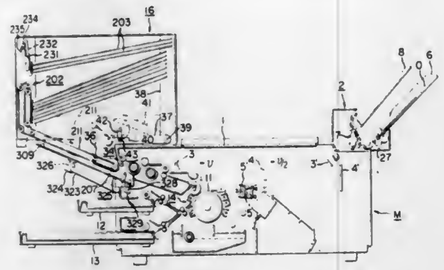
4,203,586
MULTIFEED DETECTOR
August Hoyer, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 28, 1978, Ser. No. 919,881
Int. Cl.[2] B65H *3/04*
U.S. Cl. 271—34 **2 Claims**



1. A sheet feeding apparatus, comprising:
(a) feed belt means for feeding sheets through a feed path;
(b) drive means for driving said feed belt;
(c) first stationary retard means located adjacent said feed belt for forming a nip for the passage of sheets therebetween;
(d) second retard means adjacent to and adapted for frictional engagement with said feed belt, said second retard means being located downstream of said nip formed between said first retard means and said feed belt and in the path of sheets fed by said feed belt means;
(e) a shaft for supporting said second retard means for rotational movement relative to said feed belt;
(f) clutch means for applying a torque to said second retard means; and
(g) sensor means for monitoring any change in movement of said second retard means caused by a multifeed of sheets decreasing the frictional engagement between said second retard means and said feed belt.

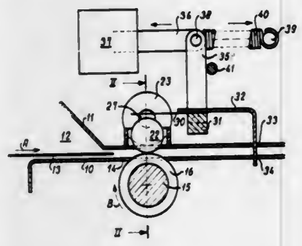
4,203,587
SHEET SORTER DEVICE
Hirotoshi Kishi, Tokyo; Hiroyuki Hattori, Inagi, and Katsuichi Shimizu, Hoya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 12, 1977, Ser. No. 815,060
Claims priority, application Japan, Jul. 27, 1976, 51-89485; Dec. 25, 1976, 51-157188; Jan. 11, 1977, 52-1701
Int. Cl.[2] B65H *39/10*
U.S. Cl. 271—293 **5 Claims**

1. A sheet sorter device comprising:
sheet introducing means for introducing, at a fixed position sheets to be sorted;
a plurality of bin trays for receiving sheets from said sheet introducing means, each tray having a spacer to maintain spaces between adjacent bin trays;
bin tray holding means for holding said trays stacked in a pile, wherein the lowermost said tray is initially held above said fixed sheet introducing position;
guiding means for guiding the trays downwardly in said bin tray holding means; and



control means for controlling the lowermost tray to move along the guiding means under the force of gravity, to place the lowermost tray in a position for receiving a sheet, and for successively controlling the remaining trays to move downwardly under the force of gravity to form another pile of trays below said sheet introducing means, wherein said trays are successively positioned for receiving a sheet.

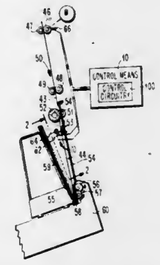
4,203,588
DEVICE FOR COPYING SHEETLIKE ORIGINALS
Joannes J. W. M. Joosten, Baarlo, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands
Filed Nov. 16, 1977, Ser. No. 851,832
Claims priority, application Netherlands, Nov. 16, 1976, 7612692
Int. Cl.[2] B65H *9/06*
U.S. Cl. 271—246 **2 Claims**



1. In an apparatus for feeding sheetlike originals to be copied, including a defined path for the original having a feed section with guide elements which together form a feed slot and a continuously driven roller means for conveying an original introduced in the path, the improvement comprising an arresting element located behind the driven roller means when viewed in the direction of movement of the original and movable between two positions, namely a first position in which the arresting element blocks the path and a second position in which the arresting element lies outside of the path, a plurality of freely rotatable spherical elements with which the driven roller means cooperates in the first position such that a force exists between the driven roller means and the spherical elements which is sufficient to convey an original up to and against the arresting element, after which the driven roller

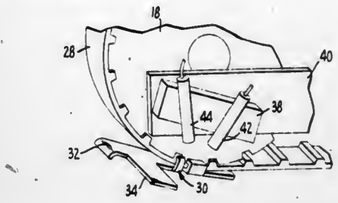
means slips relative to the original, a plurality of freely rotatable friction rolls cooperating with the driven roller means in the second position of the arresting element to convey the original further, a lever rod rotatable to at least a first and a second position, the arresting element being connected to the lever rod, the friction rolls being disposed on a flexible element connected to the lever rod, the arresting element and the friction rolls being movable in interdependent relationship to one another when the lever rod rotates, the first and second positions of rotation of the lever rod being such that rotation from one position to the other moves the friction rolls a distance which is greater than the distance which exists, in the first position of the arresting element, between the surfaces of the driven roller means and the friction rolls, thereby causing the flexible element to urge the friction rollers against the driven roller means in the second position of rotation of the lever rod.

4,203,589
JAM DETECTOR
Fred V. Arrasmith, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 25, 1977, Ser. No. 854,918
Int. Cl.[2] B65H *43/08, 7/14*
U.S. Cl. 271—258 **12 Claims**



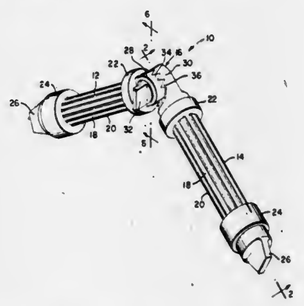
1. Apparatus for detecting jams in a series of documents moving along a predetermined document path comprising:
a sensing assembly for producing a first signal having a first state which detects the presence of a document at a predetermined position in said document path and having a second state which detects the absence of a document at the predetermined position in the document path;
means for producing pulses for each predetermined increment of document advance along the document path;
means for generating a jam signal;
an electric control signal generating circuit arrangement having first input terminals connected to said means for producing pulses and second input terminals connected to said sensing assembly and output terminals connected to said means for generating a jam signal; and
circuitry intermediate said input and output terminals for accumulating said signals produced by said sensing assembly;
said circuitry comprising means for sensing the signals produced by said sensing assembly in response to each pulse for a predetermined increment of document advance along the document path and means for increasing the accumulation level in response to one of said states of said signals produced by said sensing assembly and by decreasing the accumulation level in response to said other state of said signals produced by said sensing assembly;
and means for producing an output signal to energize said means for generating a jam signal when said accumulation level reaches a predetermined limit.

4,203,590
GRIPPER BELT TRANSFER
Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.
Filed Jan. 9, 1978, Ser. No. 867,811
Int. Cl.[2] B65H *7/02, 29/04*
U.S. Cl. 271—265 **7 Claims**



1. A fabric workpiece transport mechanism comprising a pair of spaced apart wheels, a continuous drive belt of resilient material entrained about the wheels, switch actuated motor means for intermittently driving the wheels and the belt, at least one unitary gripper finger permanently attached to the belt for clasping the edge of a fabric workpiece against the belt, the gripper finger being bent inwardly toward the belt to deform the belt from its natural configuration, and sensor switch means for detecting the presence of a fabric workpiece edge between the gripper finger and the belt and for then energizing the motor means.

4,203,591
ARM, WRIST AND SHOULDER FRICTION TYPE EXERCISING DEVICE
Stan Gibson, Richmond, Canada, assignor to Graphic Holdings, Ltd., Surrey, Canada
Filed Nov. 7, 1977, Ser. No. 849,222
Int. Cl.[2] A63B *5/00*
U.S. Cl. 272—67 **7 Claims**



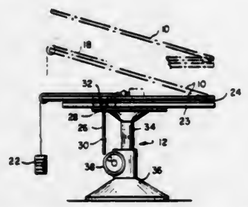
1. An arm, wrist and shoulder exercising device, comprising a pair of tubular hand grips, each of said hand grips being coaxially mounted about respective, elongated spindles which are connected to each other by adjustable coupling means for selectively varying the angle between said spindles, said clutch means including the point of substantial intersection of the extension of the axes of the spindles said device further including hand grip mounting means for allowing said hand grips to rotate with respect to each other, said mounting means further including adjustable clutch means for selectively varying the force required to rotate said hand grips with respect to said hand grip mounting means.

4,203,592
HORSESHOE TYPE GAME DEVICE
Tony Quatkemeyer, 3190 Browning, Sarasota, Fla. 33577
Filed Aug. 23, 1978, Ser. No. 936,181
Int. Cl.[2] A63B 67/06
U.S. Cl. 273—336 4 Claims



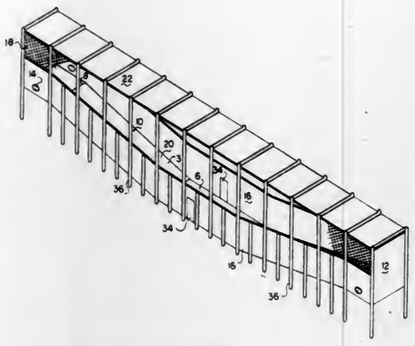
1. A game device wherein annular disks are pitched at a target area comprising:
a pair of target areas each being formed only of resilient, artificial grass-like carpet material for absorbing the shock of landing disks and providing for compact storage thereof, each of said target areas disposed in a horizontal plane;
a pair of stakes, one of said stakes extending vertically from each of said target areas providing first targets which an annular disk may be tossed toward;
a depression disposed within each of said target areas providing second targets for an annular disk to be pitched toward;
a plurality of annular disks for pitching at said target areas; and
further wherein said depression is circular in shape and has a diameter which is larger than the outside diameter of said annular disk so as to enable said disk to fit wholly within said depression, and the lateral dimensions of said stake are much less than the inside diameter of said annular disk and thus enabling said annular disk to fit easily over and surround said stake.

4,203,593
WORK TABLE FOR OCCUPATIONAL THERAPY
Marcy Coppelman, 185 Evelyn Rd., Needham, Mass. 02194
Filed May 8, 1978, Ser. No. 903,490
Int. Cl.[2] A63B 21/06
U.S. Cl. 272—117 10 Claims



1. Apparatus comprising in combination a support, a rigid, uniformly-flat tabletop defining a working surface, hinge means pivotally connecting one edge of the table top to the support for angular adjustment of its working surface about a horizontal axis to dispose said working surface in an inclined plane, a flexible cord supported in a manner to reduce frictional drag at the distal edge of the table for movement of a portion thereof around the distal edge toward the proximal edge, means connected to one end of the cord yieldably resisting movement of the cord toward the proximal edge of the table and clamp means attached to the other end of the cord for attaching an implement thereto to prevent the latter from slipping off the working surface of the tabletop when the tabletop is situated in an inclined position.

4,203,594
SOCCER COURT
David G. Cagle, 4413 - 10th, Lubbock, Tex. 79416
Filed Jul. 10, 1978, Ser. No. 919,151
Int. Cl.[2] A63B 67/00, 69/00
U.S. Cl. 273—411 30 Claims



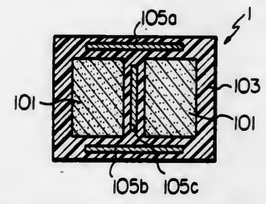
1. A soccer court comprising:
a. a playing surface having
(i) a width,
(ii) a length of several times the width,
(iii) a low kick-off plateau,
(iv) two higher goal plateaus,
(v) ramps, each of equal length and of equal incline to the other, facing the other, and running between the kick-off plateau and one of the higher plateaus,
b. planar sidewalls on each side of the playing surface with at least one door therethrough,
c. goal walls at the ends of the playing suface,
d. goals in at least one of the walls at the goal plateau.
27. The method of playing a groundball game wherein each team:
a. moves a ball from a low kick-off plateau,
b. moves the ball up a ramp to a higher goal plateau, and
c. moves the ball through a goal at the goal plateau while
d. preventing the other team from taking the ball, at any time and at any area of play.

4,203,595
BASEBALL FIELDERS SIGNALING APPARATUS
James E. Thompson, 4201 Don Tomaso Dr., Apt. 8, Los Angeles, Calif. 90008
Filed Nov. 3, 1977, Ser. No. 848,082
Int. Cl.[2] A63B 71/00
U.S. Cl. 273—25 13 Claims



2. Baseball fielder signaling apparatus comprising:
control means to be operated by a person positioned to view two adjacent first and second fielders in a baseball game, and including radio transmitter means operable to transmit selectively two different radio signals under the control of said person for instructing said adjacent fielders as to which should attempt to field a particular batted ball;
said control means including manually operated means actuable by said person between a first condition causing said transmitter means to transmit a first of said radio signals and a second condition causing said transmitter means to transmit a second of the radio signals; and
first and second fielder units constructed and adapted to be worn by said two adjacent fielders respectively during a game in a manner avoiding substantial interference with their movements in fielding a ball;
said first fielder unit being constructed to receive said first radio signal and produce in response thereto but not in response to said second signal an output which can be sensed by the first fielder and indicate to him whether he is to field the ball;
said second fielder unit being constructed to receive said second radio signal and produce in response thereto but not in response to said first radio signal an output which can be sensed by the second fielder and indicate to him whether he is to field the ball.

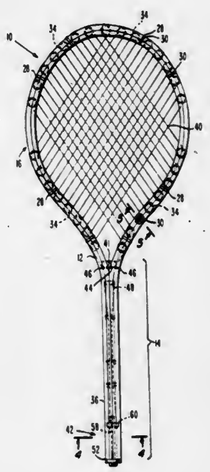
4,203,596
RACKET AND A METHOD FOR MANUFACTURING SAME
Itsushi Nagamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Nov. 2, 1977, Ser. No. 847,717
Claims priority, application Japan, Nov. 4, 1976, 51-148381
Int. Cl.[2] A63B 49/04
U.S. Cl. 273—73 J 15 Claims



1. An improved racket comprising a racket frame including a striking section and a handle section, said handle section including an elongated envelope made of fiber reinforced plastics, at least one or more weight elements substantially fully embedded in said envelope in only the grip portion of said handle section, said weight elements being of metallic material having a specific gravity being equal to or greater than the specific gravity of iron.
14. A method for manufacturing a racket comprising preparing a frame including an elongated prepreg envelope made of numerous reinforcing fibers preimpregnated with a thermosetting resin, setting said frame in position in a mold while curing the former, concurrently attaching one or more weight elements to said frame in said mold only in a portion to be formed into the grip portion in the end product, and hardening said resin by application of heat under pressure within said mold, said weight elements being of metallic material having a specific gravity equal to or greater than the specific gravity of iron.

4,203,597
THROATLESS TENNIS RACQUET
Frederick W. Reedhead; Rowland E. Reedhead, both of Trenton, and George W. Reynolds, Tinton Falls, all of N.J.
Filed Sep. 5, 1978, Ser. No. 939,761
Int. Cl.[2] A63B 49/05, 49/02
U.S. Cl. 273—73 E 8 Claims

1. An adjustable throatless tennis racquet comprising:
(a) a frame including a handle portion and a head portion, said frame comprising:
(1) two similar members each formed of hollow material and including surfaces extending parallel and disposed in spaced relationship with respect to one another;
(2) a plurality of spacers positioned between said parallel surfaces to maintain the spaced relationship therebetween;
(3) retaining means for holding said members fixedly in spaced relation with respect to one another, said retaining means including a wrap means extending transversely about both of the said similar members at a plurality of locations along said head portion of said frame, said retaining means also including a plurality of pin means fixedly secured to each of said similar members in said handle portion of said frame;
(4) a plurality of rotatably mounted sheaves positioned in said head portion of said frame between said parallel surfaces of said members; and
(5) a grip means extending about said two similar members in said handle portion;
(b) diagonal stringing means positioned extending around each of said rotatable sheaves to form a diagonally strung



hitting surface within said head portion wherein the strings are free to move axially during contact with a ball, said stringing also being fixedly secured to a movable means for tension adjustment;
(c) tensioning means for adjusting the tension of the diagonal stringing including:
(1) a connector member being located between said parallel surfaces of said similar members in said handle portion adjacent said diagonal stringing means, said connector member being fixedly secured to the ends of said diagonal stringing means to be movable therewith laterally or longitudinally with respect to said handle portion;
(2) a flexible wire means fixedly secured to said connector to allow lateral movement thereof; and
(3) an adjuster means rotatably mounted to the bottom end of said handle portion, said adjuster means being connected to said flexible wire means to adjust the amount of tension thereon to cause axial movement of said connector member to vary the tension on said diagonal stringing means.

4,203,598

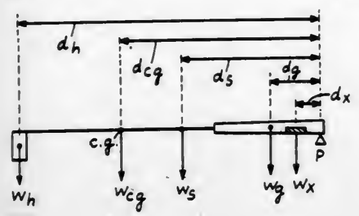
GOLF CLUB

Alfred Stuff, Ridgewood, and Anthony Pellizzi, Franklin Lakes, both of N.J., assignors to Square Two Golf Corporation, Fairfield, N.J.

Division of Ser. No. 503,474, Sep. 5, 1974, Pat. No. 4,058,312. This application Oct. 17, 1977, Ser. No. 842,538

Int. Cl.² A63B *53/00*

U.S. Cl. 273—77 A **5 Claims**



1. A method of minimizing or eliminating the axial torquing forces exerted on the shaft of a moving golf club, the club being an iron or wood, which club consists of a shaft, a grip and a club head immovably affixed thereto which method comprises affixing to the club shaft an additional weight component W_x at a position which is radially displaced from the longitudinal axis of the club shaft, proximate to the grip end of the shaft, and not extending beyond the surface of the grip, the center of gravity of said additional weight component lying in the plane defined by the longitudinal axis of the shaft and the center of gravity of the club, and on the same side of the shaft as the club head.

4,203,599

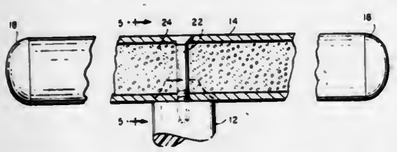
POLICE STICK

Paul D. Starrett, Rindge, N.H., assignor to Monadnock Lifetime Products, Inc., Fitzwilliam, N.H.

Filed Jun. 8, 1978, Ser. No. 913,891

Int. Cl.² F41B *15/02*

U.S. Cl. 273—84 R **3 Claims**



1. A police stick comprising a hollow, elongate metal tube of uniform circular cross section containing at its ends internal threading, said tube being comprised of an aluminum alloy of alluminum and titanium and having a wall thickness of approximately 0.120 inches, and hemispherical end caps corresponding in diameter to the diameter of the tube provided with threaded neck portions for screwing the caps into the threaded ends of the tube, said caps being comprised of solid, rigid plastic, a body of vibration-absorbent, cellular, resinous plastic material such as foamed polyurethane completely filling the tube so as to have intimate interfacial contact with the interior surface of the tube from end to end, said tube containing diametrically-aligned holes, a handle comprised of a solid, rigid plastic containing at one end a diametrically-disposed, concave, arcuate recess corresponding in radius of curvature to the radius of curvature of the tube and of such depth that, when disposed at right angles to the tube, its concave ends extend more than a quarter of the way around the tube, but less than half the way around, said concave end containing an internally threaded axial hole and a screw bolt extending through the diametrically-aligned holes into the threaded hole in the handle fixing the handle to the tube, said handle when fixed to the tube being located nearer one end than the other so as to divide the tube into a short length at one side of the handle which, in conjunction with the handle, provides means for manipulation of the stick and a longer length at the other side by means of which the execution of a maneuver may be accomplished and said handle having at its distal end a hemispherical knob and between the knob and the affixed end, a grip-enhancing surface.

2. The method of making a police stick comprising providing a length of metal tube, threading the opposite ends interiorly to receive threaded closure caps, filling the tube with a mixture of ingredients which when activated will form a body of foam within the tube to completely fill the same, screwing a threaded cap into the opposite end and securing a rigid handle to the tube at right angles to the axis thereof prior to filling the tube with a foam-producing material.

4,203,600

TARGET WITH REMOVABLE SCORE SHEET

Stephen D. Brown, 5765 N. Butman Rd., Rte. 4, Gladwin, Mich. 48624

Filed Dec. 30, 1977, Ser. No. 865,896

Int. Cl.² F41J *1/10, 3/00*

U.S. Cl. 273—407 **4 Claims**



1. A target comprising:

(a) a flat, planar score sheet with indicia imprinted thereon having substantially the same configuration and position as the internal organs of an animate object;

(b) a main body simulating the form of an animate object, said body having a construction which reduces the speed of a projectile impacting thereagainst or penetrating there into;

(c) the main body having a normally open vertical slot, said slot having a rectangular cross section in the horizontal plane defining means for removably receiving and retaining said score sheet, said slot being dimensioned greater than the score sheet and extending between portions of the main body such that emplacement of the score sheet within the slot substantially hides the score sheet from the view of the user;

(d) means within said slot for draining the slot; said main body being constructed from material of such thickness and density that a projectile penetrating the main body will traverse the slot and the score sheet emplaced there within.

4,203,601

ARROWHEAD

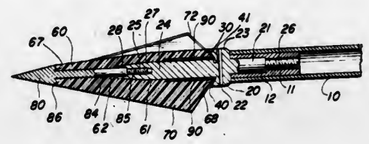
Miroslav A. Simo, Riverside, Ill., assignor to New Archery Products Corp., Riverside, Ill.

Continuation-in-part of Ser. No. 853,488, Nov. 21, 1977, which is a continuation-in-part of Ser. No. 738,030, Nov. 2, 1976, Pat. No. 4,093,230, which is a continuation-in-part of Ser. No. 619,824, Oct. 6, 1975, Pat. No. 4,006,901. This application May 30, 1978, Ser. No. 910,120

The portion of the term of this patent subsequent to Feb. 8, 1994, has been disclaimed.

Int. Cl.² F41B *5/02*

U.S. Cl. 273—421 **27 Claims**



1. An arrowhead assembly for attachment to the head end of an arrow shaft comprising:

an adapter shaft having a head end and tail end, said tail end having fastening means for securement to said head end of an arrow shaft and means for fastening a nosepiece at said adapter shaft head end;

an arrowhead body forming a hollow cylinder, said hollow cylinder having a diameter greater than said adapter shaft providing freely rotatable movement when said adapter shaft is inserted in said hollow cylinder;

a tapered nosepiece having a fastening means at its tail end for mating with said fastening means in the head end of the adapter shaft fastening said nosepiece in fixed relation to said adapter shaft and said arrow shaft.

4,203,602

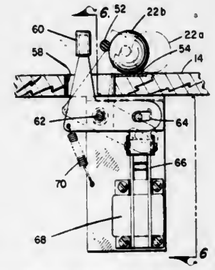
BALL BUMPER

Fred G. Kral, Lake Villa, Ill., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 1, 1977, Ser. No. 820,908

Int. Cl.² A63D *3/02*

U.S. Cl. 273—121 A **8 Claims**



1. In a bumper mechanism for a ball rolling game utilizing a conductive metal ball or the like for rolling over a playing surface, the combination comprising:

a plurality of post members secured to the playing surface;

a resilient conductive member suspended by said post members in spaced generally parallel relation with said playing surface at a height for impacting by the ball, a suspended portion of said conductive member yielding upon impact of a ball traveling in a first direction;

a conductive area on said playing surface in spaced relation with and in proximity to said conductive member;

ball propelling means including a ball kicker arm in spaced relation with said conductive member on the side opposite the ball impacting side and a solenoid having an armature for actuating said ball kicker arm to redirect the ball upon impact of the kicker arm with said conductive member in a direction generally opposite to said first direction; and

circuit means for energizing said solenoid, said circuit means including capacitor means charging in response to simultaneous contact of the ball with said conductive member and said conductive area and power amplifier means responsive to discharging of said capacitor means for energizing the coil of said solenoid to drive said armature through a full stroke regardless of the duration of contact of the ball with said conductive member and said conductive area.

4,203,603

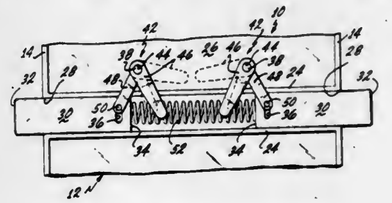
PINBALL FLIPPER MECHANISM

Yukio Konta, Gardena, Calif., assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,775

Int. Cl.² A63B *71/00*

U.S. Cl. 273—129 W **4 Claims**



1. A pinball flipper mechanism which includes:

a housing having sides and a top,

a playing platform located within said housing, said platform having a top visible from the exterior of said housing and a bottom,

an elongated bearing extending between said sides of said housing, said bearing having ends exposed at said sides of said housing, said bearing being located adjacent and below said bottom of said playing platform,

two plungers, each of said plungers being slidably mounted within said bearing, each of said plungers having an accessible end located so as to be accessible from the exterior of said housing at a side thereof, each of said plungers having an interior end located within said bearing adjacent to the bottom of said platform, said interior ends within said bearing being spaced from one another,

a single spring means located within said bearing between said adjacent ends of said plungers for biasing said plungers so that they extend outwardly from said sides of said housing,

two openings extending through and substantially perpendicular to said platform adjacent to said bearing, said openings being spaced from one another,

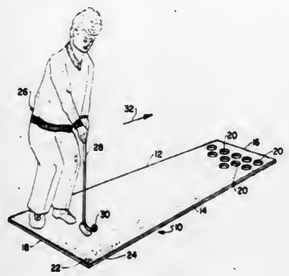
two bell crank levers, each of said bell crank levers having a centrally located apex and first and second elongated arms, said first elongated arm serving as a flipper and being located adjacent said top of said platform and said second arm being located adjacent said bottom of said platform, said arms extending from said apex, each of said bell crank levers being positioned so that its apex extends through one of said openings

two pivot means, one of said pivot means supporting the apex of one of said levers for rotation about an axis extending through its apex which is perpendicular to said platform, the other of said pivot means supporting the apex of the other of said levers for rotation about an axis extending through its apex which is perpendicular to said platform, and

two separate pin and slot sliding connection means, a pin and slot sliding connection means connecting each of said second arms with one of said plungers,

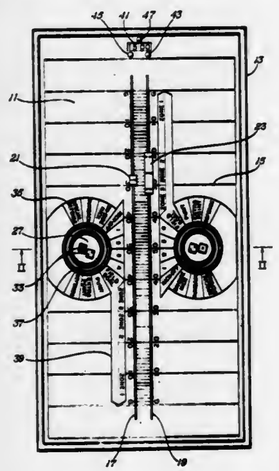
said pin and slot sliding connection means permitting said accessible ends of said plungers to be moved generally toward said sides of said housing so as to cause rotation of said bell crank levers.

4,203,604
GOLF GAME
Mark La Grange, R.R. #51-Box 500, Terre Haute, Ind. 47805
Filed Sep. 30, 1977, Ser. No. 838,104
Int. Cl.[2] A63B 69/36
U.S. Cl. 273—176 FB 5 Claims



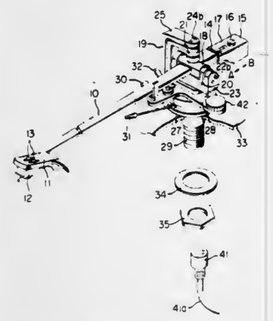
1. A golf game comprising an elongated flexible mat, said mat having one lateral surface thereof including a plurality of upstanding blade-like bristles uniformly disposed along the entire said one lateral surface, each of said upstanding bristles simulating closely cropped and evenly cut grass, the other lateral surface of said mat being substantially smooth, a plurality of holes being located adjacent one marginal edge of said mat, a plurality of flexible sheets, said plurality of flexible sheets fixedly secured to said other lateral surface of said mat at the locations of said plurality of holes, said plurality of sheets each carrying indicia, said indicia being visibly accessible through said plurality of holes.

4,203,605
FOOTBALL GAME
Joe W. Moody, 2306 W. 10th, Irving, Tex. 75060
Filed Oct. 30, 1978, Ser. No. 955,886
Int. Cl.[2] A63F 3/00, 9/04
U.S. Cl. 273—247 8 Claims



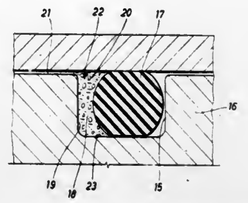
1. In a simulated football game apparatus having a board with a simulated football field thereon, ball marker means, first down yardage indicator means, and a pair of dice for determining by chance movement of the ball, an improved selector means for indicating downs and plays, comprising:
a pair of cups rotatably carried by the board, one for the offense player and the other for the defense player; each cup being adapted to receive a die thrown by a player;
markings formed on the board about each cup defining areas containing indicia that indicate downs and plays; and
indicator means on each cup for indicating which area has been selected by rotation of the cup, allowing penalties to be applied for failure to rotate the cup to the proper area before a play, and for failing to retain thrown dice in the cup.

4,203,606
PICKUP ARM DEVICE
Shuichi Obata, Kyoto, and Takayuki Sugihara, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 3, 1978, Ser. No. 957,312
Claims priority, application Japan, Nov. 17, 1977, 52-155194[U]
Int. Cl.[2] G11B 3/10
U.S. Cl. 274—23 R 3 Claims



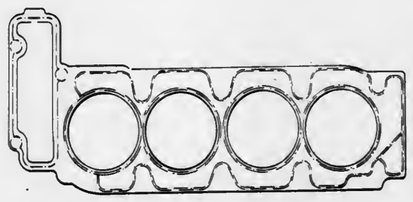
1. A pickup arm device comprising
(a) a rotary bearing adapted to be mounted on a record player, said bearing comprising an arm base, a first bearing gimbal fixed to said arm base, a second bearing gimbal mounted on said first bearing gimbal for rotation about a vertical axis, and an arm supporting inner gimbal mounted on said second bearing gimbal for rotation about a horizontal axis,
(b) an arm main body detachably mounted on said inner gimbal, said arm main body having a cartridge mounting shell at one end thereof and a balance weight for controlling stylus pressure at the other end thereof, said inner gimbal being attached to said arm main body at a position between said cartridge mounting shell and said weight and relatively proximate to said weight,
(c) an intermediate connector for delivering output signals from a pickup cartridge mounted to said cartridge mounting shell to said record player, said intermediate connector having an output terminal and being mounted on the portion of the arm main body attached to said inner gimbal, said connector being adapted to be connected to said pickup cartridge and a delivering terminal attached to said inner arm gimbal and adapted to be connected to a circuit of said record player, said terminals being slidably electrically connected to each other at a region including said horizontal axis; and
(d) a lock nut for detachably securing the attached portion of said arm main body to said inner gimbal; whereby said arm main body is freely mounted on and easily removable from said inner gimbal by said lock nut without disassembling said bearing gimbals.

4,203,607
HIGH PRESSURE, FLUID TIGHT SEAL
Emmet F. Brieger, Nogal, N. Mex. 88341
Filed Dec. 1, 1976, Ser. No. 746,601
Int. Cl.[2] B65D 53/00; F16J 15/00
U.S. Cl. 277—188 A 5 Claims



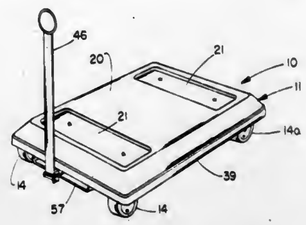
1. A sealing mechanism for improving the sealing effect of O-rings comprising:
telescoping members where one of said members has a groove for receiving a sealing element therein;
a sealing element in said groove, said sealing element is an O-ring disposed under compression between said telescoping members;
a flowable material disposed between said sealing element and on side wall of said groove, particulate grit material disposed in said flowable material and sized to block off the clearance space between said members upon the application of pressure to the sealing element, said flowable material is a viscous paste.

4,203,608
CORRUGATED GASKETS
Terence P. Nicholson, Calf Hall, Muggleswick, nr. Derwentside, Co. Durham, England
Filed Aug. 2, 1978, Ser. No. 930,429
Claims priority, application United Kingdom, Feb. 2, 1978, 4350/78
Int. Cl.[2] F16J 15/08
U.S. Cl. 277—235 B 3 Claims



1. A gasket effecting a seal between two planar surfaces lying in opposition of each other comprising a sheet like member having in cross section a double wave form corrugation terminating in coplanar oppositely extending flanges defining the base plane of said gasket, the distance between the plane in which the crests of the two waves are contained and a plane parallel thereto in which the trough between said two waves is contained is significantly less than the distance between the plane of the crests and the base plane, said gasket being deformable on application of compressive forces normal to said planes to cause said oppositely extending flanges to move apart while maintaining the relative distance between said crest of said wave form.

4,203,609
TRANSPORT VEHICLE
Terry L. Mitchell, Jenison, and David A. Immink, Holland, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Jul. 31, 1978, Ser. No. 929,737
Int. Cl.[2] B62B 7/04
U.S. Cl. 280—47.11 10 Claims



1. A transport cart having a platform, said platform having upper and lower panels, said upper panel having a pair of recessed wells in its upper surface spaced apart lengthwise of said cart, said lower panel having elongated upstanding ridges alternating with depending channels; the height of said ridges being the same as the depth of said recessed wells in said upper panel, whereby said upper panel rests on said ridges and the bottoms of said recessed wells rest on said lower panel; said ridges and channels extending lengthwise of said cart with the ridges being of a length to be received between said recessed wells; said upper and lower panels each having a depending peripheral flange, the flange of said lower panel being nested within the flange of said upper panel; said panels being secured to each other to form said platform into a rigid sandwich; supporting wheels secured to said sandwich at each of the corners thereof.

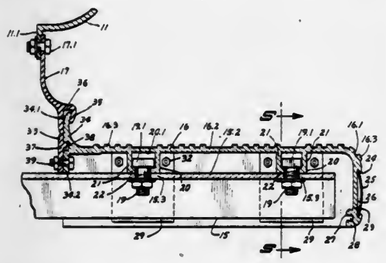
4,203,610
SCOOTER
Nicholas Mihalik, 98-25 65th Rd., Forest Hills, N.Y. 11374
Filed Oct. 10, 1978, Ser. No. 949,668
Int. Cl.[2] B62B 7/00
U.S. Cl. 280—87.04 R 2 Claims



1. A scooter, comprising
a board-like platform having spaced opposite front and rear ends and a pair of side strips affixed to opposite lengthextending edges of said platform, said side strips being curved in a slight arcuate upturn extending from the front end of the platform and having free front ends substantially perpendicular to the plane of the platform but spaced in front of said platform, said side strips extending from the rear end of said platform to a distance therebeyond;
a steering shaft having spaced opposite top and bottom ends;
a sleeve coaxially surrounding said shaft and an annular indentation formed in said sleeve in the area of the bottom end of said shaft;

a front wheel rotatably mounted at the bottom end of the steering shaft;
handle bars affixed to the top end of the steering shaft;
a rear wheel rotatably mounted between the side strips at the rearmost parts of said side strips; and
coupling means for coupling the sleeve of the steering shaft to said side strips, said coupling means comprising a pocket-like housing member accommodating the free front ends of said side strips and enclosing said side strips and the area between the front ends thereof and a substantially U-shaped bracket member having a pair of spaced free ends, said bracket member being accommodated in the indentation in said sleeve of said steering shaft, passing around said sleeve and being affixed at its free ends to said housing member.

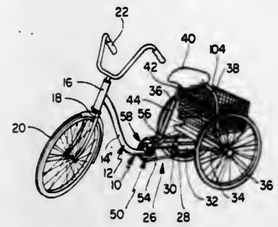
4,203,611
RUNNING BOARD FOR LIGHT TRUCKS
Martin A. Makela, Waconia, Minn., assignor to J-Mark, Inc., Minneapolis, Minn.
Filed Jul. 10, 1978, Ser. No. 923,304
Int. Cl.[2] B60R *3/00*
U.S. Cl. 280—163 **18 Claims**



1. A running board for attachment to the frame of light trucks, comprising
an elongate deck to extend along the cab of the truck,
means mounting the deck to the truck frame and including a plurality of elongate frame arms underlying the deck and extending transversely thereof,
the deck having a bottom side overlying the frame arms and also having a pair of elongate and parallel rigid mounting channels on said bottom side and extending longitudinally along and substantially throughout the length of the deck, the channel having an unobstructed open bottom and also having depending sidewalls confronting each other and being provided with inwardly turned supporting lips extending toward each other, and
a plurality of bolts with enlarged flat-sided heads fitting snugly and freely slidable in the channel and carried on said supporting lips, the bolts having depending threaded shanks secured to the transverse frame arms.

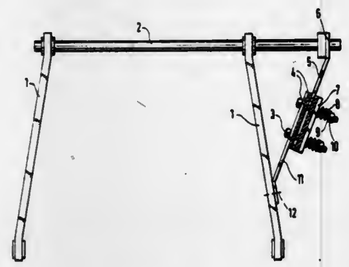
4,203,612
VELOCIPEDE HAVING SEPARABLE FRAME PARTS
Roger H. Felkema, 6050 Palmer Blvd., Sarasota, Fla. 33582
Filed Jun. 22, 1978, Ser. No. 917,905
Int. Cl.[2] B62K *13/04, 19/18*
U.S. Cl. 280—287 **3 Claims**

1. A separable frame velocipede comprising: a velocipede frame having front and rear frame parts including a separable coupling releasably interconnecting said frame parts in normal operative position of said frame and releasable for separting said frame parts from each other, said coupling having generally horizontally spaced front and rear portions and including first and second coupling members, one for each of said frame parts, said members being operatively fixed to the associated frame part, the first coupling member having an upwardly opening cradle snugly receiving a complementary portion of the second coupling member in said normal operative position of said frame, said cradle and said complementary portion being generally semi-cylindrical with substantially concentric, generally horizontal axis extending crosswise of said frame, one of said members having a tab releasably received in a recess in the other member, said coupling having releasable means restraining said members against relative horizontal movement, said complementary portion of said second coupling member being a crank hanger tube in which said crank is journalled, said tab and recess being on one side of said crank



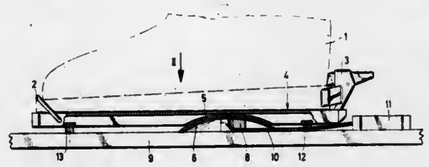
hanger tube, said releasable means being on the other side of said crank hanger tube; said tab being integral with said cradle and extending forwardly therefrom, said recess being a generally horizontally extending slot in the rear face of said crank hanger tube and said tube including an integral depending flange extending inwardly of said tube and engaging said tab in said normal operative position of said frame, and said releasable means including a pair of plates, a first of said plates being integral with and extending upwardly from the front of said cradle, and said plates having cooperating means aligning said coupling members crosswise of said velocipede frame.

4,203,613
ADJUSTING DEVICE FOR THE DRAFT LINK OF A THREE-POINT MOUNTING DEVICE
Dieter Kunze, Siegburg, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany
Filed Aug. 10, 1978, Ser. No. 932,605
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2738951
Int. Cl.[2] A01B *59/043*
U.S. Cl. 280—460 A **3 Claims**



1. An adjustable device for the draft link of a three-point mounting system for supporting agricultural implements upon an agricultural tractor, said adjusting device comprising a longitudinally adjustable bipartite strut assembly having a pair of ends, with one of said ends being connected in an articulated manner to said draft link of said tractor and with the other of said ends being connected to a fixed point on said tractor, said strut assembly comprising: two partially overlapping connecting arms; means joining said two connecting arms together in frictional engagement for movement relative to each other; means defining an elongated slot having a pair of ends on one of said connecting arms along a portion thereof in overlapping relationship with the other of said connecting arms; means defining at least two screw-receiving holes in the other of said connecting arms; a pair of threaded bolts extending through said elongated slot of said first connecting arm and through said receiving holes of said first connecting arm and through said receiving holes of said other connecting arm; a pair of compression springs one each arranged respectively at one of said ends of said slot, each of said springs being compressively engaged against one of said threaded bolts; and a pair of setscrews each operatively associated with one of said compression springs for enabling adjustment of the compressive force of said springs within said elongated slot.

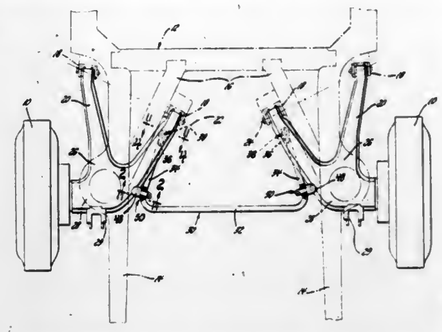
4,203,614
SAFETY SKI BINDING
Hannes Marker, Hauptstrasse 51-53, 81 Garmisch-Partenkirchen, Fed. Rep. of Germany
Filed Jul. 13, 1978, Ser. No. 924,347
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2732120
Int. Cl.[2] A63C *9/08*
U.S. Cl. 280—637 **13 Claims**



1. A safety ski binding for releasably interconnecting a skiing boot and a ski, said binding comprising:
a cable (10) connectable at one end to a skiing boot and at the other end to a ski (9);
a mounting fixture (4) for the skiing boot releasably securable to the ski approximately in a middle portion thereof and connected to said cable;
detent elements (5,6) positioned between said mounting fixture and the ski for holding the skiing boot in skiing position on the ski; and
a tensioner (11) connected to said cable for loading said cable to thereby hold said detent elements in engagement with each other, said detent elements comprising a base segment having an at least partially arcuate-shaped exterior surface and a cup having a surface mating with the exterior surface of said base segment, one of said detent elements being connected to the ski and the other detent element being fixedly connected to the mounting fixture, said cable extending from the center of one detent element and through the center of the other detent element.

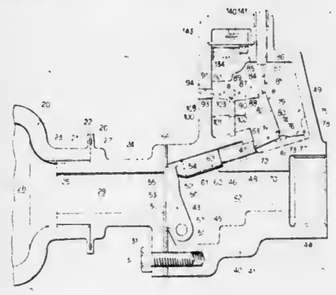
4,203,615
AUTOMOTIVE VEHICLE SUSPENSION
Casimer J. Cisio, Southfield, and Seth B. Cummings, Jr., Clarkston, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 18, 1978, Ser. No. 943,374
Int. Cl.[2] B60G *3/14*
U.S. Cl. 280—689 **4 Claims**

1. In a vehicle including transversely opposite road wheels, spring suspension therefor comprising, a pair of control arms each mounted at an inboard end thereof on the vehicle sprung mass to swing on an axis extending at an angle to a transverse plane of the latter and mounting at the outboard end thereof a respective road wheel, a stabilizer member including a main portion extending transversely of the vehicle and crank arm portions each turned from the main portion to extend toward connection with a respective control arm, and means for mounting opposite ends of said stabilizer member on the vehicle for roll stabilization of the vehicle sprung mass and including first means mounting the crank arm portion on a respective control arm and second means including a swingable link connected with the crank arm portion of the stabilizer member
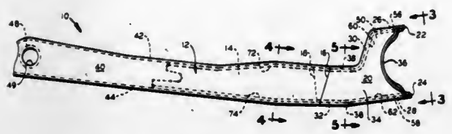


at a location spaced from the first means and whereby said link may swing to preclude resistance by said stabilizer member to pitch and ride motion of the vehicle sprung mass.

4,203,616
AIR BAG DEVICE FOR CARS
Motohiro Okada, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 23, 1977, Ser. No. 854,337
Claims priority, application Japan, Aug. 2, 1977, 52/12882
Int. Cl.[2] B60R *21/08*
U.S. Cl. 280—737 **3 Claims**



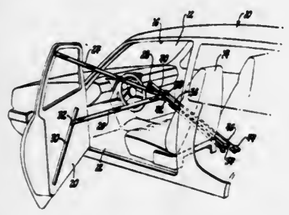
1. An air bag device, comprising:
a container for being charged with a gas under pressure;
said gas container including an opening portion communicating with an air bag;
a pressing lid;
said pressing lid being provided in a passage connecting said opening portion of said container with an inlet of the air bag;
a frangible lid disposed between said pressing lid and said gas container;
said opening portion of said gas container being tightly sealed by said frangible lid;
said frangible lid being supported on one surface thereof by a pressing surface of said pressing lid;
said pressing lid being provided with an area contacting said frangible lid which is larger than is necessary to prevent fracture of said frangible lid by said gas under pressure;
a link mechanism for applying pressure to said pressing lid;
impact detecting means for releasing said link mechanism; and
a recess formed in said pressing surface of said pressing lid contacting said one surface of said frangible lid, and provided with a small hole making the space within said recess communicate with said passage.

4,203,617
VEHICLE LOAD SUPPORTING STRUCTURE
Miles A. Bowman, Jr., Reading, Pa., assignor to Dana Corporation, Toledo, Ohio
Filed Mar. 31, 1978, Ser. No. 892,272
Int. Cl.[2] B62D 21/00
U.S. Cl. 280—797 5 Claims



1. A vehicle load supporting structure including an elongate composite metal body wherein the metal body comprises:
a first composite elongate section of generally C-shaped cross-section having a pair of spaced apart flanges and an interconnecting web defining an open channel, said section including at least two adjacent welded together portions, one portion having a predetermined yield strength, the other portion having a yield strength different from the yield strength of the first mentioned portion;
a second composite elongate section of generally C-shaped cross-section having a pair of spaced apart flanges and an interconnecting web defining an open channel, including at least two adjacent welded together portions, one portion having a predetermined yield strength, the other portion having a yield strength different from the yield strength of the first mentioned portion; and
means for securing free edges of the flanges of said first and said second sections together with the open channels of the C-shaped cross-sections of the respective sections are in facing relation to one another.

4,203,618
PASSIVE OCCUPANT RESTRAINT SYSTEM
William R. Frank, Warren, and David F. Manz, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 25, 1978, Ser. No. 945,309
Int. Cl.[2] B60R 21/02
U.S. Cl. 280—804 3 Claims

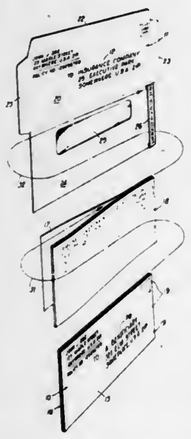


1. In a motor vehicle body having a door mounted laterally adjacent an occupant seat, a passive seat belt system comprising:
a restraint belt of fixed length having an outboard end attached to the vehicle door and an inboard end attached to the vehicle body forwardly of the seat;
a track extending longitudinally of the vehicle body inboard the occupant seat;
a belt carriage movable along the track and slidably receiving the belt intermediate the inboard and outboard ends, said carriage being movable along the track between a forward position stowing the belt forwardly of a seated occupant and a rearward position establishing the belt in a restraining position closely adjacent the seated occupant;
spring means urging the carriage toward the rearward position;
opening movement of said door causing the outboard end of the belt to be moved outwardly and forwardly whereby sliding movement of the belt through the belt carriage causes movement of the belt carriage to the forward position to stow the belt.

4,203,619
PRODUCTION OF PRESSURE-SENSITIVE CARBONLESS RECORD SHEETS USING ALKANE DIOIC ACID HOT MELT SYSTEMS AND PRODUCTS THEREOF
Frederick W. Sanders, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 869,995, Jan. 17, 1978, abandoned. This application Feb. 14, 1979, Ser. No. 11,964
Int. Cl.[2] B41M 5/22
U.S. Cl. 282—27.5 13 Claims

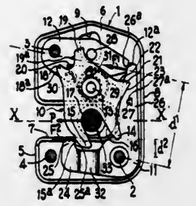
1. A process for producing a pressure-sensitive carbonless record sheet comprising the steps of:
(a) preparing a hot melt coating composition, said hot melt coating composition having a melting point of from about 60° C. to about 140° C., said hot melt coating composition comprising from about 0.1% to about 50.0%, by weight, of a chromogenic material and from about 50% to about 99.9% of a solid alkane dioic acid, said chromogenic material being a color developer of the acidic electron acceptor type, said alkane dioic acid being a water soluble dicarboxylic acid having a carbon chain of at least 5 carbon atoms;
(b) heating said hot melt coating composition to a temperature above the melting point of said hot melt coating composition;
(c) applying said heated coating composition to a substrate, said coating composition being applied at a coat weight of from about 0.2 pounds to about 8.0 pounds per 3300 square feet of substrate, and
(d) setting said coating composition by cooling said coated substrate.

4,203,620
AIR TRAVEL INSURANCE ASSEMBLAGE AND METHOD OF VALIDATING
Leonard L. Long, The Darlington, Suite 7, 2025 Peachtree Rd., NE., Atlanta, Ga. 30309
Filed Sep. 11, 1978, Ser. No. 940,943
Int. Cl.[2] B42D 15/00
U.S. Cl. 283—23 16 Claims



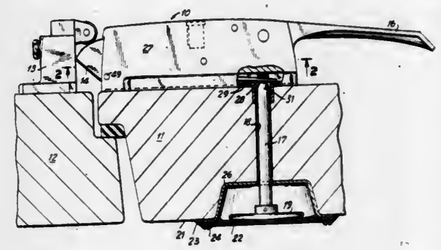
1. For use with a conventional air travel ticket as a means to facilitate the validation of air travel insurance, an air travel insurance documents assembly, said insurance documents assembly including an institutional trust mailing element, a beneficiary mailing element, a double-active face duplicating sheet at one side of said institutional trust mailing element and a single-active face duplicating sheet between the institutional trust mailing element and the beneficiary mailing element, and a return envelope having a positioning means on one panel thereof for said insurance documents assembly and an air travel ticket, the opposite side of such panel having an area to receive written air travel indicia, said air travel insurance documents assembly being adapted to be temporarily interleaved with an air travel ticket by placing the assembly beneath the first copy of the ticket, the documents assembly and ticket then being engaged as a unit with said positioning means of the return envelope to be held thereby while the insurance purchaser writes said air travel indicia in said area, said assembly and ticket then being separated from the positioning means and from each other, and the insurance documents assembly having its elements separated, whereby the institutional trust mailing element and beneficiary mailing element can be separately mailed and the return envelope can be mailed with payment to an insurance company or agent, validation of the air travel insurance being completed when said first copy of the air travel ticket with said air travel indicia thereon is delivered to and accepted by a ticket agent.

4,203,621
LOCK IN PARTICULAR FOR AN AUTOMOBILE VEHICLE
Jean P. Noel, and Marcel Party, both of Saint-Die, France, assignors to Compagnie Industrielle de Mecanismes, France
Filed Aug. 31, 1978, Ser. No. 938,498
Claims priority, application France, Sep. 12, 1977, 77 27497; Jul. 18, 1978, 78 21260
Int. Cl.[2] E05C 3/26
U.S. Cl. 292—216 15 Claims



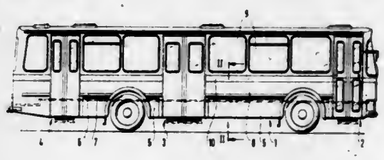
1. A lock, in particular for an opening element of an automobile, comprising a pivotal fork member which has a projecting portion and is movable between an unlocking position and a locking position, means combined with the fork member for resiliently biasing the fork member to the unlocking position thereof, detent means carried by an arm of a pivotal first lever having a first arm and a second arm and movable between a retaining position and a releasing position relative to said projecting portion of the fork member and means for biasing the pivotal lever towards its releasing position by an effect of an unlocking force exerted on the fork member, and a second lever mounted to pivot between a first position and a second position, means for resiliently biasing the second lever towards its first position, the second lever being capable of blocking an end of the second arm of the first lever in the first position of the second lever when the first lever is in the retaining position of the first lever, and the second lever being capable of releasing said end of the second arm in the second position of the second lever, means operatively connected to the second lever for shifting the second lever to the second position of the second lever, the fork member comprising two successive projecting portions, the fork member carrying means defining a cam surface, the second lever having a projecting portion with which projecting portion the cam surface is cooperative so as to cause the second lever to move temporarily to the second position of the second lever when the second projecting portion of the fork member approaches the detent means in the course of a locking movement of the fork member.

4,203,622
SAFETY LATCH
Sanford L. Cook, Ocean; Justin J. Molisani, Bricktown, and Kenneth I. Dennison, Jr., West Allenhurst, all of N.J., assignors to Standard Keil Hardware Manufacturing Company, a Division of Buildex Incorporated, Allenwood, N.J.
Filed Dec. 26, 1978, Ser. No. 973,264
Int. Cl.[2] E05C 3/22
U.S. Cl. 292—221 15 Claims



1. An improved latch suitable for use on the door of a walk-in refrigerator cabinet, said latch including a latch mechanism and housing therefor, a retractable bolt in said housing for engaging a striker assembly attached to the jamb of said cabinet, a retractor handle pivotably mounted to said housing for operating said latch mechanism to retract said bolt, said handle being movable between seated position in which said bolt is extended for engaging said striker assembly and a retracted position in which said bolt is retracted from said striker assembly for opening said door, locking means mounted to said housing for selectively preventing retraction of said handle, and a pushrod for passing through a corresponding channel in said door and into an opening in said housing for activating said latch mechanism for retracting said bolt independently of whether said locking means is in locked or unlocked condition, wherein said improvement comprises a vapor barrier disposed for prevention of entry of water vapor between said pushrod and the wall of said channel cabinet and thereby for prevention of frost buildup which could interfere with the operation of said pushrod.

4,203,623
BUS CONSTRUCTION
Hans Fenner, Evilard; Wilhelm Auwärter, Gümlingen, and Karl-Heinz Stark, Muttenz, all of Switzerland, assignors to Ramseier & Jenzer AG, Carosseriewerke Bern, Bern, Switzerland
Filed Oct. 3, 1977, Ser. No. 838,988
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715550
Int. Cl.[2] B62D 31/02, 47/02
U.S. Cl. 296—178 15 Claims



1. A bus with a chassis; a structure fastened to said chassis and enclosing the passenger area; said structure having sidewalls above the bottom of the bus and having a longitudinal

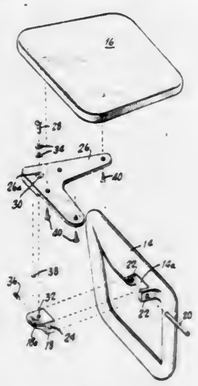
carrier section, said sidewalls having door cutouts, said longitudinal carrier being interrupted only by the door cutouts, columns connecting to said longitudinal carrier, said longitudinal carrier section being divided into a fixed supporting inside shell and a non-supporting substantially replaceable outside shell, said outside shell comprising covering means; only said inside shell having a supporting function; said outside shell being replaceable; said inside shell and said outside shell comprising plate-shaped members; said outside shell being spaced and offset from said inside shell so that said inside shell is protected from damage in accidents involving the bus, said outside shell being replaceable after damage thereto without affecting the inside shell and remaining structure of the bus, disassembly of the outside shell being substantially independent of the remaining assembled structure.

4,203,624

WRITING TABLET

Richard B. Hopkins, Pennsburg, Pa., assignor to Knoll International, Inc., Greenwich, Conn.

Filed Sep. 18, 1978, Ser. No. 943,111
Int. Cl.² A47B *39/00, 11/00*
U.S. Cl. 297—162 **7 Claims**



1. A writing tablet for a chair arm or the like comprising a pivot swivel block, first mounting means for mounting said pivot swivel block to said chair arm or the like for pivotal movement about a first axis, a tablet panel support, second mounting means for mounting said tablet panel support to said pivot swivel block for pivotal movement about a second axis perpendicular to said first axis, a first semicircular slot in said pivot swivel block, a second semicircular slot in said tablet panel support, and a ball riding simultaneously in said slots limiting the amount of movement of said tablet panel support about said second axis.

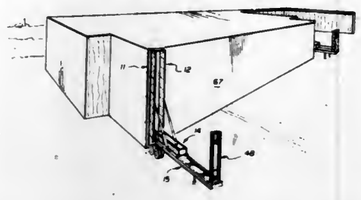
4,203,625

APPARATUS FOR SULFUR MELTING BY LATERAL DISPLACEMENT OF HEATING ELEMENT

Ernest R. Ellithorpe, and Richard C. Ellithorpe, both of Calgary, Canada, assignors to Western Sulfur Remelters Ltd., Calgary, Canada

Filed May 15, 1978, Ser. No. 906,197
Claims priority, application United Kingdom, May 17, 1977, 20629/77
Int. Cl.² E21C *41/14*
U.S. Cl. 299—6 **20 Claims**

1. Apparatus for melting block sulphur, comprising:
a heating element for applying heat to the sulphur;
said heating element comprising an array of mutually spaced and parallel pipes, inlet means for directing a flow of steam through said pipes and outlet means for the discharge of steam and condensate from said pipes;
means for supporting said heating element in an at least approximately upright disposition; and



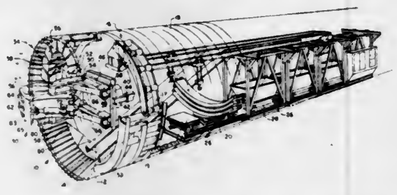
means for advancing said heating element in said disposition and in a direction at least approximately parallel to the ground towards the sulphur.

4,203,626

ARTICULATED BOOM-DIPPER-BUCKET ASSEMBLY FOR A TUNNEL BORING MACHINE

Herman Hamburger, Geneva, Ill., assignor to Zokor Corporation, Aurora, Ill.

Filed Feb. 21, 1979, Ser. No. 13,523
Int. Cl.² E21D *9/08*
U.S. Cl. 299—33 **12 Claims**



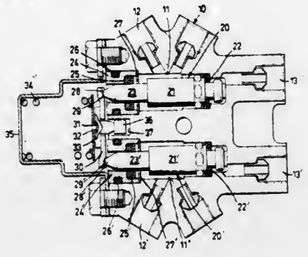
1. An articulated boom-dipper-bucket assembly for a tunnel boring machine of the type which includes a hollow cylindrical body having a front circular cutting edge and a central axis, an excavator including a bulkhead, mounting means for mounting the bulkhead on the central axis of the cylindrical body, moving means associated with the excavator for moving the bulkhead axially of the cylindrical body, and rotating means for rotating the excavator 360° about an axis coaxial with or parallel to the central axis, said assembly forming part of the excavator and including a base mounted on the bulkhead and having a front face facing axially toward the front of said machine, an elongate boom having a first inner end pivotally mounted to said base at one side thereof, an elongate dipper member pivotally mounted at a first end thereof to an outer second end of said boom and a bucket-scoop having an inner edge and an outer cutting edge and being pivotally mounted to a second outer end of said dipper member, first reciprocal power means pivotally connected at one end of said base at the other side thereof opposite said one side and pivotally connected at the other end to said boom at a point spaced from said inner end of said boom for moving said outer end of said boom about the pivot connection thereof to said base toward and away from said base, second reciprocal power means pivotally connected at one end to said first end of said boom and pivotally connected at the other end to said first end of said dipper member for moving said dipper member about the pivot connection thereof to said boom toward and away from the central axis of the cylindrical body and third reciprocal power means pivotally connected at one end to said first end of said dipper member and pivotally connected at the other end to said bucket-scoop and operable to pivot said bucket-scoop about the pivot connection thereof to said dipper member to move said outer cutting edge in a clawing action against material being removed by the tunnel boring machine.

4,203,627

PARALLEL PROPORTIONING VALVE FOR USE IN A DUAL BRAKING SYSTEM

Teruhisa Kono, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 31, 1978, Ser. No. 911,089
Claims priority, application Japan, Feb. 16, 1978, 53-17406
Int. Cl.² B60T *8/26*
U.S. Cl. 303—6 C **4 Claims**



1. A parallel proportioning valve for use in a dual braking system comprising:
(a) a casing, said casing having a pair of fluid chambers each of said chambers having a fluid inlet for connection to a pressure source and a fluid outlet for connection to a brake means, said casing additionally having a hole in the center between said fluid chambers;
(b) a fluid pressure responsive plunger located in each of said fluid chambers;
(c) valve seat means located in fluid passages, said fluid passages defined as the path between said fluid inlets and said fluid outlets of each of said fluid chambers, said valve seat means provided for closing said fluid passages upon actuation of said fluid pressure responsive plungers by seating said plungers therein;
(d) an abutting plate located adjacent said fluid pressure responsive plungers and abutting one end of each of said fluid pressure responsive plungers;
(e) spring urging means acting on said abutting plate for urging said abutting plate to urge said fluid pressure responsive plungers into an open state in relation to said valve seat means; and
(f) a pin fixed to the center of said abutting plate and received in said hole in said casing and having a size relative to said hole for allowing inclination of said abutting plate due to differences in fluid pressure responsive plunger movement during normal operating conditions, said pin further having a shoulder there around having a biting edge thereon for biting into the surface of said casing when said abutting plate is urged by only one plunger in a direction to pull said pin out of said hole and preventing movement of said abutting plate away from said casing, whereby when one of said fluid pressure responsive plungers fails the valving operation of the remaining operative fluid pressure responsive plunger is disabled.

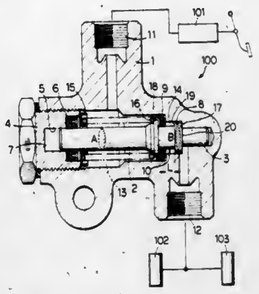
4,203,628

ANTI-BRAKE-VIBRATION TYPE PROPORTIONING VALVE

Takaaki Ohta, Okazaki, and Sadayoshi Ito, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 24, 1978, Ser. No. 936,502
Claims priority, application Japan, Jan. 3, 1978, 53-23281
Int. Cl.² B60T *8/26*
U.S. Cl. 303—6 C **6 Claims**

1. In a brake vibration preventing type proportioning valve for a hydraulic brake system, the valve comprising:
an inlet to be connected to a master cylinder of said brake system;
an outlet to be connected to at least one rear wheel brake cylinder of said brake system;
a cut valve arranged between said inlet and said outlet;
a piston controlling said cut valve being provided with on its inlet side a shaft which is of given cross section, is exposed to atmospheric pressure and provides a pressure receiving area corresponding to said cross section of said shaft, said piston being biased in a direction to open said cut valve by spring means, and being to close said cut valve at a predetermined pressure and to receive, with said cut valve closed, on a smaller effective surface thereof in cut-valve-opening direction inlet pressure and on a larger effective surface thereof in cut-valve-closing direction outlet pressure, the improvement wherein said piston of said proportioning valve has a stroke L between an inoperative position and the cut valve closing position which fulfills the condition:



$$L \geqq \frac{V}{A}\left(1 + \frac{P_4 - P_3}{2(P_3 - P_4)}\right),$$

wherein
V is the volume of fluctuation in the rear wheel brake cylinder which is caused by irregularities in the rotating members of the rear wheel brakes and which causes pressure fluctuations,
A is the cross-section area of said shaft,
P4 is the maximal pressure at which pressure fluctuations causing the brake vibration can occur,
P3 is the minimum pressure at which pressure fluctuations causing the brake vibration can occur,
P5 is the value of P4 raised by the amplitude of the pressure fluctuations, and
wherein the pressure at which said cut valve closes is equal to or greater than the pressure P5.

4,203,629

HYDRAULIC SERVO-BRAKE SYSTEM FOR ELECTRICALLY OPERATED VEHICLES

Ove Bodin, Box 54, 710 10 Fjugesta, Sweden

Filed Jul. 19, 1978, Ser. No. 926,198
Claims priority, application Sweden, Aug. 1, 1977, 7708751
Int. Cl.² B60T *13/16*
U.S. Cl. 303—10 **4 Claims**

1. A hydraulic servo-brake system for an electrically driven vehicle, the vehicle including an hydraulically operated working element and having an hydraulic control system comprising:
pump means for providing a hydraulic medium under pressure;
an hydraulic supply line system for supplying pressurized medium from said pump means to at least one hydraulically operated mechanism in the vehicle;
a regulator valve for regulating the flow of hydraulic medium to the hydraulically operated mechanism;

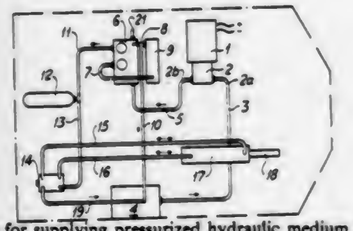
means for accumulating at least some of the hydraulic medium in said hydraulic supply line system; and

means for detecting the pressure of the medium in said supply line system and for controlling the operation of said pump means such that said pump means is actuated when a predetermined low-pressure value is detected in said supply line system and said pump means is deactuated when a predetermined high-pressure value is detected in said supply line system;

said hydraulic servo-brake system comprising:

an hydraulic cylinder;

a piston disposed within said cylinder and connected to the master cylinder of a brake system for the vehicle;



means for supplying pressurized hydraulic medium from said hydraulic supply line system to said hydraulic cylinder;

a control valve for controlling the volume of hydraulic medium supplied from said hydraulic supply line system to said hydraulic cylinder; and

a brake pedal for operating said control valve, said control valve being responsive to the position of said brake pedal such that the volume of hydraulic medium supplied to said hydraulic cylinder is proportional to the amount of depression of said pedal from a rest position, to thereby control the pressure of medium in said hydraulic cylinder in dependence upon the position of said brake pedal.

4,203,630

BRAKE CONTROL UNITS

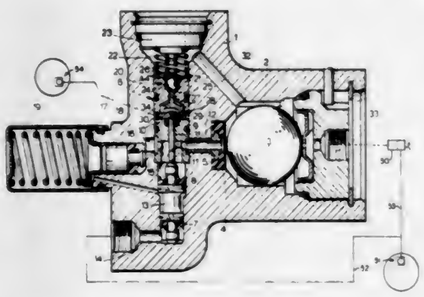
Alan G. Dixon, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Oct. 24, 1978, Ser. No. 954,282

Claims priority, application United Kingdom, Oct. 27, 1977, 44857/77; Mar. 22, 1978, 11271/78

Int. Cl.² B60T *8/14*

U.S. Cl. 303—24 C **12 Claims**



1. A brake control unit for a vehicle hydraulic braking system, said braking system including a master cylinder for applying pressure to front and rear wheel brakes, said brake control unit being adapted for incorporation between said master cylinder and at least one hydraulic actuator for said rear wheel brakes, said front wheel brakes being adapted to be applied directly by pressure from said master cylinder, said control unit incorporating an inertia-controlled valve, adapted to close when the deceleration of said vehicle exceeds a predetermined value, and an outlet port for connection to said hydraulic actuator, closure of said inertia-controlled valve being operative to ensure that any subsequent increase in pressure applied to said outlet port occurs at a lesser rate than that at which the pressure of said master cylinder increases, said control unit also incorporating pressure-responsive override means responsive to the pressure applied to said front wheel brakes, said override means being operative, after closure of said inertia-controlled valve and following reduction in pressure applied to said front wheel brakes, to override the effect of said inertia-controlled valve in reducing the rate of pressure increase applied to said rear wheel brakes.

4,203,631

HYDRAULIC SERVO-ASSISTED BRAKING SYSTEM FOR MOTOR VEHICLES

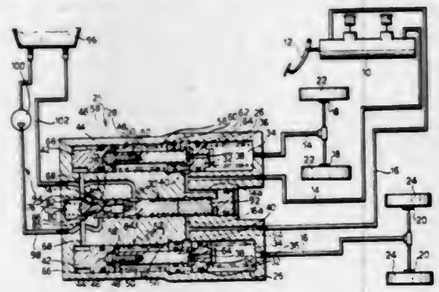
Enrico Rivetti, Turin; Giuseppe Amedei, Modena, and Antonino Bertone, Vercelli, all of Italy, assignors to Centro Richerche Fiat S.p.A., Orbassano, Italy

Filed Jan. 3, 1979, Ser. No. 742

Claims priority, application Italy, Jan. 4, 1978, 67002 A/78

Int. Cl.² B60T *13/16*

U.S. Cl. 303—52 **6 Claims**



1. Hydraulic servo-assisted braking system for motor vehicles, of the type comprising: a master cylinder; an auxiliary cylinder having an auxiliary piston mounted for fluid-tight sliding movement therein, and return spring means acting on the auxiliary piston, said auxiliary piston having a central through bore, brake actuator cylinders associated with the wheels on an axle of the vehicle and connected to said master cylinder through said auxiliary cylinder; a cylinder connected to the master cylinder in which a piston is sealingly slidable for displacement under the action of the pressure in said master cylinder chamber, and biassing spring means acting on said piston; a source of hydraulic fluid under pressure; a servo-cylinder containing a servo-piston having a stem which extends within the auxiliary cylinder so as to close, upon displacement of said servo-piston, the central bore of the said auxiliary piston, said servo-piston leaving said bore open when in its retracted rest position in the servo-cylinder;

wherein the improvements comprise the following elements in combination:

a master cylinder of the type controlling two separate braking circuits connected to the brake actuator cylinders of the respective pairs of wheels on two respective axles of the vehicle, through respective said auxiliary cylinders, wherein the respective auxiliary pistons are slidable sealingly against the action of respective return springs, the auxiliary pistons each having a central through bore;

a respective said servo-cylinder arranged coaxially with each respective auxiliary cylinder and having a respective said servo-piston fluid-tightly slidable within it against the action of a spring, the servo-piston having a stem extending within the associated auxiliary cylinder, said stem having an end which cooperates with the through bore in the associated auxiliary piston to close said bore upon displacement of the said servo-piston against the action of said spring, said end of the stem being spaced from said auxiliary piston when the servo-piston is in a rest position;

an interception valve for connecting the ends of the servo-cylinders, on the opposite sides of the respective servo-pistons from the stems, to the source of hydraulic fluid under pressure, and resilient means for urging said interception valve in the direction of closure, and

a pair of pistons, each subjected to the pressure which acts during braking in one of the two braking circuits circutis, connected to the master cylinder, said pistons acting on said interception valve to move the latter against the action of said resilient means.

4,203,632

ELECTRONIC CONTROL CIRCUIT FOR AN ELECTROMAGNETIC DECELERATOR

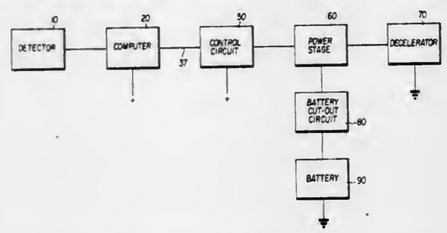
Michel Fabreges, Annonay, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 6, 1978, Ser. No. 913,102

Claims priority, application France, Jun. 9, 1977, 77 17635

Int. Cl.² B60T *8/02, 8/18*

U.S. Cl. 303—100 **4 Claims**



1. A circuit for the control of the amplitude of the electric current feeding a decelerator associated with a vehicle having a pressurized brake system with a brake pedal, comprising:

a power stage connected to said decelerator for driving said decelerator;

a control stage in series connection to said power stage for supplying command signals to said power stage and for triggering said power stage in accordance with a deceleration signal applied to said control stage;

a computer connected to said control stage for generating said deceleration signal based on the values of different vehicle parameters, said computer comprising,

first means for producing a first braking signal indicative of the manual application of braking to said vehicle, said first means including a command potentiometer activated by said brake pedal;

second means for producing second braking signals indicative of vehicle speed and for reducing said first braking signal when said vehicle speed is less than a predetermined value and increasing said first braking signal when said vehicle speed exceeds a predetermined value, said second means including a tachometric sensor; said tachometric sensor including an inductive proximity detector;

third means for producing a third braking signal indicative of brake system pressure and vehicle loading, said third braking signal combined with said first braking signal to limit the amplitude thereof; said third means including a brake pressure loading sensor and a vehicle loading sensor; and,

fourth means for producing a fourth braking signal indicative of the relative rotation speed between the front wheel and the rear wheel of the vehicle, said fourth braking signal combined with said first braking signal to reduce said first braking signal in accordance with the relative rotation speed between the front and rear wheels, said fourth means including a sensor for detecting rotation speed of the front wheels, and a sensor for detecting the rotation speed of the rear wheels;

said fourth means being comprised of a common clock and a pair of frequency threshold circuits for comparing the output of said inductive proximity detector with the output of said common clock, thereby producing said second braking signals;

wherein said deceleration signal is formed by the combination of said first, second, third and fourth signals and thereby is based on the values of the vehicle parameters respectively associated therewith.

4,203,633

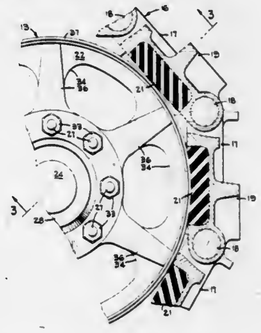
REDUCED NOISE PRODUCING IDLER WHEEL

Ronald B. Hare, Sunnyvale, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jul. 24, 1978, Ser. No. 927,070

Int. Cl.² B62D *55/12, 55/14*

U.S. Cl. 305—28 **6 Claims**



1. In combination with a track on a high speed tracked vehicle wherein the track has mounted on the inner surface thereof a plurality of elastomeric pads, and wherein the track is driven by a sprocket and is mounted in tension about a plurality of road wheels, and idler wheel arranged to receive said track the idler wheel being split into two spaced rim portions having annular peripheral surfaces thereon which come into contact with the elastomeric pads and accepting passage of track guides through the space therebetween, the improvement wherein the annular peripheral surfaces of the rim portions each include two spaced convex portions in transverse cross section, whereby the area of contact between said rim portions and the elastomeric pads is relatively small.

4,203,634

SEAL AND LOCKING ARRANGEMENT FOR A BEARING ASSEMBLY

Horst Back, Gochsheim, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 878,157

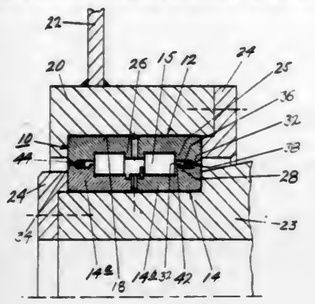
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 7704724[U]

Int. Cl.² F16C *33/78*

U.S. Cl. 308—187.2 **2 Claims**

1. A bearing assembly comprising inner and outer rings spaced apart to define an annular space for a plurality of rolling elements, at least one of the rings having a radially directed circumferentially extending first guide flange adjacent outer axial ends, each of said flanges having a circumferential surface confronting a circumferential surface of said other ring, means defining a circumferentially extending closed groove in the circumferential surface of said first flanges for an O-ring made of an elastic material, said other ring having a circumferentially extending second guide flange and means defining a recess in

the surface confronting the groove in said first guide flange, said recess being of a shallower radial depth than said groove and open in a direction toward the rolling elements, said O-ring engaging confronting surfaces of said groove and recess in the assembled position, said recess defined by a rib outboard of



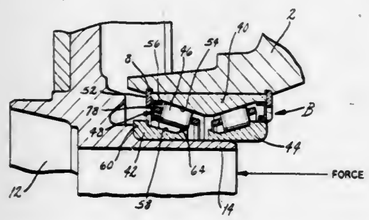
said recess spaced closely from said first guide flange, the outboard surface defining said rib being conical and outwardly divergent, the axial cross sectional area of said groove being at least as great as the cross sectional area of said O-ring in a compressed condition to facilitate assembly and disassembly of the rings with the O-ring in place.

4,203,635

WHEEL MOUNTING AND TAPERED ROLLER BEARING THEREFOR

Gerhard Reiter, Massillon, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Jul. 24, 1978, Ser. No. 927,516
Int. Cl.² F16C *33/58, 33/78*
U.S. Cl. 308—213 **17 Claims**



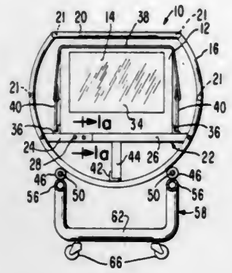
1. A roller bearing comprising an outer race having an inwardly presented tapered raceway, an inner race located within the outer race and having an outwardly presented tapered raceway located opposite the raceway for the outer race, the inner race further having a thrust rib at the large diameter end of its tapered raceway and a retaining rib at the small diameter end of its tapered raceway, the retaining rib having a beveled outwardly presented surface that leads away from the small end of the raceway for the inner race, increasing in diameter as it does; and rollers arranged in a row between the raceways of two races, with each roller having a large diameter end and a small diameter end, the large diameter ends of the rollers being adjacent to and normally abutting the thrust rib of the inner race and the small diameter ends being adjacent to the retaining rib of the inner race, the rollers and retaining rib being dimensioned and shaped such that as the inner race is withdrawn axially out of the outer race, the retaining rib will move the rollers axially a short distance until axial movement is blocked by means located adjacent to the large diameter end of the outer race, and whereupon the beveled surface on the retaining rib will deflect the small diameter ends of the rollers outwardly to an extent sufficient to free the inner race from the rollers and outer race.

4,203,636

ROCKABLE TV MOUNT

Theodore W. Wells, P.O. Box 8211, A/P Sta., San Francisco, Calif. 94128

Filed May 24, 1978, Ser. No. 909,315
Int. Cl.² A47B *81/06*
U.S. Cl. 312—7 TV **19 Claims**



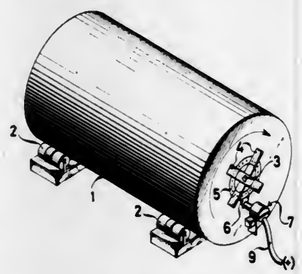
1. A mount for a television receiver having a viewing screen comprising: means adapted to be coupled to a television receiver for mounting the same for movement about a generally horizontal axis, said mounting means comprising base structure having means for positioning the television receiver thereon, means coupled with said positioning means for securing the television receiver thereto to prevent movement of the television receiver relative to said base structure, and means coupled with the base structure for supporting the same for rotation about a horizontal axis extending generally perpendicularly to the plane of the viewing screen of the television receiver when the latter is secured to the positioning means, whereby said base structure can be rotated about said axis to cause the viewing screen of the television receiver carried thereby to be tilted.

4,203,637

ELECTRICAL POWER TRANSMITTING APPARATUS

Michael Ahlgrim, Erftstadt; Gerhard Mietens, Hürth-Efferen; Wilfried Krieger, Brül, and Günter Sorbe, Hürth, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 1, 1978, Ser. No. 956,856
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1977, 2749680
Int. Cl.² H01R *39/00*
U.S. Cl. 339—5 R **6 Claims**



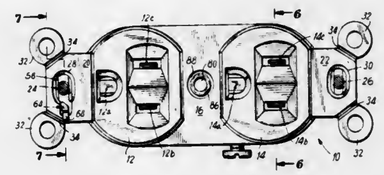
1. A collector device for galvanic treatment from an electrical source of a rotatably mounted container having side faces, the collector device comprising a connecting piece, the connecting piece having upper and lower regions, fastening means connecting the upper region to one of the side faces of the container, a shaft rigidly connected to the lower region of the connecting piece, a cylindrical receiver, including a trough and a cover, insulating means connecting the cover to the trough, the cover having a pair of bearing bushings mounted in axial alignment in opposite sides of the cover, the shaft being rotatably inserted into the bearing bushings, a low temperature melting alloy disposed in the trough, a contact plate electrically connected to the trough, a flexible electric cable electrically connected to another portion of the contact plate for connecting the device to the electrical source, a disk secured to the shaft within the receiver, the disk having a diameter which is constructed and arranged to immerse a substantial area of the disk into the low temperature melting alloy in the trough whereby the current from the electrical source is transmitted through the device when the alloy is molten.

4,203,638

ELECTRICAL RECEPTACLE AND GROUNDING STRIP THEREFOR

Hakki M. Tansi, Woodbury, N.Y., assignor to Eagle Electric Mfg. Co., Inc., Long Island City, N.Y.

Filed Oct. 10, 1978, Ser. No. 950,172
Int. Cl.² H01R *3/06*
U.S. Cl. 339—14 P **32 Claims**



1. A one-piece multi-purpose grounding strip for electrical receptacles, comprising:

(a) a generally planar, elongated base portion mountable on an electrical receptacle;

(b) a female-type grounding socket portion of one-piece with said base portion and having a pair of spaced-apart fingers for receiving therebetween a male-type ground prong of an electrical plug, each finger being bendable between an initial and a bent position in which the respective finger is substantially coplanar and non-coplanar, respectively, relative to said base portion;

(c) a grounding lug portion of one-piece with said base portion and having a hole for receiving a ground terminal fastener, said lug portion being bendable between an initial and a bent position in which the lug portion is substantially coplanar and non-coplanar, respectively, relative to said base portion;

(d) an automatic grounding portion of one-piece with said base portion and having an aperture for receiving a mounting fastener for mounting the electrical receptacle to an electrical outlet box, said automatic grounding portion being bendable between an initial and a bent position in which the automatic grounding portion is substantially coplanar and non-coplanar, respectively, relative to said base portion;

(e) all of said portions being of one-piece non-riveted construction and being constituted by the same metal copper-based material of substantially uniform electrical conductivity; and

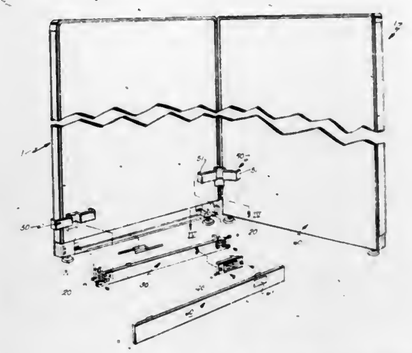
(f) all of said bendable portions being bent from their respective initial positions in which the grounding strip has a generally flattened configuration to, and being retained in, their respective bent positions in which the grounding strip has a three-dimensional configuration.

4,203,639

PANEL WIRING SYSTEM

Harold L. VandenHoek, Grand Rapids; Larry A. Speet, Holland, and Robert G. Mohr, Grand Rapids, all of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed May 26, 1978, Ser. No. 909,975
Int. Cl.² H02G *3/06, 3/28*
U.S. Cl. 339—22 R **24 Claims**



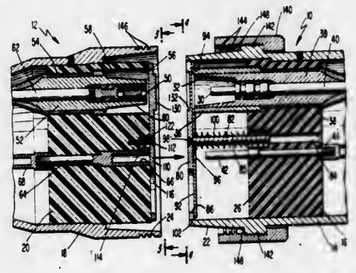
22. In a panel system comprised of at least two free standing movable room divider panels having enclosed electrical wiring, the improvement comprising: said wiring being located generally at the bottom of the panel, there being a space between adjacent panels at the bottom thereof when they are joined together; said panel system including a panel power connector for electrically joining adjacent panels, said connector being a generally elongated member for extending from one panel to the next adjacent joined panel and having a generally U-shaped deviation in the central area thereof, said generally U-shaped deviation projecting inwardly into said space between said adjacent joined panels, said generally U-shaped deviation being flexible whereby the angularly orientation of said joined panels relative to one another can be adjusted.

4,203,640

ELECTRICAL CABLE COUPLER WITH ROTATABLE PROTECTIVE COVERS

Charles D. Bice, Pittsburgh; John H. Cooper, Murrysville, and Michael L. Fenger, Westmoreland City, all of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 24, 1979, Ser. No. 6,138
Int. Cl.² H01R *13/44*
U.S. Cl. 339—41 **16 Claims**



1. An electrical cable coupler, comprising:

a first coupler section including one or more electrical contact elements;

a second coupler section including one or more electrical contact elements adapted for engagement with said contact elements of said first coupler section;

a protective cover rotatably mounted on each coupler section for movement between a protective position wherein the respective contact elements are covered to an operative position wherein said contact elements are exposed; and

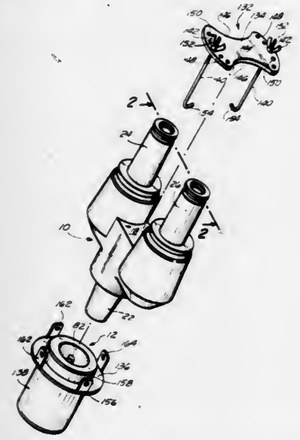
means for nonrotatably coupling said covers together upon movement of said covers into face-to-face engagement whereby upon relative rotation of said coupler sections each cover rotates to its operative position to expose said contact elements of each coupler section for electrical engagement.

4,203,641

DOUBLE BUSHING INSERT

Larry N. Siebens, Great Meadows, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,314
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—75 P **15 Claims**



1. A double bushing insert adapted to be threadedly engageable with a bushing well receptacle wherein the double bushing insert comprises a first leg portion including means for threadedly engaging the complementary threaded stud of the bushing well receptacle, and second and third leg portions including female connector means for separable engagement with a corresponding male electrical connector means, wherein the improvement comprises:

means for rotatably supporting said threadedly engaging means within said first leg portion; and

means for causing simultaneous rotation of said first leg portion and said threadedly engaging means in a first direction and for permitting limited relative rotation between said first leg portion and said threadedly engaging means in a second direction.

4,203,642

ADJUSTABLE CONNECTOR

James V. Minard, Lake St. Louis County; Loeb J. Goldman, St. Louis, and Dale R. Foss, St. Charles, all of Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

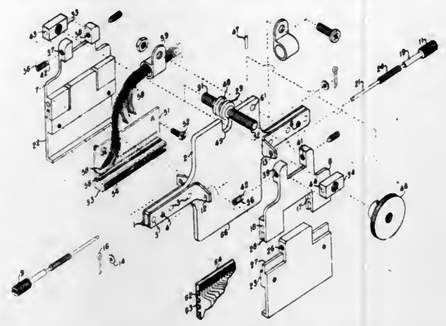
Filed May 25, 1979, Ser. No. 42,471
Int. Cl.[2] H01R *13/62*
U.S. Cl. 339—75 MP **4 Claims**

1. An adjustable cardedge connector for use with two-sided pc boards, comprising:

a. a center structure, lying substantially coplanar with the pc board after mating;

b. two clamping arms, one each pivotally attached on either side of said center structure;

c. an actuation means for moving said arms, referenced to said center structure and extending laterally therefrom to attachments with each of said clamping arms;



d. a means for individually translating a segment of each clamping arm parallel to the clamping arm pivot axis; and

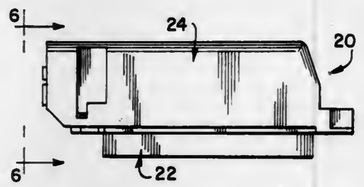
e. inwardly directed electrical contact means on the clamping arms for making contact between the connector and the pc board when said arms are actuated to compress the pc board therebetween.

4,203,643

ELECTRICAL RIBBON CONNECTOR AND HOOD

Ronald F. Krolak, North Riverside, and Joseph Warywoda, Chicago, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jul. 24, 1978, Ser. No. 927,253
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—107 **15 Claims**



1. An electrical connector comprising:

an elongated insert member having first and second ends, a mating section to receive a complimentary electrical connector and a terminal section to receive electrical conductors for terminating to the connector;

a plurality of electrical contacts supported within said insert member and extending from said mating section to said terminal section;

a hood for enclosing said terminal section of said insert member; and

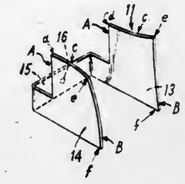
latch means associated with each end of said insert member and means for engaging said latch means associated with each end of said hood, said latch and latch engaging means having cooperating means for selectively assembling and disassembling said hood to and from a locked position on said insert member by either sliding said hood longitudinally along said insert member or pivoting said hood about one end of said insert member.

4,203,644

SPRING LOCK

Richard W. Wolpert, Roslyn Heights; Alan T. Wolpert, Massapequa; John F. Bender, Baldwin, and Harold McCormick, Roosevelt, all of N.Y., assignors to Union Connector Co., Inc., Roosevelt, N.Y.

Filed Jan. 16, 1978, Ser. No. 869,889
Int. Cl.[2] H02B *1/04*
U.S. Cl. 339—128 **5 Claims**



1. A device, for the releasable locking of an item in a panel aperture bounded by two spaced opposed edges, comprising:

(i) a bridge portion for securing to the item, and

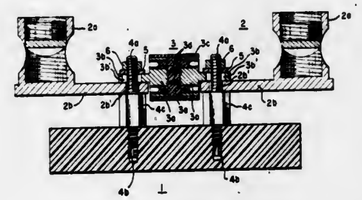
(ii) first and second wing portions carried at spaced opposed positions on said bridge portion, at least part of the device being resiliently deformable to permit approaching and separating movement of the wings, each wing portion having a first edge which extends in the direction away from the bridge from an inner end to a first tip of the wing, each wing portion having an outer edge which terminates at one end at said first tip and at the other end at said second tip, the spacing from each other of the inner ends being less than the spacing of the opposed edges of the panel aperture, the spacing of the first tip of each wing from the plane of the bridge being less than the spacing of the second tip from the plane of the bridge, the unconstrained spacing of the first tips from each other being greater than the spacing of the opposed edges of the panel aperture.

4,203,645

DEVICE FOR INSERTING A FUSE INTO AN ELECTRIC CIRCUIT

George D. Shennett, Jr., Amesbury, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 5, 1978, Ser. No. 966,639
Int. Cl.[2] H01R *9/18*
U.S. Cl. 339—147 R **1 Claim**



1. A device for inserting an electric fuse into an electric circuit comprising:

(a) a base of electric insulating material;

(b) a pair of aligned cable connectors supported in spaced relation by said base, said pair of cable connectors having axially outer cable receiving ends and axially inner perforated blade contact supporting ends;

(c) an electric fuse having a pair of perforated blade contacts supported by said blade contact supporting ends of said cable connectors; and

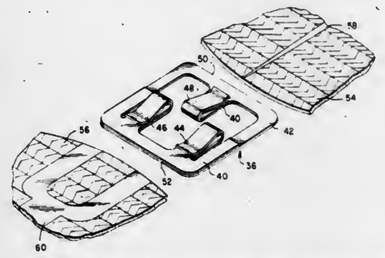
(d) joint means for supporting said pair of cable connectors on said base and for supporting said pair of blade contacts on said blade contact supporting ends of said cable connectors, said joint means comprising a pair of shafts having upper machine-screw-threaded ends projecting through said pair of perforated blade contacts and through said perforated blade contact supporting ends of said cable connectors, intermediate portions of larger width than the outer diameter of said machine-screw-threaded ends for spacing said blade contact supporting ends of said cable connectors from said base, and said shafts having self-tapping lower ends projecting into said base.

4,203,646

CLIP FOR ELECTRICALLY CONNECTING PLANAR ELEMENTS, SUCH AS SOLAR CELLS, AND THE LIKE, IN SERIES

Jerome A. Desso, Steelton; Leon T. Ritchie, Mechanicsburg, and Marvin L. Yeager, Carlisle, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 906,543, May 17, 1978, abandoned. This application Feb. 15, 1979, Ser. No. 12,264
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—205 **6 Claims**



1. A clip for electrically interconnecting adjacent pairs of planar members, such as solar cells and the like, in series, said clip comprising:

a metal blank having at least one web of insulative material bonded to one side of said blank covering approximately half the surface area thereof,

at least one first arm and at least one second arm formed in said blank, each arm extending in cantilever fashion above a portion of said blank toward an end thereof,

said first and said second arms being oppositely directed with said first arm presenting an uninsulated surface to an insulated portion of said blank and said second arm presenting an insulated surface to an uninsulated portion of said blank whereby first and second members received in opposite ends of said clip have a first side of a first member electrically connected to a second side of a second member.

4,203,647

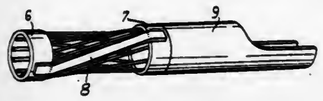
ELECTRIC SOCKETS FOR PLUG AND SOCKET CONNECTORS AND METHODS FOR THEIR MANUFACTURE

Francois R. Bonhomme, 6 Parc de Bearn, Saint-Cloud, France (92210)

Filed Jan. 19, 1979, Ser. No. 4,864
Claims priority, application France, Jan. 25, 1978, 78 01990
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—256 R **3 Claims**

1. An electric socket for plug and socket connectors, comprising a plurality of resilient conducting wires each of which is stretched between first and second points located respectively on first and second circles, which circles are located respectively on two relatively rigid rings rigidly fixed with respect to each other, so that a radius of the first circle passing through said first point on each wire and a radius of the second

circle passing through said second point on the same wire make between themselves an angle of a fixed value different from zero, whereby straight lines along which the respective wires extend at rest may be obtained from one another by rotation about an axis common to the first and second circles,



wherein said two rings are rigidly fixed with respect to each other through at least two metallic, relatively rigid distance-pieces circumferentially spaced from each other, which distance-pieces are each fixed symmetrically to said rings while being inclined substantially in the same direction and by about the same angle as the adjacent resilient wires, with respect to said axis.

4,203,648

SOLDER BEARING TERMINAL

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corp., Flushing, N.Y.

Continuation-in-part of Ser. No. 824,441, Aug. 15, 1977, Pat. No. 4,120,558. This application Aug. 23, 1978, Ser. No. 935,151
Int. Cl.² H01R *11/06*
U.S. Cl. 339—275 T **9 Claims**



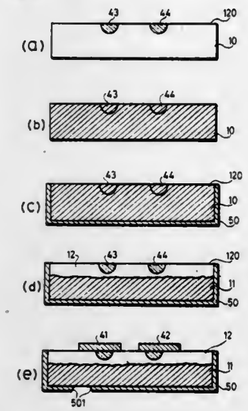
1. A terminal clip for securement to a contact pad on a substrate comprising an elongated clip body portion having a free end and a stem end, said body portion being cut longitudinally along two lines to define a central finger between spaced portions of the body portion, said finger being bent out of the plane of the body portion at approximately the point of attachment of said finger to the body portion, the free end of said body portion beyond said point of attachment constituting at least one additional finger and being bent out of the plane of the body portion in the same direction as the central finger, said central finger and additional finger defining a gap to receive the substrate, and a discrete mass of solder, the central finger being wrapped at least 180° around said mass of solder and indented into the surface of said mass for holding said mass of solder in a position adjacent said gap and on the side thereof nearer the stem end of the body portion.

4,203,649

PROCESS FOR MANUFACTURING AN INTEGRATED OPTICAL STRUCTURE AND AN OPTO-ELECTRONIC DEVICE USING SAID STRUCTURE

Gonzalo Velasco, and Michel Papuchon, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 2, 1978, Ser. No. 930,410
Claims priority, application France, Aug. 5, 1977, 77 24219
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.14 **6 Claims**



1. Process for manufacturing an integrated optical structure whereof the operation requires the application of an electric field, comprising the following steps:

(a) formation of at least one light-guide by localized doping of a region of the substrate constituted by a basic material saturated with oxygen;

(b) reduction of the material of said substrate by thermal treatment in a hydrogen plasma;

(c) deposition of a protective layer impermeable to oxygen over all the faces minus one of said substrate;

(d) oxidization of said substrate by the penetration of oxygen through the unprotected face of said substrate;

(e) deposition of electrodes on said unprotected face, the rest of the material not oxidized in the preceding step being intended to serve as the earth electrode of the structure.

4,203,650

CONNECTOR FOR SIMULTANEOUS END-TO-END CONNECTION OF GROUPS OF SEVEN OPTICAL FIBRES

Christian Millet, Meyzieu, and Francis Gauthier, Pelussin, both of France, assignors to Les Cables de Lyon, Lyons, France

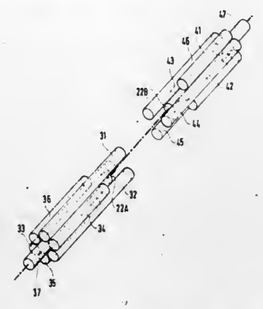
Filed May 31, 1978, Ser. No. 911,242
Claims priority, application France, May 31, 1977, 77 16566
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.21 **8 Claims**

1. A connector for simultaneous end-to-end connection of two groups of seven optical fibres, each fibre having a protective covering, said connector comprising:

opposite end pieces having oppositely directed tapering funnels leading to orifices of a size corresponding to the diameter of the circle circumscribing the assembly of the seven fibres in a centered, hexagonal configuration, and

means for alternate reciprocal longitudinal adjustment of the positions of the end faces of the peripheral fibres into two

different planes relative to a mean connection plane intermediate of said end pieces,



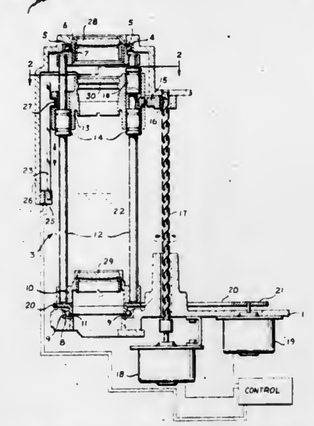
a first plane ahead of the mean connection plane and a second plane behind the mean connection plane and symmetrically of the first plane.

4,203,651

OPTICAL APPARATUS FOR VARYING FOCAL POWER ALONG ONE PRINCIPAL MERIDIAN WHILE MAINTAINING CONSTANT FOCAL POWER ALONG THE OTHER PRINCIPAL MERIDIAN

Staffan B. Persson, Kenmore, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 2, 1976, Ser. No. 710,772
Int. Cl.² G02B *15/00, 13/08*
U.S. Cl. 350—181 **4 Claims**



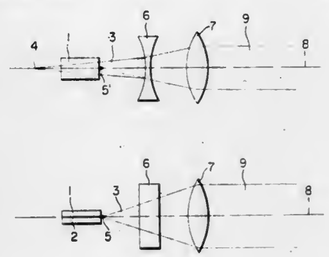
1. Apparatus for varying focal power along one principal meridian and having a fixed focal power along the other principal meridian in an optical system which comprises a stationary frame, an optical assembly rotatably mounted on said frame, said assembly having a track means, a first lens mount fixed at one end of said track means, a second lens mount fixed at the distal end of said track means, each of said first and second lens mounts having one of first and second cylinder lenses supported therein, each of said first and second cylinder lenses having an axis of cylinder positioned in a first plane containing said other principal meridian, a carriage slidably mounted on said track, a third cylinder lens supported by said carriage, said third cylinder lens having an axis of cylinder normal to said first plane and in a second plane with said one principal meridian, said first and second cylinder lenses having a combined cylinder power, said third cylinder lens having a cylinder power substantially equal to said combined cylinder power, a rotatable threaded member mounted on said frame and extending parallel to said track, a follower connected to said carriage and operably engaging said member to position said carriage at a selected location, a motor including control means operably connected to said member and a motor and control means for selectively rotating said optical assembly, whereby the cylindrical focal power along said one principal meridian in said optical system can be varied by sliding said carriage along said track and said one principal meridian can be oriented by rotating said assembly.

4,203,652

BEAM SHAPING OPTICAL SYSTEM

Hiroshi Hanada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 769,728, Feb. 17, 1977, abandoned. This application Jun. 6, 1978, Ser. No. 913,225
Claims priority, application Japan, Feb. 15, 1977, 52-15341; Feb. 15, 1977, 52-15342; Feb. 15, 1977, 52-15343; Feb. 15, 1977, 52-15344
Int. Cl.² G02B *13/08, 13/10*
U.S. Cl. 350—182 **23 Claims**



1. A beam shaping optical system for collimating the beam from a semiconductor laser, comprising:

a semiconductor laser element, the origin of divergence of the beam from the exit surface of said element in a direction parallel to the joining surface of said element lying at a position on a certain axis remote from said exit surface, the origin of divergence of said beam in a direction perpendicular to said joining surface lying at a position on said certain axis adjacent said exit surface; and

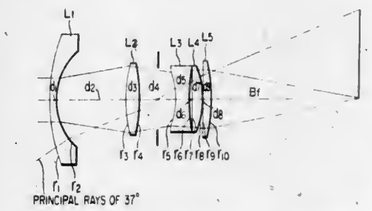
an optical system having different focal lengths in directions orthogonal to each other, the optic axis of said optical system being coincident with said certain axis, said focal lengths being coincident with said origins of divergence, respectively.

4,203,653

INVERTED TELEPHOTO TYPE WIDE ANGLE LENS SYSTEM

Ikuo Mori, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 23, 1978, Ser. No. 918,592
Claims priority, application Japan, Jun. 29, 1977, 52-77329
Int. Cl.² G02B *9/60*
U.S. Cl. 350—216 **5 Claims**



1. An inverted telephoto type wide angle lens system comprising, in order from the object side, a negative meniscus lens having its convex surface facing the object side, a first positive

lens, a negative lens, a second positive lens and a third positive lens, said lens system satisfying the following conditions:

$0.25f < d_4 < 0.5f$

$1.6d_4 < d_2 < 2.5d_4$

$d_3 < 0.5d_4$,

where d_2 is the air space between the negative meniscus lens and the first positive lens, d_3 is the center thickness of the first positive lens, d_4 is the air space between the first positive lens and the negative lens, and f is the total focal length of the entire system.

4,203,654

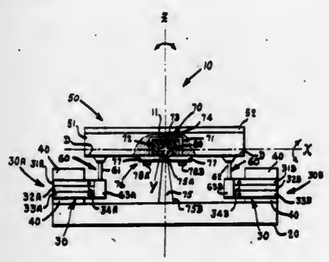
LINE-OF-SIGHT STABILIZATION REFLECTOR ASSEMBLY

Herbert B. Ellis, La Canada, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 850,327, Nov. 10, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 962,741

Int. Cl.² G02B 7/18

U.S. Cl. 350—285 **4 Claims**



1. A line-of-sight stabilization optical assembly having a dynamic center of gravity through which pass three orthogonal axes of rotation, wherein said three axes are a first axis, a second axis, and a third axis, comprising:

a. a base member;

b. a plurality of piezoelectric bender elements adjacent to, and in abutting contact with, said base member, wherein each piezoelectric bender element includes two piezoelectric ceramic wafer members that are in electrical connection with each other, and a central metallic wafer member that is interposed between said two piezoelectric ceramic wafer members;

c. means for clamping said piezoelectric bender elements to said base member;

d. an optical reflector pivotally connected to said base member, wherein said optical reflector is a mirror which comprises:

(1) a welded aluminum honeycomb substrate structure member;

(2) and, a plane replicated front surface optical mirror surface member integrated with said welded aluminum honeycomb substrate structure member;

and wherein said optical reflector is pivotally connected to said base member by a means which includes:

(1) a pivot receptacle in the form of a hole in said welded aluminum substrate structure member;

(2) a pivot means which includes a first pivot member mounted in elastomer material and rotatably movable therein, with said elastomer-mounted rotatable first pivot member fitted into said pivot receptacle and positioned at said dynamic center of gravity of said line-of-sight stabilization optical reflector assembly, and a second pivot member in the structural form of a shaft having a first and a second end, with said first end connected to said elastomer-mounted rotatable first pivot member, and with said second end connected to said base member, and wherein said elastomer-mounted rotatable first pivot member is rotatable, in and within said elastomer material mount, in one of said three orthogonal axes of rotation which pass through said dynamic center of gravity of said line-of-sight optical reflector assembly;

(3) and, means for releasably securing said elastomer-mounted rotatable first pivot member in, and within, said pivot receptacle;

e. and, means for connecting said plurality of piezoelectric bender elements to said optical reflector.

4,203,655

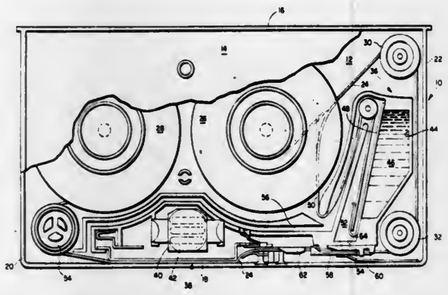
TAPERED PRESSURE PAD TO PREVENT FILM SCRATCHING

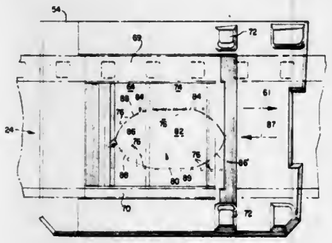
Joseph A. Stella, Peabody, and Paul B. Mason, Magnolia, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1979, Ser. No. 248

Int. Cl.² G03B 23/02

U.S. Cl. 352—78 R **6 Claims**





1. In a film cassette having a processing fluid applicator and a pressure pad assembly, said assembly having a resiliently biased pressure pad with a film engaging surface constructed to slidably, supportingly engage successive incremental portions of a non-emulsion surface of a strip of photographic film in a predetermined plane as the film is advanced in one of two opposite directions of film travel across a nozzle opening of the processing fluid applicator while the processing fluid is deposited through the nozzle opening onto the film's emulsion surface, the improvement comprising:

said pressure pad having at least one particle engaging surface depending from said film engaging surface and facing in a direction at least opposite to said one direction, said particle engaging surface being constructed to divert film carried particles impinging thereagainst in a manner and direction such that the particles are prevented from being retained by said pressure pad so as to substantially eliminate the possibility of the non-emulsion surface being scratched by such particles during film advancement in said one direction.

4,203,656

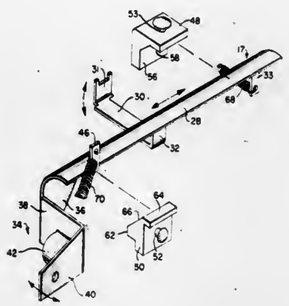
FEED SHUTTLE MECHANISM FOR MOTION PICTURE FILM STRIPS

David C. McElwaine, Millis, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 13, 1978, Ser. No. 941,762

Int. Cl.² G03B 1/22

U.S. Cl. 352—194 **2 Claims**



1. A mechanism for incrementally advancing a film strip having uniformly spaced apertures along the length thereof, said mechanism comprising:

a shuttle;

means for supporting said shuttle with respect to a longitudinal axis extending parallel to the direction of film advancement, said supporting means permitting rotational movement and longitudinal movement of said shuttle with respect to said axis;

a film aperture engaging claw supported by said body member laterally of said axis for movement with said body member relative to said axis;

means for reciprocating said body member with respect to said axis through repeated cycles, each cycle including advance and retract strokes, and for rotating said body member about said longitudinal axis to move said claw to a film aperture engaging position during said advance stroke and to a retracted disengaged position during said retract stroke, wherein said reciprocating and rotating means comprises a first cam follower carried by said shuttle and a first camming surface engaging said first cam follower and effecting said rotation of said body member about said longitudinal axis, and a second cam follower extending substantially parallel to said longitudinal axis and carried by said shuttle at a location laterally displaced from said axis and further located in one of the two radial quadrants with respect to said axis on the opposite side of said axis from said film engaging claw, and a second camming surface, engaging said second cam follower, and effecting said reciprocation of said body member upon rotation of said second camming surface about a rotational axis, the movement of said second camming surface in contact with said second cam follower during rotation thereof being in a direction opposite to the movement of said film engaging claw when said claw is moving into engagement with said film strip apertures, whereby the frictional forces developed as a result of the engagement of said second cam follower and said second camming surface is reacted through said shuttle to encourage rotation of said shuttle and said claw carried thereby about said axis to ensure positive engagement of said claw with said film strip perforations.

4,203,657

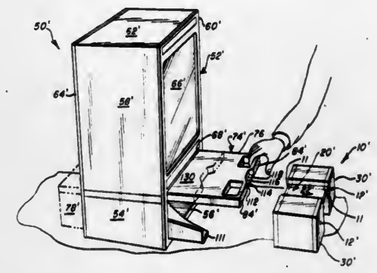
MICRO IMAGE CASSETTE AND VIEWER

Arnis E. Peters, La Crosse, Wis., assignor to Northern Engraving Company, Sparta, Wis.

Continuation-in-part of Ser. No. 861,523, Dec. 19, 1977. This application Apr. 14, 1978, Ser. No. 896,463

Int. Cl.² G03B 23/12, 1/48

U.S. Cl. 353—26 R **14 Claims**



1. For use with a cassette that houses spaced spool means upon which portions of an elongated microimage-bearing filmstrip are wound, the cassette including an elongated filmstrip passageway means through which the filmstrip may be longitudinally moved in selected incremental amounts from one of the spool means to another of the spool means, the movement of the filmstrip in the passageway means defining a filmstrip traversing plane, and the elongated filmstrip passageway means including a transverse aperture for permitting a projected light to pass through a selected portion of the filmstrip for greatly enlarged and focused display of the microimage that is provided on the selected portion of the filmstrip, the improvement comprising, in combination:

a first transparent plate located in the path of the projected light and spaced to one side of and away from the filmstrip traversing plane;

a second transparent plate located in the path of the projected light and spaced on the opposite side of and away from the filmstrip traversing plane;

the first and second transparent plates having a normal condition, when the filmstrip is not being moved, which permits opposite sides of the selected portion of the filmstrip to be moved out of said filmstrip traversing plane and to be engaged by both transparent plates so as to position said selected portion of the filmstrip in a desired focal plane that is spaced from said filmstrip traversing plane;

first and second means for respectively causing the filmstrip to move longitudinally at relatively high speed and relatively low speed; and

means operative to move one of the plates away from said normal, filmstrip-engaging, condition when the filmstrip is moved at its relatively high speed to permit the filmstrip to then move into the filmstrip traversing plane spaced from both transparent plates.

4,203,658

MICRO IMAGE STORAGE AND RETRIEVAL APPARATUS

Arnis E. Peters, LaCrosse, Wis., assignor to Northern Engraving Company, Sparta, Wis.

Filed Dec. 19, 1977, Ser. No. 861,523

Int. Cl.² G03B 1/48, 23/12; G02B 7/02

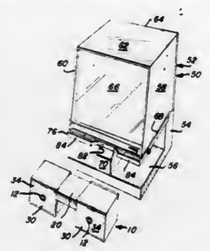
U.S. Cl. 353—26 R **25 Claims**

1. For use with a cassette that houses spaced spool means upon which portions of an elongated microimage bearing filmstrip are wound, the cassette including an elongated filmstrip passageway means through which the filmstrip may be longitudinally moved in selected incremental amounts from one of the spool means to another of the spool means, the movement of the filmstrip in the passageway means defining a

filmstrip traversing plane, and the elongated film passageway means including a transverse aperture for permitting a projecting light to pass through a selected portion of the filmstrip for greatly enlarged and focused display of the microimage that is provided on the selected portion of the filmstrip, the improvement comprising in combination:

a first transparent plate located in the path of the projected light and spaced to one side of and away from the filmstrip traversing plane;

a second transparent plate located in the path of the projected light and spaced on the opposite side of and away from the filmstrip traversing plane; and



separation-clamping means operable prior to moving the filmstrip through the filmstrip passageway means for effecting separation of the first and second plates, so that the filmstrip is completely free of engagement with both of said transparent plates during movement of said filmstrip in the filmstrip traversing plane, the separation-clamping means being also operable after a selected portion of the filmstrip has been moved into and stopped in the path of the projected light for moving one of the transparent plates to a position for clamping the selected filmstrip portion between said first and second plates in a preselected filmstrip focusing plane that is spaced from the filmstrip traversing plane.

4,203,659

TRANSPARENCY STORAGE AND DISPLAY APPARATUS

Paul Constantine, New York; Melvyn Ettinger, East Meadow, both of N.Y., and Harry S. Rubin, Willow Grove, Pa., assignors to Instructo/McGraw-Hill, Inc., Paoli, Pa.

Filed Jun. 12, 1978, Ser. No. 914,971

Int. Cl.² G03B *21/00*

U.S. Cl. 353—120 **12 Claims**



1. Apparatus adapted to be supported on a projection area of a viewing device for retaining transparencies, each having a predefined mounting edge, for storage and display comprising:

a mounting member for holding the transparencies substantially along their mounting edges in general alignment;

an opposing member in spaced relation to said mounting member;

a first connecting member having first and second ends connected to corresponding ends of the mounting and opposing members; and

a second connecting member having first and second ends connected to the other corresponding ends of the mounting and opposing members;

said members cooperating to form a frame dimensioned to circumscribe the periphery of said transparencies and having inner and outer walls, at least one top wall and at least one bottom wall for resting on the projection area of the viewing device, said mounting member holding the mounting edge of each transparency in a substantially constant position with respect to said bottom wall, said frame having means for concentrating its weight substantially in said mounting and opposing members;

said mounting member has a lower surface which is elevated with respect to the bottom wall of the frame, said lower surface cooperating with said connecting members to define a channel of sufficient height and width to receive in stacked arrangement all transparencies held by said mounting member.

4,203,660

AUTOMATIC EXPOSURE CONTROL SYSTEM FOR SINGLE REFLEX CAMERA

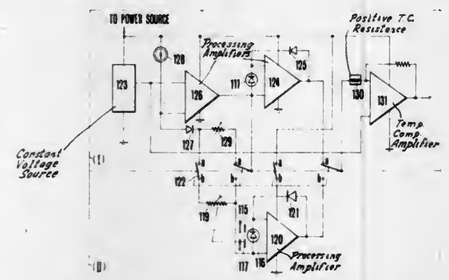
Masanori Uchidoi, Kawasaki; Tokuichi Tsunekawa, Yokohama; Hiroshi Aizawa, Machida; Tetsuya Taguchi, Kawasaki; Tadashi Ito, Yokohama, and Yoshiyuki Takishima, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 718,586, Aug. 30, 1976, abandoned, which is a continuation of Ser. No. 569,757, Apr. 21, 1975, abandoned. This application May 11, 1978, Ser. No. 904,819

Claims priority, application Japan, Apr. 22, 1974, 49-45279; Apr. 22, 1974, 49-45280; Apr. 22, 1974, 49-45281; Apr. 22, 1974, 49-45282; Jun. 27, 1974, 49-73643

Int. Cl.² G03B *7/00*

U.S. Cl. 354—31 **4 Claims**



1. A camera which permits change-over between different light measuring systems, said camera comprising:

a camera body provided with:

(a) a first light receiving element which measures light coming from an object to be photographed;

(b) a first light measurement operational amplifier which has said first light receiving element connected between the input terminals thereof, said first light measurement operational amplifier being arranged to produce an electrical signal corresponding to the output of said first light receiving element;

(c) a light measurement information producing circuit which produces a light measurement information signal for exposure computation; and

(d) change-over means connected between said light measurement information producing circuit and said first light measurement operational amplifier, said change-over means being arranged to be shiftable between a first position thereof in which said change-over means connects said first light measurement operational amplifier to said light measurement information producing circuit and a second position in which said change-over means does not connect said first light measurement operational amplifier to said light measurement information producing circuit, said electrical signal from said first light measurement operational amplifier being applied to said light measurement information producing circuit when said change-over means is shifted to said first position thereof; and

an accessory device which is attachable to said camera body, said accessory device being provided with:

(a) a second light receiving element which measures light from the object within a light measurement range different from that of said first light receiving element;

(b) a second light measurement operational amplifier which has said second light receiving element connected between the input terminals thereof, said second light measurement operational amplifier being arranged to produce an electrical signal corresponding to the output of said second light receiving element; and

(c) a terminal to which said electrical signal from said second light measurement operational amplifier is applied, said terminal being disposed at said second position of said change-over means and being arranged to have said electrical signal from said second light measurement operational amplifier applied to said light measurement information producing circuit when said changeover means is shifted to said second position thereof.

4,203,661

OPTICAL SYSTEM

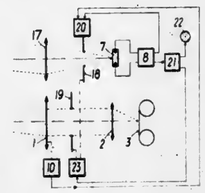
Walter Besenmatter, Vienna, Austria, assignor to Ing. Karl Vockenhuber and DDr. Raimund Hauser, both of Vienna, Austria, part interest to each

Filed Sep. 7, 1978, Ser. No. 940,293

Claims priority, application Austria, Sep. 16, 1977, 6661/77

Int. Cl.² G03B *7/08, 13/02, 9/02*

U.S. Cl. 354—53 **19 Claims**



1. An optical system comprising a lens with adjustable focal length and an aperture plate having a variable opening so as to maintain constant the amount of light leaving the lens and a light-meter device which is attached to an aperture plate adjustment device, characterized by the fact that the aperture plate adjustment device (9, 14, 23) is attached to a focal-length adjustment device (10;57;80;101;115) so that its aperture can be limited by this focal-length adjustment device, and by the fact that a signalling device (11,16,21,28, 43,53,106) is provided which emits a signal if the opening of the aperture plate defined by the focal-length adjustment device is smaller than the opening of the aperture plate (4;13;19;102;112) controlled by the light-meter device.

4,203,662

TRIGGER MECHANISM FOR PHOTOGRAPHIC CAMERA PROVIDED WITH MOTOR-DRIVEN FILM-TRANSPORT MECHANISM

Otto Stemme, Munich; Peter Lermann, Feldkirchen; Rolf Schröoder, Baldham, and Horst Karl, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 939,374, Sep. 5, 1978. This application Mar. 2, 1979, Ser. No. 16,894

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841604

Int. Cl.² G03B *1/18, 17/38*

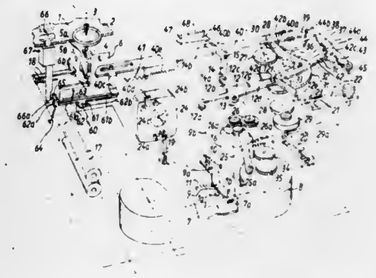
U.S. Cl. 354—173 **14 Claims**

1. In a photographic still camera, in combination, an electric motor, a control member mounted for movement in a first direction from a first to a second position and in an opposite second direction back to the first position, drive spring means operative when the control member is not blocked for driving the control member in the first direction, motion-transmitting means responding to the control member reaching its second position by coupling the control member to the motor to cause the control member to be returned by the motor back to the first position, and an improved user-activated trigger mechanism serving to block and unblock first-direction movement of the control member,

the improved user-activated trigger mechanism comprising:

a release member which the user moves from a first position to a second position to initiate exposures,

biasing means returning the release member to the first position thereof when the user lets go of the release member,



first mechanical blocking means assuming a blocking setting when the release member is in its first position for blocking first-direction movement of the control member and when the release member is in its second position assuming an unblocking setting not blocking first-direction movement of the control member;

second mechanical blocking means operative upon completion of the second-direction movement of the control member for assuming a blocking setting blocking first-direction movement of the control member at least until such time as the first blocking means reassumes its blocking setting.

4,203,663

COMPUTER CONTROLLED ELECTROSTATIC COPYING MACHINE

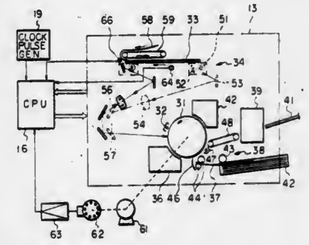
Masaaki Ogura; Nachio Seko, and Takato Yano, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 950,159

Claims priority, application Japan, Nov. 28, 1977, 52-141488

Int. Cl.² G03G *15/00*

U.S. Cl. 355—14 C **11 Claims**



1. An electrostatic copying machine including a rotary photoconductive member, imaging means for scanning an original document and radiating a light image thereof onto the photoconductive member to form an electrostatic image thereon and feed means for feeding a copy medium into image transferring engagement with the photoconductive member, characterized by comprising:

first pulse generator means driven synchronizingly by rota-

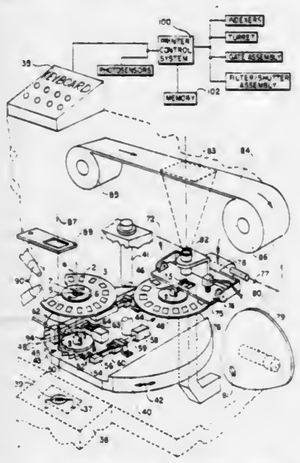
tion of the photoconductive member for generating first pulses;
second pulse generator means for generating second pulses having a frequency higher than the first pulses;
first counter means for counting the first pulses;
second counter means for counting the second pulses, the second counter means being reset by each of the first pulses;
sensing means for sensing movement between the imaging means and the document to a predetermined relative position and producing a signal in response thereto; and
computing means for storing first and second counts of the first and second counter means in response to the signal, adding a predetermined number to the first count to obtain a third count and actuating the feed means when counts in the first and second counter means are simultaneously equal to the third and second counts respectively.

4,203,664

FILM POSITIONING APPARATUS

Jerry L. Clifton; Ralph Gentile, both of Rochester; Russell G. Hurlbut, Hilton, and James L. King, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,350
Int. Cl.[2] G03B *27/32, 27/76, 27/62*
U.S. Cl. 355—64 **9 Claims**



1. Apparatus for positioning a generally disk-shaped film unit in a plurality of spaced work positions, the film unit having a hub and a plurality of images disposed around the hub, said apparatus comprising:
means for supporting the film unit;
means for positioning said supporting means to locate the supported film unit at each of the positions;
means for illuminating an image of the film unit at one of the positions; and
means engageable with the hub for moving the film unit relative to said supporting means in said one position to position selected images of the film unit relative to said illuminating means.

4,203,665

AERIAL SURVEYING METHOD TO DETERMINE GROUND CONTOURS

Richard A. Boulais, Phoenix, Ariz., assignor to Laser Systems, Inc., Phoenix, Ariz.

Filed Jan. 15, 1979, Ser. No. 3,704
Int. Cl.[2] G01C *3/08*; G01B *11/26*
U.S. Cl. 356—4 **1 Claim**



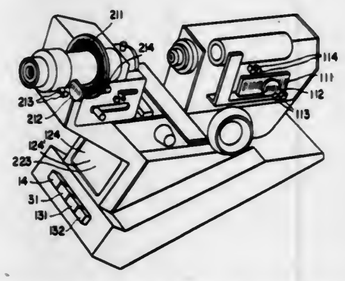
1. A method for aerial surveying to determine ground contours, said method comprising, in combination, the steps of:
(a) locating a rotating-beam laser generator at a known point on the ground and rotating said laser beam to define a reference plane;
(b) measuring the relative height of an aircraft with respect to said reference plane by sensing the location of said rotating laser beam with a stacked-array optical sensor carried by said aircraft and responsive to said beam;
(c) establishing a survey track for said aircraft along the ground and measuring the position of said aircraft along said track;
(d) continuously moving said aircraft along said track while simultaneously continuously measuring the altitude of said aircraft above the ground by altimeter means carried by said aircraft which are operatively independent of ground-located elements; and
(e) correlating the relative height (b), position (c) and altitude (d) of said aircraft to determine said ground contours.

4,203,666

LENSMETER

Tadao Ii, Yokohama; Takashi Tanaka, Tokyo, and Hayao Akaba, Akishima, all of Japan, assignors to Hoya Lens Corporation, Tokyo, Japan

Filed Nov. 1, 1977, Ser. No. 847,505
Claims priority, application Japan, Nov. 30, 1976, 51/144533
Int. Cl.[2] G01B *9/00*
U.S. Cl. 356—124 **18 Claims**



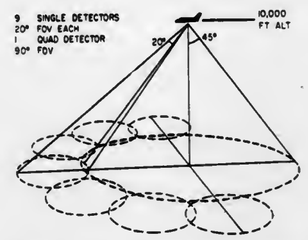
1. A lensmeter comprising, a target, an optical system for converting a power of a test lens to the relative movement of the target with respect to the test lens and a diopter displaying system for digitally displaying the dioptral number of digits with plus or minus sign of the power from the relative target movement, the diopter displaying system comprising:
a linear encoder for producing two sets of pulse signals with a phase difference, wherein the number of pulses in each set is equal and corresponds to the relative distance moved by the target and the phase difference corresponds to the direction of motion of the target, and the number of pulses of the two sets of pulse signals which corresponds to the distance of movement for one diopter is n, n being a predetermined integer in the range from four to thirty-two,
first circuitry connected with the linear encoder for converting the two sets of pulse signals with the phase difference to a dioptral number with plus or minus sign including means for dividing the number of pulses of the two sets of pulse signals by said predetermined integer n to obtain the integer part of the number and a remainder and means for multiplying the remainder by 1/n to obtain the fractional part of the number,
second circuitry substantially the same as the first circuitry,
means for resetting the second circuitry, and
means for alternatively connecting or dissociating the second circuitry with the linear encoder.

4,203,667

COVERT RECOVERY OR SIGNALLING SYSTEM

Russell W. Pierce, Bremerton, Wash.; Edward A. Teppo, and Henry P. Leet, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 965,760
Int. Cl.[2] G01B *11/26*; H04B *9/00*
U.S. Cl. 356—152 **3 Claims**



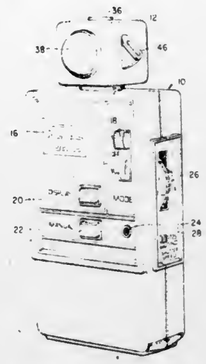
1. A location signalling apparatus comprising:
a source of electromagnetic radiation emitted along an optical axis;
a means for modulating said source of electromagnetic radiation so that said radiation is emitted with a predetermined pattern;
a means for detecting said emitted radiation whenever said detector means lies along said optical axis comprising:
a central lens system with a plurality of lenses, each lens focusing light from a predetermined area along an optical axis for the lens receiving said emitted radiation, said lenses arranged to have one lens define a large central area that is observed and the remaining lenses define a plurality of smaller overlapping areas covering at least half the perimeter of said central area in a predetermined fashion;
a quadrant detector situated on the lens axis of the lens defining said central area for detecting said emitted radiation when said source is within a quadrant of said central area;
a plurality of detectors placed with at least one detector for receiving said emitted radiation from each of said lenses observing said smaller predetermined area if said source of emitted radiation is in one of them; and
a position indicator means connected to said detector means for identifying which of said detectors is observing said source, if any, and if said source is being observed by said quadrant detector, where within said central area said source is located.

4,203,668

DIGITAL EXPOSURE METER

Darwin E. Chapman, Palo Alto, Calif., assignor to Creative Phototronics, Inc., Mountain View, Calif.

Filed Mar. 31, 1978, Ser. No. 892,415
Int. Cl.[2] G01J *1/42*
U.S. Cl. 356—215 **19 Claims**



1. Photographic exposure measuring apparatus for determining the intensity of illumination due to high intensity transient illumination and steady state sources of illumination over a preset period of time corresponding to a camera shutter speed, the apparatus comprising photo-optic sensor means for detecting the intensity of illumination and for producing an electrical signal whose magnitude is proportional thereto, means for integrating the sensor signal with respect to time over the preset time period to determine the amount of illumination, control means supplied with the integrated sensor signal information for thereupon producing an output display signal corresponding to the appropriate camera aperture setting for a given film's light sensitivity (film speed), output display means supplied with the display signal for displaying the appropriate camera aperture setting in graphical symbols at least one-half inch wide and one-half inch high, and trigger means supplied with the sensor signal and responsive to a sudden change in it corresponding to a high intensity flash of illumination, for thereafter blocking further sensor signals produced by subsequent flashes until the integration is completed and the corresponding aperture setting is displayed by the output display means.

4,203,669

WAVELENGTH READING APPARATUS FOR MONOCHROMATOR

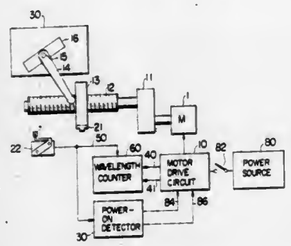
Yoshio Maeda; Koichi Matsumoto, and Koji Nishiwaki, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 734,306, Oct. 20, 1976, abandoned.
This application May 8, 1979, Ser. No. 37,033
Claims priority, application Japan, Oct. 23, 1975, 50-126906
Int. Cl.[2] G01J *3/12*
U.S. Cl. 356—332 **11 Claims**

1. A wavelength reading apparatus for an optical instrument comprising:
an optical system having a dispersion element rotatably mounted with its tuning wavelength varying in accordance with the variation of its angular position in rotation;
a driver unit for rotating said dispersion element through a predetermined angular range;
a wavelength counting pulse generator for producing wavelength counting pulses, at least one counting pulse being produced with every variation of the angular position of said dispersion element corresponding to a predetermined increment in variation of the tuning wavelength of said dispersion element;
a counter for adding to or subtracting from a set value the

number of said wavelength counting pulses depending on the rotational direction of said dispersion element;

means for producing a calibrating pulse in response to a predetermined angular position of said dispersion element in said predetermined angular range, comprising a member movable in accordance with the rotation of said dispersion element, and a switch disposed in the moving path



of said member for producing an electrical signal when the dispersion element is located at said predetermined angular position; and

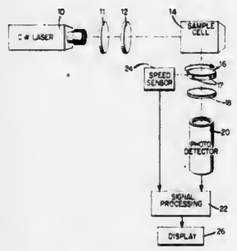
means for setting said counter to said set value in response to said calibrating pulse, said set value corresponding to the tuning wavelength of said dispersion element when it is positioned at said predetermined angular position.

4,203,670

SYSTEM AND METHOD OF FLUORESCENCE POLARIMETRY

Nathan S. Bromberg, 461 Conant Rd., Weston, Mass. 02193

Filed Apr. 21, 1977, Ser. No. 789,636
Int. Cl.² G01N *21/40*
U.S. Cl. 356—367 **39 Claims**



1. A fluorescene polarimeter comprising:

an illumination source providing a defined, narrow band light beam;

a sample cell for containing a sample solution and disposed to receive light from said illumination source and to permit fluorescent radiation from a sample solution;

an analyzer;

means for providing continuous rotation of said analyzer;

an optical filter receiving fluorescent radiation from said sample cell and having a pass band centered at the emission frequency of said fluorescent radiation;

photodetector means operative in response to radiation passed by said optical filter to provide an electrical output signal representative of radiation intensity;

signal processor means operative in response to the output signal from said photodetector means and including;

means for providing first and second signals respectively representative of the difference component and the sum component of fluorescence polarization;

means providing a time interval representing the ratio of said first signal to said second signal and including:

first integrator means receiving said second signal and providing a first integrated output signal;

second integrator means receiving a signal derived from said first signal and providing a second integrated output signal of maximum level determined by the maximum level of said first integrated output signal; and

means causing the discharge of said second integrator means at a uniform rate to provide said time interval; and

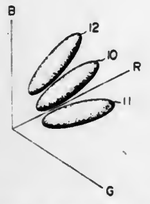
means operative in response to said time interval to provide a signal representative of polarization of fluorescence.

4,203,671

METHOD OF DETECTING FLESH COLOR IN COLOR ORIGINALS

Koji Takahashi; Taizo Akimoto, and Shigeru Watanabe, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 22, 1977, Ser. No. 809,078
Claims priority, application Japan, Jun. 22, 1976, 51/73576
The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.
Int. Cl.² G03B *27/76*
U.S. Cl. 356—402 **7 Claims**



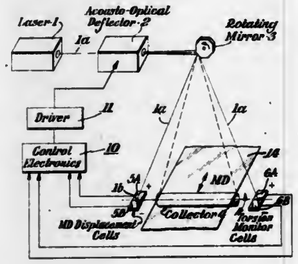
1. A method of detecting flesh color in a color original comprising defining a flesh color point as one whose red, green and blue densities fall within a solid having an elliptical cross section when plotted in a three-dimensional coordinate system the three axes of which represent the red, green and blue densities or combination thereof, measuring the red, green and blue densities of a number or points in the original, and determining that any given point is of flesh color when the measured red, green and blue densities are within said solid in the three-dimensional coordinate system.

4,203,672

SCANNING BEAM DISPLACEMENT COMPENSATION CONTROL SYSTEM

Edmund H. Smith, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 18, 1976, Ser. No. 743,003
Int. Cl.² G01N *21/18*; G01B *11/26*
U.S. Cl. 356—431 **14 Claims**



4. A closed loop control system for repetitively laterally repositioning a cyclically scanning beam of radiation to a preselected scan path comprising

a first radiation sensitive detector located on only a portion of said scan path with its sensitive surface oriented towards said radiation beam, said radiation beam impinging on said sensitive surface and developing a momentary lateral position-dependent electrical signal having a distinctive portion thereof representative of coincidence of said radiation beam with said scan path, and radiation beam deflection means responsive to said electrical signal for laterally repositioning said radiation beam on each scan into close conformity with said scan path; said first detector is a dual cell type in which said radiation beam impinges concurrently on said dual cells, thereby developing said momentary electrical signal proportionate in magnitude to the area difference in which said radiation beam overlies one cell in comparison with the other; and

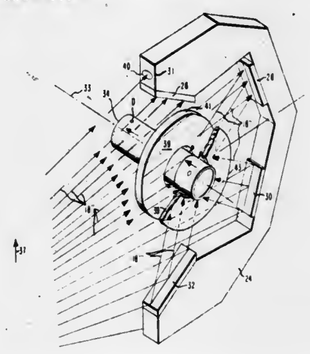
a second said radiation sensitive detector located at the end of said scan path for developing a momentary position-dependent electrical signal and wherein said radiation beam is monochromatic radiation and said deflection means comprises a voltage-controlled oscillator, said first detector being located at the beginning of said scan path, means responsive to said momentary position-dependent electrical signals only at the beginning and end of each scan, for generating a time varying beam displacement control voltage for input to said voltage-controlled oscillator, and an acousto-optical beam deflector responsive to said voltage-controlled oscillator bringing said radiation beam laterally and torsionally into close conformity with said preselected scan path.

4,203,673

METHOD AND APPARATUS FOR OPTICALLY INSPECTING CYLINDRICAL ARTICLES

Gerald I. Buckson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 26, 1978, Ser. No. 872,499
Int. Cl.² G01N *21/48*
U.S. Cl. 356—446 **14 Claims**



1. A method of optically inspecting the peripheral surface of an elongated generally cylindrical article having an axis comprising the steps of:

successively scanning said surface transversely of said axis with moving beams of light directed from each of a plurality of different circumferential locations, said beams of light lying in a plane

sensing the intensity of light non-specularly reflected from said surface from each of said locations simultaneously at different axial locations on either side of said scanning position, said non-specularly reflected light being sensed simultaneously at a small angle relative to said plane of said light beams and at all circumferential positions about said axis,

varying the position of said scanning along said axis by moving said article along said axis, and

comparing variations in said reflected light intensity.

4,203,674

USE OF BLOOD IN THE CEMENT, MORTAR AND CONCRETE INDUSTRY FOR OBTAINING A LIGHTENED MATERIAL

Charles Laleman, 80 Ile de Migneaux, Poissy, France (78300)

Filed Dec. 5, 1977, Ser. No. 857,413
Claims priority, application France, Dec. 14, 1976, 76 37653
Int. Cl.² B28C *5/00*
U.S. Cl. 366—2 **11 Claims**

1. A process for preparing a light weight cementitious material, wherein:

(a) a mixture of cement and of sand, and

(b) at least one air entraining colloid in powder form selected from the group consisting of dried whole blood, globules, red corpuscles and haemoglobin,

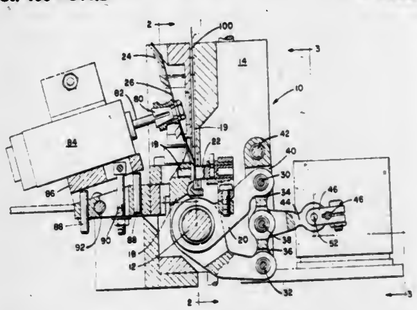
are associated together with stirring, in the presence of water, the quantity of air entraining colloid being between 0.1 and 1% by weight with respect to the weight of the cement contained in the mixture (a).

4,203,675

PRESSURE PRINTER

Miroslav Osmera, Waterloo; Rudolf Enter, Kitchener, and Robert McCallum, Erin, all of Canada, assignors to NCR Canada Ltd. - NCR Canada Ltee, Mississauga, Canada

Filed Aug. 28, 1978, Ser. No. 937,350
Int. Cl.² B41J *1/30*
U.S. Cl. 400—144.2 **5 Claims**



1. Means for transferring ink from an ink medium onto a record medium comprising a:

character bearing member, a

first swingably movable member, a

second swingably movable member, said ink medium and said record medium being positioned between said first member and said second member, a

common pivot member for supporting said first movable member and said second movable member, and

means including a pivot member and toggle members carried therefrom to allow swinging movement of said toggle members from said pivot member and connected for simultaneously moving said first member and said second member toward each other and into engagement with said ink medium and said record medium upon contact with said character bearing member.

4,203,676

RIBBON MOUNTING APPARATUS

William A. Hatsell, Hatfield, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 14, 1977, Ser. No. 833,352
Int. Cl.² B41J *33/14*
U.S. Cl. 400—208 **19 Claims**

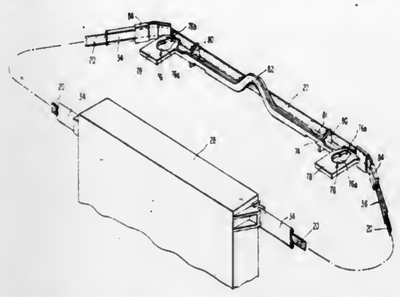
1. A removable ribbon storage apparatus for an impact printer of the type having a print point adjacent a print receiv-

ing medium and a character element striking said medium at said print point, said apparatus comprising:

a housing for storing ribbon;

a ribbon;

substantially rigid bridge means over which said ribbon passes;



a flexible leader extending between said bridge means and said housing for guiding said ribbon while permitting said bridge means to move relative to said housing; and

said ribbon being supported by and remaining in substantially the same position relative to said bridge means during printing and after removal from said impact printer.

4,203,677

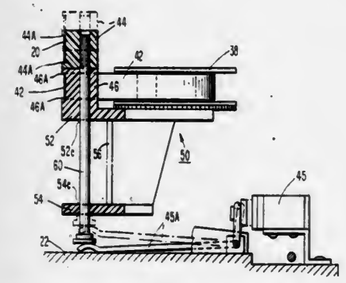
PRINTER RIBBON LIFT ASSEMBLY

William A. Hatsell, Hatfield, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 14, 1977, Ser. No. 833,272

Int. Cl.[2] B41J *33/54*

U.S. Cl. 400—214 **13 Claims**



1. An assembly for elevating a print ribbon and an erase ribbon to the print point of an impact printer, both said print ribbon and said erase ribbon being normally located at a rest position near said print point, said assembly comprising:

a pair of print ribbon lifters, one of said print ribbon lifters being positioned on each side of said print point, said print ribbon lifters defining a print ribbon path therebetween;

a pair of erase ribbon lifters, one of said erase ribbon lifters being positioned on each side of said print point, said erase ribbon lifters defining an erase ribbon path therebetween, said erase ribbon path and said print ribbon path being substantially vertically arranged with respect to one another when said ribbons are in their rest positions;

a first means for selectively elevating one pair of said lifters without disturbing the other pair of said lifters whereby one of said ribbons is intermittently positioned adjacent said print point and returned to said rest position; and

a second means for selectively elevating said other pair of lifters whereby the other of said ribbons is intermittently positioned adjacent said print point and returned to said rest position.

4,203,678

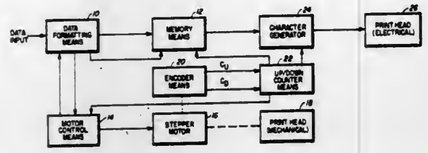
ELECTRONIC CONTROL CIRCUIT FOR A HIGH SPEED BIDIRECTIONAL PRINTER

Larry A. Nordstrom, Oviedo, and Daniel J. Szechy, Sanford, both of Fla., assignors to Scope Data Incorporated, Orlando, Fla.

Filed Aug. 17, 1978, Ser. No. 934,423

Int. Cl.[2] B41J *19/30*; G05B *19/40*

U.S. Cl. 400—320 **29 Claims**



1. An electronic control circuit for a high speed printer having a character generator coupled to a print head which forms characters as the print head is laterally displaced along a print line by a stepper motor, said control circuit comprising:

a. encoder means coupled to said stepper motor for generating count up pulses when said stepper motor displaces the print head in a first direction and count down pulses when said stepper motor displaces the print head in a second direction, the count up and count down pulses continuously defining the present print head position;

b. memory means for receiving electronic signals representative of printable characters during a load cycle and for reading out printable characters to the character generator during a print cycle;

c. means coupled to said memory means for formatting input data to be printed, loading said memory means with the formatted data, computing a desired print head position during each load cycle and initiating the print cycle at the end of each load cycle;

d. up/down counter means coupled to said encoder means, said memory means and said character generator for converting the count up and count down pulses into digital address signals for said memory means and said character generator to cause the print head to print selected characters at selected positions along the print line in response to displacements of the print head by said stepper motor; and

e. motor control means coupled to said data formatting means and to said stepper motor for controllably accelerating the print head during each print cycle as a function of the difference between the desired print head position and the present print head position.

4,203,679

PRINT HEAD CONTROL

Jonathan H. Duerr, Wargrave, and Antony C. Twitchen, High Wycombe, both of England, assignors to Trend Communications Limited, London, England

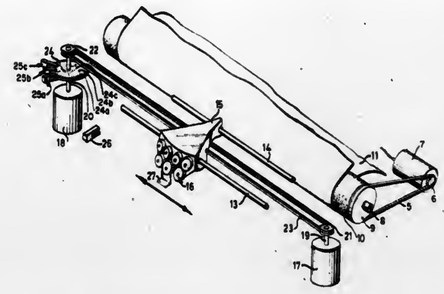
Filed Sep. 28, 1977, Ser. No. 837,417

Claims priority, application United Kingdom, Sep. 30, 1976, 40569/76

Int. Cl.[2] B41J *19/00*

U.S. Cl. 400—320 **20 Claims**

1. In a printer having a print head arranged to be traversable along a path and capable of imprinting characters on to paper supported adjacent said path, the improvement comprising providing first and second servo-motors mounted adjacent said path along which the head is traversed, a flexible tension element coupling said head to each servo-motor whereby driving said first servo-motor pulls the head along a printing traverse and driving said second servo-motor pulls the head along a fly-back traverse, and control means having two connection modes in the first of which said first servo-motor is energized to pull the head on the printing traverse and said second servo-motor is connected as a dynamic brake, and in the second of which said second servo-motor is energized to pull the head on



the fly-back traverse and said first servo-motor idles at least for the greater part of the fly-back traverse.

4,203,680

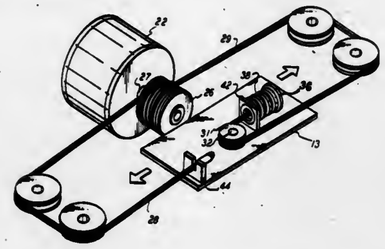
HIGH-SPEED PRINTER WITH SELF-ADJUSTING CABLE PRELOAD MECHANISM

Svetislav Mitrovich, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 10, 1978, Ser. No. 922,891

Int. Cl.[2] B41J *19/00*

U.S. Cl. 400—335 **1 Claim**



1. A carriage driving mechanism for a high-speed printer comprising:

a movable carriage for carrying a printing unit along a predetermined line of printing, said carriage including friction pulley means mounted for rotation on said carriage and resilient means for resiliently connecting a cable to said carriage;

means for intermittently transporting said carriage and said printing unit to stationary printing positions along said line of printing, said carriage being movable from a center position to extreme left and right positions, such transporting means including a motor and a second pulley means driven by said motor;

a frame for accommodating said carriage and motor;

cable segments coupling said second pulley means to said carriage, each of said cable segments having an end affixed to said second pulley means, said second pulley means having peripheral wrapping surfaces for wrapping approximately equal lengths of said cable segments on said surfaces when said carriage is in said center position, and for respectively accommodating a substantially greater length of one cable segment than the other when said carriage is in one of said extreme positions, said cable segments being respectively wrapped around said second pulley means in opposite directions, the other ends of said cable segments being affixed to said carriage, at least one of said segments being wrapped around said friction pulley means and being attached to said resilient means.

4,203,681

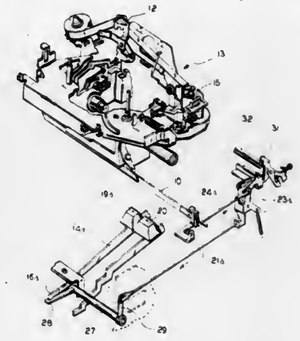
SINGLE ELEMENT TYPEWRITER WITH ERROR CORRECTION FEATURE

John C. Gall, Chicago; Chester E. Ozimek, Park Ridge, and Albert E. Chamberlain, Lake Bluff, all of Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.

Filed Nov. 25, 1977, Ser. No. 854,534

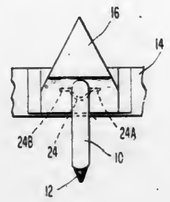
Int. Cl.[2] B41J *29/26*

U.S. Cl. 400—697 **1 Claim**



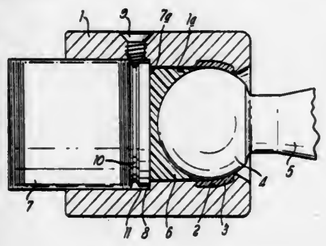
1. In a typewriter of the type having a keyboard, a carrier translatable in a linewise direction across an impression sheet, escapement control means for controlling the movement of said carrier, a single element character imprinting member mounted on said carrier, first means including a ribbon vibrator for feeding a marking tape between said imprinting member and said impression sheet and for raising said first ribbon vibrator during a printing operation, means including a second ribbon vibrator and means for feeding a correcting tape across said impression sheet, a backspace key and keylever operatively connected with said carrier, an escapement torque bar operatively connected to said escapement control means, a mode actuating bell crank, an escapement trigger operatively connected to said bell crank and normally engageable with said escapement torque bar for rendering the escapement effective, the improvement comprising an obliterating type font carried on said single element imprinting member, a correcting key associated with a connecting keylever operatively connected to said imprinting member, means operatively connecting said correcting keylever to said mode actuating bell crank whereby actuation of said correcting keylever will render the escapement control means ineffective to prevent movement of the carrier, lift the correcting tape in imprinting position and actuate the imprinting member to impinge the type font on said correcting tape, said backspace key and keylever being operatively independent of said correcting key and keylever, each successive actuation of said correcting key in each case inhibiting movement of said carrier but returning the control means to normal operational mode following each impingement of said type font on said correcting tape, and said connecting means between said correcting keylever and said mode actuating bell crank comprising a forward extension on said last-mentioned keylever, a shaft rockably supported and extending transversely of said extension, a first rigid arm on said shaft engageable by said extension, a second rigid arm on said shaft longitudinally displaced from said first arm, and link means connecting said second rigid arm to said actuating bell crank.

4,203,682
INSERT MOLDED INSTRUMENT MARKER PEN WITH ANCHORED STYLUS
William W. Hepworth, Haddonfield, N.J., assignor to Graphic Controls Corporation, Cherry Hill, N.J.
Filed Jul. 10, 1978, Ser. No. 922,840
Int. Cl.[2] B43K 1/12
U.S. Cl. 401—198 10 Claims



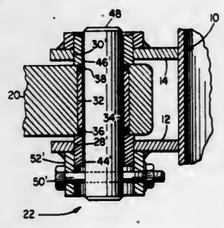
1. Insert molded instrument marker pen having a stylus tube and a pen body, a portion of said tube being embedded along a length of said tube in said body, said portion including at an intermediate point along said embedded length, an embedded anchoring projection attached to the outer surface of said tube, said anchoring projection, in cross-sectional shape, being a "U", the curvature of which corresponds to the outer curvature of said tube, said "U" having flanges at the upper ends thereof extending radially outwardly from said tube.

4,203,683
BALL JOINTS
Peter R. Rogers, Neath, Wales, assignor to Cam Gears Limited, Hertfordshire, England
Filed Apr. 7, 1978, Ser. No. 894,491
Claims priority, application United Kingdom, Apr. 12, 1977, 15041/77
Int. Cl.[2] F16C 11/00; F16D 1/12
U.S. Cl. 403—132 11 Claims



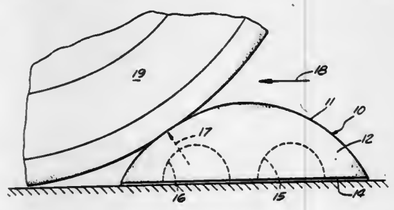
1. A ball joint comprising a housing having a bore therein, a ball received in said bore, means capable, in use, of restraining said ball against excessive penetration into sid bore, a portion of said bore of smaller diameter than said ball being capable of restraining the ball against withdrawal from said bore, a bearing annulus of synthetic plastics material having a low coefficient of friction and good wearing characteristics which partly defines said smaller diameter portion of said bore, said bearing annulus having a face generally converging in the direction of withdrawal of said ball and against which said ball bears in its restrained condition, an annular recess in said housing in which said bearing annulus is received in complementary manner, and said ball having substantially the same diameter as the portion of said bore formed in said housing in which said ball is restrained, said means capable, in use, of restraining the ball against excessive penetration into the bore comprising a bearing cap that is adapted to be subjected to a predetermined pressure, said housing defining a shoulder in the bore, and a plug, which is capable of engaging the shoulder from the side of the bore remote from the ball, subjects the bearing cap to said predetermined pressure, said cap standing proud of the shoulder when in engaement with the ball and when not being subjected to said predetermined pressure.

4,203,684
ARTICULATED JOINT INCLUDING BELLEVILLE SPRING SEALS MAINTAINED IN PRESELECTED COMPRESSED STATE
Gary L. Stecklein, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Mar. 15, 1979, Ser. No. 20,694
Int. Cl.[2] F16C 11/00
U.S. Cl. 403—158 2 Claims



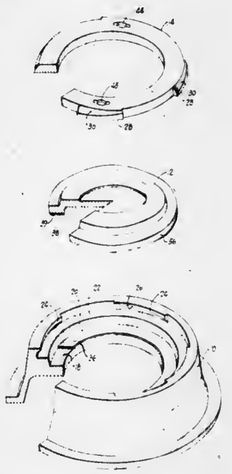
2. In an articulated connection between first and second members, the first member including a pair of parallel portions disposed on opposite sides of and pivotally interconnected to the second member by a pivot pin assembly including aligned holes located in the pair of parallel portions and the second member and a bushing press fit into the hole in the second member and having a length less than that of the last-mentioned hole; first and second pairs of opposed Belleville springs received on the pin and the combined length of the bushing and uncompressed Belleville springs being greater than the length of the hole in the second member, the improvement, comprising: said holes in the parallel portions being larger in diameter than the hole in the second member; and first and second collars respectively press fit in the holes in the pair of parallel portions and positioned against the opposite sides of the second member.

4,203,685
AUTOMOTIVE VEHICLE SPEED ARRESTOR
Richard E. Sanchez, 8548 Manatee St., Downey, Calif. 90240
Filed May 5, 1978, Ser. No. 903,077
Int. Cl.[2] E01F 13/00
U.S. Cl. 404—6 5 Claims



5. A speed bump for securement to a roadway surface over which automotive vehicles pass, comprising:
an elongated body member having a generally rectangular flat mounting surface and a second surface upwardly disposed when installed on the roadway, said second surface being convexly upwardly curved about a body member longitudinal axis;
a quantity of adhesive securing the body member flat surface to the roadway surface;
said body member being constructed of molded synthetic plastic and including a pair of spaced, generally parallel, longitudinally extending channel-like openings a part of which openings interrupt the mounting surface, the synthetic plastic being sufficiently resilient to compressingly deform on a vehicle passing thereover and on recovering its original shape providing a thrust to the vehicle which is upward and in the direction of movement of the vehicle.

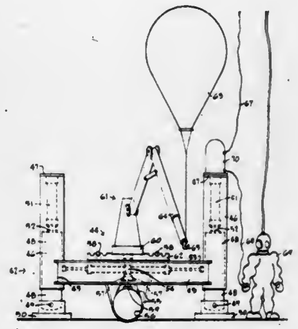
4,203,686
MANHOLE CONSTRUCTION
Harold M. Bowman, 18867 N. Valley Dr., Fairview Park, Ohio 44126
Filed Jul. 17, 1978, Ser. No. 925,390
Int. Cl.[2] E02D 29/14
U.S. Cl. 404—25 10 Claims



1. In a manhole cover assembly including a base frame defining a manhole opening and having a peripheral annular inner seat for receiving a manhole cover, an annular manhole cover seated on said seat, an annular retainer ring coacting with said cover and said frame for holding said cover in place on said seat, whereby said cover and said ring coact to present a substantially common flush surface with the top of said base frame, said retainer ring including means coacting with means on said frame for removably securing said retainer ring and said cover to said frame.

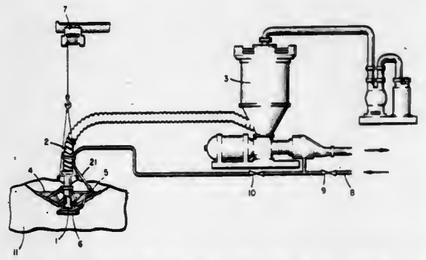
4,203,687
UNDER WATER CRANE
Maurice N. Sumner, Houston, Tex., assignor to The Sea Horse Corporation, Houston, Tex.
Division of Ser. No. 588,761, Jun. 20, 1975, Pat. No. 4,109,480.
This application May 12, 1978, Ser. No. 905,131
Int. Cl.[2] F16L 1/04
U.S. Cl. 405—170 6 Claims

1. The system for connecting pipeline ends underwater comprising:
A first underwater hoisting and handling frame comprising:
a vertically powered vertically travelling runway beam means, a laterally powered trolley means travelling along said beam means, footing means for supporting the frame on the marine floor, and framework coupling said beam and footing means, wherein said beam means is vertically powered by thrusting means at each end independently of the other end, thereby freeing said framework of stresses of synchronization,
a second underwater hoisting and handling frame comprising:
a vertically powered vertically travelling runway beam means,
a laterally powered trolley means travelling along said beam means,
footing means for supporting the frame on the marine floor, framework compling said beam and footing means,
wherein said beam means is vertically powered by thrusting means at each end independently, thereby freeing said framework of stresses of synchronization and jib crane means mounted on top thereof, allowing handling of a first load in three degrees of freedom and above said trolley while said trolley lifts a second load, and,



other independent submerged hoisting means, wherein
(a) said other means is for mounting apart from said pipeline ends for holding at least one of said pipeline ends flexibly disengaged from the marine floor,
(b) said frames are for mounting near said pipeline ends to handle said ends into alignment, and
(c) said jib crane is for handling pipeline coupling means into place proximate to said pipeline ends.

4,203,688
METHOD OF UNLOADING BULK MATERIALS FROM VESSELS
Max M. Shapunov; Mikhail A. Koppel; Felix M. Frumkin; Evgeny I. Zvenigorodsky, all of Lenigrad, U.S.S.R., and Antal Gabor, Tatabanya, Hungary, assignors to Zavod Stroitelnykh Mashin, Leningrad, U.S.S.R.
Division of Ser. No. 871,394, Jan. 23, 1978, Pat. No. 4,165,135.
This application Apr. 23, 1979, Ser. No. 32,295
Int. Cl.[2] B65G 53/42
U.S. Cl. 406—85 4 Claims



1. A method of unloading bulk materials from vessels, comprising the following steps:
vibrating bulk material to be unloaded within an intake zone to thereby mechanically loosen the material;
supplying aerating air flow into said bulk material in said intake zone simultaneously with said vibrating of said bulk material;
said aerating air flow being supplied towards an inlet opening of a taking means in pulses whose frequency is syn-

chronized with the frequency of said vibrating of said bulk material;

maintaining a vacuum within said taking means so that loosened and aerated bulk material is sucked into said taking means; and

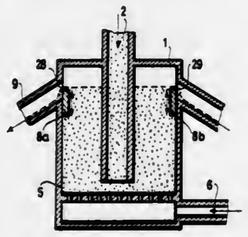
transporting said bulk material from said taking means by virtue of air.

4,203,689

SELF-ADJUSTING POWER DISTRIBUTOR

Istvan Kraxner; Antal Sebok; Janos Steiner, all of Budapest, and Jozsef Toth, Almasfuzito, all of Hungary, assignors to Aluminiumpari Tervezo es Kutato Intezet, Budapest, Hungary

Filed May 10, 1978, Ser. No. 905,171
Int. Cl.² B65G *53/40*; F27B *15/08*
U.S. Cl. 406—123 **2 Claims**



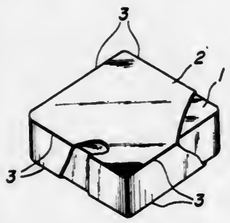
1. A self-adjusting powder distributor for alumina calcination apparatus comprising a closed casing, a powder fluidizing bottom in said casing, an inlet for supplying hydrate into the casing above said fluidizing bottom, outlets in said casing having discharge edges at the same level for distributing the hydrate from said casing to various places at a constant ratio, at least one of the outlets having means for altering its flow area and, thereby, the ratio of flow therethrough with respect to the other outlets, and means for altering the common level of said discharge edges and, thereby, the inventory of said hydrate in the distributor while maintaining said discharge edges always at a common level.

4,203,690

CERAMIC CUTTING TIP

Hiroshi Tanaka, Aichi, and Kenji Sakurai, Komaki, both of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 687,758, May 19, 1976, abandoned.
This application Sep. 8, 1978, Ser. No. 940,772
Claims priority, application Japan, May 23, 1975, 50-69816
Int. Cl.² B27G *15/00*
U.S. Cl. 407—119 **2 Claims**



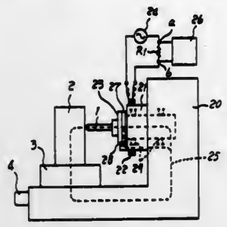
1. A ceramic cutting tip of the throw-away type comprising a ceramic sintered body having at least two cutting blades and covered on at least a cutting blade portion with a metal coating having a thickness of 1–10μ, said cutting blades being adapted to be employed in succession, wherein the metal employed in the metal coating is selected from the group consisting of nickel, cobalt, aluminum and copper.

4,203,691

CONTACT DETECTING APPARATUS

Hideo Nishimura, Aichi; Shigeo Noda, Nagoya, and Kunihiko Eto, Toyota, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 7, 1978, Ser. No. 958,363
Claims priority, application Japan, Nov. 14, 1977, 52-136554
Int. Cl.² B23B *39/04, 9/00, 39/06*
U.S. Cl. 408—8 **3 Claims**



1. In a machine tool including a machine body, a work table mounted on said machine body for mounting thereon a workpiece to be machined, a spindle head mounted on said machine body, a tool spindle rotatably supported through bearings in said spindle head for supporting a tool, and control means for effecting relative movement between said work table and said tool spindle, a contact detecting apparatus comprising:

an AC power source;

a coil mounted on the periphery of said spindle head and connected to said AC power source for generating an induced current in a looped secondary circuit including the workpiece, work table, machine body, spindle head, tool spindle and tool, when said workpiece and said tool are moved relatively into contact with each other;

means included in said secondary circuit for bypassing an electric resistance in said bearings; and

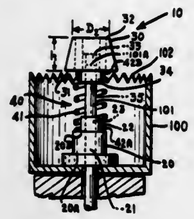
means connected between said AC power source and said coil for detecting a change in an electric signal caused by the contact between said workpiece and said tool.

4,203,692

SELF-CENTERING HOLE SAW ADAPTER

Roger S. Jensen, Box 186, Garland, Utah 84312

Filed Dec. 20, 1978, Ser. No. 971,589
Int. Cl.² B23B *41/00*
U.S. Cl. 408—96 **5 Claims**



1. A self-centering hole saw adapter, for use in combination with a toothed edge hole saw having a shaft centrally disposed within the hole saw and connected thereto, and with said shaft having a portion thereof protruding beyond said toothed edge of said hole saw, comprising:

a. a first member having a first hole therein and therethrough complementary to said centrally disposed shaft, with said first member removably mounted on and fitted over said shaft, through said first hole;

b. a second member in the geometric form of a frustum of a right circular cone having a circular base with a diametric width; a circular section parallel to, oppositely disposed to, and less diametrically wider than, said base; and, a first

hole therein and therethrough extending from said base to said parallel section, with said first hole complementary to said centrally disposed shaft, and with said first member removably mounted on and fitted over said shaft through said first hole, and also with said base of said second member facing said first member;

c. and, an elastic and resilient body interposed between, and releasably interconnecting, said first member and said second member, with said body removably mounted on and fitted over said shaft;

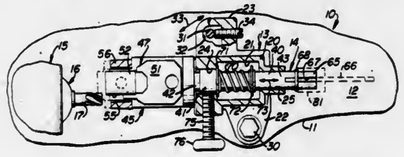
whereby said first member, said second member, and said elastic and resilient body are in alignment, are releasably interconnected, and form a one-piece unit, and whereby said one-piece unit is, in and of itself, removably mounted on and fitted over said shaft in either a "first member-up" position or a "second member-up" position, with said unit extending beyond said protruding portion of said shaft.

4,203,693

DUPLICATING MACHINE FOR TUBULAR KEYS

Jerome Schwartz, and Joseph Levitt, both of Philadelphia, Pa., assignors to Taylor Lock Company, Philadelphia, Pa.

Filed Jul. 27, 1978, Ser. No. 928,580
Int. Cl.² B23C *1/16*
U.S. Cl. 409—81 **11 Claims**



1. A duplicating machine for tubular keys, said machine comprising: a base, a generally cylindrical cutter rotatably mounted about an axis and having a cutting face transverse to said cutter axis; on said base and having a radius generally equal to the radius of a tubular key notch, a mount at a fixed location on said base spaced from said cutter, a key carrier supported by said mount for shifting movement on an axis parallel to the axis of said cutter and rotative movement to spaced angular locations relative to the axis of said carrier, a work holder on said carrier for gripping engagement with the stem of a blank key to be cut by said cutter upon longitudinal carrier shifting movement, a control holder on said carrier for holding a key to be duplicated with its stem in fixed generally parallel and aligned relation with the stem of a gripped key blank, and a guide having a radius generally equal to the radius of a tubular key notch fixed relative to the axis of said cutter, said guide having an axis parallel to the axis of said cutter and located in similar relation to a key on the control holder as a key blank held by the work holder is located relative to the cutter, whereby control holder movement by a key to be duplicated in guided relation with said guide effects carrier shifting and rotative movement for corresponding cutting by said cutter of a key blank held by said work holder.

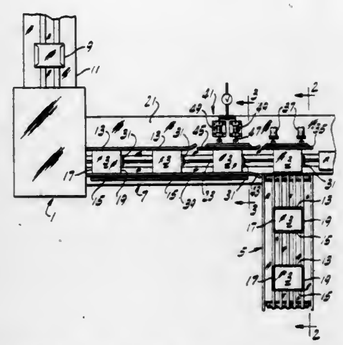
4,203,694

SQUARING REAMS OF PAPER FOR WRAPPING

Robert C. James, Sheboygan, Wis., assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed May 15, 1978, Ser. No. 905,634
Int. Cl.² B65H *9/10*
U.S. Cl. 414—28 **4 Claims**

1. Apparatus for feeding reams of paper to a wrapping apparatus and squaring up the reams as they are fed comprising means for feeding the reams forward one after another with two opposite sides of each ream extending generally in the direction of feed and the other two opposite sides extending generally transversely of the direction of feed, said feeding means comprising a conveyor having a stationary surface over which the reams may be pushed, endless conveyor means having a series of pushers thereon adapted to extend up above the reams at the rear of the reams for pushing the reams over said surface, said endless conveyor means being movable continuously relative to said surface for continuous delivery of reams of paper to the wrapping apparatus, and means engageable with at least one of said two opposite sides of each ream



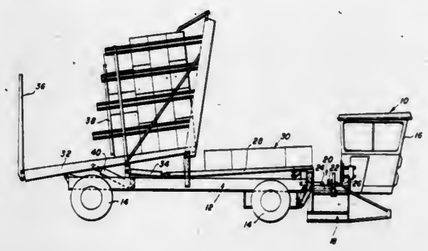
for subjecting each ream being pushed forward by said pushers to forces applied repetitively transversely of the ream thereby to attain register of the sheets of the ream in the transverse direction, with the frictional resistance between the sheets of the ream as the latter is pushed forward and said means applying the force being effective to bring the sheets back against a respective pusher thereby to attain register of the sheets of the ream in the longitudinal direction.

4,203,695

AUTOMATIC BALE WAGON CONTROL SYSTEM

Edward J. Wynn, Leola, and Cal L. Bryant, Lancaster, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 14, 1978, Ser. No. 933,233
Int. Cl.² B65G *57/32*
U.S. Cl. 414—40 **12 Claims**



1. In a bale wagon including first and second bale accumulating means and including bale handling means for sequentially picking up bales of crop material and arranging said bales into tiers and stacks, and further including means, feeding hydraulic fluid under pressure to said bale handling means, a sequential control system for said feeding means and said bale handling means comprising:

a plurality of solenoid valves for controlling flow of said hydraulic fluid,

an electronic gate network,

a plurality of sensors for feeding data to said gate network representative of the operation state of said bale handling means,

first counter means providing output data representative of the number of completed cycles of said first accumulating means has during a loading sequence,

second counter means providing output data representative

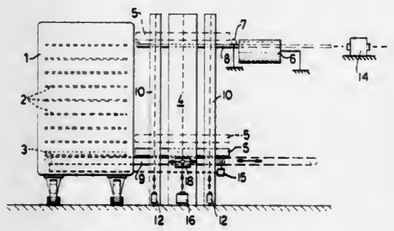
of the number of completed cycles of said second accumulating means has during a loading sequence,
first memory means having stored therein data representative of a plurality of individually selectable stack configurations,
means for addressing said first memory means with a signal representative of a selected one of said stack configurations and said output data from said second counter means and providing an output from said first memory means,
second memory means addressable by said output from said first memory and said output from said first counter means for providing control signals, and
latch means operated by said control signals and output signals from said gate network for providing command signals to said solenoid valves for operating selected ones of said solenoid valves and thereby said bale handling means sequentially for forming said selected one of said stack configurations.

4,203,696

TRAY UNLOADING DEVICE

Gunnar V. Lindberg, Vällingbyvägen 212, 162 21, Vällingby, Sweden

Continuation of Ser. No. 605,292, Aug. 18, 1975, abandoned. This application Dec. 7, 1977, Ser. No. 858,345
Int. Cl.² B65G *1/00, 47/00;* E04H *6/06*
U.S. Cl. 414—331 **3 Claims**



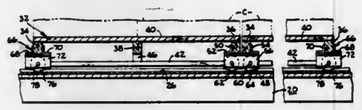
1. In combination, a tray transport van with vertically spaced apart pairs of horizontal tray rails, carry-away conveyor and a tray unloading apparatus for transferring trays from the vertically spaced apart pairs of horizontal tray rails in the tray transport van to a horizontal infeed station of the carry-away conveyor, the improvement comprising, in said unloading apparatus, a set of spaced apart vertical side pillars; a single set only of two laterally spaced apart parallel tray guide tracks mounted for vertical rectilinear movement on said vertical side pillars and disposed essentially horizontally; drive means connected to said set of tray guide tracks to vertically shift said set along one side of said pillars into a plurality of different vertical positions which correspond to the levels of transport van tray rails, the uppermost of the vertical positions being substantially level with the in-feed station of said carry-away conveyor so a tray can be laterally shifted from the tray guide tracks onto said carry-away conveyor at the upper level; a second set of vertical side pillars located adjacent said first mentioned set of side pillars; a horizontal outfeeding continuous belt conveyor located below and between said set of tray guide tracks and mounted on said second set of pillars for independent selective vertical and horizontal movement as a unit, vertically to a plurality of levels equal to the levels of trays in the van, and horizontally so that a portion of the continuous belt conveyor can be positioned into the van between the van tray rails and raised to any selected level of a pair of said van tray rails to engage and carry trays from the van to said set of vertically shiftable tray guide tracks; means for vertically shifting said belt conveyor; means for horizontally moving said belt conveyor as a unit; and means located adjacent the top portion of said vertical side pillars at the upper level position of said set of vertically shiftable tray guide tracks, comprising a laterally shiftable horizontal tray shifter to engage and shift any tray on the set of tray guide tracks to the in-feed station of said carry-away conveyor, and means for shifting said tray shifter.

4,203,697

TRANSFER APPARATUS FOR PALLETIZED LOADS

David W. Cayton, Cupertino, Calif., assignor to Bud Antle, Inc., Salinas, Calif.

Filed Jun. 24, 1977, Ser. No. 809,785
Int. Cl.² B60P *1/64*
U.S. Cl. 414—345 **2 Claims**



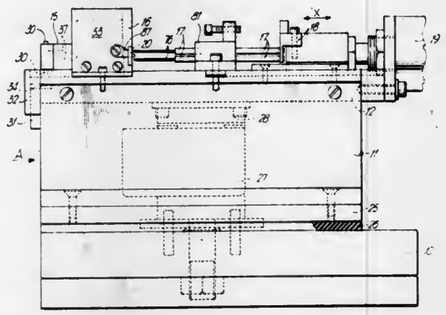
1. Apparatus for transferring a group of loaded pallets from the bed of a vehicle to the bed of a carrier, the pallets including beams having a thickness dimension at the peripheral margins thereof, comprising means forming a first pair of parallelly spaced apart longitudinally extending track grooves on the bed of said vehicle, means forming a second pair of parallelly spaced apart longitudinally extending track grooves on the bed of said carrier, said second pair of track grooves being spaced from one another by an amount equal to said first pair of track grooves, means for supporting said pallets on said vehicle bed, said supporting means including a roller assembly having a frame, an upper portion of said frame defining a slot having a width dimension corresponding to twice said thickness dimension to receive beams of two abutting pallets therein, and a lower portion of said frame having means for supporting at least one roller for rotation about an axis parallel to the width dimension of the slot, said roller being engageable in said track grooves, means for aligning said carrier relative said vehicle so that said first pair of track grooves is in alignment with said second pair of track grooves, and means for drawing said pallets from said vehicle bed onto said carrier bed.

4,203,698

APPARATUS FOR SIMULTANEOUSLY LOADING A MULTIPLICITY OF PINS INTO A LOADING FIXTURE FOR A PIN INSERTION MACHINE

Jean M. Dupuis, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 27, 1978, Ser. No. 919,666
Int. Cl.² H05K *3/30*
U.S. Cl. 414—404 **5 Claims**



1. Apparatus for simultaneously loading a multiplicity of pins into a loading fixture for a pin insertion machine, comprising:
a support plate;

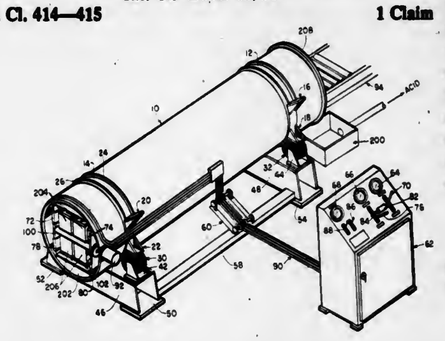
means for locating and holding a loading fixture on said support plate, said fixture having two rows of holes for receiving and holding pins;
a magazine on said support plate and having a plurality of vertical compartments, for holding pins in vertical rows, said compartments spaced to be aligned with the pin receiving holes of a loading fixture;
a plurality of elongate insertion members slidably mounted on said support plate, said insertion members arranged in two rows, an insertion member axially aligned with each compartment in said magazine, each insertion member comprising a tubular housing, a piston axially slidable in said housing, and a pin extending axially from said piston out of said housing, and a compression spring behind said piston, and means for holding a template between said insertion member and said compartments in said magazine, said template having a predetermined pattern of holes therein corresponding to a predetermined distribution of pins to be inserted in said holding fixture, the arrangement such that an axial movement of said insertion members, the piston and associated pin can retract against said spring when a hole is not present in a turnplate whereby a pin is not transferred from said magazine to said holding fixture; and
actuating means for moving said elongate insertion members axially, whereby the insertion members enter said magazine and push a pin out of each compartment into a corresponding pin receiving hole in the loading fixture.

4,203,699

METHOD OF DUMPING AND COLLECTING CORROSIVE SUBSTANCES FROM AUTOMOTIVE BATTERIES

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Division of Ser. No. 669,216, Mar. 22, 1976, Pat. No. 4,081,093. This application Jan. 3, 1978, Ser. No. 866,515
Int. Cl.² B65G *65/30*
U.S. Cl. 414—415 **1 Claim**



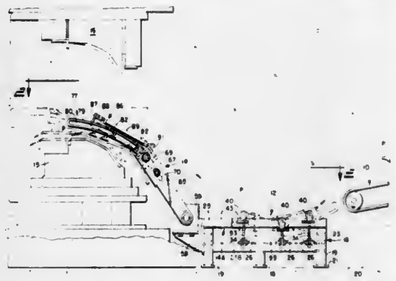
1. A method of draining acid from automotive storage batteries comprising the steps of:
(a) introducing said batteries in their upright position into an acid dumping apparatus;
(b) gripping the sides of said batteries with resilient gripping means;
(c) swinging said apparatus through an arc in a first direction by using resilient drive means until said batteries are in their inverted position;
(d) stopping said apparatus with said batteries in said inverted position by causing said resilient drive means to contact a stop on said apparatus thus shaking said batteries in said inverted position within said gripping members, whereby said shaking is amplified by interrelationship between said resilient gripping means and said batteries engaged thereby;
(e) swinging said batteries back through said arc in the opposite direction; and
(f) removing said batteries from said acid dumping apparatus.

4,203,700

ARTICULATING PART HANDLING DEVICE

Joseph P. Seme, Sr., 17607 Egbert Rd., Walton Hills, Ohio 44146

Filed Feb. 21, 1978, Ser. No. 879,719
Int. Cl.² B65G *47/91*
U.S. Cl. 414—732 **8 Claims**



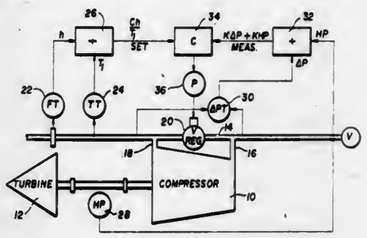
1. An articulating part handling device comprising a fixed frame having roller members thereon properly to locate a part during receipt thereof for subsequent handling, said roller members being adjustable in at least two directions properly to locate parts of varying sizes and shapes, an articulating arm assembly having at least two pivotally interconnected members, the proximal member of such pivoting arm assembly being pivotally mounted to said fixed adjacent its proximal end, a carriage slidably mounted to the distal member of said articulating arm assembly for selective movement therealong, a part support means on said carriage including plural selectively actuated part holding means selectively to secure the properly located part on said fixed frame to the part support means at several positions across the part, and actuating means selectively to pivot the articulating assembly relative to the fixed frame and/or to pivot the members of such articulating arm assembly relative to one another and/or slidably to move said carriage relative to said distal member, thereby selectively to change the orientation of the part selectively to said carriage as required.

4,203,701

SURGE CONTROL FOR CENTRIFUGAL COMPRESSORS

William C. Abbey, Houston, Tex., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

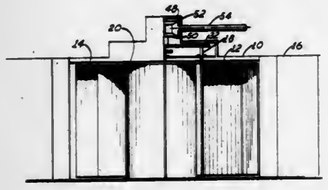
Filed Aug. 22, 1978, Ser. No. 935,833
Int. Cl.² F04D *27/02*
U.S. Cl. 415—1 **4 Claims**



1. Apparatus for surge control of a centrifugal compressor comprising in combination:
means deriving signals proportional to suction temperature

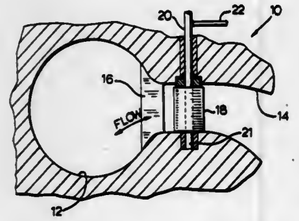
and pressure differential across the inlet orifice of the compressor;
means for dividing said pressure signal by said temperature signal to provide a first control signal;
means for deriving signals proportional to power input to and pressure drop across the compressor;
means for adding said power and pressure drop signals to provide a second control signal;
a recycle line connecting the inlet and outlet of the compressor;
valve means in said recycle line; and
means for modulating flow in said recycle line by controlling said valve in accordance with said first and second control signals so that $Ch/T_i = \Delta P$ irrespective of variations in the composition of gases being compressed where
C is a gas constant,
h is pressure across a compressor inlet orifice,
T_i is the suction temperature, and
ΔP is the pressure drop across the compressor.

4,203,702
WATER DRIVEN ENGINE
Glen A. Williamson, Wagner, Mont. 59543
Continuation-in-part of Ser. No. 798,294, May 19, 1977. This application Jun. 30, 1978, Ser. No. 920,815
Int. Cl.[2] F01D *1/28*
U.S. Cl. 415—60 3 Claims



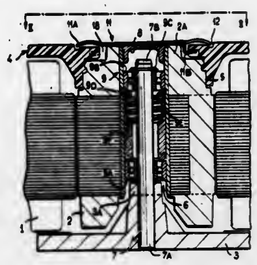
1. In a water driven engine comprising:
(a) a frame mounted in a stream of water;
(b) a first and second vertical rotor rotatably mounted in said frame and having a plurality of overlapping blades;
(c) a water diverter approximately centrally mounted forward of said first and second vertical rotors so that the flow of water which enters said frame is divided and diverted onto the rotor blades which are adjacent the sides of said frame, thereby rotating one of said rotors clockwise and the remaining rotor counterclockwise; and
(d) means for mechanically joining said clockwise rotating and said counterclockwise rotating rotor to each other and to an energy system wherein said means for mechanically joining said clockwise rotating rotor and said counterclockwise rotating rotor to each other and to an energy system comprises:
(e) a first shaft rotatably mounted on said frame, said shaft being mechanically joined to said first vertical rotor;
(f) a second hollow shaft rotatably mounted on said first shaft, said second hollow shaft being mechanically joined to said second vertical rotor;
(g) a first gear means attached to the end of said first shaft which end extends through said hollow shaft;
(h) a second gear means attached to the end of said hollow shaft which end is adjacent the first gear means attached to said first shaft; and
(i) means for mechanically joining said first and second gear means, the improvement wherein:
(j) said first shaft is mounted on said frame equidistant from said first and second vertical rotors;
(k) said first gear means is a downward projecting bevel gear;
(l) said second gear means is an upward projecting bevel gear; and
(n) said means for mechanically joining said first and second gear is one or more bevel gears,
wherein said first shaft is mechanically joined to said first vertical rotor by mechanical means comprising:
(o) a first planar gear attached to said first shaft;
(p) a second planar gear attached to the shaft of said first vertical rotor; and
(q) a chain drive mechanically joining said first and second planar gears; and
said hollow shaft is mechanically joined to said second vertical rotor by mechanical means comprising:
(r) a third planar gear attached to said hollow shaft;
(s) a forth planar gear attached to the shaft of said second vertical rotor; and
(t) a chain drive mechanically joining said third and forth planar gears.

4,203,703
HYDRAULIC TURBO MACHINE WICKET GATE SEALS
Paul Koeller, Dorval, Canada, assignor to Dominion Engineering Works Limited, Lachine, Canada
Filed Oct. 26, 1977, Ser. No. 845,546
Claims priority, application Canada, Nov. 4, 1976, 265082
Int. Cl.[2] F01D *11/00*; F01B *25/02*
U.S. Cl. 415—113 2 Claims



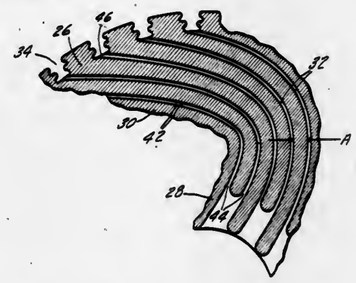
1. In a turbo-hydraulic machine having a stationary housing, an annular array of wicket gates located within the housing, each gate having a shaft portion thereof pivotally mounted in the housing the improvement comprising a large axial end clearance space provided between the array of wicket gates and the housing comprising a shrinkage allowance sufficient to accommodate relative closure of the housing gap, an annular cylinder concentric with the main axis of the machine in substantial axial coincidence with the wicket gates, an annular piston mounted in the cylinder for substantially unrestricted axial displacement therealong, a hydraulic supply connecting an inlet portion of said stationary housing with said cylinder, having pressure responsive diaphragm means therein to preclude the passage of contamination therethrough, a pair of seal rings extending about the radially inner and the radially outer peripheries of the annular piston in sealing relation with the walls of the cylinder and pressure fluid means connected to the cylinder to extend the piston axially outwardly towards the wicket gates in substantial end sealing relation therewith, to take up said axial end shrinkage clearance between said gates and said housing.

4,203,704
ELECTRIC FAN AND ESPECIALLY A FAN OF THE FLAT TYPE
Henri Saint-Amand, Antony, France, assignor to Etudes Techniques et Representations Industrielles E.T.R.I., Neuilly-sur-Seine, France
Filed Oct. 3, 1977, Ser. No. 839,287
Claims priority, application France, Nov. 23, 1976, 76 35220
Int. Cl.[2] F04D *25/08*
U.S. Cl. 416—93 R 7 Claims



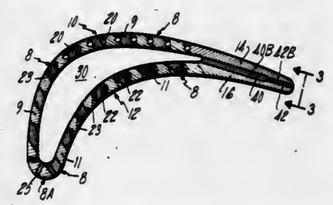
1. An electric fan and especially a fan of the flat type comprising a stator and a rotor forming a motor mounted within a housing, an impeller having a hub with a socket which fits over an annular end portion of the rotor, an axial passage within said rotor and a stationary shaft in said passage, one end of said shaft being secured to the housing and the other end being covered by a plug for sealing-off the axial passage of the rotor at the end nearest the impeller hub, an external cover-plate covering said plug and the annular end portion of the rotor which is associated with the impeller, said cover-plate having slots which open into a space located underneath said cover-plate in the vicinity of the annular end portion of the rotor in order to improve the cooling of said end portion by ventilation, said space being out of communication with the internal part of the motor, and elastic means applying said cover-plate against said end portion of the rotor in good thermal contact with said end portion, said cover-plate being of highly heat conductive material.

4,203,705
BONDED TURBINE DISK FOR IMPROVED LOW CYCLE FATIGUE LIFE
James J. Wesbecher, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Continuation of Ser. No. 643,737, Dec. 22, 1975, abandoned. This application May 15, 1978, Ser. No. 906,306
Int. Cl.[2] F01D *5/08*
U.S. Cl. 416—95 2 Claims



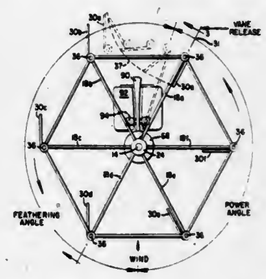
1. For a gas turbine engine a rotor disk of the type having a bore and a live rim of circumferentially continuous material, wherein the rotor disk is formed of a front member and a rear member which are metallurgically joined in an adjacent relationship and includes means formed between the front and rear members for providing a thermal profile characteristic to the disk, including a first region of nearly constant temperature running from the bore toward the live rim and a second region of substantially elevated temperature at the live rim and wherein said means for providing said thermal profile characteristic includes cooling conduits which are curved with increasing radius from the bore to the rim to maintain a substantially uniform material thickness therebetween.

4,203,706
RADIAL WAFER AIRFOIL CONSTRUCTION
W. Craig Hess, Lake Park, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 28, 1977, Ser. No. 865,356
Int. Cl.[2] F01D *5/18*
U.S. Cl. 416—97 A 4 Claims



1. An airfoil shaped member having pressure and suction walls formed of radial wafers wherein the forward portion is formed of a plurality of parallel radial wafers bonded together having a hollow cavity therein for receiving a cooling fluid, cooling passages formed in the pressure and suction walls of said airfoil shaped member between the surface of abutting radial wafers, two side wafers bonded to the last parallel radial wafer and extending therefrom at an angle forming the trailing edge region of said airfoil shaped member, said side wafers having wavy grooves on the meeting surfaces thereof whereby the wavy grooves of each side are offset from each other in parallel planes, said grooves being connected to said cavity at one end and to the trailing edge of the blade at the other end, said wavy grooves of one side wafer crossing over the wavy grooves of the other side wafer, each groove on its side wafer forming a single passage.

4,203,707
WINDMILL WITH AUTOMATIC FEATHERING CONTROL AND STORM PROTECTION
William J. Stepp, 4241 Park Ave., Lake Station, Ind. 46405
Continuation-in-part of Ser. No. 530,830, Mar. 3, 1975, abandoned. This application Sep. 28, 1976, Ser. No. 727,352
Int. Cl.[2] F03D *7/06*
U.S. Cl. 416—119 5 Claims



1. In a windmill of the vertical axis type there is a vertical rotatable tubular center shaft mounted on a thrust bearing at the bottom end in a base and held erect by a thrust and a stabilizing bearing at the top positioned in the center of two or

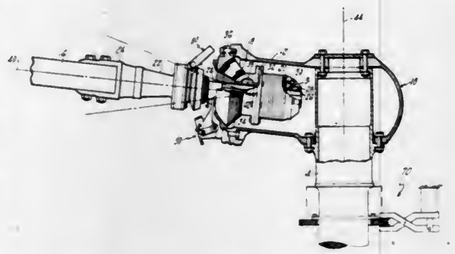
more intersecting trusses of which the outer ends extend beyond the periphery of the windmill and connected to guy wires or cables which are in turn anchored to the medium which holds the base, said tubular shaft having affixed thereto a plurality of radial arms, one set of arms located a few feet above the base bearing and another set spaced above the lower set and near the trusses at the top and so affixed to the tubular center shaft as to be geometrically congruent to the radial arms below, there being a swingable wind power blade suspended between each pair of the upper and lower matching radial arms, said blades vertical and parallel to the tubular center shaft of the windmill and journaled in bearings at the outer ends of the radial arms, said bearings receiving the ends of the axis posts of the swingable blades enabling each blade to rotate three hundred sixty degrees horizontally on its axis post during each rotation of the windmill, said type of windmill equipped with cam means provided to cause each blade to feather into a rotation opposite in direction to the rotation of the windmill by the last significant remaining wind pressure on the pressure side of the blade before feathering, said means consisting of the machinery of an apparatus comprised of two identical inverted frustum bodies or conical cam cups each encircling the center shaft and supported by thrust bearings in collars thereon, one of said bodies within a few inches of and below the top of the space provided between the upper and lower radial arms, its counterpart located near the bottom of said space, said bodies having been bored through vertically at their centers admitting sleeves firmly affixed therein, said sleeves slidably fit around the tubular center shaft of the windmill affording both vertical and rotational movement around the vertical center shaft, the sleeve of the upper frustum body extending a short distance inferiorly therefrom and the sleeve of the lower frustum body extending superiorly up and around the center shaft a short distance, said bodies rigidly connected one to the other by a directional control wind vane adjustably clamped to both sleeves, maintaining a rigid constant relationship to cams one to the other within the frustum bodies in both vertical and rotational movement around the center shaft, movable in unison, such rigidity effected by the aileron-equipped wind-direction-vane, said ailerons lift the vane and the frustum body cam assemblies in winds of intolerable velocities to feather all blades simultaneously, each of said cam assembly bodies having been machined or cast with a circular space inside, around the interior, outwardly from the sleeve for housing horizontal cam follower wheels, said space open at the bottom and extending the greater distance upwardly toward the top of the conical body, the inner and outer walls of said space elevationally parallel one to the other and angular to the vertical shaft in an outwardly upward direction, there being a cam lobe forming a part of the upper section of the outer wall of the cam-follower track space and confronted by a matching depression in the opposite or inner wall forming a detour from the otherwise circular space of the cam-follower track permitting an inward horizontal diversion from the otherwise circular travel of the cam-follower wheels, each wheel supported in a horizontal position and propelled by a rigid linkage of rods which are attached to the inner end of a slidable bar supported in apertured supports which are attached to a radial arm of the windmill, the cam-follower wheel, the rod linkage and the slidable bar constituting the linkage to a hinged upwardly pivotal blade-stop latch at the bar's outer end removable from its engagement with the power blade by being withdrawn horizontally as a result of the cam-follower being deflected from its circular course as it passes the cam in the cam assembly and pulling said linkage inwardly, all said assemblies in conjunction one with the others in duplicate at the top and bottom of the blade space, the linkage assemblies propelled by the radial arms as the windmill rotates, an alternative disengagement of the latches from the power blades is initiated by an upward lift of the outer end of the latches clearing inward extensions of the upper and lower framing bars of each of the power blades, said latches movable upwardly in elongated slots in apertured supports attached to the radial arms, said latches lifted by flexible linkages with the movable iron cores of a pair of electric solenoids mounted on the radial arms, both the top and bottom solenoids of the pair energized simultaneously by parallel circuitry as an automatic consequence of malfunction of the horizontal sliding of either the top or bottom linkage assembly, the solenoids' links lifts the outer end of the latches above their engagement with the power blades, the accuracy of either technique for feathering the blades at a predetermined point in the power angle of the blade travel is regulated by the proper adjustment of the relationship of the cam assemblies to the large wind trailing vane or rudder positioning the cams in relation to the wind direction, said rudder clamped to the sleeves of said cam assemblies to swivel on their support collars to effect a constant cam-to-wind relationship and the circuit electrodes attached to the side of the cam assembly bodies adjusted to make timely synchronized contacts in the solenoid circuit to conductor-plates mounted upon the top side of the first lateral rod of the top and bottom linkage assemblies to operate a current connection a moment later than the point in time when the cam action is initiated, provided of course that the conductor-plate-part of the electrode-contact on either the top or bottom linkage rods has not become normally withdrawn by the cams' action before said electrical contact is made.

4,203,708

ELASTOMERIC ROTOR LOAD REACTION SYSTEM

Robert C. Rybicki, Trumbull, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1978, Ser. No. 919,358
Int. Cl.² B64C 11/06, 27/38
U.S. Cl. 416—134 A **6 Claims**



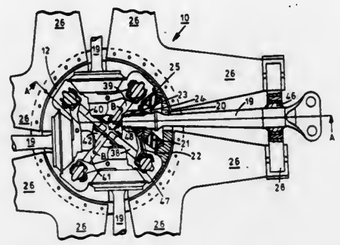
1. A helicopter rotor comprising:
(1) a hub mounted for rotation about an axis of rotation,
(2) at least one blade projecting radially from said hub,
(3) an elastomeric bearing supporting said blade from said hub for universal motion thereabout and so that rotation of the blade with said hub generates centrifugal force which causes a radially outward motion of the blade to exert a compressive load upon the elastomeric bearing,
(4) a lead-lag damper comprising a cylinder-piston mechanism extending substantially parallel to said blade and connected at its opposite ends to said blade and said hub to resist lead-lag motion of said blade,
(5) brake means operatively associated with said hub to reduce the speed thereof and hence cause said blade to lead and thereby cause said damper to impose a force on the blade to cause a radial inward motion of the blade to exert a tension load on said bearing in opposition to said compression load,
(6) and restraint means operative in response to centrifugal force from a first position wherein universal motion between said blade and said hub is permitted during flight operation and to a second position at a selected rotor rpm to prevent further inward motion of the blade when the bearing compressive load and the bearing tension load are substantially equal to thereby prevent the imposition of tension load on the bearing beyond a selected limit.

4,203,709

HELICOPTER ROTOR AND BLADE CONNECTION

Keaneth Watson, Yeovil, England, assignor to Westland Aircraft Limited, Yeovil, England

Filed Sep. 7, 1978, Ser. No. 940,263
Claims priority, application United Kingdom, Sep. 7, 1977, 37426/77
Int. Cl.² B64C 27/38
U.S. Cl. 416—134 A **16 Claims**



1. A helicopter rotor including a rotor hub arranged for rotation about an axis and a plurality of rotor blades extending radially of that axis, each blade being attached to the outer end of an individual spindle having its inner end so supported in a spindle-support bearing attached to structure of the rotor hub as to permit rotational movement of the spindle about its axis to change the pitch of its associated blade and to transmit centrifugal forces to the hub structure, means for rotating said spindle about its axis, a generally flat arm assembly associated with each said spindle, each arm assembly being flexible in a plane perpendicular to the plane of rotation and extending outwardly from said rotor hub to outer end parts spaced-apart from each side of said associated spindle in the plane of rotation of said spindle, and bearing means adjacent the outer end of each spindle and supported by both of said spaced-apart outer end parts of said arm assembly through resilient means arranged to permit movement of the spindle and its associated rotor blade relative the arm assembly in the plane of rotation of the spindle.

4,203,710

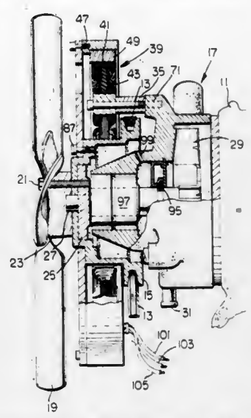
UNIFIED PUMP AND GENERATOR ARRANGEMENT

James B. Farr, Ann Arbor, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation-in-part of Ser. No. 734,116, Oct. 20, 1976, Pat. No. 4,095,922. This application Apr. 27, 1978, Ser. No. 900,531
Int. Cl.² F04B 21/00
U.S. Cl. 417—53 **19 Claims**

1. The method of assembling a pump and alternator with an engine comprising the steps of:
affixing the pump to the engine;
affixing the alternator stator to the pump;
passing a pump drive pulley through the stator and attaching the pulley to the pump actuating shaft; and
supporting an alternator rotor for rotation with the pulley with a portion of the rotor spanning the stator and with the pulley intermediate the stator and pump.

6. A unified pump-generator for a vehicle engine comprising:
a pump including a housing having a face, pump bearings supported in the housing and a rotatable driving shaft journaled in the pump bearings and axially extending from said housing face;
a rotatable hub member supported on said shaft for rotation about said shaft;
a generator stator mounted on and supported solely by said housing face;
a generator rotor fixedly secured to said hub member, the hub member and generator rotor rotatably supported by the pump bearings, said rotor positioned radially outward of the stator and concentric with said shaft;



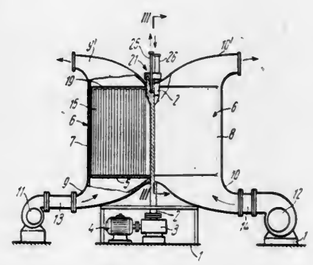
said hub member including a pulley for driving the pump shaft and generator rotor, the pulley being disposed axially intermediate the pump housing and the generator stator.

4,203,711

THERMAL ABSORPTION COMPRESSOR

Anatoly N. Podgorny, ulitsa Sumskaya, 118, kv. 14, Kharkov; Ilya L. Varshavsky, Leninsky prospekt, 66, kv. 141, Moscow; Viktor V. Solovei, prospekt Lenina, 41a, kv. 4, and Elena V. Sinegubova, ulitsa Bljukhera, 45, kv. 183, both of Kharkov, all of U.S.S.R.

Filed Apr. 19, 1978, Ser. No. 898,425
Int. Cl.² F04B 37/02, 37/04
U.S. Cl. 417—207 **7 Claims**

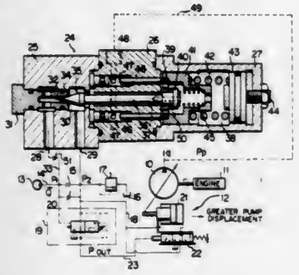


1. A thermal absorption compressor comprising:
a rotatable base plate;
generator-sorbers, each having a vessel filled with a solid sorbent and mounted on said rotatable base plate;
manifolds with pipes, grouping said generator-sorbers into sections;
a heat source for delivering a heat carrier onto the surface of said generator-sorbers;
a source of a coolant disposed substantially diametrically opposite to said heater source relative to said rotatable base plate for delivering said coolant onto the surface of the vessels of said generator-sorbers;
a gas distributing mechanism including a tap valve having a suction inlet, and a pressure outlet, and adapted to connect alternatingly said pipes of said manifolds to the suction inlet and to the pressure outlet as a result of the rotational movement of said base plate to enable continuous suction of the gas at a low pressure and delivery of the desorbed gas with constant parameters.

4,203,712
SINGLE OR PLURAL VARIABLE DISPLACEMENT PUMP CONTROL WITH AN IMPROVED FLOW METERING VALVE

Kazuo Uehara, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 31, 1978, Ser. No. 892,305
Claims priority, application Japan, Mar. 31, 1977, 52-35397; Mar. 31, 1977, 52-35398; Mar. 31, 1977, 52-35399
Int. Cl.² F04B 49/00
U.S. Cl. 417—218 6 Claims



1. A hydraulic control system for a variable displacement hydraulic pump driven by a prime mover, comprising in combination:

a fixed displacement hydraulic pump;

restrictor means communicating with the fixed displacement pump and effective to create a differential in the output fluid pressure therefrom;

sensing valve means for sensing the pressure differential created by the restrictor means and for providing an output fluid pressure corresponding thereto;

servo control means communicating with the restrictor means and with the sensing valve means for adjusting the displacement of the variable displacement pump in response to the fluid pressure therefrom; and

flow metering valve means connected in parallel with the restrictor means and effective to provide a variable degree of opening therethrough in response to the output fluid pressure from the variable displacement pump, said flow metering valve means comprising:

a valve seat;

a valve member having a conical head coacting with the valve seat to provide said variable degree of opening;

spring means normally urging the conical valve head against the valve seat to hold the opening closed;

actuating means movable against the force of the spring means in response to the output fluid pressure from the variable displacement pump; and

means for operatively connecting the actuating means to the valve member when the former is moved to a predetermined degree against the force of the spring means;

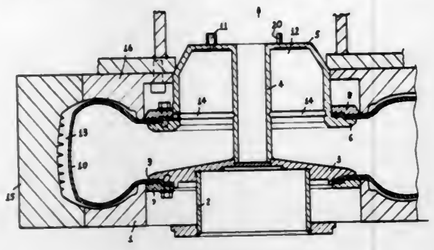
whereby the conical valve head moves away from the valve seat when the actuating means is moved to more than the predetermined degree against the force of the spring means.

4,203,713
TIRE RETREADING AUTOMATIC PRESS

Vincenzo Napolitano, Via delle Rose, 6, 20065 Inzago (Milano), Italy

Filed Jan. 15, 1979, Ser. No. 3,521
Claims priority, application Italy, Feb. 3, 1978, 19960 A/78
Int. Cl.² B29H 5/04
U.S. Cl. 425—23 4 Claims

1. An automatic press for tire retreading, which comprises a fixed mold base formed by a plurality of movable radial sectors, a vertical frame substantially shaped as a double bell joined to said fixed mold, said vertical frame having a radial opening; a band fixed along the edges of said frame at the perimetrical borders of said band, said band acting as an open air tube; said air tube being inflated through the air space defined by said bell frame and forming an air chamber, a valve at the top of the same bell frame for inflating said air tube; a

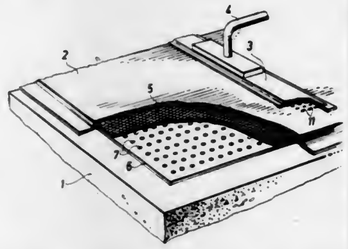


suction valve located on said bell frame for exhausting air from said chamber, at least four small bars located in said air chamber in the same plane and along the radial direction.

4,203,714
APPARATUS FOR VACUUM PROCESSING OF CONCRETE

Harald S. Wenander, Nacka, Sweden, assignor to Tremix AB, Skarholmen, Sweden

Filed May 24, 1976, Ser. No. 689,413
Claims priority, application Sweden, May 30, 1975, 7562224
Int. Cl.² B28B 11/00
U.S. Cl. 425—85 4 Claims



1. An apparatus for vacuum processing concrete to remove surplus water from a concrete surface comprising: an upper cover for sealingly defining a surface to be processed, a vacuum source, means for connecting said vacuum source to said cover, lower sheet means preventing solid particles from being sucked away from the concrete surface along with the water, and means forming passages between the upper cover and said lower sheet means for distribution of the vacuum from said vacuum source and transport of the water removed from the concrete, said lower sheet means having perforations comprising small holes the size of which substantially exceeds the smallest size of the particles of concrete.

4,203,715
ROTATING JOINT FOR EXTRUSION DIE

Garland E. Raley; C. W. Miller, and D. L. Smith, all of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 24, 1978, Ser. No. 889,830
Int. Cl.² B29F 3/04
U.S. Cl. 425—131.1 9 Claims

1. A rotating joint assembly for feeding an extrusion die with two or more thermoplastic streams of a consistent uniformity of distribution comprising:

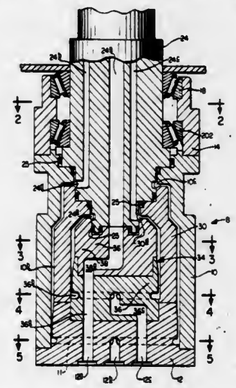
a. a stationary vertical manifold means for receiving two or more of said thermoplastic streams and conveying said streams upwardly to a series of generally toroidal discharge means in said manifold means, said manifold means having:

i. vertical cavity means therein for conveying said thermoplastic streams upwardly to said toroidal discharge means, the number of said cavity means being one less than the total number of thermoplastic streams fed to said extrusion die;

ii. a plurality of horizontal channels for conveying said thermoplastic stream horizontally and outwardly to said cavity means;

iii. vertical channel means for conveying said thermoplastic streams upward to said horizontal channels;

iv. first axial channel means for conveying one of said



thermoplastic streams upwardly to a central discharge opening in the center of said stationary manifold means; and,

b. a cylindrical conduit means rotatably connected to said manifold means, said conduit means having:

i. a plurality of generally toroidal intake means aligned with each of said generally toroidal discharge means for receiving and conveying said thermoplastic streams from said manifold means through vertical channel means in said cylindrical conduit means to an extrusion die;

ii. second axial channel means aligned with said central discharge opening for receiving and conveying one of said thermoplastic streams to said die.

4,203,716
PHOTOGRAPHIC ELEMENTS HAVING HYDROPHILIC COLLOID LAYERS CONTAINING HYDROPHOBIC ADDENDA UNIFORMLY LOADED IN LATEX POLYMER PARTICLES

Tsang J. Chen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

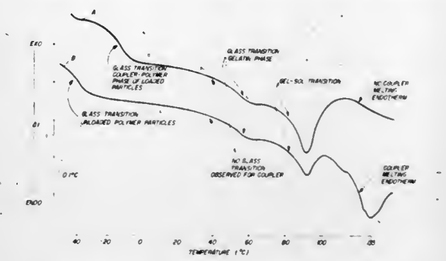
Continuation of Ser. No. 778,184, Mar. 16, 1977, abandoned, and Ser. No. 880,684, Feb. 23, 1978, abandoned, which is a continuation of Ser. No. 744,680, Nov. 24, 1976, abandoned, and Ser. No. 778,182, Mar. 16, 1977, abandoned, each is a continuation-in-part of Ser. No. 653,816, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 575,680, May 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 506,919, Sep. 17, 1974, abandoned, said Ser. No. 778,184, is a continuation-in-part of Ser. No. 744,842, Nov. 24, 1976, abandoned, and said Ser. No. 653,816. This application Aug. 23, 1978, Ser. No. 936,155
Int. Cl.² G03C 1/40, 1/84
U.S. Cl. 430—207 54 Claims

1. In a photographic element comprised of

a support and, coated on the support,

one or more hydrophilic colloid layers, at least one of which is a silver halide emulsion layer,

the improvement in which at least one of the hydrophilic colloid layers contains in a photographically useful amount loaded polymer particles of from 0.02 to 0.2 micron in average diameter consisting essentially of a loadable polymer, with greater than 2 percent by weight the polymer being derived from monomers

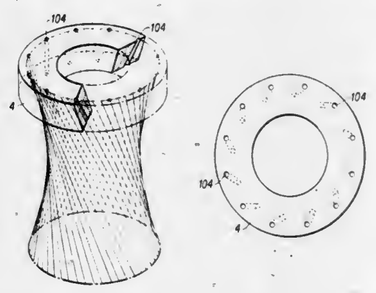


capable of forming water soluble homopolymers, and, loaded into and distributed through said particles, a hydrophobic redox dye-releaser, the weight ratio of the redox dye-releaser to said loaded polymer being from about 1:4 to 3:1.

4,203,717
FLAT FLAME BURNER ASSEMBLY

Giuseppe Facco, and Tomaso Carpaneto, both of Genoa, Italy, assignors to Italimpianti Societa Italiana Impianti per Asioni, Genoa, Italy

Filed Jan. 6, 1978, Ser. No. 867,226
Claims priority, application Italy, Jan. 14, 1977, 12418 A/77
Int. Cl.² F23M 9/00
U.S. Cl. 431—182 3 Claims



1. A flat flame burner assembly for use in furnaces, comprising:

(a) a refractory block having a flaring port which defines a central axis and a combustion zone;

(b) a hollow body mounted externally of the furnace on the said flaring port, provided with an inlet opening for the admission of combustion air and presenting an air diffuser member having passages directed in such a manner as to cause the combustion air to swirl around said central axis in the combustion zone of the flaring port;

(c) a burner mechanism comprising a lance for feeding the fuel terminating with a burner head extending into the combustion zone, said lance being coaxial to the said central axis of the port; a first pipe for a fluid atomizing agent under pressure, arranged externally and coaxially to said lance; a cylindrical sheath which surrounds the said burner head in the combustion chamber, said sheath being in communication with the said first pipe, whereby a portion of fluid atomizing agent is used to provide a fluid protection for the burner head from the heat, said lance carrying the burner head, said first pipe for the fluid atomizing agent and said protective sheath surrounding the burner head being movable in an axial direction towards

and away from the combustion zone of the flaring port; a second pipe, mounted externally and coaxially to the said first pipe and terminating with an annular opening in correspondence of the diffuser member, for feeding a gaseous fuel into the combustion zone of the flaring port around the sheath surrounding the burner head, said burner head comprising:

a first chamber presenting a distributor for admitting the fuel and a first row of peripheral bores for admitting into said chamber the fluid atomizing agent, said bores being directed so as to confer a swirling motion to the said fluid atomizing agent;

a second chamber, or mixing chamber, in communication with the first chamber, provided with a second row of bores for admitting into said mixing chamber the fluid atomizing agent;

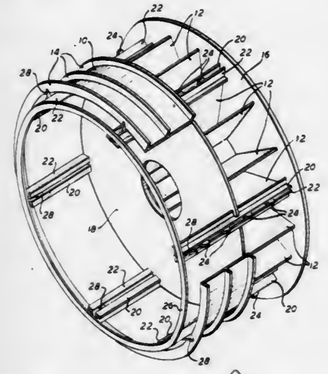
an outlet nozzle at the end of the mixing chamber, provided with an associated cup-like member held axially aligned opposite to said nozzle with its cavity directed towards the nozzle and at a predetermined distance therefrom.

4,203,718

REGISTER

James L. Tracy, Rexville, N.Y., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jun. 29, 1978, Ser. No. 920,520
Int. Cl.[2] F23M *9/00*
U.S. Cl. 431—188 7 Claims



1. A register for regulating the flow of air toward an inner combustion region comprising:

a first annular member;

a second annular member spaced alongside said first annular member;

a plurality of spaced vanes affixed between said first and second annular members, said plurality of spaced vanes being inwardly directed;

a plurality of spaced outer guide means mounted across said first and second annular members, said plurality of spaced outer guide means being peripherally disposed around said plurality of spaced vanes; and

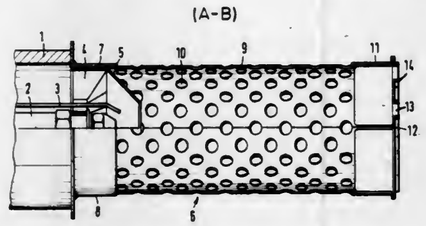
a sleeve encircling and bearing upon said plurality of spaced outer guide means, said sleeve being linearly movable to enshroud said vanes a variable amount, whereby the flow of air past said plurality of spaced vanes is regulated by moving said sleeve.

4,203,719

OIL BURNER ARRANGEMENT FOR HEATING INSTALLATIONS

Cary Brandt, Holderlinstrasse 11, 1 Berlin 19, Fed. Rep. of Germany

Filed Feb. 22, 1978, Ser. No. 879,877
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712856
Int. Cl.[2] F23D *15/02*; F23Q *3/00*; B05B *1/14*
U.S. Cl. 431—352 10 Claims



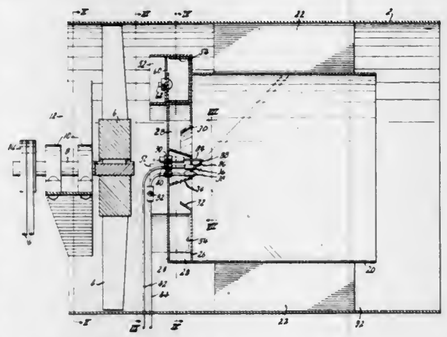
1. An oil burner arrangement for heating installations which generates a blue flame and which serves for the achievement of a soot-free, stoichiometric combustion, which oil burner arrangement comprises a burner housing, which burner housing serves for the addition of combustion air; a nozzle which is located coaxially in the burner housing, said nozzle serving to atomize oil; means for communicating oil to said nozzle; an evaporator tube which is located adjacent to the burner housing and located coaxially with reference to the burner housing, said evaporator tube extending into the burner space, said evaporator tube having at its circumference a plurality of drilled holes, which drilled holes serve for the addition of air from the burner space; a disk-shaped baffle, said evaporator tube being equipped with said disk-shaped baffle, said disk-shaped baffle being located at a selected distance with respect to the opened end of the evaporator tube cross pieces for mounting said baffle to said tube open end; said disk-shaped baffle being directed perpendicular to the axis of the evaporator tube, said disk-shaped baffle being equipped with outward flanged holes, and whereby the outward flanged holes holes serve for the stable combustion of the oil and air mixture which emerges from the evaporator tube.

4,203,720

OIL BURNER

Robert C. Chaffee, Green, and Ernest G. Bauer, Clay Center, both of Kans., assignors to Gilmore & Tatge Mfg. Co., Clay Center, Kans.

Filed Mar. 31, 1978, Ser. No. 892,286
Int. Cl.[2] F24H *3/02*
U.S. Cl. 432—222 6 Claims



1. An oil burner comprising:

a. an elongated combustion chamber open at its forward end,

b. a nozzle mounted at the rearward end of said combustion chamber and operable to spray oil longitudinally forwardly in said chamber,

c. means operable to ignite said oil initially, and

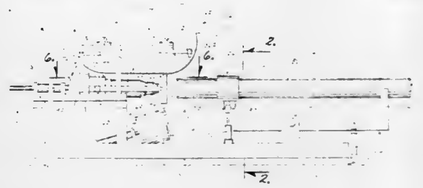
d. air delivery means operable to direct combustion air into the rearward end of said combustion chamber in a whirling pattern generally coaxial with said nozzle, whereby the air-oil mixture tends to be retained in the rearward portion of said combustion chamber and a hot fireball of flame develops therein, said fireball serving reliably to ignite oil subsequently ejected from said nozzle to render continuous ignition unnecessary, said air delivery means comprising a circular air chest disposed at the rearward end of said combustion chamber coaxially therewith, said chest having a forward wall dividing it from said combustion chamber and having a circular aperture of lesser diameter formed centrally therein coaxial with said combustion chamber, and a rearward wall, said nozzle being mounted in said rearward wall and projecting forwardly through said aperture, and blower means operable to deliver air tangentially into said air chest.

4,203,721

METHOD OF HEATING PLASTIC PIPE

Fay A. Hayes, 242 NW. 12th Ave., Boca Raton, Fla. 33432, and Leonard L. Hayes, 1906 10th Ave., Lewiston, Id. 83501

Division of Ser. No. 902,443, May 3, 1978. This application Mar. 19, 1979, Ser. No. 21,586
Int. Cl.[2] F27D *5/00*
U.S. Cl. 432—10 5 Claims



1. A method of heating one end portion of a plastic pipe comprising:

providing a heating bell having a generally continuous sidewall and an open end for receiving said pipe end portion therethrough,

advancing one of said pipe and heating bell toward the other whereby said pipe end portion is axially inserted through said open end and received within said sidewall,

directing a flow of heating fluid over the inserted pipe end portion, and

withdrawing said one of said pipe and heating bell away from the other for removal of the heated pipe end portion from the heating bell,

said withdrawing step including removing said pipe end portion from said heating bell in selected intermittent steps for step heating of said pipe end portion.

4,203,722
TRANSFER PRINTING PROCESS WITH NAPHTHOLACTAM DYES

Alfred Brack, Odenthal, and Hans-Peter Kühlthau, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

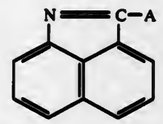
Filed Oct. 18, 1978, Ser. No. 952,560

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1977, 2747110

Int. Cl.² D06P *3/70, 5/00*

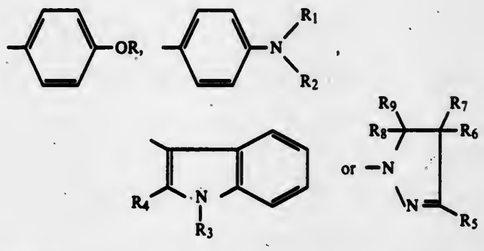
U.S. Cl. 8—467 **10 Claims**

1. Process for dyeing, by transfer printing, materials made of polyacrylonitrile or acid-modified polyesters, characterised in that dyestuffs of the formula



wherein

A represents a radical of the formula



wherein

R denotes a lower alkyl radical with at most 6 C atoms,

R_1 denotes hydrogen or a lower alkyl radical with at most 6 C atoms,

R_2 represents a lower alkyl radical with at most 4 C atoms,

R_3 represents hydrogen or a lower alkyl radical with at most 4 C atoms,

R_4 represents hydrogen or methyl,

R_5 represents a phenyl radical which can be substituted by lower alkyl or alkoxy groups with at most 4 C atoms, or represents an α-thienyl radical and

R_6, R_7, R_8 and R_9 represent hydrogen or a lower alkyl radical with at most 4 C atoms or a phenyl radical, with the proviso that only one of the radicals R_6, R_7, R_8 and R_9 is an optionally substituted phenyl radical,

and wherein

the radical R_1 or R_2 can also be bonded to the phenyl radical in the position adjacent to the nitrogen, a tetrahydroquinoline ring or an indoline ring being formed,

and wherein the cyclic and acyclic radicals can contain nonionic substituents, are used.

4,203,723
VITRA-VIOLET PROCESS FOR PRODUCING FLAME RESISTANT POLYAMIDES AND PRODUCTS PRODUCED THEREBY

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Madeline S. Toy, Palo Alto, and Roger S. Stringham, Woodside, both of Calif.

Filed Dec. 6, 1976, Ser. No. 747,674

Int. Cl.² C08F *8/00*

U.S. Cl. 8—115.5 **7 Claims**

1. A one step method to chemically modify aromatic polyamide fibrous products formed of poly-m-phenyleneisophthalamide to improve flame resistance properties and appearance of the aromatic polyamide fibrous product consisting essentially of contacting the aromatic polyamide substrate in a chamber with a gaseous medium containing haloolefinic material consisting of a mixture of tetrafluoroethylene and bromotrifluoroethylene and an inert diluent while irradiating said aromatic polyamide with ultraviolet light having sufficient energy to effect chemical bonding of said haloolefinic material to said aromatic polyamide.

4,203,724
METHOD AND APPARATUS FOR THE MEASUREMENT OF ANTIGENS AND ANTIBODIES

Masanobu Sawai, Yamatoshi; Tadamitsu Sudo, Sagamihara, and Shogo Enomoto, Tokorozawa, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

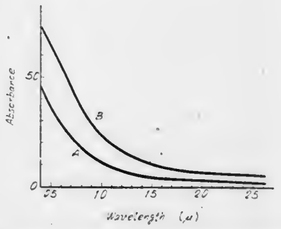
Continuation-in-part of Ser. No. 825,160, Aug. 16, 1977, Pat. No. 4,118,192. This application Jun. 20, 1978, Ser. No. 917,259

Claims priority, application Japan, Aug. 16, 1976, 51/97158; Feb. 14, 1978, 53/15018

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.² G01N *21/24, 33/16*

U.S. Cl. 23—230 B **27 Claims**



1. An absorbance method of measuring antigens and antibodies comprising reacting an antigen or antibody or a mixture thereof with the corresponding antibody or antigen or mixture thereof, which has been supported on insoluble carrier particles having an average diameter of not greater than 1.6 microns to sensitize the carrier particles, said reaction being carried out in a liquid medium and the concentration of said carrier particles in the resulting mixture being 0.05 to 1% by weight; irradiating the reaction mixture with light which contains rays of polychromatic light having a particular wavelength region in the range of 0.6 to 2.4 microns and so selected that, when applied to the reaction mixture, it gives an increase in absorbance or percent absorption with time; and measuring the absorbance or percent absorption of the reaction mixture for the polychromatic light.

4,203,725
METHOD AND TEST KIT FOR THE ON-SITE DETERMINATION OF THE PRESENCE OF CONTAMINANT MATERIAL IN LUBRICATING OIL

James E. Snowden, Jr., and Esther A. Snowden, both of Houston, Tex., assignors to Contamoil Corporation, Santa Monica, Calif.

Filed Feb. 13, 1978, Ser. No. 877,371

Int. Cl.² G01N *31/22, 33/28*

U.S. Cl. 23—230 HC **12 Claims**

1. A lubricating oil analysis kit to analyze for a metallic contaminant that may be present in lubricating oil comprising:

at least one receptacle adapted to be opened and closed on one end thereof and containing therein an aqueous solvent and a reagent both present in predetermined concentration, said aqueous solvent effective to dissolve the preselected contaminant existing within the oil but not effective to dissolve the oil so as to form an oil phase and an aque-

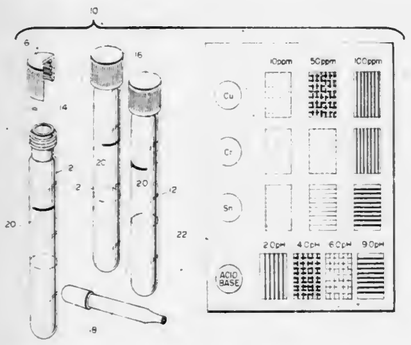
ous phase containing the dissolved preselected contaminant and said reagent capable of reacting with the dissolved contaminant and thereby causing a color to be generated in the aqueous phase;

a dispensing device adapted to dispense a volume of lubricating oil into said receptacle, the capacity of said receptacle being at least equal to the sum of the volumes of said oil phase and said aqueous phase;

a color intensity chart adapted for use in comparing color intensities generated when said aqueous solvent and said reagent are mixed with lubricating oil to determine the concentration of the preselected contaminant which may be existing within said oil.

7. An on-site method for determining the need for replacement of oil due to the build up of metallic contaminant material therein, which comprises the steps of:

removing a sample of oil, the oil being suspected of having a build up of metallic corrosive material therein, to provide a sample of oil;



vigorously mixing a known volume of said sample of oil in a known volume of an aqueous solvent which extracts metal and/or metal oxides existing within the oil from the oil into the aqueous solvent to form an aqueous phase comprising an aqueous solvent solution of said metallic contaminant material, said aqueous solvent solution including a reagent capable of reacting with the metal and/or metal oxide in the aqueous phase to generate a color in the aqueous phase indicative of the presence and concentration of said metallic contaminant, said aqueous solvent not being effective to dissolve the oil whereby distinct oil and aqueous phases are intimately mixed together;

allowing the oil phase to separate from the aqueous phase; and

comparing the color as generated in the aqueous phase by the reaction of said reagent with said metal and/or metal oxide to a standard color to determine the concentration of said metallic contaminant material.

4,203,726

THERMIONIC DETECTOR

Paul L. Patterson, Walnut Creek, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 28, 1978, Ser. No. 882,033
Int. Cl.² G01N *27/62*
U.S. Cl. 23—232 E **54 Claims**

1. A mehod for analyzing a sample to detect the presence of a component of said sample, said method comprising the steps of:

(a) electrically heating in a gaseous environment and to operating temperatures within the approximate range 400° C. to 1000° C. a solid body comprising a hardened ceramic cement impregnated with an alkali metal, and capable of withstanding operating temperatures in excess of 1000° C.;

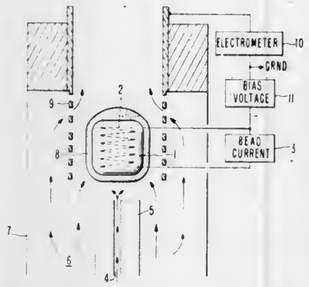
(b) causing said sample to interact with said heated body to form negative ions,

(c) maintaining a difference of electrical potential between said surface of said body and a collector electrode to cause a current of said negative ions to move towards said collector electrode, and

(d) measuring said negative ion current to detect the presence of said specific component of said sample.

20. An apparatus for the analysis of a sample in a gaseous state to detect the presence of a specific component of said sample, said apparatus comprising:

a solid body comprising a hardened ceramic cement impregnated with an alkali metal, said solid body being capable of



withstanding operating temperatures in excess of 1000° C., electrical heating means for internally heating said body in a gaseous environment to cause said body to operate at temperatures in the approximate range of 400° C. to 1000° C.,

means for transferring said gaseous sample about said body whereby said sample interacts with said body to form negative ions in response to the presence of said specific component in said gas,

means for causing a current of said negative ions to move toward a collector electrode,

and means for measuring said negative ion current, whereby said specific component is detected.

4,203,727

PROCESS FOR REDUCING THE SULFUR CONTENT OF COAL

Charles H. Simpson, 7749 E. Chaparral Rd., Scottsdale, Ariz. 85253

Filed Nov. 29, 1978, Ser. No. 964,742
Int. Cl.² C10L *9/10*; C01B *17/14*
U.S. Cl. 44—1 SR **2 Claims**

1. A process for reducing the sulfur content of raw coal containing sulfur impurities and water, comprising the steps in sequence of:

(a) comminuting said raw coal in a vapor-tight extraction zone in contact with a combustible solvent for sulfur at an elevated temperature to form sulfurous acid in situ and continuing said contact to form an extraction mixture slurry, including

(i) a liquid component comprising said solvent containing sulfur impurities from said raw coal dissolved therein, and

(ii) a solid component comprising said comminuted, extracted coal;

(b) separating said liquid and solid components of said extraction mixture slurry.

4,203,728

FUEL COMPOSITION COMPRISING A COAL-OIL SLURRY

Richard V. Norton, Wilmington, Pa., assignor to Suntech, Inc., Wayne, Pa.

Filed Feb. 28, 1977, Ser. No. 772,416
Int. Cl.² C10L *1/32*
U.S. Cl. 44—51 **4 Claims**

1. A process for preparing a slurry comprising oil and comminuted coal for transport through pipelines and use as fuel wherein the suspension stability of said coal particles in the oil is increased which comprises oxidizing the surface of said coal particles and then slurrying said coal in said oil.

4,203,729

METHOD FOR PRODUCING COAL DISPERSING OIL COMPOSITIONS

Takaharu Ishizaki; Taizo Igarashi, and Hirozumi Shimizu, all of Amagasaki, Japan, assignors to Nippon Oil & Fats Co. Ltd., Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 919,048
Claims priority, application Japan, Jun. 30, 1977, 52-77166
Int. Cl.² C10L *1/32*
U.S. Cl. 44—51 **4 Claims**

1. A method for producing coal dispersing oil compositions containing 10–89.99% by weight of a petroleum oil, 10–89.99% by weight of coal powders and 0.01 to 5% by weight of a surface active agent wherein previously milled coal powders and a petroleum oil are mixed and then dehydrated, or a coal is milled and dehydrated in the petroleum oil, after which a surface active agent is added thereto to obtain dispersion.

4,203,730

POLYAMINE DERIVATIVES OF OXIDIZED OLEFINIC SUBSTITUTED DICARBOXYLIC ACID COMPOUNDS

Joseph B. Hanson, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 14, 1978, Ser. No. 942,296
Int. Cl.² C10L *1/22*
U.S. Cl. 44—71 **16 Claims**

1. A composition comprising the polyamine derivative of an oxidized substantially undegraded adduct of an olefinic compound and an unsaturated dicarboxylic acid compound having 4 to 10 carbon atoms containing two carboxyl functions either free or in an anhydride form and at least one unsaturated olefinic bond.

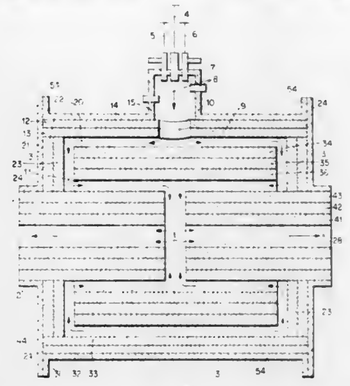
4,203,731

RADIANT ENERGY GASIFICATION APPARATUS

Wayne Bailey, R.D. #2, Schaghticoke, N.Y. 12154, and Robert Kemp, Box 96 Lansingburgh, Troy, N.Y. 12182

Continuation of Ser. No. 761,216, Jan. 21, 1977, abandoned. This application Dec. 15, 1977, Ser. No. 860,984
Int. Cl.² C10B *1/00*
U.S. Cl. 48—99 **4 Claims**

1. A continuous high speed gas making retort having a substantially upright mixture chamber opening into a refractory cylinder inside of which there is another refractory cylinder each of which cylinders are substantially horizontal with means defining a circular space between each of said refractory cylinders and enclosing two centrally positioned refractory circular gas out take tubes directly opposite to each other with a gas making space between their two internal ends and with further means defining a circular space around each of said refractory gas out take tubes and means for introducing air, oil



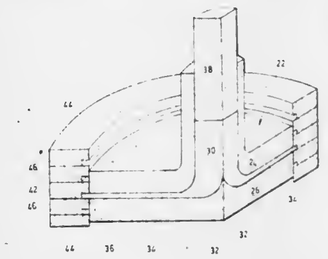
(or pulverized carbon fuel) and finely divided water into said gas making retort, via said upright mixing chamber.

4,203,732

METHOD OF MAKING AN ABRASIVE PRODUCT

Cornelius Phaal, Robant La., Edenburg, Rivonia, Sandton, Transvaal, South Africa

Filed Mar. 3, 1975, Ser. No. 554,699
Claims priority, application South Africa, Mar. 7, 1974, 74/1477; May 24, 1974, 74/3328
Int. Cl.² C09K *3/14*
U.S. Cl. 51—293 **5 Claims**



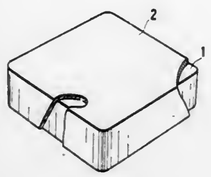
1. A method of making an abrasive product including the steps of preparing a mixture of needle-shaped abrasive particles each having a long and a short axis and starter ingredients for a bonding matrix, flowing said mixture along a passage thereby orienting the abrasive particles such that the long axis of the abrasive particles are placed substantially in the direction of the flow, causing the mixture to flow from the passage into a product-defining cavity, such that the flow into the cavity is substantially normal to the wall of the cavity defining the working face of the product so that the abrasive particles are oriented substantially normally to the working face of the product and at least partially setting the starter ingredients of the bonding matrix in the cavity wherein the ratio of the long axes to a short axes of said abrasive particles is greater than 3:1, wherein the bonding matrix is selected from the group consisting of resin, metal, vitreous and rubber and wherein the abrasive particles are selected from the group consisting of diamond particles, cubic boron nitride particles and mixtures thereof.

4,203,733

ALUMINUM NITRIDE SINTERED BODY COATED WITH ALUMINA

Hiroshi Tanaka, and Yoshihiro Yamamoto, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Aug. 16, 1978, Ser. No. 934,285
Claims priority, application Japan, Aug. 16, 1977, 52-97509
Int. Cl.² B24D 3/06
U.S. Cl. 51—295 8 Claims



1. An aluminum nitride sintered body consisting essentially of a sintered body of aluminum nitride with alumina crystals having an average particle diameter of 2.5 microns or less on the surface of the sintered body.

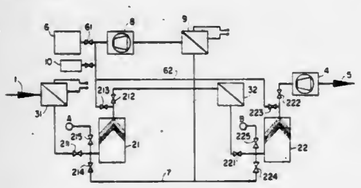
5. A high-speed cutting tool comprising the aluminum nitride sintered body of claim 1.

4,203,734

METHOD AND APPARATUS FOR THE SELECTIVE ADSORPTION OF VAPOROUS OR GASEOUS IMPURITIES FROM OTHER GASES

Karl Winter, Dortmund-Sölde, and Günter Staschik, Halingen, both of Fed. Rep. of Germany, assignors to Ceagfilter und Entstaubungstechnik GmbH, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 738,537, Nov. 3, 1976, abandoned. This application Dec. 7, 1977, Ser. No. 858,384
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1976, 2610963
Int. Cl.² B01D 53/04
U.S. Cl. 55—26 4 Claims



1. Method for the selective adsorption in adsorption filters of a mixture of vaporous impurities of different volatilities in a stream of exhaust air which comprises passing said stream of exhaust air containing said mixture of vaporous impurities of different volatilities through at least two adsorption filters connected in tandem with each filter containing activated carbon as the adsorption medium, maintaining the temperature of adsorption in the first activated carbon adsorption filter at a temperature sufficiently high to selectively adsorb the vaporous impurities of low volatility with passage of said stream of exhaust air containing vaporous impurities of higher volatility in direct contact with and through said first activated-carbon adsorption filter, and passing said stream of exhaust air containing vaporous impurities of higher volatility in direct contact with and through at least said second activated-carbon adsorption filter at a temperature lower than the temperature in the first activated-carbon adsorption filter to selectively adsorb said vaporous impurities of higher volatility, maintaining the temperature of adsorption to effect selective adsorption in each of said two adsorption filters by passing said stream in indirect heat exchange with a fluid at a different temperature prior to passing said stream into each of said two adsorption filters, individually desorbing each adsorption filter by passage of an inert gas through the filter after it has attained a predetermined loading of the vaporous impurities and discharging the inert gas containing desorbate as vaporous impurities separately from each individually desorbed adsorption filter the first of said two adsorption filters being desorbed at a longer time interval than the second, and recovering the desorbate containing the impurities of high volatility from the second adsorption filter separate and apart from the desorbate containing the impurities of low volatility from the first adsorption filter.

3. Apparatus for the selective adsorption in adsorption filters of a mixture of vaporous impurities of different volatilities in a stream of exhaust air comprising at least two adsorption filters connected in tandem with each filter containing activated carbon as the adsorption medium, means for maintaining the temperature of adsorption in the first activated carbon adsorption filter at a temperature sufficiently high to selectively adsorb the vaporous impurities of low volatility with passage of said stream containing vaporous impurities of higher volatility in direct contact with and through said first activated carbon adsorption filter, and means for maintaining the temperature of adsorption in said second activated carbon adsorption filter through which the exhaust air stream containing vaporous impurities then passes in direct contact, at a temperature lower than the temperature in the first activated carbon adsorption filter to selectively adsorb vaporous impurities of higher volatility, wherein said means for maintaining the temperature of adsorption in each of said two adsorption filters is a heat exchanger preceding each of said filters, through which said stream passes in indirect heat exchange with a fluid at a different temperature, and including means for generating an inert gas, and means for passing said inert gas individually to each adsorption filter to individually desorb the filter after it has attained a predetermined loading of the vaporous impurities with the first of said two adsorption filters being desorbed at a longer time interval than the second, and means for discharging the inert gas containing desorbate as vaporous impurities separately from each individual desorbed adsorption filter and recovering the desorbate of high volatility from the second adsorption filter separate and apart from the desorbate containing the impurities of low volatility from the first adsorption filter.

4,203,735

PROCESS FOR PURIFYING GASEOUS FORMALDEHYDE

Paolo Colombo, Saronno, and Pierino Radici, Turate, both of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Apr. 12, 1978, Ser. No. 895,553
Claims priority, application Italy, Apr. 13, 1977, 22394 A/77
Int. Cl.² B01D 53/12
U.S. Cl. 55—26 16 Claims

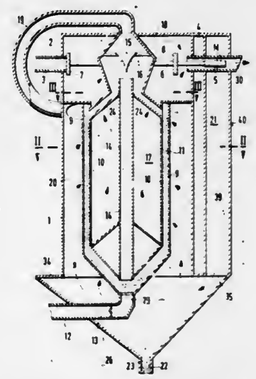
1. A continuous process for purifying raw gaseous formaldehyde containing impurities comprising water, methyl alcohol, formic acid and mutual reaction products thereof, which comprises purifying said raw formaldehyde in an adsorption step by introducing a flow of said raw formaldehyde at the bottom of the lowermost bed of a first series of superimposed, spaced-apart, communicating fluidized beds of solid adsorbent, passing the flow of raw formaldehyde through said first series of fluidized beds and recovering purified formaldehyde at the top of the uppermost bed of said first series, maintaining the temperature within said first series of fluidized beds at a value of from 80° to 140° C., and continuously introducing solid adsorbent into the uppermost bed of said first series, passing said solid adsorbent from each bed to the following one of said first series and continuously discharging from the lowermost bed of said first series exhausted solid adsorbent containing adsorbed formaldehyde and impurities; selectively desorbing said adsorbed formaldehyde in a desorption step by stripping with an inert gas, thereby recovering substantially all adsorbed formaldehyde, by continuously introducing said exhausted solid adsorbent into the uppermost bed of a second series of superimposed, spaced-apart, communicating fluidized beds of solid adsorbent, passing said exhausted solid adsorbent from each bed to the following one of said second series and continuously discharging the exhausted solid adsorbent thus treated from the lowermost bed of said second series, introducing at the bottom of the lowermost bed of said second series a stream of inert gas to strip said adsorbed formaldehyde and maintain fludization conditions in said second series of fluidized beds, passing said stream of inert gas through the second series of fluidized beds and discharging from the top of the uppermost bed of said second series a stream of inert gas enriched in desorbed formaldehyde, and maintaining the temperature within said second series of fluidized beds at a value of from 130° to 150° C.; regenerating the exhausted solid adsorbent thus treated by stripping with an inert gas in a regeneration step by continuously introducing said exhausted solid adsorbent thus treated into the uppermost bed of a third series of superimposed, spaced-apart, communicating fluidized beds of solid adsorbent, passing said exhausted solid adsorbent thus treated from each bed to the following one of said third series and continuously discharging the thus regenerated solid adsorbent from the lower most bed of said third series, introducing at the bottom of the lowermost bed of said third series a stream of inert gas to strip said adsorbed impurities and maintain fluidization conditions in said third series of fluidized bed, passing said stream of inert gas through the third series of fluidized beds and discharging from the top of the uppermost bed of said third series a stream of inert gas enriched in desorbed impurities, and maintaining the temperature within said third series of fluidized beds at a value higher than that maintained in the second series and from 145° to 250° C.; and continuously recycling the solid adsorbent thus regenerated to the uppermost bed of said first series.

4,203,736

METHOD AND APPARATUS FOR PURIFYING A GAS OF SUSPENDED PARTICLES

Wolfgang Berz, Westmount, Canada, assignor to Gimag Aktiengesellschaft, Chur, Switzerland

Continuation-in-part of Ser. No. 793,418, May 3, 1977, Pat. No. 4,142,873. This application Jan. 2, 1979, Ser. No. 545
Claims priority, application Switzerland, May 6, 1976, 5706/76
Int. Cl.² B01D 37/00, 46/30, 46/42
U.S. Cl. 55—96 12 Claims



9. In a method of purifying a gas of suspended particles in which the gas to be purified is passed from a first space to a third space through a filter bed of granular material confined in a second space between perforated, vertically extending walls, whereby at least a portion of said particles is retained by said granular material, said second space having topmost and lowermost portions, and purified gas is withdrawn from said third space in each of a plurality of filtering phases, granular material carrying retained particles is withdrawn from said lowermost portion during each of a plurality of filter bed cleaning phases alternating with said filtering phases by suspending the granular material in a stream of conveying gaseous material flowing toward a zone above said topmost portion, the suspended granular material is separated in said zone from said stream and said particles, the particles being suspended in said stream, the granular material being returned to said second space by gravity, the improvement which comprises:

(a) withdrawing the separated gaseous material and the particles suspended therein from said zone,

(b) introducing the withdrawn material and the particles into said first space, and

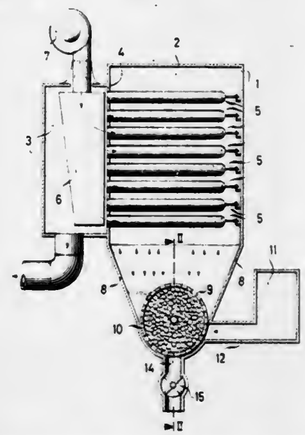
(c) separately withdrawing said gaseous material and the particles from said first space during each of said cleaning phases.

4,203,737

POCKET OR TUBE FILTERS

Adolf Margraf, Am Schleplingsbach 46, D-3060 Stadthagen Wendthagen, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,558
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743805
Int. Cl.² B01D 46/04, 46/42
U.S. Cl. 55—287 3 Claims



1. In a filtering separator of the kind having filter elements and a dust collecting trough located therebelow, and wherein a smoke laden gas containing extremely adherent dust particles is fed into the dust collecting trough and upwardly toward the filter elements, and compressing filter cleaning means such that when the dust which settles when the filter surfaces are periodically cleaned is carried back together with the dust of the incoming smoke laden gas to the filter surfaces for agglomeration purposes, and a proportion of the agglomerated dust, corresponding to the amount of dust in the incoming smoke laden gas and which by its weight or size cannot be carried back to the filter surfaces by the smoke laden gas, being removed from said dust collecting trough; the improvement comprising a longitudinally extending rotatably mounted perforated drum having heavy bodies therein and occupying the lower portion of said dust collecting trough and positioned so that the smoke laden gas is directed into the trough and passes through said perforated drum, the upper portion of said drum being exposed for receiving the agglomerated dust loosened periodically from the filter elements and acting as a dust collecting store or reservoir, and further comprising an exit opening in the dust collecting trough below or at the end of said drum to allow dust collected in said perforated drum to drop out of said drum and to be removed from the collecting trough,

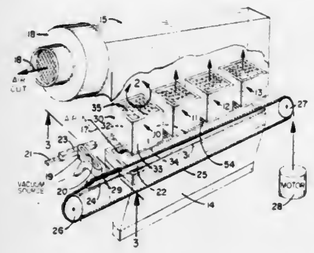
said separator further comprising means to rotate said drum in order to effect removal of the dust as soon as the resistance to flow through said drum reaches a maximum and which is adapted to be stopped when a minimum resistance is reached.

4,203,738

COMBINATION AIR FILTER AND VACUUM CLEANING SYSTEM

Kenneth C. Kerman, 1126 6th St., Santa Monica, Calif. 90403

Filed Nov. 13, 1978, Ser. No. 960,472
Int. Cl.² B01D *46/04*
U.S. Cl. 55—287 **6 Claims**



1. An air filter and vacuum cleaning system including, in combination:

(a) at least one filter unit comprising:

(1) a housing having front, rear, left and right side walls defining rectangular bottom entrance and top exit openings;

(2) a plurality of vertical partitions running between and secured to said left and right side walls, alternate partitions having their lower ends starting in the plane of the bottom entrance opening and terminating at their upper ends short of the plane of the top exit opening, the remaining partitions having their upper ends starting in the plane of said top exit opening and terminating short of the plane of said bottom entrance opening, each of said partitions being corrugated along vertical bend lines to present a zig-zag appearance in top plan cross section; and,

(3) a cloth-like fibrous filtering strip of width corresponding to the distance between said left and right side walls passing over the first of said alternate partitions, thence under the first of said remaining partitions, and continuing in an up and down manner to define upper folds about the ends of those partitions terminating short of the top exit opening and lower folds about the lower ends of those partitions terminating short of the bottom entrance opening, the portions of said strip between the upper and lower folds passing between the partitions being held in generally vertical parallel planes by said partitions, the corrugations defining with the strip a series of vertical channels of generally triangular cross section when viewed in plan, particulate and other impurities to be filtered from air entering said entrance opening accumulating in greatest concentrations in the form of slugs in the strip folds adjacent to the top exit opening; and

(4) a thin screen overlying said bottom entrance opeing; and

(b) a vacuum cleaning means for removing accumulated impurities from said at least one filter unit including:

(1) a pair of guide tracks running along parallel and adjacent to the lower ends of the left and right side walls of said filter unit housing;

(2) a vacuum head for connection to a vacuum source mounted for movement along said tracks to pass under said bottom entrance opening of said housing adjacent to said screen, said head having a vacuum slot extending between said left and right walls parallel to said folds, said slot being between ¼ and ½ the distance between said alternate partitions and having planar surfaces ahead and behind said slot in engagement with said screen extending in forward and rearward directions distances greater than said distance between alternate partitions; and

(3) means for moving said vacuum head along said bottom entrance opening between said front and rear walls of said filter unit housing so that said slot successively applies vacuum to the channels defined by the alternate corrugated partitions as it traverses the same, the channels and slots cooperating to create a confined air movement in the channels of sufficient velocity to carry said slugs from the strip folds adjacent to said exit opening along with other impurities down the channels communicating with the slot opening to remove the slugs, said impurities themselves acting as mechanical scrubbers in their movement along the sides of the channels to further clean the strip portions between the partitions

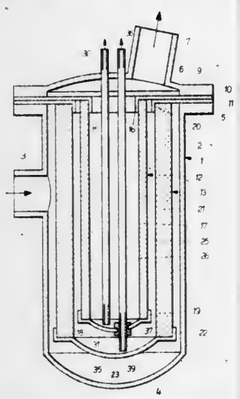
whereby said filter unit can be periodically cleaned by said vacuum system without mechanical shaking of the filters and without the necessity of disassembling the filter units.

4,203,739

SEPARATOR DEVICE FOR REMOVING OIL FROM AN AIR STREAM

Hans Erdmannsdörfer, Ludwigsburg, Fed. Rep. of Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,245
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 7726666[U]
Int. Cl.² B01D *50/00*
U.S. Cl. 55—323 **4 Claims**



1. A separator device adapted to remove oil from an air stream carrying a mist of oil droplets, the device comprising in combination:

an enclosed separator housing having the shape of a pot with a vertical center axis, a generally vertical housing wall, a bottom end, and a removable housing cover;

a raw air intake arranged laterally in the housing wall;

a clean air outlet arranged in the housing cover;

first and second air permeable oil separator elements, each having a tubular air permeable filter body, a bottom cover at the lower end of the filter body, and an open cover disc at the upper end of the filter body which serves as a mounting member for the separator element, the two separator elements being mounted inside the housing in such a way that the first element surrounds the second element, so that the interior space of the housing is subdivided into a raw air space between the raw air intake duct and the first separator element, an intermediate air space between the two separator elements, and a clean air space between the second separator element and the clean air outlet, thereby forcing the oil-carrying air stream to flow radially inwardly through the filter body of the first element, to traverse the intermediate air space, to flow radially inwardly through the filter body of the second element and to leave the latter through its open cover disc towards the housing cover and its clean air outlet;

a first oil collecting space at a low point of the intermediate air space, for the accumulation of oil droplets collected by the first separator element;

first conduit means leading from the first oil collecting space to the outside of the separator housing, for the removal of the accumulated oil from said space;

a second oil collecting space at the low point of the clean air space, for the accumulation of oil droplets collected by the second separator element; and

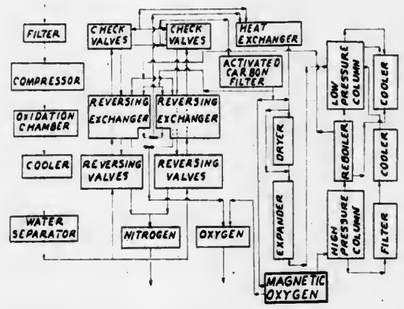
second conduit means leading from the second oil collecting space to the outside of the separator housing, for the removal of the accumulated oil from said space.

4,203,740

OXYGEN PRODUCTION BY PARAMAGNETIC REMOVAL OF MAGNETIZED OXYGEN FROM LIQUID AIR

V. A. Vaseen, 9840 W. 35th Ave., Wheat Ridge, Colo. 80033, assignor to Vesper Albert Vaseen, Wheat Ridge, Colo.

Filed Sep. 11, 1978, Ser. No. 940,905
Int. Cl.² F25J *3/00*
U.S. Cl. 62—18 **1 Claim**



1. An improved method in the production of pure oxygen gas from liquefaction of air, consisting of the steps of;

passing a stream of liquid air through the gap between the north and south poles of a high intensity magnet,

having a magnetic force $10KO_e$ great enough to create paramagnetic forces on the dissolved oxygen atoms and molecules,

at a temperature of the liquid air between (−)182.96° C. and (−) 152.30° C.,

at a velocity and movement of liquid air and liquid nitrogen mass within the liquid air which permits migration of the dissolved gaseous oxygen to the magnet poles,

thus supersaturating the liquid nitrogen and liquid air with paramagnetic oxygen gas,

which form bubbles and effervesce from the liquid air mass, collecting the gaseous oxygen above the liquid air surface and removing oxygen to use or storage,
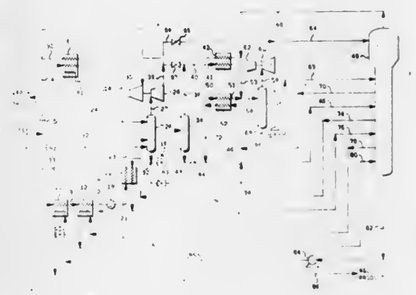
then disposing of remaining liquid air and liquid nitrogen by evaporation, using the cooling from heat absorption for cooling additional air.

4,203,741

SEPARATE FEED ENTRY TO SEPARATOR-CONTACTOR IN GAS SEPARATION

Robert M. Bellinger, and Michael L. Gray, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 14, 1978, Ser. No. 915,687
Int. Cl.² F25J *3/02*
U.S. Cl. 62—24 **13 Claims**



1. A process comprising:

(a) dividing a fluid feed stream having higher and lower molecular weight hydrocarbons into at least first and second portions;

(b) passing said first portion of said feed stream into heat exchange relationship with overhead from a downstream stripping zone to cool said first portion of said feed stream;

(c) passing said second portion of said feed stream into heat exchange relationship with a stream from a lower portion of said downstream stripping zone to cool said second portion of said feed stream, said first portion of said feed stream being cooled to a lower temperature than said second portion of said feed stream;

(d) passing said thus cooled first portion of said feed stream to an upper portion of a separation and contacting zone;

(e) passing said thus cooled second portion of said feed stream to said separation and contacting zone at a point at least 20 percent of the height of said separation and contacting zone below the point of said cooled first portion of said feed stream;

(f) withdrawing a vapor stream from an upper portion of said separation and contacting zone and passing said vapor stream to an expansion zone where said vapor stream is expanded to cool said vapor stream and produce external work;

(g) withdrawing a cooled expanded fluid stream from said expansion zone and passing said thus cooled fluid stream to an upper portion of said stripping zone;

(h) withdrawing liquid from a lower portion of said separation and contacting zone;

(i) passing at least a major portion of the thus withdrawn liquid of (h) to said stripping zone at a point below the introduction of said cooled fluid stream of (g) and above the point said stream of (c) is withdrawn;

(j) withdrawing said overhead from said heat exchange with said first portion of said feed as a vapor product of the process; and

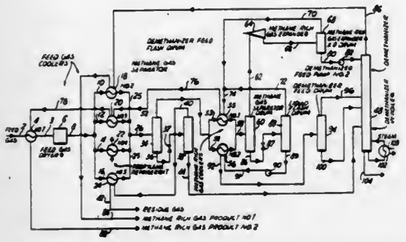
(k) withdrawing bottom product from said stripping zone as a liquid product of said process.

4,203,742

PROCESS FOR THE RECOVERY OF ETHANE AND HEAVIER HYDROCARBON COMPONENTS FROM METHANE-RICH GASES

Chaitanya B. Agnihotri, Cedar Knolls, N.J., assignor to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Oct. 31, 1978, Ser. No. 956,324
Int. Cl.² F25J 3/02
U.S. Cl. 62—24 18 Claims



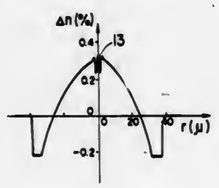
1. A process for recovering ethane and heavier hydrocarbons from a methane-rich gas which comprises:
(a) passing said gas through a series of at least two indirect cooling stages whereby partial liquefaction of said gas takes place,
(b) separating the liquid and remaining vapors leaving each indirect cooling stage,
(c) vaporizing a portion of each of the liquids so formed by passing said liquids through pressure reduction stages,
(d) separating the vapors from the liquids remaining,
(e) passing the vapor from the last cooling stage through an expansion turbine whereby part of said vapor is liquefied,
(f) separating said liquid and remaining vapor,
(g) passing the liquid remaining after the last liquid pressure reduction stage in heat exchanger relation with a portion of the already partly cooled feed vapor thereby vaporizing a portion of said liquid and forming therefrom a mixture of vapor and liquid, and
(h) passing said mixture of vapor and liquid, the liquid from the separator after the expansion turbine and the liquid from the separator following the first liquid pressure reduction stage as separate feed streams to a demethanizer tower, said tower operating at a pressure level intermediate the inlet feed gas pressure and the pressure at the outlet of the expansion turbine.

4,203,743

METHOD OF PRODUCING OPTICAL FIBER

Tsuneo Suganuma, Tokorozawa; Koji Ishida, Tokyo; Shin Satoh, Iruma; Mamoru Sugie, Hachioji; Toshio Katsuyama, Kokubunji, and Gyozo Toda, Hino, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 832,900, Sep. 13, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,672
Claims priority, application Japan, Sep. 20, 1976, 51-111864; Feb. 14, 1977, 52-14270
Int. Cl.² C03B 37/02
U.S. Cl. 65—3 A 20 Claims



1. A method of producing optical fiber, wherein a glass film is deposited by chemical vapor reaction on the inner wall surface of a glass tube, an optical preform is produced from said glass tube by heating and collapsing said glass tube, and an optical fiber is produced from said preform by heating and drawing said optical preform, comprising the steps of:
(i) depositing a glass film having a dopant therein, for enhancing the refractive index of said glass film, onto an inner wall surface of a glass tube by a chemical vapor reaction, said depositing taking place at a temperature up to 1100° C., whereby a glass film having a dopant therein and having a desired refractive index or refractive index profile is deposited on said inner wall surface;
(ii) heating the glass tube, having the glass film, with the dopant therein and with a desired refractive index or refractive index profile, on an inner wall surface of said tube, to a temperature between 1400°–1500° C., passing a gas through said tube, said gas consisting essentially of (a) a compound gas which can be oxidized, at said temperature between 1400°–1500° C., to form an oxide which enhances the refractive index of said glass film, and (b) an oxidizing gas, and forming and precipitating on said glass film a precipitate consisting essentially of said oxide which enhances the refractive index of said glass film, said forming and precipitating occurring during said passing said gas through said tube, whereby the deposited glass film having a dopant therein is densified and the evaporation of the dopant from said glass film while producing said optical preform by heating and collapsing said glass tube is suppressed and compensated for;
(iii) heating said glass tube to a temperature between 1550°–1650° C. and collapsing said tube at this temperature between 1550°–1650° C., whereby a solid optical perform is produced; and
(iv) heating and then drawing said solid optical preform to form said optical fiber.

4,203,744

METHOD OF MAKING NITROGEN-DOPED GRADED INDEX OPTICAL WAVEGUIDES

Peter C. Schultz, Painted Post, and Raja R. Wusirika, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 2, 1979, Ser. No. 77
Int. Cl.² C03B 37/00; C03C 3/08, 3/30, 13/00
U.S. Cl. 65—3 A 8 Claims

1. A method of making a glass article comprising the steps of
providing a cylindrically shaped glass preform containing throughout its mass a multiplicity of interconnected pores, said preform comprising at least two oxides having different affinities for nitrogen, the concentration of the oxide having the greatest affinity for nitrogen varying radially through said preform,
heating said porous preform in a nitrogen-containing atmosphere at a temperature sufficient to cause nitrogen to react therewith, and
heating said preform to a temperature sufficient to cause said preform to consolidate and form a dense glass article.

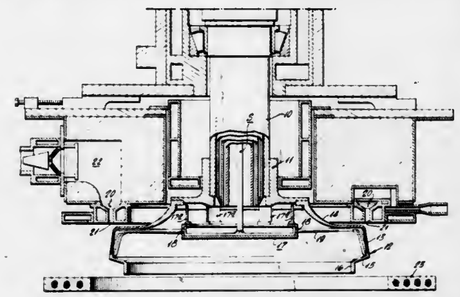
4,203,745

GLASS FIBERIZATION BY CENTRIFUGAL FEED OF GLASS INTO ATTENUATING BLAST

Jean A. Battigelli, and Francois Bouquet, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 6, 1979, Ser. No. 27,617
Claims priority, application France, Dec. 8, 1978, 78 34616
Int. Cl.² C03D 37/04
U.S. Cl. 65—6 20 Claims

1. Glass fiberizing equipment comprising a hollow spinner having a peripheral wall with a plurality of rows of orifices for centrifugal projection of streams of molten glass, having a glass distributing device within the spinner, and a blower generating an annular gas current directed downwardly around the spinner, characterized in that the distributing device comprises means for feeding all of the glass to be fiberized to the region of the uppermost row of spinner orifices, with consequent laminar flow of the glass downwardly on the inside of the peripheral wall of the spinner in a substantially unobstructed layer overlying the rows of orifices, means for heating the lower edge portion of the peripheral wall of the spinner, sufficiently to maintain a glass temperature at the lower edge portion of the peripheral wall approximating the temperature of the glass at the upper edge portion of said peripheral wall, thereby establishing substantial uniformity in the viscosity of the glass in the upper and lower regions of the spinner wall,



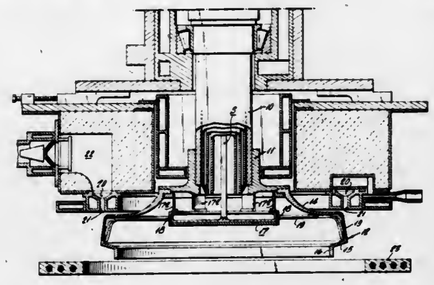
and the peripheral wall of the spinner being of progressively increasing thickness from the upper to the lower region thereof and the diameter of the spinner orifices and the thickness of the peripheral wall of the spinner in the upper and lower regions thereof being proportioned to establish resistance in the centrifugal delivery of the glass, at a given viscocity, which resistance is higher in the lower rows of orifices than in the upper rows of orifices, thereby providing greater extent of projection of the streams of molten glass from the upper rows of orifices than from the lower rows of orifices, notwithstanding the substantial uniformity of viscosity of the glass projected from the orifices in the upper and lower regions of the peripheral wall.

4,203,746

METHOD FOR CENTRIFUGAL FIBERIZATION OF HARD GLASS

Jean A. Battigelli; Francois Bouquet, both of Rantigny; Igor Fezenko, Aubervilliers, and Jean-Jacques Massol, Asnieres, all of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 6, 1979, Ser. No. 27,912
Claims priority, application France, Dec. 8, 1978, 78 34616
Int. Cl.² C03B 37/02
U.S. Cl. 65—6 1 Claim



1. Method for fiberizing molten glass by the use of a spinner having a peripheral wall with a plurality of rows of orifices for centrifugal projection of streams of the glass, the spinner being positioned within a downwardly directed annular gaseous blast, characterized by feeding the glass to be fiberized into a spinner formed of an alloy consisting essentially and by weight of the following composition:

Elements	Ranges
C	0.65–0.83
Cr	27.5–31
W	6–7.8
Fe	7–10
Si	0.7–1.2
Mn	0.6–0.9
Co	0–0.2
P	0–0.03
S	0–0.02
Ni (balance)	~ 59–50

the glass consisting essentially of the following ingredients by weight:

SiO_2	60–64
Al_2O_3	5–6.5
Na_2O	14.5–18
K_2O	0–3
$R_2O = Na_2O + K_2O$	16–18
Al_2O_3/R_2O	(0.25–0.4)
CaO	5–9
MgO	0–4
MgO/CaO	0–0.75
MgO + CaO	8–9.5
MnO	1.5–4
BaO	trace
Fe_2O_3	0.8–3.5
$MnO + BaO + Fe_2O_3$	3.5–6.5
B_2O_3	trace
Miscellaneous	≦ 1
of which SO_3	≦ 0.6

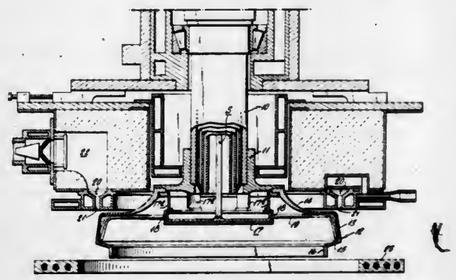
the glass being substantially free of fluorine, boron and barium.

4,203,747

GLASS FIBERIZATION SPINNER ALLOY AND USE THEREOF

Igor Fezenko, Aubervilliers, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 9, 1979, Ser. No. 28,211
Claims priority, application France, Dec. 8, 1978, 78 34616
Int. Cl.² C03B 37/02
U.S. Cl. 65—6 2 Claims



1. A hollow centrifugal glass fiberizing spinner adapted to be mounted for rotation about a generally upright axis within a surrounding annular gas blast, the spinner being formed of an alloy consisting essentially and by weight of the following composition:

Elements	Ranges
C	0.65–0.83
Cr	27.5–31

-continued

Elements	Ranges
W	6–7.8
Fe	7–10
Si	0.7–1.2
Mn	0.6–0.9
Co	0–0.2
P	0–0.03
S	0–0.02
Ni (balance) ~	59–50

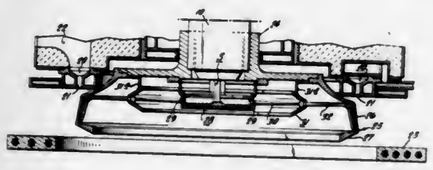
the spinner having a peripheral wall with a plurality of vertically spaced rows of perforations for projection of streams of molten glass.

4,203,748

GLASS FIBERIZATION SPINNER

Jean A. Battigelli; Francois Bouquet, both of Rantigny, and Igor Fezenko, Aubervilliers, all of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 9, 1979, Ser. No. 28,393
Claims priority, application France, Dec. 8, 1978, 78 34616
Int. Cl.² C03B *37/04*
U.S. Cl. 65—14 **3 Claims**



1. A hollow centrifugal glass fiberizing spinner adapted to be mounted for rotation about a generally upright axis within a surrounding annular gas blast, the spinner being formed of an alloy of the following composition:

Elements	Ranges
C	0.65–0.83
Cr	27.5–31
W	6–7.8
Fe	7–10
Si	0.7–1.2
Mn	0.6–0.9
Co	0–0.2
P	0–0.03
S	0–0.02
Ni (balance) ~	59–50

the spinner having a peripheral wall with a plurality of vertically spaced rows of perforations for projection of streams of molten glass, with the perforations of the lower rows proportioned to provide greater resistance to glass flow than the orifices of the upper rows with glass at the same viscosity.

4,203,749

METHOD OF PRESSING AND PRESSING MACHINE FOR HOLLOW GLASSWARE

Jean-Claude Laine, Meung sur Loire, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Aug. 17, 1978, Ser. No. 934,403
Claims priority, application France, Aug. 24, 1977, 77 25860
Int. Cl.² C03B *11/16*
U.S. Cl. 65—68 **17 Claims**

1. In a pressing machine for articles of moldable material having a rotatable molding plate, advancing means for rotating the plate in a step-by-step advance movement, means for mounting a plurality of molds on the plate, a plurality of discharging devices and a plurality of pressing devices positioned about the periphery of the plate for respectively placing molten material into each of the molds, and molding the material into articles of the desired shape, the improvement wherein:

(a) the advancing means includes selectively operable means for advancing the plate through a first series of advance steps of equal distances as measured in terms of a fraction of revolution of the plate and through a second series of advance steps equal to a whole multiple of the distance of the first advance steps;

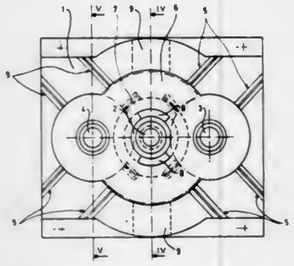
(b) the discharging and pressing devices are divided into a plurality of groups, one group including:

(1) a first set of discharging devices angularly spaced from each other by a distance equal to a fraction of the first advance step,

(2) a first set of pressing devices angularly spaced from each other by a distance equal to said fraction of the first advance step and spaced, in the direction of advancement of the plate, from the respective ones of the first set of discharging devices by a distance equal to said first advance step,

and a second group including:

(1) a second set of discharging devices angularly spaced from each other by a distance equal to said first advance step, with one of the second set thereof being located centrally between the first set of discharging devices and the other of the second set being located centrally of the first set of pressing devices, and



(2) a second set of pressing devices angularly spaced from each other by a distance equal to said first advance step and angularly spaced in the direction of advancement of the plate from the respective ones of the second set of discharging devices by a distance equal to said second advance step; and

(c) means for selectively controlling the operation of the discharging and pressing devices independently of each other.

16. In the process for pressing articles of moldable material by the action of one or a plurality of hydraulically controlled dies on the raw material, specifically one or a plurality of parisons in one or a plurality of molds, the improvement wherein the travel of each of the dies has the following sequential steps:

(a) rapid and controlled descent of the die;

(b) slow and controlled descent during the pressing operation;

(c) holding of the die under pressure in low position in the mold for a given time;

(d) decompressing the hydraulic control for the die while the die is in the low position in the mold;

(e) holding of the die during decompression in low position in the mold; and

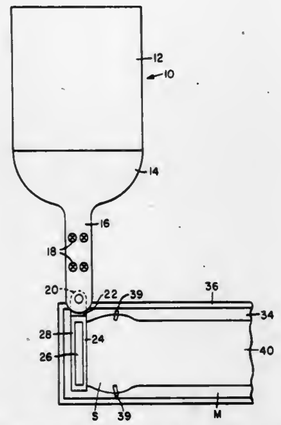
(f) rapid and controlled ascent of the die.

4,203,750

MANUFACTURE OF FLAT GLASS

George C. Shay, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,522
Int. Cl.² C03B *18/02*
U.S. Cl. 65—99 A **10 Claims**



1. A method of delivering a sheet of substantially homogeneous molten glass to the surface of a bath of molten metal for producing float glass which comprises, delivering molten glass to a relatively narrow conditioning channel, flowing said molten glass longitudinally through said channel while simultaneously stirring such glass and producing a substantially homogeneous glass consistency, delivering said stirred and homogeneous glass to the inlet end of an overflow channel having opposed sidewalls, flowing such glass longitudinally along such channel and simultaneously overflowing at least one of said sidewalls and forming a downward flowing sheet-like flow of molten glass, and depositing said sheet of substantially homogeneous molten glass on the surface of a bath of molten metal for forming a ribbon of float glass.

10. Apparatus for forming float glass which comprises, means for retaining a longitudinally extending bath of molten metal, distributor means positioned above and transversely of said molten metal bath means, said distributor means having an inlet end positioned transversely of the longitudinal extent of said molten metal bath means, means for producing homogeneous molten glass, means for delivering said homogeneous molten glass directly from said homogeneous producing means to the inlet end of said distributor means, and channel means forming a part of said distributor means for flowing said homogeneous glass transversely of said longitudinally extending molten bath means and for overflowing a sheet of homogeneous molten glass for delivery to said molten bath means.

4,203,751

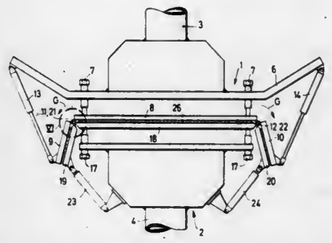
METHOD AND APPARATUS FOR MAKING CONVEX SHEETS OF GLASS HAVING A SMALL RADIUS OF CURVATURE

Mario Roth; Hans-Peter Siemonsen, both of Aachen; Günther Schmidt, Aachen-Richterich; Hubert Sonntag, and Leo Peters, both of Herzogenrath, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Sep. 14, 1978, Ser. No. 942,272
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741965
Int. Cl.² C03B *23/02*
U.S. Cl. 65—106 **23 Claims**

1. A process for making a convex sheet of glass having a substantial bent portion of small radius of curvature comprising the steps of vertically suspending a flat sheet of glass, heating said flat sheet to a bending temperature, confining said flat sheet between two molds having matching center elements and matching jointed elements, and moving simultaneously the matching jointed elements of both molds with respect to the center elements in the same direction to bend a portion of said sheet confined by said jointed elements with respect to a portion of said sheet confined by said center elements.

7. A device for making a convex sheet of glass having a substantial bent portion of small radius of curvature including suspension means for vertically suspending a flat sheet of glass,



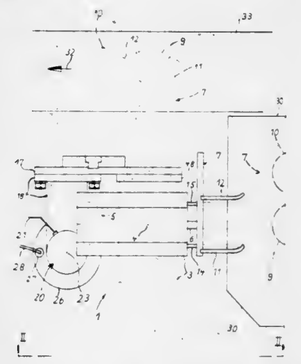
a female mold and a male mold movable respectively towards and away from each other adapted to engage a sheet of glass suspended therebetween, said mold having two matching center elements and at least one set of two opposed matching jointed elements connected to one end of the center elements with the matching jointed elements of a set being simultaneously movable with respect to the center elements about an axis to confine a portion of a sheet of glass and to impart a bend in a sheet of glass engaged by said molds, and means for moving said matching jointed elements about said axis.

4,203,752

MULTI-STATION GLASS-FORMING MACHINE

Kurt Becker, Obernkirchen; Hermann Büogert, Aeutal; Siegfried Schwarzer, Stockse, and Hans-Georg Seidel, Rinteln, all of Fed. Rep. of Germany, assignors to Hermann Heye KG, Obernkirchen, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,185
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746675
Int. Cl.² C03B *9/44, 35/00*
U.S. Cl. 65—163 **17 Claims**



1. In a multi-station machine, particularly a glass-forming machine producing glass articles, of the type in which each station of the machine deposits articles produced at that station onto a respective deposit location, an article transfer system comprising a common conveyor extending along the stations of the multi-station machine and serving to carry away articles produced at the stations; plural article transfer means each

operative when activated for engaging at least one article at the deposit location of a respective station, performing a transfer motion transferring such article or articles onto the e common conveyor, and then performing a return motion returning to starting position for another such article transfer; a plurality of rotary electric motors each coupled in driving connection to the article transfer means of a respective one of the stations and each supplying motion to the respective article transfer means for causing the same to perform the transfer and return motions; and control means connected to the rotary electric motors and operative for controlling the rotation of each motor individually independently of the rotation of the respective remaining motors.

4,203,753

TURRET GLASS PRESS

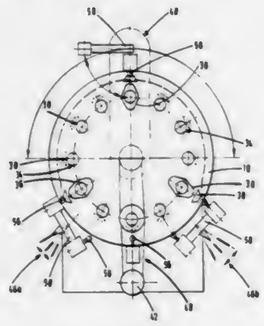
Eberhard Liebal, Kronach, and Norbert Eichenberg, Michelau, both of Fed. Rep. of Germany, assignors to Messrs. J. Walter Co. Maschinen GmbH, Kronach, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 961,940

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752814

Int. Cl.² C03B *11/02, 11/16*

U.S. Cl. 65—163 **12 Claims**



1. A turret glass press comprising a turntable having means forming a plurality of equally circumferentially spaced mould-receiving stations, means forming operating stations which are stationary with respect to the rotary motion of said turntable for charging glass into moulds in said mould receiving stations, for pressing glass charged into the moulds, and for withdrawing the pressed glass from the moulds, a Maltese cross mechanism connected to said turntable for rotating the same, a clutch and brake device connecting said Maltese cross mechanism to a continuously running motor for driving said mechanism, scanners for uncoupling and braking said Maltese cross mechanism and provided at said means forming said operating stations, and an actuator provided at each means forming said mould-receiving station and connected to said scanners so as to be operative in the presence of a mould at said last-mentioned station.

4,203,754

APPARATUS FOR BENDING GLASS SHEETS

M. Pierre Potier, Sartrouville, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Mar. 13, 1978, Ser. No. 886,101

Claims priority, application France, Mar. 18, 1977, 77 08119

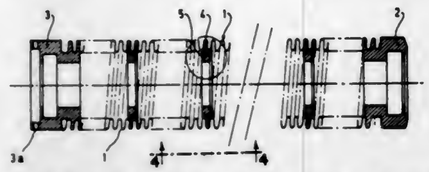
Int. Cl.² C03B *23/02*

U.S. Cl. 65—273 **8 Claims**

1. In a continuous glass sheet conveying and bending device of the type including a rod having a curved portion, a rotary flexible tubular member slidably disposed about at least said curved portion of said rod for supporting and conveying the glass sheet thereover, and a pluality of rings rotatably disposed on said rod and within said tubular member, the improvement wherein:

(a) said rotary tubular member is of solid wall construction lengthwise thereof with internal threading;

(b) a plurality of annular support means having external threading maing with the internal threading of said rotary



tubular member for internally supporting said rotary tubular member thereon and positioned along spaced locations within said tubular member; and

(c) each of said rings being affixed within one of said annular support means to maintain said tubular member in rotary relation about said rod.

4,203,755

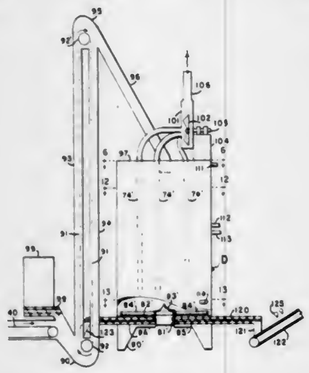
METHOD OF AND APPARATUS FOR TREATING WASTE MATERIALS

Konrad Ruckstuhl, 1019 E. Easter Way, Littleton, Colo. 80122

Filed Jan. 9, 1978, Ser. No. 867,698

Int. Cl.² C05F *11/08, 9/00*

U.S. Cl. 71—9 **13 Claims**



1. A process for treating waste material which may include magnetic and non-magnetic metal material and which includes cellulosic fiber materials, relatively hard materials having a hardness on the order of glass, ceramic, and stone, relatively soft material, on the order of food waste or lawn waste and intermediate material, which comprises:

(a) separating removable magnetic metal material present;

(b) comminuting the remaining material, including impacting the hard material, to produce sufficiently small sizes for separation;

(c) separating finely divided material including relatively hard and relatively soft material simultaneously by passing through apertures;

(d) separating and removing lighter cellulosic fiber material;

(e) separating and removing intermediate material;

(f) introducing increments of separated, relatively hard and relatively soft, finely divided material into the upper portion of a compost producing treatment space;

(g) recirculating portions of said material from the lower portion of said treatment space into the upper portion of said treatment space; and

(h) discharging portions of treated material from the lower portion of said treatment space.

4,203,756

METHOD FOR INCREASING THE SUCROSE CONTENT OF GROWING PLANTS

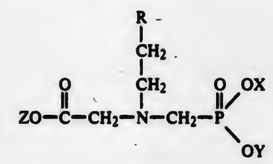
Van R. Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1978, Ser. No. 972,540

Int. Cl.² A01N *5/00*

U.S. Cl. 71—86 **12 Claims**

1. A method for increasing the sucrose content of sugarcane plants which comprises applying to said plants, from about 2 to 10 weeks prior to harvest, an effective sucrose increasing amount of a compound of the formula



wherein R represents cyano, carbamoyl or carboxyl, X represents hydrogen or alkali metal, Y represents hydrogen, lower alkyl or phenyl, and Z represents hydrogen, lower alkyl, phenyl or alkali metal.

4,203,757

HALOPHENOXYALKOXY PHOSPHOROUS-CONTAINING SULFIDES

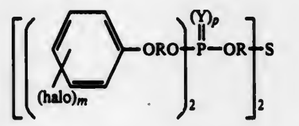
Fred S. Eiseman, Basking Ridge, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,373

Int. Cl.² A01N *9/36;* C07F *9/141, 9/165*

U.S. Cl. 71—87 **18 Claims**

1. A bis-(halophenoxyalkoxy)phosphino alkoxy sulfide having the formula:



wherein

each R is alkylene having from 1 to 3 carbon atoms;

Y is oxygen of sulfur

m is an integer having a value of from 1 to 3;

p is 0 or 1

and wherein

P is trivalent phosphorous when p is 0 and is pentavalent phosphorous when p is 1.

6. The process for inhibiting the growth of weeds which comprises contacting the plant or plant situs with a herbicidally effective amount of the compound of claim 1.

4,203,758

HERBICIDAL PHENOXY-PHENOXYALKANE THIO ESTERS

Ryuzo Nishiyama, Takatsuki; Ryobei Takahashi, Tokyo; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Itaru Shigehara, Kusatsu, and Nobuyuki Sakashita, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Limited, Osaka, Japan

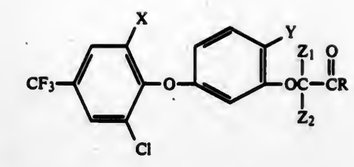
Division of Ser. No. 722,327, Sep. 10, 1976, Pat. No. 4,070,177. This application Sep. 29, 1977, Ser. No. 837,815

Claims priority, application Japan, Sep. 27, 1975, 50-115982; Mar. 5, 1976, 51-23084; Mar. 17, 1976, 51-28189

Int. Cl.² A01N *9/12;* C07C *153/07*

U.S. Cl. 71—100 **9 Claims**

1. A compound having the formula:



wherein

X represents hydrogen or chlorine;

Y represents halogen or cyano;

Z_1 represents hydrogen or methyl;

Z_2 represents hydrogen, methyl or ethyl; and R is C_1-C_4 alkylthio, C_2-C_4 alkenylthio or C_2-C_4 alkynylthio.

9. A herbicidal composition, which comprises: the compound of claim 1 and an agriculturally acceptable adjuvant.

4,203,759

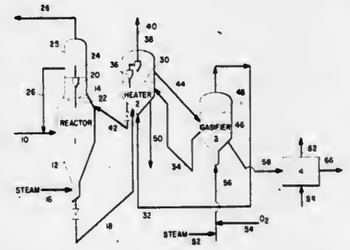
PROCESS FOR THE PREPARATION OF A VANADIUM-CONTAINING METALLIC ASH CONCENTRATE

William J. Metrailer, and David E. Mueller, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 1, 1978, Ser. No. 901,700

Int. Cl.² B22F *9/00*

U.S. Cl. 75—0.5 BA **6 Claims**



1. A process for producing a particulate vanadium-containing low density metallic ash concentrate which comprises: partially gasifying coke comprising metallic components, including vanadium components, at a temperature ranging from about 1600° F. to about 2000° F. in the presence of steam and an oxygen-containing gas and heating the resulting partially gasified coke comprising said metallic components at a temperature below the fusion point of said metallic components, said temperature below the fusion point being a temperature not greater than about 1050° F., in the presence of a molecular oxygen-containing gas, for a time sufficient to burn at least a portion of the coke therefrom, and to produce a particulate vanadium-containing low-density metallic ash concentrate, at least 50% of the particles of said concentrate having a diameter not greater than about 1 micron.

6. The process of claim 1 wherein said metallic components comprise iron, nickel and vanadium metals or metal compounds thereof.

4,203,760

METHOD FOR PRODUCING STEEL FROM SPONGE METAL BY USING A GAS PLASMA

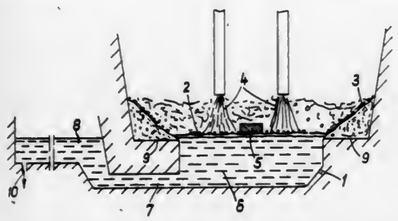
Heinrich-Otto Rossner, and Henri F. Seelig, both of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 885,021

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2710377

Int. Cl.² C21C 5/52

U.S. Cl. 75—12 6 Claims



1. In a method for producing steel by refining raw sponge iron material containing a matrix of impurities and sponge iron with the use of a gas plasma formed by a plasma burner, in a melting vessel containing a metal bath, the sponge iron being fed into the melting vessel, the improvement comprising the steps of:

(a) feeding the sponge iron material into the melting vessel by forming a thin floating layer of sponge iron material on the surface of the metal bath,

(b) directly melting by the plasma the sponge iron in the sponge iron material that is fed into the melting vessel without the addition of base or acid substances, and

(c) continuously removing from the metal bath slag produced from the melting of the sponge iron.

4,203,761

PROCESS OF SMELTING WITH SUBMERGED BURNER

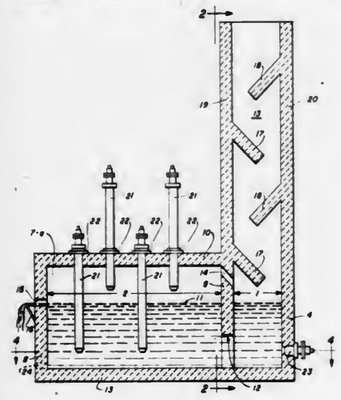
Robert N. Rose, Darien, Conn., assignor to Robert C. LeMay, Lafayette Hill; Earl G. Mills, Downingtown, both of, Pa.; Chester S. Stackpole, Elizabeth and Harold Massey, Ridgewood, both of, N.J., part interest to each

Continuation of Ser. No. 334,225, Feb. 21, 1973, abandoned.

This application Jun. 17, 1977, Ser. No. 807,567

Int. Cl.² C21B 11/00

U.S. Cl. 75—40 6 Claims



1. A metalurgical process which includes maintaining a melt-down non-circulating pool in a furnace by interacting a fluid fuel and oxygen in a heat-insulating refractory combustion chamber of an internal-combustion burner separate and distinct from the furnace and having its discharge below the metal-line and above the bottom of the pool of molten metal, the interaction between the fuel and the oxygen, of which the same are capable, being substantially completed within said combustion chamber, and with none of the interaction between the fuel and oxygen taking place below the bottom of the pool of molten metal, and injecting into the melt-down pool substantially below its top and above its bottom the resultant hot gases issuing from said combustion-chamber and passing such hot gases upwardly through the melt-down pool, and feeding material to be melted to said melt-down pool and passing the hot gases which have risen through the melt-down pool through said material-feed counter-current to the feeding movement thereof, thereby causing said melt-down pool to be augmented by the melting of such feed-material, causing the excess of melt to flow from said melt-down non-circulating pool into a processing-pool in the furnace and interacting a fluid fuel and oxygen in a heat-insulating refractory combustion chamber of an internal combustion burner separate and distinct from the furnace and having its discharge below the top and above the bottom of the melt in the processing pool, the interaction between the fuel and the oxygen, of which the same are capable, being substantially completed within said combustion chamber, and with none of the interaction between the fuel and oxygen taking place below the bottom of the processing pool, and injecting into the melt in the processing-pool, substantially below its top and above its bottom the resultant hot gases issuing from said combustion-chamber and passing such hot gases upwardly through the melt in the processing-pool, and causing said hot gases which have risen through said processing-pool to merge with the hot gases which have risen through the said melt-down pool so as to pass therewith through the aforementioned material-feed, and drawing off metal from said processing-pool.

4,203,762

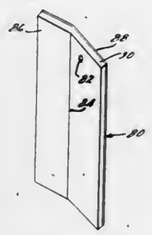
PROCESS FOR SEPARATING AND RECOVERING ALUMINUM AND STEEL FROM BIMETAL SCRAP

John L. Dansereau, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Dec. 11, 1978, Ser. No. 968,194

Int. Cl.² C22B 21/00

U.S. Cl. 75—68 R 10 Claims



1. A method for processing bimetallic scrap to separate and recover the aluminum lining from the ferrous substrate without incurring appreciable formation of contaminating iron-aluminum intermetallic compounds comprising the steps of introducing the bimetallic scrap into a furnace chamber, rapidly heating said scrap through a critical temperature range commencing at about 842° F. to a temperature above the melting point of the aluminum lining to convert said lining to the liquid state, removing the liquid aluminum as it is formed from the surface of the ferrous substrate to minimize reaction between the aluminum and iron to avoid any significant formation of iron-aluminum intermetallic compounds and separately recovering the aluminum and ferrous constituents.

4,203,763

METHOD OF MANUFACTURING A LEAD ALLOY STEEL AND A STEEL MADE ACCORDING TO THE METHOD

M. K. Olof Johnsson, Degerfors; Karl-Erik Öberg, Viken, and Harry Bertheussen, Degerfors, all of Sweden, assignors to Scandinavian Lancers Aktiebolag, Hoganas, Sweden

Filed Nov. 22, 1978, Ser. No. 962,936

Claims priority, application Sweden, Dec. 21, 1977, 7714561

Int. Cl.² C22C 33/08

U.S. Cl. 75—129 10 Claims

1. A method of manufacturing a lead alloy steel, wherein lead bearing particles are injected beneath the surface of a body of molten steel, said particles having a diameter less than 5 mm, said injection being carried out by introducing the particles with a neutral gas until the content of lead in the molten steel is 0.15 to 0.35% by weight, said neutral carrier gas being injected at a rate which brings about very efficient stirring of the melt so as to produce, in the solidified steel, small metallic lead inclusions evenly distributed over a section of the steel, said inclusions having average particle diameters less than 100 μm, and without tendency to macrosegregations of lead, and wherein prior to the injection of said lead bearing particles, the molten steel is deoxidized by treatment with up to 2 kg aluminum per ton steel, and a calcium compound is added to the molten steel during a stage which is not later than the lead injection to form a slag, the major portion of the entire content of aluminum being collected in the slag so that the aluminum content in the finished steel does not exceed 0.010% by weight.

4,203,764

POLYESTER OR POLYURETHANE COATED ELECTROSTATIC IMAGE HOLDING MEMBER

Umi Tosaka, Tokyo; Hideyo Kondo, Toride; Keiichi Murai, Tokyo, and Hitoshi Toma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 797,172, May 16, 1977, abandoned.

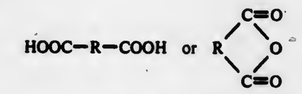
This application Dec. 15, 1978, Ser. No. 969,888

Claims priority, application Japan, May 17, 1976, 51-56342; Jun. 15, 1976, 51-70183; Aug. 23, 1976, 51-100834; Sep. 16, 1976, 51-111048; Sep. 30, 1976, 51-117569

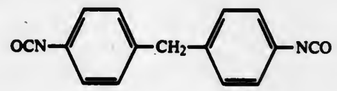
Int. Cl.² G03G 5/00, 8/00

U.S. Cl. 430—67 6 Claims

1. An image holding member for holding electrostatic image and/or toner image, characterized in that the surface of the image holding member has a surface layer, said surface layer essentially consisting of at least one of the substance A and B wherein the substance A represents a linear polyester having a structural unit —OOC—R—COO—R'—in which the dibasic acid compound is:



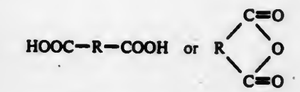
and the diol compound is HO—R'—OH, wherein R and R' are organic groups and are the same or different within each said structural unit, such that each said structural unit is the same or different, said polyester having a molecular weight in the range of 5,000 to 50,000 and is soluble in organic solvent, and the substance B represents a polymerization product of a linear isocyanate compound of the formula:



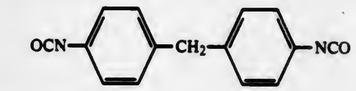
and a polyol compound of the formula:

wherein n is a positive integer from 2 to 20.

5. An image holding member for holding electrostatic image and/or toner image, characterized in that the image holding member comprises a photo conductive layer and a surface layer, said surface layer being on the upper surface of said member and consisting essentially of at least either one of substances A and B wherein the substance A represents a linear polyester having a structural unit —OOC—R—COO—R'—in which the dibasic acid compound is:



and the diol compound is HO—R'—OH, wherein R and R' are organic groups and are the same or different within each said structural unit, such that each said structural unit is the same or different, said polyester having a molecular weight in the range of 5,000 to 50,000 and is soluble in organic solvent, and the substance B represents a polymerization product of a linear isocyanate compound of the formula:



and a polyol compound of the formula:

wherein n is a positive integer from 2 to 20.

4,203,765

ETCH BLEACHING LIQUID WITH IRON(III)IONS

Danië A. Claeys, Mortsel; Albert A. Reyniers, Kontich, and Wilhelmus Janssens, Aarschot, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jun. 1, 1978, Ser. No. 911,484

Claims priority, application United Kingdom, Jun. 1, 1977, 23204/77

Int. Cl.² G03C 7/00, 5/32

U.S. Cl. 430—252 10 Claims

1. An etch-bleaching process containing the step of treating a hydrophilic polymeric colloid layer comprising a photographically formed silver image with an aqueous acidic etch-bleach solution comprising hydrogen peroxide, iron (III) ions and inorganic anions that form a silver salt having a solubility product not greater than 1×10^{-8} determined in water at 20° C., characterized in that this solution contains in the dissolved state the combination of citric acid and a polymer containing alkylene oxide units, whereby improved stabilization of the hydrogen peroxide is obtained.

4,203,766

PHOTOGRAPHIC PRODUCTS COMPRISING DYE DEVELOPERS AND N-OXIDES

Gerard J. Bourgeois, Kingston; Russell A. Gaudiana, Merrimack, both of N.H., and Ronald A. Sahatjian, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

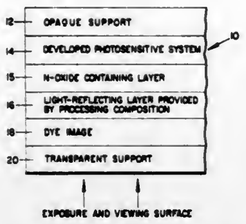
Continuation-in-part of Ser. No. 811,083, Jun. 29, 1977, abandoned. This application Apr. 30, 1979, Ser. No. 34,868

Int. Cl.² G03C 7/00, 5/54, 1/40, 1/10

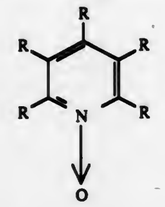
U.S. Cl. 430—243 45 Claims

35. A diffusion transfer process which comprises the steps of:

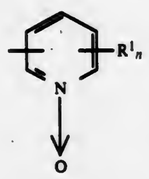
(a) photoexposing a photosensitive element which includes at least one silver halide emulsion layer associated with a dye developer;
(b) contacting the photoexposed element with a processing composition so that said photoexposed silver halide emul-



sion layer and associated dye developer can be processed in the presence of an N-oxide substantially soluble in said processing composition, said N-oxide having a polarographic reduction potential less positive than the polarographic oxidation potential of said dye developer(s) and conforming to the following formula:



where each R can be hydrogen or methyl or one of said R groups can be:



wherein R^1 is methyl and n is zero or an integer of from 1 to 4; and

(c) developing said photoexposed silver halide layer to provide, as a function of said development, an imagewise distribution of dye image providing material which is transferred by diffusion to an image receiving layer.

4,203,767

AMPLIFICATION PROCESS FOR LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Mitsuto Fujiwhara; Syunji Matsuo; Yutaka Kaneko; Toyoaki Masukawa, and Mikio Kawasaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi-Muro-machi, Japan

Continuation of Ser. No. 640,268, Dec. 12, 1975, abandoned. This application Nov. 9, 1977, Ser. No. 849,983
Claims priority, application Japan, Dec. 16, 1974, 48144615
Int. Cl.² G03C *7/00*
U.S. Cl. 430—376 **4 Claims**

1. A process for providing a color image which process comprises imagewise exposing a multi-layered light-sensitive photographic material comprising a support and a light-sensitive silver halide emulsion layer not having a coupler incorporated therein and a layer contiguous therewith, said emulsion layer or the layer contiguous therewith containing oil particles of a high boiling solvent, and developing said exposed photographic material with a coupler-containing color developer and processing said developed photographic material with an amplifying solution.

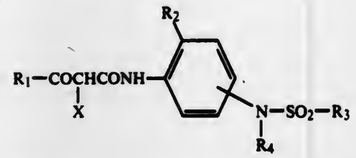
4,203,768

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND METHOD FOR FORMATION OF COLOR PHOTOGRAPHIC IMAGES

Kozo Inouye, and Hideki Naito, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

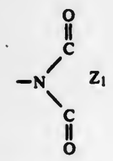
Filed Sep. 26, 1978, Ser. No. 945,946
Claims priority, application Japan, Sep. 26, 1977, 52-115265
Int. Cl.² G03C *7/00, 1/40*
U.S. Cl. 430—388 **9 Claims**

9. A method for formation of color photographic images which comprises developing an image-wise exposed photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer with a primary aromatic amine color developing agent in the presence of a yellow dye-forming coupler represented by the following general formula (I):



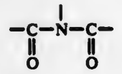
(I)

wherein R_1 represents an alkyl group or a monocyclic aryl group; R_2 represents a chlorine atom or a lower alkoxy group having 1 to 4 carbon atoms; R_3 and R_4, which may be the same or different, each represents a straight chain or branched chain alkyl group having 1 to 22 carbon atoms, a phenoxyalkyl group having 7 to 32 carbon atoms, a monocyclic aralkyl group having 7 to 32 carbon atoms, a phenyl group or a substituted phenyl group; and X is selected from the group consisting of groups represented by the following general formulae (III) to (V):

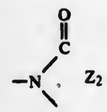


(III)

wherein Z_1 represents the non-metallic atoms necessary to form together with the



moiety a 5-membered ring or a 6-membered ring,

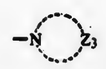


(IV)

wherein Z_2 represents the non-metallic atoms necessary to form together with the



moiety an unsaturated 5-membered ring or an unsaturated 6-membered ring, or



(V)

wherein Z_3 represents the non-metallic atoms necessary to form together with

an imidazole ring, a triazole ring or a tetrazole ring.

4,203,769

RADIATION-SENSITIVE ELEMENTS HAVING AN ANTISTATIC LAYER CONTAINING AMORPHOUS VANADIUM PENTOXIDE

Claude Guestaux, Colombes, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 14, 1976, Ser. No. 705,187
Claims priority, application France, Jul. 15, 1975, 75 22060
Int. Cl.² G03C *1/00, 1/06*
U.S. Cl. 430—631 **16 Claims**

1. In a radiation-sensitive element comprising a support, at least one image-forming layer, and an antistatic layer; the improvement wherein said antistatic layer has been formed by the coating and subsequent drying of an antistatic composition comprising an aqueous solution of an amorphous antistatic material, said aqueous solution having been produced by forming a melt comprised of at least 80% by weight of V_2O_5 and casting said melt into a solubilizing amount of water, said melt having been heated to a temperature in the range of from 790° C. to 1190° C. and cast into said solubilizing amount of water while at a temperature of at least 740° C.

4,203,770

NEGATIVE TONABLE PHOTOHARDENABLE ELEMENT

Mario Grossa, Dreieich, and Helmut G. Sandner, Nieder-Roden, both of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 20, 1978, Ser. No. 926,577
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733581
Int. Cl.² G03C *1/78, 1/96*
U.S. Cl. 430—270 **8 Claims**

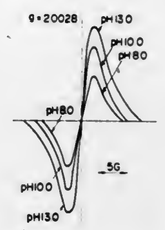
1. A photohardenable element for the preparation of negative tonable images comprising
(1) a support;
(2) an intermediate layer consisting essentially of one or more thermoplastic polymeric binders;
(3) a photohardenable layer comprising an addition polymerizable ethylenically unsaturated compound or a compound having photocrosslinkable groups, and a polymeric binder; and optionally,
(5) a removable cover sheet, the improvement wherein over layer (3) is a layer
(4) which is tonable and which comprises a polymeric binder and a nonvolatile diffusible component which can diffuse imagewise from the tonable layer thereby removing tonability in the areas of the tonable layer from which diffusion occurs.

4,203,771

GREEN SAND COMPOSITION FOR CASTING

Hirofumi Matsui, No. 6-16, 2-chome, Higashi, Shibuya-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 785,312, Apr. 8, 1977, Pat. No. 4,137,085. This application Oct. 16, 1978, Ser. No. 951,800
Claims priority, application Japan, Apr. 8, 1976, 51-40047
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.² B28B *7/34*
U.S. Cl. 106—38.35 **18 Claims**



1. A green sand composition for casting comprising a green sand composed of siliceous sand, a combination of Na-type and Ca-type bentonite, and water, and having incorporated therein a component selected from the group consisting of (a) a waste liquor of a pH of 9 to 13 obtained in the soda process, kraft process, or oxygen-alkali cooking process for preparing pulps from woods or non-wooden raw materials, or a concentrate or powder formed from said waste liquor, (b) a waste liquor of a pH of 9 to 13 obtained by cooking a wood or non-wooden material with a liquid mixture of sodium sulfite with sodium hydroxide or sodium carbonate, or a concentrate or powder prepared from said waste liquor, (c) a mixture of a solution of an alkali lignosulfonate having a pH of 9 to 13 with a monosaccharide or polysaccharide or a monosaccharide-or polysaccharide-containing residue left after removing thiolignin from a kraft pulp waste liquor, the mixing ratio being in the range of 30/70 to 70/30 based on the solids, and (d) a mixture of at least two components selected from said components (a), (b) and (c), the amount incorporated of said component (a), (b), (c) or (d) as the solids thereof being at least 0.01% by weight based on the siliceous sand.

4,203,772

POROUS ZIRCONIA CONTAINING CERAMICS

Allen D. Davis, Jr., Louisville, Ky.; Herbert L. Johns, Madison, Ohio, and Irwin M. Lachman, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 788,614, Apr. 18, 1977, abandoned. This application Jan. 12, 1978, Ser. No. 868,888
Int. Cl.² C04B *35/48*
U.S. Cl. 106—40 R **15 Claims**

1. A method of fabricating a porous sintered zirconia-containing ceramic body including the steps of
(a) formulating a batch of ceramic material which contains zirconia, and

(b) shaping the batch into a green body, and firing the green body to transform it into a sintered body, wherein the improvement comprises

(c) incorporating into the batch zirconium hydroxide in an amount greater than 11 wt.% of ceramic material plus hydroxide.

4,203,773

LIGHTWEIGHT SILICATE AGGREGATE

Ralph E. Temple, Chardon, and William T. Gooding, Jr., Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Nov. 13, 1978, Ser. No. 959,517
Int. Cl.² C04B *21/00, 31/02*
U.S. Cl. 106—40 R **12 Claims**

1. A process for the preparation of lightweight silicate aggregate, which process comprises the steps of:

(a) mixing anhydrous alkali metal silicate and sufficient boron-containing curing agent to provide a boron content of 0.5–2.5 percent in the mixture,

(b) adding water to provide from about 17 percent to about 25 percent H_2O, by weight, of the total mixture,

(c) mixing until a homogeneous, free-flowing powdery composition is obtained,

(d) curing the composition at a temperature below about 100° C. until the silicate is hydrated, while maintaining the composition in a substantially nonliquid state,

(e) comminuting the composition into discrete free-flowing particles, and

(f) expanding the particles by rapid heating to at least 425° C. to produce an aggregate having a bulk density of less than about 56 kg per cubic meter.

4,203,774

GLASS COMPOSITION AND FIBERS

Jean A. Battigelli; Francois Bouquet, both of Rantigny, and Jean-Jacques Massol, Asnieres, all of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 9, 1979, Ser. No. 28,212
Claims priority, application France, Dec. 8, 1978, 78 34616
Int. Cl.² C03C *13/00*
U.S. Cl. 106—50 **9 Claims**

1. Fiberizable glass consisting essentially of the following ingredients in the amounts indicated by weight, and characterized by a viscosity in a range above 1000 poises at a temperature of about 950° C. up to about 5000 poises at a temperature of about 1050° C.:

SiO_2	60–64
Al_2O_3	5–6.5
Na_2O	14.5–18
K_2O	0–3
$R_2O = Na_2O + K_2O$	16–18
Al_2O_3/R_2O	(0.25–0.4)
CaO	5–9
MgO	0–4
MgO/CaO	0/0.75
MgO + CaO	8–9.5
MnO	1.5–4
BaO	trace
Fe_2O_3	0.8–3.5
$MnO + BaO + Fe_2O_3$	3.5–6.5
Miscellaneous	≦1
of which SO_3	≦0.6

9. Glass fibers formed from glass consisting essentially of the following ingredients in the amounts indicated by weight:

SiO_2	59–65
Al_2O_3	4–8
Na_2O	12.5–18
K_2O	0–3
$R_2O = Na_2O + K_2O$	15–18
Al_2O_3/R_2O	0.25–0.4
CaO	4.5–8
MgO	0–4
MgO/CaO	0/0.75
MgO + CaO	7–0.75
MnO	1–3.5
BaO	2–3.5
Fe_2O_3	0.1–1
$MnO + BaO + Fe_2O_3$	4–8
B_2O_3	0–2
Miscellaneous	≦1
of which SO_3	≦0.6

4,203,775

Patent Not Issued For This Number

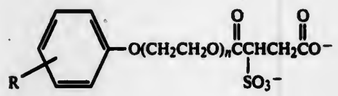
4,203,776

AQUEOUS FORTIFIED ROSIN DISPERSIONS

Richard W. Greiner, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 790,650, Apr. 25, 1977, abandoned. This application Sep. 19, 1978, Ser. No. 943,898
Int. Cl.² C08L *93/04*
U.S. Cl. 106—238 **10 Claims**

1. In the invention process of preparing paper size from fortified rosin wherein molten fortified rosin and water containing a dispersing agent are first mixed to provide an emulsion wherein the molten fortified rosin is the continuous phase and the water is the disperse phase and the emulsion is subsequently inverted by the addition of water to provide an emulsion wherein the water is the continuous phase and the fortified rosin is the disperse phase, the improvement wherein there is employed as the dispersing agent one or more water-soluble compounds which provide in solution one or more anions of the formula



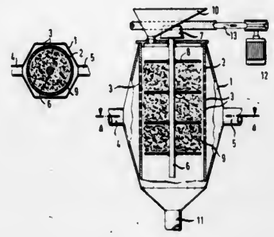
wherein R is a normal or branched chain alkyl containing from 4 through 18 carbon atoms, and n is an integer 4 through 25.

4,203,777

METHOD FOR PURIFYING PARTICULATE MOULD MATERIAL

Hermann Jacob, Fachenfelderweg 115, 2105 Seevetal 3, Fed. Rep. of Germany

Continuation of Ser. No. 545,014, Jan. 29, 1975, Pat. No. 4,089,081. This application Feb. 21, 1978, Ser. No. 879,868
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1974, 2404702; Dec. 20, 1974, 2460594
Int. Cl.² B08B *1/00*
U.S. Cl. 134—7 **9 Claims**



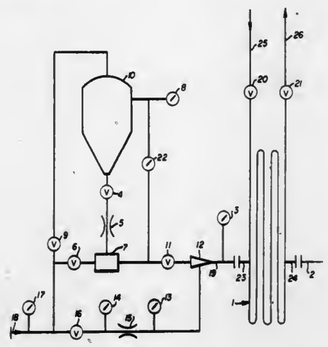
1. A method of purifying particulate material, particularly foundry sand, to remove adhering contaminants therefrom, comprising the steps of confining in an enclosed space at least one body of finely divided metallic material having sharp edges and defining a plurality of voids which are bounded by said sharp edges; passing a stream of the particulate material through the enclosed space so that the particles of the material travel through the voids and brush against the sharp edges bounding the same, whereby contaminants adhering to the particles are scoured off by the sharp edges; and withdrawing the scoured-off contaminants to purify the particulate material.

4,203,778

METHOD FOR DECOKING FIRED HEATER TUBES

David J. Nunciato, Missouri City, Tex.; Norman H. White, Amherst, N.Y., and William A. Woodburn, Kingwood, Tex., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 17, 1978, Ser. No. 906,748
Int. Cl.² B08B *9/02*
U.S. Cl. 134—7 **5 Claims**



1. A method for decoking fired heater tubes of a serpentine configuration used in hydrocarbon processing while maintaining the integrity of the tube walls and return bends comprising

(a) establishing a gas inlet to and a gas outlet from said fired heater tubes of a serpentine configuration;

(b) injecting a purge gas stream into the inlet while the outlet is open to atmosphere to purge the tubes of loose debris until the effluent is clear;

(c) entraining impact resistant, non-angular, non-abrasive particles into a propelling gas stream at a concentration of 0.1 to 1.0 pounds of particles per pound of propellant;

(d) introducing the impact resistant, non-angular, non-abrasive particle entrained gas stream into the inlet of said fired heater tubes of a serpentine configuration while the outlet remains open to the atmosphere at a gas flow rate corresponding to an outlet gas velocity of 14,000 to 20,000 feet per minute;

(e) maintaining the flow of the gas stream in step (d) until the inlet pressure to the tubes reaches a preselected maximum value;

(f) discontinuing entraining impact resistant, non-angular, non-abrasive particles into said propelling gas stream;

(g) continuing the flow of propelling gas into said tubes to clear such tubes of loose coke debris; and

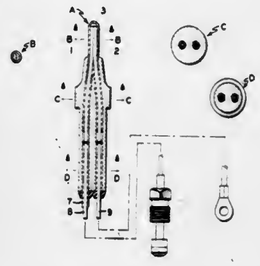
(h) repeating steps (c), (d), (e) and (f) until the tubes are clean, as evidenced by a coke-free clear effluent from the outlet whereby grinding-type abrasion of the tube walls and gouging-type abrasion of the return bends is eliminated.

4,203,779

FLAME DETECTION THERMOCOUPLE

Tadashi Kojima, and Kazuo Seki, both of Fujisawa, Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 24, 1978, Ser. No. 963,632
Int. Cl.² H01L *35/02, 35/28*
U.S. Cl. 136—233 **4 Claims**



1. A flame detecting thermocouple comprising

a first element which is composed of a high potential side thermoelectric material of an iron-chromium alloy,

a second element composed of a low potential side thermoelectric material formed of an alloy of 0.7 to 2% of yttrium, 45–70% copper and the remainder of the alloy is nickel, and

a welded connection of the ends of said first and second elements to provide a junction which can be heated by a flame to produce a thermoelectric output at the other ends of the elements.

4,203,780

FE ION IMPLANTATION INTO SEMICONDUCTOR SUBSTRATE FOR REDUCED LIFETIME SENSITIVITY TO TEMPERATURE

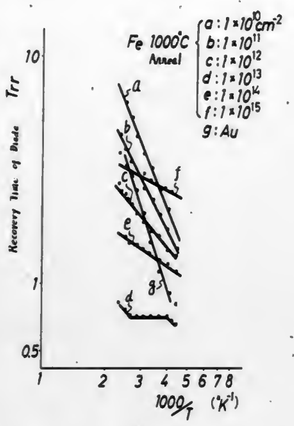
Takeshi Matsushita, Sagamihara; Takayoshi Mamine, Tokyo; Hisao Hayashi, Atsugi, and Kazuo Nishiyama, Yamato, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,104
Int. Cl.² H01L *21/263, 29/167*
U.S. Cl. 148—1.5 **8 Claims**

1. A method of Fe ion implantation into a semiconductor substrate of an N-type conductivity having a reduced lifetime sensitivity to temperatures comprising the steps of:

(a) implanting Fe ions into a semiconductor substrate of an

N-type conductivity from its surface with a dose amount of 10^{10} to 10^{15} cm^{-2};



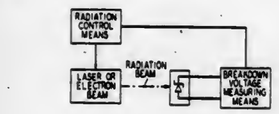
(b) heat-treating said semiconductor substrate having Fe ions therein at 850° to 1250° C.

4,203,781

LASER DEFORMATION OF SEMICONDUCTOR JUNCTIONS

Gabriel L. Miller, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1978, Ser. No. 973,713
Int. Cl.² H01L 21/26; H01J 37/30
U.S. Cl. 148—1.5 15 Claims





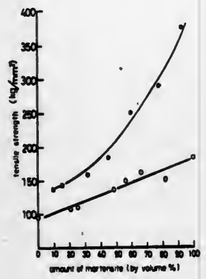
1. A method of making a semiconductor device having a junction between a more heavily doped semiconductor and a less heavily doped semiconductor, the invention characterized by deforming a portion of the junction by directing substantially perpendicularly to the junction a radiation beam selected from the group consisting of laser beam and electron beam, said radiation beam having a diameter less than 100 microns and small compared to the area of the junction, and of sufficient intensity to melt the semiconductor material, until a portion of the more heavily doped region melts into the less heavily doped region.

4,203,782

STEEL HAVING A UNI-DIRECTIONAL LAMELLAR MARTENSITE STRUCTURE IN AN AUSTENITE MATRIX

Seniehi Yamada, and Yoshio Kato, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jun. 28, 1978, Ser. No. 920,065
Claims priority, application Japan, Jun. 28, 1977, 52-76727
Int. Cl.² C21D 1/22, 9/02
U.S. Cl. 148—12 E 37 Claims



1. Steel having excellent resistance to hydrogen-brittleness cracking, having a tensile strength of at least 150 kg/mm^2 and a lower-limit strength of at least 100 kg/mm^2.

4,203,783

PROCESS FOR IMPROVING THE QUALITY OF STEEL SECTIONS

Marios Economopoulos, Liege, and Yves J. Respen, Herstal, both of Belgium, assignors to Centre de Recherches Metallurgiques, Brussels, Belgium

Filed Sep. 18, 1978, Ser. No. 943,392
Claims priority, application Belgium, Sep. 19, 1977, 858862
Int. Cl.² C21D 7/14
U.S. Cl. 148—12.4 2 Claims



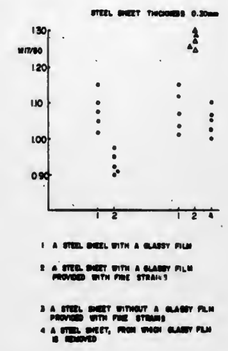
1. A process for improving the quality of steel sections, in which, when the section leaves the rolling mill, the outer layer of a flat face of the section is subjected to a treatment of surface quenching and self-tempering, characterised in that the said treatment is carried out in three stages, in which the first stage consists of cooling such that the structure of the outer layer comprises a mixture of austenite and ferrite, the second stage consists of rapid cooling by means of a suitable cooling liquid so that the structure of the outer layer comprises a mixture of ferrite and martensite and/or bainite, this second stage being interrupted so that the non-quenched parts of the sections comprising residual austenite are at a sufficiently high temperature to permit a tempering of the quenched outer layer by the heat in the non-quenched parts, and the third stage consists of slow cooling so that the austenite in the said non-quenched parts of the section transforms into ferrite and carbides.

4,203,784

GRAIN ORIENTED ELECTROMAGNETIC STEEL SHEET

Katsuro Kuroki, Kitakyushu, and Osamu Tanaka, Nohgata, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 4, 1978, Ser. No. 902,811
Claims priority, application Japan, May 4, 1977, 52-50667
Int. Cl.² H01F 1/04
U.S. Cl. 148—111 12 Claims



1. A method of treating a grain oriented steel to improve the iron loss which comprises treating a grain oriented electromagnetic steel sheet containing a glassy film formed by an annealing separator on the surface thereof and which sheet has been subjected to a finished annealing operation by imparting a plurality of linear strains to the base steel sheet through the glassy film by forcefully moving a rotatable body over the glassy film, said linear fine strains being formed at an angle of 45° or more to be the rolling direction of the steel sheet said linear strain having a depth of 5 μm or less, a width of 600 μm or less and wherein the distance between adjacent strains is 2.5 to 15 mm.

7. A grain oriented magnetic steel sheet having a glassy film on the surface thereof, which steel sheet has been subjected to a finishing annealing, said steel sheet containing silicon in an amount of 4.0% or less and being characterized in that it contains a plurality of strains imparted through the glassy film by a rotatable body, in which the strains have a depth of 5 μm or less, a width of 600 μm or less and the distance between the adjacent strains being 2.5 to 15 mm and wherein the direction of the fine strains is at an angle of 30° or more to the rolling direction of the steel.

4,203,785

METHOD OF EPITAXIALLY DEPOSITING CADMIUM SULFIDE

Frank Z. Hawrylo, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,239
Int. Cl.² H01L 21/208
U.S. Cl. 148—171 10 Claims

1. A method of epitaxially depositing a layer which includes cadmium sulfide on a substrate which method comprises the steps of:

placing a surface of the substrate into contact with a solution which includes cadmium sulfide dissolved in indium, and

cooling said solution to precipitate out at least some of the cadmium sulfide which deposits on the substrate.

4,203,786

POLYETHYLENE BINDER FOR PYROTECHNIC COMPOSITION

Eugene F. Garner, Canyon Country, Calif., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 8, 1978, Ser. No. 913,915
Int. Cl.² C06B 45/10
U.S. Cl. 149—19.91 5 Claims

1. A pyrotechnic composition for the generation of a non-toxic, non-flammable and essentially smokeless inflating gas for an inflatable occupant safety restraint, said composition comprising, in approximate weight percent based on the total weight of the composition,

(a) 1 to 10% of a high density homopolymer of ethylene, having a density of about 0.92 to 0.97 at 23° C. as determined by ASTM Method D 792;

(b) 20 to 30% of a coolant selected from the group consisting of calcium hydroxide, magnesium hydroxide, calcium carbonate and magnesium carbonate, and

(c) 60 to 79% of an inorganic oxidizer selected from the group consisting of sodium chlorate, potassium chlorate, sodium perchlorate and potassium perchlorate.

4,203,787

PELLETIZABLE, RAPID AND COOL BURNING SOLID NITROGEN GAS GENERANT

George F. Kirchoff, and Fred E. Schneiter, both of Brigham City, Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Dec. 18, 1978, Ser. No. 970,602
Int. Cl.² C06B 35/00
U.S. Cl. 149—35 7 Claims

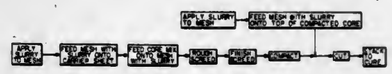
1. A solid nitrogen gas generant consisting of 60 to 80 weight percent alkali metal azide, 2 to 35 weight percent oxide selected from the group consisting of iron oxide, cobalt oxide, nickel oxide, palladium oxide, silicon oxide and mixtures thereof, 2 to 26 weight percent molybdenum disulfide and up to 6 weight percent sulfur.

4,203,788

METHODS FOR MANUFACTURING CEMENTITIOUS REINFORCED PANELS

Theodore E. Clear, 903 Harrison Ave., Hamilton, Ohio 45013

Filed Mar. 16, 1978, Ser. No. 887,324
Int. Cl.² B32B 31/12, 13/14; B28B 1/08
U.S. Cl. 156—44 32 Claims



1. A method for manufacturing cementitious panels of the type having a nailable cementitious aggregate core faced on each major side with a reinforcing element bathed in a slurry comprising hydraulic cement, the method comprising the steps of:

running an elongated indefinite length web of pervious reinforcing material through a slurry bath and depositing an amount of slurry thereto to form a first wet uncured flexible cementitious element;

depositing cementitious aggregate core material on said uncured flexible cementitious element;

running a second elongated indefinite length web of pervious reinforcing material through a second slurry bath, and depositing an amount of slurry thereto to form a second wet uncured flexible cementitious element;

laying the second element on said core material;

thereby adhering the elements to respective major sides of said aggregate core material to form an uncured panel web;

thereafter cutting said uncured panel web to form separate

uncured cementitious panels; and thereafter curing said panels.

4,203,789

PROCESS FOR REPRODUCING PICTORIAL WORKS AND WORKS ACHIEVED WITH SAID PROCESS

Gérard L. Y. Delorme, 10 boulevard Suchet, Paris, France

Filed Sep. 26, 1977, Ser. No. 836,845
Int. Cl.² B44C *3/00*; G03C *5/04, 5/00*
U.S. Cl. 156—59 **12 Claims**

1. A process for reproducing a pictorial work such as a painting on a support comprising:
producing a flat copy of said pictorial work;
projecting an image of saif flat copy onto the support;
applying touches of a hardenable pasty mass to portions of said support to construct imitation relief portions coinciding with relief portions of the pictorial work shown in said image;
allowing the touches of pasty mass to harden on said support; and
applying said flat copy to the support so that the relief portions of the pictorial work shown in the flat copy coincide with the imitation relief portions on the support.

4,203,790

METHOD OF FORMING WIRE REINFORCED CORRUGATED BOARD

Marc A. Chavannes, 4044 Roberts Point, Sarasota, Fla. 33581

Filed Jul. 25, 1975, Ser. No. 599,142
Int. Cl.² B31F *1/24*
U.S. Cl. 156—179 **10 Claims**



1. The method of manufacturing wire reinforced corrugated board for packaging comprising the steps of feeding a paper web with an adhesive applied to an outer surface of said web, feeding a plurality of spaced parallel longitudinal wires onto the adhesive coated paper web, setting the wires in firm contact with said web to form a wire reinforced paper web, then corrugating said wire reinforced web transversely of said wires, and adhesively securing a paper web to the crest portions on each side of the corrugated wire reinforced web to form a double faced wire reinforced corrugated board.

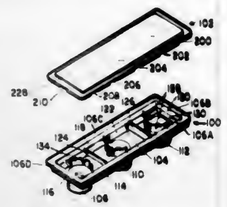
4,203,791

METHOD OF MAKING A MULTI-SLIT SELF-SEALING IGNITION-ARRESTER BATTERY VENT

Joseph I. Heiser, Wyomissing Hills, and Edgar M. Erb, Lancaster, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Division of Ser. No. 744,647, Nov. 24, 1976, Pat. No. 4,086,395, which is a continuation-in-part of Ser. No. 593,546, Jul. 7, 1975, abandoned. This application Feb. 21, 1978, Ser. No. 879,461
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.² B32B *31/00*
U.S. Cl. 156—252 **2 Claims**

1. A method of producing an ignition arresting battery vent for use on electric storage batteries to sealingly engage one or more openings of said battery and to vent battery gases to the atmosphere, comprising the steps of:
(a) providing a substantially hollow battery cap having means to sealingly engage one or more of said openings;
(b) creating a plurality of slits in at least one exterior surface of said vent cap, each of said slits having a width of about 0.004 to 0.005 inches and for providing fluid communication between the interior of said battery cap and the atmosphere, the depth, length and number of said plurality of slits being selected such that at least 1.5 psig of air pressure



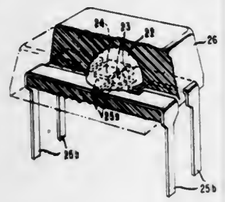
is required to move 2½ standard cubic feet per hour per cell of air through said slits.

4,203,792

METHOD FOR THE FABRICATION OF DEVICES INCLUDING POLYMERIC MATERIALS

Larry F. Thompson, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 17, 1977, Ser. No. 852,504
Int. Cl.² B29C *19/02*; B05D *3/06, 5/12*
U.S. Cl. 156—272 **12 Claims**



1. A method of semiconductor device fabrication comprising
(a) forming a mixture of a thermally curable polymeric material and an effective amount of thermal initiator to bring about substantially complete reaction of the polymeric material upon thermally curing the mixture,
(b) dispensing a quantity of the mixture onto a support member, which quantity has an unconfined dome-shaped surface, and
(c) thermally curing the mixture characterized in that the mixture additionally contains at least effective amounts of a radiatively curable polymer additive and a radiation initiator additive, and further characterized in that prior to thermally curing the quantity of polymeric material it is exposed to actinic radiation, whereby the radiatively curable polymer is cured, resulting in a gelling of the quantity and the persisting of the quantity's dome-shaped surface during the following thermal cure.

4,203,793

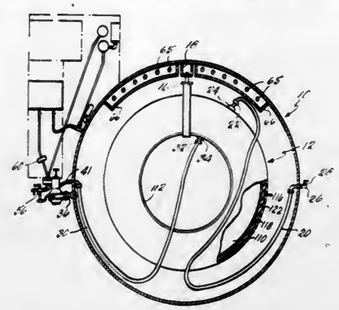
PRESSURE VESSEL SYSTEM FOR RETREADING TIRES

Edwin T. Brodie, and Donaldee Brewer, both of Muscatine, Iowa, assignors to Bandag Incorporated, Muscatine, Iowa

Division of Ser. No. 622,419, Oct. 14, 1975, Pat. No. 4,075,047. This application Jan. 6, 1978, Ser. No. 867,611
Int. Cl.² B29H *17/36*
U.S. Cl. 156—394 **6 Claims**

1. Apparatus for bonding a precured tread strip to a tire by means of a vulcanizable bonding material interposed between the tread strip and the tire, said apparatus comprising: a vessel for receiving a tire and tread assembly; pressure fluid conduit means having an inlet for receiving pressure fluid from a source thereof, said conduit means including a first pressure regulator and a manifold connected to said first pressure regulator to receive pressure fluid therefrom; means for passing

pressure fluid from said manifold to the interior of said vessel, said means including in flow sequence a differential pressure check valve and a second pressure regulator; and a tire-inflating conduit connected to said manifold, said inflating conduit having an end located in said vessel and connectable to the interior of a tire in said vessel, the arrangement of said pressure



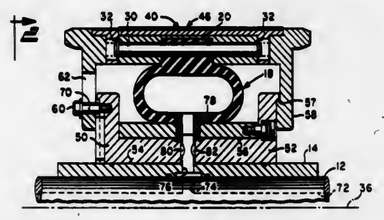
regulators and said pressure differential check valve being such that during pressurization of said manifold by way of said first pressure regulator, the pressure fluid flows simultaneously from said manifold to said inflating conduit and to said vessel and such that thereafter the pressure in said vessel is maintained at a lower value than the pressure in said inflating conduit.

4,203,794

VARIABLE WIDTH TIRE BUILDING DRUM WITH INTERDIGITATED SHOES

Marcus H. Collins, Akron, and John K. Smith, Parma, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 25, 1978, Ser. No. 954,516
Int. Cl.² B29H *17/16*
U.S. Cl. 156—415 **18 Claims**



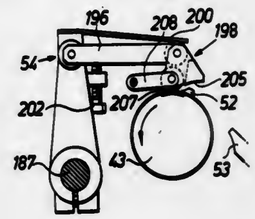
1. An annular tire building drum having an infinitely variable width for use in a tire building machine for building portions of tires having variable widths comprising a hub portion supportable for rotation in the tire building machine about an axis of rotation, an annular fluid expandable tube element supported on said hub portion, support means disposed on an exterior surface of said tube element for movement therewith, a plurality of pairs of shoe members supported by said support means for movement therewith in a radial direction upon expansion and contraction of said tube element, said shoe members cooperating to define an annular tire building surface which is movable in a radial direction upon expansion and contraction of said tube element, one of said shoe members of each of said plurality of pairs of shoe members being movable in a first direction parallel to said axis of rotation and the other of said shoe members of said plurality of pairs of shoe members being movable in a second direction opposite to said first direction to infinitely vary the axial width of the building surface to enable various width tires to be built thereon, said support means including guideway means disposed thereon, each of said shoe members including a guide member attached thereto for movement therewith, said guide members being received in said guideway means and cooperating therewith to prevent movement of said shoe members in a radial direction relative to said support means and the exterior surface of the tube element and providing for relative movement in a direction parallel to said axis of rotation between said shoe members and said support means to thereby infinitely vary the width of said tire building surface.

4,203,795

MACHINE FOR THE MANUFACTURE OF PACKING CONTAINERS

Herwig Pupp, and Birger O. Andersson, both of Lund, Sweden, assignors to AB Ziristor, Lund, Sweden

Division of Ser. No. 720,516, Sep. 3, 1976, Pat. No. 4,077,829. This application Feb. 27, 1978, Ser. No. 881,604
Claims priority, application Sweden, Sep. 10, 1975, 7510092
Int. Cl.² B29D *23/00*
U.S. Cl. 156—446 **12 Claims**



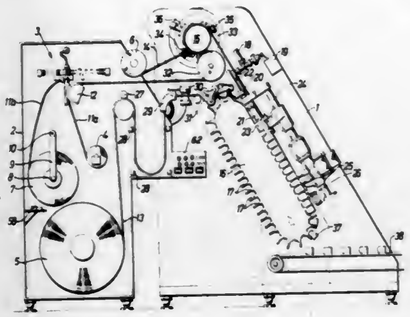
1. In a machine for the manufacture of packing containers of a heat shrinkable thermoplastic web material having a mandrel rotatable about its axis, means for intermittently rotating said mandrel, means for intermittently feeding a web of the material to the rotatable mandrel, means for rotating the mandrel to wrap a blank of the material about the mandrel to form a sleeve-shaped shell having overlapping opposed edges and means for heat sealing the overlapping opposed edges of the blank together, the improvement comprising roller means for pressing the blank against the mandrel while said blank is being wrapped thereabout, pressure means for pressing together the overlapping edges of the blank when the edges are heat sealed together, means for sequentially (1) pressing only said roller means against the blank while it is being wrapped about the mandrel to form the shell, (2) pressing said roller means and said pressure means against the shell during heat sealing of the overlapping opposed edges, and (3) withdrawing said roller means and said pressure means from the shell on the mandrel after heat sealing the overlapping opposed edges wherein said means for sequentially operating said roller means and said pressure means comprises a shaft for supporting both said roller means and said pressure means and disposed axially parallel to the axis of the mandrel, said means for sequentially operating said roller means and said pressure means further comprising means for intermittently rotating said shaft on its axis in opposite directions and said means for sequentially operating said roller means and said pressure means further comprising linkage means connecting said shaft both to said roller means and to said pressure means for sequentially operating said roller means and said pressure means when said shaft is intermittently rotated in opposite directions.

4,203,796

ARRANGEMENT FOR JOINING MATERIAL WEBS

Tore I. Larsson, Lödeköpinge, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Apr. 24, 1978, Ser. No. 899,526
Claims priority, application Sweden, Apr. 22, 1977, 7704647
Int. Cl.[2] B65H *19/08*
U.S. Cl. 156—504 5 Claims



1. An apparatus for joining a first web of material with a second web of material comprising:

means for longitudinally advancing the first web;

holding means for positioning a starting end of the second web relative to the first web during movement of the first web;

cutting means for cutting the first web at a predetermined location;

splicing means for carrying said holding means and said cutting means, said splicing means being located adjacent to the first web and displaceable in the longitudinal direction of travel of the first web, and said holding means and cutting means including first and second members, respectively, pivotably mounted on said splicing means such that said members having corresponding and cooperating cutting edges which sever the first web at a predetermined location upon pivoting the second member; and

means for synchronizing the displacement of said splicing means with the longitudinal advancement of the first web, said synchronizing means including a stationary cam surface with a follower member carried by said cutting means, said follower member engaging the cam surface during a pivoting of said pivotably mounted member of the cutting means.

5. The apparatus of claim 1 further comprising actuating means for driving said cutting means, said actuating means being adapted to engage said cam surface with said follower member to synchronize the position of the splicing means with the first web.

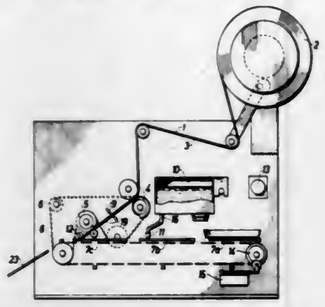
4,203,797

METHOD OF AND APPARATUS FOR APPLYING COVER-SLIPS TO SLIDES CARRYING SPECIMENS FOR MICROSCOPIC EXAMINATION

Nils G. Stormby, Malmö, Sweden, assignor to Cytologiska Centrallaboratoriet AB, Sweden

Division of Ser. No. 795,007, May 9, 1977, Pat. No. 4,146,414.
This application Sep. 29, 1978, Ser. No. 947,028
Int. Cl.[2] A01N *1/00*; G02B *21/34*; A01N *1/00*
U.S. Cl. 156—521 4 Claims

1. An apparatus for forming a composite assembly of a discrete slide provided with a specimen for microscopic examination and a cover-slip comprising means for transporting a slide having the specimen thereon in a horizontal plane past at least a first and second station, means for positioning a nozzle which dispenses liquid solvent adjacent the surface of the leading end of said slide, means for depositing said solvent directly on said slide and for forming a small but restricted liquid excess swelling thereon, means for partially raising said nozzle from said slide, means for moving said slide through said first station and forming a liquid solvent film on said slide, means for interrupting the formation of the film immediately before the opposite end of the slide passes the nozzle, means for transporting said slide with solvent to said second station, means for feeding a flexible cover-slip toward said slide at said second station, said cover-slip having a pre-applied dry adhesive layer on one side adapted to be activated by said solvent, means for positioning said cover-slip with its leading end first at an angle to said slide



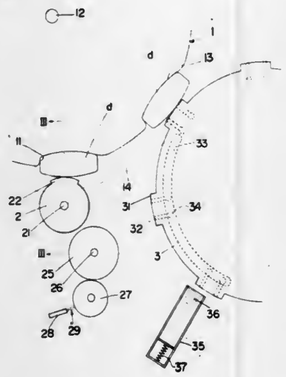
while said slide is transported past said second station, means for transporting said slide past said second station at a speed substantially equal to the feeding of said cover slip, means for positioning a roller distinct from said slide and said cover-slip at a predetermined distance above said slide thereby to form an excess of solvent in the angle between the cover slip and the slide and means for simultaneously pressing said cover-slip to said slide from the leading end to the trailing end thereof so as to squeeze any excess solvent and air from between said cover-slip and said slide, and thus from said composite assembly.

4,203,798

LABELING DEVICE

Kyoichi Yamashita, Yokohama, Japan, assignor to Koyo Jidoki Corporation Ltd., Yokohama, Japan

Filed Aug. 3, 1978, Ser. No. 930,755
Claims priority, application Japan, Aug. 3, 1977, 52/93655
Int. Cl.[2] B65C *9/00*, *11/04*
U.S. Cl. 156—567 4 Claims



1. In a labeling device of the type comprising:

a rotatable container transfer drum means for transferring containers onto which labels are to be affixed;

an adhesive coating drum means for applying an adhesive material; and

a label supply drum means for first holding labels and then releasing them, said label supply drum means comprising a drum having protrusions spaced along its periphery, suction outlets to ports on the surface of said protrusions, and valve means for alternately applying and releasing suction applied to said suction ports, thereby first gripping and then releasing said labels;

wherein the improvement comprises contacting the containers carried by said rotatable container transfer drum means with said adhesive coating drum means, thereby applying adhesive to said containers and subsequently contacting said adhesive coated containers while still carried by said container transfer drum means to said labels supported on said label supply drum means, thereby applying labels to said adhesive coated containers.

4,203,799

METHOD FOR MONITORING THICKNESS OF EPITAXIAL GROWTH LAYER ON SUBSTRATE

Katsuro Sugawara, Kodaira; Yukiyoshi Nakazawa, Ohme, and Katsuhiko Itoh, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 690,304, May 26, 1976, abandoned.
This application May 2, 1978, Ser. No. 902,033
Claims priority, application Japan, May 30, 1975, 50/64317
Int. Cl.[2] B01J *17/30*, *17/32*, *17/40*; G01B *19/38*
U.S. Cl. 156—601 10 Claims

1. A method for monitoring thickness of a homoepitaxial growth layer, comprising the steps of:

(a) implanting ions into an original substrate to a predetermined depth from a major surface so as to form within the substrate below said major surface a layer of substance having an optical property different from that of the substance of the original substrate;

(b) growing on said major surface of the original substrate a homoepitaxial layer having substantially the same optical properties as the original substrate;

(c) receiving light from the original substrate and from the surface of the implanted layer at the time of growth of the epitaxial layer in the form of an interference waveform; and

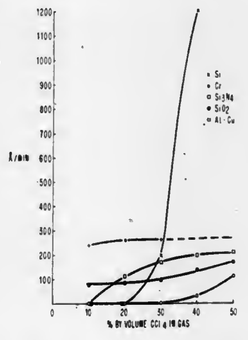
(d) monitoring thickness of an epitaxial growth layer by the use of the interference waveform.

4,203,800

REACTIVE ION ETCHING PROCESS FOR METALS

James R. Kitcher, Poughkeepsie; Gunars M. Ozols, Wappingers Falls, and Bryant N. Zingerman, Monroe, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 866,087, Dec. 30, 1977, abandoned.
This application Apr. 2, 1979, Ser. No. 25,801
Int. Cl.[2] H01L *21/44*, *21/465*
U.S. Cl. 156—643 11 Claims



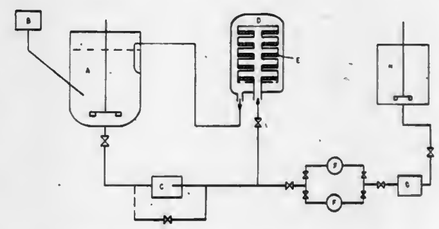
1. A process for removing a metal layer from a workpiece which includes silicon, without significant etching of silicon which is exposed to the etching gas plasma for the metal layer, comprising placing the workpiece having a metal layer which is selected from the group consisting of chromium, titanium, tungsten, tantalum and alloys thereof, on a first electrode in a chamber and subjecting the metal layer to a glow discharge formed by electrically biasing the first electrode relative to a second electrode, in a low pressure ambient atmosphere comprising a gaseous mixture of from about 5 to about 20 percent by volume of a polychlorinated organic compound containing one to two carbon atoms and about 80 to about 95 percent by volume of oxygen, said ambient atmosphere having a pressure in the range of about 5 to 50 milli-torr.

4,203,801

CELL AND VIRUS CULTURE SYSTEMS

Ronald C. Telling, Woking; Roy J. Passingham, Fleet; Brian L. Kitchener, and David G. Hopkinson, both of Farnborough, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 670,448, Mar. 25, 1976, Pat. No. 4,085,203, and Ser. No. 354,195, Apr. 25, 1973, abandoned.
This application Apr. 1, 1977, Ser. No. 783,660
Claims priority, application United Kingdom, Apr. 26, 1972, 19387/72
Int. Cl.[2] C12K *9/00*; C12B *3/00*; C12K *5/00*
U.S. Cl. 435—284 21 Claims



1. A cell culture system which comprises living eucaryotic cells of human or animal origin, or mycophyta, dispersed within a porous carrier bed, said carrier bed comprising particulate material, and a support means for said carrier bed, said particulate material providing sufficient internal cavities or spaces for retaining and permitting said cells to grow and multiply within said carrier bed, and said support means allowing liquid media to pass through and out of said carrier bed and to have contact with said cells.

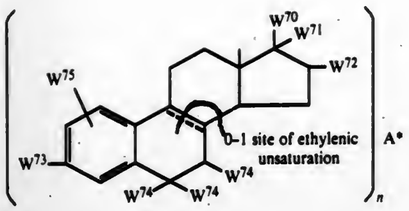
4,203,802

INHIBITABLE ENZYME AMPLIFICATION ASSAY

Kenneth E. Rubenstein, Menlo Park, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 722,964, Sep. 13, 1976, Pat. No. 4,067,774, which is a continuation of Ser. No. 481,022, Jun. 20, 1974, abandoned, which is a division of Ser. No. 304,157, Nov. 6, 1972, Pat. No. 3,852,157, which is a continuation-in-part of Ser. No. 143,609, May 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 802,683, Jan. 2, 1977, Pat. No. 4,190,496, which is a continuation of Ser. No. 760,499, Jan. 19, 1977, which is a continuation of Ser. No. 722,964, Sep. 13, 1976.
This application Dec. 5, 1977, Ser. No. 857,145
Int. Cl.[2] G01N *31/14*
U.S. Cl. 435—188 6 Claims

1. An enzyme-bound-ligand of the formula:



wherein:

any one of the W groups can be $-X^*$ or an H of any of the W groups may be replaced by $-X^*$, wherein $-X^*$ is a bond or a linking group;

A^* is an enzyme bonded at other than its reactive site, having n ligands, wherein n is in the range of 1 to the molecular weight of A^* divided by 2,000;

W^{70} and W^{71} are hydrogen, hydroxyl, or ethinyl, there being only one ethinyl;

W^{72} is hydrogen or hydroxyl;

W^{73} is hydroxyl or alkoxyl of from 1 to 3 carbon atoms;

W^{74} is hydrogen, or two W^{74}'s may be taken together to form a double bond; and

W^{75} is hydrogen.

4,203,803

CHARGING OF COKE OVENS WITH PREHEATED COAL

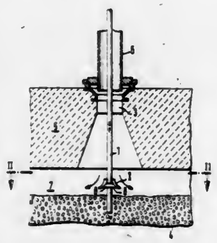
Joachim F. Meckel, Heiligenhaus; Wolfgang Rohde, Essen; Werner Siebert, Essen; Dietrich Wagener, Essen; Claus Flockenhaus, Essen, and Manfred Galow, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,107

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738094

Int. Cl.² C10B *31/04*

U.S. Cl. 201—40 **2 Claims**



1. A method of charging a coke oven chamber, comprising the steps of advancing preheated particulate coal by a conveyor to a coke oven chamber; charging the chamber by admitting through a single charging hole in the top of the chamber a stream of the preheated particulate coal at a charging rate of substantially 8–20 t/min; intercepting only a minor fraction of the stream of coal below the charging hole; and imparting to the intercepted fraction of the stream of coal a component of movement diverting the intercepted fraction toward the respective ends of the chamber whereby, due to the flowability of the preheated coal particles and the diversion of the intercepted fraction, the chamber becomes charged to a uniform permissible filling level at substantially 100% of its volumetric capacity.

4,203,804

APPARATUS FOR THE PYROLYSIS OF PIECES OF RUBBER OR LIKE MATERIAL, ESPECIALLY USED MOTOR VEHICLE TIRES

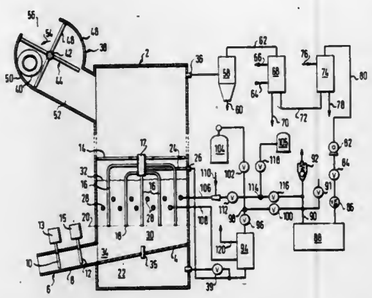
Jörg Janning, Hamburg; Walter Kaminsky, Pinneberg; Hansjörg Sinn, Norderstedt, and Stanislav Tysarcyk, Hamburg, all of Fed. Rep. of Germany, assignors to Carl Robert Eckelmann AG, Hamburg, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,294

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658371

Int. Cl.² C10B *1/04, 53/00*

U.S. Cl. 202—121 **20 Claims**



1. A fluidized bed reactor for the pyrolysis of pieces of material of rubber and the like, comprising a reactor container which includes a bottom associated with an outlet arrangement for non-vaporizable pyrolysis products, said bottom and said outlet arrangement being arranged in a lower part of the container, an arrangement of blowing orifices for introducing fluidizing gas and producing a fluidized bed from a filled-in fire-resistant and inert finely granular fluidized bed material, said blowing orifices being arranged in a region above the bottom with a downward blowing direction, at least on group of the blowing orifices being arranged in a common horizontal plane, a gas outlet, and a feeding device for introducing pieces of material to be pyrolyzed, said inert fluidized bed material having a particle size below 1 mm, said gas outlet and said feeding device being arranged in an upper part of the container, and said feeding device and fluidized bed being dimensioned for the introduction and pyrolysis of pieces having the size of whole automobile tires.

4,203,805

APPARATUS FOR DESALINATING WATER

Richard E. Diggs, 12A Road, Carthage, Mich. 64836

Division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283. This application Jan. 12, 1978, Ser. No. 868,975

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.² C02B *1/04*; B01D *3/10*; F24J *3/02*

U.S. Cl. 202—176 **5 Claims**

1. A distillation device comprising:

a first water transfer means for withdrawing contaminated water from a body of water having solid contaminants dissolved therein;

a grid connected to said first water transfer means so that contaminated water received from said body of water flows across said grid, said grid having an outer peripheral edge and an inner peripheral edge and comprising a header located on said grid outer peripheral edge and fluidly connected to said first water transfer means so that contaminated water flows into said header from the body of water, said header being fluidly attached to said grid so that contaminated water flows from said header onto said grid whereby contaminated water flows from the body of water to said grid via said header, and a trough located on said grid inner peripheral edge and fluidly attached to said grid so that contaminated water flows into said trough from said grid, and means for transferring solar energy to said water flowing across said grid;

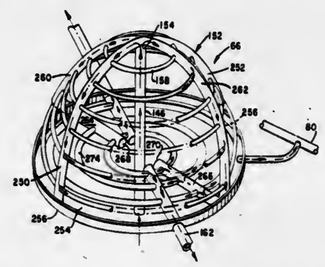
a water storage means having a side wall attached to said grid trough so that contaminated water flowing on said grid flows into said water storage means via said trough;

second water transfer means connected with said water storage means for removing contaminated water from said storage means;

a third water transfer means located in said trough and connected to said water storage means for transferring water from said trough to said water storage means and temperature control means connected to said third water transfer means for actuating said third water transfer means when the temperature of said water in said trough reaches or exceeds said predetermined temperature so that only water having a temperature which equals or exceeds said predetermined temperature is transferred to said water storage means;

a heat exchange structure connected to said water storage means;

a recirculation apparatus mounted in said trough and connected to said header for recirculating said water from said trough back to said header prior to transferring water from said trough into said water storage means and temperature control means connected to said recirculation apparatus for actuating said apparatus when the temperature of said water in said trough falls below a predetermined temperature;



a vaporizer means connected to said heat exchange structure for separating said water from said solid contaminants dissolved therein, said vaporizer means having a solar concentrator means for transferring solar energy to said contaminated water flowing from said heat exchange structure into said vaporizer means;

vacuum producing means for producing a vacuum in said vaporizer means so that said contaminated water is vaporized under vacuum conditions to form water vapor and thereby separate said water from said solid contaminants, and solid removing means connected to said vaporizer means for removing said solid contaminants from said vaporizer means;

water vapor transfer means connected to said vaporizer means for removing said water vapor from said vaporizer means;

condenser means connected to said water vapor transfer means for condensing said water vapor to form distilled water which is free of solid contaminants; and

distillate transfer means connected to said condenser means for withdrawing condensed water from said condenser means; and

a heat exchange structure, said heat exchange structure comprising:

a base;

a wall mounted on said base;

a piping system located adjacent said wall and connected to said base for containing water to be used in the distillation device, said piping system comprising upright pipes and interconnecting pipes for transferring water between said interconnecting pipes;

means for transferring said water into said pipes; and

means for collecting water located at the bottom of said structure.

4,203,806

APPARATUS FOR DESALINATING WATER

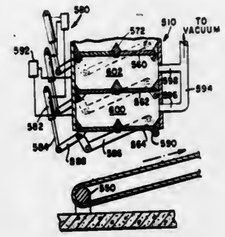
Richard E. Diggs, 12A Rd., Carthage, Mo. 64836

Division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283. This application Jan. 12, 1978, Ser. No. 869,005

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.² C02B *1/04*; B01D *3/10*

U.S. Cl. 202—176 **6 Claims**



1. A distillation device comprising:

a first water transfer means for withdrawing contaminated water from a body of water having solid contaminants dissolved therein;

a grid connected to said first water transfer means so that contaminated water received from said body of water flows across said grid, said grid having an outer peripheral edge and an inner peripheral edge and comprising a header located on said grid outer peripheral edge and fluidly connected to said first water transfer means so that contaminated water flows into said header from the body of water, said header being fluidly attached to said grid so that contaminated water flows from said header onto said grid whereby contaminated water flows from the body of water to said grid via said header, and a trough located on said grid inner peripheral edge and fluidly attached to said grid so that contaminated water flows into said trough from said grid, and means for transferring solar energy to said water flowing across said grid;

a water storage means having a side wall attached to said grid trough so that contaminated water flowing on said grid flows into said water storage means via said trough;

second water transfer means connected with said water storage means for removing contaminated water from said storage means;

a third water transfer means located in said trough and connected to said water storage means for transferring water from said trough to said water storage means and temperature control means connected to said third water transfer means for actuating said third water transfer means when the temperature of said water in said trough reaches or exceeds said predetermined temperature so that only water having a temperature which equals or exceeds said predetermined temperature is transferred to said water storage means;

a heat exchange structure connected to said water storage means;

a recirculation apparatus mounted in said trough and connected to said header for recirculating said water from said trough back to said header prior to transferring water from said trough into said water storage means and temperature control means connected to said recirculation apparatus for actuating said apparatus when the tempera-

ture of said water in said trough falls below a predetermined temperature;

a vaporizer means connected to said heat exchange structure for separating said water from said solid contaminants dissolved therein, said vaporizer means having a solar concentrator means for transferring solar energy to said contaminated water flowing from said heat exchange structure into said vaporizer means;

vacuum producing means for producing a vacuum in said vaporizer means so that said contaminated water is vaporized under vacuum conditions to form water vapor and thereby separate said water from said solid contaminants, and solid removing means connected to said vaporizer means for removing said solid contaminants from said vaporizer means;

water vapor transfer means connected to said vaporizer means for removing said water vapor from said vaporizer means;

condenser means connected to said water vapor transfer means for condensing said water vapor to form distilled water which is free of solid contaminants; and

distillate transfer means connected to said condenser means for withdrawing condensed water from said condenser means; and

a dump system for removing solids from the vaporizing means, said dump system comprising:

a casing attached to the vaporizing means;

a plurality of trap door pairs mounted on said casing and a vaporizing means trap door in said vaporizing means, said vaporizing means trap door located adjacent a first pair of said plurality of pairs of trap doors for dumping solids from the vaporizing means onto said first pair of trap doors, said trap door pairs being spaced from one another to define therebetween a plurality of chambers and aligned with each other for moving solid material from one pair of trap doors to the next; and

trap door moving means mounted on said casing for selectively opening and closing said trap doors.

4,203,807

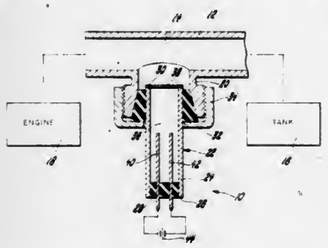
ON-BOARD DETECTION OF ANTIKNOCK COMPOUNDS IN AUTOMOTIVE GASOLINE

Jeffrey C. Buchholz, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1979, Ser. No. 22,337

Int. Cl.² G01N 27/26

U.S. Cl. 204—1 T **9 Claims**



1. A method for detecting the presence of a lead or manganese organometallic compound in an automotive gasoline sample, said method comprising

assembling an electrochemical cell comprising an anode, a cathode spaced apart from the anode, and an electrolyte contacting the anode and the cathode, said electrolyte comprising water, a soluble inorganic hydroxide and an alcohol taken from the group consisting of methanol, ethanol and mixtures thereof, said electrolyte being substantially immiscible with gasoline, but capable of extracting said organometallic compounds from gasoline containing said compounds,

contacting the sample with the electrolyte and thereby extracting said organometallic compound into said electrolyte,

applying an electrical potential to the anode and cathode, said potential being suitable to deposit the metallic constituent of said compound onto said cathode, and

determining the presence of said metallic deposit on the cathode.

6. An electrochemical device for detecting the presence of an organometallic compound comprising tetraalkyl lead compound or methylcyclopentadienyl manganese tricarbonyl compound in an automotive gasoline sample, said device comprising

an electrolyte adaptable to contact said gasoline sample and comprising a hydroxide ion-containing methanol solution, said electrolyte being substantially immiscible with gasoline and capable of extracting the organometallic compound from gasoline,

an anode immersed in said electrolyte,

a cathode immersed in said electrolyte and spaced apart from said anode, and

means for connecting the anode and the cathode to an electrical power source for applying an electrical potential thereto.

4,203,808

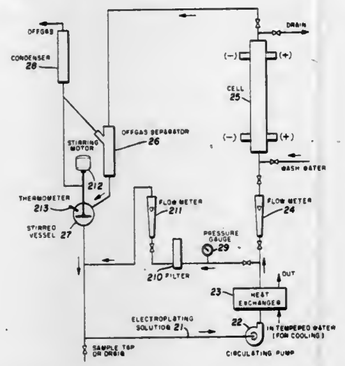
ELECTROPLATING CATHODES FOR ELECTROCHEMICAL SYNTHESIS

Charles R. Campbell; William A. Heckle, and Marion J. Mathews, III, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 14, 1976, Ser. No. 705,307

Int. Cl.² C25D 5/00, 21/00

U.S. Cl. 204—23 **12 Claims**



1. In a method for production of an undivided electrolytic cell for electrochemical reduction of organic compounds having in permanently fixed and substantially parallel planar relationship electrodes comprising anodes and cathodes at least a portion of which cathodes are metal-plated the metal plating constituting the cathode surface wherein cathode substrates are electroplated and thereafter assembled and permanently fixed in said substantially parallel planar relationship, the improvement comprising assembling the anodes and cathode substrates in said substantially parallel planar relationship as a package and thereafter electroplating the cathode substrates while in package form by applying an electric potential between said anodes and cathode substrates in an electroplating solution containing the plating metal in complex form, said anodes functioning as nonsacrificial anodes during electroplating.

4,203,809

COPPER FOIL HYPOCHLORITE TREATMENT METHOD AND PRODUCT PRODUCED

Walter A. McKean, 116 Meredith Rd., Colonia, N.J. 07067

Continuation of Ser. No. 40,832, May 27, 1970, abandoned. This application Mar. 4, 1975, Ser. No. 555,180

Int. Cl.² C25D 5/32; C23F 1/00

U.S. Cl. 204—32 R **16 Claims**

1. A process for improving the surface characteristics of copper foil comprising subjecting said foil to an aqueous sodium hypochlorite solution for a period of from about 5 to 30 seconds, said solution containing from about 2½ to 15% sodium hypochlorite and being maintained at a temperature of from about 110°-160° F.

15. A process for improving the surface characteristics of copper foil comprising subjecting said foil to an aqueous sodium hypochlorite solution and then subjecting said foil to an electrochemical treatment to coat at least one of its faces with a microcrystalline, powdery electrodeposit so as to improve its bond strength.

4,203,810

ELECTROLYTIC PROCESS EMPLOYING ELECTRODES HAVING COATINGS WHICH COMPRISE PLATINUM

Michael A. Warne, Brewood, and Peter C. S. Hayfield, Bickenhill, both of England, assignors to IMI Marston Limited, Staffordshire, England

Division of Ser. No. 540,384, Jan. 13, 1975, which is a continuation of Ser. No. 371,727, Jun. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 125,956, Mar. 19, 1971, abandoned. This application Nov. 11, 1976, Ser. No. 741,107

Claims priority, application United Kingdom, Mar. 25, 1970, 14417/70

Int. Cl.² C25D 5/38, 5/42, 5/50

U.S. Cl. 204—38 B **10 Claims**

1. A method of carrying out an electrolytic process, which comprises inserting in an electrolyte, an electrode, connecting said electrode to a positive potential with respect to a cathode in said electrolyte, said electrode being manufactured by taking an electrode substrate of titanium, tantalum or niobium or an alloy based on at least one of these metals, applying thereto at least one chemical compound containing platinum or an alloy thereof and capable of decomposing upon firing to provide an underlayer contaning platinum or an alloy thereof, firing the coating at a temperature in the range 200°-550° C. to produce such an underlayer and, subsequently, without heating to higher temperatures, electroplating at least one precious metal onto said underlayer.

4,203,811

PROCESS FOR THE MANUFACTURE OF p-BENZOQUINONE-DIKETALS

Jürgen Cramer, Eppstein am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

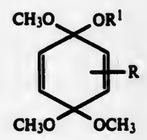
Filed Aug. 30, 1978, Ser. No. 938,043

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739316

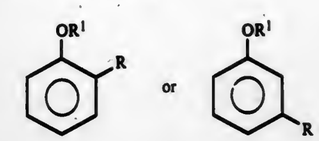
Int. Cl.² C25B 3/02; C07C 41/00

U.S. Cl. 204—78 **8 Claims**

1. In a process for the preparation of p-benzoquinone diketals of the formula



wherein R is hydrogen, an alkyl group having from 1 to 4 carbon atoms or halogen, and R^1 is an alkyl group having from 1 to 4 carbon atoms, by anodically oxidizing benzene or an alkoxybenzene of the formula



wherein R and R^1 are as defined above, in a methanolic solution containing less than about 5% by weight of water in the presence of at least one alkali metal fluoride, ammonium fluoride and/or phosphonium fluoride as a supporting electrolyte, the improvement which comprises the addition of hydrogen fluoride in an amount sufficient to conduct the anodic oxidation in a medium maintained at a pH below 7.

4,203,812

PROCESS FOR PREPARING BASIC ALUMINUM CHLORIDES

Dieter Bergner, Kelkheim, and Max Danner, Gersthofen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,334

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713236

Int. Cl.² C25B 1/26, 11/10

U.S. Cl. 204—94 **6 Claims**

1. A process for preparing aqueous solutions of basic aluminum chloride of the formula $Al_2(OH)_nCl_z$, wherein n is a number from 1 to 5.3 and z is a number from 5 to 0.66 and the sum of n+z is always 6, by electrolysis of an aqueous solution of aluminium chloride or of a basic aluminium chloride of lower basicity, at temperatures of from 50° to 120° C. and current densities of from 200 to 4000 A/M², which process comprises subjecting the said aluminium salt solutions between a cathode of graphite, of a platinum metal, or of a material coated with a platinum metal, and an anode having a core of titanium or a titanium alloy and a coating on said core of at least one metal of the platinum group, of at least one oxide of a metal of the platinum group, or of a mixture thereof, without the use of a diaphragm, to electrolysis until a basic chloride of the desired stoichiometric composition has formed.

4,203,813

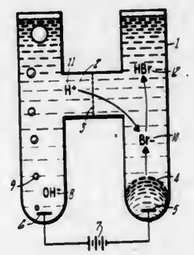
METHOD FOR PRODUCING HBR

Daniel H. Grantham, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1978, Ser. No. 956,761

Int. Cl.² C25B 1/22, 1/24

U.S. Cl. 204—103 **10 Claims**



1. In the production of hydrogen bromide in an electrolytic cell having anode and cathode containing compartments separated by hydrogen ion permeable membrane and containing an aqueous electrolyte solution, by causing current to flow from

the anode to the cathode with the accompanying ion transport through the hydrogen ion permeable membrane, the improvement comprising:

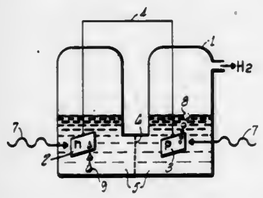
utilizing as the cathode a metal electrode surrounded by liquid bromine having dissolved therein bromide ions in an amount sufficient to conduct charge through the liquid bromine.

4,203,814

HYDROGEN GAS GENERATION UTILIZING A BROMIDE ELECTROLYTE AND RADIANT ENERGY

Daniel H. Grantham, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1978, Ser. No. 956,760
Int. Cl.² C25B *1/02, 1/00*
U.S. Cl. 204—129 **12 Claims**



1. A process for producing hydrogen gas from an electrolyte solution in an electrolytic cell, wherein the improvement comprises utilizing a solution of a bromide compound as the electrolyte in conjunction with radiant energy and a semiconducting silicon electrode to at least partially power the electrolytic cell.

4,203,815

PROCESS FOR PRODUCING CROSSLINKED AND FOAMED RESIN SHEET

Yoichiro Noda, Ohtone; Michio Matsumura, Saitama; Norio Chiba, and Masahito Hata, both of Hasuda, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1978, Ser. No. 886,580
Int. Cl.² B01J *1/10*; B29D *27/00*
U.S. Cl. 204—159.2 **14 Claims**

1. A process for producing a crosslinked and foamed resin sheet which comprises shaping a resinous mixture comprising a thermoplastic synthetic resin and a heat-decomposable blowing agent into a sheet form, applying high-energy and low-energy ionizing radiation to the resulting foamable resin sheet to crosslink the resin sheet, and then heating the resulting crosslinked foamable resin sheet to a temperature at which the blowing agent decomposes, wherein the high-energy ionizing radiation is at least 0.7 ρd g/cm^2 in which d is the thickness of cm of the foamable resin sheet, and ρ is the density in g/cm^3 of the foamable resin sheet, and wherein the low-energy ionizing radiation is not more than 0.6 ρd g/cm^2 in which d and ρ are as defined, and the low-energy ionizing radiation is applied to the foamable resin sheet before, during or after the application of the high-energy ionizing radiation and before heating the resulting cross-linked foamable resin sheet.

14. A crosslinked and foamed resin sheet produced by the process of claim 1.

4,203,816

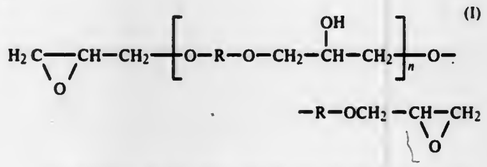
COMPOSITIONS HARDENABLE BY UV RADIATION COMPRISING AN UNSATURATED EPOXY RESIN ESTER AND AN UNSATURATED MONOMER

Silvio Vargiu, Casatenovo; Edoardo Carpaneti, Sovico, and Beppino Passalenti, Lissone, all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation of Ser. No. 894,319, Apr. 7, 1978, abandoned. This application May 11, 1979, Ser. No. 38,160
Claims priority, application Italy, Apr. 7, 1977, 22183 A/77
Int. Cl.² C08G *18/00, 63/00*
U.S. Cl. 204—159.16 **7 Claims**

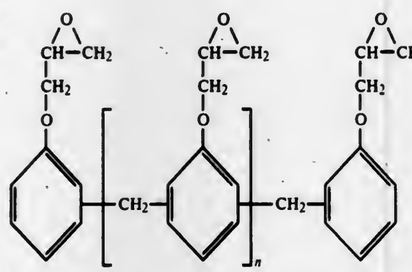
1. A composition hardenable by means of ultra-violet radiations, which comprises:

(a) an unsaturated epoxy resin ester which is a reaction product prepared by a process consisting essentially of reacting an epoxy resin



(I)

wherein R is the divalent radical of a dephenol HO-R-OH and n has a value of from 0 to 14, or an epoxy novolak resin



(II)

wherein n has a value of from 0 to 4, with one or more unsaturated monocarboxylic fatty acids with 18 carbon atoms per molecule, and then with one or more lower unsaturated acids chosen from acrylic and methacrylic acids, said fatty and lower acids being used in an overall amount equivalent, or about equivalent to the number of oxirane bridges of the epoxy or epoxy novolak resin and said fatty acids being used in an amount of from 20 to 80 moles for each 100 moles of the sum of the fatty and lower acids;

(b) one or more mono- or polyfunctional unsaturated monomers copolymerizable with said unsaturated epoxy resin ester; and

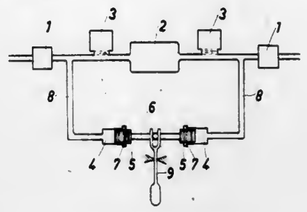
(c)a photosensitive substance which decomposes under the action of ultra-violet radiations and promotes cross-linking by ultra-violet radiations; the component (a) being present in the composition in an amount of from 3 to 97 parts by weight for each 100 parts by weight of the sum of components (a) and (b) and the component (c) in an amount of from 1.2 to 3.5 parts by weight for each 100 parts by weight of the sum of the components (a) and (b) and wherein said unsaturated epoxy resin ester (I) contains unreacted internal hydroxy groups where n=1 to 14.

4,203,817

METHOD OF AND DEVICE FOR MOVING LIQUID SAMPLES

Wolfgang Schütt, 141, Doberaner-Strasse; Hans-Ludwig Jensen, 6, Klosterbach-Strasse, both of, Rostock; Werner Eberlein, 5, Reinhold-Härzer-Strasse, and Günter Schöppe, 24, Hans-Eisler-Strasse, both of, Jena, all of German Democratic Rep., assignors to JENOPTIK JENA G.m.b.H., Jena, Fed. Rep. of Germany

Filed Mar. 6, 1979, Ser. No. 17,960
Int. Cl.² G01N *27/26, 31/08*
U.S. Cl. 204—180 R **3 Claims**



1. Method of moving liquid sample material in a measuring chamber by small amounts under elimination of any turbulence, said chamber being provided with an inlet duct and an outlet duct,

comprising the steps of

closing said inlet duct and outlet duct, and displacing said liquid sample material in a duct system by means of a reversely directed pair of pistons rigidly connected to each other.

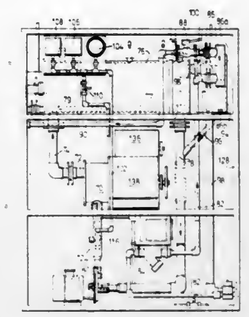
4,203,818

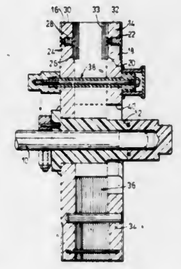
ELECTROLYZERS

Bruce B. Greaves, 3 Fishermans Close, Formby, Merseyside, L37 1XX, England

Filed May 9, 1979, Ser. No. 37,368
Claims priority, application United Kingdom, May 17, 1978, 20020/78
Int. Cl.² C25B *8/00, 15/08, 1/34*
U.S. Cl. 204—212 **20 Claims**

1. In an electrolytic cell having an electrolysing chamber, a pair of terminal electrodes located within the chamber and adapted to be connected to the poles of a D.C. source, a plurality of bipolar electrodes in the form of parallel flat annular discs which are located in the chamber between the terminal electrodes and which are rotatable about a common central axis through their centres, and an electrolyte inlet located radially outwardly of the bipolar electrodes, the improvement in that said electrolyte inlet to the cell comprises at least one





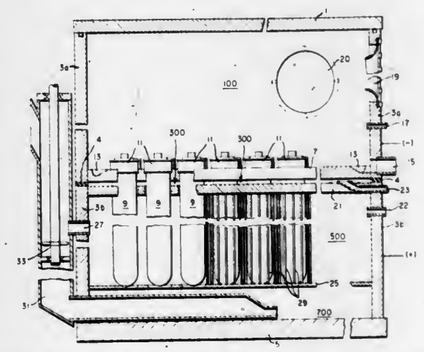
elongate slot extending in a direction generally perpendicular to the planes containing said bipolar disc electrodes.

4,203,819

ELECTROLYTIC CELL WITH FLOW DETECTION MEANS

Steven A. Cope, North Little Rock, Ark., assignor to E. I. Du pont de Nemours and Company, Wilmington, Del.

Filed Jan. 26, 1978, Ser. No. 872,666
Int. Cl.² C25C *3/14, 3/02, 7/00*
U.S. Cl. 204—247 **6 Claims**



1. In a cell for the electrochemical separation of metals from electrodissociatable compounds thereof in the molten state having

(a) an enclosed shell having top, bottom and side members;

(b) a molten metal collection zone comprising

(1) an upper horizontal fluid-tight partition positioned below the top of the cell, the partition having a plurality of open risers extending above the upper surface of the

partition, the riser tubes being in fluid communication with

(2) a plurality of corresponding solid electrolyte tubes suspended from the upper partition, the tubes being joined to the upper partition in fluid-tight relationship at the upper end and closed at the lower end,

(3) negative current collector means extending into the upper end of each of the solid electrolyte tubes, and

(4) outlet means for removing molten metal in the collection zone from the cell; and

(c) an electrolyte circulation zone beneath the upper horizontal partition comprising

(1) a plurality of positive pole assemblies, each connected with positive current collector means, positioned concentrically to the outer longitudinal surface of each of the solid electrolyte tubes,

(2) outlet means for removing gas from the electrolyte circulation zone near the top thereof, and

(3) inlet means for feeding electrolyte feed materials into the circulation zone,

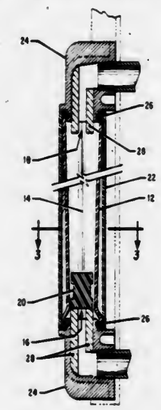
the improvement which comprises at least one opening in the wall of each electrolyte tube for visually detecting the rate of flow of molten metal from the tube to the molten metal collection zone.

4,203,820

ELECTROLYTIC CELL BRINE FLOW METER

Russell M. Wiseman, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 4, 1978, Ser. No. 948,413
Int. Cl.² C25B *9/00, 15/08;* G01F *1/22*
U.S. Cl. 204—263 **5 Claims**



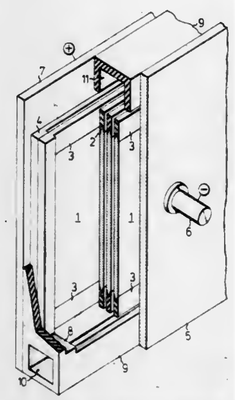
1. An electrolytic brine cell including a flow meter for metering the flow of brine into the electrolytic cell for the production of chlorine and caustic, said flow meter comprising: a float tube made of UDEL polysulfone injection molded; said float tube being of a fluted design so as to provide uniform float tube guides over an ever increasing cross-sectional area; the smaller diameter conjugate plane of said float tube being the float tube ingress and connected to the supply of brine for use in a chlor-alkali electrolytic cell; the larger diameter conjugate plane of said float tube being at the top of the float tube and being the float tube egress as connected to the piping for transfer into a chlor-alkali electrolytic cell for the production of chlorine and caustic; a float riding in the interior of said float tube along said float tube guides in close tolerance thereto so as to restrain horizontal movement thereof during the passage of flow by said float in said float tube; said float tube having a float tube protector completely surrounding said float tube and being of a visually transparent material resistant to the transmittance of UV radiation; and said float tube, along with said float tube protector being connected to associated piping for transmitting the supply of brine having a high pH therethrough by means of an O-ring seal at each end of said float tube.

4,203,821

APPARATUS FOR CARRYING OUT ELECTROCHEMICAL REACTIONS AND CORRESPONDINGLY SUITABLE BIPOLAR ELECTRODES

Jürgen Cramer, and Werner Lindner, both of Eppstein, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 30, 1978, Ser. No. 938,049
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739324
Int. Cl.² C25B *9/00, 9/02, 11/12, 11/02*
U.S. Cl. 204—268 **9 Claims**



1. A continuous flow cell for electrochemical reaction with an electrolyte comprising a housing; a plurality of bipolar electrodes provided in said housing, each bipolar electrode being formed of an electrically active plate and a frame of electrically non-conducting material secured to the periphery of said active plate; an inlet tunnel in said housing having an inlet to introduce said electrolyte from beneath said electrode plates; a collecting tunnel in said housing disposed above and common to all of said electrode plates for collecting electrolyte which flows thereto; said electrode plates being arranged in a stack with the plane of each plate being parallel to the direction in which said electrolyte flows in said housing from said inlet to said collecting tunnel; and means for supplying an electric current to said cell.

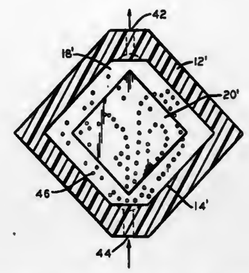
4,203,822

METHOD OF PRODUCING SOLS BY ELECTRODIALYSIS

Barry A. Schenker, Mayfield Heights; Thomas T. Sugano, Painesville; Neil W. Stillman, Madison, and Kevin J. O'Leary, Cleveland Heights, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 787,314, Apr. 14, 1977, Pat. No. 4,147,605, which is a continuation-in-part of Ser. No. 669,188, Mar. 22, 1976, abandoned. This application Jan. 24, 1979, Ser. No. 6,091
Int. Cl.² B01D *13/02*
U.S. Cl. 204—301 **2 Claims**

1. An electrodialytic cell comprising a housing defining an anode compartment and a cathode compartment, with the anode compartment having a diamond-shaped vertical cross-section and being provided with an inlet and an outlet for removing anolyte therefrom; said anolyte having therein a plurality of beads; a cation permselective membrane separating the anode compartment from the cathode compartment; an anode positioned in the anode compartment, and a cathode positioned in the cathode compartment for passing electrical current through the cell; and a conduit communicating with the inlet and outlet of anode compartment whereby anolyte



can be circulated through the anode compartment so as to impinge said plurality of beads against said anode to prevent buildup on said anode.

4,203,823

COMBINED COAL LIQUEFACTION-GASIFICATION PROCESS

Norman L. Carr, Allison Park; Ronald Schleppy, Jr., Pittsburgh, both of Pa.; Bruce K. Schmid, Denver, Colo., and Yatish T. Shah, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jul. 3, 1978, Ser. No. 921,338
Int. Cl.² C10G *1/06;* C10J *3/00*
U.S. Cl. 208—10 **22 Claims**

1. A combination coal liquefaction-gasification process comprising passing mineral-containing feed coal, hydrogen, recycle dissolved liquid coal solvent, recycle dissolved coal which is solid at room temperature and recycle mineral residue to a coal liquefaction zone to dissolve hydrocarbonaceous material from mineral residue and to hydrocrack said hydrocarbonaceous material to produce a liquefaction zone effluent mixture comprising hydrocarbon gases, dissolved liquid coal, solid dissolved coal and suspended mineral residue; recycling to said liquefaction zone a portion of said dissolved liquid coal, solid dissolved coal and mineral residue; the ratio of said recycle portion to said feed coal being established so that the net yield after recycle based on dry feed coal of solid dissolved coal is 17.5 weight percent or lower and the net yield after recycle based on dry feed coal of 450° to 850° F. dissolved liquid coal is at least 35 weight percent greater than the net yield of solid dissolved coal; separating dissolved liquid coal and hydrocarbon gases from solid dissolving coal and mineral residue to produce a gasifier feed slurry comprising substantially the entire net yield of solid dissolved coal and mineral residue of said liquefaction zone; passing said gasifier feed slurry to a gasification zone including an oxidation zone for the conversion of the hydrocarbonaceous material therein to synthesis gas; converting at least a portion of said synthesis gas to a gaseous hydrogen-rich stream and passing said hydrogen-rich stream to said liquefaction zone to supply process hydrogen thereto; the amount of carbonaceous material passed to said gasification zone being sufficient to enable said gasification zone to produce at least the entire hydrogen requirement of said liquefaction zone.

4,203,824

POLYVINYLPYRROLIDONE DEWAXING AID FOR BRIGHT STOCKS

Biddanda U. Achia, Sarnia, and David H. Shaw, Camlachie, both of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 22, 1978, Ser. No. 972,230
Int. Cl.² C10G *43/06, 43/08*
U.S. Cl. 208—33 **11 Claims**

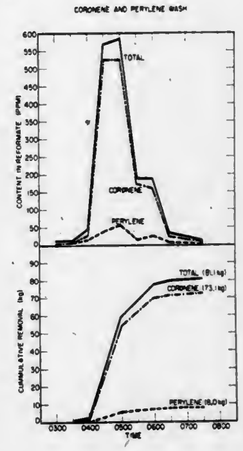
1. A solvent dewaxing process comprising mixing a waxy hydrocarbon oil with a polyvinylpyrrolidone dewaxing aid and a ketone dewaxing solvent and chilling said mixture to form a slurry comprising solid particles of wax and a solution of dewaxed oil and ketone dewaxing solvent and separating said wax from said dewaxed oil solution.

4,203,825

METHOD FOR REMOVING CORONENE FROM HEAT EXCHANGERS

Walter S. Kmak, Scotch Plains, N.J., and Charles Monzo, Sea Brook, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 2, 1979, Ser. No. 8,777
Int. Cl.² C07C *15/12;* C10G *9/16, 39/00*
U.S. Cl. 208—48 R **7 Claims**



1. A method for removing a coronene deposit in a reforming process which comprises the steps of:

(a) contacting a hydrocarbonaceous feedstock with a catalyst in the presence of added hydrogen at reforming conditions in a reforming zone;

(b) passing the resulting total reforming zone effluent into a heat exchange zone, said reforming zone effluent comprising coronene, at least a portion of which deposits in a portion of the heat exchange zone;

(c) separating the heat exchanged total reforming zone effluent into a hydrogen-rich gaseous phase, and a liquid hydrocarbon phase comprising normally liquid hydrocarbons and normally gaseous hydrocarbons, the improvement which comprises maintaining the dew point of said reforming zone effluent at a temperature such that at least a portion of said reforming zone effluent condenses to a liquid phase in said portion of the heat exchange zone of step (b) having said coronene deposit, for a time sufficient to remove at least a portion of said coronene deposit from said portion of heat exchange zone.

4,203,826

PROCESS FOR PRODUCING HIGH PURITY AROMATIC COMPOUNDS

Warden W. Mayes, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.

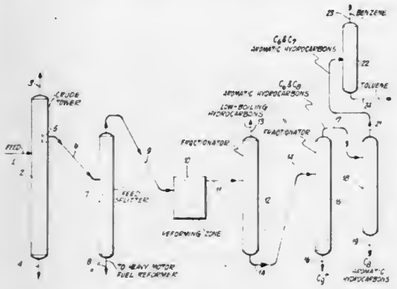
Filed Aug. 24, 1977, Ser. No. 827,356
Int. Cl.² C10G *35/04*
U.S. Cl. 208—64 **17 Claims**

1. A process for the production by reforming of high-purity commercial quality aromatic hydrocarbons, selected from the group consisting of C_7, C_8, or C_7 and C_8 aromatic hydrocarbons, from a full boiling C_7–C_8 naphtha fraction without the

use of prefractionation of the naphtha fraction or solvent extraction or clay treatment of the reformate, consisting essentially of the steps of:

(a) providing a starting material determined as follows: (i) for the production of high-purity C_7 aromatic, a C_7 full boiling carbon number naphtha fraction; (ii) for the production of high-purity C_8 aromatic, a C_8 full boiling carbon number naphtha; (iii) for the production of high-purity C_7 and C_8 aromatic hydrocarbons, a C_7 and C_8 full boiling carbon number naphtha fraction;

(b) catalytically reforming said starting material under reforming conditions of sufficient severity to convert the nonaromatic present therein essentially completely to the



corresponding aromatic and to produce a reformate having a nonaromatic content such that said C_7 aromatic hydrocarbons can be directly recovered from said reformate with purity of greater than about 95 liquid volume percent and said C_8 aromatic hydrocarbons can be directly recovered from said reformate with a purity of greater than about 99 liquid volume percent, by fractional distillation; and

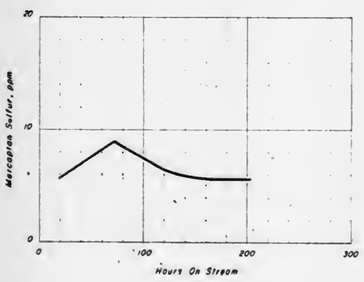
(c) fractionating said reformate to directly recover said aromatic hydrocarbons in highly pure form.

4,203,827

PROCESS FOR TREATING SOUR PETROLEUM DISTILLATES

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 28, 1978, Ser. No. 940,041
Int. Cl.[2] C10G 27/06
U.S. Cl. 208—206 **16 Claims**



1. A process for treating a mercaptancontaining sour petroleum distillate which comprises:

(a) passing said distillate in admixture with an oxidizing agent and an aqueous solution of an alkali metal hydroxide into contact with a catalytic composite consisting essentially of a metal phthalocyanine mercaptan oxidation catalyst and a quaternary ammonium compound impregnated on a solid adsorbent support disposed as a fixed bed in a first treating zone;

(b) passing the effluent comprising said distillate and said aqueous solution of alkali metal hydroxide from said first treating zone in admixture with an oxidizing agent into contact with a catalytic composite, said catalytic composite comprising a metal phthalocyanine mercaptan oxidation catalyst impregnated on a solid adsorbent support disposed as a fixed bed in a second treating zone; and

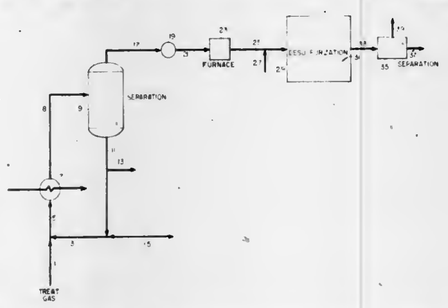
(c) recovering a petroleum distillate product substantially free of mercaptan sulfur.

4,203,828

HYDRODESULFURIZATION PROCESS

Sheldon Bodnick, Rockaway, N.J., and John C. Brice, Epsom, England, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 26, 1976, Ser. No. 690,254
Int. Cl.[2] C10G 23/02
U.S. Cl. 208—213 **7 Claims**



1. In a process for hydrodesulfurizing a sulfur-containing heavy hydrocarbon oil wherein said oil is contacted with hydrogen and steam in the presence of a hydrodesulfurization catalyst at hydrodesulfurization conditions including a temperature varying from about 400° F. to about 900° F. and a pressure varying from about 800 psig to about 3000 psig, the improvement which comprises:

(a) introducing a hydrogen-containing gas into a circulating water stream to produce a mixed stream;

(b) heating said mixed stream to a temperature below about 450° F. to vaporize a portion of said water and to produce a steam and hydrogen-containing gas;

(c) separating the steam and hydrogen-containing gas from the unvaporized water;

(d) contacting said steam and hydrogen-containing gas with a sulfur-containing heavy hydrocarbon oil in the presence of said hydrodesulfurization catalyst under said hydrodesulfurization conditions; and

(e) recovering a hydrocarbon oil reduced in sulfur content.

4,203,829

CATALYST, METHOD OF PREPARATION AND USE THEREOF IN HYDRODESULFURIZING CRACKED NAPHTHA

Ralph J. Bertolacini, Chesterton, Ind., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 28, 1978, Ser. No. 946,573
Int. Cl.[2] C10G 23/02; B01J 23/88
U.S. Cl. 208—216 R **13 Claims**

1. A method for preparing hydrodesulfurization catalyst comprising Group VIB metal and Group VIII metal on a solid support comprising magnesium oxide and aluminum oxide, which method comprises:

(1) forming an aqueous composition comprising dissolved Group VIB and Group VIII metal compounds and suspended magnesia;

(2) drying the composition of step 1;

(3) blending compositions comprising the product of step 2 and particulate alumina;

(4) forming the product of step 3 into pellets; and

(5) calcining said pellets.

8. A process for the selective desulfurization of cracked naphthas, which process comprises contacting a cracked naphtha in a reaction zone under hydrodesulfurization conditions and in the presence of hydrogen with a catalyst prepared by a method which comprises:

(1) forming an aqueous composition comprising dissolved Group VIB and Group VIII metal compounds and suspended magnesia;

(2) drying the composition of step 1;

(3) blending compositions comprising the product of step 2 and particulate alumina; and

(4) forming the product of step 3 into pellets;

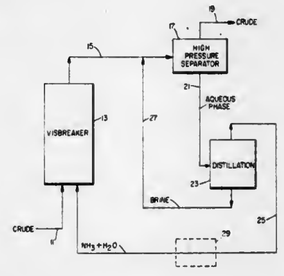
(5) calcining said pellets.

4,203,830

VISBREAKING PROCESS FOR DEMETALATION AND DESULFURIZATION OF HEAVY OIL

Louis D. Rollmann, Princeton, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,660
Int. Cl.[2] C10G 34/00, 31/06, 29/02
U.S. Cl. 208—236 **9 Claims**



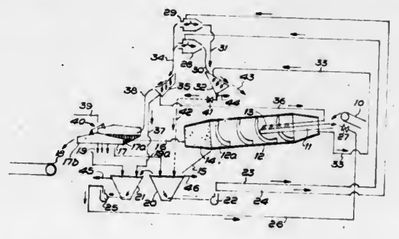
1. A visbreaking process for demetalation and desulfurization of a heavy hydrocarbon feed stock which comprises contacting said stock with an aqueous solution of 0.5 to 30 weight percent ammonia at visbreaking temperature and recovering a hydrocarbon product from said contacting having a reduced viscosity which is at least partially demetalized and desulfurized.

4,203,831

6/30 COAL WASHING PLANT

Derek Parnaby, Horsley Hall, Eastgate, Bishop Auckland, Durham, England

Filed Jun. 23, 1978, Ser. No. 918,432
Int. Cl.[2] B03B 7/00
U.S. Cl. 209—13 **8 Claims**



1. Coal washing plant comprising an inclined rotatably mounted barrel (12) having an internal helical scroll, (12*a*);

means (10) for feeding raw coal into the upper end of said inclined barrel;

means (11) introducing wash liquor into said barrel; outlet means (33) below said feed means and said wash liquid means at said upper end for disposal of unwanted materials therefrom;

sieve means (17) subsequent the lower end of said barrel for screening washed coal issuing from said barrel;

removal means (18) for removing washed coal after said screening from the top side of said sieve means;

at least one cyclone separator (28, 29);

said sieve means (17) having a first sieve region (17*a*) of relatively fine mesh and a second sieve region (17*b*) of coarser mesh;

a first collecting tank (20) disposed below said first fine mesh sieve region (17*a*);

a second collecting tank (21) disposed below said second coarse mesh sieve region (17*b*);

first pump means (22) for circulating particles and liquor passing through said fine mesh sieve region from said first tank to said at least one cyclone separator (28, 29);

second pump means (25) for circulating particles and liquor passing through said second coarse mesh sieve region (17*b*) to said upper end of said barrel;

means (34, 35, 38,) for feeding coal material separated by said least one cyclone separator to said removal means (18);

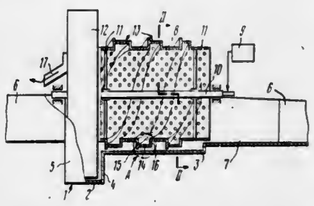
and means (30, 31, 32, 43) to remove material rejected by said at least one cyclone separator.

4,203,832

DEVICE FOR SEPARATING HEAVIER IMPURITIES FROM SOLID BODIES IN FLUID FLOW

Nikolai M. Datsenko, ulitsa Frunze, 131, kv. 16, Kiev, U.S.S.R.

Filed Sep. 15, 1978, Ser. No. 942,487
Int. Cl.[2] B03B 7/00
U.S. Cl. 209—44 **8 Claims**



1. A separating and cleaning device having inlet and exit sides for separating heavier impurities from solid bodies, such as roots and tubers or the like conveyed by a fluid flow supply source comprising: a trough-like casing for receiving said fluid from said supply source; a hollow drum having a cylindrical perforated side wall being disposed substantially horizontally and coaxially in said trough-like casing and being supported on a rotatable shaft; an appliance for separating, receiving and unloading impurities disposed in said trough-like casing and being secured to said drum at the inlet side of said device; elements in said drum for moving said impurities towards said appliance in the form of grooves arranged spirally in the side wall of said drum throughout its length; each said groove having a cylindrical side wall and two face walls arranged substantially perpendicularly to said cylindrical perforated side wall of said drum; the cylindrical side wall of each groove protrudes beyond the perforated side wall of said drum, the face walls of said grooves nearest said appliance serve for moving towards said appliance sand or other relatively small impurities falling out from the perforated side wall of said drum, and the internal surfaces of each groove serve for moving toward said appliance stones or other relatively large impurities which have settled in said drum; and the roots and tubers

being carried by said fluid through said drum to the exit of said device.

4,203,833

CONVEYING AND CLASSIFYING OF PARTICULATE SUBSTANCES

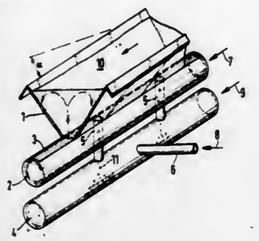
Heinrich Wagener, Bochum, and Karl-Heinrich van Heek, Essen, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,108

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737635

Int. Cl.² B07B *4/08*

U.S. Cl. 209—139 R **26 Claims**



4. Apparatus for conveying and simultaneously classifying a mixture of heavier and lighter particles, comprising first means defining an inclined substantially horizontal travel path which is laterally bounded by two upwardly divergent side walls and has a length and a width; second means defining below said path an enclosed passageway which extends along the path, including a plurality of upright classifying conduits having lower open ends communicating with said passageway and upper open ends communicating with said path; third means for directing a stream of fluidizing fluid at a first pressure from below and substantially centrally between said side walls in upward direction into said path, so as to fluidize the mixture therein, whereby portions of the mixture are also made to travel repeatedly past said upper open ends; and fourth means for admitting through said passageway and said conduits streams of classifying fluid into the fluidized bed at a second pressure which is sufficiently higher than said first pressure to substantially prevent the lighter particles from entering said open ends but is sufficiently low to permit the heavier particles to overcome it and to drop through said open ends and said classifying conduits into said passageway.

4,203,834

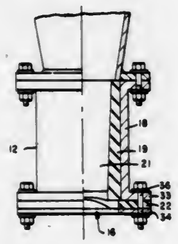
HYDROCYCLONE UNDERFLOW DENSITY CONTROL

David L. Martin, Woodside, Calif., assignor to Krebs Engineers, Menlo Park, Calif.

Continuation-in-part of Ser. No. 871,391, Jan. 23, 1978. This application Aug. 21, 1978, Ser. No. 935,525

Int. Cl.² B04C *5/16*

U.S. Cl. 209—211 **4 Claims**



1. A hydrocyclone which when in upright position has a separating chamber that is annular in section with a lower conical shaped portion having an opening at its lower apex end for discharge of an underflow containing heavier separated solids, the chamber also having means forming an inlet opening connected tangentially with the upper portion of the chamber and means forming an overflow outlet communicating with a vortex finder disposed axially of the chamber for discharge of overflow material, control means secured directly to the lower end of the hydrocyclone, said control means consisting of a device made of resilient material, said device having a plurality of flexible sectors, said sectors when relaxed extending across the apex opening, the apex end of each sector being substantially aligned with the axis of the chamber with its side edges extending generally radially from the perimeter of the apex opening to the central axis of the hydrocyclone, the side edges of each sector when relaxed being in juxtaposition with the side edges of adjacent sectors but spaced therefrom, said sectors being so constructed that they present increasing resistance to downward deflection and being deflected downwardly by the thrust of underflow material overlying the same, resistance to such deflection serving as means to effect controlled underflow discharge, whereby the density of the discharging underflow material is maintained substantially constant.

4,203,835

WASTE WATER TREATMENT METHOD USING ACTIVATED CARBON

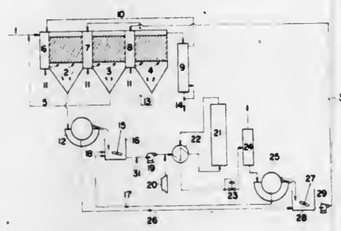
Yoshiaki Tagashira; Hitoshi Takagi, and Katsumi Inagaki, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 27, 1977, Ser. No. 836,997

Claims priority, application Japan, Aug. 25, 1977, 52-101068

Int. Cl.² C02B *1/14*

U.S. Cl. 210—33 **18 Claims**



1. A waste water treatment method comprising contacting with activated carbon in an adsorption and separation zone waste water discharged from the ammoxidation process for the production of acrylonitrile or an oxidized liquid formed by subjecting said waste water to a wet oxidation treatment to adsorb onto said activated carbon pollutants in said waste water; separating the resulting mixture into a spent carbon slurry and water; subjecting the spent carbon slurry from the adsorption and separation zone to wet oxidation in the presence of copper values and ammonium ions at a pH of not higher than 5 in a regeneration zone to thereby regenerate the spent carbon; and recycling the regenerated activated carbon to the adsorption and separation zone.

4,203,836

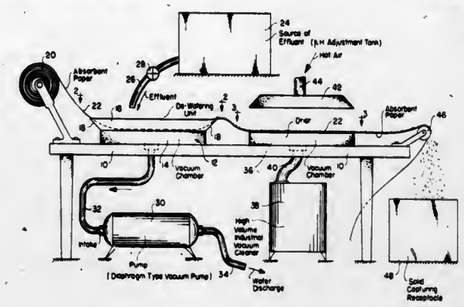
METHOD AND APPARATUS FOR REMOVING PRECIPITATED SUSPENDED SOLIDS FROM AN EFFLUENT

Richard D. Hallack, 500 Oak Knoll Ave. #24, Pasadena, Calif. 91101, and Tommie B. Carter, 806 Valencia Mesa Dr., Fullerton, Calif. 92632

Continuation-in-part of Ser. No. 777,687, Jun. 25, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,373

Int. Cl.² C02B *1/20*; B01D *33/00*

U.S. Cl. 210—42 R **7 Claims**



1. In a method for separating hydroxide-precipitative metals from an aqueous solution by the steps of adding a base to the solution for raising the pH of the solution above 8.0 and forming a hydroxide precipitate suspension of the metals present in the water, the improvement comprising the steps of:

(a) feeding the aqueous suspension of precipitated metal hydroxides onto a surface of a liquid-absorbing medium comprising an industrial paper towel having a basis weight from about 28 to about 34 pounds per ream, a caliper from about 0.0130 to about 0.0145, an aged-wet tensile strength from about 16 to 25 ounces and an aged absorption of less than 40 seconds;

(b) absorbing the water from the aqueous suspension into the liquid-absorbing medium leaving the suspended mtal hydroxides unabsorbed;

(c) removing the absorbed water from the liquid-absorbing medium surface opposite the surface in contact with the aqueous suspension for providing additional absorption capability to the liquid-absorbing medium;

(d) concomitantly absorbing additional water into the liquid-absorbing medium as a result of the removal of the previously absorbed water; and

(e) collecting the water removed from the liquid-absorbing medium.

5. Apparatus for separating suspended metal hydroxides from an aqueous suspension containing metal hydroxides, said apparatus comprising:

(a) a solid-liquid separation unit having a perforated base and a liquid-receiving chamber below said base;

(b) a paper positioned on the base covering and sealing the perforations in the base for absorbing water from an aqueous suspension to the substantial exclusion of absorbing suspended metal hydroxides, said paper having a basis weight from about 28 to about 34 pounds per ream, a caliper from about 0.0130 to about 0.0145, an aged-wet tensile strength from about 16 to 25 ounces and an aged absorption of less than 40 seconds;

(c) means for introducing an aqueous suspension containing suspended metal hydroxides onto the surface of the paper;

(d) means for containing the liquid containing suspended metal hydroxides on the surface of the paper and preventing the liquid containing suspended metal hydroxides from flowing around the paper; and

(e) means for removing absorbed water from the paper, said last named means comprising a vacuum paper having an intake coupled to the liquid-receiving chamber for establishing reduced pressure on the underside of the paper through the perforations in the base.

4,203,837

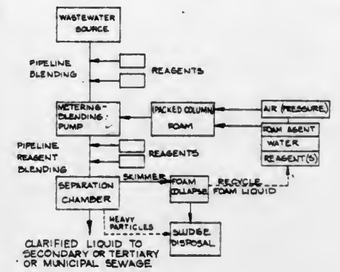
PROCESS FOR REMOVAL OF DISCRETE PARTICULATES AND SOLUTES FROM LIQUIDS BY FOAM FLOTATION

John H. Hoge, and John H. Hubbard, both of 4204 Airport Rd., Cincinnati, Ohio 45226

Continuation of Ser. No. 649,690, Jan. 16, 1976, abandoned. This application Dec. 16, 1977, Ser. No. 861,492

Int. Cl.² C02B *1/20*; C02C *5/02*

U.S. Cl. 210—44 **4 Claims**



1. A process for removal of discrete particulates from wastewater by foam flotation which comprises the steps:

(a) adding at least one agent to the wastewater containing the particulates to alter the surface charge of said particulates;

(b) preparing a foam solution comprising a foaming agent dissolved in a solvent, said foaming agent being specifically ionic for attracting the surface charge of the particulates to be removed;

(c) mixing said foam solution with a gas to produce a pregenerated foam of bubbles having surface active ionic films;

(d) blending said pregenerated foam with the wastewater containing the particulates for a period of time sufficient to insure that substantially all the particulates will contact the surface active films of said bubbles and ionically attach thereto;

(e) discharging said blend into a chamber wherein said blend is able to flow at a diminishing velocity, whereby said bubbles rise from the liquid to freely coalesce into a floating layer in the upper portion of said chamber and a clarified wastewater which is separately withdrawn from said chamber for disposal; and

(f) removing the coalesced foam layer containing the floated particulates for disposal.

4,203,838

PROCESS FOR THE TREATMENT OF SLUDGE

Koh Shimizu; Terumi Uchimura; Ken-Ichi Uede, and Katuyoshi Nakamura, all of Osaka, Japan, assignors to Kubota Tekko Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 775,599, Mar. 8, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 967,877

Claims priority, application Japan, Mar. 13, 1976, 51-27331; Jun. 16, 1976, 51-71635

Int. Cl.² C02C *3/00*

U.S. Cl. 210—63 R **3 Claims**

1. A process for treating sludge comprising the steps of:

(1) introducing raw sludge into a raw sludge thickener to thicken said sludge and producing raw sewage as a supernatant;

(2) transferring said thickened sludge into a thickened sludge storage tank to store said thickened sludge;

(3) transferring the thickened sludge from the thickened

sludge storage tank into a heat exchanger to preheat the sludge;

(4) feeding the preheated sludge along with steam and compressed air into a reactor to oxidize and heat-condense the sludge at 130°-165° C. under a pressure of about 10 kg/cm^2 for at least 30 minutes while separating malodorous gas therefrom, thereby improving the filterability of the sludge;

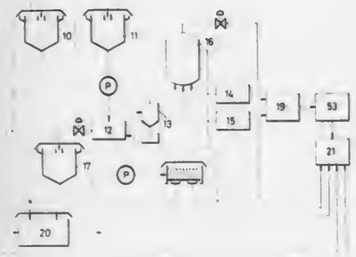
(5) transferring the sludge treated in step (4) through said heat exchanger to be used as a direct or indirect source of heat to preheat the untreated sludge, said treated sludge being transferred through the heat exchanger by means of a conduit which separates the treated from the untreated sludge;

(6) transferring the treated sludge from the heat exchanger to a heat-treated sludge thickener tank to settle the treated sludge and permit it to separate into a thickened sludge and a supernatant liquor;

(7) feeding the thickened sludge into a filter press to filter and remove liquid from the thickened sludge by means of pressure so as to form a cake and a filtrate;

(8) transferring the supernatant liquor from the heat-treated sludge thickener tank and the filtrate from the filter press into a biological treatment system;

(9) subjecting the supernatant liquor and the filtrate in said biological treatment system to a biological treatment by at



least one step of the activated sludge process in which raw sewage is added from the raw sludge thickener and discharging the final effluent thus produced;

(10) incinerating the malodorous gas from the reactor and the cake from the filter press by conveying said malodorous gas and said cake by separate means into an incinerator;

(11) said process being such that malodorous gases are produced in the raw sludge thickener, the thickened sludge storage tank, the heat-treated sludge thickener tank, the filter press and the biological treatment system during the aforementioned treatment steps, and wherein such malodorous gases are deodorized by contacting them with ozone produced by an ozone generator by conveying these malodorous gases by separate means into a deodorizing system containing ozone therein;

(12) said incinerator being characterized by giving off an exhaust gas produced from the inicineration of the malodorous gases in step (10), said exhaust gas containing sulfurous gas, which sulfurous gas is removed from the exhaust gas by means of sodium hydroxide in a desulfurizing step to produce sodium sulfite; and

(13) feeding the deodorized gas from step (11) into an ozone removing tower to remove any unreacted ozone and contacting the unreacted ozone with sodium sulfite produced in step (12) above while discharging the deodorized gases.

4,203,839

PROCESS FOR SEPARATING SOLIDS FROM COAL LIQUIDS

Norman L. Carr, Allison Park, and Edgar L. McGinnis, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 3, 1978, Ser. No. 893,085
Int. Cl.^{2} B01D *37/02*
U.S. Cl. 210—71 **14 Claims**

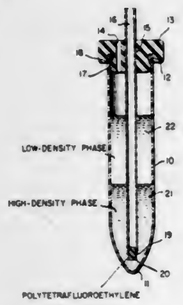
1. A process for filtering particles of coal minerals from a coal liquid in which they are suspended comprising adding between about 1 and 100 grams per liter of a calcium salt selected from the group consisting of calcium carbonate, calcium acetate and $CaCO_3.MgCO_3$ to said coal liquid prior to the filtration step, performing said filtration step with the coal liquid at a temperature above about 475° F., said calcium salt increasing the rate of said filtration of said coal mineral particles from said coal liquid.

4,203,840

METHOD OF AND APPARATUS FOR CENTRIFUGAL SEPARATION OF LIQUID PHASES

Markus Stoeppler, Jülich, Fed. Rep. of Germany, and Ivan Havezov, Sofia, Bulgaria, assignors to Kernforschungsanlage Jülich Gesellschaft mit Beschränkter Haftung, Juülich, Fed. Rep. of Germany

Filed Dec. 20, 1971, Ser. No. 209,882
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1971, 2115032
The portion of the term of this patent subsequent to May 20, 1996, has been disclaimed.
Int. Cl.^{2} B01D *11/00*
U.S. Cl. 210—83 **10 Claims**



8. A method of separating liquid phases of a liquid/liquid extraction mixture comprising the steps of centrifugally separating said mixture into a plurality of phases, inserting a plugged tube below one of said phases and into another phase, and centrifugally dislodging the plug of said tube to communicate between said tube and said other phase.

4,203,841

APPARATUS FOR HIGH-EFFICIENT MICROBIOLOGICAL OXIDATION TREATMENT

Norio Shimizu; Youji Odawara; Tetsuo Yamaguchi; Setsuo Saitou, all of Hitachi; Azuma Nakaoka, Chiba, and Kazuaki Ichihashi, Yamaguchi, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 722,034, Sep. 10, 1976, abandoned. This application Dec. 6, 1977, Ser. No. 857,890
Claims priority, application Japan, Sep. 10, 1975, 50/108889
Int. Cl.^{2} C02C *1/06, 1/12*
U.S. Cl. 210—205 **10 Claims**

1. An apparatus for high-efficient microbiological oxidation treatment of waste liquid containing organic materials comprising:

an aeration tank body having a height that is from 5 to 30

meters and a diameter of from 0.5 to 10 meters that is substantially less than the height;

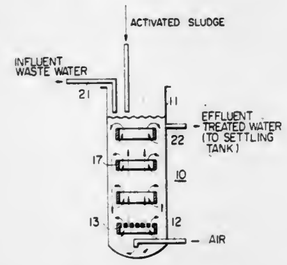
first feed means for introducing influent waste liquid containing organic materials into said aeration tank body;

second feed means for introducing activated sludge into said aeration tank body;

means for supplying and for diffusing air into the waste liquid, said air supply and diffusion means being provided at the bottom of said aeration tank body;

at least one air dispersion means provided above said air supply and diffusion means for dispersing the air ascending from the bottom of said aeration tank body into fine air bubbles, said air dispersion means comprising a cylindrical skirt provided with a perforated disc-like plate extending across one end of the skirt;

a plurality of open cylinders, each of said open cylinders comprising a cylindrical skirt, each of the cylindrical



skirts of said open cylinders and said air dispersion means being of substantially the same diameter, said open cylinders being aligned directly above said air dispersion means with a predetermined vertical distance from each other above said air supply and diffusion means, the cylindrical skirts being disposed coaxially with said aeration tank body and defining an annular space with the inner wall of said aeration tank body, the cylindrical skirts forming partially circulating streams of the waste liquid along the inside and the outside of the cylindrical skirt and forming an overall circulating stream ascending along the center parts of the skirts and descending through the annular space, the cross-sectional area of each of said dispersion means and said open cylinders being in a range of 50 to 80% of the cross-sectional area of said aeration tank body; and

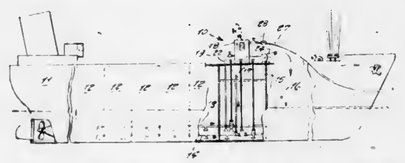
discharge means for removing effluent treated liquid from said aeration tank body.

4,203,842

SYSTEM FOR OIL AND WATER SEPARATION

James Di Perna, 85 Foxhill Ter., Staten Island, N.Y. 10305

Filed Dec. 6, 1978, Ser. No. 966,798
Int. Cl.^{2} E02B *15/04*
U.S. Cl. 210—242 S **1 Claim**



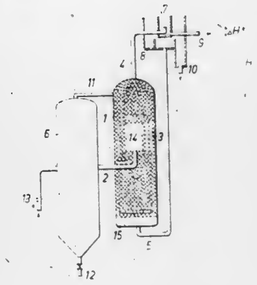
1. A system for oil and water separation upon a tanker ship, comprising in combination, a sealed first tank upon a ship deck, a hand-controlled vent valve upon a top of said first tank and an observation window on a side of said first tank, a siphon line having an outlet inside said tank, an opposite end of said syphon line freely depending downward into a below-deck collection tank of said ship for containing a mixture of oil and water, said syphon line being intercepted by a hand-controlled valve, an upper outlet from said first tank comprising a suction line connected to a pump for discharging oil from said tank, a lower outlet from said tank comprising a suction line connected to a second pump for discharging water from said first tank, and a second tank adjacent a side of said first tank, a pipe between a lower end of said first tank and an upper end of said second tank, a filter between an upper and lower portions of said second tank, for separation of sludge therebelow and water above, and a line from said second tank connected to a pump for draining of said water therefrom in a sludge-free condition back into the sea.

4,203,843

COALESCENCE SYSTEM

Bo R. Carlstedt, Hölö, Sweden, assignor to Ingenjorsfirman Orrje & Co AB, Stockholm, Sweden

Filed Apr. 11, 1979, Ser. No. 28,950
Claims priority, application Sweden, Apr. 18, 1978, 7804394
Int. Cl.^{2} B01D *29/00*
U.S. Cl. 210—262 **2 Claims**



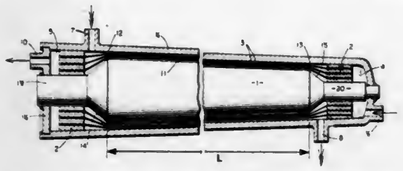
1. A device for separation of two liquids in a common mixture from each other, said liquids having different densities and being non-soluble in each other, said device comprising a pressure-tight vessel, which contains a charge of a high-porous material, which is resistant to the mixed liquids to be separated and has a high surface ratio (i.e. great surface area per volume unit) and small flow resistance, into which vessel the liquid mixture through at least one inlet conduit is to be introduced under pressure into a chamber, located within the charge in the vessel but free from the charge material, an outlet for the heavier liquid being disposed in the bottom of the vessel, in order to bring said liquid to flow substantially vertically and downwardly through the vessel, after which the two liquids each are carried to an individual spillway, characterized in that the mixture introduction chamber is disposed on the vertical center axis of the separation vessel and below the top of the charge of material therein, namely particularly at about the upper third of the height of the vessel, and in that the outlet for the lighter liquid is located at the crown of said separation vessel so that also the lighter liquid is brought to flow vertically, namely upwardly, and in that in the inlet conduit for the mixture is connected upstream of the separation vessel and at substantially the same level as the latter a coarse separation tank which at its crown has a communicating connection to the uppermost portion of separation vessel and which is adapted to be entirely liquid-filled and house within itself a border surface between the heavier and the lighter liquid while providing for an introductory coarse-separation thereof, the spillways for the separated liquids being disposed on at least some distance above the crown of the separation vessel.

4,203,844

HOLLOW FIBER APPARATUS FOR THE FRACTIONATION OF FLUID ESPECIALLY USEFUL AS AN ARTIFICIAL KIDNEY

Charles Amicel, Carrieres sur Seine; Bernard Biot, Craponne; Yves Butruille, Ferrolles-Attilly, and Christian Ollivier, Vienne, all of France, assignors to Sodip SA, Meyzieu, France

Filed Sep. 20, 1977, Ser. No. 834,997
Claims priority, application France, Oct. 5, 1976, 76 30673
Int. Cl.[2] B01D *13/04*
U.S. Cl. 210—321 B **11 Claims**



1. Hollow fibre apparatus for the fractionation of fluid, especially useful as an artificial kidney, characterized in that it comprises:

a mandrel in the form of a truncated cone towards the ends of which two end walls are situated, which surround the mandrel and by which hollow fibres are held, the fibres extending from one end wall to the other, at least one of the end walls being sealed and traversed by the open ends of the hollow fibres,

an outer casing of which the inner wall is in the form of a truncated cone at least along the greater part of is length near the hollow fibres, the latter being uniformly pressed against each other between the inner wall of the casing and the mandrel on the greater part of its length,

means for intake and discharge for the fluid which circulates inside the hollow fibres, and

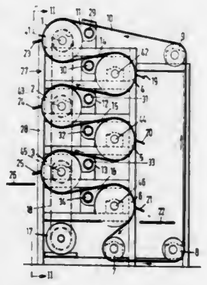
means for the intake and discharge for the fluid which circulates on the outer wall of the fibres.

4,203,845

FILTER PRESS

Egbert K. Brouwer, Thorbeckestraat 107, Veendam, Netherlands

Filed Jan. 8, 1979, Ser. No. 1,603
Claims priority, application Netherlands, Jan. 13, 1978, 7800473
Int. Cl.[2] B01D *33/14, 35/26*
U.S. Cl. 210—386 **9 Claims**



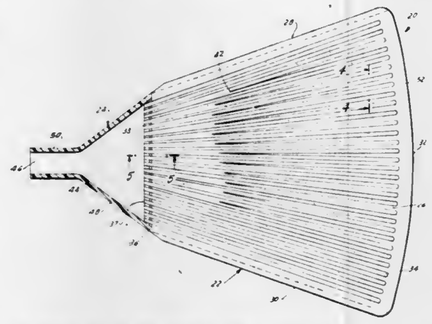
1. A filter press for at least partially separating a mixture comprising a liquid phase and a solid phase into a product substantially containing the solid phase and a product substantially containing the liquid phase, comprising a plurality of parallel cylindrical hollow filter rollers each having a perforated cylindrical surface, a plurality of return rollers and/or tensioning rollers, and an endless imperforate pressure belt passed about a circumferential portion of the cylindrical surface of each of the filter rollers and about the return and tensioning rollers, for separation of the mixture in the area of contact of the pressure belt and the circumferential portion of the cylindrical surface of each of the filter rollers under an adjustable pressure exercised by the pressure belt on the cylindrical surface, distributing means for supplying the mixture to be separated at a controllable pressure to the nip between the pressure belt and each of the filter rollers, means for circulating the endless pressure belt with simultaneous rotation of the filter rollers and return rollers, means for supplying the mixture to be separated to the distributing means, means for discharging the separated liquid phase, and means for discharging the separated solid phase, means for mounting said filter rollers in two side-by-side rows of rollers with at least two rollers in each row, and the rollers in a row located one below the other, one surface of said pressure belt engaging a first roller in one row and the belt passing directly to a first roller in the next row and the opposite surface of the pressure belt engaging the said next roller contact by said pressure belt, and thereby causing rollers successively engaged by said pressure belt to rotate in opposite directions.

4,203,846

DISC SECTOR

Kenneth E. Barthelemy, Warwick, R.I., assignor to Albany International Corporation, Albany, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,076
Int. Cl.[2] B01D *33/00*
U.S. Cl. 210—486 **11 Claims**



1. A sector for a disc-shaped filter comprising;

a substantially sector-shaped element having a pair of opposed sides, a pair of opposing edges including a leading edge and a trailing edge converging toward each other and terminating in a neck at one end and diverging in the other direction to terminate at an arcuate outer edge;

an arrangement of flow paths on each side and positioned to direct filtrate toward the neck;

the element adapted to be interconnected with a plurality of similar sectors to form a disc-shaped filter and adapted to be interconnected with pressure differential means so that when a filter medium is mounted thereon, filtrate collected therethrough will be directed to the neck for removal; and

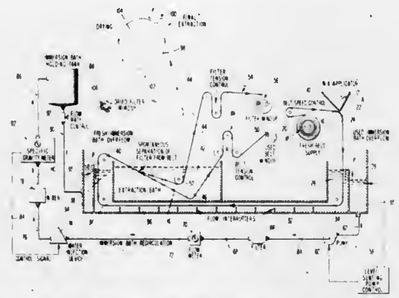
the flow paths being a predetermined non-symmetrical arrangement of channels in the outer surface of each side with the channel arrangement adjacent the leading edge being different from the channel arrangement adjacent the trailing edge including a greater number of single channels adjacent the trailing edge than the number of single channels adjacent the leading edge and the channels being of predetermined size to facilitate accommodation of different amounts of filtrate on different portions of the element and maintain a predetermined pressure differential condition as the element passes through the material to be filtered and to provide streamline and low turbulence flow through the channels with controlled direction and without significant back-flow between channels.

4,203,847

MAKING POROUS MEMBRANES AND THE MEMBRANE PRODUCTS

Joseph D. Grandine, 2nd, Acton, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed May 25, 1977, Ser. No. 800,575
Int. Cl.[2] B29D *27/04*
U.S. Cl. 210—490 **12 Claims**



1. In a process for making a polymeric membrane that is either a microporous membrane or a skinned, asymmetric, semipermeable membrane, that has at least 60% of its volume taken up by pores, by casting a solution of the polymer in a solvent for the polymer onto the surface of a travelling backing belt in the form of a thin, continuous layer of the polymer solution, then passing the belt and thus carrying the layer into and through a formation bath comprising a liquid that is not a solvent for the polymer but that is miscible with the solvent, to form the layer into a porous membrane, with a consequent migration of the solvent liquid from the layer into the formation bath and an enrichment of the composition of the formation bath in the solvent, and thereafter removing the solvent from the porous membrane, and drying it, the improvement wherein the same liquid material that is used as the solvent component of the casting solution is used as a component of the formation bath, the balance of the formation bath consisting of a liquid that is not a solvent for the polymer, and wherein the process includes the following continuous process steps:

withdrawing from the formation bath solvent-enriched formation bath liquid,

monitoring the composition of the withdrawn liquid and adding any necessary non-solvent liquid to adjust the composition to within the desired operating range of composition for the formation bath, then

returning the composition-adjusted liquid to the bath,

the amount of composition adjustment and the rates of withdrawal and return respectively being such as to limit the deviation in composition of the bath between the point of withdrawal and return respectively to not more than about 10%.

10. A microporous membrane produced by the continuous process of claim 9.

4,203,848

PROCESSES OF MAKING A POROUS MEMBRANE MATERIAL FROM POLYVINYLIDENE FLUORIDE, AND PRODUCTS

Joseph D. Grandine, II, Acton, Mass., assignor to Millipore Corporation, Bedford, Mass.

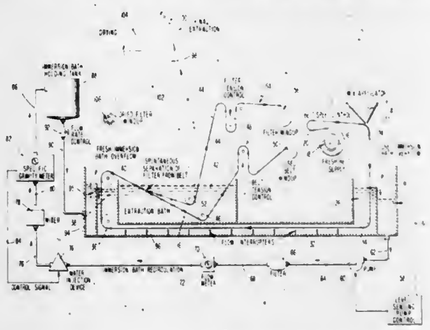
Filed May 25, 1977, Ser. No. 800,574
Int. Cl.[2] B29D *27/04*
U.S. Cl. 210—490 **21 Claims**

1. A continuous process for forming a microporous membrane from a polymer that is at least 90% by weight of polyvinylidene fluoride, the membrane having at least 60% of its volume taken up by intercommunicating capillary pores of average size below about 14 micrometers, comprising:

applying a layer of a solution consisting essentially of the polymer in acetone at a polymer concentration of from about 15% to about 25% by weight of the solution as a thin layer to a rigidly supported surface of a travelling backing belt,

immersing the belt carrying the layer of polymer solution in a formation bath consisting essentially of a mixture of acetone and water, with the acetone forming from about 55% to about 85% by volume of the bath, the balance being water,

maintaining the layer immersed in and passing it through an elongate path in the formation bath between the point of entry of the belt and layer into the formation bath and the point of departure of the belt and layer from the bath, to permit replacement of the acetone in the layer with the formation bath liquid, until the layer has been converted to a microporous membrane having an average pore size



in the range from about 25 nanometers to about 14 micrometers, wherein the pores intercommunicate, form at least 60% by volume of the membrane, and are of substantially uniform size, and the porous structure is essentially fully formed,

continuously withdrawing formation bath liquid from the bath adjacent the entry point of the belt into the bath,

continuously monitoring the composition of the withdrawn formation bath liquid, and adding the necessary amount of water to maintain the liquid at a composition within the specified range of composition for the bath, so that it is recirculable liquid,

returning the recirculable liquid to the formation bath adjacent the departure point of the belt from the bath,

separating the formed membrane from the belt,

washing the membrane with water, apart from the formation bath, to extract any residual acetone or formation bath liquid from the membrane, and then

drying the membrane to remove water.

6. A microporous membrane of polyvinylidene fluoride prepared in accordance with claim 1.

4,203,849

APPARATUS FOR CLEANING WATER CONTAINING FOREIGN PARTICLES SUCH AS SUSPENDED MATTERS OR OIL

Haruko Ino, and Risaburo Ino, both of 9-119, Shimogofukumachi, Hakata-ku, Fukuoka, Japan

Filed Nov. 10, 1975, Ser. No. 630,395
Claims priority, application Japan, Nov. 14, 1974, 49/138328[U]; Nov. 29, 1974, 49/137982[U]
Int. Cl.[2] B01D *21/10*
U.S. Cl. 210—522 **5 Claims**

1. An apparatus for cleaning water containing foreign material such as suspended matter or oil comprising an introduction

means into which said water is charged, an inclined separation chamber having one end connected to said introduction means, a reservoir having an inlet end, said chamber having its other end connected to the inlet end of said reservoir, said separation chamber having a plurality of oblique partition plates disposed at regular spaced intervals and forming a plurality of passages,



said plates having an inclination corresponding generally to the inclination of said inclined separation chamber, said plates also having an inclination transverse to said inclination of said separation chamber, said reservoir having a bottom portion onto which suspended foreign material is settled, and an outlet attached to the bottom end of said separation chamber for discharging the clean water.

4,203,850

FOAM EXTINGUISHING AGENT

Peter Wirtz, Königstein, and Richard Bröll, Langen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,368

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1977, 2732555

Int. Cl.² A62D *1/00*

U.S. Cl. 252—8.05 **5 Claims**

1. A fire extinguishing concentrate, based on water and a fluorinated surfactant as foam formers, which comprises:

(a) an amine oxide of the formula $R_1R_2R_3N\rightarrow O$, in which R_1 is alkyl of 4 to 20 carbon atoms and R_2 and R_3 are identical or different alkyls of 1 to 4 carbon atoms, and

(b) a fluorinated surfactant of the formula

$$R_F-CF=CH-CH_2-\overset{R_4}{\underset{R_5}{(+}}N-R_6 \quad (I)$$

in which R_F is perfluoroalkyl of 3 to 16 carbon atoms, R_4 is a hydrogen atom, C_{1-4} alkyl, cyclohexyl, or 2-hydroxyalkyl of 2 to 6 carbon atoms, R_5 is C_{1-4} alkyl, cyclohexyl, or 2-hydroxyalkyl of 2 to 6 carbon atoms, and R_6 is a water solubilizing radical.

4,203,851

FABRIC SOFTENING COMPOSITIONS AND METHODS FOR MANUFACTURE THEREOF

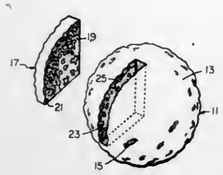
Pallassana N. Ramachandran, Robbinsville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,072

Int. Cl.² D06M *13/34*

U.S. Cl. 252—8.6 **23 Claims**

1. A free-flowing particulate fabric softening composition comprising base beads impregnated with about 15 to 150% of the base beads weight of a normally solid, cationic quaternary ammonium softening agent selected from the group consisting of salts of the formula $[R^1R^2R^3R^4N]^+X^-$ wherein R^1 is an organic radical of 8 to 22 carbon atoms, R^2 and R^3 each represent C_1–C_4 alkyl or C_2–C_4 hydroxyalkyl groups, R^4 is an organic radical of the type like R^1 or R^2 or R^3 and X is an anion and of imidazolinium compounds wherein a C_8–C_{22} alkyl group is substituted on the ring and on the quaternary nitrogen, said base beads having a particle size in the range of 8 mesh to 200 mesh U.S. Sieve Series, having a free volume from 30% to 80% and containing at least 70% by weight of an inorganic water-soluble and/or water-insoluble detergent builder selected from the group consisting of sodium aluminosilicates of calcium ion exchange capacity of at least 200 milligram equivalents per gram, pentasodium tripolyphosphate, sodium carbon-



ate, sodium bicarbonate and sodium silicate having an Na_2O to SiO_2 ratio in the range of 1:1.16 to 1:2.8 and mixtures thereof and containing from 0 to 15% by weight of water, with over 80% by weight of said softening agent being present within the interior of said base beads and the particles of said composition being of a size which pass a No. 8 U.S. Sieve and are retained by a No. 200 U.S. Sieve.

4,203,852

SOFTENER, BLEACH AND ANTI-CLING COMPOSITION

James R. Johnson, Highland Park, and William Chirash, New Providence, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 672,095, Mar. 31, 1976, abandoned, which is a continuation of Ser. No. 447,140, Mar. 1, 1974, abandoned. This application Dec. 13, 1976, Ser. No. 750,325

Int. Cl.² D06M *11/04, 13/10, 13/34*

U.S. Cl. 252—8.8 **8 Claims**

1. A wash cycle fabric softener, bleach, and anti-cling powder, granular, pelleted or tabletted composition compatible with organic detergents consisting essentially of an inorganic peroxygen bleach compound blended with a cationic softening agent selected from the group consisting of hydrogenated ditallow dimethyl ammonium chloride, ethoxylated distearyl dimethyl ammonium chloride, dimethyl distearyl ammonium chloride, dimethyl distearyl ammonium bromide, dicoco dimethyl ammonium chloride, dimethyl arachidyl behenyl ammonium chloride, and disoyadimethyl ammonium chloride, in the weight ratio of 17:1 to 1:4 bleach to softening agent.

4,203,853

FLUID FOR RECOVERING HYDROCARBONS

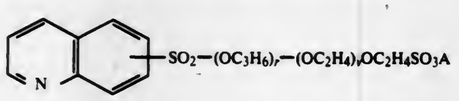
Joseph C. Allen, Bellaire, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 825,313, Aug. 17, 1977, Pat. No. 4,127,171. This application May 25, 1978, Ser. No. 909,734

Int. Cl.² E21B *43/22*

U.S. Cl. 252—8.55 D **2 Claims**

1. A fluid for use in recovering hydrocarbons comprising water containing from about 0.001 to about 0.50 weight percent of an interfacial tension reducer of the formula:



wherein r is an integer of from 2 to about 5, v is an integer of from 5 to about 60 and A is selected from the group consisting of hydrogen, sodium, potassium and the ammonium ion.

4,203,854

STABLE LUBRICANT COMPOSITION CONTAINING MOLYBDENUM DISULFIDE AND METHOD OF PREPARING SAME

Joseph J. Silverstein, Woodmere, N.Y., assignor to The Ore-Lube Corporation, New York, N.Y.

Continuation of Ser. No. 785,812, Apr. 8, 1977, abandoned, which is a continuation of Ser. No. 663,552, Apr. 8, 1977, abandoned, which is a continuation of Ser. No. 444,125, Feb. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 278,153, Aug. 4, 1972, abandoned. This application Sep. 5, 1978, Ser. No. 939,236

Int. Cl.² C10M *1/10*

U.S. Cl. 252—25 **19 Claims**

1. A stable lubricant composition for use as a motor oil which consists essentially of, by volume based upon the total volume of the lubricant composition, at least about 62 up to about 98.5 percent of a petroleum base oil; about 0.25 to about 1.25 percent of molybdenum disulfide particulates having a particle size in the range of about 0.15 to about 0.9 microns; about 0.60 to about 1.75 percent of an oil-soluble polymethacrylate viscosity index improver having a molecular weight in the range of about 100,000 to about 750,000; about 0.75 to about 3.00 percent of an anti-wear agent; and about 0.25 to about 2.00 percent corrosion inhibitor.

8. A stable concentrate suitable for preparing a lubricant composition for use as a motor oil by the addition of more petroleum base oil which concentrate consists essentially of, by volume, from about 20 to about 88 percent dispersion, from about 4 to about 13 percent corrosion inhibitor, from about 4 to 11.5 percent anti-wear agent and sufficient petroleum base oil, if needed, to make 100% by volume, said dispersion consisting essentially of, by volume, from about 5 to 15 percent MoS_2 particulates having a particle size in the range of about 0.15 to about 0.9 micron, from about 5 to 15 percent polymethacrylate viscosity index improver having a molecular weight in the range of about 100,000 to 750,000, and from about 70 to about 90 percent petroleum base oil.

12. A stable composition suitable for addition to a petroleum base motor oil to enhance the latter's properties as a motor oil, which composition consists essentially of, by volume, a dispersion of from about 5 to 15 percent MoS_2 particulates having a particle size in the range of about 0.15 to about 0.9 micron, from about 5 to 15 percent polymethacrylate oil-soluble viscosity index improver, and from about 70 to about 90 percent petroleum base oil.

4,203,855

PHENOXIDE-HALO CARBOXYLIC ACID CONDENSATE ADDITIVES FOR LUBRICANTS

Thomas F. Steckel, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 857,152, Dec. 5, 1977, Pat. No. 4,128,488, which is a continuation-in-part of Ser. No. 608,291, Aug. 27, 1975, Pat. No. 4,061,474. This application Dec. 4, 1978, Ser. No. 966,290

Int. Cl.² C10M *1/20, 1/38, 1/54*

U.S. Cl. 252—42.7 **30 Claims**

1. A composition made by reacting at least one (I) metal phenoxide substituted with at least one hydrocarbon-based group of at least about 30 carbon atoms with (II) a carboxylic acid reagent containing from 1 to about 3 carboxyl-based groups and a halogen-substituted hydrocarbon-based aliphatic or alicyclic group containing a halogen atom.

4,203,856

LUBRICANTS COMPRISING FLUOROALKYL ESTERS

Robert P. Pardee, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 824,886, Aug. 15, 1977, abandoned. This application Jul. 12, 1978, Ser. No. 924,025

Int. Cl.² C10M *3/24, 7/28;* D02G *3/00;* H01F *1/00*

U.S. Cl. 252—54.6 **20 Claims**

1. A method of lubricating an encoded surface of closely spaced grooves, said method comprising the steps of applying to the closely spaced grooves a homogeneous solution comprising about 3 weight percent or less of a fluoroalkyl ester and an organic carrier having an effective penetrating coefficient, and removing the organic carrier therefrom whereby a lubricous coating is deposited on said surface, said fluoroalkyl ester being derived from an aliphatic alcohol having the general formula $C_nF_{2n+1}(CH_2)_mOH$ wherein n is from 3 to 14 and m is 1 to 3 and an aliphatic carboxylic acid having from 2 to about 30 carbon atoms, said carrier having a surface tension of about 20 dynes or less per centimeter at 20° C.

4,203,857

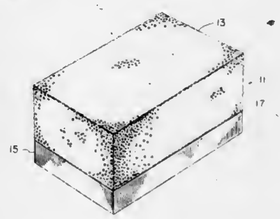
DETERGENT-SCRUBBER ARTICLE AND METHOD FOR MANUFACTURE

Bernard B. Dugan, Sandton, South Africa, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 6, 1978, Ser. No. 867,243

Int. Cl.² C11D *9/00, 17/04*

U.S. Cl. 252—92 **22 Claims**



1. A detergent-scrubber article having a handle to facilitate application of detergent to items to be cleaned which comprises a solid body of detergent composition selected from the group consisting of synthetic organic detergents and soaps and mixtures thereof affixed to a substantially rigid body of light weight closed cell synthetic organic polymeric foam material which is functional as a scrubbing means for scrubbing soiled or stained surfaces of items to be cleaned after application of the detergent composition to such items and which is functional as a handle by means of which the body of solid detergent composition may be held while applying such composition to the items to be cleaned.

4,203,858

PHOSPHATE-FREE MACHINE DISHWASHING COMPOSITION

Paritosh M. Chakrabarti, Wayne, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 691,008, May 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 448,518, Mar. 6, 1974, abandoned. This application Oct. 17, 1977, Ser. No. 842,482

Int. Cl.² C11D *3/08, 3/10, 7/26*

U.S. Cl. 252—135 **7 Claims**

1. A phosphate-free, low foaming, machine dishwashing composition consisting essentially of, approximately by weight,:

(i) an alkali metal or ammonium carbonate;

(ii) a water soluble salt of a polyelectrolyte, selected from the group consisting of polyacrylic acid, polymethacrylic acid and their copolymers with each other, having a molecular weight of about 504 to 1291,

the weight ratio of (ii):(i) ranging from about 5:95 to about 20:80;
(iii) 0 to about 10% of a foam-suppressing non-ionic surfactant;
(iv) 0 to about 50% of an alkali metal silicate; and
(v) 0 to about 80% of an inert diluent selected from the group consisting of alkali metal chlorides, sulfates and nitrites.

4,203,859

SOLUBILIZED ACRYLIC POLYMERS AND CARPET SHAMPOOS CONTAINING THE SAME

William A. Kirn, Abington, and David R. Gehman, Harleysville, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 810,216, Jun. 27, 1977, abandoned. This application Apr. 21, 1978, Ser. No. 898,571
Int. Cl.² C11D *3/37*
U.S. Cl. 252—174.23 **15 Claims**

1. An aqueous composition useful for imparting improved soil retardancy to a surface and adapted to modify a carpet shampoo, consisting essentially of: (1) a polymer component comprising an aqueous dispersion of a low molecular weight acrylic addition polymer consisting essentially of copolymerized units of (a) butyl acrylate, (b) styrene, (c) methyl methacrylate, and (d) an acid monomer selected from the group consisting of methacrylic acid, acrylic acid, itaconic acid and any mixture of two or more thereof, in the ratio by weight of a/b/c/d of 20–60/0–25/0–15/40–60, the polymer having a number average molecular weight of from about 2,500 to about 100,000; (2) polyvalent metal ions; (3) ammonia or a volatile amine in an amount effective to solubilize the polymer; and (4) optionally an anion in the form of $CO_3^=$, HCO_3^- or amino acid anion, in an amount effective to stabilize any complex formed with ingredients (2) and (3); the pka of the polymer component being less than about 6.7, there being no more than about 1 part of styrene to 1 part of butyl acrylate by weight, the pH of the composition being between about 7.5 and about 11, and there being at least about 0.8 equivalents of polyvalent metal ion per carboxyl group in the polymer and about 5–50% by weight of polymer solids in the composition.

4,203,860

NITROGEN-EMITTING COMPOSITION TO BE USED WITH FLASH GETTER MATERIALS

Wataru Ichise, Tokyo; Yasuo Kinjo, Yokohama; Kenji Enokida, and Hideharu Nihei, both of Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 355,345, Apr. 30, 1973, abandoned, which is a continuation-in-part of Ser. No. 179,057, Sep. 9, 1971, abandoned. This application May 5, 1975, Ser. No. 574,419
Claims priority, application Japan, Sep. 10, 1970, 45-78878
Int. Cl.² H01J *7/20*
U.S. Cl. 252—181.2 **1 Claim**

1. A nitrogen-emitting composition which is useful together with flash getter materials comprising a mixture consisting essentially of a major portion of Fe_4GeN and a minor portion of β-Ge_3N_4, which emits nitrogen when heated.

4,203,861

INORGANIC COMPOUNDS

Anthony J. Thorp, Immingham; Frank Clamp, Grimsby; Raoul Feld, Cleethorpes; Joseph E. Page-Gibson, Grimsby, and Keith Archer, Brigg, all of England, assignors to Laporte Industries Limited, London, England

Continuation-in-part of Ser. No. 856,605, Dec. 1, 1977, Pat. No. 4,137,297. This application Feb. 15, 1978, Ser. No. 878,159
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.² C01G *23/00*; H01M *4/58*
U.S. Cl. 252—182.1 **43 Claims**







1. Titanium disulphide particles comprising orthogonally intersecting interpenetrating plate segments.

26. A process for the manufacture of titanium disulphide comprising forming a dry oxygen-free reactant gas mixture having a mixed gas temperature as herein defined, above 400° C. and sufficient to enable the reaction to proceed and less than 500° C., the said mixture comprising titanium tetrachloride and hydrogen sulphide, the hydrogen sulphide being in an excess over the stoichiometric quantity for reaction with the titanium tetrachloride and the titanium tetrachloride and the hydrogen sulphide being separately preheated, passing the reactant gas mixture through a reaction zone as a gas stream having a velocity sufficient to entrain particles of titanium disulphide formed in the course of the reaction, subjecting the gas stream to a positive heat gradient in the reaction zone and recovering the particles of titanium disulphide from the entraining gases.

4,203,862

LIQUID CRYSTAL COMPOSITION

Ying-Yen Hsu, Bridgewater, N.J., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 22, 1978, Ser. No. 972,556
Int. Cl.² C09K *3/34*; C02F *1/13*
U.S. Cl. 252—299 **5 Claims**

1. A nematic liquid crystal composition comprising:
4-cyanophenyl-4'-butylbenzoate: 15–30 mole%
4-cyanophenyl-4'-heptylbenzoate: 20–40 mole%
4-pentylphenyl-4'-pentylbenzoate: 20–35 mole%
4-pentylphenyl-4'-(4''-pentylbenzoyloxy)benzoate: 10–15 mole%
4-cyano-4'-pentylibiphenyl: 10–20 mole%

4,203,863

PROCESS FOR THE PRODUCTION OF SOLID PARTICLES

Karl Knotik, Eisenstadt; Peter Leichter; Emil Proksch, both of Vienna, all of Austria, and Hans Huschka, Hanau, Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,383
Claims priority, application Austria, May 24, 1977, 3696/77
Int. Cl.² G21F *9/08*
U.S. Cl. 252—301.1 W **10 Claims**

1. A process for the production of solid particles of bioinjurious radioactive liquid waste comprising dividing the waste into drops and supplying energy to the drops in a non-turbulent gaseous medium to evaporate the liquid, the energy being supplied by irridiation, to form solid dust-free particles from the drops.

4,203,864

METHOD OF FORMING LOW TEMPERATURE DISPERSIONS

Edgar W. Sawyer, Jr., Hagerstown, Md., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 696,142, Jun. 14, 1976, abandoned. This application Dec. 30, 1977, Ser. No. 866,094
Int. Cl.² B01J *13/00*
U.S. Cl. 252—314 **6 Claims**

1. A method of forming an aqueous dispersior of solid particles having a depressed freezing point, comprising the steps of:
dissolving a condensed phosphate dispersant in water in an amount equal to 0.2 to 4.0% by weight of solid particles to be added;
mixing urea into the water containing the dispersant in an amount equal to 3 to 30% by weight of the dispersion;
adding solid particles to the mixture in an amount equal to 20 to 75% by weight of the dispersion; and
adding an antifreeze solution selected from the group consisting of methanol, ethanol, isopropanol, ethylene glycol and propylene glycol to the dispersion in an amount equal to 9 to 30% by weight of the dispersion to depress the freezing point of the dispersion without flocculating the solid particles.

4,203,865

METHOD AND A CATALYST FOR THE OXIDATION OF A CONJUGATED DIOLEFIN

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 676,258, Apr. 12, 1976, Pat. No. 4,099,018. This application May 2, 1978, Ser. No. 902,192
Int. Cl.² B01J *27/08, 27/10*
U.S. Cl. 252—429 R **9 Claims**

1. In a composition comprising a lead compound, the improvement comprising an alkali metal compound and a halogenated olefin having a halogen radical in the allylic position in combination with said lead compound, wherein the alkali metal compound is a member of the group consisting of salts, oxides and mixtures thereof and the halogenated olefin is present in an amount of from about 0.1 to about 10 moles per mole of lead compound.

4,203,866

CHEMICAL COMPOSITIONS BASED ON TITANIUM TRIHALIDES AND METHODS FOR THEIR PRODUCTION AND USE

Margherita Corbellini, Milan; Alberto Greco, Dresano, and Mirko Osellame, Ombriano, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed Jun. 16, 1978, Ser. No. 915,998
Claims priority, application Italy, Jun. 30, 1977, 25232 A/77
Int. Cl.² C08F *4/64*
U.S. Cl. 252—429 C **10 Claims**

1. A chemical composition based on a titanium trihalide and at least one other halide of a metal selected from the group consisting of Al, Cr, Mn, Fe, V, Ti, Zr, Mo, Zn and Ca, when prepared by reacting a titanium compound having a valency higher than three and the vapors of at least one metal selected from said group in the presence of a halogen-donor compound.

4,203,867

TRANSITION METAL COMPOSITION AND PRODUCTION THEREOF

Ashley D. Bye, Hague, Netherlands, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 25, 1978, Ser. No. 936,892
Claims priority, application United Kingdom, Aug. 31, 1977, 36343/77; May 24, 1978, 21733/78
Int. Cl.² C08F *4/64*
U.S. Cl. 252—429 B **15 Claims**

1. A composition of matter which is of the formula:

$$TiCl_3(AlR_xX_{3-x})_nE_aL_b$$

where
R is a hydrocarbyl group;
X is a halogen atom other than fluorine;
E is a hydrocarbyl ether or a hydrocarbyl thioether;
x is such that $0<x<3.0$;
n is from 0 up to 0.5;
a and b are each, independently, from 0.001 up to 0.50; and
L is an organic Lewis Base compound selected from esters of the formula

$$R^1R^2R^3CCOOR^1;$$

hydrocarbyl esters and partial esters of aliphatic hydrocarbyl diols and hydrocarbyl polyols; amines of the formula

$$R^4R^5R^6N;$$

and ketones of the formula

$$R^7-\overset{\overset{O}{\|}}{C}-R^8$$

where
R^1 is a hydrocarbyl group;
R^2 and R^3 are each, independently, a hydrogen atom or a hydrocarbyl group; or the group $R^1R^2R^3C-$ is an unsubstituted or hydrocarbyl substituted, saturated or unsaturated, condensed or uncondensed hydrocarbyl ring system;
R^4 and R^5 are hydrocarbyl groups;
R^6 is a hydrogen atom, a hydrocarbyl group or a group

$$-C_mH_{2m}NR^4R^5;$$

or R^4 and R^5, optionally together with R^6, together form an unsubstituted, condensed or uncondensed hydrocarbyl ring system;
R^7 is a hydrocarbyl group;
R^8 is a hydrocarbyl group, which may optionally be substituted with one hydrocarbonoxy-group; and
m is 1, 2 or 3.

4,203,868

PROCESS FOR PREPARING CARBON WHICH ADSORBS METAL IONS

Geert J. deJong, Boekelo, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Jun. 13, 1978, Ser. No. 915,242

Claims priority, application Netherlands, Jun. 22, 1977, 7706879

Int. Cl.² B01J *27/02, 31/02*

U.S. Cl. 252—439 **6 Claims**

1. A process for the preparation of a solid carbon-containing material having a sorption capacity for metal ions which comprises mixing a carbon-containing starting material with sulphur, heating the resulting mixture at a temperature in the range of about 120° to 500° C. and subsequently heating the resulting product and an aqueous solution containing an alkali metal hydroxide at a temperature of up to about 200° C.

4,203,869

ZSM-5 CONTAINING ALUMINUM-FREE SHELLS ON ITS SURFACE

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 868,147, Jan. 9, 1978, Pat. No. 4,148,713, which is a continuation-in-part of Ser. No. 726,353, Sep. 24, 1976, Pat. No. 4,088,605. This application Dec. 1, 1978, Ser. No. 965,656

The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.

Int. Cl.² B01J *29/06*

U.S. Cl. 252—455 Z **7 Claims**

1. A crystalline aluminosilicate zeolite having an aluminum-free outer shell of SiO_2, said outer shell having the same crystal structure as said zeolite.

3. The crystalline aluminosilicate zeolite of claim 1 having the crystal structure of ZSM-5, ZSM-11, ZSM-12 or ZSM-35.

4,203,870

CATALYST FOR HYDROGENATION OF GLYCOLIC ACID

Donald R. Nielsen, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 896,944, Apr. 17, 1978, Pat. No. 4,141,930. This application Nov. 6, 1978, Ser. No. 958,074

Int. Cl.² B01J *29/10*

U.S. Cl. 252—459 **3 Claims**

1. A catalyst, especially suited for use in catalyzing the liquid phase hydrogenation of glycolic acid to produce ethylene glycol, consisting essentially of metallic cobalt and from about 5 to 20 percent by weight of thorium oxide based on the combined weights of metallic cobalt and thorium oxide.

3. The catalyst of claim 1 carried on a particulate support containing at least about 80 percent silica.

4,203,871

METHOD OF MAKING LEAD AND BISMUTH RUTHENATE AND IRIDATE PYROCHLORE COMPOUNDS

Harold S. Horowitz, Clark; John M. Longo, New Providence, and Joseph T. Lewandowski, Middlesex, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 856,648, Dec. 2, 1977, Pat. No. 4,129,525. This application Nov. 1, 1978, Ser. No. 956,744

Int. Cl.² H01B *1/08*

U.S. Cl. 252—518 **21 Claims**

1. A method of preparing compounds having the formula:

$$A_2[B_{2-x}A_x]O_{7-y}$$

wherein A is selected from the group consisting of lead, bismuth and mixtures thereof, wherein B is selected from the group consisting of ruthenium, iridium and mixtures thereof, wherein x is a value such that $0 > x > 1.0$ and y is a value such that $0 > y > 1$, comprising:

(a) reacting A cations and B cations from an aqueous solution in a liquid reaction medium having a pH which is equal to or greater than about 4.5 and less than about 13.5, in the presence of oxygen source at a temperature below about 200° C. for a sufficient time for reaction to occur; and, if amorphous reaction products are obtained,

(b) subsequently heat treating the reaction products at a temperature of about 200° C. to about 600° C. for a time to convert amorphous reaction products to crystalline pyrochlore reaction product.

4,203,872

SURFACTANT SYSTEM

John J. Flanagan, 8950 S. Leavitt Ave., Chicago, Ill. 60620

Continuation-in-part of Ser. No. 862,595, Dec. 20, 1977, and Ser. No. 601,054, Aug. 1, 1975, Pat. No. 4,065,409, Ser. No. 832,364, Sep. 12, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,134

The portion of the term of this patent subsequent to Dec. 27, 1994, has been disclaimed.

Int. Cl.² C11D *1/75, 1/825, 1/835, 1/94*

U.S. Cl. 252—542 **5 Claims**

1. A surfactant system comprising:

A. about 25–75% by weight of a non-ionic detergent which is a mixture of about 25% by weight of a condensation product of 4–5 moles of ethylene oxide with 1 mole of nonyl phenol, and about 75% by weight of a condensation product of 8–12 moles of ethylene oxide with 1 mole of nonyl phenol;

B. about 5–65% by weight of

(1) a tertiary amine oxide selected from the group consisting of

(a) alkyl di (lower alkyl) amine oxides in which the alkyl group has about 10–20 carbon atoms and the lower alkyl groups have about 1–7 carbon atoms;

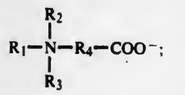
(b) alkyl di (hydroxy lower alkyl) amine oxides in which the alkyl group has about 10–20 carbon atoms and contains from 0 to 1 ether linkages and has one alkyl moiety which contains from about 10 to 15 carbon atoms and no ether linkages, and the lower alkyl groups have about 1–7 carbon atoms;

(c) alkylamidopropyl di (lower alkyl) amine oxides in which the alkyl group has about 10–20 carbon atoms and the lower alkyl groups have about 1–7 carbon atoms; and

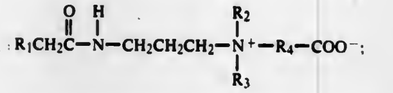
(d) alkyl morpholine oxides in which the alkyl group has about 10–20 carbon atoms; or

(2) an amphoteric detergent selected from the group consisting of

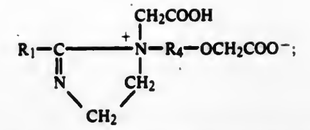
(a) betaine detergents having the formula



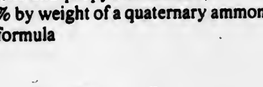
(b) alkyd bridged betaine detergents having the formula



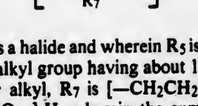
(c) imidazoline detergents having the formula



(d) alkyliminopropionate detergents having the formula



(e) alkyliminodipropionate detergents having the formula

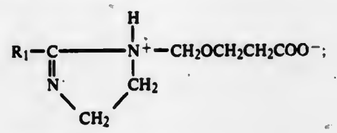


(f) ether bridged alkyliminopropionate detergents having the formula

(g) ether bridged alkyliminodipropionate detergents having the formula



(h) cocoimidazoline based amphoteric detergents having the formula



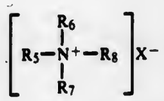
wherein

R_1 is an alkyl radical containing from about 10 to about 14 carbon atoms,

R_2 and R_3 are each selected from the group consisting of methyl and ethyl radicals, and

R_4 is selected from the group consisting of methylene, ethylene and propylene radicals;

C. about 8–50% by weight of a quaternary ammonium halide having the formula



wherein X is a halide and wherein R_5 is an alkyl or phenyl-substituted alkyl group having about 10–20 carbon atoms, R_6 is lower alkyl, R_7 is $[—CH_2CH_2O—]_xH$, and R_8 is $[—CH_2CH_2O—]_yH$, wherein the sum of x and y is between 2 and 5; and

D. the remainder water.

5. A method for emulsifying vegetable oil and petroleum oils, said method including the steps of preparing a surfactant system comprising

A. about 25–75% by weight of a non-ionic detergent which is a condensation product of about 4–16 moles of ethylene oxide with one mole of a compound selected from the group consisting of

(1) an alkyl phenol having about 7–10 carbon atoms in the alkyl group;

(2) an alkyl amine having about 12–16 carbon atoms in the alkyl group;

(3) an aliphatic alcohol having about 10–20 carbon atoms; and

(4) a hydrophobic base formed by condensing propylene oxide with propylene glycol; and

B. about 5–65% by weight of

(1) an amine oxide selected from the group consisting of

(a) alkyl di (lower alkyl) amine oxides in which the alkyl group has about 10–20 carbon atoms and the lower alkyl groups have about 1–7 carbon atoms;

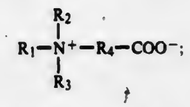
(b) alkyl di (hydroxy lower alkyl) amine oxides in which the alkyl group has about 10–20 carbon atoms and contains from 0 to 2 ether linkages and has one alkyl moiety which contains from about 10 to 15 carbon atoms and no ether linkages, and the lower alkyl groups have about 1–7 carbon atoms;

(c) alkylamidopropyl di (lower alkyl) amine oxides in which the alkyl group has about 10–20 carbon atoms and the lower alkyl groups have about 1–7 carbon atoms; and

(d) alkyl morpholine oxides in which the alkyl group has about 10–20 carbon atoms; or

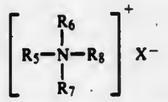
(2) an amphoteric detergent selected from the group consisting of

(a) betaine detergents having the formula



said method comprising the step of adding to said aqueous solution

C. about 8–50% by weight of a quaternary ammonium halide having the formula



wherein X is a halide and the quaternary ammonium radical is selected from the group consisting of

(1) radicals wherein R_5 and R_6 are lower alkyl, R_7 is a lower alkyl group or a benzyl group, and R_8 is an alkyl group having about 1–18 carbon atoms substituted with a phenyl group, or an alkyl group having about 8–20 carbon atoms;

(2) radicals wherein R_5, R_6 and R_7 are lower alkyl, and R_8 is an alkyl or phenyl-substituted alkyl group having about 8–20 carbon atoms; and

(3) radicals wherein R_5 is an alkyl or phenyl-substituted alkyl group having about 10–20 carbon atoms, R_6 is lower alkyl, R_7 is $[—CH_2CH_2O—]_xH$, and R_8 is $[—CH_2CH_2O—]_yH$, wherein the sum of x and y is between 2 and 5,

said method further comprising

D. combining 1 part by weight of said surfactant system with from about 1 to about 3 parts by weight of alkaline builders and with up to about 100 parts by weight of water to provide a detergent concentrate;

E. diluting 1 part by weight of said detergent concentrate

with up to about 50 parts by weight of water to provide a detergent solution, and

F. mixing said detergent solution and oil to emulsify the oil within said solution.

4,203,873

ANIONIC DETERGENT COMPOSITION CONTAINING A BUILDER MIXTURE COMPRISING AN IMIDOBIS-SULFATE AND SODIUM CITRATE OR NITRILOTRIACETATE

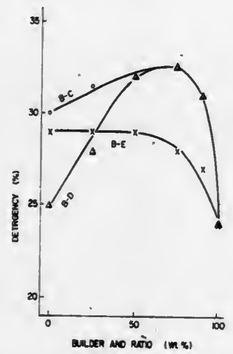
Hiroshi Suzuki, Mitaka; Yukio Ito, Tokyo; Yosiro Yasumoto, Fuchu; Sigeru Kinomura, and Kazuo Nagashima, both of Yokohama, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation of Ser. No. 753,777, Dec. 23, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,599

Claims priority, application Japan, Dec. 23, 1975, 50-153537

Int. Cl.² C11D 3/34, 1/12

U.S. Cl. 252—545 **5 Claims**



1. A detergent composition consisting essentially of (1) an anionic surface active agent selected from the group consisting of sodium linear alkylbenzene sulfonate, sodium higher alcohol sulfate, sodium higher alcohol ethoxy sulfate, sodium olefin sulfonate and their corresponding potassium and ammonium salts; (2) an imidobissulfate of the general formula $(MSO_3)_2NM$ in which M is a cation selected from the group consisting of sodium, potassium and ammonium; and (3) at least one compound selected from the group consisting of sodium nitrilotriacetate and sodium citrate; the amount of (1) being 25–65 parts by weight, the amount of (2) being 25–65 parts by weight and the amount of (3) being 5–35 parts by weight, said amounts being based on 100 parts by weight of (1), (2) and (3).

4,203,874

METHOD, COMPOSITION AND PRODUCT WITH IMPROVED ADHESION BETWEEN A METAL MEMBER AND A CONTIGUOUS CURED RUBBER SKIM STOCK

Adel F. Halasa, Bath; Frederick J. Ravagnani, Uniontown, and Steven E. Schonfeld, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 866,973, Jan. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 824,767, Aug. 15, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,540

Int. Cl.² C08K 5/18; C08L 7/00, 9/00

U.S. Cl. 260—3 **12 Claims**

1. In a cured rubber skim stock of conventional composition containing vulcanizable rubber, said stock being bonded to at least one metal member contained within said stock, the improvement wherein a minor proportion of a transition salt of para-aminobenzoic acid is present in said stock prior to curing, said minor amount of para-aminobenzoic acid salt being an appropriate amount to secure improved rubber-to-metal adhesion.

9. A tire having improved adhesion between a cured rubber skim stock of conventional composition containing vulcanizable rubber, and, metal reinforcing members imbedded therein, the improvement wherein a minor proportion of a transition salt of para-aminobenzoic acid selected from the group consisting of the salts of the transition metals Ni, Cr, Mn, Zn, Mo, Cd, Zr, Ag and Ti is present in said stock prior to curing, said minor amount of para-aminobenzoic acid salt being an appropriate amount to secure improved rubber-to-metal adhesion.

4,203,875

HIGH SOLIDS URETHANES AND APPLICATION THEREOF

James W. Garner, Farmington Hills, and Robert G. Kelso, Southfield, both of Mich., assignors to Grow Chemical Corp., New York, N.Y.

Division of Ser. No. 599,833, Jul. 28, 1975, Pat. No. 4,070,509. This application May 23, 1977, Ser. No. 799,179

Int. Cl.² C08L 75/06; C08G 18/42

U.S. Cl. 260—13 **14 Claims**

1. A polymerizable protective heat curable thermosetting coating composition comprising:

A. a polyol composition consisting essentially of (1) a polymerized low molecular weight polyol selected from the group consisting of (a) polycaprolactone in an amount of about 10% to about 50% by weight (PBW) of the polyol portion; (b) a copolymer of a compound of the formula $CH_2{=}C(R){-}R^1$ and allyl alcohol in an amount of 10 to 50 PBW of the polyol portion; and (c) mixtures thereof; and (2) a saturated aliphatic polyol from 4 to 12 carbon atoms or a saturated cycloaliphatic polyol of from 5 to 8 carbon atoms per ring; wherein R is methyl, ethyl or hydrogen; R^1 is a group having 6 to 12 carbon atoms containing an aromatic carbocyclic ring and said aromatic ring is directly bonded to the moiety $CH_5{=}C(R){-}$; wherein the polymerized low molecular weight polyol of (A) has at least three functional groups per molecule;

B. a polyisocyanate; wherein the ratio of NCO/OH of A and B ranges from about 0.9 to 1.2; the coating composition having a range of solids content from about 40 to about 100% by weight of A and B; and

C. a compatible polyurethane catalyst capable of catalyzing the cross-linking reaction between the hydroxyl group of a polyol and the isocyanate group of the polyisocyanate;

wherein the coating composition is capable of heat curing to a cross-linked coating at a temperature-time range of from about 130° to about 180° F. for a period of time ranging from about 15 minutes to about 60 minutes to achieve a Tukon hardness of at least 3 within 24 hours.

4,203,876

MOLDABLE COMPOSITIONS BASED ON THERMOPLASTIC POLYMERS, SYNTHETIC ELASTOMERS AND VEGETABLE FIBROUS MATERIALS, AND USE OF THESE COMPOSITIONS FOR CALENDERING AND THERMOFORMING

Michel Dereppe, Brussels, and Jean Leva, Limelette, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Feb. 23, 1978, Ser. No. 880,486

Claims priority, application France, Feb. 28, 1977, 77 06029

Int. Cl.² C08L 23/04

U.S. Cl. 260—17.4 R **10 Claims**

1. Moldable composition consisting essentially of a thermoplastic polyolefin and vegetable materials, wherein the composition furthermore contains a synthetic elastomer.

4,203,877

BLOCK OR GRAFT COPOLYMERS AND THEIR USE AS SURFACTANTS

Alan S. Baker, Slough, England, assignor to Imperial Chemical Industries Limited, London, England

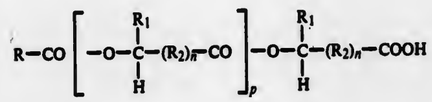
Filed Jul. 3, 1978, Ser. No. 921,563

Claims priority, application United Kingdom, Jul. 12, 1977, 29192/77

Int. Cl.² C08G 65/26; C08L 67/00

U.S. Cl. 260—18 R **22 Claims**

1. A copolymer suitable for use as a surfactant in a system consisting of an oil phase and an aqueous phase, the copolymer containing at least two polymeric components which are derived from oil-soluble complex monocarboxylic acids and another polymeric component which is the residue of a water-soluble compound containing polyoxyalkylene chains, characterized in that the copolymer has the general formula $(A{-}COO)_m{-}B$, wherein m is an integer at least 2, wherein each polymeric component A has a molecular weight of at least 500 and is the residue of an oil-soluble complex monocarboxylic acid having the general structural formula


(I)

in which

R is hydrogen or a monovalent hydrocarbon or substituted hydrocarbon group;

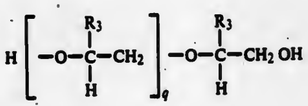
R_1 is hydrogen or a monovalent C_1 to C_{24} hydrocarbon group;

R_2 is a divalent C_1 to C_{24} hydrocarbon group;

n is zero or 1;

p is an integer from zero up to 200;

and wherein each polymeric component B has a molecular weight of at least 500 and, in the case where m is 2, is the divalent residue of a water-soluble polyalkylene glycol having the general formula

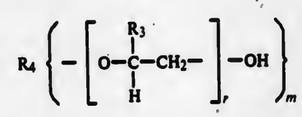

(II)

in which

R_3 is hydrogen or a C_1 or C_3 alkyl group;

q is an integer from 10 up to 500;

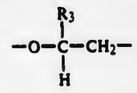
or in the case where m is greater than 2, is the residue of valency m of a water-soluble polyether polyol having the general formula


(III)

in which

R_3 and m have their previous significance;

r is zero or an integer from 1 to 500, provided that the total number of



units in the molecule is at least 10;

R_4 is the residue of an organic compound containing in the molecule m hydrogen atoms reactive with an alkylene oxide.

4,203,878

EPOXY RESIN TRAFFIC PAINT COMPOSITIONS

Ronald S. Bauer, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 2, 1978, Ser. No. 930,482

Int. Cl.² C09D 3/58, 3/76

U.S. Cl. 260—18 EP **11 Claims**

1. A meltable, extrudable, solventless traffic marking composition free of epoxy curing agent comprising (1) an adduct of (a) at least one glycidyl polyether of polyhydric phenols and (b) a polymeric fatty acid, (2) a thermoplastic resin and (3) one or more pigments.

4,203,879

PLASTISOL RESINS HAVING IMPROVED CLARITY

Raymond C. DeWald, Douglassville; Ronald M. Ellis, and Stephen T. Fitzpatrick, both of Pottstown, all of Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 1, 1978, Ser. No. 939,035

Int. Cl.² C08L 91/00, 27/06

U.S. Cl. 260—23 XA **26 Claims**

1. A method for improving the clarity of plastisol resin films prepared from a monomer selected from the group consisting of vinyl chloride and other monomers copolymerizable therewith comprising the sequential steps of:

polymerizing the desired monomeric ingredients and an aqueous phase in a suitable reactor to yield a latex, said aqueous phase comprising

water;

an anionic surfactant;

a fatty compound; and

an oil soluble free radical forming initiator;

dissolving a nonionic emulsifier in said latex and blending to form a uniform mixture;

spray drying said mixture to yield a resin containing said nonionic emulsifier said nonionic emulsifier having the formula $R{-}O{-}(CH_2CH_2O)_n\,H$ and R is selected from the group consisting of fatty acids polyol fatty acid esters, fatty alcohols, fatty amines, fatty amides, polypropylene oxides and alkylated phenols and N is an integer ranging from 1 to about 50;

forming a paste with said resin and a suitable plasticizer with mixing; and thereafter

fusing a layer of said paste with heat to form a clear film.

15. A plastisol resin film product comprising: a polymer resin comprising

100 parts of a monomer selected from the group consisting of vinyl chloride, other monomers copolymerizable therewith and mixtures thereof;

from about 0.5 to about 3.0 parts of an anionic surfactant, per 100 parts of monomer;

from about 0.01 to about 0.1 parts of an oil soluble initiator, per 100 parts of monomer; and

from about 0.5 to about 3.0 parts of a fatty alcohol, per 100 parts of monomer; a plasticizer; and

from about 0.1 to about 5.0 parts per 100 parts of resin of at least one nonionic emulsifier having the formula $R{-}O{-}(CH_2CH_2{-}O)_nH$ wherein R is selected from the group consisting of fatty acids, polyol fatty acid esters, fatty alcohols, fatty amines, fatty amides, polypropylene oxides and alkylated phenols, and n is an integer ranging from 1 to about 50.

4,203,880

LUBRICANT COMPOSITION FOR HALOGEN-CONTAINING POLYMERS

Alfred Stoloff, Livingston, and Anthony L. Williams, Summit, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Nov. 13, 1978, Ser. No. 959,707
Int. Cl.[2] C08F *10/02, 14/06;* C08J *3/18*
U.S. Cl. 260—23 XA 22 Claims

1. A composition for improving the melt strength and processability of polymers formed from at least one halogen-containing ethylenically unsaturated compound, said composition comprising (1) an effective amount of a heat stabilizer for said polymers, (2) an effective amount of an external lubricant for said polymers, said lubricant being selected from the group consisting of paraffin oils, paraffin waxes, liquid and solid hydrocarbons and non-oxidized polyethylene waxes, and (3) an oxidized polymer wherein at least 50% of the repeating units are derived from ethylene and any remaining repeating units are derived from at least one α-olefin containing from 3 to 10 carbon atoms, wherein said oxidized polymer exhibits an acid number greater than 5 and a melt viscosity of from 1,000 to about 60,000 centipoises at a temperature of 140° C.

12. A halogen-containing polymer composition exhibiting improved melt strength and processability, said composition comprising (1) a halogen-containing polymer selected from the group consisting of homopolymers of vinyl chloride or vinylidene chloride and copolymers of vinyl chloride and vinylidene chloride with one another or with at least one copolymerizable ethylenically unsaturated compound, (2) an effective amount of a heat stabilizer for said halogen-containing polymer, (3) an effective amount of an external lubricant for said halogen-containing polymer, said lubricant being selected from the group consisting of paraffin oils, paraffin waxes, liquid and solid hydrocarbons and non-oxidized polyethylene waxes, and (4) from 0.05 to 1.5%, based on the weight of said halogen-containing polymer, of an oxidized polymer wherein at least 50% of the repeating units are derived from ethylene and any remaining repeating units are derived from at least one α-olefin containing from 3 to 10 carbon atoms, wherein said oxidized polymer exhibits an acid number greater than 5 and a melt viscosity of from 1,000 to about 60,000 centipoises at a temperature of 140° C.

4,203,881

POINTING COMPOUND

Peter Klezl, Vienna, Austria, assignor to ÖMV Aktiengesellschaft, Vienna, Austria

Filed Sep. 29, 1978, Ser. No. 947,060
Claims priority, application Austria, Oct. 4, 1977, 7058/77
Int. Cl.[2] C08L *23/06, 23/12, 23/16, 91/00*
U.S. Cl. 260—28.5 A 7 Claims

1. A composition of matter useful as a pointing compound comprising a mixture of:

(a) a mildly air-blown bitumen of the >B 70 standard type;

(b) at least 25% by weight of an amorphous polyolefin selected from polypropylene, polyethylene, and copolymers of propylene and ethylene having a molecular weight in the range of from 25,000 to 30,000, having a viscosity at 170° C. of 2,000 to 5,000 cp., a ring and ball softening point of 115°–125° C. and a penetration at 25° C. of 30 to 40 1/10 mm; and

(c) from 10% to 40% by weight of a high-boiling aromatic mineral oil having a viscosity in the range of 5–6 E°/20° C. (MD I) to 7–8 E°/100° C. (MD V).

4,203,882

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS BASED ON MODIFIED POLYPROPYLENE

Guido Bertelli; Pierpaolo Roma, and Renato Locatelli, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Oct. 24, 1978, Ser. No. 954,206
Claims priority, application Italy, Oct. 27, 1977, 29042 A/77
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—28.5 A 5 Claims

1. Impact resistant polymeric compositions endowed with flame-resistance properties, comprising as the essential components:

(1) a blend consisting of (a) 95–80% by weight of a thermoplastic propylene-ethylene block copolymer containing from 3 to 20% by weight of copolymerized ethylene and having a flow index, measured at 230° C. according to ASTM D 1238 condition L standards, between 0.2 and 1, and an elasticity modulus at 23° C., measured according to ASTM D 790 standards, of at least 1100 MN/m^2, and (b) from 5–20% by weight of an elastomeric ethylene-propylene copolymer containing from 50 to 70% by weight of copolymerized ethylene and having a Mooney viscosity ML (1+4) at 100° C. comprised between 50 and 100;

(2) from 0.5 to 5%, preferably from 0.9 to 1.7%, of basic bismuth carbonate $(BiO)_2CO_3$;

(3) from 0.3 to 1.3% of a triazine compound selected from the group consisting of melamine, ammeline, ammelide, acetoguanamine, benzoguanamine and isocyanuric acid;

(4) from 2 to 10% of a chlorinated paraffin wax containing from 40 to 70% by weight of chlorine;

(5) from 0.5 to 10% of a brominated organic compound selected from the group consisting of decabromodiphenyl oxide, octabromodiphenyl oxide, pentabromodiphenyl oxide, 1,2-bis(2,4,6-tribromo-phenoxy)ethane, pentabromophenol, pentabromotoluene and ethyl-pentabromobenzene;

the total quantity of the two halogenated additives ranging from 5 to 15% and all the percentages of anti-flame additives being referred to the total weight of the composition.

4,203,883

AQUEOUS COLLOIDAL DISPERSIONS OF TERTIARY AMINE SALTS OF UREA-URETHANE POLYMERS AND METHOD FOR MANUFACTURE

David G. Hangauer, Jr., Buffalo, N.Y., assignor to Textron, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 729,091, Oct. 4, 1976, abandoned. This application Sep. 5, 1978, Ser. No. 939,667
Int. Cl.[2] C08L *75/04*
U.S. Cl. 260—29.2 TN 67 Claims

1. A stable, aqueous colloidal dispersion of urea-urethane polymer salt which dispersion is infinitely dilutable with water, and which polymer salt consists essentially of tertiary amine salt of urea-urethane polymer prepared by reaction of carboxylic group-containing, isocyanate-terminated urethane prepolymer and polyamine, said prepolymer being the reaction product of polyisocyanate and polyol having sufficient carboxylic groups which are relatively non-reactive with isocyanate to provide said prepolymer with an acid value of about 17 to 60 on an unneutralized solids basis, said polyisocyanate being selected from the group consisting of aliphatic diisocyanates, alicyclic diisocyanates, toluene diisocyanate and xylene diisocyanate and said polyamine consisting essentially of triamine, wherein said polyamine components have at least two amine groups selected from the group consisting of primary amine groups and secondary amine groups reactive with isocyanate groups, said polyamine having on the average at least about 2.2 amine nitrogen atoms having active hydrogen per molecule of polyamine, said polymer salt having sufficient carboxylic groups in tertiary amine salt form to provide said stable, aqueous, colloidal dispersion.

4,203,884

THERMOPLASTIC COMPOSITIONS OF POLYNORBORNENE AND POLYOLEFIN RESIN

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 19, 1979, Ser. No. 31,576
Int. Cl.[2] C08L *23/06, 23/12*
U.S. Cl. 260—33.6 AQ 36 Claims

1. A composition comprising a blend of about 1–99 parts by weight of thermoplastic crystalline polyolefin resin, about 99–1 parts by weight of polynorbornene per 100 total parts by weight of polyolefin resin and polynorbornene, and sufficient plasticizer to lower the glass transition temperature of the polynorbornene to within the rubbery range.

4,203,885

PROCESS FOR THE MONONITRATION OF ANTHRAQUINONE

Walter Hohmann; Klaus Wunderlich, both of Leverkusen, and Helmut Seidler, Bonn-Bad Godesberg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 835,938, Sep. 22, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,358
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646649
Int. Cl.[2] C07C *49/68*
U.S. Cl. 260—369 13 Claims

1. Process for the preparation of 1-nitro-anthraquinone with yields of about 74 to 80% relative anthraquinone employed, by the mononitration of anthraquinone with nitric acid/sulphuric acid mixtures, which consists of nitrating anthraquinone in a nitric acid/sulphuric acid mixture in a two phase system consisting of a liquid organic phase and a liquid inorganic phase, in which the weight ratio of nitric acid to sulphuric acid is about 1:1 to about 2:1, in which the weight ratio of sulphuric acid to anthraquinone is about 0.5:1 to about 1:1 and in which the weight ratio of sulphuric acid to water is about 2.5:1 to about 5.1:1, the weight ratios relating to the sum of the materials employed, the nitric acid being employed in a concentration of about 90 to 100% by weight and the sulfuric acid being employed in a concentration of about 70 to 85% by weight at temperatures in the range from about 45° to 70° C. until the anthraquinone content is less than 3% by weight, relative to the sum of the anthraquinone compounds.

4,203,886

FLAME-RETARDANT SILICONE COMPOSITION HAVING X-RAY SHIELDING ABILITY

Akira Hirai; Kazuyuki Nishimoto, both of Katano, and Hisataka Kuroki, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1978, Ser. No. 955,757
Claims priority, application Japan, Nov. 15, 1977, 52-137535
Int. Cl.[2] C08K *3/30, 3/24, 3/16*
U.S. Cl. 260—37 SB 10 Claims

1. A flame-retardant silicone composition having X-ray shielding ability characterized in that at least one of barium titanate, barium fluoride and lead sulfate is incorporated as an X-ray shielding substance in a silicone composition containing platinum or a platinum compound as a flame-retardant.

4,203,887

MODIFIED POLYESTER COMPOSITION

Edwin J. Goedde, Mt. Vernon, Ind.; Fred F. Holub, Schenectady, N.Y., and Phillip S. Wilson, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 19, 1978, Ser. No. 870,679
Int. Cl.[2] C08K *3/36, 7/14, 9/06;* C08L *67/02*
U.S. Cl. 260—40 R 17 Claims

1. A thermoplastic composition comprising:

(a) a polyester composition comprising, in intimate admixture, a poly(1,4-butylene terephthalate) resin and a poly(ethylene terephthalate) resin and

(b) an amount of up to 60 parts per 100 parts by weight of (a) and (b) of a modifier therefor comprising:

(i) a silane-treated clay;

(ii) acicular calcium metasilicate;

(iii) a combination of a segmented copolyester and an aromatic polycarbonate; or

(iv) novaculite, or a mixture thereof, said composition being more readily moldable to articles having improved dimensional stability in comparison with the corresponding compositions wherein the modifer is not present.

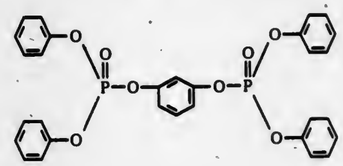
4,203,888

POLYESTER FILMS

Robert B. Rashbrook, Hatfield, England, assignor to ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 488,232, Jul. 12, 1974, abandoned. This application Jan. 23, 1976, Ser. No. 651,779
Claims priority, application United Kingdom, Mar. 5, 1974, 9823/74
Int. Cl.[2] C08K *5/51*
U.S. Cl. 260—45.7 P 6 Claims

1. A polyester composition which comprises a linear polyester as the main component and from 5 to 20% by weight based on the polyester, of an organic diphosphate of the formula:



4,203,889

POLYURETHANE COMPOSITIONS STABILIZED WITH KETOXIMES

Eugene Y. C. Chang, and Samuel Kaizerman, both of Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 371,816, Jun. 20, 1973, abandoned. This application Dec. 18, 1974, Ser. No. 534,026
Int. Cl.[2] C08K *5/34*
U.S. Cl. 260—45.8 NT 22 Claims

1. A polyurethane containing a stabilizing amount of a mixture of co-operative amounts of (1) an organic oxime selected from the group consisting of acetoxime and cyclohexanone oxime, (2) an ultraviolet light absorber selected from the group consisting of 2,2'-dihydroxy-4-methoxybenzophenone and 2-(2-hydroxy-3,5-di-t-butylphenyl)-5-chlorobenzotriazole and (3) a phenolic antioxidant selected from the group consisting of 2,2'-methylenebis(4-methyl-6-tert.butylphenol), 4,4'-butylidenebis(6-t-butyl-m-cresol), the reaction product of (a) dicyclopentadiene, (b) formaldehyde and (c) isobutylene and 2,2'-methylenebis-(6-nonyl-p-cresol).

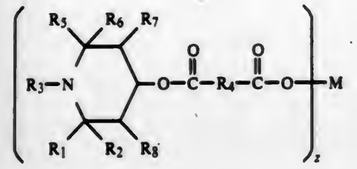
4,203,890

HINDERED PIPERIDINE CARBOXYLIC ACIDS, METAL SALTS THEREOF AND STABILIZED COMPOSITIONS

Chester E. Ramey, Spring Valley, and John L. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 671,910, Mar. 29, 1976, Pat. No. 4,101,509.
This application May 30, 1978, Ser. No. 910,553
The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.
Int. Cl.[2] C08K *5/34*; C07D *211/46*
U.S. Cl. 260—45.8 N 12 Claims

1. A compound of the formula



wherein

R_1 and R_2 independently of each other are straight- or branched-chain alkyl having from 1 to 6 carbon atoms, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group,

R_3 is hydrogen, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 to 4 carbon atoms, propargyl, benzyl, or alkyl substituted benzyl, or acyl,

R_4 is 1,2-cycloalkylene or 1,2-cycloalkenylene having 4 to 6 carbon atoms, 2,3-bicycloalkylene or 2,3-bicycloalkenylene having 7 to 8 carbon atoms or 1,2- 1,3- or 1,4-phenylene,

M is hydrogen or a metal selected from the group consisting of barium, calcium, magnesium, sodium, and potassium,

z has a value of from 1 to 4, the value of z being the same as the available valence of M, and either

(a) R_5 is alkyl of 2 to 6 carbon atoms, R_6 is alkyl of 1 to 6 carbon atoms, and R_7 and R_8 are independently hydrogen or alkyl of 1 to 5 carbon atoms, provided that R_7 and R_8 are not both hydrogen, or

(b) R_5 and R_6 together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a metyl group and R_7 and R_8 are independently hydrogen or alkyl of 1 to 5 carbon atoms.

4,203,891

METHOD OF COLLECTING ANTI-HEMOPHILIC FACTOR VIII FROM BLOOD AND BLOOD PLASMA USING HEPARIN OR SODIUM HEPARIN

Gail A. Rock, 270 Sandridge Rd., Ottawa, Ontario, Canada

Filed Dec. 29, 1977, Ser. No. 865,656
Claims priority, application Canada, Dec. 19, 1977, 293393
Int. Cl.[2] C07G *7/00*
U.S. Cl. 260—112 B 7 Claims

1. A method for recovering antihemophilic Factor VIII from whole blood or blood plasma or blood plasma fractions which comprises collecting whole blood or blood plasma or blood plasma fractions from a donor directly into an anticoagulant agent selected from the group of heparin, sodium heparin, or mixtures thereof which agent does not reduce the physiological concentration of calcium in the whole blood or blood plasma or flood plasma fraction and recovering the desired antihemophilic Factor VIII.

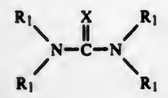
4,203,892

METHOD OF PROTECTING PROTEINS FOR ANIMAL FEED

Mendel Friedman, Moraga, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 17, 1978, Ser. No. 897,083
Int. Cl.[2] A23K *1/00*; C08H *1/00*
U.S. Cl. 260—112 R 7 Claims

1. A method for producing modified proteinaceous feed materials for ruminant animals, which comprises contacting a proteinaceous feed material with a compound of the structure-



wherein:

X is oxygen or sulfur

R_1 is independently hydrogen or lower alkyl containing 1-5 carbon atoms and containing at the alpha position hydroxyl, chlorine, bromine, iodine, alkoxyl, alkenoxyl, aryloxyl, substituted aryloxyl, and aryl-substituted alkoxyl and alkenoxyl, and wherein at least one R_1 is not hydrogen,

for a time and in an amount sufficient to chemically modify the proteinaceous material to protect it against microbial degradation in the rumen of the animal but render it capable of degradation and digestion in the intestines of the animal.

4,203,893

COUPLING PRODUCTS OF CYTIDINE-DIPHOSPHOCHOLINE AND AMINO-COMPOUNDS FOR PHARMACEUTICAL USE

Pierre Pery, Villepreux; Gerard Luffau; Joelle Poulain nee Charley, both of Plaisir, and Agnes Petit, Thiverval Grignon, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed Aug. 30, 1978, Ser. No. 937,972
Claims priority, application France, Sep. 7, 1977, 77 27151
Int. Cl.[2] C08H *1/00*; A61K *37/02*
U.S. Cl. 260—121 7 Claims

1. Coupling products of cytidine-diphosphocholine and amino compounds selected from the group consisting of human albumin serum, ovalbumin, gelatin, lectins hemocyanine, limule, bacterial bodies, salmonellae flagellae, soya, lysine polymers having a degree of polymerization higher than 2, and synthetic polymers of amino acids possessing several lysine residues among compounds bearing free—NH_2 groups and compounds on which it is possible to fix lysine selected from the group consisting of polysaccharides and epichlorhydrin polymers, the coupling bond being formed after oxidation of the cytidine-diphosphocholine, under alkaline conditions between the oxidized ribose groups of the latter and the lysine residues of said amino compounds.

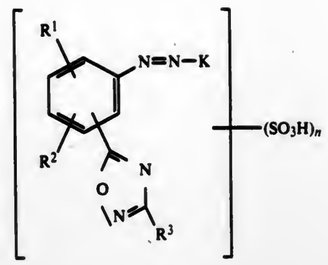
4,203,894

AZO DYES CONTAINING SULFONIC ACID GROUPS AND OXDIAZOLYL RADICALS

Walter Kurtz, Bad Durkheim, and Johannes Dehnert, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,753
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709660
Int. Cl.[2] C09B *29/02, 29/16, 29/30, 29/36*
U.S. Cl. 260—156 10 Claims

1. An acid azo dye which in the form of the free acid has the formula



where

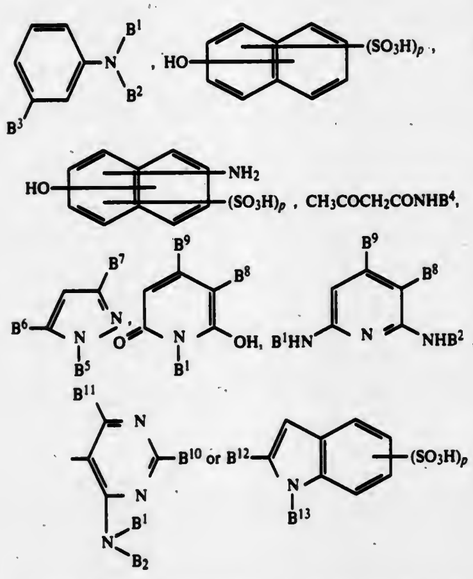
R^1 is hydrogen, chlorine or bromine,

R^2 is hydrogen, chlorine, bromine, nitro, methyl or trifluoromethyl,

R^3 is hydrogen; C_1 to C_8 alkyl; C_1 to C_8 alkyl substituted by hydroxy, C_1 to C_8 alkoxy or phenoxy; C_2 to C_8 alkyl interrupted by oxygen and substituted by hydroxy or phenyl; benzyl; phenylethyl; cyclohexyl; phenyl; phenyl substituted by chlorine, bromine, nitro, methyl, ethyl, methoxy, ethoxy, phenoxy or di-C_1 to C_4-alkylamino; naphthyl; pyridyl; thienyl; or furyl;

n is 1, 2 or 3 and

K is



where B^1 and B^2 independently of one another are hydrogen; C_1 to C_4 alkyl; C_2 to C_4 alkyl substituted by hydroxy, cyano, C_1 to C_4 alkoxy, C_1 to C_4 alkanoyloxy or C_1 to C_4 alkoxycarbonyl; C_3 to C_9 alkyl interrupted by oxygen and substituted by hydroxy or phenyl; cyclohexyl; benzyl; phenylethyl or phenyl;

B^3 is hydrogen, chlorine, methyl, C_1 to C_4 alkanoylamino or hydroxysulfonyl,

B^4 is phenyl or phenyl substituted by chlorine, bromine, methyl, ethyl, methoxy or ethoxy,

B^5 is hydrogen, C_1 to C_4 alkyl, cyclohexyl, benzyl, phenyl or phenyl substituted by chlorine, bromine, methyl or ethyl,

B^6 is hydroxy or amino,

B^7 is hydrogen, methyl, carbamoyl or C_1 to C_4 alkoxycarbonyl,

B^8 is cyano or carbamoyl,

B^9 is hydrogen, hydroxy or methyl,

B^{10} is B^1 or



B^{11} is B^1 or



B^{12} is methyl or phenyl,

B^{13} is hydrogen, methyl, β-cyanoethyl, β-hydroxyethyl, β-carboxyethyl or β-carbamoylethyl and

p is 0, 1 or 2 and the n hydroxysulfonyl groups are present in the radicals R^3 or K or in the ring bearing the substituents R^1 and R^2.

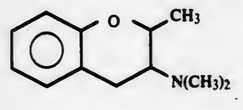
4,203,895

PROCESS FOR THE PREPARATION OF CIS-(±)-3,4-DIHYDRO-N,N,2-TRIMETHYL-2H-1-BENZOPYRAN-3-AMINE AND INTERMEDIATES PRODUCED THEREBY

Robert F. Parcell, Lakeland, Fla., and Ivan C. Nordin, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,403
Int. Cl.[2] C07D *230/02, 311/04*
U.S. Cl. 260—239 E 66 Claims

1. A process for preparing cis-(±)-3,4-dihydro-N,N,2-trimethyl-2H-1-benzopyran-3-amine having the formula I:

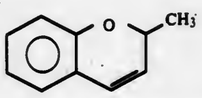


I

(cis)

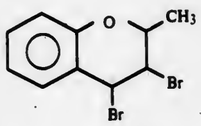
which comprises the following steps:

1. reacting a solution of 2-methyl-2H-1-benzopyran having the formula II:



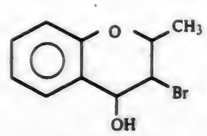
II

in water and a nonreactive, water-miscible solvent, with bromine to obtain, in situ, 3,4-dibromo-3,4-dihydro-2-methyl-2H-1-benzopyran having the formula IIa:



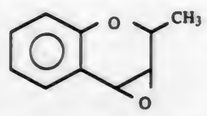
IIa

2. treating the reaction mixture of Step 1 with water and neutralizing with alkali to obtain 3,4-dihydro-3-bromo-2-methyl-2H-1-benzopyran-4-ol having the formula III:



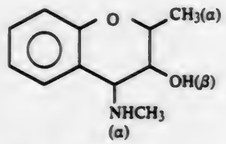
III

3. reacting compound III in water or a water miscible solvent with aqueous solution of methylamine to form, in situ, 3,4-epoxy-2-methylbenzopyran having the formula IIIa:



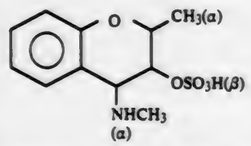
IIIa

and continuing the reaction to form (2α,3β,4α)-(±)-3,4-dihydro-2-methyl-4-(methylamino)-2H-1-benzopyran-3-ol having the formula IV:



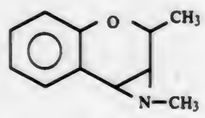
IV

4. reacting sulfuric acid in a hydrocarbon solvent or a halogenated hydrocarbon solvent with compound IV at a temperature above 110° C. to obtain (2α,3β,4α)-(±)-3,4-dihydro-2-methyl-4-(methylamino)-2H-1-benzopyran-3-ol, hydrogen sulfate ester having the formula V:



V

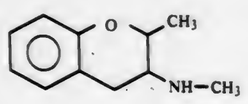
5. heating compound V and an alkali metal hydroxide to obtain (1aα,2β,7bα)-(±)-1,1a,2,7b-tetrahydro-1,2-dimethyl[1]benzopyrano[3,4-b]azirine having the formula VI:



VI

cis

6. subjecting a solvent solution of compound VI to catalytic hydrogenation to effect ring opening and formation of cis-(±)-3,4-dihydro-N,2-dimethyl-2H-1-benzopyran-3-amine having the formula VII:



VII

cis

7. methylating a solvent solution of compound VII at a temperature of from about 10° C. to about 150° C. for from about 20 minutes to about 48 hours to obtain compound I in the form of the free base or the non-toxic pharmaceutically acceptable salt thereof.

4,203,896

ACETOXY AZETIDIN-2-ONE ANTIBIOTICS VIA THIAZOLIDINE RING CLEAVAGE

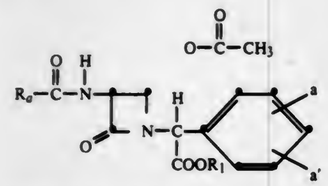
Gary A. Koppel, and Robin D. G. Cooper, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 855,841, Nov. 30, 1977, Pat. No. 4,144,232, which is a continuation-in-part of Ser. No. 753,980, Dec. 23, 1976, abandoned. This application Nov. 28, 1978, Ser. No. 964,401

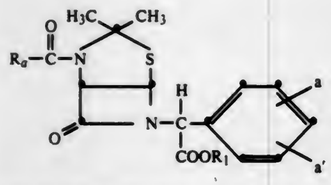
Int. Cl.² C07D *205/08*

U.S. Cl. 260—239 A **7 Claims**

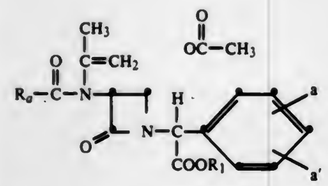
1. The process for preparing a trans-4-acetoxyazetidin-2-one compound of the formula



which comprises heating at a temperature between about 25° and about 75° C. a thiazolidine azetidinone compound of the formula



with mercuric acetate in the presence of acetic acid to form the N-propenyl trans-4-acetoxyazetidin-2-one amide of the formula



and hydrolyzing under acidic conditions said 4α-acetoxyazetidin-2-one amide, wherein R_a is C_1-C_3 alkyl, phenyl, benzyl, or phenoxymethyl; R_1 is hydrogen or a carboxylic acid protecting ester forming group; and a and a′ independently are hydrogen, halogen, hydroxy, protected hydroxy, C_1-C_4 alkyl, C_1-C_4 alkoxy, protected amino or protected aminomethyl.

4,203,897

PENAM DERIVATIVES

Takashi Kamiya, Sulta; Tsutomu Teraji; Masashi Hashimoto, both of Toyonaka; Osamu Nakaguti, Nagaicho-higashi, and Teruo Oku, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

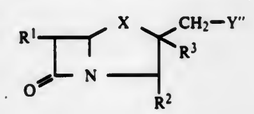
Division of Ser. No. 867,623, Jan. 6, 1978, which is a division of Ser. No. 648,491, Jan. 12, 1976, Pat. No. 4,084,049, which is a division of Ser. No. 407,962, Oct. 19, 1973, Pat. No. 3,954,732. This application Apr. 23, 1979, Ser. No. 32,293

Claims priority, application Japan, Nov. 8, 1972, 47-112348; Dec. 12, 1972, 47-1201; Dec. 12, 1972, 47-128657; Dec. 20, 1972, 47-128659; Dec. 22, 1972, 47-2270; Aug. 1, 1973, 48-87108

Int. Cl.² C07D *499/44*

U.S. Cl. 260—239.1 **4 Claims**

1. A compound of the general formula:



wherein R^1 is a conventional, pharmaceutically acceptable acylamino, R^2 is carboxy or a conventionally protected carboxy, X is —S— or



R^3 is lower alkyl and Y″ is azido.

4,203,898

AMIDE DERIVATIVES OF VLB, LEUROSIDINE, LEUROCRISTINE AND RELATED DIMERIC ALKALOIDS

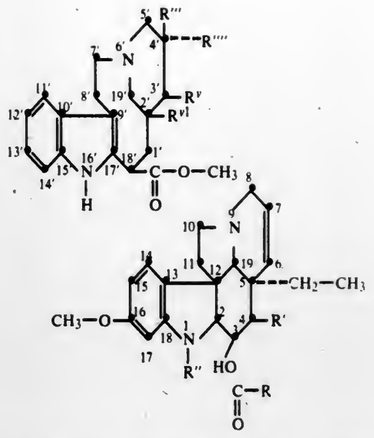
George J. Cullinan, Trafalger, and Koert Gerzon, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 828,693, Aug. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 721,650, Sep. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 539,681, Jan. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 446,869, Feb. 28, 1974, abandoned, which is a continuation-in-part of Ser. No. 347,275, Apr. 2, 1973, abandoned. This application Oct. 25, 1978, Ser. No. 954,514

Int. Cl.² C07D *519/04*

U.S. Cl. 260—244.4 **23 Claims**

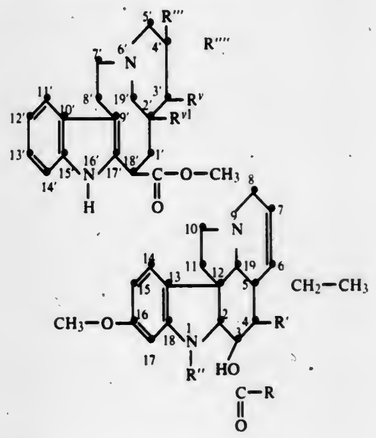
1. A compound of the formula



I

wherein R is NH_2, NH—NH_2, $N(CH_3)_2$, N_3, NH—CH_2—Y wherein Y is H, CN, CHO, CH(O—C_1-C_3-alkyl)$_2$, NH—C_2—C_6-alkyl-X, NH—C_2-C_6-alkyl-$(OH)_{1-3}$, NH—$(CH_2)_n$—OAc, NH—$(CH_2)_n$—OCH_3, n is 2 or 3, X is SY′, NH_2, $NHCH_3$, $N(CH_3)_2$, NHAc, CN, H, phenyl, or COOH, Y′ is H, or C_1-C_3-alkyl and Ac is C_1-C_{17}-alkyl-CO or C_2-C_7-alkenyl-CO, pyrrolidinyl or NH—C_3-C_8-cycloalkyl; R′ is H, OH, O—(C_1-C_3)-alkanoyl or O-chloro-(C_1-C_3)-alkanoyl, R″ is hydrogen, methyl or formyl, one of R‴ and R⁗ is hydrogen or hydroxyl and the other is ethyl, and R^v and R^{vi} are hydrogen or hydroxyl, with the proviso that, when either R‴ or R⁗ is hydrogen, R^v and R^{vi} must also be hydrogen and pharmaceutically-acceptable salts thereof.

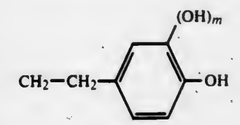
22. A compound of the formula



I

wherein

R is CH_2—CH=CH_2, CH_2—C≡CH, or



wherein m is 0 or 1;

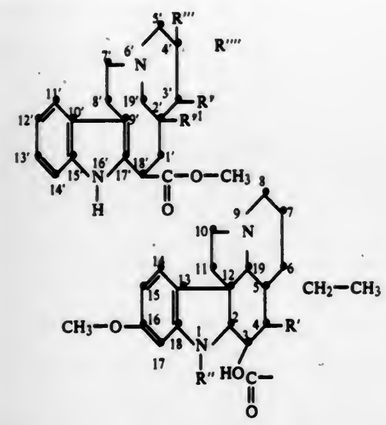
R′ is H, OH, O—(C_1-C_3)-alkanoyl or O-chloro-(C_1-C_3)-alkanoyl, R″ is hydrogen, (C_1-C_3)-alkyl or formyl, one of

R''' and R'''' is hydrogen or hydroxyl and the other is ethyl, and R^{v} and R^{vi} are hydrogen or hydroxyl, with the proviso that, when either R''' or R'''' is hydrogen, R^{v} and R^{vi} must also be hydrogen and pharmaceutically-acceptable salts thereof.

23. A compound of the formula

$$Q\text{—}NH\text{—}(CH_2)_p\text{—}S\text{—}S(CH_2)_p\text{—}NH\text{—}Q$$

wherein p is 2 or 3 and Q is



wherein R' is H, OH, O—(C_1–C_3)-alkanoyl or O-chloro-(C_1–C_3)-alkanoyl, R'' is hydrogen, (C_1–C_3)-alkyl or formyl, one of R''' and R'''' is hydrogen or hydroxyl and the other is ethyl, and R^{v} and R^{vi} are hydrogen or hydroxyl, with the proviso that, when either R''' or R'''' is hydrogen, R^{v} and R^{vi} must also be hydrogen and pharmaceutically-acceptable salts thereof.

4,203,899

THIAZOLYLACETAMIDO COMPOUNDS

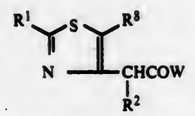
Michihiko Ochiai, Suita; Taiiti Okada, Kyoto; Osami Aki, Kawanishi; Akira Morimoto, Ikeda; Kenji Kawakita, Suita, and Yoshihiro Matsushita, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 642,356, Dec. 19, 1975, Pat. No. 4,098,888. This application Apr. 17, 1978, Ser. No. 897,239

Int. Cl.^{2} A61K *31/545*; C07D *277/44*

U.S. Cl. 548—194 **12 Claims**

1. A compound of the formula:



wherein R^{1} represents amino, protected amino, hydroxyl or protected hydroxyl, R^{2} represents amino, protected amino, hydroxyl, protected hydroxyl or the group



represents a group of the formula



wherein R^{5} is hydroxy or lower alkoxy, R^{8} represents hydrogen or a halogen and W represents hydroxyl, C_{1-4} alkoxyl, halogen, or OM wherein M is an alkali metal.

4,203,900

PROCESS FOR PREPARING 2-OXAZOLINES

Mark E. Kaiser, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 3, 1977, Ser. No. 756,146

Int. Cl.^{2} C07D *263/12, 263/14*

U.S. Cl. 548—239 **12 Claims**

1. A cyclodehydration process for preparing a 2-oxazoline comprising reacting by contacting in liquid phase (a) an N-(2-hydroxyalkyl)or N-(inertly-substituted 2-hydroxyalkyl) carboxamide or a carboxylic acid/amine salt precursor of said carboxamides with (b) a small but catalytic amount of a soluble inorganic iron-containing compound, said iron-containing compound not being an iron oxide.

4,203,901

PROCESS FOR MAKING N-(N'-METHYLENEPYRROLIDONYL)-2-SUBSTITUTED ANILINES

Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 892,146, Mar. 31, 1978, Ser. No. 928,569, Jul. 29, 1978, Ser. No. 935,354, Aug. 21, 1978, Ser. No. 942,644, Sep. 15, 1978, and Ser. No. 955,483, Oct. 26, 1978. This application Nov. 20, 1978, Ser. No. 962,305

Int. Cl.^{2} C07D *207/44*

U.S. Cl. 260—326.5 S **3 Claims**

1. A process for making intermediate compounds having the formula:

where

R is

alkyl, C_1–C_6,

alkenyl, C_3–C_5,

$-(CH_2)_n$, OR'' wherein n'=1-3, and R'' is alkyl, C_1–C_3,



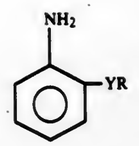
where n'=0–3,

R' is hydrogen or alkyl, C_1–C_3 and

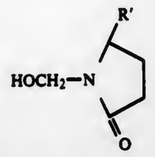
Y is oxygen or sulfur,

which comprises:

(a) heating a reaction mixture containing substantially equivalent molar amounts of a 2-substituted aniline having the formula:



and an N-hydroxy methylenepyrrolidone having the formula:



where R, R' and Y are as defined above, in a solvent, under non-catalyzed conditions, at a reflux temperature of about 80°–140° C.,

(b) simultaneously and continuously distilling out from the reaction mixture an azeotrope consisting essentially of water and solvent until substantially all the water produced during the reaction has been removed thereby, and thereafter,

(c) crystallizing the product from the remaining solution.

4,203,902

PROCESS FOR PREPARING 6- AND 2-SUBSTITUTED-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACIDS

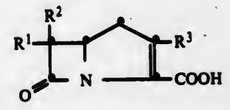
David H. Shih, Edison, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 21, 1978, Ser. No. 898,591

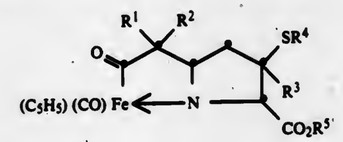
Int. Cl.^{2} C07D *487/04*

U.S. Cl. 260—326.31 **2 Claims**

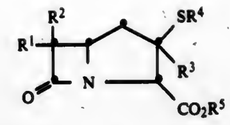
1. A process for preparing:



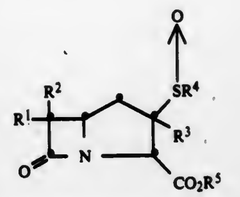
wherein R^{1} and R^{2} are independently selected from hydrogen, alkyl and hydroxyl-substituted alkyl having 1 to 6 carbon atoms, benzyl, and phenyl; R^{3} is hydrogen, —R, —OR, and —SR wherein R is hydrogen and substituted and unsubstituted: alkyl having 1–6 carbon atoms, phenyl, and benzyl wherein the substituent is amino; consisting of treating:



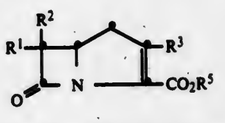
with an oxidizing agent selected from Ag_2O, CuO, PbO_2, or Cl_2 to yield:



followed by treating with an oxidizing agent selected from m-chloroperbenzoic acid, H_2O_2, perbenzoic acid or peracetic acid to yield:



which is treated with base selected from triethylamine, piperidine, pyridine, or diisopropylamine to yield:



wherein: R^{4} is phenyl and R^{5} is hydrogen or benzyl; when R^{5} is benzyl, the benzyl group is removed by hydrogenolysis to yield the free acid.

4,203,903

PROCESS FOR THE RECOVERY OF SPECTINOMYCIN

Timothy W. Evans, Three Rivers, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 10, 1979, Ser. No. 37,492

Int. Cl.^{2} C07D *319/08*

U.S. Cl. 260—340.3 **12 Claims**

11. A process for removing inorganic salts from an aqueous concentrate containing spectinomycin and said inorganic salts which comprises adding benzoic acid or a salt thereof, and a water-miscible solvent to said concentrate adjusted to a pH of about 5 to about 9.

4,203,904

ALKYLATION OF ANILINE WITH A LACTONE IN THE PRESENCE OF A BASE

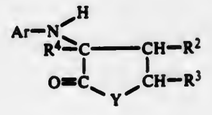
Richard N. Reynolds, Jr., Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 27, 1978, Ser. No. 928,481

Int. Cl.^{2} C07D *307/32, 207/26, 333/36*

U.S. Cl. 260—343.6 **9 Claims**

1. A process for making a compound of the formula



wherein

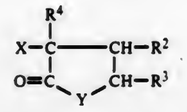
Ar is phenyl or phenyl substituted with the same or different substituents selected from 1 to 5 alkyl or alkoxy groups of 1 to 4 carbon atoms; 1 to 2 fluoro, chloro, iodo or bromo; and 1 nitro;

R^2, R^3 and R^4 are hydrogen or alkyl of 1 to 4 carbon atoms; and

Y is O, S or N—R where R is H or alkyl of 1 to 4 carbon atoms,

which comprises:

contacting and reacting a compound of the formula



wherein X is chloro, iodo or bromo; Y, R^2, R^3 and R^4 are as previously defined;

with an aniline compound, unsubstituted or substituted in the aromatic ring with the same or different substituents selected from 1 to 5 alkyl or alkoxy groups of 1 to 4 carbon atoms; 1 to 2 fluoro, chloro, iodo or bromo; and 1 nitro, in the presence of water and an inorganic base in a reaction zone at a temperature between 80° and 160° C. to form the compound of Formula I, and wherein the base is added sufficiently slowly to the reaction zone so that the pH does not exceed about 7.5.

4,203,905

METHOD FOR PREPARING STABLE, LIQUID TETRAHYDROPHTHALIC ANHYDRIDE FOR USE IN PREPARING POLYESTERS

Marvin Z. Woskow, Houston, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 541,315, Jan. 15, 1975, abandoned. This application Aug. 17, 1978, Ser. No. 934,505

Int. Cl.² C07D *307/24*

U.S. Cl. 260—346.3 **6 Claims**

1. A method for preparing tetrahydrophthalic anhydride for use in preparing polyesters and characterized as a stable, liquid form for transportation and storage having viscosity of less than 10 poise at a temperature of 50° C. comprising the steps of:

(a) heating a glycol having 2 to 9 carbon atoms to a temperature in the range of 100° to 120° C.,

(b) adding molten cis-Δ^4-tetrahydrophthalic anhydride to said glycol at a rate which does not cause the temperature of the mixture to rise in increments of more than 5° F. said temperature being maintained below 155° C., said anhydride being added to a final mole ratio of glycol to anhydride in the range of about 0.8 to 1.2:1,

(c) reacting said mixture under an inert gas blanket at a temperature in the range of 120° to 170° C. for a sufficient period of time to reduce the acid number of said mixture to a number in the range below the theoretical acid number for the half ester of said glycol and said anhydride, to not less than 165,

(d) cooling said reaction mixture to a temperature less than 155° C.,

(e) adding said glycol to said cooled reaction mixture to a mole ratio of glycol to anhydride in the range of 1.2 to 2:1, and

(f) cooling said mixture of glycol and reaction mixture to a temperature in the range of 40° to 70° C.

4,203,906

PROCESS FOR CATALYTIC VAPOR PHASE OXIDATION

Masahiro Takada; Hiroyuki Uhara, both of Tatsuno, and Takahisa Sato, Himeji, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 7, 1978, Ser. No. 922,791

Claims priority, application Japan, Jul. 13, 1977, 52-83036; Jul. 14, 1977, 52-83609; Jul. 20, 1977, 52-86010

Int. Cl.² C07D *307/89*

U.S. Cl. 260—346.4 **13 Claims**

1. A process for catalytic vapor phase oxidation which comprises using a fixed-bed shell and tube heat exchange type reactor in which a bundle of a multiplicity of tubes filled with at least one type of oxidizing catalyst are disposed in a shell and these tubes are passed through the apertures formed in at least one perforated shield plate to partition the inside of the shell into at least two heat transfer medium feed zones and in such a manner that each of the tubes passing through the perforated shield plate is not in direct contaction with the shield plate but the outer surface of the tube and the inner surface of the aperture are spaced apart by a distance of between 0.2–5 mm, supplying feed gas to the tubes of the reactor, and conducting exothermic catalytic vapor phase oxidation while controlling the temperatures for the heat transfer medium in each of the zones so that the temperature difference between each of the zones can be maintained between 0°–100° C.

4,203,907

PROCESS FOR PREPARING A FURANIC COMPOUND

Richard C. Cookson, Southampton, England; Karl-Heinrich Schulte-Elte, Onex, and Arnold Hauser, Petit-Lancy, both of Switzerland, assignors to Firmenich, S.A., Geneva, Switzerland

Filed Jun. 27, 1978, Ser. No. 919,484

Claims priority, application Switzerland, Jun. 28, 1977, 7902/77

Int. Cl.² C07D *307/38*

U.S. Cl. 260—346.11 **7 Claims**

1. A process for the preparation of 3-methyl-2-[3-methyl-but-2-en-1-yl]-furan which comprises the following subsequent steps:

(a) adding a 2-methyl-prop-2-en-1-yl magnesium halide to furfural to yield 2-[1-hydroxy-3-methyl-but-3-en-1-yl]-furan;

(b) reacting the thus obtained carbinol with an alkyl orthoacetate in the presence of a catalyst selected from the group consisting of carboxylic acids or an organic protonic acid having a pK_a of about 7 to 9 to give an alkyl 2-[3-methyl-but-3-en-1-ylidene]-2,3-dihydro-furyl-acetate;

(c) treating said ester with an acidic agent to given an alkyl 2-[3-methyl-but-2-en-1-yl]-furyl-acetate, and

(d) hydrolyzing and then decarboxylating the obtained alkyl furyl-acetate;

or

(c') hydrolyzing and then decarboxylating the alkyl 2-[3-methyl-but-3-en-1-ylidene]-2,3-dihydro-furyl acetate obtained in accordance with letter (b) above and

(d') isomerizing the terminal double bond of 3-methyl-2-[3-methyl-but-3-en-1-yl]-furan by means of a thermal treatment of this latter compound in the presence of palladium on charcoal.

4,203,908

MANUFACTURE OF CYCLIC ETHERS

Herbert Mueller, Frankenthal, and Otto H. Huchler, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 15, 1978, Ser. No. 942,654

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743345

Int. Cl.² C07D *307/08*

U.S. Cl. 260—346.11 **4 Claims**

1. A process for the manufacture of a cyclic ether by dehydrating a diol of 4 to 10 carbon atoms in the liquid phase over a dehydrating catalyst selected from the group of the bleaching earths, wherein the reaction is carried out in the presence of from 0.3 to 1.8 percent by weight, based on the amount of bleaching earth used, of an alkali metal or alkaline earth metal carbonate or bicarbonate.

4,203,909

FURAN COMPOUNDS

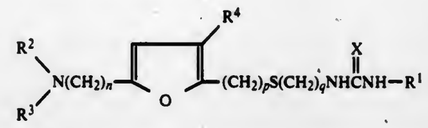
Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 945,968

Int. Cl.² C07D *307/54*

U.S. Cl. 260—347.2 **15 Claims**

1. A compound of the formula



wherein R^1 is a straight or branched chain alkynyl group containing from 3 to 9 carbon atoms, inclusive; R^2 and R^3 are the same or different and are hydrogen, (lower)alkyl, (lower-)alkenyl, (lower)alkynyl or Ar; R^4 is hydrogen or (lower)alkyl; n is an integer of from 1 to 6; p is 1 or 2 and q is 2 or 3, provided that the sum of p and q is 3 or 4; X is NR^5 or CHR^5; R^5 is cyano, nitro, SO_2Ar or SO_2(lower)alkyl; and Ar is phenyl or phenyl containing one or two substituents independently selected from (lower)alkyl and halogen, or a nontoxic, pharmaceutically acceptable salt thereof.

4,203,910

BORIDE CATALYST FOR EPOXIDIZING OLEFINIC COMPOUNDS

Robert M. Gipson, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Continuation of Ser. No. 814,520, Jul. 11, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 10,184

Int. Cl.² C07D *301/20*

U.S. Cl. 260—348.29 **2 Claims**

1. A method for the liquid phase epoxidation of an olefin having from about 2 to about 60 carbon atoms with an organic hydroperoxide comprising the step of:

intimately contacting said olefin with said organic hydroperoxide at lower temperatures of about 25° C. to about 200° C. and pressures sufficient to maintain the product and reactants substantially in liquid phase in the presence of a catalytically effective amount of a binary boride compound consisting of boron and nitrogen.

4,203,911

PROCESS FOR CONJUGATING UNCONJUGATED UNSATURATION OF FATTY ACIDS OR ESTERS THEREOF

Daniel A. Scarpiello, Parma Heights, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,560

Int. Cl.² C09F *7/08*; C11C *3/14*

U.S. Cl. 260—405.6 **6 Claims**

1. In a process for conjugating unconjugated unsaturation in polyunsaturated lipid feedstock by contacting said feedstock with a sulfided nickel catalyst in an agitated reaction zone, the improvement which comprises:

establishing and maintaining in said reaction zone a positive hydrogen pressure of not substantially above about 10 psig, a catalyst concentration of about 0.2 to 3% nickel by weight, and a temperature of between about 200° and 250° C. until substantially maximum conjugation of said feedstock occurs.

4,203,912

COMPOSITIONS CONTAINING PLATINUM

Paul C. Hydes, and Bernard W. Malerbi, both of Reading, England, assignors to Johnson, Matthey & Co., Limited, London, England

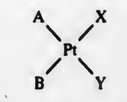
Filed Oct. 18, 1978, Ser. No. 952,607

Claims priority, application United Kingdom, Oct. 19, 1977, 43493/77; May 18, 1978, 20460/78

Int. Cl.² C07F *15/00*

U.S. Cl. 260—429 R **3 Claims**

1. A cis co-ordination compound of platinum having the structure



in which X and Y are the same or different ligands selected from sulphate, phosphate, nitrate, tartronate, benzylmalonate, cyclobutane-1, 1-dicarboxylate, phthalate, oxalate, tartrate, pyruvate, gluconate, succinato, glutarato, adipato, pimelato and malato and water and A and B are the same or different alicyclic amines selected from cyclopentamine and cyclohexylamine co-ordinated to the Pt through their N atoms, such that the platinum is present as Pt^{2+}.

4,203,913

STABILIZATION OF ORGANOPOLYSILOXANES

Jurgen Burkhardt, Halsbach, and Karl-Heinrich Wegehaupt, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 17, 1976, Ser. No. 687,064

Claims priority, application Fed. Rep. of Germany, May 30, 1975, 2524041

Int. Cl.² C07F *7/04*

U.S. Cl. 556—401 **14 Claims**

1. A method for stabilizing the viscosity of organopolysiloxanes prepared in the presence of phosphoronitrile chlorides, which comprises treating the organopolysiloxane with a basic nitrogen compound selected from the class consisting of ammonia, an amine of the general formula

$$YHNC(CH_3)_n(CH_2X)_{3-n}$$

and mixtures thereof in which X is selected from the class consisting of a radical of the formulae $—OCH_3$, $—N(CH_3)_2$, $—C(CH_3)_3$, $—C(CH_3)_2NHY$ and $—OC(CH_3)_3$ and a hydrogen atom, Y is selected from the class consisting of hydrogen and a trimethylsilyl radical, and n represents 0, 1, 2, or 3, in which the amount of basic nitrogen compound is from 1 to 5 moles per mole of phosphoronitrile chloride calculated as $PNCl_2$ used in the preparation of the organopolysiloxane.

4,203,914

SILYL ESTERS OF PERFLUOROALKANESULPHONIC ACID ESTERS AND A PROCESS FOR THEIR PREPARATION

Ulrich Finke, Ettlingen; Hans-Heinrich Moretto, Cologne; Hans Niederprüm, Monheim, and Helmut Vorbrüggen, Berlin, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 2,112

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803125

Int. Cl.² C07F *7/08*

U.S. Cl. 556—428 **4 Claims**

3. A perfluoroalkanesulphonic acid trialkylsilyl ester of the formula

$$C_nF_{2n+1}SO_3SiR^1R^2R^3$$

wherein
R^1, R^2, and R^3 have the abovementioned meaning and each independently is alkyl with 1 to 6 carbon atoms,
n is from 1 to 12, and
the total number of carbon atoms in Cn, R^1, R^2 and R^3 is at least 6.

4,203,915

PROCESS OF PRODUCING METHANOL

Emil Supp, Dietzenbach; Heinz Jockel, Klein-Gerau; Hagen Krumm, Frankfurt am Main, and Friedemann Marschner, Oberursel, all of Fed. Rep. of Germany, assignors to Metallgesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 850,565, Nov. 11, 1977, abandoned, which is a continuation of Ser. No. 724,031, Sep. 17, 1976, abandoned. This application Sep. 25, 1978, Ser. No. 945,727

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603204

Int. Cl.[2] **C07C** *31/04, 31/06*

U.S. Cl. 260—449.5 **3 Claims**

1. In the production of methanol from gaseous and liquid hydrocarbons having a higher C/H ratio than is stoichiometrically required to produce methanol, wherein said hydrocarbons are catalytically cracked in the presence of water vapor and at a temperature of about 350°-950° C. and under a pressure of about 5-30 bars to produce a synthesis gas containing hydrogen and oxides of carbon, followed by a catalytic reaction of the hydrogen with the oxides of carbon at a temperature of about 230°-280° C. and under a pressure of about 30-150 bars to produce methanol, the improvement which comprises treating the methanol synthesis exhaust gas adiabatically in an adsorption unit filled with aluminosilicate molecular sieve so as to remove therefrom the carbonaceous gaseous constituents so that the residual gas is pure hydrogen, adding said hydrogen to the hydrocarbons prior to cracking in an amount such that the C/H ratio of the material to be cracked is up to about 5.7, and burning the carbonaceous gaseous constituents removed from the methanol synthesis exhaust gas by the molecular sieve as fuel for heating of the cracking catalyst thereby reducing the energy consumption per unit of methanol produced.

4,203,916

PREPARATION OF TRANS CYCLOHEXANE 1,4 DIISOCYANATE

Hans Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 6, 1978, Ser. No. 883,949

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2710595

Int. Cl.[2] **C07C** *103/19, 118/00, 125/06, 127/15*

U.S. Cl. 260—483 P **10 Claims**

1. A process for making a trans-cyclohexane-1, 4 diisocyanate preferentially to its cis-stereisomer which comprises
(a) reacting mixed cis- and trans-cyclohexane-1,4-dicarboxylic acid or an ester thereof with ammonia in a liquid polyhydric alcohol solvent for the acid or ester at a temperature of from about 25° C. to about 200° C. and under an ammonia partial pressure of about 0.1 bar to about 50 bars;
(b) separating the resulting solid dicarboxylic acid diamide from the liquid phase including any water soluble constituents therein,
(c) suspending the resulting semi-solid diamide in an aqueous mineral acid or water,
(d) chlorinating the resulting suspended diamide to form cyclohexane-1,4 dicarboxylic acid-bis-N-chloramide,
(e) reacting said chloramide with a primary or secondary amine in an aqueous reaction mixture containing an alkaline metal hydroxide or alkaline earth metal hydroxide to form a trans-cyclohexane-1,4 diurea, and
(f) reacting said diurea with gaseous hydrogen chloride in an inert solvent for the diurea to form trans-cyclohexane-1,4 diisocyanate.

4,203,917

CATALYTIC PROCESS FOR PREPARING NITRILES FROM AMIDES

Bernard M. Delmon, Wavre; Michel C. Portenart, Drogenbos, and Heinz Viehe, Beersel, all of Belgium, assignors to Unibra Societe Anonyme, Brussels, Belgium

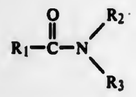
Continuation-in-part of Ser. No. 769,826, Feb. 17, 1977, abandoned. This application Mar. 7, 1978, Ser. No. 884,443

Claims priority, application United Kingdom, Feb. 19, 1976, 06595/76; Belgium, Feb. 24, 1978, 185451

Int. Cl.[2] **C07C** *120/10*

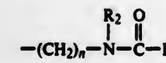
U.S. Cl. 260—465 B **9 Claims**

1. A process for preparing nitriles from amides of the general formula



(I)

in which R_1 represents hydrogen or a lower alkyl radical, R_2 represents hydrogen, a lower alkyl radical having a straight or branched chain, allyl, propargyl, an aryl radical selected from mono- and polynuclear aromatic hydrocarbon groups, wherein said aryl radical can optionally be substituted by one or more substituent groups selected from lower alkyl radicals, halogen atoms, OH and SH groups, a carboxyl group, trifluoro- or trichloromethyl groups, a cyano group and an NH_2 group, or an aralkyl radical in which the alkyl moiety is a lower alkylene group and in which the aryl moiety is selected from mono- and polynuclear aromatic hydrocarbon groups, wherein said aryl moiety of said aralkyl radical can be optionally substituted by one or more substituent groups selected from lower alkyl radicals, halogen atoms, OH and SH groups, a carboxyl group, trifluoro- or trichloromethyl groups, a cyano group and a NH_2 group, and R_3 represents hydrogen, a lower alkyl radical having a straight or branched chain, allyl, propargyl, an aryl radical selected from mono- and polynuclear aromatic hydrocarbon groups, wherein said aryl radical can optionally be substituted by one or more substituent groups selected from lower alkyl radicals, halogen atoms, OH and SH groups, a carboxyl group, trifluoro- or trichloromethyl groups, a cyano group and an NH_2 group, an aralkyl radical in which the alkyl moiety is a lower alkylene group and in which the aryl moiety is selected from mono- and polynuclear aromatic hydrocarbon groups, wherein said aryl moiety can optionally be substituted by one or more substituent groups selected from lower alkyl radicals, halogen atoms, OH and SH groups, a carboxy group, trifluoro- or trichloromethyl groups, a cyano group and an NH_2 group, or a radical of the formula



wherein n is equal to 1 to 6, and R_1 and R_2 have the above meanings, with the proviso that at least one of the symbols R_1, R_2 and R_3 is different from hydrogen, said process comprising reacting an amide of formula I in gaseous phase at a temperature between 400° and 650° C. on a catalyst selected from the group consisting of
(i) bismuth molybdate, bismuth phosphomolybdate, antimony molybdate, bismuth tungstate,
(ii) manganese, cobalt, iron (III), tellurium and cerium molybdate.
(iii) Bi_2O_3—MoO_3; MoO_3—Sb_2O_3; Sb_2O_3—SnO_2; CuO—Al_2O_3; and UO_x—Sb_2O_3 ($2<x<3$); and
(iv) mixtures of any proportions of two or more of these compounds.

4,203,918

HALO-SUBSTITUTED BENZOSPIRO CYCLOPROPANE CARBOXYLATES AS INSECTICIDES AND IXODICIDES

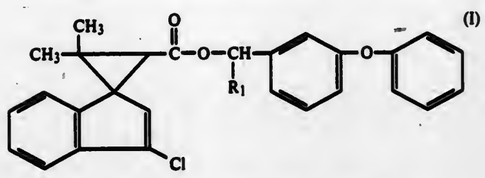
Dale G. Brown, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 21, 1978, Ser. No. 926,990

Int. Cl.[2] **C07C** *120/00, 67/00;* **A01N** *9/20*

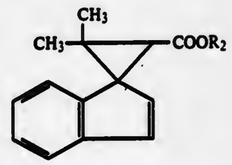
U.S. Cl. 260—465 D **1 Claim**

1. A method for preparing compounds of the formula:



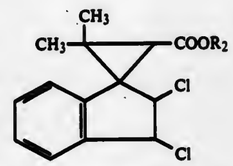
(I)

wherein R_1 is hydrogen or cyano which comprises
reacting a spirocyclopropanecarboxylic acid ester of the formula



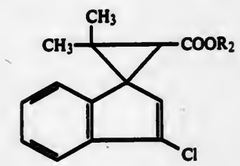
II

wherein R_2 is C_1-C_3 alkyl with a halogenating agent in the presence of an inert solvent at a temperature in the range of from 20° C. to 30° C. for a period of time to essentially complete the reaction and obtain the dihalo derivative of the formula



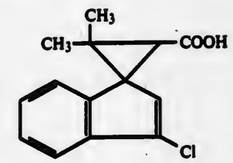
III

dehydrohalogenating the dihalo derivative III under anhydrous conditions with an alkali metal alkoxide in the presence of a solvent to produce the ester



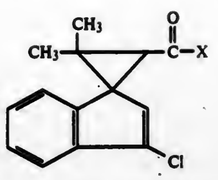
IV

hydrolizing the ester IV with a base in a dilute alcohol to yield the acid



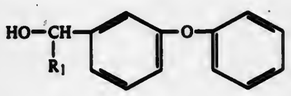
V

converting the acid V to the acid halide



VI

wherein X is halogen by reacting acid V with a thionyl halide in the presence of an inert solvent
isolating the acid halide VI and then
reacting the acid halide VI with a benzyl alcohol



VII

in the presence of an acid acceptor and an inert solvent to yield the compound of formula I.

4,203,919

(ACETOXYALKYL) 2-CYANO-3,3-DIPHENYLACRYLATE INTERMEDIATES FOR MAKING COPOLYMERIZABLE, ULTRAVIOLET LIGHT ABSORBER COMPOUNDS

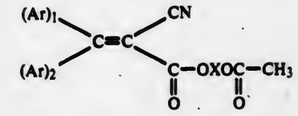
Bruce A. Gruber, Bloomingdale, and Donald H. Lorenz, Basking Ridge, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed May 3, 1979, Ser. No. 35,648

Int. Cl.[2] **C07C** *121/70*

U.S. Cl. 260—465 D **6 Claims**

1. (Acetoxyalkyl) 2-cyano-3,3-diphenylacrylate intermediate compounds having the formula:



where $(Ar)_1$ and $(Ar)_2$ are aromatic carbocyclic nuclei of the benzene and naphthalene series and are independently selected from phenyl or phenyl substituted with alkyl, halo, alkoxy, carboxy, carbalkoxy, cyano, acetyl, benzoyl, phenyl, alkyl phenyl, phenoxy phenyl, alkyl substituted phenoxy, or alkoxy phenyl substituted phenyl, and naphthyl; and,
X is alkylene, C_2-C_{17}, unsubstituted or substituted with halo, cyano, alkyl, C_1-C_6, alkoxy, C_1-C_6 alkoxyalkyl, C_1-C_6, or alkoxyalkyleneoxy, C_1-C_6.

4,203,920

AMIDINOUREAS

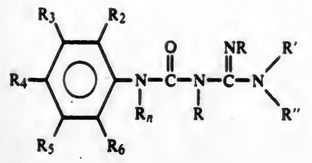
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Paoli, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 787,673, Apr. 14, 1977, abandoned, which is a division of Ser. No. 558,187, Mar. 31, 1975, Pat. No. 4,060,635. This application Jul. 21, 1978, Ser. No. 926,675

Int. Cl.[2] **C07C** *127/19*

U.S. Cl. 260—553 A **12 Claims**

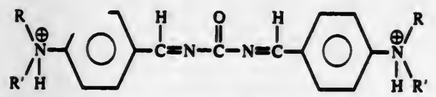
1. A compound of the formula:



where:
R_2 is hydrogen or loweralkyl;
R_3, R_4 and R_5 are hydroxy or loweralkoxy;
R_6 is hydrogen, loweralkyl, nitro, loweralkoxy or halo;
R and R_n are hydrogen or loweralkyl; and
R' and R'' are hydrogen or alkyl, provided at least one of R, R' and R'' is other than hydrogen; and
the non-toxic acid addition salts thereof.

4,203,921
STABILIZED REAGENTS
Ram B. Roy, Spring Valley, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Oct. 30, 1978, Ser. No. 956,007
Int. Cl.[2] C07C *127/00*
U.S. Cl. 260—553 A **2 Claims**

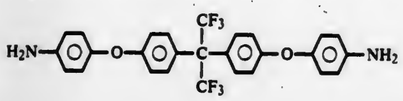
1. A protonated reagent of the general formula:



where R and R' are the same or different and each selected from a group consisting of: H and a lower alkyl.

4,203,922
FLUORINATED AROMATIC DIAMINE
Robert J. Jones, Hermosa Beach; Michael K. O'Rell, Manhattan Beach, and Jim M. Hom, Sepulveda, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Division of Ser. No. 706,880, Jul. 19, 1976, Pat. No. 4,111,906. This application Oct. 11, 1977, Ser. No. 841,085
Int. Cl.[2] C07C *93/14*
U.S. Cl. 260—570 R **1 Claim**

1. An aromatic diamine compound having the structure;

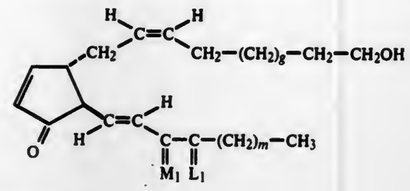


4,203,923
METHOD FOR PROMOTION OF PHENOL HYDROGENATION
Chuen Y. Yeh, Succasunna, and Harry E. Ulmer, Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 527,467, Nov. 26, 1974, abandoned. This application Mar. 17, 1976, Ser. No. 667,760
Int. Cl.[2] C07C *41/00, 46/15*
U.S. Cl. 568—362 **10 Claims**

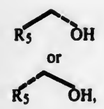
1. In a process for producing cyclohexanone by the hydrogenation of phenol in the presence of a nonpromoted palladium catalyst, the improvement which comprises adding to the hydrogenation reaction mixture a promoter selected from the group consisting of ammonia, ammonium hydroxide, secondary amines and mixtures thereof.

4,203,924
2-DECARBOXY-2-HYDROXYMETHYL-DEOXY-9,10-DIDEHYDRO-PGD$_2$ ANALOGS
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 647,369, Jan. 28, 1976, Pat. No. 4,032,576. This application Apr. 6, 1977, Ser. No. 784,981
Int. Cl.[2] C07C *49/56*
U.S. Cl. 568—379 **15 Claims**

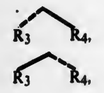
1. A prostaglandin analog of the formula



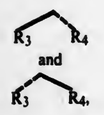
wherein M_1 is



wherein
R_5 is hydrogen or methyl;
wherein L_1 is



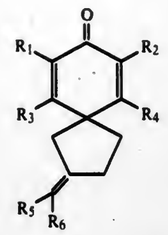
or a mixture of



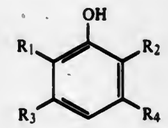
wherein R_3 and R_4 are hydrogen, methyl or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
wherein g is one, 2, or 3; and
wherein m is one to 5, inclusive;
with the proviso that at least one of R_3, R_4, and R_5 is methyl or at least one of R_3 and R_4 is fluoro.

4,203,925
PROCESS FOR THE PRODUCTION OF SPIRODIENONES AND SPIROCYCLIC KETONES
Derek H. R. Barton, Gif-sur-Yvette, France, and Brian J. Willis, Bergenfield, N.J., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.
Filed Jun. 9, 1978, Ser. No. 914,160
Int. Cl.[2] C07C *45/00*
U.S. Cl. 568—362 **9 Claims**

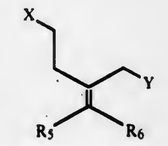
1. A process for preparing a spirodienone compound having the structure:



wherein each of R_1, R_2, R_3, R_4, R_5 and R_6 is the same or different and represents hydrogen or a lower alkyl group which comprises reacting a phenol having the structure:



and a 2-alkylidene-1,4-disubstituted butane having the structure:



wherein X and Y are selected from the group consisting of halogens and sulfonate groups of the structure —O—SO_2—R where R may be an aliphatic or aromatic hydrocarbon moiety, or wherein X and Y together form a cyclic sulfate group of the structure



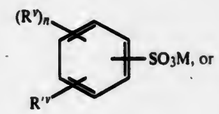
in the presence of a base and at a temperature in the range from about −70° to +220° C. to form said spirodienone compound.

4,203,926
HYDROXIDATION OF GASEOUS OLEFINS WITH ETHYLBENZENE HYDROPEROXIDE IN A HETEROGENEOUS LIQUID SYSTEM
Ching-Yong Wu, O'Hara Township, Allegheny County, and Thaddeus P. Kobylinski, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Dec. 18, 1978, Ser. No. 970,103
Int. Cl.[2] C07C *27/16, 29/02, 31/16, 49/78*
U.S. Cl. 568—319 **13 Claims**

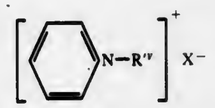
1. A method of concurrently preparing a glycol, acetophenone and 1-phenylethanol which comprises contacting ethylbenzene hydroperoxide with ethylene or propylene at an elevated pressure in a heterogeneous, two-phase liquid reaction system comprising ethylbenzene, an organic polar solvent, a catalytic quantity of osmium tetroxide and an aqueous solution of cesium hydroxide, rubidium hydroxide or potassium hydroxide at a moderate temperature.

4,203,927
OLEFIN OXIDATION PROCESS
Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 11, 1978, Ser. No. 895,339
Int. Cl.[2] C07C *45/04*
U.S. Cl. 568—401 **16 Claims**

1. A process for the conversion of the olefinic carbon-carbon double bond of a mono-olefinic hydrocarbon reactant comprising contacting:
(a) at least one olefin with
(b) oxygen in
(c) a reaction diluent comprising at least two liquid phases wherein at least one liquid phase is an aqueous phase, and in the presence of
(d) a catalyst comprising palladium, copper, and a boron-containing material that provides a catalytically active boric acid under the conditions employed in the reaction, and
(e) a surfactant selected from the group of:
(1) quaternary ammonium salts of the general formula $(R''')_4N^+X^-$,
(2) alkali metal alkyl sulfates of the general formula $R''OSO_3M$,
(3) alkali metal salts of alkanoic acids of the general formula $R''CO_2M$,
(4) alkali metal salts of alkaryl sulfonic acids of the general formula



(5) 1-alkyl pyridinium salts of the general formula



wherein R''' is an alkyl radical of from 1 to 20 carbon atoms and wherein the total number of carbon atoms in said quaternary ammonium salt is from about 8 to about 30 carbon atoms; X^- is selected from the group consisting of Br^-, Cl^-, I^-, F^-, $R'''CO_2^-$, QSO_3^-, BF_4^-, HSO_4^- wherein Q is an aryl or alkaryl radical of 6 to 10 carbon atoms; R'' is an alkyl radical of from 10 to about 20 carbon atoms; M is an alkali metal; R'' is an alkyl radical of 1 to 4 carbon atoms and wherein n is 0 or an integer of from 1 to 4,
under such oxidation conditions sufficient to oxidize the olefinic carbon-carbon double bond of (a) to a carbonyl group.

4,203,928
PROCESS FOR THE PREPARATION OF 2-NITROBENZALDEHYDE
Horst Meyer, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 11, 1975, Ser. No. 557,296
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1974, 2415062
Int. Cl.[2] C07C *45/18*
U.S. Cl. 568—424 **9 Claims**

1. The process for the preparation of 2-nitrobenzaldehyde which comprises treating an alkali metal salt of the corresponding 2-nitrophenylpyruvic acid with an alkali metal hypochlorite in an aqueous medium to yield the corresponding 2-nitrobenzylidene chloride and subjecting said 2-nitrobenzyli-

dene chloride to aqueous hydrolysis at a temperature of from about 20° to about 150° C.

4,203,929

GEM DICHLOROCYCLOPROPANES AND METHOD OF MAKING SAME

Sobhy Tawfik, 89-15 102nd St., Richmond Hill, N.Y. 11418

Filed Jun. 16, 1978, Ser. No. 915,920
Int. Cl.² C07C *17/28*
U.S. Cl. 260—648 D **1 Claim**

1. The method of making gem dichlorocyclopropane comprising reacting 2,3-dimethyl-2-butene with chloroform in liquid phase by phase transfer catalysis in the presence of cetyl trimethyl ammonium bromide in a sodium hydroxide solution at a temperature of −7° to 40° C.

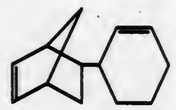
4,203,930

CODIMER OF NORBORNADIENE AND CYCLOHEXADIENE

Harry K. Myers, Jr., Aston, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 818,489, Jul. 25, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,231
Int. Cl.² C07C *13/32*
U.S. Cl. 585—22 **2 Claims**

1. Codimer of norbornadiene and 1,3-cyclohexadiene having the following structure:



4,203,931

FLAME RETARDANT THERMOPLASTIC POLYPHENYLENE ETHER RESIN COMPOSITIONS

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 29, 1976, Ser. No. 671,342
Int. Cl.² C08K *5/15*; C08L *71/04*
U.S. Cl. 525—4 **10 Claims**

1. A self-extinguishing, non-dripping thermoplastic molding composition possessing a combination of improved mechanical properties and good flame resistance characteristics which comprises:
(i) a polyphenylene ether resin;
(ii) a styrene resin;
(iii) a halogenated aromatic frame retardant compound;
(iv) an antimony containing compound; and
(v) an additive selected from the group consisting of polyesters and, polyethylene.

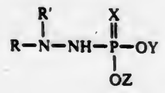
4,203,932

PHOSPHORYL HYDRAZINES

Michael J. Brown, Randolph, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,132
Int. Cl.² A01N *9/36*; C07F *9/24, 9/22*
U.S. Cl. 260—923 **2 Claims**

1. Compounds having the formula:



where

R is carbalkoxyalkyl, C_2–C_6 and
R' is hydrogen;
X is oxygen or sulfur; and,
Y and Z are both alkyl, C_1–C_6.

4,203,933

METHOD OF PURIFYING TRIARYL PHOSPHATE

Sadayoshi Mukai; Yoshiaki Otani, and Osamu Yamaguchi, all c/o Nissin Electric Co., Ltd., 47, Umezu Takase-cho, Ukyo-ku, Kyoto, Japan

Filed May 9, 1978, Ser. No. 904,261
Claims priority, application Japan, May 20, 1977, 52-59229
Int. Cl.² C07F *9/09*
U.S. Cl. 260—990 **26 Claims**

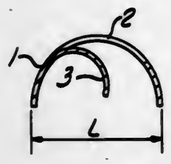
1. A method of purifying a triaryl phosphate to be used as electrical insulating oil, comprising: a first step of washing said phosphate, said first step including a first substep of washing said phosphate with an aqueous solution containing from approximately 1 percent to approximately 7 percent by weight of an alkali compound, a second substep of separating said solution from said phosphate, a third substep of rinsing said phosphate with water, and a fourth substep of separating said water from said phosphate; a second step of diluting said phosphate with an amount of an aromatic insulating oil effective to reduce the viscosity of said phosphate; a third step of treating said diluted phosphate with an adsorbent acid clay in an atmosphere of dry gas so that said clay adsorbs the impurities in said phosphate; and a fourth step of treating said phosphate under reduced pressure for removal of any remaining impurities therefrom.

4,203,934

TOWER PACKING ELEMENT

Max Leva, 2160 Greentree Rd., Pittsburgh, Pa. 15220

Continuation-in-part of Ser. No. 749,272, Dec. 10, 1976, abandoned, which is a continuation of Ser. No. 586,529, Jun. 13, 1975, abandoned. This application Mar. 17, 1978, Ser. No. 887,604
Int. Cl.² B01F *3/04*
U.S. Cl. 261—98 **12 Claims**



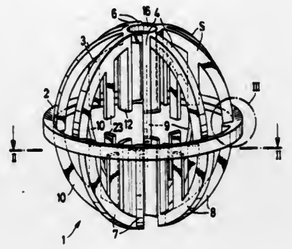
1. In a packing for a vapor- or gas-liquid contact tower and the like, a plurality of randomly packed, mutually interlocking packing elements providing a bed having substantial physical stability, each packing element comprising an open-ended curved strip exhibiting curvature only in a single direction and the curvature extending through an angular range of about 90 to 180 degrees, said strip having a plurality of tongues selected ones of which are different lengths and extending only inwardly of the curvature of said strip, at least one slot extending along said single direction in said curved strip, the surface of said strip and tongues being otherwise smooth and free of small perforations, at least one of said tongues extending for at least a distance equal to about one-fifth the distance from its base at the concave surface of said strip to the center between the ends of said strip, so as to permit interlocking with and prevent nesting with adjacent packing elements and provide a homogeneous packing.

4,203,935

FILTER MEDIA

Ernst Hackenjos, Munich, Fed. Rep. of Germany, assignor to Rolf Jaeger, Costa Mesa, Calif.

Filed Jul. 10, 1978, Ser. No. 923,003
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739236
Int. Cl.² B01F *3/04*
U.S. Cl. 261—98 **18 Claims**



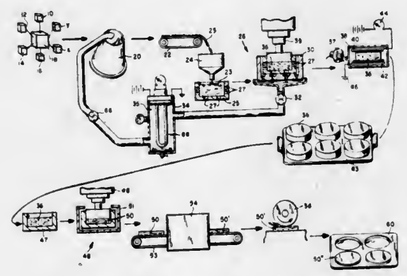
1. A filter body adapted for use in a scrubber of the type including a tower within which are disposed a plurality of the filter bodies which thereby define a bed, the scrubber operating by passing a liquid downwardly through the bed while passing a gas upwardly through the bed, said filter body comprising:
a latticework jacket defined by an annular meridian ring, a plurality of arcuate bars extending upwardly and downwardly from said annular meridian ring, and a plurality of fingers extending from at least some of said arcuate bars towards a plane defined by said annular meridian ring and wherein at least a majority of said arcuate bars have a cross-sectional shape tapering inwardly towards said annular meridian ring.

4,203,936

WATER SLURRY PROCESS FOR MANUFACTURING PHENOLIC RESIN BONDED FRICTION MATERIALS

Robert S. Kiwak, Northville, and Tung Liu, Southfield, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 754,477, Dec. 27, 1976, abandoned. This application Jul. 12, 1978, Ser. No. 923,883
Int. Cl.² B29G *1/00*; H05B *9/00*
U.S. Cl. 264—26 **9 Claims**



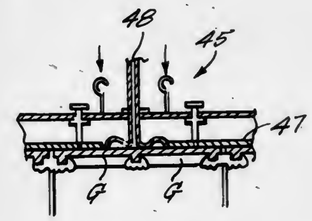
1. A dustless process for producing organic friction articles comprising the steps of:
mixing together dry ingredients including a thermosetting phenolic resin containing from 7–15% by weight of hexamethylenetetramine, asbestos and friction modifiers to form a composition of material;
adding a solution of water and from 4–24% by weight of hexamethylenetetramine to said composition of material to form a slurry;
communicating a fixed volume of said slurry into a first mold;
compressing said slurry in said first mold to remove up to 95% by weight of said solution to form a briquette;
drying said briquette through dielectric heating to heat the briquette from the inside to the outside and remove up to 99% by weight of the water in said solution from the briquette to reestablish substantially the same weight relationship of ingredients therein as in said composition of material; and
curing the dried briquette in a second mold to a desired shape and density.

4,203,937

PROCESS AND APPARATUS FOR THE MANUFACTURE OF PREFABRICATED LINED WALL SECTIONS

Hans Lingl, Neu-Ulm-Ludwigsfeld, Fed. Rep. of Germany, assignor to Lingl Corporation, Paris, Tenn.

Continuation of Ser. No. 552,261, Feb. 24, 1975, abandoned. This application Jan. 26, 1977, Ser. No. 762,921
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1974, 2408484; Jan. 30, 1975, 2503685
Int. Cl.² B32B *3/10*
U.S. Cl. 264—101 **10 Claims**



1. A method of producing a preformed finished wall section comprising the steps of:
(a) disposing a preformed wall panel of bricks, blocks, or the like, in a generally horizontal plane, said panel being adapted to be disposed vertically when a finished wall section of which the panel is a part is in use,
(b) arranging in a generally horizontal plane a plurality of individual tile members or the like in substantially abutting engagement with each other to form an unconnected lining panel,
(c) applying a plurality of columns of mortar on the upper surface of said wall panel, said columns being arranged in generally parallel relationship,
(d) automatically introducing spaces of predetermined uniform dimension between said tile members by moving said tile members out of substantially abutting engagement with each other for proper disposition thereof in relationship with said wall panel,
(e) transferring said unconnected lining panel members in groups into operative position above said wall panel, and
(f) pressing said lining panel tile members in groups onto said wall panel, said individual members being connected to each other and said wall panel by said columns of mortar, thereby forming a preformed finished wall section.

4,203,938

MANUFACTURE OF POLYTETRAFLUOROETHYLENE TUBES

Edward L. Burnett, and Eugene V. Stack, both of Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 500,801, Aug. 26, 1974, abandoned. This application Jul. 6, 1976, Ser. No. 703,048

Int. Cl.² B27J *5/00*

U.S. Cl. 264—127 **2 Claims**

1. In a method for the preparation of a polytetrafluoroethylene tube from a polytetrafluoroethylene in a finely divided form suitable for molding, a mandrel of generally constant cross-sectional configuration is provided, polytetrafluoroethylene in finely divided form is disposed about at least a portion of the mandrel, the polytetrafluoroethylene is subsequently pressed against the mandrel with sufficient force to result in a compacted generally coherent compacted tubular polytetrafluoroethylene preform and the preform subsequently removed from the mandrel,

the improvement which comprises compacting the polytetrafluoroethylene at a temperature below about the crystalline transition of the polytetrafluoroethylene at about 19° C., raising the temperature of at least the tubular preform to a temperature above the crystalline transition of the polytetrafluoroethylene at about 19° C. and removing the mandrel from the tubular preform.

4,203,939

PROCESS AND APPARATUS FOR TREATMENT OF THE EXIT SURFACE OF SPINNERETS

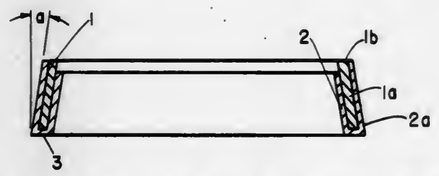
Werner Drachenberg, Heinsberg, and Heinrich Wolters, Waldfeucht, Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 24, 1978, Ser. No. 890,000

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713601

Int. Cl.² B29H *21/04*

U.S. Cl. 264—130 **14 Claims**



1. A process for treating the exit face of spinnerets having a plurality of orifices with a finishing oil selected from creeping oils, which are thermally stable at temperature of at least about 300° C., for the spinning of fibers from a melt, comprising applying the finishing oil uniformly only to a peripheral zone on the face of said spinneret located between the outer edge and the spinneret orifices nearest said outer edge by means of an absorbent, surfactant material in contact with the spinneret face at said peripheral zone.

4,203,940

CRYSTAL WAFER RACK STRUCTURES AND THE METHOD OF PRODUCING THE SAME

Wolfgang Dietze, and Gerhard Bachmann, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 27, 1974, Ser. No. 510,071

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1973, 2349512

Int. Cl.² B28B *1/48*

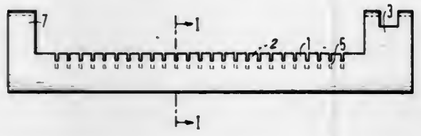
U.S. Cl. 264—154 **3 Claims**

1. A method of manufacturing rack structures composed of a silicon material selected from the group consisting of Si and SiC for supporting crystal wafers during diffusion and annealing operations, comprising:

forming, in a manner known per se, a tube having a diameter which is smaller than the diameter of the crystal wafer to be supported by the rack structures by depositing said silicon material from a gas phase thereof onto a heated graphite carrier member and removing the carrier member without destroying the so-formed tube;

machining the so-formed tube on a relatively narrow transverse portion of a side surface of said tube adjacent to at least one end thereof in a direction perpendicular to a longitudinal axis of said tube for a first distance which is less than the diameter of said tube so as to produce a tube having a cut at least at one end thereof;

machining the so-cut tube on a relatively wide axial portion of said side surface of said tube at a location adjacent said cut in a direction parallel to said tube axis for a vertical



distance substantially equal to said first distance so as to produce two spaced apart wall portions having free edges extending parallel to said tube axis and being joined to one another by at least one bridging portion located at least at said one end of the tube to define an initial rack structure;

machining the so-formed initial rack structure along said spaced apart wall portions at spaced intervals along the free edges thereof in a direction perpendicular to said tube axis for a second distance which is less than the height of said wall portions so as to produce a plurality of uniformly spaced support grooves in each of said wall portions for transversely supporting crystal wafers therein; and

machining the so-formed initial rack structure surface opposite said spaced apart wall portion thereof along the entire length of such structure in a direction parallel to said tube axis for a third distance which is less than said second distance so as to produce two spaced apart independent wall edges capable of standing on a flat support means.

4,203,941

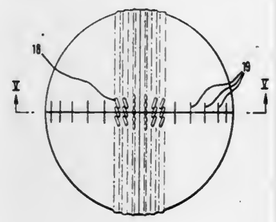
BALL AND METHOD FOR MAKING IT

Bernard F. Brooker, Silver Birches, Balcombe Rd., Crawley, Sussex, England

Filed Dec. 27, 1978, Ser. No. 973,596

Int. Cl.² A63B *37/12, 45/00;* B29C *27/00;* B29D *9/00*

U.S. Cl. 264—250 **7 Claims**



1. In a method for making a ball having a core and a cover molded over the core, the improvement comprising the steps of providing a preformed spherical core, assembling a supporting shell from a plurality of preformed shell elements so as to enclose said core in said supporting shell, the shell elements having a plurality of spaced projections extending substantially radially therefrom, the projections having tips which define an imaginary sphere substantially concentric with said spherical core, supporting the core and shell in a spherical mold by means of said projections and molding a covering material about over the core and shell.

4,203,942

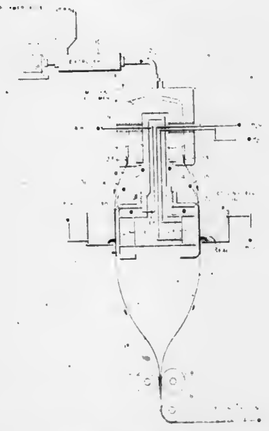
PROCESS FOR TUBULAR WATER-BATH POLYPROPYLENE FILMS

J. Robert Sims, Jr., Waquoit, Mass.; Willard N. Mitchell, Baytown, and Charles W. Williamson, Seabrook, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 492,091, Jul. 26, 1974, abandoned, which is a continuation of Ser. No. 322,034, Jan. 8, 1973, abandoned. This application Dec. 9, 1977, Ser. No. 859,000

Int. Cl.² B29D *23/04*

U.S. Cl. 264—559 **4 Claims**



1. In a process for the formation of tubular polypropylene film having a width of 60 to 80 inches and a thickness between 1 and 2.5 mils comprising extruding polypropylene resin having a shear stress between 18.0 and 22.0 and a die swell between 2.2 and 3.6, generally downwardly through a die with an annular orifice in the form of a molten substantially tubular film body, maintaining the pressure in said substantially tubular film body at a constant figure of about 0.1 to 1.0 inch of water, preliminarily cooling the internal surface of said tubular film body with a directed stream of gaseous material to partially solidify said film, subsequently downwardly passing said film to engage in sequence a cooling mandrel comprising an air slot at the point of film entry over said mandrel, said mandrel having a texturized surface next to the film and being internally water cooled, a water bath for cooling the exterior of said film comprising a cell designed to control the distribution and flow of cooling water in counter-current fashion against the direction of film flow, said cell having a resilient seal at its lower end to maintain water level within the cell and to minimize water carry over by the film passing through the cell, and an overflow weir at the flow entry point to maintain outflow water level, and utilizing multiple step airing comprising a means for supplying a pressurized air stream from a primary orifice, said stream expanding in control fashion through sucessively larger multiple orifices, thereby guiding and controlling the expansion of the film between the die and mandrel, said successive orifices being independently adjustable in axial position relative to the primary orifice, whereby a plurality of annular pressure zones are arranged externally to said tubular film body in the region between said die and said mandrel, said pressure zones being highest near said die and lowest near said mandrel, to define an expansion gradient for said film between said die and said mandrel and thereafter recovering said tubular film, at through-put rates of about 500 to 540 lbs./hr., the improvement comprising attaining through-put rates of about 700 lbs./hr. by:

(a) effecting controlled, shaped pre-expansion of molten polypropylene from said annular orifice by providing a gradual taper of said orifice to a gap of about 0.025 inch, which is maintained for about 1 inch and subsequently flared at a 2° to 5° angle within said die at the last 0.5 inch of said orifice just prior to extrusion;

(b) effecting said preliminary cooling with a high velocity jet of air at a rate of approximately 100 to 250 scm from an annular slot in said cooling mandrel, the angle of said slot from the horizontal being about 25° to 45° and the width of said slot being from about 50 to 100 mils; and

(c) effecting further cooling along the internal surface of the film with water supplied to the exterior of said cooling mandrel at a point above the level of said water bath for cooling the exterior of the film, said water for cooling the internal surface additionally forming a liquid boundary between the interior of the film and the mandrel.

4,203,943

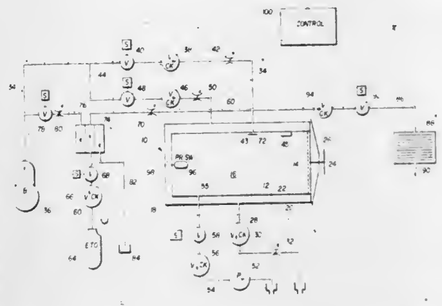
METHOD OF BIOCIDAL STERILIZATION USING CYCLIC SUBATMOSPHERIC PRESSURE CONDITIONING

John R. Gillis, Harborcreek, and Frank E. Halleck, Erie, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Nov. 11, 1977, Ser. No. 850,846

Int. Cl.² A61L *5/00, 1/00, 3/00*

U.S. Cl. 422—27 **9 Claims**



1. Method for conditioning goods for sterilization and sterilizing such goods with ethylene oxide in a sealable chamber capable of operating below atmospheric pressure within prescribed leak rate limits,

such conditioning being carried out prior to introduction of the ethylene oxide and independent of load contact measurement requirements of temperature in the goods, the conditioning including heating the goods, moistening the goods, and removal of air from the goods to facilitate heating and moistening of the goods to be sterilized, the method comprising the steps of

loading the goods to be sterilized into the chamber and sealing the chamber,

preselecting upper and lower subatmospheric pressure levels for controlled cyclic pulsing operation of such chamber during load conditioning,

evacuating the chamber and injecting a condensable vapor having transferrable latent heat and moisture into the chamber to condition the goods to be sterilized by cyclically varying chamber pressure between such upper and lower subatmospheric pressure levels independent of prescribed evacuating and vapor injecting times such that the time duration of a pressure rise from lower to higher preselected subatmospheric pressure levels during a cyclic variation is directly responsive to characteristics of the

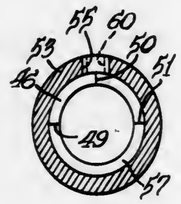
goods being conditioned including moisture and heat absorption characteristics of such goods,
such subatmospheric pressure levels being selected based on an interrelationship of pressure and temperature of the condensable vapor with such upper pressure level establishing an upper temperature for injecting the condensable vapor which approximates without exceeding the desired final sterilization temperature for the goods to be sterilized,
the evacuating of such chamber and the injecting of the condensable vapor into such chamber being carried out non-simultaneously and alternately to bring about such cyclic variations in chamber pressure,
repeating such cyclic variation of chamber pressure between the preselected subatmospheric pressure levels to provide a plurality of cyclic pulses during such load conditioning before termination of evacuation of the sealable chamber in preparation for ethylene oxide gas sterilization, and
after such termination of evacuation of the sealable chamber, introducing ethylene oxide gas into such chamber to accomplish the desired sterilization of goods in the chamber.

4,203,944

RESPIRATORY GAS ASSEMBLY FOR BUBBLE OXYGENATOR

Richard A. DeWall, 247 Northview Rd., Dayton, Ohio 45419

Continuation of Ser. No. 739,554, Nov. 8, 1976, which is a division of Ser. No. 411,332, Oct. 31, 1973, Pat. No. 3,994,689, which is a continuation-in-part of Ser. No. 178,647, Sep. 8, 1971, abandoned. This application Jul. 13, 1978, Ser. No. 924,379
Int. Cl.² A61M *1/03*
U.S. Cl. 422—47 **19 Claims**



1. An oxygenator system, comprising: a frame assembly, means for supplying venous blood to the frame assembly, a respiratory gas and blood mixing chamber, means for supplying oxygen to said chamber, and selectively operable means for preventing the flow of blood from the mixing chamber into the means for supplying oxygen to the chamber, said means for supplying oxygen to said mixing chamber including a first tube in the mixing chamber, a second tube in the mixing chamber surrounding said first tube, first aperture means in said first tube and second aperture means in said second tube selectively communicable to vent the oxygen supplying means and block oxygen or blood flow relative to said mixing chamber through said tubes.

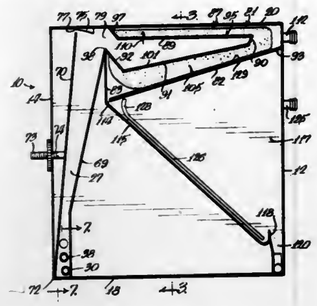
4,203,945

BUBBLE OXYGENATOR

Richard A. De Wall, 247 Northview Rd., Dayton, Ohio 45419

Continuation of Ser. No. 739,553, Nov. 8, 1976, which is a division of Ser. No. 411,332, Oct. 31, 1973, Pat. No. 3,994,689, which is a continuation of Ser. No. 178,647, Sep. 8, 1971, abandoned. This application Jul. 13, 1978, Ser. No. 924,352
Int. Cl.² A61M *1/03*
U.S. Cl. 422—47 **4 Claims**

1. A bubble oxygenator, comprising: housing means, a bubble chamber in said housing means for oxygenating blood, means for supplying venous blood to the bubble chamber, means for supplying respiratory gas to the bubble chamber, and means for varying the flow capacity of the bubble chamber including control means for varying the size of the chamber during use, the control means including a movable wall pivotally mounted in the housing means to define one side of the



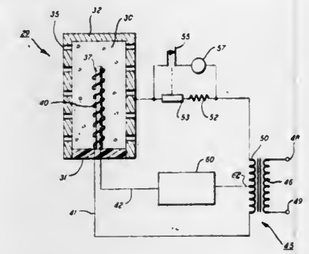
bubble chamber and a projection for moving the wall, the projection being supported by, and projecting from, the housing means.

4,203,946

OZONE DETECTING ELEMENT

Joseph L. Ryerson, Holland Patent, N.Y., assignor to Energy for Independence, Inc., Holland Patent, N.Y.

Filed Mar. 20, 1978, Ser. No. 888,228
Int. Cl.² G01N *27/04*; H01C *7/00*
U.S. Cl. 422—98 **12 Claims**



1. A sensing element for detecting the presence of ozone at ambient temperatures and pressures including
a porous body section containing a lower valence oxide of a variable valence semiconductor material that is capable of being oxidized in the presence of ozone to a higher valence oxide at ambient temperatures and pressures, and
at least two electrodes mounted in spaced apart contact with the body section whereby an electrical current may be passed therethrough.

4,203,947

LOAD CONDITIONING CONTROL APPARATUS FOR STEAM STERILIZATION

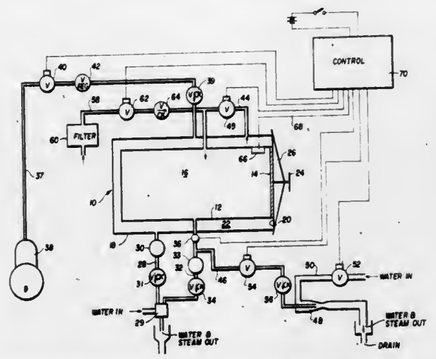
Jack H. Young, Cambridge Springs, and Frank E. Halleck, Erie, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Division of Ser. No. 850,845, Nov. 11, 1977, Pat. No. 4,164,538. This application Feb. 2, 1979, Ser. No. 8,925
Int. Cl.² A61L *5/00, 1/00, 3/00*
U.S. Cl. 422—114 **6 Claims**

1. Apparatus for conditioning materials forming a load within a sealable sterilizing chamber capable of operation at pressure above atmospheric for steam sterilization without requiring selection of quantity or characteristics of the materials, such conditioning including removal of air, moistening the load, and heating of the load to a desired temperature in preparation for sterilization, the apparatus comprising:

evacuation means operable to evacuate the sterilizing chamber,
vapor injection means operable to inject a vapor having a transferrable latent heat into the sterilizing chamber,
and control means controlling operation of the evacuation means and the vapor injection means to provide cyclic pulsing of chamber pressure to provide a plurality of cyclic pulses of chamber pressure below an upper pressure level related to desired temperature for sterilization,
each cyclic pulse including an evacuating phase during which pressure in the chamber is decreasing during operation of the evacuation means and a vapor injecting phase during which pressure within the chamber is increasing during operation of the vapor injecting means,
pressure sensing means monitoring chamber pressure change during cyclic pulsing,
timing means for measuring the time of the evacuation phase of the cyclic pulses, and
such control means including means responsive to such indication of chamber pressure and evacuation time for determining the rate of evacuation of the chamber and for automatically controlling such cyclic pulsing in response to the determined chamber evacuation rate to complete the conditioning of the load.

2. Apparatus for conditioning materials forming a load within a sealable sterilizing chamber capable of operation at pressure above atmospheric for steam sterilization without



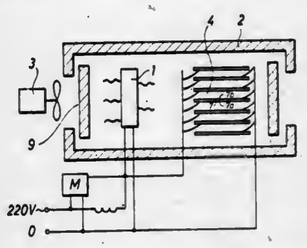
requiring selection of quantity or characteristics of the materials, such conditioning including removal of air and heating of the load to a desired temperature for sterilization, the apparatus comprising:
evacuation means operable to evacuate the sterilizing chamber,
steam injection means operable to inject steam into the sterilizing chamber,
means operating the evacuation means and the steam injection means to provide cyclic pulsing of chamber pressure including a plurality of cyclic pulses of chamber pressure below an upper pressure level related to desired temperature for sterilization,
each cyclic pulse including an evacuating phase during which pressure in the chamber is decreasing during operation of the evacuation means and a steam injecting phase during which pressure within the chamber is increasing during operation of the steam injecting means,
pressure sensing means monitoring chamber pressure change during a cyclic pulse,
timing means for measuring the time of each evacuation phase, and
pulse cycle control means for controlling such cyclic pulsing responsive to such indication of chamber pressure and evacuation time,
such control of cyclic pulsing including control of the means operating the evacuation means to continue each evacuation phase of the cyclic pulse until both a predetermined time has lapsed and a predetermined vacuum level is reached in the sterilizing chamber and control of the steam injecting means during cyclic pulsing to heat the load to the desired sterilization temperature and to remove air from throughout the sterilizing chamber irrespective of load size and load characteristics.

4,203,948

AIR PURIFIER OF THE REGENERATING TYPE

Niels Brundbjerg, Resedavej 12, DK-2820 Gentofte, Denmark

Filed Jul. 26, 1978, Ser. No. 928,160
Claims priority, application Denmark, Aug. 4, 1977, 3499/77
Int. Cl.² B03C *3/43, 3/82*
U.S. Cl. 422—121 **3 Claims**



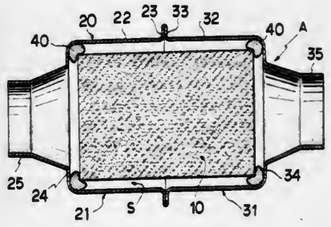
1. An air purifier comprising a housing constructed of a negative charge absorbing non-conductive material, said housing having an air inlet and an air outlet; means for flowing an air stream through said housing from said inlet to said outlet; radiating means in said housing for emitting electrons and X-rays having a wavelength of at least 165 nm and producing in the stream ozone molecules which become positively charged due to the housing absorbing negatively charged particles; electron-cloud forming means having an electric field and arranged within said housing downstream of the radiating means for generating in the stream, as the latter flows through the electric field, ozone molecules which are negatively charged whereby the positively charged and negatively charged ozone molecules react to produce oxygen so as to reduce the ozone content of the stream leaving the outlet.

4,203,949

CATALYST CONVERTER FOR CLEANING EXHAUSTS OF CARS

Yoshio Mase; Tadayoshi Hayashi, both of Niiza; Shinichi Natsuume, Higashi-Kurume; Yasuhisa Kobayashi, Wako, and Yoshiyuki Moriya, Kami-Fukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 789,012, Apr. 20, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,511
Claims priority, application Japan, Apr. 23, 1976, 51-51013
Int. Cl.² B01J *35/04*; F01N *3/15*
U.S. Cl. 422—179 **8 Claims**



1. A catalyst converter for cleaning the exhaust of a vehicle, comprising:
a case;

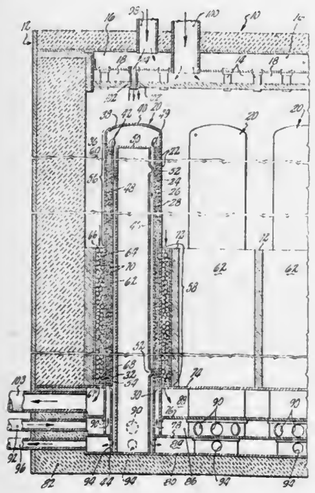
said case being divided at its substantially central portion thereof in the axial direction to form two case halves;
a catalyst-carrying ceramic element provided with honeycomb passages;
support rings formed entirely of compressed metallic fibers including netted steel wires;
each said support ring having an L-shaped cross-section;
support portions on said case halves, said support portions and said support rings applying an axial compression of 15 to 75 KG/cm^2 to said catalyst-carrying ceramic element;
said compressed metallic fiber support rings directly contacting both said ceramic element and said support portions, and holding said ceramic element between said rings while imparting compression to said ceramic element in radial and axial directions;
said compressed metallic fiber support rings being directly fitted to the end surfaces in the axial direction of said ceramic element to be in direct contact with the radially-extending end surfaces and the outer periphery of said ceramic element to support said ceramic element within said case; and
said support rings having an initial pre-assembled outside diameter which is larger than the inside diameter of said case halves such that said rings are forcibly pressed and fitted within said case halves.

4,203,950

STEAM REFORMING REACTOR DESIGNED TO REDUCE CATALYST CRUSHING

Richard A. Sederquist, Newington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,511
Int. Cl.^{2} B01J *7/00, 8/06*
U.S. Cl. 422—197 **1 Claim**



1. An annular reactor for steam reforming hydrocarbon fuel comprising:
a generally cylindrical inner wall, said inner wall having a thickness t_1 in the range of 0.02 to 0.25 inches, said inner wall being capable of a limited degree of yielding in the radial inward direction in response to applied forces, said inner wall having an outer diameter D_1 in the range of 1 to 11 inches and a coefficient of thermal expansion α in the range of 5×10^{-6} to 12×10^{-6}°F.$^{-1}$, said inner wall having a modulus of elasticity E in the range of 27×10^{-6} to 32×10^{-6} psi;
an intermediate wall, said intermediate wall being coextensive in length with said inner wall and being coaxial therewith to define a first annular chamber, said intermediate wall having a thickness t_2 in the range of 0.1 to 1.0 inches and an inner diameter D_2 in the range of 2 to 12 inches, the coefficient of thermal expansion and modulus of elasticity of said intermediate wall being chosen to be the same as those of said inner wall, said intermediate wall always being thicker than said inner wall;
catalyst particles disposed in said first annular chamber between said inner and intermediate walls, said catalyst particles having a coefficient of thermal expansion α_c in the range of 3×10^{-6} to 8×10^{-6}°F.$^{-1}$;
a generally cylindrical outer wall, said outer wall being coaxial with said inner and intermediate walls to define a second annular chamber between a portion of said intermediate and outer walls, said outer wall having a thickness t_3 in the range of 0.02 to 0.25 inches, the thickness of the outer wall always being less than the thickness of the intermediate wall, said outer wall having an inner diameter D_3 in the range of 4 to 16 inches, said outer wall being chosen to have a coefficient of thermal expansion and a modulus of elasticity commensurate with those of the inner and intermediate walls;
a particulate heat exchange material disposed in said second annular chamber between said outer and intermediate walls, said heat transfer material being pervious to fluid flow and having a coefficient of thermal expansion α_p in the range of 3×10^{-6} to $8\times10-6$°F.$^{-1}$, said inner wall, intermediate wall, catalyst particles, outer wall and heat transfer material respectively being subjected to thermal cycles ΔT_2, ΔT_1, ΔT_c, ΔT_3 and ΔT_p, said thermal cycles being between about 400° F. and about 2000° F., said reactor meeting the following constraint equations:

$$P_c\alpha = \frac{\left[\frac{D_2^2\Delta T_2 - D_1^2\Delta T_1}{D_2^2 - D_1^2}\right] - \alpha_c\Delta T_c}{\frac{1}{2E}\left[\frac{\frac{D_2^3}{t_2} + \frac{D_1^3}{t_1}}{D_2^2 - D_1^2}\right] + \frac{2}{3B}}$$

and

$$P_p\alpha = \frac{\left[\frac{D_3^2\Delta T_3 - D_2^2\Delta T_2}{D_3^2 - D_2^2}\right] - \alpha_p\Delta T_p}{\frac{1}{2E}\left[\frac{\frac{D_3^3}{t_3} + \frac{D_2^3}{t_2}}{D_3^2 - D_2^2}\right] + \frac{2}{3B'}}$$

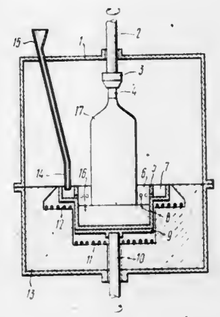
where the mechanical pressure P_c on the solid particle bed after cooling of the walls defining the first annular chamber and the mechanical pressure P_p on the heat transfer material after cooling of the walls defining the second annular chamber do not exceed 7500 psi and wherein B is the bulk modulus of the catalyst particles and B' is the bulk modulus of the heat transfer material; and
means delivering a gaseous fuel to the base of said first annular chamber for flow upwardly through said catalyst particles.

4,203,951

APPARATUS FOR GROWING SINGLE CRYSTALS FROM MELT WITH ADDITIONAL FEEDING OF COMMINUTED CHARGE

Valentin I. Goriletsky, ulitsa Otokara Yarosha, 17, kv. 53; Oleg S. Mjulendorf, ulitsa Geroev Truda, 47b, kv. 242; Alexel V. Radkevich, ulitsa Zernovaya, 53, kv. 56, and Lev G. Eidelman, ulitsa Otokara Yarosha, 17, kv. 53, all of Kharkov, U.S.S.R.

Filed Nov. 23, 1977, Ser. No. 854,237
Claims priority, application U.S.S.R., Nov. 23, 1976, 2421865[I]
Int. Cl.^{2} B01J *17/18*
U.S. Cl. 422—249 **2 Claims**



1. An apparatus for growing single crystals from melt with means for feeding additional comminuted charge, which apparatus comprises a crucible made of two containers—an inner container and an outer container-mounted coaxially in each other to define containing means comprising an annular space therebetween for said additional charge to which said additional charge is fed by said feeding means, said inner container protruding downwards relative to said outer container, said melt being contained in said protruding part of said inner container; apertures provided in the wall of said inner container at the level of the bottom wall of said outer container for overflow of said melt therefrom to said inner container; independent heaters, one of said heaters being disposed under the bottom wall of said outer container and the other heater being located under the bottom wall of said inner container.

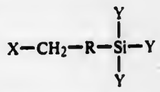
4,203,952

PROCESS FOR THE REMOVAL OF HEAVY METALS AND TRANSITION METALS OTHER THAN PLATINUM FROM SOLUTION

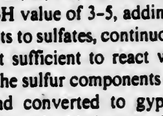
Ronald D. Hancock, Weybridge, and Ian V. Howell, Woking, both of England, assignors to The British Petroleum Company Limited, London, England

Continuation-in-part of Ser. No. 575,739, May 8, 1975, abandoned. This application Sep. 8, 1977, Ser. No. 831,603
Int. Cl.^{2} B01D *15/00, 15/02*
U.S. Cl. 423—6 **21 Claims**

1. A process for purifying liquids containing mercury, silver, lead, copper, cadmium, rhodium or uranium metal residue which comprises removing such a metal by contacting a liquid solution containing such a metal in the form of a soluble compound thereof with a substrate obtained by reacting an inorganic solid contacting surface hydroxyl groups with a compound of the formula



wherein R is a divalent organic group of up to 20 carbon atoms; Y is the same and is the group —OR_3 where R_3 is hydrogen or an alkyl group; or Y is chlorine; and X is —SH, —$NHCH_2CH_2NH_2$, —NH_2, or



4,203,953

PROCESS FOR REMOVING SO_2 FROM WASTE GASES

Hartmut Simolelt, and Ludwig Walter, both of Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Nov. 14, 1974, Ser. No. 523,745
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1973, 2356976
Int. Cl.^{2} C01B *17/00, 17/02*
U.S. Cl. 423—243 **14 Claims**

1. In a process for removing sulfur dioxide from waste gases including introducing waste gases containing sulfur dioxide into a buffer solution capable of absorbing sulfur dioxide, and passing said waste gas through said buffer solution at a controlled pH to effect absorption of SO_2, the improvement which comprises using a buffer solution containing glycerol in a amount between about 20% to about 70% of the solution for sulfur dioxide absorption from the waste gases.

4,203,954

PROCESS FOR DESULFURIZATION OF EXHAUST GASES RECOVERING GYPSUM AS BY-PRODUCT

Etsuo Asanagi, Kashiwa, Japan, assignor to Chiyoda Chemical Engineering & Construction Co., Ltd., Kanagawa, Japan

Filed Apr. 4, 1978, Ser. No. 893,446
Claims priority, application Japan, Apr. 5, 1977, 52-38106
Int. Cl.^{2} C01B *17/00*
U.S. Cl. 423—243 **7 Claims**

1. A process for desulfurization of exhaust gases and recovery of gypsum as a by-product which comprises contacting said gases with an aqueous slurry containing 0.05–1.5 mole/1 of undissolved gypsum, lime that is reactive with the oxidized sulfur gases, at least 0.001 mole/1 of a dicarbonyl acid component represented by the general formula: HOOCRCOOH (where R represents ethylene group, hydroxyethylene group, dihydroxyethylene group, or vinylene group), at least 0.001 mole/1 of sulfuric acid, and an alkali salt from the group consisting of salts of Li, K, Na, Rb, Cs, NH_3 and Mg, maintaining said slurry at a pH value of 3–5, adding oxygen to oxidize the sulfur components to sulfates, continuously adding lime to said slurry in amount sufficient to react with said sulfur components, whereby the sulfur components of said gas are absorbed and oxidized and converted to gypsum, and continuously removing a portion of said slurry and separating the gypsum therefrom for recovery and recycling the mother liquor to the absorption step described above.

4,203,955

PROCESS OF PREPARING CALCIUM HYDROGEN PHOSPHATE ANHYDRIDE SUITABLE AS MATERIAL FOR PHOSPHORS

Takamitsu Enomoto; Kyōji Tanaka, both of Ube; Hiromi Kawamoto, Onoda; Tamotsu Mizuno, and Masao Fujinaga, both of Ube, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Aug. 8, 1978, Ser. No. 931,902
Claims priority, application Japan, Aug. 9, 1977, 52/94672; Aug. 9, 1977, 52/94673
Int. Cl.^{2} C01B *25/32*
U.S. Cl. 423—308 **5 Claims**

1. A process of preparing calcium hydrogen phosphate

anhydride suitable as a raw material for phosphate phosphors, the process comprising the steps of:

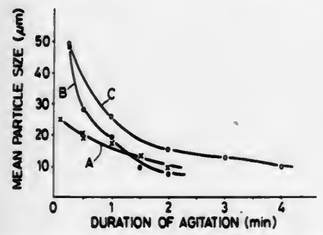
(a) adding a water soluble calcium salt to an aqueous solution of sodium ammonium hydrogenphosphate in such an amount that the Ca/P mole ratio in the resultant solution becomes 0.01–0.10 thereby to cause precipitation of a small quantity of calcium hydrogen phosphate dihydrate;

(b) removing the precipitate from the resultant solution thereby to lower the content of Fe of said sodium ammonium hydrogenphosphate;

(c) preparing an aqueous solution of sodium ammonium hydrogenphosphate treated in steps (a) and (b) so a to contain less than 50 g/l of P_2O_5;

(d) adding a water soluble phosphate to an aqueous solution of calcium chloride in such an amount that the P/Ca mole ratio in the resultant solution becomes 0.005-0.05 thereby to cause precipitation of a small quantity of calcium hydrogen phosphate dihydrate;

(e) removing the precipitate from the resultant solution thereby to lower the content of Fe of said calcium chloride;



(f) preparing an aqueous solution of calcium chloride treated in steps (d) and (e) so as to contain less than 70 g/l of $CaCl_2$;

(g) mixing said solution prepared in step (c) with said solution prepared in step (f) at temperatures between 5° C. and 40° C.;

(h) separating the precipitated calcium hydrogen phosphate from solution;

(i) preparing an acidified water containing a mineral acid selected from the group consisting of nitric acid, hydrochloric acid and phosphoric acid in such an amount that the pH of said water is in the range from 1.0 to 5.0;

(j) maintaining said acidified water at a temperature above 80° C.;

(k) putting a batch of the calcium hydrogen phosphate dihydrate separated from said solution into said acidified water maintained at said temperature all at once to form a hot aqueous slurry of calcium hydrogen phosphate dihydrate in a concentration below 40% by weight; and

(l) agitating said hot slurry thereby to convert said calcium hydrogen phosphate dihydrate in said slurry to crystalline calcium hydrogen phosphate anhydride.

4,203,956

PROCESS AND APPARATUS FOR RECOVERING ALCOHOLIC PHOSPHORIC ACID SOLUTIONS FROM ACID PHOSPHATES

Klaus Schröter, Cologne; Wolfgang Scheibitz, Hürth -Knapsack, and Klaus-Peter Ehlers, Erftstadt-Lechenich, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Hürth-Knapsack, Fed. Rep. of Germany

Continuation of Ser. No. 765,639, Feb. 4, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,501

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605106

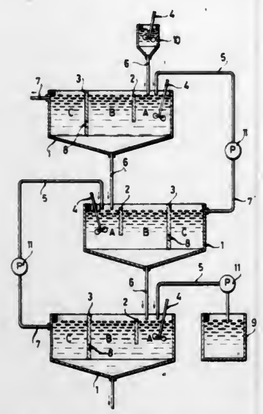
Int. Cl.² C01B *25/22*

U.S. Cl. 423—321 S **5 Claims**

1. In the process for making alcoholic phosphoric acid solutions from an aqueous solution or aqueous suspension of acid phosphates or phosphate mixtures in the presence of a strong mineral acid by contacting countercurrently said aqueous phosphate with at least one alcohol having from 3 to 8 carbon atoms and a strong mineral acid, employing said alcohol and said aqueous phosphate in a ratio by volume of 2:1 to 20:1, the improvement which comprises the combination of the steps:

(a) using sulfuric acid as the mineral acid,

(b) mixing the sulfuric acid with said alcohol prior to contacting said alcohol with said aqueous phosphate,



(c) employing the sulfuric acid in a quantity just that stoichiometrically necessary to transform the phosphates to free phosphoric acid and neutral mineral salts,

(d) using said alcohol, sulfuric acid and said aqueous phosphate with such a water content to establish in the resulting mixture of these substances a total water content necessary to ensure the formation of an alcoholic phase and a separate flowable salt phase, and

(e) separating the salt phase from the alcoholic phase.

4,203,957

MODIFIED PHOSPHORUS FURNACE OPERATION

James S. Medves, St. Johns, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed Feb. 21, 1978, Ser. No. 879,111

Claims priority, application Canada, Dec. 23, 1977, 293866

Int. Cl.² C01B *25/01*

U.S. Cl. 423—323 **4 Claims**

1. A process for the production of phosphorus by the electrothermal method in an electrothermal phosphorus furnace, which comprises

providing a reactants charge to the furnace having less than about 2% by weight moisture and comprising agglomerated phosphate rock sized such that not more than about 6% by weight thereof passes through an 8 mesh screen, and coke and silica particles sized such that not more than about 6% by weight thereof passes through a 6 mesh screen,

forming gaseous products in said furnace consisting essentially of phosphorus vapour, carbon dioxide gas and associated dust having a temperature of about 200° C. to less than 300° C. at the gaseous outlet from said furnace,

conducting said gaseous products by a single continuous duct directly from the furnace to wet phosphorus condensers in the absence of electrostatic duct precipitating equipment between said furnace and said condensers while maintaining a positive pressure in said duct exerted by said gaseous products which does not exceed about ¾ inch of water at said furnace outlet and which decreases in value along the length of said duct, whereby the ingress of external air to the gaseous products is avoided,

said duct including a first short upwardly-extending duct portion from the furnace gaseous outlet and a second long downwardly-extending portion from the upper extremity of said first portion to said condensers, said second duct portion having a sufficiently steep angle to cause phosphorus condensing therein to flow to said condensers,

other than may be intermittently required to remove accumulated dust in the duct, avoiding the introduction of water to the duct from external sources, and

condensing and recovering phosphorus in said condensers from the gaseous products conveyed thereto by said duct.

4,203,958

PROCESS FOR PRODUCING OXYGEN-FREE NITROGEN ATMOSPHERE

Thomas R. Snarski, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 6, 1978, Ser. No. 883,598

Int. Cl.² C01B *21/00*

U.S. Cl. 423—351 **2 Claims**

1. In the process of generating a substantially O_2-free, decarbonized nitrogen atmosphere including the principal steps of (a) burning a combustible gas in a generator in the presence of air to yield a generator gas comprising nitrogen, carbonaceous products and water, (b) scrubbing the generator gas with water to clean and cool it, (c) passing the scrubbed gas through an adsorbent bed for adsorbing said carbonaceous products and water from said generator gas to yield a substantially O_2-free nitrogen effluent, and (d) flushing said bed with said effluent under vacuum to regenerate said bed in a separate desorption cycle, the improvement comprising:

prior to said flushing with said effluent, flushing said bed with an air-rich gas under vacuum for a sufficient time to desorb said adsorbed carbonaceous products and water whereby the duration of said effluent flushing may be reduced to a time sufficient only to purge said bed of said air and conservation of said effluent and said combustible gas is achieved.

4,203,959

PROCESS FOR THE PREPARATION OF NITROUS OXIDE

Gerhard Münster, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,040

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811181

Int. Cl.² C01B *21/22*

U.S. Cl. 423—400 **5 Claims**

1. Process for the preparation of nitrous oxide, which comprises introducing into an aqueous solution having a pH value of from 0 to 3 an inorganic nitrite and an inorganic SO_2 source, while applying molar ratios of nitrite to sulfite of from 1:1 to 1:1.5.

4,203,960

COKE DESULPHURIZATION

William V. Bauer, New York, N.Y.; Jose A. C. Isaacs, and Oliverio M. Lamonte, both of Edo de Mexico, Mexico, assignors to The Lummus Company, Bloomfield, N.J.

Filed Aug. 15, 1978, Ser. No. 933,809

Int. Cl.² C01B *31/02*; C10B *57/00*

U.S. Cl. 423—461 **22 Claims**

1. A process for effecting desulphurization of a sulphur containing coke, comprising:

sequentially heating coke to coke desulphurization temperatures, soaking said coke at coke desulphurization temperatures to effect desulphurization thereof, said coke reaching a temperature of at least 1000° C. during said desulphurization, and cooling said coke to below the desulphurization temperature, said cooling being effected by passing a gas in direct contact with said coke, said gas being at a temperature below the temperature of said coke during said cooling, at least a portion of said heating of the coke being effected by passing said gas subsequent to said cooling in direct contact with said coke with the gas being at a temperature above the temperature of said coke, at least one of said coke and said gas being heated between said direct contact heating and cooling, whereby heat released from the cooling is recuperated by said gas and employed to provide most of the heat required to heat to desulphurization temperatures, said gas employed for said cooling and heating of the coke being a recycle gas provided by recycling at least a portion of the gas recovered from the direct contact heating to the direct contact cooling, said recycle gas consisting essentially of nitrogen and hydrogen and combustible matter derived from the coke.

4,203,961

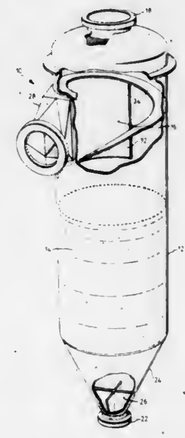
CHLORINE DIOXIDE GENERATION PROCESS

Gerald Cowley, Mississanga, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed Nov. 29, 1978, Ser. No. 964,681

Int. Cl.² C01B *11/02*

U.S. Cl. 423—478 **7 Claims**



1. In a continuous method for the production of chlorine dioxide, which comprises:

continuously maintaining a chlorine dioxide-producing reaction medium in an enclosed upright cylindrical reaction zone having a vapor space located above the liquid level of said reaction medium in said reaction zone, the reaction medium containing an alkali metal chlorate, a reducing agent capable of reducing said alkali metal chlorate to chlorine dioxide and chlorine, and a strong mineral acid,

continuously generating chlorine dioxide and chlorine from said reaction medium and continuously evaporating water from said reaction medium at substantially the boiling point thereof while the reaction zone is maintained under a subatmospheric pressure,

continuously removing from said reaction zone a gaseous mixture of said generated chlorine dioxide and chlorine and evaporated water through a gaseous outlet located in communication with said vapor space in said reaction zone,

continuously depositing in said reaction zone an alkali metal salt of the anion of said strong acid, removing from a lower portion of said reaction zone a slurry containing deposited alkali metal salt and part of said reaction medium and recovering alkali metal salt from a portion of said slurry,

admixing alkali metal chlorate with said remainder of said slurry,

heating recycled material substantially to an elevated tem-

perature which is the boiling point of the reaction medium at the prevailing absolute pressure in said reaction zone,
accelerating the heated material in admixture with alkali metal chlorate, and also reducing agent when said strong mineral acid is not also the reducing agent, to establish a back pressure exceeding the difference in saturation vapor pressure of the heated mixture and of said reaction medium,
adding strong mineral acid to said accelerated heated mixture substantially at the maximum velocity of said mixture resulting from said acceleration to provide a feed material for said reaction zone,
allowing gaseous material in said feed material to expand while maintaining a low rate of acceleration, and
feeding said expanded feed mixture into said vapor space,
the improvement which comprises effecting said feeding of expanded feed mixture into said vapor space generally tangentially of the internal wall of said reaction zone, and
inducing said gaseous material to follow the flow path of said expanded feed mixture from inlet to said reaction zone to said reaction medium and to flow radially inwardly of the internal wall of the reaction zone prior to upward passage through said vapor space towards said gaseous outlet.

4,203,962

PROCESS FOR CONSOLIDATION OF FINE ALUMINA PARTICLES

Alfred Lippman, Metairie, La., assignor to Toth Aluminum Corporation, New Orleans, La.

Filed Aug. 24, 1978, Ser. No. 936,508
Int. Cl.² C01F 7/02
U.S. Cl. 423—625 **10 Claims**

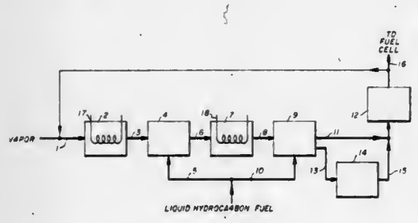
1. A method for making granules from ultrafine alumina particles comprising the following steps: (1) admixing ultrafine alumina particles with a solution of an alkali metal hydroxide or equivalent alkali in a maximum amount of 0.7 percent equivalent Na_2O by weight based on dry alumina; (2) compressing the mixture obtained in step (1); (3) autoclaving the compressed mixture obtained in step (2) at a temperature of at least 150° C. for at least three hours; (4) drying and calcining the autoclaved compressed mixture obtained in step (3); and (5) comminuting the dried and calcined mass obtained in step (4) to form granules.

4,203,963

STAGED VAPORIZATION OF LIQUID HYDROCARBON FUELS

Glenn W. Scheffler, Tolland, and Yasar Tanrikut, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1977, Ser. No. 859,381
Int. Cl.² C01B 1/13
U.S. Cl. 423—650 **17 Claims**



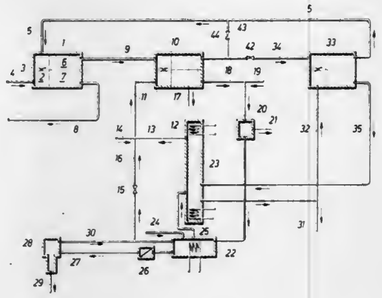
1. In a method for producing a hydrogen rich gas utilizing the vaporization of a liquid hydrocarbon fuel, the improvement comprising the steps of:
dividing a liquid hydrocarbon fuel into at least two portions;
staged vaporization of said fuel portions, said staged vaporization including:
a first stage wherein a first portion of the liquid hydrocarbon fuel is mixed with a heated vapor having a specific heat in the range of about 0.2 to 1 Btu/lb°F., said vapor having a sufficient temperature and heat transfer capability to cause vaporization of essentially all of the first fuel portion to provide a first vapor product;
heating said first vapor product; and
successive stages of mixing and heating to vaporize essentially all of the remaining portions of liquid fuel to provide a final vapor product, the successive stages mixing the vapor product from a preceding stage with a portion of the liquid fuel; and
reacting the final vapor product in a reforming zone to produce a hydrogen rich gas.

4,203,964

RE-EXTRACTING METAL CHLORIDE COMPLEX FROM AN ORGANIC EXTRACTION SOLUTION

Hans Reinhardt, and Ulf V. Kuylenstierna, both of Västra Frölunda, Sweden, assignors to MX-Processer Reinhardt & Co. AB, Mölindal, Sweden

Filed Jul. 3, 1978, Ser. No. 921,177
Claims priority, application Sweden, Jul. 20, 1977, 7708387; Dec. 14, 1977, 7714219
Int. Cl.² C01B 17/96, 7/01
U.S. Cl. 423—658.5 **7 Claims**



1. A process for the re-extraction of a metal from an organic extraction solution in which the metal is presented as a metal chloride complex bonded to an extractant, characterized in contacting the organic extraction solution with an aqueous solution to transfer metal ions and chloride ions to the aqueous solution, adding a sulphuric acid solution to the aqueous solution, either before or before and after the contact with the organic extraction solution, heating the thusly acidified aqueous solution to drive off hydrogen chloride and water, crystallizing metal sulphate from the concentrated solution thus produced, and separating the crystallized metal sulphate from the solution.

4,203,965

Patent Not Issued For This Number

4,203,966

DENTIFRICE WITH TOPICAL AND SYSTEMIC PHOSPHATE FLUORIDE SYSTEM

Frank R. Faunce, Houston, Tex., assignor to William F. McCord, Pasadena, Tex.

Continuation of Ser. No. 826,718, Aug. 22, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 973,910
Int. Cl.² A61K 7/18
U.S. Cl. 424—52 **7 Claims**

1. A two component ingestible dentifrice composition comprising:
a first topical dentifrice composition component including an abrasive material, a carrier material, a binder, a sweetening agent, a flavoring agent and an effective amount of an acid phosphate compound to impart a pH of about 3.5;
a second systemic and topically effective but otherwise unstable fluoride composition incorporated within a water free carrier gel; and
a lipid coating material coating said systemic fluoride compound of said dentifrice composition, said coating being broken down by the acid fluid of the stomach to release fluoride in the stomach for absorption by the mucosa, said acid phosphate paste dentifrice, when reacted together with said gel of coated fluoride during a toothbrushing sequence, providing a tooth decay inhibiting complex fluoride fluorophosphate compound at an energized tooth surface etched by said acid phosphate compound.

4,203,967

DIAGNOSTIC TEST FOR MALABSORPTION

Hugo E. Gallo-Torres, Livingston, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 759,221, Jan. 13, 1977, abandoned. This application Dec. 2, 1977, Ser. No. 856,818
Int. Cl.² A61K 29/00
U.S. Cl. 424—9 **9 Claims**

1. A method for testing for malabsorption in a patient comprising:
(a) orally administering to said patient who had fasted overnight N-(2-aminoethyl)-glycine;
(b) collecting the urine from said patient during the eight hours following said administration; and
(c) contacting a sample of the urine with an indicator substance which colorimetrically indicates the presence of N-(2-aminoethyl)-glycine thereby colorimetrically determining the amount of N-(2-aminoethyl)-glycine in the urine.

4,203,968

COMBINATION VACCINE FOR SWINE DYSENTERY AND METHOD OF USE

Delbert L. Harris, Ames, Iowa; Robert A. Goodnow, Omaha, Nebr.; Robert D. Glock, and Joann M. Kinyon, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa and Burns-Biotec Laboratories, Inc., Omaha, Nebr.

Division of Ser. No. 935,000, Aug. 18, 1978, Pat. No. 4,152,414. This application Mar. 1, 1979, Ser. No. 16,623
Int. Cl.² A61K 39/02
U.S. Cl. 424—92 **5 Claims**

1. A parenteral preparation for increasing the resistance of swine to swine dysentery infection, comprising an injectable cell concentrate containing killed cells of a virulent isolate of *Treponema hyodysenteriae* in combination with killed cells of *Bacteroides vulgatus*, and *Bacteroides vulgatus* being present in an amount of from 0.25 to 2 parts by weight (dry basis) per part of said *Treponema hyodysenteriae*.

4,203,969

DITHRANOL COMPOSITIONS FOR TOPICAL APPLICATIONS

Hyman Yarrow, Hitchin, and Martin Whitefield, London, both of England, assignors to Drythanol Limited, London, England

Filed Apr. 28, 1978, Ser. No. 900,861
Claims priority, application United Kingdom, Jul. 6, 1977, 28410/77
Int. Cl.² A61K 31/745, 31/05
U.S. Cl. 424—83 **11 Claims**

1. A composition for topical application comprising:
0.01 to 1% of dithranol;
0.05 to 5% of a water-soluble, oil-insoluble acid antioxidant or of a combination of a water-soluble, oil-insoluble acid and a water-soluble, oil-insoluble antioxidant;
20 to 60% of petroleum jelly, along or mixed with a spreadable synthetic hydrocarbon rubber, in which dithranol is soluble;
25 to 60% of water in which the said acid-antioxidant or combination of acid and antioxidant is dissolved; and
5 to 20% of an emulsifier to maintain as a stable emulsion the said petroleum jelly, alone or mixed with a spreadable synthetic hydrocarbon rubber, as a discontinuous oil phase dispersed in a continuous aqueous phase;
the said precentages being by weight based on the total weight of the composition;
the dithranol being substantially completely retained in the discontinuous oil phase, and the acid-antioxidant or combination of acid and antioxidant being dissolved in and substantially completely retained in the continuous aqueous phase,
whereby when in said composition the dithranol is protected from oxidation during storage but when the composition is applied to the skin the water in said aqueous phase evaporates or is absorbed by the skin and the dithranol is made available.

4,203,970

SWINE ATROPIC RHINITIS VACCINE

Dennis J. Carlo, Rahway; Arpi Hagopian, and Peter J. Kniskern, both of Sayreville; all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 5, 1979, Ser. No. 17,528
Int. Cl.² A61K 39/02
U.S. Cl. 424—92 **5 Claims**

1. An immunogenic sub-cellular cell wall antigenic fraction of *Bordetalla bronchiseptica* contains in part by weight at least about 53% Lowry protein, from about 10 to about 13% carbohydrate, of which about 19% is hexose and about 19% is hexosamine, from about 1 to about 1.4% sialic acid, and about 0.18% KDO.

4,203,971

NEISSERIA GONORRHOEAE VACCINE

Thomas M. Buchanan, Seattle, Wash., assignor to Government of the United States, Washington, D.C.

Filed Mar. 23, 1978, Ser. No. 889,343
Int. Cl.[2] A61K *39/02*
U.S. Cl. 424—92 2 Claims

1. A vaccine for protecting humans against infection by *Neisseria gonorrhoeae* microorganisms containing at least one POMP antigen free of contaminants which are toxic to humans characterized by the ability to elicit a bactericidal response in humans, consisting essentially of subunits with molecular weights of from 34,000 to 39,000 Daltons, containing both hydrophobic and hydrophilic groups and having a carbohydrate content of about 4% and a protein content of about 96% by weight.

4,203,972

PENICILLIN COMPOSITION

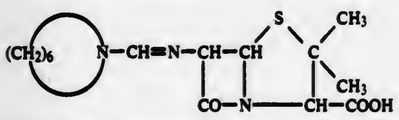
Peter Bamberg, Zürich, Switzerland; Bertil A. Ekström, Södertilje, Sweden; Ulf E. Forsgren, Gävle, Sweden, and Berndt O. H. Sjöberg, Södertilje, Sweden, assignors to Astra Pharmaceutical Products, Inc., Framingham, Mass.

Continuation-in-part of Ser. No. 464,157, Apr. 25, 1974, which is a continuation-in-part of Ser. No. 302,423, Oct. 31, 1972, abandoned. This application Mar. 23, 1978, Ser. No. 889,410
Claims priority, application United Kingdom, Nov. 1, 1971, 50675/71
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—114 8 Claims

1. An antibacterial synergistic composition comprising a mixture of

(a) the penicillin 6-(D-α-amino-p-hydroxyphenylacetamido)penicillanic acid or its pharmaceutically acceptable salts (A); and

(b) a penicillin of the formula



or pharmaceutically acceptable salts or pharmaceutically acceptable in vivo rapidly hydrolyzed esters thereof (C); said composition containing the compounds of formulas A and C in a weight ratio ranging from 10:1 to 1:10.

4,203,973

ANTIBIOTICS

Martin Cole, Dorking; John D. Hood, Cranleigh, and Dennis Butterworth, Redhill, all of England, assignors to Beecham Group Limited, England

Division of Ser. No. 724,948, Sep. 20, 1976, which is a continuation-in-part of Ser. No. 691,491, Jun. 1, 1976, abandoned, which is a division of Ser. No. 559,973, Mar. 19, 1975, abandoned. This application Jun. 7, 1978, Ser. No. 913,304
Claims priority, application United Kingdom, Mar. 28, 1974, 13855/74
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—114 26 Claims

1. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises a synergistically effective amount of a pharmaceutically acceptable dibasic salt of MM 4550A which is at least 70% pure and an antibacterially effective amount of amoxycillin which substance MM4550A is a solid carboxylic acid of the molecular formula $C_{13}H_{16}O_9N_2S_2$ which in the form of a substantially pure sodium salt has the following characteristics:

(a) in aqueous solution, it has a characteristic ultraviolet spectrum with absorption maxima at about 238 nm and at about 287 nm;

(b) when present at 0.4% w/w in a freshly prepared KBr disc, it has a characteristic infra-red spectrum substantially as shown in FIG. 2 and has absorption maxima at inter alia about 3450, 2950, 1765, 1695, 1510, 1390 and 1260 cm^{-1};

(c) it has a characteristic n.m.r. spectrum which when taken in D_2O is substantially as shown in FIG. 3, which spectrum possesses inter alia (i) a pair of low field doublets centred approximately at 2.45τ and 3.65τ with coupling constants of approximately 15 Hz; (ii) a doublet centred at approximately 8.55τ; and (iii) a sharp singlet at approximately 7.95τ;

(d) it possesses antibacterial activity against various species including inter alia, strains of *Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiella aerogenes, Proteus mirabilis, Acinetobacter anitratus, Serratia marcescens* and *Shigella sonnei;*

(e) it syngegizes the antibacterial activity of ampicillin against certain β-lactamase producing bacteria including stains of *Escherichia coli, Klebsiella aerogenes, Proteus mirabilis,* and *Staphylococcus aureus Russell;* and

(f) it is not a polypeptide or protein, in combination with a pharmaceutically acceptable carrier, said di-basic salt of MM 4550A and said *amoxycillin* being present in the ratio of 10:1 to 1:10.

4,203,974

STABLE AQUEOUS FOAM FORMULATION, AND METHOD OF USE THEREOF FOR VISUAL OBSCURATION AND AREA DENIAL

Harry A. Brown, Jr., Fallston, and Robert F. Durgin, Abingdon, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 15, 1978, Ser. No. 886,961
Int. Cl.[2] A01N *11/00;* B01J *13/00*
U.S. Cl. 424—166 11 Claims

1. A stable aqueous foam formulation comprising, in a single composite solution, a conventional high expansion foam liquid concentrate consisting essentially of a sodium lauryl sulfate surfactant as a principal active ingredient in aqueous solution, a glycerin thickener, a sucrose stabilizer and a relatively large amount of ammonia in aqueous solution sufficient to act as an irritant deterrent to persons exposed to said foam formulation.

6. In a method for obtaining visual obscuration and area denial in military operations through dissemination of a high expansion aqueous foam, the improvement comprising the step of using a stable, aqueous foam formulation which comprises a single composite aqueous solution of a conventional high expansion foam liquid consisting essentially of a sodium lauryl sulfate surfactant as a principal active ingredient, a glycerin thickener, a polyhydroxylated stabilizer and a relatively large amount of ammonia as an irritant deterrent to persons exposed to said foam.

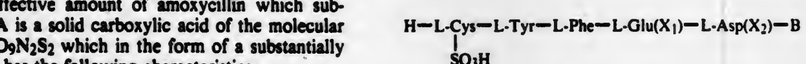
4,203,975

PSYCHOPHARMACOLOGICAL PEPTIDES SUITABLE FOR THERAPEUTIC ADMINISTRATION

Hendrik M. Greven, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Jun. 30, 1978, Ser. No. 921,067
Claims priority, application Netherlands, Jul. 13, 1977, 7707781
Int. Cl.[2] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 18 Claims

1. Compounds of the formula:



and their functional derivatives, wherein X_1 and X_2 represent hydroxy or amino and B represents:

(1) hydroxy or

(2) an amino-acid residue selected from the group consisting of L-Asp-OH, L-Asn-OH, L-Glu-OH, L-Gln-OH, L-Ser-OH, or HN-A-COOH, wherein A is an alkylidene group with one to about six carbon atoms.

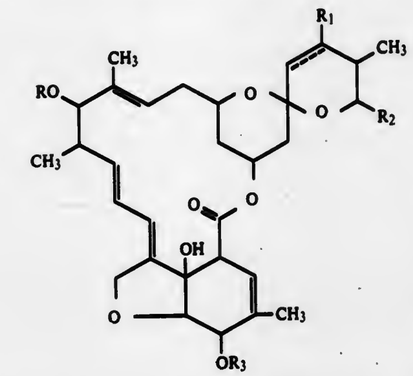
4,203,976

SUGAR DERIVATIVES OF C-076 COMPOUNDS

Michael H. Fisher, Bridgewater, and Richard L. Tolman, Berkeley Heights, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 2, 1978, Ser. No. 930,466
Int. Cl.[2] A61K *31/35;* C07H *17/08*
U.S. Cl. 424—180 18 Claims

1. A compound having the formula:



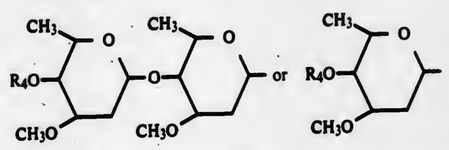
wherein the broken line indicates a single or double bond;

R_1 is hydroxy, loweralkanoyloxy, or glycosyloxy and is present only when the broken line indicates a single bond;

R_2 is n-propyl or sec-butyl;

R_3 is hydrogen, methyl, loweralkanoyl or glycosyl; and

R is hydrogen, loweralkanoyl, glycosyl,



wherein R_4 is hydrogen, loweralkanoyl or glycosyl; wherein said glycosyl groups are polyhydroxy 5- or 6-membered cyclic acetals which are optionally substituted on the ring carbon atoms with loweralkyl and in which the hydroxy groups may be optionally substituted with loweralkyl or loweralkanoyl, and the monosaturated glycosyl derivatives thereof;

provided that at least one of R, R_1, R_3 or R_4 must contain a glycosyl group, however, when only R contains a glycosyl group, said glycosyl group of R shall exclude the α-L-oleandrosyl and α-L-oleandrosyl-α-L-oleandrosyl groups.

17. A method for the treatment of helmintic, arthropod ectoparasitic, and acaridal infections which comprises administering to an animal infected with such helminths, arthropod ectoparasites or acarides an effective amount of a compound of claim 1.

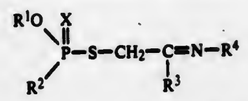
4,203,977

PHOSPHORIC ACID ESTERS, COMPOSITION AND USE

Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,152
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746087
Int. Cl.[2] C07F *9/165;* A01N *9/36*
U.S. Cl. 424—211 9 Claims

1. A phosphoric (phosphonic) acid ester of the formula



I,

where R^1 denotes linear or branched alkyl of up to 4 carbon atoms, R^2 denotes linear or branched alkoxy or alkylthio, each of up to 4 carbon atoms R^3 denotes amino, mono- or di-alkylamino of up to 4 carbon atoms in each alkyl, alkylalkoxy-alkyl-amino of up to 4 carbon atoms in each alkyl or alkoxyalkyl, di-alkoxyalkylamino of up to 4 carbon atoms in each alkoxyalkyl, alkylalkenylamino of up to 4 carbon atoms in each alkyl or alkenyl, alkylalkynylamino of up to 4 carbon atoms in each alkyl or alkynyl, N-methyl-N-methoxyamino, R^4 denotes alkylsulfonyl or haloalkylsulfonyl of up to 4 carbon atoms in each alkyl or haloalkyl, and X denotes oxygen or sulfur.

8. Pesticides for insects, mites and ticks comprising a solid and/or liquid carrier and an amount of a phosphoric (phosphonic) acid ester of the formula I sufficient to kill said insects, mites or ticks.

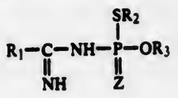
4,203,978

AMIDINO-PHOSPHORIC ACID THIOL ESTERS FOR COMBATING PESTS

Elmar Sturm, Aesch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 862,695, Dec. 21, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,335
Claims priority, application Switzerland, Dec. 30, 1976, 16473/76; Mar. 4, 1977, 2721/77
Int. Cl.[2] A01N *9/36;* C07F *9/24*
U.S. Cl. 424—211 20 Claims

1. A compound of the formula I



(I)

wherein

R_1 represents hydrogen, C_1-C_4-alkyl or cyclopropyl,

R_2 represents C_3-C_5-alkyl, and

R_3 represents methyl or ethyl, whilst

Z represents oxygen or sulphur.

19. A method of combating nematodes at a locus which comprises applying to the locus an effective amount of a compound according to claim 1.

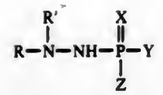
4,203,979

INSECTICIDAL 1-SEC. AND TERT.-ALKYL-2-DISUBSTITUTED-PHOSPHORYL HYDRAZINES

Michael J. Brown, Randolph, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Jan. 16, 1979, Ser. No. 3,959
Int. Cl.[2] A01N *9/36;* C07F *9/24*
U.S. Cl. 424—220 18 Claims

1. Compounds of the formula:



where
R is a secondary or tertiary alkyl, C_4-C_{10},
R' is hydrogen, alkyl, C_1-C_6 or acetyl,
X is oxygen or sulfur, and,
Y and Z are independently alkyl, C_1-C_6, alkenyl, C_2-C_6, alkoxy, C_1-C_6, thioalkoxy, C_1-C_6.

17. A composition for combatting insect or mite pests at a locus which comprises an insecticidally or miticidally effective amount of a compound according to claim 1 and an acceptable diluent or carrier material.

18. A method of combatting insect or mite pests at a locus which comprises treating the locus with an insecticidally or miticidally effective amount of a composition according to claim 17.

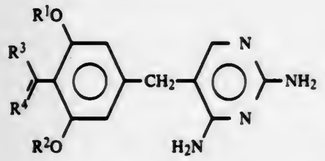
4,203,980

BENZYLPYRIMIDINE DERIVATIVES

Ivan Kompis, Oberwil, and Alexander E. Wick, Riehen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 26, 1978, Ser. No. 900,357
Claims priority, application Luxembourg, May 5, 1977, 77269; Switzerland, Mar. 10, 1978, 2650/78
Int. Cl.² A61K *31/635*; C07D *239/48*
U.S. Cl. 424—229 **16 Claims**

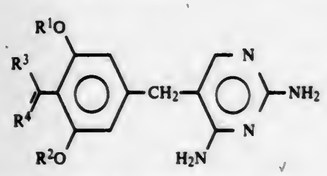
1. A compound of the formula



I

wherein R^1 and R^2, independently, are C_{1-6}-alkyl, R^3 is C_{1-3}-alkyl and R^4 is methylene or C_{2-4}-alkylidene,
or a physiologically acceptable acid addition salt thereof.

14. An antibacterial pharmaceutical composition comprising a compound of the formula



I

wherein R^1 and R^2, independently, are C_{1-6}-alkyl, R^3 is C_{1-3}-alkyl and R^4 is methylene or C_{2-4}-alkylidene,
or a pharmaceutically acceptable acid addition salt thereof, an antibacterially active sulfonamide and a compatible pharmaceutical carrier material, said compound of formula I being present in an amount sufficient to potentiate the antibacterial activity of the sulfonamide.

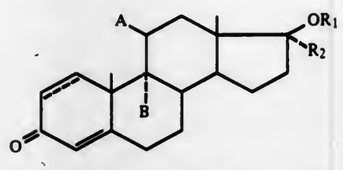
4,203,981

NOVEL 17 α-ARYL-STEROIDS

André Pierdet, Noisy-le-Sec; Vesperto Torelli, Maisons-Alfort, and Roger Deraedt, Les Pavillons-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jan. 3, 1979, Ser. No. 692
Claims priority, application France, Jan. 11, 1978, 78 00658
Int. Cl.² C07J *23/00*; A61K *31/56*
U.S. Cl. 424—243 **37 Claims**

1. A compound of the formula



I

wherein R_1 is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of 1 to 18 carbon atoms, R_2 is selected from the group consisting of optionally substituted phenyl and benzyl and optionally substituted heterocyclic selected from the group consisting of furyl, thienyl, pyridyl and pyrimidyl, the optional substituents being selected from the group consisting of hydroxy, alkyl and alkoxy of 1 to 4 carbon atoms, halogens and $-CF_3$, the dotted line in the A ring indicates an optional $\Delta^{1(2)}$-double bond and A may be oxo and B is hydrogen or A is β—OH and B is hydrogen or halogen or A and B form a $\Delta^{9(11)}$-double bond.

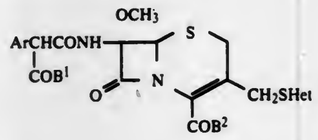
4,203,982

ARYLMALONAMIDOMETHOXYCEPHALOSPORINS

Masayuki Narisada, Ibaraki; Hiromu Matsumura, Ashiya, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jul. 28, 1977, Ser. No. 819,931
Claims priority, application Japan, Aug. 10, 1976, 51-95732
Int. Cl.² C07D *501/36*
U.S. Cl. 424—246 **8 Claims**

1. A compound of the formula:



wherein
(1) Ar is p-hydroxyphenyl, Het is 1-methyl-1H-tetrazol-5-yl, and COB^1 and COB^2 are carboxy or protected carboxy groups;
(2) Ar is p-carbamoyloxyphenyl, Het is 1-methyl-1H-tetrazol-5-yl, and COB^1 and COB^2 are carboxy or protected carboxy groups;
(3) Ar is 2-fluoro-4-hydroxyphenyl, Het is 1-methyl-1H-tetrazol-5-yl, and COB^1 and COB^2 are carboxy or protected carboxy groups;
(4) Ar is 2-thienyl, Het is 1-methyl-1H-tetrazol-5-yl, and COB^1 and COB^2 are carboxy or protected carboxy groups; or
(5) Ar is 3-thienyl, Het is 1-methyl-1-H-tetrazol-5-yl, and COB^1 and COB^2 are carboxy or protected carboxy groups,
and pharmaceutically acceptable salts thereof.

3. An antibacterial pharmaceutical composition comprising an effective antibacterial amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

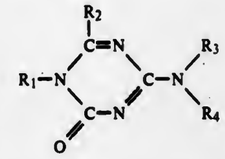
4,203,983

SPASMOLYTIC TRIAZINONES

John Yelnosky, Warrington; George H. Douglas, Malvern; Ghulam N. Mir, Buckingham, and Chong M. Won, Warrington, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 13, 1978, Ser. No. 959,840
Int. Cl.² A61K *31/53, 31/54, 31/535*
U.S. Cl. 424—249 **12 Claims**

1. A method for treating smooth muscle spasms which comprises administering to a patient in need of such therapy by oral, parenteral or anal routes an effective amount of an antispasmodic agent of the formula:



wherein R_1 is phenyl, benzyl or phenethyl; or phenyl, benzyl or phenethyl in which one or more of the phenyl hydrogens are substituted by lower alkyl, lower alkoxy, halo, halo-lower alkyl, amino, nitro, hydroxy, cyano, carboxyl or lower alkyl sulfonyl; pyridyl or pyridyl in which one or more of the hydrogens is replaced by lower alkyl, lower alkoxy, halo, halo-lower alkyl, amino, nitro, hydroxy, cyano, carboxyl or lower alkyl sulfonyl; R_2 is hydrogen or lower alkyl, and R_3 and R_4 are each independently selected from the group consisting of hydrogen, hydroxyl, lower alkanoyl, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halo lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, phenoxy lower alkyl, di-lower alkylamino lower alkyl; and their pharmaceutically acceptable salts.

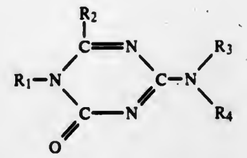
4,203,984

ANTISECRETORY TRIAZINONES

George H. Douglas, Malvern; Ghulam N. Mir, Buckingham; Chong M. Won, Warrington, and William L. Studt, Harleysville, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 13, 1978, Ser. No. 959,950
Int. Cl.² A61K *31/53, 31/54, 31/535*
U.S. Cl. 424—249 **9 Claims**

1. A method for inhibiting or suppressing the activity of the secretory glands in the gastrointestinal tract which comprises administering by oral or parenteral route to a patient suffering from hypersecretion an effective amount of an antisecretory composition consisting essentially of an inert pharmaceutical carrier and an effective antisecretory amount of a compound of the formula:



wherein R_1 is phenyl, benzyl or phenethyl; or phenyl, benzyl or phenethyl in which one or more of the phenyl hydrogens are substituted by lower alkyl, lower alkoxy, halo, halo lower alkyl, amino, nitro, hydroxy, cyano, carboxyl, or lower alkyl sulfonyl; pyridyl or pyridyl having one or more hydrogens replaced by lower alkyl, lower alkoxy, halo, halo lower alkyl, amino, nitro, hydroxy, cyano, carboxyl, or lower alkyl sulfonyl; R_2 is hydrogen or lower alkyl, and R_3 and R_4 are each independently selected from the group consisting of hydrogen, hydroxyl, lower alkanoyl, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halo lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, phenoxy lower alkyl, di-lower alkylamino lower alkyl; and their pharmaceutically acceptable salts.

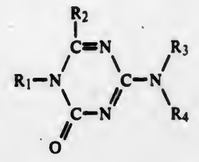
4,203,985

ANTIDIARRHEAL TRIAZINONES

John Yelnosky, Warrington; George H. Douglas, Malvern; Ghulam N. Mir, Buckingham; Dahyabhai M. Patel, Ambler; Chong M. Won, Warrington, and Ronald L. Alioto, Havertown, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 13, 1978, Ser. No. 959,722
The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.
Int. Cl.² A61K *31/53, 31/54, 31/535*
U.S. Cl. 424—249 **16 Claims**

1. A pharmaceutical composition suitable for treating diarrhea comprising an effective amount of a compound of the formula:



wherein R_1 is phenyl, benzyl or phenethyl; or phenyl, benzyl or phenethyl in which one or more of the phenyl hydrogens are substituted by lower alkyl, lower alkoxy, halo, halo-lower alkyl, amino, nitro, hydroxy, cyano, carboxyl or lower alkyl sulfonyl; pyridyl or pyridyl having one or more of the hydrogens replaced by lower alkyl, lower alkoxy, halo, halo-lower alkyl, amino, nitro, hydroxy, cyano, carboxyl or lower alkyl sulfonyl; R_2 is hydrogen or lower alkyl, and R_3 and R_4 are each independently selected from the group consisting of hydrogen, hydroxyl, lower alkanoyl, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halo lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, phenoxy lower alkyl and di-lower alkyl-amino lower alkyl and their pharmaceutically acceptable non-toxic salts and a pharmaceutically acceptable carrier.

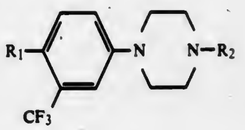
4,203,986

M-TRIFLUORO-METHYLPHENYL-PIPERAZINE

Maurice Joullié, Saint-Germain-en-Laye; Gabriel Maillard, Paris; Lucien Lakah, Paris; Christian J. M. Warolin, Paris, and Yves R. A. Pascal, Paris, all of France, assignors to Metabio-Joullie, France

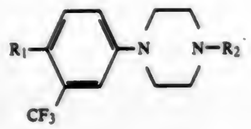
Filed Jan. 13, 1978, Ser. No. 869,277
Claims priority, application United Kingdom, Jan. 14, 1977, 1539/77
Int. Cl.² C07D *295/08, 295/10*; A61K *31/495*
U.S. Cl. 424—250 **16 Claims**

1. A compound of the formula



wherein
R_1 is selected from a hydrogen or fluorine atom, and
R_2 is selected from the group consisting of an alkyl group containing 2 to 6 carbon atoms and which is substituted by at most two hydroxy groups or an oxo group and also by a 4-(m-trifluoromethylphenyl)-piperazino or 4-(3-trifluoromethyl-4-fluoro-phenyl)-piperazino group,
and pharmaceutically-acceptable acid addition salts thereof.

11. A compound of the formula



wherein

R_1 is selected from the group consisting of hydrogen and fluorine, and R_2 is selected from the group consisting of

3-[4-(m-trifluoromethylphenyl)-piperazino]-2-hydroxypropyl,

3-[4-(m-trifluoromethyl-4-fluorophenyl)piperazino]-2-hydroxypropyl, and

3-[4-(m-trifluoromethylphenyl)piperazino]-2-oxo-propyl,

and pharmaceutically-acceptable acid addition salts thereof.

15. A pharmaceutical composition comprising a compound according to claim 11, together with a pharmaceutically acceptable diluent.

4,203,987

3-[PYRIDINYLALKYL AND PIPERIDINYLALKYL]-2,3,4,4a-TETRAHYDRO-1H-PYRAZINO[1,2-a]QUINOXALIN-5(6H)-ONES

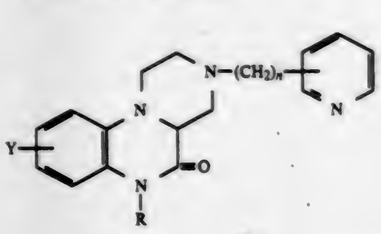
Meier E. Freed, Paoli, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 40,609

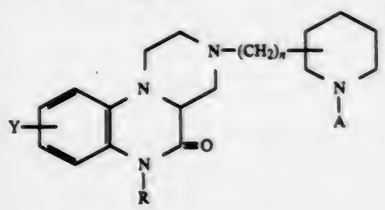
Int. Cl.[2] A61K *31/495*; C07D *487/04*

U.S. Cl. 424—250 **54 Claims**

1. A compound of the formula:



or



wherein

n is an integer from 1 to 8;

R is hydrogen or lower alkyl;

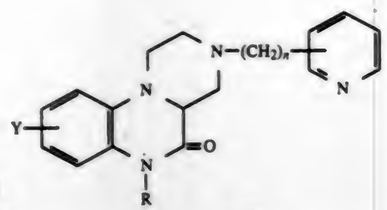
Y is hydrogen, lower alkyl, lower alkoxy, chlorine, fluorine, or trifluoromethyl, in the 7, 8, or 9 position;

A is hydrogen, lower alkyl, phen(lower)alkyl, or diphenyl(-lower)alkyl; and

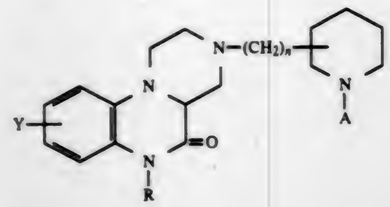
the pyridinyl or piperidinyl moiety is joined to the alkylene bridging group at the 2 or 4 position; or

a non-toxic acid addition salt thereof.

34. A method for relieving hypertension in warm-blooded animals which comprises administering to an animal in need thereof an anti-hypertensive effective amount of a compound of the formula:



or



wherein

n is an integer from 1 to 8;

R is hydrogen or lower alkyl;

Y is hydrogen, lower alkyl, lower alkoxy, chlorine, fluorine, or trifluoromethyl in the 7, 8, or 9 position;

A is hydrogen, lower alkyl, phen(lower)alkyl, or diphenyl-(lower)alkyl; and

the pyridinyl or piperidinyl moiety is joined to the alkylene bridging group at the 2 or 4 position; or

a non-toxic acid addition salt thereof.

4,203,988

PYRIDINYL UREAS AND PHARMACEUTICAL USE

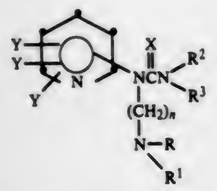
William A. Bolhofer, Frederick; Edward J. Cragoe, Jr., Lansdale, and Jacob M. Hoffman, Jr., North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 727,907, Sep. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 631,300, Nov. 12, 1975, abandoned. This application Sep. 18, 1978, Ser. No. 943,581

Int. Cl.[2] A61K *31/44*; C07D *213/75*

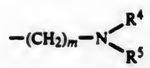
U.S. Cl. 424—266 **30 Claims**

1. A compound of the formula



wherein n is a whole number from 2 to 8 and up to 4 hydrogen atoms in the alkylene chain $(CH_2)_n$ may be replaced by alkyl of from 1 to 3 carbon atoms;

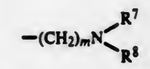
R, R^1, R^2 and R^3 are hydrogen or alkyl of from 1 to 8 carbon atoms, aralkyl wherein alkyl is 1 to 3 carbon atoms, cycloalkyl or from 3 to 7 carbon atoms in the ring, cycloalkylmethyl with from 3 to 7 carbon atoms in the ring, alkoxyalkyl wherein alkoxy is 1 to 4 carbon atoms and alkyl is 1 to 4 carbon atoms, lower alkylcarbonyloxyalkyl, hydroxyalkyl of from 1 to 4 carbon atoms, haloalkyl of from 1 to 3 carbon atoms,



wherein m is 0, 2 or 3 and R^4 and R^5 are the same or different and are

hydrogen or alkyl of from 1 to 4 carbon atoms; phenyl, substituted phenyl wherein the substituent is alkyl of from 1 to 3 carbon atoms, alkoxy of from 1 to 3 carbon atoms, halogen or haloalkyl of from 1 to 3 carbon atoms;

the Y substituents are the same or different and are hydrogen, alkyl of from 1 to 4 carbon atoms, hydroxyalkyl of from 1 to 4 carbon atoms, deuteroalkyl of from 1 to 4 carbon atoms, phenyl, hydroxy, halogen,



wherein m is 0–3 and R^7 and R^8 are the same or different and are hydrogen, alkyl of from 1 to 4 carbon atoms or aralkyl wherein alkyl is 1 to 3 carbon atoms; haloalkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, aralkoxy wherein alkoxy is 1 to 3 carbon atoms, alkylthio of from 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, cyano, nitro, formyl, loweralkoxycarbonyl wherein alkoxy is 1 to 5 carbon atoms or carbamoyl;

X is oxygen or sulfur;

and the quaternary ammonium or N-oxide derivatives thereof, and the pharmaceutically acceptable acid-addition salts thereof.

28. A method for inhibiting gastric acid secretion which comprises administering to a mammalian species an effective amount of a compound of claim 1.

4,203,989

ANTI-DIARRHEAL DIARYL-(1-AZABICYCLO(2.2.2)OCTAN-2-YL)-ALKANOLS AND RELATED COMPOUNDS

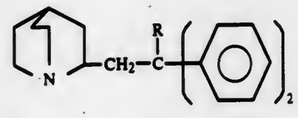
Chung H. Yen, Arlington Hts., and James R. Deason, Wilmette, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Apr. 30, 1979, Ser. No. 34,889

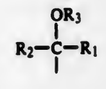
Int. Cl.[2] A61K *31/445*; C07D *453/02*

U.S. Cl. 424—267 **19 Claims**

10. A method of treating diarrhea comprising administering to an animal in need of anti-diarrheal treatment an effective anti-diarrheal amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein R is a cycloalkanol having 4–8 carbon atoms, an alkanol having 1–2 carbon atoms, or a radical of the formula



wherein R_1 and R_2 are each H or a C_1–C_5 alkyl, and R_3 is H or an acyl of the formula



wherein R_4 is H or a C_1–C_4 alkyl.

4,203,990

ANTI-DIARRHEAL 2-SUBSTITUTED QUINUCLIDINES

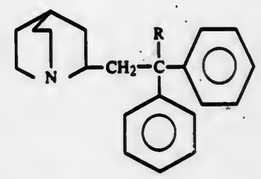
Chung H. Yen, Arlington Heights, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Apr. 30, 1979, Ser. No. 34,890

Int. Cl.[2] A61K *31/445*; C07D *453/02*

U.S. Cl. 424—267 **9 Claims**

5. A method of treating diarrhea comprising administering to an animal in need of anti-diarrheal treatment an effective anti-diarrheal amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein R is phenyl, halogen-substituted phenyl, lower alkyl-substituted phenyl, pyridyl or 5-methyl-1,3,4-oxadiazol-2-yl.

4,203,991

(PIPERIDINO OXOETHOXY)ACETIC ACID COMPOUNDS, COMPOSITIONS AND METHODS

Michael J. Umen, Glenside, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

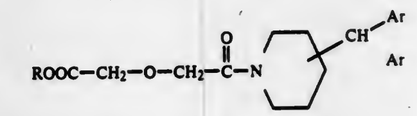
Continuation-in-part of Ser. No. 829,117, Aug. 30, 1977, Pat. No. 4,123,538. This application Sep. 1, 1978, Ser. No. 939,146

The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.

Int. Cl.[2] C07D *211/16*; A61K *31/445*

U.S. Cl. 424—267 **4 Claims**

1. A (2-amino-2-oxoethoxy)acetic acid compound represented by the formula



wherein

R is lower alkyl or phenylalkyl; and

Ar is phenyl, trifluoromethylphenyl, halo-substituted-phenyl, lower alkyl-substituted-phenyl or lower alkoxy-substituted-phenyl.

4. A method for inhibiting gastric secretion which comprises administering to a subject with gastric hyperacidity, an effective antisecretory amount of a compound of claim 1.

4,203,992

β-BROMOPENICILLANIC ACID SULFONE

Eric M. Gordon, Pennington, and William H. Koster, Ringoes, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 11, 1978, Ser. No. 968,538

Int. Cl.[2] A61K *31/43*; C07D *499/44*

U.S. Cl. 424—271 **6 Claims**

3. A method of inhibiting the action of the β-lactamase enzyme RTEM in a mammalian host being treated with a

β-lactam antibiotic susceptible to degradation by the RTEM enzyme, which comprises administering (2S,5R,6S)-6β-bromo-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid, S,S-dioxide, or a physiologically acceptable salt thereof or a readily hydrolyzable ester thereof to the host in conjunction with the antibiotic.

4,203,993

6α-BROMOPENICILLANIC ACID SULFONE

Eric M. Gordon, Pennington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 11, 1978, Ser. No. 968,539
Int. Cl.[2] A61K *31/43*; C07D *499/44*
U.S. Cl. 424—271 **6 Claims**

3. A method of inhibiting the action of the β-lactamase enzyme RTEM in a mammalian host being treated with a β-lactam antibiotic susceptible to degradation by the RTEM enzyme, which comprises administering (2S,5R,6S)-6α-bromo-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid, S,S-dioxide, or a physiologically acceptable salt thereof or a readily hydrolyzable ester thereof to the host in conjunction with the antibiotic.

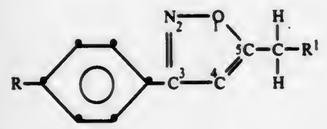
4,203,994

FUNGICIDAL 3-PHENYL-5-(SUBSTITUTED METHYL)ISOXAZOLES

James D. Davenport; Barry A. Dreikorn, both of Indianapolis, Ind., and A. Frederick Elsasser, Columbus, Ohio, assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 695,669, Jun. 14, 1976, Pat. No. 4,109,002. This application May 10, 1978, Ser. No. 904,687
Int. Cl.[2] A01N *9/22, 9/28, 9/00*
U.S. Cl. 424—272 **6 Claims**

1. A fungicidal method of reducing the adverse effects of fungal foliar phytopathogens which comprises applying to the phytopathogens on the foliage of host plants an effective phytopathogen-inhibiting amount of a compound of the formula



wherein
R represents
chloro,
bromo,
fluoro,
trifluoromethyl, or
hydrogen;
R^1 represents
bromo or
chloro.

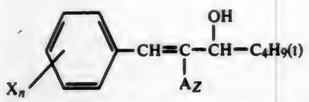
4,203,995

1-PHENYL-2-AZOLYL-4,4-DIMETHYL-1-PENTEN-3-OLS AND THE FUNGICIDAL USE THEREOF

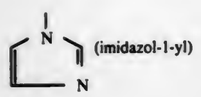
Yuji Funaki, Toyonaka; Hirofumi Oshita, Takarazuka; Shizuya Tanaka, Minoo; Shigeo Yamamoto, Ikeda, and Toshiro Kato, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 28, 1978, Ser. No. 937,384
Claims priority, application Japan, Sep. 7, 1977, 52-108166
Int. Cl.[2] A01N *9/00, 9/22*; C07D *00/00*
U.S. Cl. 424—273 R **7 Claims**

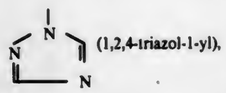
1. A compound of formula:



wherein X, which may be same or different, is alkyl (C_1–C_4), cyano, alkoxy (C_1–C_4), phenoxy, phenyl or halogen, n is zero or an integer of 1 to 2, A_Z is an imidazole group of the formula



or triazole of the formula



or salts thereof.

7. A method for killing fungi which comprises applying a fungicidally effective amount of the compound according to claim 1 to the fungi.

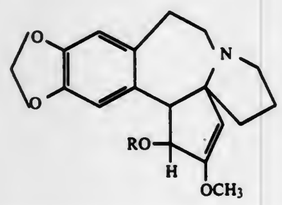
4,203,996

SYNTHETIC CEPHALOTAXINE ESTERS HAVING ANTILEUKEMIC P388 ACTIVITY

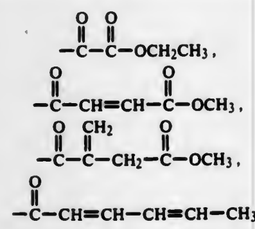
Kenneth L. Mikolajczak, Washington, and Cecil R. Smith, Jr., Dunlap, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 880,000, Feb. 22, 1978, Pat. No. 4,152,333. This application Jan. 3, 1979, Ser. No. 738
Int. Cl.[2] A61K *31/40*
U.S. Cl. 424—274 **7 Claims**

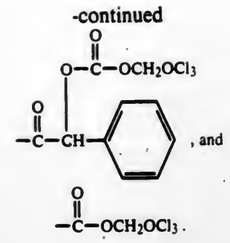
1. A method of treating animals for remission of leukemia of the strain P388 comprising administering to said animals by injection an amount, effective for said remission, of an active alkaloid compound having the following structure:



where R is selected from the group consisting of



-continued



, and

4,203,997

DIRECTLY-PRESSABLE ASCORBIC ACID-CONTAINING GRANULATES

Walter Küppers, Reinheim, and Pasquale Della Mura, Darmstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,362
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706660
Int. Cl.[2] A61K *31/365*
U.S. Cl. 424—280 **11 Claims**

1. In a directly pressable granulate comprising 90–93 weight % of ascorbic acid and a binder, the improvement wherein the binder consists essentially of, sorbitol, mannitol or xylitol.

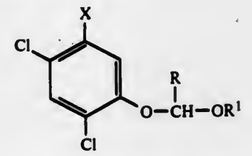
4,203,998

FUNGICIDAL USE OF CHLORO-SUBSTITUTED PHENOXY ETHERS

Don R. Baker, Orinda, and Malcolm B. McClellan, San Jose, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Continuation of Ser. No. 50,971, Jun. 29, 1970, abandoned, and a continuation-in-part of Ser. No. 657,003, Jul. 31, 1967, abandoned, which is a continuation-in-part of Ser. No. 574,529, Aug. 24, 1966, abandoned. This application Jun. 23, 1975, Ser. No. 589,112
Int. Cl.[2] A01N *9/28*
U.S. Cl. 424—283 **3 Claims**

1. The method of controlling the growth of fungi comprising applying to the habitat of said fungi a fungistatically effective amount of a compound having the formula



wherein X is selected from the group consisting of hydrogen and chlorine, and jointly R and R^1 are a divalent alkylene radical containing 3 to 4 carbon atoms.

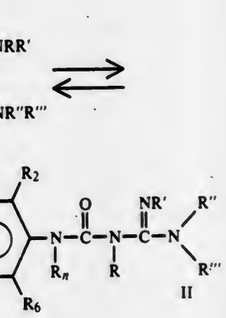
4,203,999

BIS(DITHIOCARBAMATE) SALTS

Charles W. Martin, Lake Jackson, and Eldon L. Ward, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 16, 1978, Ser. No. 951,915
Int. Cl.[2] A01N *9/12*; C07C *155/08*; C07F *15/02, 3/06*
U.S. Cl. 424—286 **8 Claims**

1. A compound of the formula



wherein
n is the valence of M and is 1, 2 or 3, and M is ammonium, an alkali metal, or a transition metal.

4,204,000

ANTI-ULCER AMIDINOUREAS

Julius Diamond, Morris Plains, N.J., and George H. Douglas, Malvern, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 787,673, Apr. 14, 1977, abandoned, which is a division of Ser. No. 558,187, Mar. 31, 1975, Pat. No. 4,060,635. This application Sep. 14, 1978, Ser. No. 942,247
Int. Cl.[2] C07C *127/19*; A61K *31/17, 31/22, 31/275*
U.S. Cl. 424—304 **6 Claims**

1. A method for treating gastrointestinal hyperacidity in humans and mammals in need thereof which comprises the oral or parenteral administration of an effective amount of an amidinourea of the general formula I or its tautomeric form II when R is hydrogen:

where:
R_2, R_3, R_4, R_5 and R_6 may be the same or different and are
hydrogen,
hydroxy,
arloweralkoxy,
acyloxy,
cyano, or
haloloweralkoxy
provided they are not all hydrogen at the same time;
R and R′ are hydrogen or loweralkyl;
R″ and R‴ are hydrogen,
loweralkyl,
loweralkenyl,
cycloalkenyl up to 9 carbon atoms,
cycloalkylloweralkyl,
loweralkyl,
cycloalkyl,
aralkyl,
loweralkynyl,
haloalkyl,
hydroxyalkyl,
alkoxyalkyl,
cyanoalkyl,
aminoalkyl,
mono- and di- loweralkylaminoalkyl,
carbamoylalkyl,
mono- and di- carbamoylalkyl,
carboxyalkyl,
alkoxycarbonylalkyl,
aralkoxycarbonylalkyl,

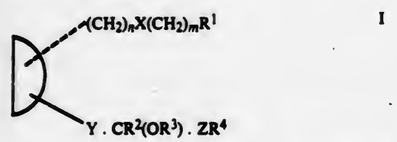
formyl,
acyl,
acylalkyl,
alkylsulfonyl or
aralkylsulfonyl;
R'' and R''' together may form a 5–7 atom ring which may include 0–2 hetero atoms of N, O or S;
R_n is hydrogen or loweralkyl provided at least one of R, R', R'' and R''' is other than hydrogen; and
the non-toxic acid addition salts thereof.

4,204,001
PROSTANE DERIVATIVES

Jean Bowler, and Graham E. Robinson, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 816,666, Jul. 18, 1977, Pat. No. 4,115,580. This application May 30, 1978, Ser. No. 910,894
Claims priority, application United Kingdom, Aug. 11, 1976, 33382/76
Int. Cl.[2] C07C *177/00*
U.S. Cl. 424—308 **9 Claims**

1. A prostane derivative of the formula:



I

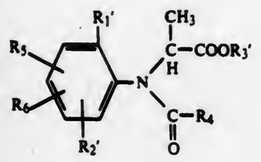
wherein either R^1 is carboxy or C_{2-12}alkoxycarbonyl, D is 3,4,5-trihydroxycyclopenta-1,2-diyl or 3,4-dihydroxycyclopent-5-en-1,2-diyl; X is ethylene or vinylene; Y is ethylene or trans-vinylene; n is 1 or 2 and m is 2 to 5, provided that n and m together total 4 to 6; R^2 and R^3 which may be the same or different are each hydrogen or C_{1-4} alkyl; Z is a direct bond, C_{1-3} alkylene or C_{1-3} alkyleneoxy, in which the oxygen is bonded to R^4; and R^4 is phenyl or naphthyl optionally bearing one or more substituents selected from halogen, nitro, hydroxy and phenyl, and C_{1-4}alkyl, alkoxy and halogenoalkyl; and for those compounds wherein R^1 is carboxy, the pharmaceutically or veterinarily acceptable salts thereof.

4,204,002
METHODS OF USING N-(SUBSTITUTED)-N-ALKOXY CARBONYL ANILINO COMPOUNDS

Adolf Hubele, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 723,825, Sep. 16, 1976, Pat. No. 4,093,738, which is a continuation-in-part of Ser. No. 564,016, Apr. 1, 1975, abandoned. This application Mar. 13, 1978, Ser. No. 885,718
Int. Cl.[2] A61K *31/24*
U.S. Cl. 424—309 **8 Claims**

1. A method of combatting phytopathogenic fungi which consists essentially of applying to the locus thereof an effective amount of a compound of the formula Ia



Ia

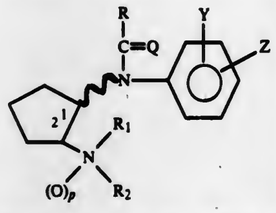
wherein
R_1' represents methyl
R_2' represents methyl, ethyl or chlorine
R_5 represents hydrogen, alkyl of 1 to 3 carbon atoms or halogen and
R_6 represents hydrogen or methyl; the total number of carbon atoms in R_1', R_2', R_5, R_6 not exceeding 4;
R_3' represents methyl and
R_4 represents alkyl of 2 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms or cycloalkyl of 3 to 4 carbon atoms.

4,204,003
N-(2-AMINOCYCLOPENTYL)-N-ALKANOYLANILIDES AS CNS ANTI-DEPRESSANTS

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 777,599, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 756,191, Nov. 30, 1976, abandoned. This application Feb. 9, 1978, Ser. No. 876,349
Int. Cl.[2] A61K *31/165*; C07C *103/20, 103/22*
U.S. Cl. 424—324 **49 Claims**

1. A process for treating depression which comprises administering to a depressed human a compound of the formula



(I)

wherein the wavy line (~) in the 1-position of the cyclopentyl ring indicates cis or trans configuration of the substituents in the 1- and 2-positions of the cyclopentyl ring;
p is zero or 1;
Q is oxygen or sulfur;
R is C_1 to C_3-alkyl;
R_1, taken separately, is hydrogen or C_1 to C_3-alkyl;
R_2, taken separately, is hydrogen or C_1 to C_3-alkyl;
each of Y and Z is selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_2-alkyl, and C_1 to C_2-alkyloxy and when Y is trifluoromethyl, Z is hydrogen; when Y is C_1 to C_2-alkyloxy and Z is hydrogen the C_1 to C_2-alkyloxy is in the 3-position; when Y and Z are both halogens or C_1 to C_2-alkyloxy they are present in the 3- and 4- or 3- and 5-positions, or a pharmacologically acceptable salt thereof, in an amount in the range from about 1 to about 100 mg per dosage unit to alleviate the conditions of depression, in association with a pharmaceutical carrier.

4,204,004
INFUSING BAG CONTAINING COMBINATION OF DRIED EXTRACT AND LIGNEOUS ADSORBENT AND PROCESS OF PREPARING SAME

David R. Farr, Brent, and Ian Horman, Corseaux, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

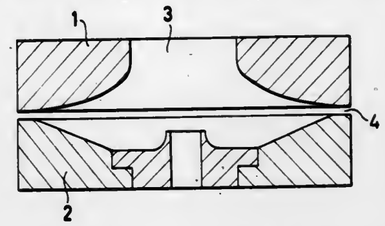
Division of Ser. No. 842,987, Oct. 17, 1977, Pat. No. 4,160,042. This application Mar. 22, 1979, Ser. No. 22,798
Claims priority, application Switzerland, Jul. 29, 1977, 9410/77
Int. Cl.[2] A23F *1/10, 3/00*
U.S. Cl. 426—77 **10 Claims**

1. A process for treating an aqueous extract of a vegetable material to reduce its caffeine and/or chlorogenic acid content, which comprises contacting said aqueous extract containing caffeine and/or chlorogenic acid with a solid ligneous adsorbent of vegetable origin in divided form at a temperature of from 0° to 100° C. so as to adsorb caffeine and chlorogenic acid by suspending said adsorbent in said extract with stirring, drying the suspension without separation of the adsorbent by freeze-drying, introducing the dry mixture obtained into infusing bags wherein the extract is obtained in partially decaffeinated and partially deacidified form by infusing the bags in hot water.

4,204,005
PROCESS FOR PRODUCING FIBROUS FOOD MATERIALS

Shiro Kudo, Ito, and Mitsuyoshi Hayashi, Toyooka, both of Japan, assignors to Asahimatsu Koridofu Kabushiki Kaisha, Nagano, Japan

Filed Dec. 16, 1977, Ser. No. 861,564
Claims priority, application Japan, Dec. 27, 1976, 51-158359; Apr. 18, 1977, 52-44381
Int. Cl.[2] A23P *1/00*; B02C *7/02*
U.S. Cl. 426—518 **2 Claims**

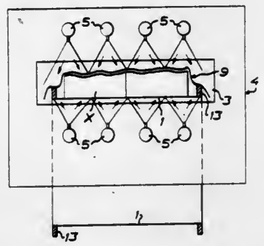


1. A process for producing fibrous or granular foods and feeds from cereal, vegetable, animal and fish materials comprising adjusting the water content of the materials to between 10–65% by weight and grinding the raw food materials between two opposing disc grinding members separated by a gap not larger than 1 mm, wherein one of the grinding members rotates at a peripheral speed from 8 to 8000 m/min, and wherein the opposing discs are concave to form a central hollow portion therebetween having an approximately trapezoidal cross section.

4,204,006
METHOD OF THERMALLY TREATING UNPACKAGED FOOD PRODUCTS

Lennart Emgard; Alan Lascelles, both of Helsingborg, and Lars Eek, Nyhamnsläge, all of Sweden, assignors to Frigoscandia Contracting AB, Helsingborg, Sweden

Continuation of Ser. No. 876,815, Feb. 10, 1978, abandoned. This application Mar. 5, 1979, Ser. No. 17,651
Claims priority, application Sweden, Feb. 18, 1977, 7701856
Int. Cl.[2] A23L *3/18*
U.S. Cl. 426—520 **4 Claims**



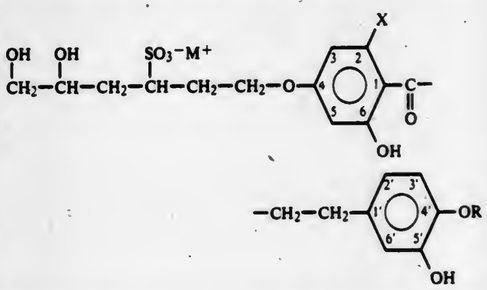
1. A method of thermally treating exposed, unpackaged food products, comprising the steps of
placing the products on a support in the form of a conveyor belt of high thermal conductivity;
moving as a continuous web, a thin, fluid-tight and readily flexible covering layer, which has a width greater than that of the products resting on the support, in unison with said support;
draping the products on the support under the continuous web covering layer so as to prevent fluid from coming into contact with the products;
flushing the underside of the support while simultaneously flushing under pressure the top side of the continuous web covering layer with a fluid which has a temperature different from that of the products, which fluid exchanges heat with the products by supplying heat to or removing heat from the products;
pressing the continuous web covering layer flushing under pressure its top side to move the web to closely follow the free surfaces of the products and be adjacent to portions of the support so as to maximize the area over which heat exchange with the fluid takes place;
undraping the products on the support; and then
winding the continuous web over a roller.

4,204,007
4-(DIHYDROXYHEXOXY)DIHYDROCHALCONE SWEETENERS

Patricia C. Wang; Robert E. Wingard, Jr., and Guy A. Crosby, all of Palo Alto, Calif., assignors to Dynapol, Palo Alto, Calif.

Continuation-in-part of Ser. No. 863,116, Dec. 22, 1977, abandoned. This application Dec. 1, 1978, Ser. No. 964,211
Int. Cl.[2] A23L *1/236*
U.S. Cl. 426—548 **11 Claims**

1. A dihydroxyhexoxy substituted dihydrochalcone compound represented by the structural formula



wherein R is a lower alkyl of from one to three carbon atoms inclusive, X is hydrogen or hydroxy, and M^+ is a physiologically acceptable cation.

4,204,008
PREPARATION OF PROTEIN CONCENTRATES FROM WHEY AND SEED PRODUCTS

Robert M. Saunders, and George O. Kohler, both of El Cerrito, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 839,711, Oct. 5, 1977, abandoned, and a continuation-in-part of Ser. No. 695,616, Jun. 14, 1976, Pat. No. 4,064,283. This application Dec. 28, 1978, Ser. No. 974,170
Int. Cl.[2] A23J *1/12, 1/14, 1/20*
U.S. Cl. 426—583 **4 Claims**

1. A process for preparing a protein concentrate from whey and a protein-containing seed product, said concentrate being useful as a human food supplement, which consists of
(a) mixing the whey and the protein-containing seed product,
(b) applying an alkalizer to the mixture to adjust to a pH of about 9–10,
(c) separating a juice containing soluble proteins therefrom,
(d) acidifying the juice to about pH 7, and
(e) drying the so-treated juice to obtain a solid product.

4,204,009

TWO LAYER RESIST SYSTEM

Bai-Cwo Feng, Wappingers Falls, and George C. Feng, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 865,814, Dec. 30, 1977. This application Aug. 24, 1978, Ser. No. 936,434

Int. Cl.[2] B05D *3/02, 3/06, 1/36*

U.S. Cl. 427—36 **6 Claims**

1. In a method for forming a lift-off resist mask comprising:

coating on a substrate a first layer of resist material,

coating on said first layer a second layer of resist material which is slower dissolving in resist developer than said first layer of resist material after exposure of both layers to actinic radiation each resist material being a sensitized organic polymer capable of forming a patterned resist mask to protect the underlying portions of a substrate,

exposing portions of said layers to actinic radiation and developing to remove the exposed portions of said layers to uncover said substrate by treating said layers with a solvent which preferentially dissolves the exposed portions, the improvement wherein:

said second layer is formed from a resist material solution which is saturated with a dilutant which does not substantially dissolve said first layer.

4,204,010

RADIATION CURABLE, ETHYLENICALLY UNSATURATED THIXOTROPIC AGENT AND METHOD OF PREPARATION

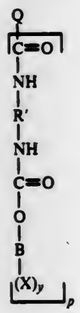
David E. Kramm, Laurel, and Arthur D. Ketley, Columbia, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 855,072, Nov. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 724,196, Sep. 17, 1976, abandoned. This application Dec. 21, 1978, Ser. No. 972,127

Int. Cl.[2] B05D *3/06*

U.S. Cl. 427—44 **10 Claims**

1. A radiation curable thixotropic agent containing terminal ethylenic unsaturation of the formula:



wherein

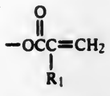
Q is the residue obtained by removal of H from primary OH groups of the reaction product from the esterification of a polyhydric alcohol containing primary OH groups with only a fatty carboxylic acid containing 4 to 26 carbon atoms in a saturated aliphatic hydrocarbon chain;

R' is an aliphatic or aromatic polyvalent organic moiety of a polyisocyanate after reaction of the isocyanato groups;

B is an aliphatic hydrocarbon containing 1-36 carbon atoms;

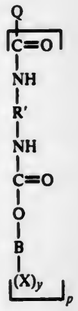
X is a member of the group consisting of

and



wherein R_1 is hydrogen or a methyl group and p and y are each integers from 1-10.

7. The process of forming a varnished printed paper product which comprises feeding the paper product to a color offset press, applying at least one UV curable colored ink in the desired design to a surface of the paper product, wet trapping the applied ink with a UV curable overprint varnish composition comprising a liquid photocurable vehicle and about 5-15% by weight of the vehicle of a radiation curable thixotropic agent containing terminal ethylenic unsaturation of the general formula:



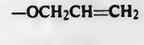
wherein

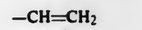
Q is the residue obtained by removal of H from primary OH groups of the reaction product from esterification of a polyhydric alcohol containing primary OH groups with only a fatty carboxylic acid containing 4 to 26 carbon atoms in a saturated aliphatic hydrocarbon chain;

R' is an aliphatic or aromatic polyvalent organic moiety of a polyisocyanate after reaction of the isocyanate groups,

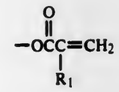
B is an aliphatic hydrocarbon containing 1-36 carbon atoms,

X is a member of the group consisting of





and



wherein R_1 is hydrogen or a methyl group and p and y are each integers from 1-10 and, thereafter, exposing the overprint varnish and ink to UV radiation for a time sufficient to simultaneously cure the ink and varnish thereby forming a glossy, hard, cured coating on the printed surface.

4,204,011

METHOD OF DRIVING POWDERY MATERIAL INTO POROUS MATERIAL OF OPEN-CELLED STRUCTURE

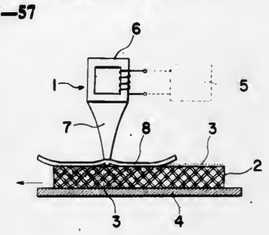
Naoto Tanabe, Takatsuki; Kenzoh Okada, and Norio Maeda, both of Neyagawa, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki, Japan

Filed Jun. 30, 1978, Ser. No. 921,170

Claims priority, application Japan, Jul. 4, 1977, 52/80281

Int. Cl.[2] B05D *3/12*

U.S. Cl. 427—57 **6 Claims**



1. A method of permeating a powdery material into the porous material of an open-celled structure which comprises spreading the powdery material on one surface of the porous material, and causing the powdery material so spread to permeate into the porous material by the application of vibrations to the powdery material, which vibrations are generated by a vibration generator including a vibrating element in contact with the powdery material spread on the surface of the porous material, with the frequency and amplitude of the vibrations so selected as to minimize scattering of the powdery material, said frequency and amplitude being within the range of 50 to 50,000 Hz and within the range of 50 to 1,500 μm, respectively, to cause permeation of the powdery particles in the area of the porous material disposed within the area defined by the vibrating element.

4,204,012

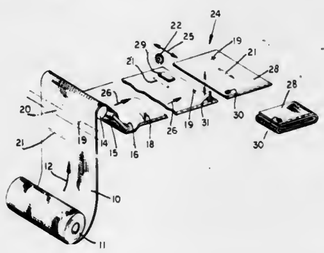
SHEET INSPECTION AND MARKING SYSTEM

Charles E. Brocklehurst, and Perry E. Burton, both of Fountain Inn, S.C., assignors to Opelika Manufacturing Corp., Chicago, Ill.

Filed Nov. 1, 1978, Ser. No. 956,791

Int. Cl.[2] B05D *5/12;* **B05C** *9/12*

U.S. Cl. 427—288 **14 Claims**



1. A method of marking a cut segment of sheet material bearing a flaw or the like comprising the steps of moving the sheet material from a supply along its length past a cutter into a cutting station, cutting across the sheet material with the cutter to form the sheet material into cut segments of predetermined length at the cutting station, and as the sheet material is moved toward the cutting station, inspecting the sheet material for the purpose of detecting flaws in the sheet material, applying a detectable substance to the sheet material at a position adjacent a flaw in the sheet material, detecting the detectable substance as the flaw in the sheet material moves into the cutting station, and in response to the detection of the detectable substance and to the movement of a predetermined portion of the flawed segment to be cut into the cutting station marking the segment of the sheet material which bears the flaw at a location which appears at a predetermined position on the cut segment of sheet material.

9. Apparatus for marking sheet material bearing a flaw or the like comprising sheet cutting means for cutting the sheet material into segments, conveyor means for moving the uncut sheet material from a supply along its length through a path to said cutting means, first marking means positioned along the path for applying a detectable mark to the sheet material at a predetermined distance from a flaw in the sheet material, detection means positioned along the path between said first marking means and said cutting means for detecting the detectable mark on the sheet material, length measuring means for detecting the movement of the last portion of the sheet material into said cutting means prior to cutting the sheet material, second marking means positioned along the path between said detection means and said cutting means responsive to said detection means and to said length measuring means for applying a second mark to a predetermined portion of the flawed segment of the sheet material moved into said cutting means.

4,204,013

METHOD FOR TREATING POLYMERIC SUBSTRATES PRIOR TO PLATING EMPLOYING ACCELERATING COMPOSITION CONTAINING AN ALKYL AMINE

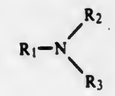
Donald A. Arcilesi, Mt. Clemens, Mich., and Warren R. Doty, Los Alamos, N. Mex., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Oct. 20, 1978, Ser. No. 953,153

Int. Cl.[2] C23C *3/02*

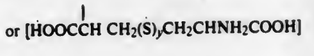
U.S. Cl. 427—304 **10 Claims**

1. In a process for treating a polymeric plastic substrate to render it receptive to electroless plating including the steps of etching the substrate with an aqueous acid solution containing hexavalent chromium ions, rinsing and activating the etched substrate with an acidic tin-palladium complex, rinsing and accelerating the activated substrate, the improvement comprising contacting the activated substrate during the accelerating step with an aqueous acidic accelerating solution having a pH of about 0 to about 7 and containing an aqueous soluble compatible substituted alkyl amine present in an amount effective to complex substantially all of any contaminating cupric and ferric ions present and to extract any residual tin constituents present on the surface of the activated substrate, an anion of a mineral acid or alkali metal salts thereof present in an amount up to about 120 g/l, said substituted alkyl amine corresponding to the following structural formula:



Wherein:

R_1 is an organic radical



in which x and y = 1 to 4;

R, R_2 and R_3 is H or $-CH_2]_zX$ in which z = 1 to 6 and X is —OH, $-SO_3H$, —COOH, $-NH_2$, halide, $-CH_3$, or $-OCH_3$,

as well as the alkali metal salts of the foregoing.

4,204,014

LIQUID COATING COMPOSITIONS CONTAINING LITTLE OR NO SOLVENT

Jörg Dörffel, Marl; Werner Andrejewski, Dorsten, and Wilfried Bartz, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 895,673, Apr. 12, 1978, abandoned. This application May 7, 1979, Ser. No. 36,708
Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721989
Int. Cl.² B05D 3/02; C08L 61/20, 67/00
U.S. Cl. 427—385.5 15 Claims

1. In a liquid coating composition comprising a small amount of solvent or no solvent, a binder and optionally conventional auxiliary agents, wherein the binder consists essentially of:

(A) 45–10% by weight of an aminoplast, the low molecular weight precursors thereof, or mixtures thereof; and

(B) 55–90% by weight of an at least difunctional polyester or a mixture of such polyesters; wherein the polyester component B has been produced by the condensation of an alcohol component I with an acid component III, wherein component I consists essentially of:

I.1 0–50 molar percent of one or aliphatic polyols of 3 or 4 hydroxy groups and 3–6 carbon atoms; and

I.2 100–50 molar percent of a mixture II of aliphatic and cycloaliphatic diols wherein mixture II consists essentially of:

II.1 0–90 molar percent of ethylene glycol;

II.2 0–90 molar percent of 1,2-propanediol; and

II.3 0–40 molar percent of one or more aliphatic or cycloaliphatic diols whose hydroxy functions are separated by 2–8 carbon atoms and up to 2 carbon atoms of which can be replaced by oxygen atoms which are separated from each other and from the hydroxy groups by at least 2 carbon atoms; wherein component III consists essentially of a mixture of:

III.1 67–92 molar percent of hexahydroterephthalic acid or a lower alkyl ester thereof; and

III.2 8–33 molar percent of an aromatic dicarboxylic acid or a lower alkyl ester derivative thereof;

wherein the polyester component B has a molecular weight of 300–1,500 and wherein the binder may be obtained by the cocondensation of aminoplast component A with polyester component B, or by the cocondensation of the starting materials used for the production of aminoplast component A with polyester component B;

the improvement wherein component III.2 is terephthalic acid or a lower alkyl ester derivative thereof.

15. A method of providing a substrate with a protective coating comprising coating the substrate with a coating composition of claim 1 and baking the coated substrate at a temperature of 100°–250° C.

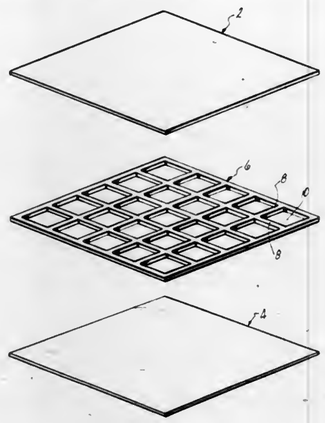
4,204,015

INSULATING WINDOW STRUCTURE AND METHOD OF FORMING THE SAME

Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405, and Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437

Filed Apr. 3, 1978, Ser. No. 892,516
Int. Cl.² B32B 3/10; E06B 3/00
U.S. Cl. 428—34 7 Claims

1. An improved laminate for use in making thermally insulated window panes, said laminate comprising at least two gas-impermeable transparent relatively rigid panels, and at least one plastic panel sandwiched between said rigid panels, said plastic panel having opposed planar surfaces which are bonded over substantially their entire extent to respective ones of said rigid panels, said plastic panel having a multiplicity of through perforations laterally surrounded by gas impermeable strand-like portions of said plastic panel, each of said perforations being completely isolated from the others and from ambient surroundings by said rigid panels and said strand-like portions of said plastic panel, to form a multiplicity of isolated cells within the laminate, said cells being sized so that a large stock piece of said laminate can be cut in substantially any direction to form a smaller pane with retention of at least 80% of said isolated cell structure in said smaller pane whereby



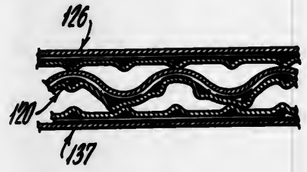
thermal insulating properties of the cut pane will not be materially altered, the isolation of said cells from each other and from ambient surroundings being provided solely by said rigid panels and by said strand-like portions of said plastic panel.

4,204,016

REINFORCED PAPER PRODUCTS

Marc A. Chavannes, 4044 Roberts Point, Sarasota, Fla. 33581

Division of Ser. No. 599,142, Jul. 25, 1975. This application Oct. 18, 1976, Ser. No. 733,436
Int. Cl.² B32B 3/28, 5/10, 5/12
U.S. Cl. 428—108 3 Claims



1. A double faced corrugated board comprising a corrugated medium formed of a layer of paper having parallel reinforcing wires adhered to one side thereof, said reinforced paper layer and wires being corrugated transversely of said parallel wires to form said corrugated medium, and a first outer layer of paper adhered to the crests of one side of said corrugated medium, and a second layer of paper adhered to the crests of the other side of said corrugated medium to form a double faced corrugated board.

4,204,017

RASTER-LIKE HEAT SEALABLE ADHESIVES ON SUBSTRATES

Josef Hefele, Gräfelfing, Fed. Rep. of Germany, assignor to Kufner Textilwerke KG, Fed. Rep. of Germany

Continuation of Ser. No. 341,961, Mar. 16, 1973, abandoned. This application Jun. 14, 1976, Ser. No. 695,814
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1972, 2214236
Int. Cl.² B32B 3/12, 3/26
U.S. Cl. 428—160 7 Claims

1. A flexible adhesive clothing insert structure adapted for being heat sealed with another flexible clothing structure, comprising:

(a) a flexible clothing insert;

(b) a first raster-like layer of a heat sealable adhesive coated directly on one side of said flexible clothing insert;

(c) a second raster-like layer of a heat sealable adhesive seated substantially only on said first raster-like layer, said second raster-like layer having adhesive properties different than said first layer and a melting point lower than said first layer; and



(d) said first and second raster-like layers are of spot raster form and having at least 94 spots per square inch, isolated spots of said second layer being seated substantially only upon spots of said first layer;

whereby said flexible clothing insert retains its flexibility after heat sealing to flexible clothing structure and said heat sealable adhesive spots of the second layer are isolated from the substrate clothing insert by the spots of the first layer.

4,204,018

ACTIVATED POLYMER MATERIALS AND PROCESS FOR MAKING SAME

Bruce S. Bernstein, 46 Steele Ave., Somerville, N.J. 08876; Ramesh C. Kapoor, 113 S. Cannon St., Seaford, Del. 19973, and Seymour Hyman, 220 Central Park South, New York, N.Y. 10019

Continuation of Ser. No. 255,144, May 19, 1972, abandoned, which is a division of Ser. No. 112,053, Feb. 2, 1971, Pat. No. 3,705,938, which is a continuation-in-part of Ser. No. 593,267, Nov. 10, 1966, abandoned. This application Jul. 26, 1977, Ser. No. 819,538
Int. Cl.² B32B 15/08, 21/08, 27/08
U.S. Cl. 428—246 16 Claims

1. A polymeric article having antistatic properties comprising

a solid, non-porous, polymeric substrate, and

a solid, non-porous layer of a polymeric composition adherently applied to at least one surface of said substrate, said composition containing at least one antistatically active agent distributed within said polymeric composition, and capable of migrating from said layer into and throughout said substrate, said agent being present in said layer in sufficient amount so that upon migration from said layer into said substrate an effective level of antistatic activity is provided throughout said substrate and on at least one other surface of said substrate which is not in direct contact with said layer.

4,204,019

POLYISOCYANURATE FOAM LAMINATE AND PROCESS

Lawrence J. Parker, Converse, Tex., assignor to Shelter Insulation, Inc., San Antonio, Tex.

Filed Sep. 11, 1978, Ser. No. 941,057
Int. Cl.² B32B 3/26, 5/20, 31/14
U.S. Cl. 428—310 12 Claims

1. In a process for producing a polyisocyanurate foam laminate comprising mixing polyisocyanate, surfactant, blowing agent, polyol and isocyanate trimerization catalyst components to form a reaction mixture, feeding said reaction mixture between two flexible sheet substrates defining a reaction zone, and reacting and foaming said mixture to form together with said substrates said polyisocyanurate foam laminate, the improvement which comprises:

conducting said reaction at a temperature less than about 140° F.

2. The process of claim 1 comprising, in addition, the steps of sensing the pressure exerted by the reaction mixture on at least one of said substrates as the foam is formed, and controlling the feeding of said reaction mixture to said reaction zone to maintain a substantially constant pressure therein during said reaction.

7. The process of claim 2 wherein said components are

(i) a polymethylene polyphenylisocyanate;

(ii) a silicon-containing polymeric surfactant free of hydroxyl groups; and

(iii) a liquid blowing agent having a boiling point less than about 140° F.

(iv) a diol having a molecular weight less than about 150;

(v) a polyol having at least 3 hydroxyl groups;

(vi) a polyethylene glycol having a molecular weight of at least 150;

(vii) an amine salt;

(viii) a metal carboxylate; and

(ix) a dimethyl aminomethyl-substituted phenol,

wherein the reaction temperature is from about 60° F. to less than about 140° F.

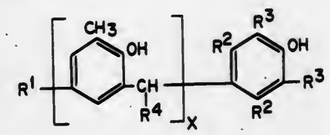
11. The laminate produced by the process of claim 7.

4,204,020

PHENOLIC FOAM LAMINATED STRUCTURAL PANEL

John H. Beale, Dedham, Mass., and Ernest K. Moss, St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 837,875, Sep. 29, 1977, Pat. No. 4,140,842. This application Aug. 22, 1978, Ser. No. 935,846
Int. Cl.² C08J 9/14
U.S. Cl. 428—310 13 Claims



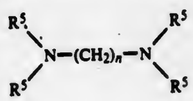
1. A laminated structural panel having at least one facing sheet and having a closed cell foam material adhering to the facing sheet wherein the closed cell foam material comprises the reaction product of:

A. phenolic-resin foam forming reactants,

B. a blowing agent,

C. a surfactant which is the capped reaction product of:

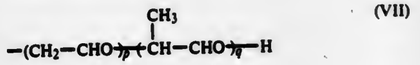
I. an alkoxylated amine of Formula VI



(VI)

wherein:

(a) R^5 is an alkoxylated chain of Formula VII, having terminal hydroxyl groups,



(VII)

(b) n is an integer from 2 to 10 inclusive,

(c) the ratio p:q is 15:85 to 85:15 with

II. a copolymerizable mixture of dialkyl maleate and a member selected from the group consisting of N-vinyl-2-pyrrolidone and N-vinyl caprolactam, and

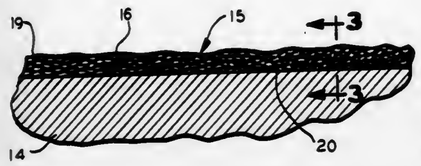
III. a capping agent for the terminal hydroxyl groups.

4,204,021

ARTICLE OF MANUFACTURE HAVING COMPOSITE LAYER AFFORDING ABRASION RESISTANT AND RELEASE PROPERTIES

Gordon P. Becker, Broadview Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Dec. 26, 1978, Ser. No. 972,708
Int. Cl.[2] B32B *27/00, 9/06, 15/04;* B05D *1/36*
U.S. Cl. 428—325 22 Claims



1. A substrate having a composite layer adhered thereto providing improved abrasion-resistant and release properties, said composite layer comprising a porous ceramic body having a continuous, communicating pore structure, and a film-forming, polymerized, organic resinous impregnant filling pores of said body selected from the group consisting of silicone polymers, polyphenyl sulfide, and fluorinated polyalkylenes, said impregnant being adapted to serve as a release agent, and said composite layer having at least the abrasion resistance of the ceramic and the release properties of the impregnant.

4. The substrate and composite layer of claim 1 in which said ceramic body comprises ceramic particles bound one to another by glass, said glass also adhering the resulting ceramic body to said substrate.

4,204,022

ADHESIVES COATINGS AND LAMINATES UTILIZING ETHYLENE COPOLYMERS AND COAL-TAR PITCH

George F. Snyder, Franklin Township, Westmoreland County, and Robert M. Stewart, Monroeville Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 438,141, Jan. 30, 1974, Pat. No. 3,967,651, which is a division of Ser. No. 201,861, Nov. 24, 1971, Pat. No. 3,814,712, which is a continuation-in-part of Ser. No. 692,295, Dec. 21, 1967, abandoned. This application Mar. 23, 1976, Ser. No. 669,533
Int. Cl.[2] B32B *11/08, 15/08, 27/30*
U.S. Cl. 428—337 5 Claims

1. A laminate comprising

A. a metallic skin layer

B. a middle visco-elastic layer at least 0.008 inch thick of a composition comprising

(a) from about 10 to about 75 weight percent coal tar pitch;

(b) from about 25 to about 90 weight percent of a polymeric ethylene composition selected from

1. a terpolymer of ethylene, vinyl acetate, and an ethylenically unsaturated carboxylic acid containing from 3 to 8 carbon atoms, and

2. a mixture of copolymers of ethylene and vinyl acetate and ethylene and an ethylenically unsaturated carboxylic acid containing from 3 to 8 carbon atoms wherein the ethylene vinyl acetate copolymer and the ethylene carboxylic acid copolymer each comprise from about 5 to about 85 weight percent of the total composition, and

C. a bottom metallic constraining layer at least 0.009 inches thick.

4,204,023

MIXED SULFONATED EMULSIFYING AGENTS USED TO PRODUCE ADHESIVE COMPOSITIONS FROM ACRYLIC MONOMERS AND ADHESIVE TAPE USING THE COMPOSITIONS

Edward Witt, Framingham, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 7, 1978, Ser. No. 922,553
Int. Cl.[2] C09J *7/02*
U.S. Cl. 428—355 13 Claims

1. An adhesive composition comprising the product of emulsion polymerization of a mixture of acrylic monomers containing an emulsifier agent, the emulsifying agent comprising a mixture of (a) a sulfonated diphenyl ether and (b) a sulfonated reaction product of formaldehyde and napthalene.

6. A pressure sensitive adhesive tape comprising a substrate having an adhesive composition deposited on at least one surface thereof, the adhesive composition comprising the product of emulsion polymerization of acrylic monomers in an aqueous system containing an emulsifier agent, the emulsifying agent comprising a mixture of (a) a sulfonated diphenyl ether and (b) a sulfonated reaction product of formaldehyde and naphthalene.

13. A process for the emulsion polymerization of acrylic monomers in an aqueous system comprising: charging to a reactor, a first portion of a monomer mixture comprising 2-ethylhexylacrylate, ethyl acrylate, acrylonitrile, and acrylic acid, water and a first portion of an emulsifying agent comprising a mixture of (a) a sulfonated diphenyl ether and (b) a sulfonated reaction product of formaldehyde and naphthalene; initiating polymerization by adding to the reactor a catalyst comprising an alkali metal persulfate and an alkali metal bisulfite; adding the remaining portions of the monomer mixture and emulsifying agent in equal portions to complete the polymerization reaction.

4,204,024

ELECTRICAL INSULATION COMPOSITION HAVING LOW POWER FACTOR

Richard T. Pye, Middlebury, Conn., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Filed Jun. 15, 1978, Ser. No. 915,900
Int. Cl.[2] C08K *3/22, 5/14;* H01B *3/00*
U.S. Cl. 428—379 12 Claims

1. An elastomeric dielectric composition with very low dielectric loss factor which consists essentially of 100 parts by weight of an ethylene-propylene elastomer, from 0.25 to 1 part by weight of a vinyl silane, from 0.1 to 2 parts by weight of lead peroxide, up to 40 parts by weight of zinc oxide, from about 1.5 to 4 parts by weight of a peroxide curing agent and an effective amount of inhibitor for said peroxide curing agent, said zinc oxide being the sole filler in said composition.

4,204,025

GLASS-POLYCARBONATE LAMINATE

Donald G. LeGrand, Burnt Hills, N.Y., and Gina G. Vitale, Arlington, Va., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 21, 1978, Ser. No. 962,614
Int. Cl.[2] B32B *17/10, 27/08, 27/30*
U.S. Cl. 428—409 7 Claims

1. An improved laminate of glass and polycarbonate resin bonded by means of a first organopolysiloxane-polycarbonate copolymer adhesive layer disposed between the glass layer and the polycarbonate layer, the improvement comprising a second polyvinylidene chloride adhesion promoting layer disposed between said first adhesive layer and said glass layer.

7. A process for forming a polycarbonate-glass laminate comprising the steps of (i) applying composition comprised of a polyvinylidene chloride emulsion to a glass lamina; (ii) evaporating off the water from said emulsion thereby forming a primer layer on said glass lamina; and, (iii) adhesively bonding

the primed glass lamina to a polycarbonate lamina with an adhesive which comprises an organopolysiloxane-polycarbonate block copolymer.

4,204,026

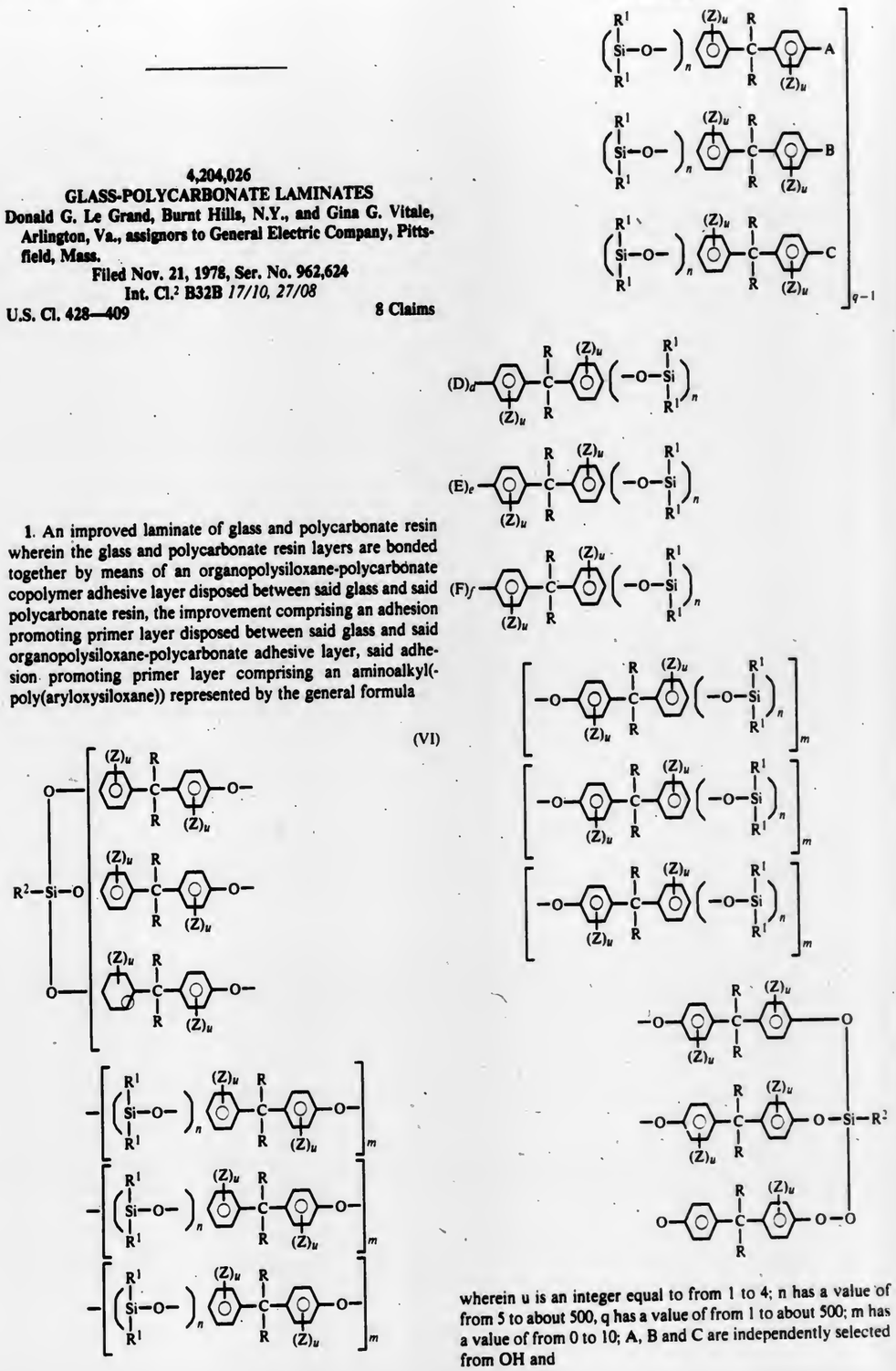
GLASS-POLYCARBONATE LAMINATES

Donald G. Le Grand, Burnt Hills, N.Y., and Gina G. Vitale, Arlington, Va., assignors to General Electric Company, Pittsfield, Mass.

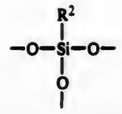
Filed Nov. 21, 1978, Ser. No. 962,624
Int. Cl.[2] B32B *17/10, 27/08*
U.S. Cl. 428—409 8 Claims

1. An improved laminate of glass and polycarbonate resin wherein the glass and polycarbonate resin layers are bonded together by means of an organopolysiloxane-polycarbonate copolymer adhesive layer disposed between said glass and said polycarbonate resin, the improvement comprising an adhesion promoting primer layer disposed between said glass and said organopolysiloxane-polycarbonate adhesive layer, said adhesion promoting primer layer comprising an aminoalkyl(-poly(aryloxysiloxane)) represented by the general formula

(VI)



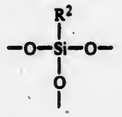
wherein u is an integer equal to from 1 to 4; n has a value of from 5 to about 500, q has a value of from 1 to about 500; m has a value of from 0 to 10; A, B and C are independently selected from OH and



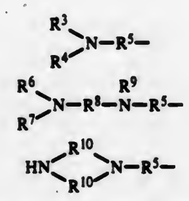
radicals; D, E and F are OH radicals, d, e and f are 0 or 1, provided that if q is 1 then all of d, e and f are 0, and further provided that if q is greater than 1 then at least one 1/f A, B and C is a



radical and the sum of d+e+f is equal to Y wherein Y has a value of from 0 to 2 which is obtained from the formula 3−W=Y wherein W is the number of



radicals represented by A, B and C; R is a member independently selected from the class of hydrogen, alkyl radicals, and halogenated alkyl radicals; R^1 is a member independently selected from the class of alkyl radicals, halogenated alkyl radicals, and cyanoalkyl radicals; Z is a member independently selected from the class of hydrogen, lower alkyl radicals, and halogen radicals; and R^2 is a member selected from the class of



wherein R^6, R^7 and R^9 are independently selected from hydrogen and alkyl radicals, R^5 and R^8 are independently selected from alkylidene radicals, R^{10} represents a straight chain alkylidene radical, and R^3 and R^4 are independently selected from hydrogen, alkyl radicals, H_2NCO—, $H_2NCH_2CH_2$—, and $H_2NCH_2CH_2NCH_2CH_2$—.

4,204,027

PHOTOCHROMIC SHEET GLASS PROCESS

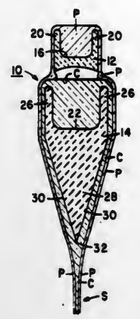
Raphael A. Simon, Avondale Estates, Ga., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,498

Int. Cl.² B32B *33/00, 17/06;* C03B *17/00, 5/26*

U.S. Cl. 428—428 **9 Claims**

7. A laminated photochromic glass article comprising a central core portion of a non-photochromic glass composition and a layer of photochromic glass formed integrally with outer surfaces of said core glass, said photochromic glass being sensitized and having a sensitizing temperature above its softening point temperature, and said core glass having a softening



point temperature higher than the softening point temperature of said photochromic glass.

4,204,028

CONDUCTIVE METAL OXIDE FILM FOR SOLAR ENERGY CONTROL

Harold E. Donley, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 16, 1978, Ser. No. 887,384

Int. Cl.² B32B *17/06*

U.S. Cl. 428—432 **4 Claims**

1. An electroconductive article comprising:

a. a glass substrate; and

b. an electroconductive metal oxide coating wherein the metal portion consists essentially of

(1) about 5 to 50 percent nickel; and

(2) about 50 to 95 percent cobalt

wherein the surface resistivity of the coated surface is less than 10^4 ohms per square.

4,204,029

MANUFACTURED GLASS LAMINATES

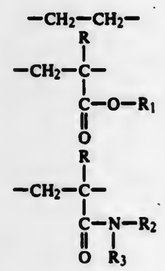
Robert L. Batchelor, Orange, Tex., and Charles F. Feldman, Fresno, Calif., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 252,934, May 12, 1972, abandoned, which is a continuation of Ser. No. 64,056, Jul. 23, 1970, abandoned, which is a continuation of Ser. No. 516,752, Dec. 27, 1965, abandoned. This application Dec. 22, 1976, Ser. No. 753,124

Int. Cl.² B32B *17/10, 31/00*

U.S. Cl. 428—441 **13 Claims**

1. A laminated glass structure comprising a pair of glass sheets bonded together with an ethylene polymer containing therein recurring units of the structure

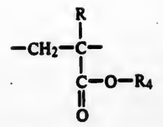


(a)

(b)

(c)

and optionally units of the structure



(d)

wherein R is selected from the group consisting of hydrogen and alkyl groups, R_1 is hydrogen, R_2 and R_3 are hydrogen, and R_4 is an alkyl group, the combined total of said units of the formulae (b), (c) and (d) being present in a ratio from about 0.025 to about 0.25 mole per mole of unit (a); said units (b) constituting at least 10 mole % of the total of units (b), (c) and (d); said ethylene polymer being further characterized in having the units (a), (b), (c) and (d) substantially uniformly distributed throughout the polymer chains.

4,204,030

ORGANOPOLYSILOXANE SIZED PAPERBOARDS FOR GYPSUM WALLBOARDS

Minoru Takamizawa; Akira Abe; Yoshiaki Ono; Yutaka Sugimori, all of Annaka; Tetsuo Kishibayashi, Urawa, and Makoto Ino, Toride, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd. and Yoshino Gypsum Co. Ltd., both of Tokyo, Japan

Filed Sep. 28, 1977, Ser. No. 837,191

Claims priority, application Japan, Oct. 5, 1976, 51-119566

Int. Cl.² B32B *9/04*

U.S. Cl. 428—447 **10 Claims**

1. A paperboard for a gypsum wallboard which is sized at at least one of both surfaces with an organopolysiloxane comprising

(a) from 99.95 to 85 mole % of organosiloxane units represented by the general formula

$$R^1_aSiO_{(4-a)/2}$$

where R^1 is a hydrogen atom or a monovalent hydrocarbon group selected from the class consisting of methyl, ethyl, propyl, vinyl, and phenyl groups and a is 1, 2, or 3,

(b) from 0.05 to 10 mole % of mercapto-containing organosiloxane units represented by the general formula

$$HS—(CH_2)_pSiR^2_bO_{(3-b)/2}$$

where R^2 is a hydrogen atom or a monovalent hydrocarbon group selected from the class consisting of methyl, ethyl, propyl, and phenyl groups, b is 0, 1, or 2 and p is 1, 2, 3, or 4, and

(c) from 0 to 5 mole % of methacryloxy-containing organosiloxane units represented by the general formula

$$H_2C{=}C(CH_3)—CO—O—(CH_2)_qSiR^3_cO_{(3-c)/2}$$

where R^3 is a hydrogen atom or a monovalent hydrocarbon group selected from the class consisting of methyl, ethyl, propyl, and phenyl groups, c is 0, 1, or 2 and q is 1, 2, 3 or 4,

and wherein the amount of sizing is in the range from 15 g to 200 g of the organopolysiloxane per 1,000 kg of the paperboard on either one of the surfaces.

4,204,031

IRON-BASE SINTERED ALLOY FOR VALVE SEAT AND ITS MANUFACTURE

Kazutoshi Takemura; Takashi Oda, and Fumio Kiyota, all of Kashiwazaki, Japan, assignors to Riken Corporation, Tokyo, Japan

Filed Nov. 30, 1977, Ser. No. 855,964

Claims priority, application Japan, Dec. 6, 1976, 51-145662; Apr. 4, 1977, 52-37637; Mar. 28, 1977, 52-33284

Int. Cl.² C22C *1/10*

U.S. Cl. 428—539.5 **8 Claims**

1. Wear resistant and machineable sintered iron-base alloy especially suitable for valve seat manufacture having chemical composition by weight of 0.6–1.5% carbon, 1.0–8.0% chromium, 0.25–4.0% tungsten, 2.0% cobalt and balance essentially iron, having a microstructure comprising pearlite and a globular hard alloy phase uniformly dispersed in said pearlite, said hard alloy phase being formed with atomized powder in a spherical form of pre-alloyed hard metal having a chemical composition by weight of 1.0–3.0% carbon, 20–40% chromium, 5–20% tungsten and 40–60% cobalt, wherein pores in said alloy are infiltrated with a filler material having a melting point in the range of 120° to 250° C., such as organic metallic compounds or waxes.

4. Method of producing a sintered iron-base alloy especially suitable for valve seat manufacture, comprising the steps of: mixing 5–20% by weight of pre-alloyed and atomized hard metal powder in a spherical form having a chemical composition by weight of 1.0–3.0% carbon, 20–40% chromium, 5–20% tungsten and 40–60% cobalt with 0.6–1.5% by weight of graphite powder and the remainder iron powder; compacting the mixture into a desired shape; and sintering the compacted shape at a temperature in the range of 1100° to 1180° C. for 30–60 minutes, said sintered product having a microstructure comprising pearlite and a globular hard alloy phase uniformly dispersed in said pearlite and having a chemical composition by weight of 0.6–1.5% carbon, 1.0–8.0% chromium, 0.25–4.0% tungsten, 2.0–12.0% cobalt and the balance essentially iron and, further comprising the step of infiltrating pores in the product by placing the product in a sealed chamber containing a molten bath of filler material having a melting point in the range of 120° to 250° C. such as organic metallic compounds or waxes, decreasing the pressure in said chamber to evacuate said pores, dipping the product into said bath, and then increasing the pressure above normal level.

4,204,032

ELECTRO-CHEMICAL CELLS OR BATTERIES

Patrick E. McKellen, Bramhall, England, assignor to Unigate Limited Co., London, England

Continuation-in-part of Ser. No. 791,444, Apr. 27, 1977, abandoned, which is a continuation of Ser. No. 500,782, Apr. 26, 1974, abandoned. This application Dec. 7, 1978, Ser. No. 967,459

Claims priority, application United Kingdom, Sep. 14, 1973, 43368/73

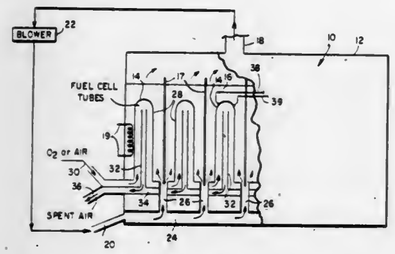
Int. Cl.² H01M *12/06*

U.S. Cl. 429—13 **10 Claims**

1. A rechargeable zinc halogen electric current producing cell comprising a casing, at least one gaseous halogen cathode support structure within said casing and formed of a substrate of anodizable metal or alloy selected from the metals of Groups IVA and VA of the Periodic Table according to Mendeleef having permanently mounted thereon a coherent stratum of crumb-like porous carbon, a zinc containing anode within said casing, a separator in said casing separating said cathode support structure and said anode to prevent cathodic halogen molecules contacting said anode but permitting the passage of halogen ions, a zinc halide electrolyte within said casing in substantial surface contact with said gaseous halogen in said cathode support structure and with said anode, the internal casing temperature and pressure being such as to maintain said halogen in a gaseous state with a minimum temperature within said casing of 2° C. and a pressure of between

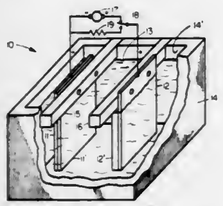
2 to 10 atmospheres, and a halogen circuit including means for storing said gaseous halogen liberated at said cathode support structure on recharge and means to supply gaseous halogen to said cathode support structure on discharge.

4,204,033
ELECTRICAL CELL CONSTRUCTION
Herman P. Meissner, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jan. 2, 1979, Ser. No. 330
Int. Cl.² H01M 8/12
U.S. Cl. 429—33 **7 Claims**



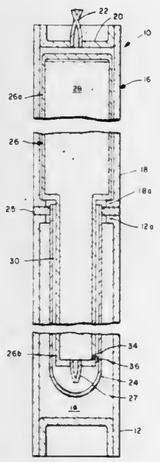
1. An electrical cell which comprises
(a.) at least one bed of iron particles including particles at different oxidation states,
(b.) at least one fuel cell comprising a cathode adjacent one of said beds, an anode which does not contact said bed and a solid electrolyte positioned between said anode and said cathode,
(c.) said electrolyte being capable of transporting oxygen ion,
(d.) means for cycling a gas through said bed to control the temperature of said bed, and
(e.) means for passing a gas in contact with said anode to promote oxygen ion transfer through said electrolyte.

4,204,034
ELECTROCHEMICAL CELL
Glenn R. Schaer, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio
Filed Oct. 2, 1978, Ser. No. 947,649
Int. Cl.² H01M 2/12
U.S. Cl. 429—54 **12 Claims**



1. A rechargeable electrochemical cell comprising
a negative electrode having an active surface comprising essentially copper;
a positive electrode having an active surface comprising essentially lead dioxide, spaced from the negative electrode;
an aqueous acid electrolyte comprising essentially fluoboric, fluosilicic, sulfamic, or perchloric acid, in which both divalent copper and divalent lead ions are soluble during discharging, and from which smooth and adherent deposits may be obtained during charging, in contact with the electrodes; and
a container for the electrolyte and the electrodes, having an electrically nonconductive inner surface that is chemically resistant to the electrolyte.

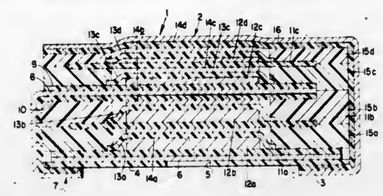
4,204,035
SODIUM INSERT CONTAINER FOR A SODIUM-SULFUR CELL AND ITS METHOD OF USE
Randall N. King, Johnstown, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Sep. 25, 1978, Ser. No. 945,623
Int. Cl.² H01M 10/39
U.S. Cl. 429—104 **8 Claims**



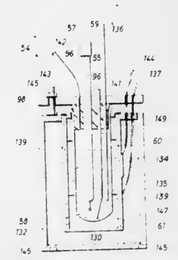
1. In an improved sodium sulfur cell including means forming a sulfur compartment, means forming a sodium compartment including a main compartment connected to a hollow solid electrolyte separator tube with a closed end extending into said sulfur compartment means, the improvement comprising a reservoir insert container for sodium disposed within said sodium compartment forming means and including a closed-end hollow tubular portion extending into said separator tube, said reservoir tubular portion being spaced apart from said separator tube so that a chamber is formed therebetween, means forming a port permitting flow of molten sodium from the interior of said reservoir insert container into said chamber at an elevated temperature at which molten sodium is formed, said port forming means comprising an opening in said reservoir insert container sealed by a meltable plug which is solid at room temperature and which melts at the temperature of cell operation.

4,204,036
MULTIPLE DUTY BATTERY
Frederic S. Cohen, Lexington, and Albert L. Hyland, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Mar. 29, 1979, Ser. No. 25,087
Int. Cl.² H01M 6/46
U.S. Cl. 429—152 **16 Claims**

1. A laminar multiple duty battery, comprising a stack of series connected cells extending between a first outer terminal and a second outer terminal and comprising at least one intercell terminal assembly connecting a pair of adjacent cells in said stack, each intercell terminal assembly comprising a conductive metal element formed with a tab projecting from the battery for connection to external circuitry, each said metal element being covered on both sides at least in the region within the battery by conductive plastic current collectors extending over at least the active cell regions of the contiguous cells.



4,204,037
METHOD AND AUTOMATED APPARATUS FOR DETECTING COLIFORM ORGANISMS
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; W. Preston Dill, Houston, Tex.; Rueben E. Taylor, Seabrook, Tex., and Eldon L. Jeffers, La Porte, Tex.
Filed Apr. 4, 1978, Ser. No. 893,657
Int. Cl.² C12Q 3/00, 1/06; C12M 1/36
U.S. Cl. 435—3 **11 Claims**



1. A method of continuous determination of the concentration of bacteria contained in a selected fluid, comprising the steps of:
providing a liquid growth medium at selected intervals,
controlling the environment of said liquid growth medium by maintaining the temperature of said medium at a first preselected temperature of 85° C. for a preselected heat-soak time period of approximately 30 minutes,
inoculating said liquid growth medium with a predetermined quantity of the selected fluid containing the bacteria,
culturing the bacteria contained in said selected fluid in said liquid growth medium for evolving hydrogen metabolically produced by the growth of the bacteria by maintaining the temperature of said inoculated growth medium at a second preselected temperature of either 35° C. or 44.5° C.,
detecting a change in potential between a measuring electrode and a reference electrode in contact with said bacteria and liquid growth medium as a result of said evolving hydrogen,
generating an electrical signal representative of said change in potential,
measuring the period of time between said inoculating of said of said liquid growth medium with the bacteria and said detecting a change in potential between said electrodes,
determining the concentration of the bacteria in said inoculated liquid growth medium as a function of said measured period of time,
discharging said liquid growth medium containing said cultured bacteria subsequent to said measuring and determining steps, initiating a cleaning and steriling cycle for removing bacterial residue remaining after discharging said liquid growth medium containing said cultured bacteria, and re-initiating said above steps beginning with providing a liquid growth medium.

4,204,038
PROCESS FOR PREPARING ANTIBIOTICS MA 144-M_1 AND MA 144-M_2
Hamao Umezawa; Tomio Takeuchi; Hiroshi Naganawa; Masaaki Ishizuka, all of Tokyo; Norio Shibamoto, Kanagawaken; Toshikazu Oki, Kanagawaken, and Taiji Inui, Kanagawaken, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan
Division of Ser. No. 780,730, Mar. 24, 1977, Pat. No. 4,144,329.
This application Feb. 21, 1978, Ser. No. 879,536
Claims priority, application Japan, Apr. 7, 1976, 51/39688
Int. Cl.² C12P 19/56
U.S. Cl. 435—78 **6 Claims**

1. The process for producing the anthracycline glycoside MA 144-M_1 which comprises culturing a MA 144-M_1-producing strain belonging to the genus Streptomyces under submerged aerobic conditions in a nutrient medium containing a carbon source and a nitrogenous nutrient until a substantial amount of MA 144-M_1 is produced by said organism in said nutrient medium and recovering the MA 144-M_1 from the nutrient medium substantially free of substances co-produced therewith.

4,204,039
PROCESS FOR PRODUCING DEOXYNARASIN ANTIBIOTICS
Walter M. Nakatsukasa; Gary G. Marconi; Norbert Neuss, all of Indianapolis, and Robert L. Hamill, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 844,087, Oct. 20, 1977, Pat. No. 4,141,907.
This application Jun. 19, 1978, Ser. No. 917,036
Int. Cl.² C12P 17/16; C12R 1/485
U.S. Cl. 435—118 **5 Claims**

1. The method of producing the deoxynarasin antibiotic complex which comprises cultivating *Streptomyces aureofaciens* NRRL 1181 or a deoxynarasin-producing mutant thereof in a culture medium containing assimilable sources of carbohydrate, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antiobiotic activity is produced.

4,204,040
COPOLYMERIZATION OF PROTEINS ON AN INORGANIC SUPPORT
Melvin H. Keyes, Sylvania, Ohio, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Nov. 18, 1977, Ser. No. 852,635
The portion of the term of this patent subsequent to Oct. 15, 1991, has been disclaimed.
Int. Cl.² C07G 7/02
U.S. Cl. 435—176 **17 Claims**

1. A process for the immobilization of proteins having a relatively low cystine and cysteine content on a support to form a biologically active protein-support composite, in the absence of a cross-linking agent, consisting essentially of the steps of:
selecting a first protein having a sum total of two times the number of the cystine amino acid residues plus al the cysteine amino acid residues equaling at least about 14 per mole of said protein;
selecting at least a second protein, which comprises an enzyme, having a sum total of two times the number of the cystine amino acid residues plus all of the cysteine amino acid residues equaling less than 14 per mole of said protein;
depositing said selected proteins on an inert support; and
copolymerizing said first and second proteins on said inert support in the absence of a cross-linking agent to provide

a protein-support composite containing an amount of enzyme comprising said protein to result in the composite having at least 1×10^{-4} enzyme units of activity per cubic centimeter of said composite.

4,204,041

HIGH LOADING OF IMMOBILIZED ENZYMES ON ACTIVATED CARBON SUPPORTS

James E. Bailey, Houston, Tex., and Yong K. Cho, Rockford, Ill., assignors to Illinois Water Treatment Company, Rockford, Ill.

Filed Oct. 3, 1977, Ser. No. 838,544
Int. Cl.² C07G 7/02
U.S. Cl. 435—177 **4 Claims**

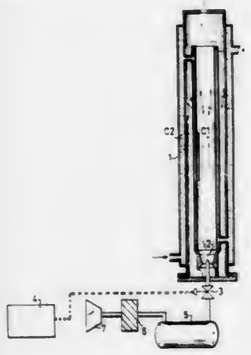
1. Method of immobilizing enzymes on activated carbon supports which comprises treating said activated carbon with a solution of a water-soluble carbodiimide which forms a complex with reactive groups on the surface of said activated carbon thereafter treating said activated carbon complex with a solution of an enzyme, whereby the enzyme displaces said carbodiimide and forms a carbon-enzyme complex, and separating said carbon-enzyme complex from the reaction media.

4,204,042

METHOD OF GASIFYING AND AGITATING A FERMENTATION CULTURE

René Chelle, Toulouse, France, assignor to Societe Anonyme S.E.T.R.I.C., Toulouse, France

Filed Feb. 9, 1978, Ser. No. 876,545
Claims priority, application France, Feb. 23, 1977, 77 05872
Int. Cl.² C12N 1/20
U.S. Cl. 435—253 **7 Claims**



1. A method of gasifying and agitating a micro-organism culture to enable the growth of the culture to be accelerated, said culture being contained in a fermenter comprising at least two containers in communication with one another in their upper and lower regions, the method comprising injecting air in the form of bubbles at the base of one of the containers during injection periods of predetermined length, and stopping the air injection for establishing non-injection periods at a predetermined frequency alternating with said injection periods, so as to produce in the two containers a surging or pulsating effect on the culture and permit a general flow between the two containers.

4,204,043

METHOD OF REMOVING PIGMENT FROM ANNATTO SEED

William G. Schultz, El Cerrito, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 4, 1978, Ser. No. 893,366
Int. Cl.² A23L 1/27, 1/28
U.S. Cl. 435—267 **9 Claims**

1. A process for extracting pigment from seeds containing the same, which comprises contacting the seeds with water containing about 0.01 to 0.0001 parts per part of seeds of an alpha-enzyme selected from the group consisting of polygalacturonases, pectinases, alpha-amylases, pectic acid transeliminases, and pectin transeliminases for a period of time of about 1–20 hours and at a temperature of about 10°–70° C. and a pH of about 3.75–7.5.

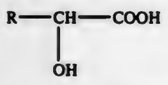
4,204,044

PROCESS FOR THE MANUFACTURE OF OPTICALLY ACTIVE α-HYDROXYCARBOXYLIC ACIDS

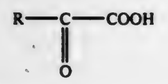
Yasuji Suhara; Hiromi Maruyama, both of Yokohama; Toyoaki Sawada, Zushi; Mayumi Ogawa, Kamakura; Kazuteru Yokose, Urayasu; Morio Fujiu, Tokyo, and Kimihiro Watanabe, Ayase, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 19, 1978, Ser. No. 926,592
Claims priority, application Switzerland, Jul. 26, 1977, 9218/77
Int. Cl.² C12D 1/02
U.S. Cl. 435—280 **9 Claims**

1. A process of obtaining an optically pure enantiomer of a D,L-α-hydroxy carboxylic acid of the formula:



wherein R is a alkyl group containing from 1 to 13 carbon atoms or pyridine
or salts thereof
comprising enzymatically treating said D,L-α-hydroxy carboxylic acid in a fermentation medium with a microorganism belonging to the genus Streptomyces, Pseudomonas or Bacillus or to the Coryneform group which microorganism has enantiospecific dehydrogenase activity to selectively dehydrogenate only one of said enantiomers to an α-keto acid of the formula:



wherein R is as above,
or salt thereof,
to leave the other of said enantiomers free of said enantiomer which was selectively dehydrogenated.

4,204,045

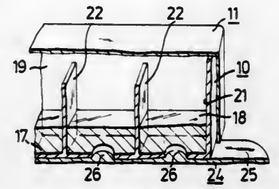
DEVICE FOR EXAMINING MICROORGANISMS

Jan O. Kjellander, and Dan G. Danielsson, both of Örebro, Sweden, assignors to Orion-Yhtyma Oy, Finland

Filed Feb. 15, 1978, Ser. No. 877,894
Int. Cl.² C12M 1/20; C12Q 1/20
U.S. Cl. 435—301 **1 Claim**

1. A device for investigating the effect of biologically active substances against microorganisms and capable of diffusing through a gel layer having microorganisms thereon, said device comprising:

a vessel having a bottom and a plurality of walls upstanding from the bottom to define a plurality of mutually adjacent elongate rectangular compartments and a common compartment, each of said rectangular compartments having an open end to communicate it with the common compartment;



means defining a plurality of openings through said bottom into said rectangular compartments at positions spaced from said open ends of said compartments;

a removeable protective strip covering said openings and having a plurality of projections positioned to be received in said openings.

4,204,046

PRESSURE SENSITIVE ADHESIVE COMPOSITION

Shobu Minatono; Hideo Takamatsu; Junnosuke Yamauchi, and Katsuyoshi Terao, all of Ibaragi, Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan

Filed Jan. 10, 1979, Ser. No. 2,410
Claims priority, application Japan, Jan. 17, 1978, 53-3925
Int. Cl.² C08L 51/00
U.S. Cl. 525—65 **11 Claims**

1. A pressure-sensitive adhesive composition comprising a liquid rubber, a crosslinking agent therefor and a tackifier, said liquid rubber being a modified low molecular weight polyisoprene which is an adduct of a low molecular weight polyisoprene having a molecular weight of 10,000 to 90,000 with maleic anhydride and/or a derivative thereof in an amount of 0.03 to 7 mol % per isoprene monomer unit is said low molecular weight polyisoprene.

4,204,047

THERMOPLASTIC MOULDING COMPOSITION

Dieter Margotte, and Werner Nouvertné, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,812
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712171
Int. Cl.² C08L 51/04, 33/24, 69/00
U.S. Cl. 525—67 **5 Claims**

1. A thermoplastic moulding composition comprising

(1) 80 to 20 parts by weight of a thermoplastic polycarbonate based on a bis-(hydroxyaryl)-alkane;

(2) 20 to 80 parts by weight of a graft polymer of 20 to 90% by weight of a mixture of 95 to 5 parts by weight of styrene, methyl methacrylate or a mixture thereof, 50 to 5 parts by weight of acrylonitrile or methacrylonitrile, 50 to 0 parts by weight of a N-substituted maleic imide, the total being 100 parts by weight on 10 to 80% by weight of a rubber;

(3) 0 to 75 parts by weight of a copolymer of 95 to 50% by weight of styrene, methylmethacrylate or a mixture thereof and 50 to 5% by weight of acrylonitrile or methacrylonitrile; and

(4) 2 to 75 parts by weight of a copolymer of 95 to 50 parts by weight of styrene, methylmethacrylate or a mixture thereof, 40 to 5 parts by weight of acrylonitrile or methacrylonitrile, and 2 to 40 parts by weight of a N-substituted maleic imide, selected from the group consisting of N-methyl-maleic imide, N-butyl-maleic imide, N-cyclohexyl-maleic imide, N-phenyl-maleic imide, N-(2-Cl-phenyl)-maleic imide, N-(3-Cl-phenyl)-maleic imide, N-(3-methyl-phenyl)-maleic imide; N-(3,5-dimethyl-phenyl)-maleic imide, N-benzyl-maleic imide and N-(3-methoxy-phenyl)-maleic imide, the total being 100 parts by weight.

4,204,048

HALOPOLYMERS CROSSLINKED WITH A 1,3-DIAMINOPROPANE

James L. Brewbaker, and Rodrique L. Marzett, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 26, 1978, Ser. No. 945,944
Int. Cl.² C08F 8/32
U.S. Cl. 525—343 **17 Claims**

1. A heat-curable, elastomer-forming composition comprising (a) a chlorine- or bromine-containing halopolymer, (b) about 1 to about 15 parts of a 1,3-diaminopropane or salt thereof per hundred parts by weight of the halopolymer, (c) sulfur or a sulfur-containing compound, and (d) an acid acceptor.

4,204,049

HYDROLYTIC POLYMERIZATION OF EPSILON-CAPROLACTAM

Paul Matthies, Heidelberg; Joachim Kunde, Frankenthal, and Werner Hoerauf, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 743,515, Nov. 19, 1976, abandoned. This application Feb. 12, 1979, Ser. No. 11,647
Int. Cl.² C08G 69/16
U.S. Cl. 526—65 **4 Claims**

1. In a process for the continuous polymerization of ε-caprolactam in the presence of water as an initiator in a vertical downward-flow tubular reactor in which the ε-caprolactam is partially polymerized at elevated temperature in a first reaction zone, mechanically agitated, and is further polymerized in further reaction zones until the desired degree of polymerization into a fiber-forming polymer has been achieved, the resulting molten poly-ε-caprolactam the being discharged, the improvement which consists of carrying out the polymerization at a gauge pressure of from 0.2 to 0.9 bar, constant in all reaction zones, and converting from 20 to 70% of the ε-caprolactam into polymer in said first reaction zone while maintaining the temperature in the first reaction zone according to the relationship $t \leqq 265 + 43\ p$°C., where p is the numerical value of the gauge pressure in bars which relationship is subject to the condition that the temperature in the first reaction zone must be within the range of 260° to 295° C.

4,204,050

POLYMERIZATION OF α-OLEFINS WITH A DUAL TRANSITION METAL CATALYST

Wilbur L. Bressler; Kirby Lowery, Jr., and Fred L. Vance, Jr., all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 9, 1978, Ser. No. 959,287
Int. Cl.² C08F 4/78
U.S. Cl. 526—97 **6 Claims**

1. A process for polymerizing α-olefins which comprises subjecting one or more α-olefins to Ziegler polymerization conditions in the presence of a catalyst comprising

(a) an inert solid catalyst support containing a metal Ms selected from Mg, Zn, Zr, Si, Ti and mixtures thereof;

(b) the reaction product of a tetravalent hydrocarbyloxy titanium halide or mixture of such compounds and CrO_3 in a mole ratio of CrO_3 to hydrocarbyloxy titanium halide of from about 0.25:1 to about 6:1; and

(c) an organometallic activating agent containing aluminum; and

wherein the atomic ratio of Ms:Ti is from about 0.1:1 to about 1000:1; the atomic ratio of Al:Ti is from about 0.3:1 to about 2000:1.

4,204,051

PROCESS FOR POLYURETHANES FROM ORTHO-ESTER-BLOCKED POLYOLS

Wolfgang Wellner, Cologne, and Hermann Gruber, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

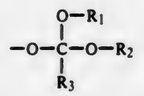
Division of Ser. No. 802,169, May 31, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,265

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625392

Int. Cl.[2] C08G *18/40, 18/48;* C07C *43/32*

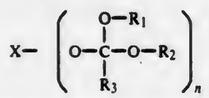
U.S. Cl. 528—55 6 Claims

1. A process for the preparation of polyurethanes by the reaction of water and moisture free storage stable mixtures containing polyisocyanates and organic compounds which under the influence of moisture form polyhydroxyl compounds having free hydroxyl groups, characterized in that said organic compounds have at least two groups of the formula



wherein R_1 and R_2 are the same or different and represent aliphatic hydrocarbon groups having from 1 to 6 carbon atoms, and R_3 represents hydrogen or a group which has the same meaning as defined for R_1 or R_2.

2. A moisture free storage stable composition comprising (a) compounds of the formula



wherein X is the n-valent hydroxyl free residue of an organic polyhydroxyl compound which has a molecular weight of between about 90 and 10,000, R_1, R_2 and R_3 are the same or different and represent C_1 to C_6 aliphatic hydrocarbon groups, and R_3 may also represent hydrogen, and n is an integer of from 2 to 8 inclusive, and

(b) polyisocyanates selected from the group consisting of aliphatic, cycloaliphatic, araliphatic, aromatic and heterocyclic isocyanates, prepolymers of said isocyanates with low molecular weight monomeric polyols, prepolymers of said isocyanates with higher molecular weight polyesters and prepolymers of said isocyanates with higher molecular weight polyethers.

4,204,052

COPOLYMERS OF ACETAL CARBOXYLATES

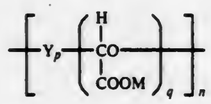
Marvin M. Crutchfield, Creve Coeur; Victor D. Papanu, Maryland Heights, both of Mo., and Craig B. Warren, Rumson, N.J., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 904,067, May 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 826,424, Aug. 22, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,512

Int. Cl.[2] C08G *2/14, 2/30;* C08L *59/02*

U.S. Cl. 525—398 33 Claims

1. A copolymer having the following empirical formula:



where Y is one or more comonomers randomly distributed in the copolymer; the product of q and n averages at least 4; p is at least 1; and M is selected from the group consisting of alkali metal, ammonium, alkyl groups having 1 to about 4 carbon atoms, and alkanol ammonium groups having 1 to about 4 carbon atoms in the alkyl chain.

4,204,053

METHOD FOR THE PRODUCTION OF UREA OF HIGH MECHANICAL STRENGTH

Tore Elstrøm, deceased, late of Porsgrunn, Norway (by Britt Elstrøm, administrator); Per F. Gustavsen, Skien, and Olav Kjøhl, Porsgrunn, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Sep. 13, 1978, Ser. No. 942,498

Claims priority, application Norway, Sep. 19, 1977, 773201

Int. Cl.[2] C08G *12/12*

U.S. Cl. 528—259 5 Claims

1. A method for the production of urea of high mechanical strength by the crystallizing process or the evaporation process, including a prilling or granulating step, utilizing 0.01-1% by weight of formaldehyde in the form of a formaldehyde polymer, which comprises, before prilling or granulating, incorporating in the urea a formaldehyde polymer with a formaldehyde content of 82-97% and with a melting point of about 90°-160° C.

4,204,054

PAPER STRUCTURES CONTAINING IMPROVED CROSS-LINKED CELLULOSE FIBERS

Claude H. Lesas, Colmar, and Michel Pierre, Mulhouse, both of France, assignors to S. A. Beghin-Say, Thumeries, France

Continuation-in-part of Ser. No. 731,895, Oct. 13, 1976, Pat. No. 4,113,936. This application Sep. 7, 1978, Ser. No. 940,188

Claims priority, application France, Oct. 20, 1975, 75 31965; Aug. 1, 1978, 78 22657

Int. Cl.[2] D06M *13/14*

U.S. Cl. 536—56 23 Claims

1. Fibrous structure in sheet form having the composition as follows:

10% to 90% by weight of pulp consisting essentially of cellulosic fibers cross-linked with formaldehyde, the predominant cross-linking being at the surface area of said fibers and in an amount sufficient to impart flexibility and softness to said fibers; and

90% to 10% by weight of an additional binding product, said amount being selected to ensure sufficient strength and cohesion to the structure of said sheet.

4,204,055

CROSS-LINKED CELLULOSE FIBERS

Claude H. Lesas, Colmar, and Michel Pierre, Mulhouse, both of France, assignors to S. A. Beghin-Say, Thumeries, France

Continuation-in-part of Ser. No. 731,895, Oct. 13, 1976, Pat. No. 4,113,936. This application Sep. 7, 1978, Ser. No. 940,189

Claims priority, application France, Oct. 20, 1975, 75 31965

Int. Cl.[2] D06M *13/14*

U.S. Cl. 536—56 10 Claims

1. Cellulose fibers cross-linked with formaldehyde by the process comprising the steps of

(1) spraying of formaldehyde as a mixture with hydrochloric acid and formic acid on individualized cellulose fibers;

(2) immediately after said spraying, introducing said fibers which have the reagents of step (1) uniformly disposed thereon into an air stream having a temperature of from about 60° and about 250° C., and a velocity of from about 1-20 m/sec during a curing-time period ranging between about 1 and 20 seconds to effect a cross-linking reaction; and

(3) separatmg said fibers from said air stream.

10. Cellulose fibers cross-linked with formaldehyde, at least 50% of the cross-linking bridges being at the surface area of the fibers, thereby imparting flexibility and softness to the fibers.

4,204,056

PROCESS AND INTERMEDIATES FOR PREPARING FIBER-REACTIVE PHTHALOCYANINE DYES

Rolf Müller, Karben, and Joachim Ribka, Offenbach am Main-Bürgel, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main Fechenheim, Fed. Rep. of Germany

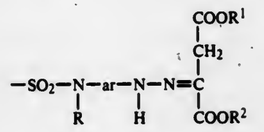
Division of Ser. No. 786,819, Apr. 12, 1977. This application Sep. 21, 1978, Ser. No. 944,641

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 2617062

Int. Cl.[2] C07B *47/04*

U.S. Cl. 542—416 1 Claim

1. A water-soluble phthalocyanine dye in which there is substituted on the phthalocyanine nucleus up to four groups having the structure



wherein

R is hydrogen or alkyl having up to 6 carbons,

R^1 is an alkyl radical which has 2-6 carbon atoms and is substituted by Cl, Br, OH or alkoxy having 1-4 carbon atoms, or an unsubstituted alkyl radical having 1-18 carbon atoms,

R_2 is an alkyl radical which has 2-6 carbon atoms is substituted by Cl, Br, OH or alkoxy having 1-4 carbon atoms, or denotes an unsubstituted alkyl radical having 1-18 carbon atoms, and

ar is a carbocyclic divalent aromatic or araliphatic group containing up to two benzene rings and up to 16 carbons, the NH group of the hydrazone moiety being attached to a benzene ring.

4,204,057

9-DEOXY-6,9α-EPOXYMETHANO-PG C-1 AMINES

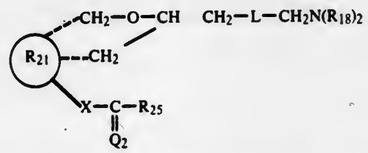
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 788,145, Apr. 19, 1977, Pat. No. 4,130,569. This application Sep. 11, 1978, Ser. No. 941,481

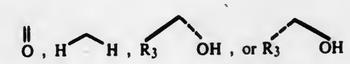
Int. Cl.[2] C07D *311/02*

U.S. Cl. 542—426 12 Claims

1. A cyclic ether of the formula



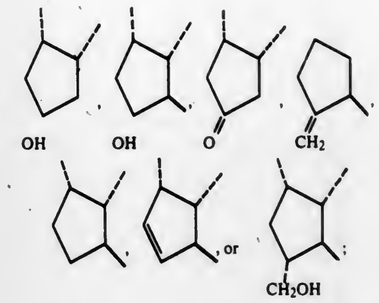
wherein L is (1) a valence bond, (2) $-(CH_2)_d-$ wherein d is one to 5 inclusive, (3) $-(CH_2)_t-CF_2-$ wherein t is 2, 3, or 4, (4) $-CH_2-CH=CH-A-$ wherein A is a valence bond or $-(CH_2)_h-$ wherein h is one, 2, or 3, or (5) $-CH_2-O-CH_2-Y-$ wherein Y is a valence bond or $-(CH_2)_k-$ wherein k is one or 2; wherein Q_2 is



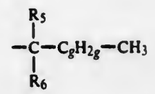
wherein R_3 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein R_{18} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, the two R_{18}'s being the same or different;

wherein R_{21} is

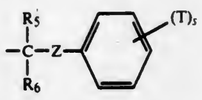


wherein R_{25} is



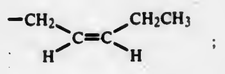
(1)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;



(2)

wherein R_5 and R_6 are as defined above with the proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 6 carbon atoms, inclusive between $-CR_5R_6-$ and the phenyl ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; or



wherein X is cis- or trans-CH=CH—, —C≡C—, or $-CH_2CH_2-$; and wherein the wavy line (~) indicates attachment in cis or trans configuration.

4,204,058

PROCESS FOR OBTAINING CEPHALOSPORIN C AND THE SALTS AND DERIVATIVES THEREOF FROM CULTURE FILTRATES OR CULTURE SOLUTIONS

Laszlo Vértesy, Eppstein, and Gerhard Huber, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 26, 1978, Ser. No. 954,896
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748659
Int. Cl.² C07D *501/12*
U.S. Cl. 544—4 20 Claims

1. A method for separating cephalosporin C or a salt or derivative thereof from a culture filtrate or culture solution, which method comprises drying said culture filtrate or culture solution, dissolving the dried filtrate or solution in a solvent other than water, but which may contain water, to form a solution and then

(a) precipitating cephalosporin C or a salt thereof directly from said solution, or

(b) reacting the amino group of cephalosporin C to form a derivative thereof, and then isolating said derivative from said solution as the free acid or a salt thereof.

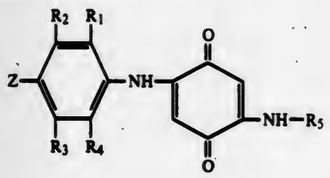
4,204,059

DIAMINOBENZOQUINONES

Andrée Bagaut, Boulogne-sur-Seine, and Monique Laudon, Gagny, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 762,272, Jan. 25, 1977, Pat. No. 4,084,052, which is a division of Ser. No. 600,786, Jul. 31, 1975, Pat. No. 4,023,926, which is a division of Ser. No. 370,737, Jun. 18, 1973, Pat. No. 3,919,265. This application Dec. 21, 1977, Ser. No. 862,827
Claims priority, application Luxembourg, Jun. 21, 1972, 65555; Jan. 23, 1973, 66883
Int. Cl.² C07D *295/14*
U.S. Cl. 544—166 2 Claims

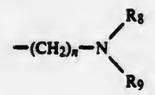
1. Diaminobenzoquinone of the formula



wherein,

R_1, R_2, R_3 and R_4 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy,

R_5 represents a member selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl and amino alkyl of the formula



wherein n is 2–6 and R_8 and R_9 each independently represent a member selected from the group consisting of hydrogen, lower alkyl and hydroxy lower alkyl; and

Z is morpholinyl.

4,204,060

NOVEL MONOCHLORO-S-TRIAZINE DERIVATIVES

Gerrit Hoentjen, Westervoort; Stephanus A. G. de Graaf, Renkum; Albert H. Bijkerk, Rheden, and Cornelis R. H. I. de Jonge, De Steeg, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 651,086, Jan. 21, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,371
Claims priority, application Netherlands, Oct. 4, 1974, 7511696
Int. Cl.² C07D *251/26*
U.S. Cl. 544—218 4 Claims

1. 2,4-Distearoxy-6-chloro-s-triazine.

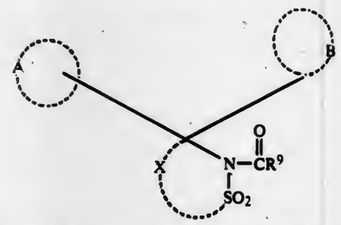
4,204,061

SULFAM(NA)PHTHALEINS

Stanley M. Bloom, Waban; Alan L. Borror, Lexington, and James W. Foley, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 23, 1977, Ser. No. 836,021
Int. Cl.² C07D *275/06, 417/10, 279/02*
U.S. Cl. 260—243.3 45 Claims

1. A compound of the formula



wherein A is a 4'-hydroxy-1'-phenyl moiety or a 4'-hydroxy-1'-naphthyl moiety; B is a phenyl moiety or a naphthyl moiety, provided A is said 4'-hydroxy-1'-phenyl moiety when B is said naphthyl moiety; X represents the carbon atoms necessary to complete 2,3-dihydrobenz[d]isothiazole-1,1-dioxide or 2,3-dihydronaphtho[1,8-de]-1,2-thiazine-1,1-dioxide; and R^9 is selected from methyl, unsubstituted or substituted with one halo group selected from chloro, bromo and fluoro or substituted with two of said halo groups; and phenyl, unsubstituted or substituted in the para position with a group selected from alkyl having 1 to 4 carbon atoms, dimethylamino and nitro.

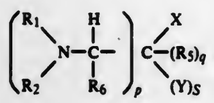
4,204,062

AMINE SALTS OF TERTIARY AMINO ACIDS

Ibrahim S. Bechara, Boothwyn; Rocco L. Mascioli, Media, and Philip J. Zaluska, Schnecksville, all of Pa., assignors to Air Products & Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 746,313, Dec. 1, 1976, Pat. No. 4,134,994. This application Oct. 23, 1978, Ser. No. 954,133
Int. Cl.² C07C *101/20, 121/42, 121/78, 241/00*
U.S. Cl. 544—351 7 Claims

1. An amine salt of a tertiary amino acid represented by the formula:



wherein in the formula:

R_1 and R_2 independently are alkyl, or hydroxy-substituted alkyl groups having from 1 to 15 carbon atoms;

R_5 is hydrogen, a lower alkyl group having from 1 to 6 carbon atoms, an alkenyl group having from 2 to 6 carbon atoms, an aryl group, a cycloaliphatic or alkyl substituted cycloaliphatic group with the alkyl portion having from 1 to 6 carbons, or a keto alkyl group with the alkyl portion having from 1 to 6 carbon atoms;

R_6 is hydrogen, or a radical selected from the group consisting of alkyl, phenyl and napthyl groups;

X is an amine salt of a carboxylic acid group;

Y is a nitrile group; and

q is 0 or 1; p is 1 or 2; S is 0 or 1; and p+q+S is 3.

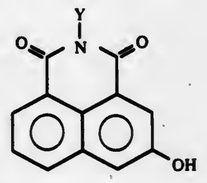
4,204,063

N(AMINOALKYL)-NAPHTHALIMIDES AND THEIR DERIVATIVES

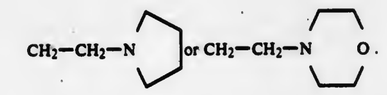
Miguel F. Brana; Antonio M. Sanz; Rafael P. Alvarez-Ossorio; Cristobal M. Roldan, and Cristina R. Fernandez de Gamboa, all of Madrid, Spain, assignors to Laboratorios Made, S.A., Madrid, Spain

Filed Jun. 2, 1978, Ser. No. 911,801
Claims priority, application Spain, Jun. 4, 1977, 459497
Int. Cl.² C07D *401/06, 413/06*
U.S. Cl. 546—99 5 Claims

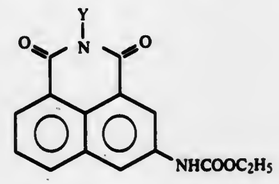
1. A compound having the formula



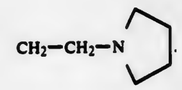
wherein Y is $CH_2—CH_2N(CH_3)_2$,



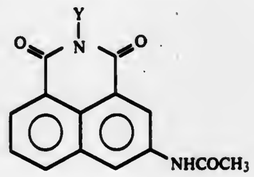
2. A compound having the formula



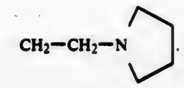
wherein Y is $CH_2—CH_2—N(CH_3)_2$ or



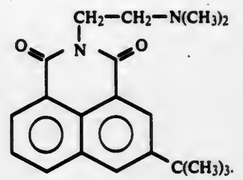
3. A compound having the formula



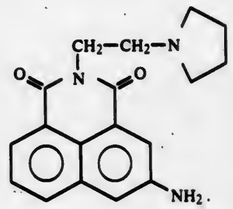
wherein Y is $CH_2—CH_2—N(CH_3)_2$ or



4. A compound having the formula



5. A compound having the formula



4,204,064

SULFUR CONTAINING HETEROCYCLIC AMINO ACID DERIVATIVES

Gregoire Kalopissis, Paris, France, assignor to L'Oreal, Paris, France

Division of Ser. No. 714,000, Aug. 12, 1976, Pat. No. 4,085,217, which is a division of Ser. No. 501,615, Aug. 29, 1974, Pat. No. 3,976,781, which is a division of Ser. No. 203,046, Nov. 29, 1971, Pat. No. 3,849,576, which is a continuation-in-part of Ser. No. 736,960, Jun. 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 427,976, Jan. 25, 1965, abandoned, and Ser. No. 602,480, Dec. 19, 1966, abandoned, and Ser. No. 794,363, Jan. 27, 1969, abandoned, and Ser. No. 801,840, Feb. 24, 1969, abandoned, and Ser. No. 858,161, Sep. 15, 1969, Pat. No. 3,671,643, and Ser. No. 12,122, Feb. 17, 1970, abandoned, and Ser. No. 36,405, May 11, 1970, abandoned. This application Jan. 24, 1978, Ser. No. 871,839
Claims priority, application France, Jan. 29, 1964, 64.961897; Luxembourg, Dec. 22, 1965, 50125; France, Jun. 21, 1967, 67 111396; Jul. 28, 1967, 67.116160; Luxembourg, Jan. 29, 1968, 55371; Feb. 23, 1968, 55553; Feb. 19, 1969, 58042; Apr. 19, 1969, 55935; May 12, 1969, 58634; Belgium, Jun. 3, 1969, 74877; Luxembourg, Apr. 23, 1971, 63056; Apr. 23, 1971, 63057
Int. Cl.² C07D *211/20*
U.S. Cl. 546—245 3 Claims

1. A compound selected from the group consisting of 3-(β-piperidinocarbonyl ethylthio) alanine and 2-acetamido 3 pyrrolidinocarbonylmethylthio propionic acid.

4,204,065

SOFT QUATERNARY SURFACE ACTIVE AGENTS AND METHOD OF USING SAME

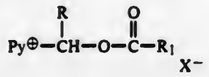
Nicolae S. Bodor, Lawrence, Kans., assignor to Interx Research Corporation, Lawrence, Kans.

Continuation of Ser. No. 726,841, Sep. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,519, Sep. 22, 1975, Pat. No. 3,989,711. This application Dec. 13, 1978, Ser. No. 969,255

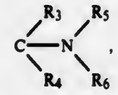
Int. Cl.[2] A61K *31/465*

U.S. Cl. 546—316 **108 Claims**

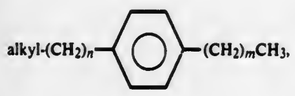
1. A quaternary ammonium compound of the formula:



wherein Py is an N-heterocyclic unsaturated ring system comprising a basic nulceus selected from the group consisting of pyridyl and 3-carboloweralkoxypyridyl, 3-carbamoylpyridyl and 3-(N-loweralkylcarbamoyl)pyridyl; wherein R represents a member selected from the group consisting of hydrogen, C_1-C_{20} alkyl, cycloalkyl having up to 7 carbon atoms, alkoxyalkyl having up to 20 carbon atoms, C_1-C_{20} haloalkyl, carboxyalkyl having up to 20 carbon atoms, phenyl, naphthyl, substituted phenyl and substituted naphthyl whose substituents are selected from the group consisting of halogen, O—C_1-C_4 alkyl, O—C_1-C_8 acyl, wherein said acyl group is derived from a carboxylic acid, nitro, carboxyl, and carboethoxy; wherein R_1 represents C_9-C_{22} straight or branched alkyl, —$(CH_2)_n$—



wherein R_3, R_4, R_5 and R_6 are each selected from the group consisting of hydrogen, methyl, and ethyl, C_1-C_{22} straight or branched



wherein n in each occurrence and m represent an integer of from 0 to 22, —$(CH_2CH_2O)_p$, wherein the p represents an integer of from 0 to 22, and the radical which results from decarboxylation of a naturally occuring bile acid; and wherein X is a nontoxic, pharmaceutically acceptable anion.

4,204,066

PREPARATION OF ALKYL PYRIDINES

Tamotsu Imai, Mt. Prospect, and Edwin H. Homeier, Maywood, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 1, 1978, Ser. No. 965,670

Int. Cl.[2] C07D *213/12*

U.S. Cl. 546—348 **9 Claims**

1. A process for the preparation of alkyl pyridine which comprises reacting a mixture of ethylene, carbon monoxide, hydrogen and ammonia in the presence of a metal phthalocyanine catalyst complex in which the metallic portion is selected from the transition metals of Groups IB and VIII of the Periodic Table, and recovering the resultant alkyl pyridine.

4,204,067

DERIVATIVES OF IMIDAZO[2,1-b] THIAZOLE

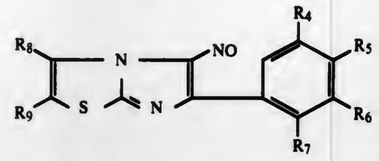
Parimal K. Adhikary, 510 Basswood Dr., Apt. No. 6, Nashville, Tenn. 37209

Division of Ser. No. 857,854, Dec. 5, 1977, Pat. No. 4,160,840, which is a continuation of Ser. No. 726,390, Sep. 24, 1976, abandoned. This application Dec. 11, 1978, Ser. No. 968,090

Int. Cl.[2] C07D *277/08*

U.S. Cl. 548—154 **2 Claims**

1. A compound having the formula



wherein R_4, R_5, R_6, and R_7 are selected from the group consisting of hydrogen, halogen and lower-alkyl of from one to four carbon atoms, inclusive, with the proviso that when taken together they constitute the following substituents on the tetracyclic ring, 9-halo, 8-halo, 7-halo, 6-halo, 9-lower-alkyl, 8-lower-alkyl, 7-lower-alkyl, 6-lower-alkyl, 7,9-dihalo, 7,8-dihalo, 6,8-dihalo, 6,7-dihalo, 7,9-di-lower-alkyl, 7,8-di-lower-alkyl and 4,6-di-lower-alkyl; R_8 is selected from the group consisting of hydrogen, lower-alkyl of from one to four carbon atoms, inclusive, and R_9 is selected from the group consisting of hydrogen and halo.

4,204,068

NITROGEN HETEROCYCLES

Albert G. Caldwell, West Wickham, and Norman Whittaker, Beckenham, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

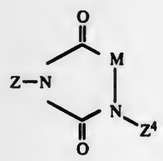
Filed Jun. 2, 1977, Ser. No. 802,644

Claims priority, application United Kingdom, Jun. 3, 1976, 22877/76; Dec. 2, 1976, 50340/76; Jan. 1, 1977, 23071/77; Mar. 23, 1977, 12145/77

Int. Cl.[2] C07D *233/76, 233/78*

U.S. Cl. 548—313 **2 Claims**

1. A compound of formula



wherein

Z is hydrogen or alkyl;

M is $>C=Z^3$, $>CH-CHO$ or $>CH-CH(OG^3)_2$, G^3 being alkyl; and

Z^4 is $-CH_2-X-X^1-X^2$ or $-Y-Y^1-Y^2-Y^3$, except when M is $C=Z^3$ whereupon

either

Z^3 is $=CR-CH_2-Y^1-Y^2-Y^3$ and Z^4 is $-CH_2-X-X^1-X^2$, or

Z^3 is $=CH-X-X^1-X^2$ and Z^4 is $-Y-Y^1-Y^2-Y^3$;

wherein

R is hydrogen or methyl;

X is phenylene, —C≡C—, —CH=CH— or —CH_2—CQ_2—, in which each Q is independently selected from hydrogen and alkyl or the two Q's together form an alkylene radical having four, five or six carbon atoms;

X^1 is a covalent bond or a straight or branched alkylene chain having 1 to 6 carbon atoms, optionally having one of its methylene groups replaced by oxa (—O—) provided that at least one carbon atom separates the oxa group from a —C≡C—, —CH=CH— or —CO— group;

X^2 is selected from 5-tetrazolyl, carboxyl, carboxamide, hydroxymethylene and alkoxycarbonyl;

Y is $-CR_2-CH_2-$ in which each R is independently as defined above;

Y^1 is carbonyl, methylene, methylene substituted by hydroxyl, or methylene substituted by hydroxyl and alkyl;

Y^2 is a covalent bond or straight or branched alkylene having 1 to 7 carbon atoms, optionally substituted on the carbon adjacent Y^1 by one or two groups independently selected from alkyl, cycloalkyl and bicycloalkyl; and

Y^3 is hydrogen, hydroxy, alkoxy having 1 to 7 carbon atoms, cycloalkyl, bicycloalkyl, phenyl, benzyl, phenoxy or benzyloxy,

wherein each of phenyl, benzyl, phenoxy and benzyloxy may be substituted in the benzene ring by one or more groups selected from hydroxy, halogeno, nitro, amino, acylamino, alkenyl, alkoxy, phenyl, and alkyl which may itself be substituted by one or more halogeno groups; or

Y is a bond, $-CH_2-$ or $-CH_2.CH_2-$; and

Y^1, Y^2 and Y^3 taken together form a cycloalkyl group substituted by a hydroxyl group;

and salts thereof.

4,204,069

REDUCTIVE ALKYLATION

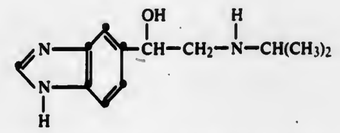
Carroll D. Arnett, Durham, N.C.; Jeremy Wright, Baltimore, and Nicolas Zenker, Lutherville, both of Md., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 747,661, Dec. 6, 1976, Pat. No. 4,082,847. This application Jan. 16, 1978, Ser. No. 869,970

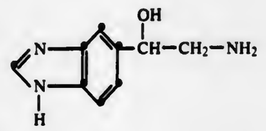
Int. Cl.[2] C07D *235/08*

U.S. Cl. 548—325 **3 Claims**

1. A process for preparing a compound having the formula



which comprises the reductive alkylation of a compound having the formula



with acetone in the presence of anhydrous Na_2SO_4.

4,204,070

PROCESS FOR PREPARING POLYETHYLENE TEREPHTHALATE AND ITS LOW MOLECULAR WEIGHT OLIGOMERS

Fumiyuki Suzuki; Toshimitu Okutu, and Keitaro Ohe, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 23, 1976, Ser. No. 679,612

Claims priority, application Japan, Apr. 23, 1975, 50-49350

Int. Cl.[2] C07C *69/82*

U.S. Cl. 560—94 **6 Claims**

1. A process for preparing BHET in a reactor provided with a rectifying column which comprises:

(i) suspending or dissolving terephthalic acid in a molten liquid of BHET at a temperature above the dew point of ethylene glycol;

(ii) feeding gaseous or liquid ethylene glycol into the suspension or the solution in said reactor to react it at a temperature of about 197° to about 300° C. with the terephthalic acid, wherein the feeding of ethylene glycol to the reactor is controlled so that the temperature inside of and at a position at the top of the rectifying column is maintained at about 100° to about 120° C. at which more than about 3% of the ethylene glycol does not distill off from the rectifying column and the partial pressure of the ethylene glycol is maximized, said control being maintained by

(iii) discontinuing feeding of the ethylene glycol when the temperature at a position about ½ to about 1/5 below the top of the rectifying column rises to a temperature within the range of about 110° C. to about 160° C.; and

(iv) continuing feeding of the ethylene glycol when the temperature at said position about ½ to about 1/5 below the top of the rectifying column falls to 0° to about 5° C. lower than the temperature point in step (iii).

4,204,071

4-ARYL-3-BUTENOIC ACIDS AND LOWER ALKYL ESTERS

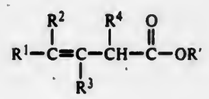
Richard J. Anderson, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed May 4, 1978, Ser. No. 902,624

Int. Cl.[2] C07C *63/60, 69/76*

U.S. Cl. 560—100 **18 Claims**

1. A compound of the formula:



wherein,

R' is hydrogen or lower alkyl;

R^1 is naphthyl, phenyl or substituted phenyl in which the phenyl group is substituted at one, two or three of the ring carbon atoms with lower alkyl, lower haloalkyl, lower alkoxy or halogen;

each of R^2 and R^3 is independently selected from hydrogen, chloro, fluoro or methyl; and

R^4 is lower alkyl of 2 to 5 carbon atoms.

4,204,072

TRIS(N-CARBALKOXYLAMINOMETHYL)PHOSPHINES

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 29, 1978, Ser. No. 964,751

Int. Cl.[2] C07C *125/06*; D06M *13/44*

U.S. Cl. 560—158 **8 Claims**

1. A tris(N-carbalkoxylaminomethyl)phosphine compound

having the formula $(RO_2CNHCH_2)_3P$, where R is an alkyl radical having from 1 to 6 carbon atoms.

3. A process for preparing a tris(N-carbalkoxylaminomethyl)phosphine which comprises reacting a tetrakis(N-carbalkoxylaminomethyl)phosphonium salt having the formula $(RO_2CNHCH_2)_4P^+X^-$, where R is an alkyl radical having from 1 to 6 carbon atoms and X is an inorganic acid radical, with a base capable of forming a salt with the inorganic acid HX, and recovering the product from the resulting reaction mixture.

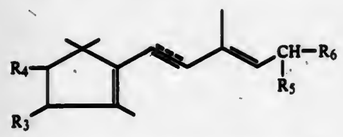
4,204,073

PROCESS FOR PRODUCING CAROTENOIDS

Frank Kienzle, Flüh, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 815,470, Jul. 14, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,624
Claims priority, application Austria, Aug. 2, 1976, 5705/76
Int. Cl.² C07C *69/52, 67/02*
U.S. Cl. 560—231 **4 Claims**

1. A compound of the formula



wherein R_5 is hydroxy, R_6 is hydrogen, or R_5 and R_6 taken together forms oxo; R_4 is hydroxy, oxo or acyloxy; R_3 is oxo or hydroxy, with the proviso that when R_5 is hydroxy and R_4 is oxo or acyloxy, R_3 is oxo and the dotted bond can be optionally hydrogenated and with the further proviso that when R_5 and R_6 are oxo, R_3 is oxo.

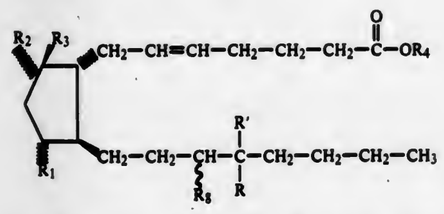
4,204,074

16-SUBSTITUTED PROSTAGLANDINS

George W. Holland, and Perry Rosen, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 813,068, Jul. 5, 1977, Pat. No. 4,163,016. This application Apr. 6, 1979, Ser. No. 27,631
Int. Cl.² C07C *127/00*
U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula:



wherein R_4 is hydrogen or lower alkyl; R_2 is hydroxy or taken together forms oxo; R_1 is lower alkyl; R' is lower alkyl and R is hydrogen or lower alkyl; R_8 is hydroxy, benzoyloxy, lower alkanoyloxy, benzoyloxy, benzhydryloxy, trimethylsilyloxy or tetrahydropyranyloxy or their enantiomers or racemates thereof.

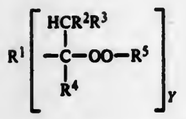
4,204,075

PROCESS FOR DI-ORGANIC PEROXIDES

Richard A. Bafford, Tonawanda, and Orville L. Mageli, Kenmore, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

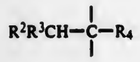
Division of Ser. No. 771,334, Oct. 28, 1968, Pat. No. 4,061,317. This application Aug. 30, 1978, Ser. No. 938,192
Int. Cl.² C07C *179/06*
U.S. Cl. 568—562 **4 Claims**

1. A process for purifying, an impure organic peroxide having the general formula



produced by a solvolysis reaction of an aralkyl halide with a hydroperoxide in the presence of an olefin corresponding to the dehydrohalogenated aralkyl halide wherein the impurities are generally substituted benzene derivatives, said impure peroxide being essentially free of acidic materials and said impurities having an appreciable lower boiling point than said peroxide which process comprises charging said impure peroxide along with about 2–10 parts by weight of liquid water, based on said impure peroxide, to a distillation zone and vaporizing water and impurities at a temperature of about 30°–80° C. at a pressure of about 0.01–0.5 atmospheres and continuing said vaporization until essentially no oily liquid is obtained in a condensor receiving vapors from said zone, under conditions such that a substantial amount of liquid water is present in said zone in contact with peroxide product, wherein

(a) Y is an integer equal to 1, 2 or 3;
(b) R^1 is phenyl or naphthyl;
(c) R^2 and R^3 are each H, alkyl, cycloalkyl, phenyl or a corresponding halo-substituted radical;
(d) R^4 is alkyl, cycloalkyl, phenyl or a corresponding halo-substituted radical;
(e) R^2 and R^3 may join with the common carbon to which they are attached to form the cyclic group;
(f)



may be a cyclic group;
(g)



may be a fused ring group; and
(h) R^5 is an aliphatic or cycloaliphatic hydrocarbon radical.

4,204,076

HYDROQUINONE DIMETHYL ETHER

Elmar Konz, Bad Soden am Taunus, and Rudolf Pistorius, Ober-Mörlen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 871,921, Jan. 24, 1978, Pat. No. 4,161,614. This application Nov. 15, 1978, Ser. No. 960,857
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703077
Int. Cl.² C07C *41/00*
U.S. Cl. 568—648 **3 Claims**

1. A method of preparing hydroquinone dimethyl ether, which comprises catalytically dehydrogenating cyclohexanedione-(1,4)-tetramethyl diketal and splitting off methanol.

4,204,077

ETHERIFICATION PROCESSING OF LIGHT HYDROCARBONS

Hanbury J. Woods, Campbellville; John D. Chase, Oakville, and Buenaventura B. Galvez, Islington, all of Canada, assignors to Gulf Canada Limited, Toronto, Canada

Filed Oct. 2, 1978, Ser. No. 948,072
Int. Cl.² C07C *41/00, 41/10, 41/12*
U.S. Cl. 568—697 **10 Claims**

1. A method for processing an olefinic hydrocarbon stream consisting essentially of a mixture including both four and five carbon atom etherifiable olefins, for the formation of high octane components for blending into gasoline, said method comprising

a. passing said stream into an etherification reactor with a proportion of methanol under etherifying conditions, to contact an etherification catalyst therein and etherify tertiary olefins in said stream,
b. passing the entire effluent stream from said etherification reactor into a glycol contacting unit and contacting it therein with a stream of liquid glycol to remove methanol from said effluent and reduce the methanol concentration in the effluent stream to no greater than 200 mole ppm in said effluent,
c. separating said effluent stream from said glycol and fractionally distilling the reduced effluent to separate a distillate containing hydrocarbons of predominantly four carbon atoms each and no greater than 200 mole ppm methanol from a higher boiling high octane fraction containing ethers and hydrocarbons of predominantly more than four carbon atoms each.

4,204,078

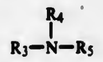
PROCESS FOR THE PREPARATION OF NITROPHENYL HYDROXY SUBSTITUTED ACETYLENES

Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 13, 1978, Ser. No. 942,068
Int. Cl.² C07C *33/04*
U.S. Cl. 568—705 **21 Claims**

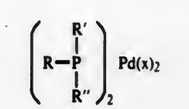
1. In a process for the production of a nitrophenyl hydroxy substituted acetylene by reacting a nitrobromobenzene with a substituted terminal acetylene compound containing at least three carbon atoms and an hydroxy group on the carbon atom adjacent to the acetylene group in the presence of a reaction mixture comprising:

(i) a solvent comprising a compound having the formula:



where R_3, R_4, and R_5 can be the same or different and are selected from the group consisting of hydrogen and lower alkyl groups having from 1 to 4 carbon atoms with the proviso that no more than one of said R groups can be hydrogen;

(ii) a catalyst comprising a compound having the formula:



where x can be Br, I, or Cl;
and where R, R' and R" can be the same or different and are selected from the group consisting of phenyl, substituted phenyl and alkyl groups having from 1 to 4 carbon atoms, and

(iii) a promoter comprising cuprous iodide;

the improvement which comprises reacting said nitrobromobenzene in the added presence of a sufficient amount of excess trisubstituted phosphine over that amount needed to form said catalyst to result in a yield of desired nitrophenyl hydroxy acetylene of at least 90 weight percent.

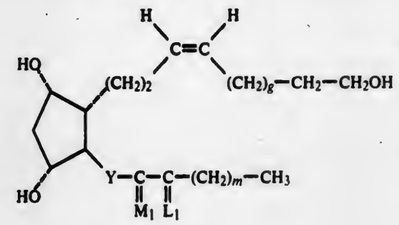
4,204,079

2-DECARBOXY-2-HYDROXYMETHYL-CIS-4,5-DIDEHYDRO PGF$_1$ COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 778,649, Mar. 17, 1977, which is a division of Ser. No. 647,363, Jan. 8, 1976, Pat. No. 4,028,419. This application Jul. 12, 1978, Ser. No. 923,770
Int. Cl.² C07C *177/00*
U.S. Cl. 568—838 **22 Claims**

1. A prostaglandin analog of the formula



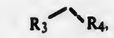
wherein Y is trans -CH=CH-;
wherein M_1 is



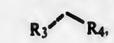
or



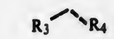
wherein R_5 is hydrogen or methyl;
wherein L_1 is



or



or a mixture of



and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;

wherein g is one, 2, or 3; and

wherein m is one to 5, inclusive.

4,204,080

HYDROGENATION PROCESS FOR THE SELECTIVE PREPARATION OF 3-MENTHENE

James O. Bledsoe, Jr., and Carlos G. Cardenas, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,138

Int. Cl.[2] C07C *5/06, 5/30;* **B01J** *23/46*

U.S. Cl. 585—273 **10 Claims**

1. A process for catalytically hydrogenating a non-conjugated paramenthadiene having one site of unsaturation at the 4(8)-or the 8-position, for selectively forming 3-menthene which comprises:

contacting with hydrogen gas under hydrogenation conditions a reaction mixture comprising said para-menthadiene, a catalytic proportion of a ruthenium (II) catalyst complex, and an organic solvent in which said catalyst complex is homogeneously dispersed, until said 3-menthene is formed, said catalyst complex restricted to one which is capable of catalyzing a selective hydrogenation of a cyclic polyene to a cyclic monoene.

4,204,081

SELECTIVE HYDROGENATION OF CYCLOPENTADIENE TO FORM CYCLOPENTENE

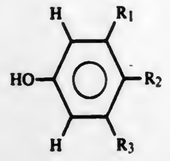
Henry R. Menapace, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 30, 1978, Ser. No. 938,159

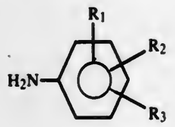
Int. Cl.[2] C07C *5/06, 5/16, 13/12*

U.S. Cl. 585—274 **5 Claims**

1. A process for the preparation of cyclopentene which comprises selectively hydrogenating cyclopentadiene in the liquid phase by contacting cyclopentadiene with hydrogen in the presence of a hydrogenation catalyst comprising (1) a soluble nickel compound, (2) an aluminum trialkyl compound or a lithium alkyl and (3) at least one cocatalyst compound selected from the group consisting of H_2O; NH_3;



where R_1, R_2 and R_3 may be hydrogen or an alkyl radical containing from 1 to 6 **carbon atoms;**



where R_1, R_2 and R_3 may be hydrogen or halogen, or an alkyl radical containing from 1 to 6 carbon atoms; $R_1O\,R_2$ wherein R_1 and R_2 may be the same or different alkyl radicals containing from 1 to 6 carbon atoms; and



wherein R_1 may be alkyl or an aromatic radical containing from 1 to 8 carbon atoms and R_2 may be hydrogen or an alkyl or aromatic hydrocarbon radical containing from 1 to 8 carbon atoms.

4,204,082

DC ARC FURNACE HAVING STARTING ELECTRODE

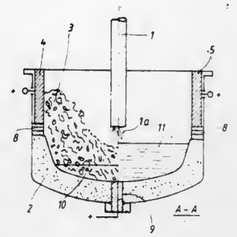
Sven-Einar Stenkvist, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Nov. 13, 1978, Ser. No. 959,480

Claims priority, application Sweden, Nov. 16, 1977, 7712920

Int. Cl.[2] H05B *7/00*

U.S. Cl. 13—9 R **4 Claims**



1. A DC arc furnace comprising a furnace vessel having a hearth adapted to contain a melt and a side wall extending upwardly from said hearth, an arcing electrode positioned above said hearth, said hearth having a hearth electrode requiring contact by molten metal to be effective, and starting electrode means for contacting scrap charged in said vessel to put arcing current in the scrap until said molten metal is formed, said means comprising a plurality of elongated, electrically conductive plate-like elements built into said side wall and forming fixed immovable parts thereof, said elements being circumferentially interspaced and being vertically positioned so that scrap initially charged in said vessel gravitationally leans against the elements and solely thereby forms electrical connection therewith, said arcing electrode being connected for operation with one polarity and said hearth electrode and said elements being connected for operation with the opposite polarity, said electrical connection of any one of said elements being insufficient to put said arcing current in the scrap and the elements being provided in sufficient number to cumulatively put the arcing current into the scrap.

4,204,083

TERMINATION ON ELECTRIC POWER CABLES FOR NORMAL, HIGH AND VERY HIGH VOLTAGES

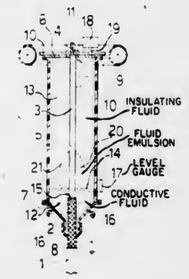
Adriano Isotton, Latina, Italy, assignor to Angelo Mariani, Italy

Filed Nov. 14, 1977, Ser. No. 851,188

Claims priority, application Italy, Nov. 18, 1976, 16907 A/76

Int. Cl.[2] H02G *15/02*

U.S. Cl. 174—9 F **7 Claims**



1. A termination on a shielded electric cable for normal, high or very high voltage, comprising a housing for accommodating an end length of the cable, an electric cable comprising a conductor, insulation surrounding said conductor and a shield around said insulation, an end length of said cable being received in said housing with an end section of said shield in said housing and with said conductor and insulation in said housing extending beyond said shield, a terminal electrically connected to the end of said conductor, a body of conductive liquid in said housing immersing said end section of said shield and a body of insulating liquid at least partially filling the remaining space within said housing, and means for sealing said bodies of liquid in said housing.

4,204,084

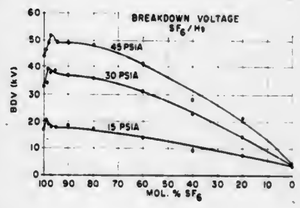
APPARATUS WITH DIELECTRIC GAS MIXTURES IN SUBSTANTIALLY UNIFORM FIELD

Martin J. Mastroianni, East Aurora, and Sabatino R. Orfeo, Orchard Park, both of N.Y., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed Jun. 26, 1978, Ser. No. 919,338

Int. Cl.[2] H01B *3/16*

U.S. Cl. 174—25 G **7 Claims**



1. In a high voltage electrical apparatus having at least two electrical conductors separated by an insulative dielectric gas subjected to a substantially uniform electrical field, the improvement wherein the insulative gas consists essentially of about 1 to about 10 mole % of a noble gas and about 90 to about 99 mole % of sulfur hexafluoride.

4,204,085

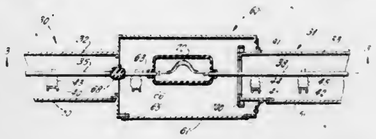
SEISMIC-PROOF BUS DUCT JOINT

Frank X. Chapman, Perkasie, Pa.; Charles R. Gallant, Beach Haven Park, N.J., and Charles V. Stull, Ambler, Pa., assignors to Gould Inc., Rolling Meadows, Ill.

Filed May 26, 1978, Ser. No. 910,079

Int. Cl.[2] H02G *5/08, 3/06*

U.S. Cl. 174—86 **11 Claims**



1. A bus duct joint for connecting the adjacent ends of first and second bus duct units in a manner which allows a given displacement of said ends of said bus duct units relative to one another; each of said bus duct units including at least one elongated bus bar supported within and insulated from an elongated sheet metal housing which is rectangular in cross-section; said bus duct joint comprising a sheet metal housing which is rectangular in cross-section and which has first and second ends; said first and second ends each having enlarged openings; said housing of said first bus duct unit being fixed to said first end of said housing of said joint with its interior communicating through said opening in said first end with the interior of said bus duct joint housing; said housing of said second bus duct unit passing through said enlarged opening in said second end of said joint housing and partially into the interior of said joint housing; said second enlarged opening being spaced from the outer surface of said housing of said second bus duct unit by given dimensions, thereby to permit lateral movement of said second bus duct housing relative to said joint housing; flexible conductor means disposed within

said joint housing for connecting each of said at least one elongated bus bar of said first and second bus duct units to one another; and sealing means extending across the space between said outer surface of second bus duct unit housing and said joint housing for covering said opening regardless of the relative position of said last-mentioned housings.

4,204,086

PROCESS FOR THE PRODUCTION OF HIGHLY EXPANDED POLYOLEFIN INSULATED WIRES AND CABLES

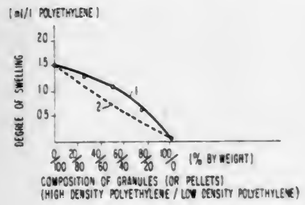
Fumio Suzuki, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 420,486, Nov. 30, 1973, abandoned. This application Feb. 27, 1976, Ser. No. 661,875

Claims priority, application Japan, May 23, 1972, 47/59459; Sep. 21, 1972, 47/94129; Aug. 8, 1973, 48/88298

Int. Cl.² B29D *27/00*; B29F *3/10*; H01B *11/05*

U.S. Cl. 174—102 R **22 Claims**



1. In a process for producing a highly expanded polyolefin insulated coaxial cable having excellent high frequency characteristics comprising the steps of feeding a polyolefin, a nucleating agent and a volatile liquid blowing agent to an extruder and heat extruding said mixture through said extruder onto an inner conductor passing through said extruder to cover the outer periphery of said inner conductor thereby forming an insulation layer of a highly expanded polyolefin foam having a foaming ratio in excess of 2.5 times (60% expansion degree), the improvement which includes the step of, after extruding the foaming polyolefin mixture around said inner conductor, sizing the outer surface of said foaming polyolefin layer on said inner conductor by means of a sizing die having a parallel land at normal atmospheric pressure to prevent free foaming in the sizing die and to obtain the highly expanded uniform polyolefin insulation layer while providing tight adhesion of said insulation layer to said inner conductor due to the absence of a space between said foaming material and said inner conductor, which space, if present, would permit free expansion on said foaming material and wherein the temperature of the sizing die is maintained lower than the boiling point of the volatile liquid, said volatile liquid blowing agent being in liquid form and providing a lubricating effect for the foamed material being sized.

22. Highly expanded polyolefin insulated coaxial cable having excellent high frequency characteristics wherein the inner conductor coated with the layer of insulation is produced by a process comprising the steps of feeding a polyolefin, a nucleating agent and a volatile liquid blowing agent to an extruder and heat extruding said mixture through said extruder onto an inner conductor passing through said extruder to cover the outer periphery of said inner conductor, thereby forming an insulation layer of a highly expanded polyolefin foam having a foaming ratio in excess of 2.5 times (60% expansion degree), wherein the improvement includes the step of, after extruding the foaming polyolefin mixture around said inner conductor, sizing the outer surface of said foaming polyolefin layer on said inner conductor by means of a sizing die having a parallel land at normal atmospheric pressure to prevent free foaming in the sizing die to obtain a uniform size of the highly expanded uniform polyolefin insulation layer while providing tight adhesion of said insulation layer to said inner conductor.

4,204,087

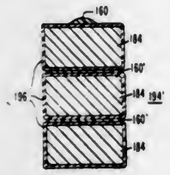
ADHESIVE COATED ELECTRICAL CONDUCTORS

Kou C. Lin, Hickory, and Edmund E. Woods, Sharon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 743,828, Nov. 22, 1976, Pat. No. 4,109,375. This application Apr. 21, 1978, Ser. No. 898,346

Int. Cl.² H01B *7/02*; H01F *27/30*

U.S. Cl. 174—120 SR **1 Claim**



1. An insulated, bondable electrical conductor, comprising:
an elongated electrical conductor having a plurality of sides which define a substantially rectangular configuration about a longitudinal axis,
a solid infusible, thermoset first coating on all sides of said elongated electrical conductor, said first coating being a resinous tenacious film formed of heat fused, particulated electrical insulation material,
a solid heat fusible adhesive bead on said first coating on a selected side of said electrical conductor which extends in the direction of the longitudinal axis of elongated electrical conductor,
said bead being heat fused, particulated resinous electrical insulation material in the B-stage,
said bead having predetermined width and height dimensions, with the width and height dimensions of said adhesive bead being selected such that the height dimension exceeds the predetermined thickness dimension of said first coating, and the width dimension is less than the width of said selected side, with the amount of material in said bead being such that application of heat and pressure to the bead, when the insulated, bondable electrical conductor is wound upon itself into a coil to form a plurality of adjacent conductor turns with the bead therebetween, will spread the bead material over substantially all of the selected side to a thickness having a dimension which is substantially equal to the predetermined thickness dimension of said first coating.

4,204,088

MEANS FOR ESTABLISHING VARIOUS COMMUNICATION CONDITIONS IN A CRYPTOGRAPHIC SYSTEM

Stephen Janiszewski, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

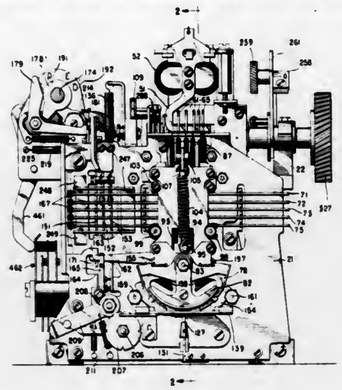
Filed Dec. 20, 1945, Ser. No. 636,217

Int. Cl.² H04L *9/00*

U.S. Cl. 178—22 **5 Claims**

4. In a telegraph system, interconnected stations, converters at each station comprising transmitting and receiving apparatus, a signal line connected to said stations, said transmitting apparatus comprising a series of cam controlled transmitting contacts, means for controlling said contacts permutably, and means for altering the control imparted to said contacts by said means, said receiving apparatus comprising a selector mechanism responsive to enciphered signals generated by any transmitting apparatus, and means for retranslating said altered signal to effect printing in correspondence thereto, an electro-

magnetically controlled ciphering device at each station, and pulsing means cyclically operable by said receiving apparatus



for controlling said ciphering device, whereby said altering means is rendered effective.

4,204,089

KEYBOARD METHOD AND APPARATUS FOR ACCENTED CHARACTERS

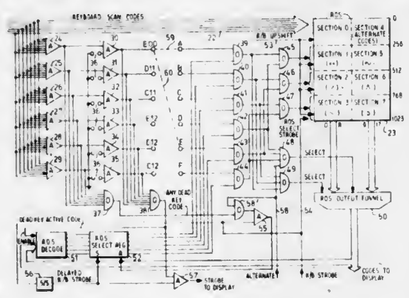
Brian D. Key, Winchester; James Smith, Southampton, and Shaun C. Kerigan, Harestock, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1978, Ser. No. 961,081

Claims priority, application United Kingdom, Dec. 16, 1977, 52383/77

Int. Cl.² G06F *3/14*; H04L *13/08*

U.S. Cl. 178—30 **7 Claims**



1. Keyboard apparatus comprising:
a keyboard including at least one dead-key, each said dead-key being associated with a given type of character accent;
a storage means having a plurality of sections, one section thereof containing character codes representing a character set, each of the other sections thereof containing character code sets representing characters accented with accent marks of a type associated with each said other section;
means for providing coded signals indicative of the positions of said keys which have been selected;
means responsive to a coded signal indicative of selection of a non-dead-key for accessing said storage means to read therefrom a character code associated with that key and forming part of said character set;
means responsive to a coded signal indicative of selection of a dead-key for accessing said storage means to obtain an address of the section of said storage means containing character code sets representing characters accented with the accent marks associated with said dead-key; and
means responsive to a signal indicative of selection of a non-dead-key following an immediately preceding signal indicative of selection of a dead-key for accessing the section of said storage means having said obtained address, thereby enabling the reading from said storage means of a character code representing a character accented with the accent marks associated with said dead-key represented by said preceding signal.

4,204,090

PROCESS AND AN ARRANGEMENT FOR REDUCING THE REDUNDANCY OF BINARY CHARACTER SEQUENCES WHICH DESCRIBE CHARACTERS OR GRAPHIC PATTERNS

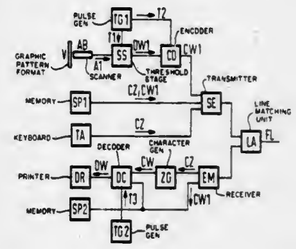
Joachim Heinzl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 942,916

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748289

Int. Cl.² G11C *17/00*; H04L *13/08*; H04N *5/78*

U.S. Cl. 178—30 **9 Claims**



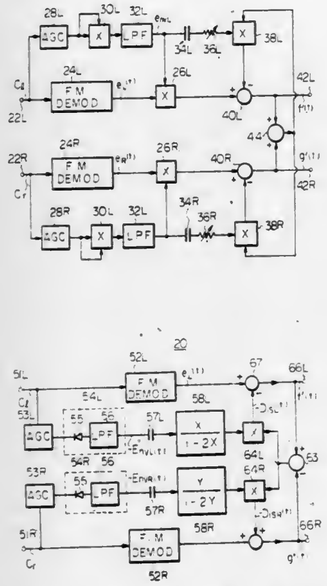
1. A process for reducing the redundancy of binary character sequences which describe information including characters and graphic patterns represented in punctiform fashion, wherein within the binary character sequences each binary character having a first binary value is assigned to a point which is to be represented and at least one interval corresponding to one printing element is provided between two points represented by the same output component, wherein each element is divided into a plurality of sub-elements, and wherein the binary character sequences represent the information divided into sub-elements, the improvement therein comprising the steps of:
generating and assigning code words such that of the possible combinations of a group of binary characters of the binary code sequences the code words are assigned to those combinations in which a binary character having a first binary value is followed by at least one predetermined number of binary characters having a second binary value, the predetermined number being dependent on the number of sub-elements within a printing element;
transmitting the code words, in place of the binary character sequences, to a receiver;
receiving the transmitted code words;
reassigning the original binary character sequences to the received code words; and
feeding the binary character sequences to operate output components.

4,204,091

CANCELLATION OF INTERFERENCE DISTORTIONS CAUSED BY INTERMODULATION BETWEEN FM SIGNALS ON ADJACENT CHANNELS

Yukinobu Ishigaki, and Teruo Muraoka, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Mar. 17, 1978, Ser. No. 887,813
Claims priority, application Japan, Mar. 21, 1977, 52/30839; Apr. 19, 1977, 52/44840
Int. Cl.² H04H 5/00
U.S. Cl. 179—1 GB **14 Claims**



1. In a sound reproduction system for quadraphonic records having first and second physically separated sound tracks respectively containing first and second signals frequency-modulated on a same carrier frequency, said system including first and second channels including first and second frequency demodulators for demodulating said first and second frequency-modulated signals respectively and crosstalk paths between said first and second channels to produce an interference distortion in each of said frequency-modulated signals, apparatus for cancelling said interference distortion comprising:

first and second input terminals to which said first and second frequency-modulated signals are respectively applied;

first and second output terminals from which first and second distortionless frequency-demodulated signals are delivered;

first and second means connected to said first and second input terminals respectively for detecting the envelopes of said first and second frequency-modulated signals;

first and second means for eliminating the DC components of the detected envelopes respectively and varying the magnitude of said DC-eliminated envelopes; and

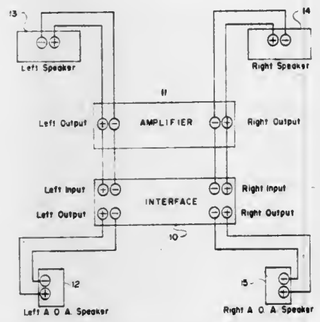
first and second closed-loop feedback circuits cross-coupled between said first and second output terminals including a common arithmetic circuit having its input terminals connected to said first and second output terminals, said first feedback circuit including a first multiplier for providing multiplication of the output of said common arithmetic circuit and the output from said first magnitude-varying means and a second arithmetic circuit for combining the output of said first multiplier and the output of said first frequency demodulator and applying its output to said first output terminal, and said second feedback circuit including a second multiplier for providing multiplication of the output of said common arithmetic circuit and the output from said second magnitude-varying means and a third arithmetic circuit for combining the output of said second multiplier and the output of said second frequency demodulator and applying its output to said second output terminal.

4,204,092

AUDIO IMAGE RECOVERY SYSTEM

Paul F. Bruney, 3201 Rue Park Fontaine, New Orleans, La. 70114

Filed Apr. 11, 1978, Ser. No. 895,309
Int. Cl.² H04R 5/04
U.S. Cl. 179—1 G **6 Claims**



2. An audio-image system for use by a listener comprising:

(a) first left and right transducer means providing left and right speakers spaced and laterally placed respectively on the sides of the listener for converting audio electrical signals to sound;

(b) left and right signal means for providing left and right audio electrical signals; and

(c) second left and right transducer means providing left and right spaced speakers placed respectively left forward and right forward of the listener for converting audio electrical signals to sound;

(d) an interface circuit connecting to said second left and right transducer means and connecting said left and right signal means, respectively, to said first left and right transducer means; said interface circuit comprising

(1) a variable attenuation circuit providing means for attenuating said left and right signals in varying amounts according to audio electrical signal level differences between them; and

(2) left and right feed circuits providing means for feeding said left and right variably attenuated signals to said left and right transducer means at selectively variable levels, respectively.

4,204,093

VARIABLE FRAME RATE TECHNIQUE FOR USE IN A TIME-DIVISION MULTIPLE ACCESS (TDMA) COMMUNICATION SYSTEM

Yu Shuan Yeh, Freehold Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1978, Ser. No. 907,795
Int. Cl.² H04J 3/16
U.S. Cl. 370—95 **13 Claims**

1. A method of providing efficient access in a communication system between at least one transmitter disposed in a first ground area and a plurality of receiving stations having a plurality of different communication traffic requirements disposed in a second remote ground area, the method comprising the steps of:

(a) transmitting information destined for the plurality of receiving stations in a transmission burst; and

(b) in performing step (a), transmitting in each transmission burst a plurality of q subbursts, each subburst comprising digital information associated with a particular receiving station and including preamble information bits and a plurality of information bits where the preamble bits comprise, inter alia, information for accessing the proper receiving station to receive and process the included information bits,

characterized in that

the method comprises the further steps of:

(c) transmitting a plurality of s sequential transmission bursts during a predetermined time interval to form a communication sequence which communication sequence is sequentially repeated, each communication sequence being capable of providing q·s one-way transmission channels between the first and second ground areas; and

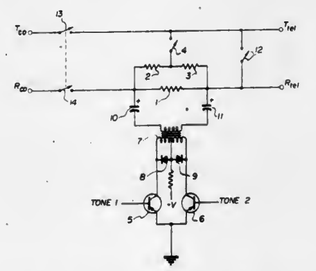
(d) transmitting within n assigned subbursts in each transmission burst of the communication sequence the digital information associated with n·s transmission channels required between the at least one transmitter in the first ground area and a receiving station in the second ground area when n is an integer while transmitting within each of m assigned subbursts spaced at preselected intervals throughout the s transmission bursts of the communication sequence the digital information associated with m transmission channels required between said at least one transmitter in the first ground area and a receiving station in the second group area when m<s.

4,204,094

TONE APPLYING LINE CIRCUIT

Jacob Cepelinski, Ottawa, Canada, assignor to Mitel Corporation, Canada

Filed Aug. 14, 1978, Ser. No. 933,538
Claims priority, application Canada, May 24, 1978, 303989
Int. Cl.² H04Q 1/44
U.S. Cl. 179—18 FA **8 Claims**



8. In a line circuit comprising a tip lead and a ring lead having one end for connection to a central office and another end for connection to a subscriber's telephone set, a tone applying arrangement comprising

a signal source having an output impedance which is low relative to the off-hook impedance of the subscriber's telephone set including line current conducting means connected in series with the tip or ring lead,

a pair of resistors connected in series across the low impedance source, and

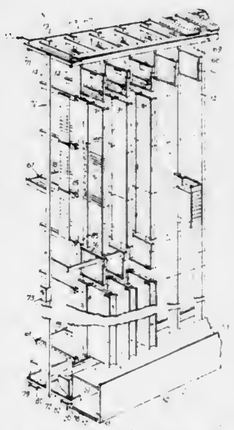
a switch means connected between the junction of the pair of resistors and the other of the tip or ring lead.

4,204,095

TELEPHONE MAIN DISTRIBUTING FRAME

Paul V. De Luca, Port Washington, N.Y., and Charles L. Gautier, Warren, N.J., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,098
Int. Cl.² H04Q 1/14
U.S. Cl. 179—98 **3 Claims**



1. Improved telephone main distributing frame construction comprising: a plurality of vertical planar elements positioned in mutually parallel relation to define first generally rearward and second generally forward vertical coplanar edges, and an elongated interstice between pairs of adjacent elements; a plurality of jumper rings interconnected to at least one of each of said pair of adjacent elements, said rings lying substantially in a horizontal plane to accommodate generally vertically arranged jumper connectors passing therethrough; means for mounting connector blocks in generally vertical orientation on said forward edges of said planar elements; a plurality of generally horizontally arranged trough-forming elements mounted upon said planar elements at said forward edges, including a first trough-forming element adjacent an upper end of said planar elements, a second generally medially positioned trough-forming element, and a third trough-forming element positioned substantially at the lower end of said forward edges of said planar elements; whereby horizontal jumpering connections between connector blocks may be formed substantially adjacent the plane of said forward edges of said planar elements, and vertical jumpering connections may be formed within said interstices between adjacent planar elements.

4,204,096

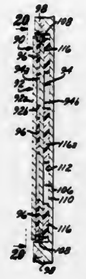
SONIC TRANSDUCER MOUNTING

Lester M. Barcus, 16226 Wayfarer La., Huntington Beach, Calif. 92649, and John F. Berry, 3392 St. Albans Dr., Los Alamitos, Calif. 90720

Continuation of Ser. No. 820,314, Jul. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 528,671, Dec. 2, 1974, Pat. No. 4,048,454. This application Aug. 4, 1978, Ser. No. 930,997

Int. Cl.² H04R *1/02*

U.S. Cl. 179—146 R **15 Claims**



1. A sonic transducer system for transmitting sonic signals in a medium comprising:

a sonic transducer which is sheet-like and rigid and substantially incapable of flexural and diaphragm-like movement, said transducer having a front sonic energy-transmitting surface and a rear surface,

said transducer comprising piezoelectric sonic energy generating means having opposed generally planar electrodes, sonic energy transmitting means which is sheet-like and rigid and substantially incapable of flexural and diaphragm-like movement, coupling means coupling said generating means to said transmitting means with said electrodes of said generating means oriented principally parallel to the general plane of said sheet-like transmitting means, and means for damping the natural resonant frequencies of said transmitting means,

means for supporting said transducer, and

resilient mounting means interposed between said transducer and said supporting means and secured to both said transducer and said supporting means.

4,204,097

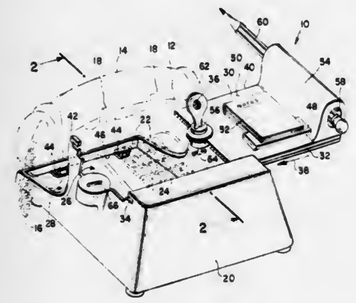
LOCKABLE COVERING APPARATUS FOR TELEPHONE DIALS

John W. Schmit, 1858 N. Natoma Ave., Chicago, Ill. 60635

Continuation of Ser. No. 772,089, Feb. 25, 1977, abandoned. This application Jul. 12, 1978, Ser. No. 924,096

Int. Cl.² H04M *1/66*

U.S. Cl. 179—189 D **5 Claims**



1. A telephone dial shielding device for selectively permitting or preventing access to the dialing area of a telephone base comprising

a housing, said housing including a front wall and a rearwall and side walls, said housing having a first opening and a second opening therein, said housing covering portions of a base of a telephone, said first opening having a first portion and a second portion, the hand held portion of the telephone being disposed outwardly of said housing, said first portion of said first opening being located adjacent the receptacle portions of said telephone base in which said hand held portion thereof resides when stored, said second opening being located adjacent the underside of said base, said second portion of said first opening being located adjacent the dialing area of said telephone base, said first portion of said first opening and said second portion of said first opening communicating with each other,

a cover, said cover movable slidably relative to said housing, and a lock, said lock releasably lockingly engaging said cover to said housing, wherein said front wall and said side walls and said rear wall and said cover are configured to enclose portions of said telephone base in confining engagement therewithin when said cover is locked to said housing, said second opening being configured to provide access to the underside of said base when said base is engaged within said housing.

4,204,098

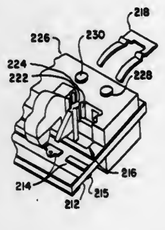
MULTIPLE CIRCUIT SWITCH ASSEMBLY

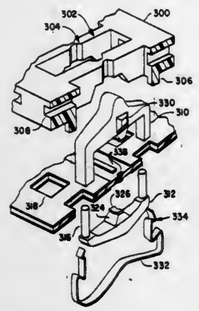
Edward J. Strande, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 667,736, Mar. 17, 1976, abandoned. This application Feb. 25, 1977, Ser. No. 772,185

Int. Cl.² H01H *9/00*

U.S. Cl. 200—1 R **4 Claims**





1. An electrical switch comprising

a substantially planar dielectric support member,

a first pair of longitudinally spaced, elongate metal strips disposed on one side of said support member with adjacent end portions of said strips forming a first pair of fixed electrical contacts,

a second pair of longitudinally spaced, elongate metal strips disposed on the other side of said support member, with adjacent end portions of said second pair of strips forming a second pair of fixed electrical contacts,

switch actuator means comprising a carrier for a pair of movable electrical contacts, said carrier including first and second portions of an elastomeric material, said movable contacts consisting of a third pair of elongate metal strips, each one bonded to a different portion of said elastomeric material, and

means mounting said carrier on said support member, said mounting means being configured to position each movable contact opposite a different pair of fixed contacts,

said actuator means further comprising means biasing one of said movable contacts into engagement with the fixed contacts disposed opposite it, actuation of said switch causing said one of the movable contacts to disengage, and the other to engage, the fixed contacts disposed opposite them in the switch.

4,204,099

ELECTRICAL SWITCH

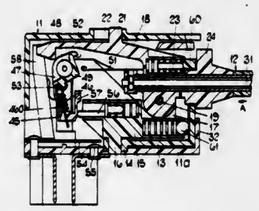
Edward Cryer, Higham, Nr. Burnley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 30, 1978, Ser. No. 910,336

Claims priority, application United Kingdom, Sep. 13, 1977, 38046/77

Int. Cl.² H01H *25/06*

U.S. Cl. 200—4 **20 Claims**



1. An electrical switch including a body, an operating lever extending from the body and movable relative thereto at least in part, in two different directional modes, a contact carrier supported on the body for movement relative thereto in a first plane between first and second positions, a movable contact member supported by said carrier for movement relative to the carrier between first and second positions, first and second fixed electrical contacts engageable by said movable contact member in the first position of the movable contact member while the contact carrier is in its first position, and third and fourth fixed electrical contacts spaced from said first and second fixed electrical contacts in the direction of movement of the contact carrier and engageable by said movable contact member in the first position of the movable contact member relative to the carrier while the carrier is in its second position, movement of the lever or said part thereof in one of said modes causing movement of the movable contact member relative to the contact carrier and movement of the lever in the other of said two modes causing movement of the carrier relative to the body.

4,204,100

ANTI-THEFT SWITCH FOR VEHICLES

Dieter Reichert, Bismarckstr.49, Gartringen, Fed. Rep. of Germany

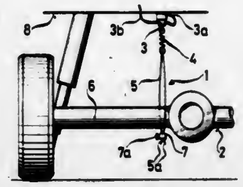
Filed Nov. 14, 1977, Ser. No. 850,931

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1976, 2655660

Int. Cl.² H01H *3/16*

U.S. Cl. 200—52 R **6 Claims**

1. An anti-theft device for a vehicle that is movably mounted on wheel carriers, for securing the vehicle against theft of wheels and against unauthorized towing, comprising an alarm switch and an actuating member, one of which is mounted in a fixed position relative to the vehicle, and the other of which is mounted to move with one of said wheel carriers, a pre-loaded resilient member connecting the switch and the actuating member, the actuating member defining a lost motion limit to accommodate normal relative movement of said vehicle and said wheel carrier during travel of the vehicle without actuating the switch, and said switch being actuated through the pre-loaded resilient member by relative motion of said switch and said actuating member in excess of said lost motion limit when said vehicle is raised for towing or removal of a wheel, said resilient member being adapted to yield to accommodate relative movement of said vehicle and wheel carrier in excess of said relative motion needed to actuate the switch.



4,204,101

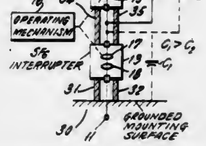
HYBRID CIRCUIT BREAKER WITH VARISTOR IN PARALLEL WITH VACUUM INTERRUPTER

Rolf Dethlefsen, Greensburg, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 22, 1977, Ser. No. 808,811

Int. Cl.² H01N *33/16*

U.S. Cl. 200—144 AP **11 Claims**



1. A hybrid circuit interrupter comprising a vacuum circuit interrupter, an electronegative gas circuit interrupter connected in series with said vacuum interrupter, an operating mechanism for simultaneously opening said vacuum circuit interrupter and electronegative gas circuit interrupter, and a varistor connected in parallel with said vacuum interrupter.

4,204,102

ELECTRICAL SWITCH

David W. Bull, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

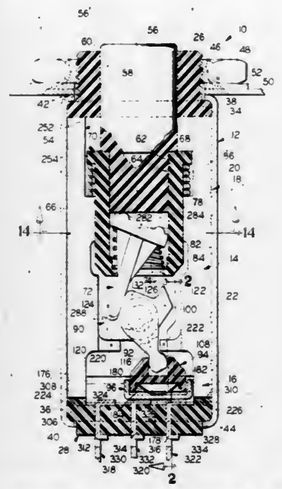
Filed Dec. 16, 1977, Ser. No. 861,436

Int. Cl.² H01H *3/12, 3/14, 13/64*

U.S. Cl. 200—153 J **32 Claims**

1. An electrical switch assembly, comprising switch body means, chamber means formed generally internally of said switch body means, a plurality of stationary electrical contacts disposed within said chamber means, linearly movable contact means slidably movable to a first plurality of operating positions and engageable with said plurality of stationary electrical contacts, oscillatingly movable motion transmitting means carried within said chamber means and movable to a second plurality of operating positions, said oscillatingly movable motion transmitting means being operatively connected to said movable contact means, manually movable actuator means carried by said switch body means and movable relative

thereto, resiliently deflectable motion transmitting means operatively carried by said manually movable actuator means and effective for operatively engaging said oscillatingly movable motion transmitting means, said resiliently deflectable motion transmitting means being effective upon actuation of said movable actuator means to move said oscillatingly movable motion transmitting means from one of said second plurality of operating positions to an other of said second plurality of operating positions and to thereby move said movable contact means from one of said first operating positions to an other of said first



operating positions, said manually movable actuator means comprising plunger-like means axially movable in directions generally toward and away from said oscillatingly movable motion transmitting means, and keying means for the otherwise free rotational movement of said plunger-like means relative to said switch body means as said plunger-like means moves axially in said directions generally toward and away from said oscillatingly movable motion transmitting means, said keying means comprising a first keying portion carried by said plunger-like means and a second keying portion carried by said switch body means.

4,204,103

DRIVING APPARATUS FOR ELECTRIC POWER CIRCUIT BREAKERS

Siegfried Jährig, and Reinhard Liebig, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

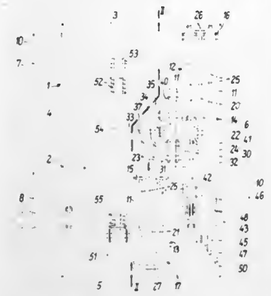
Filed Sep. 20, 1978, Ser. No. 943,926

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742772

Int. Cl.[2] H01H *5/10*

U.S. Cl. 200—153 SC **5 Claims**

1. A driving apparatus for electric power circuit breakers comprising a shaft adapted for latching in a cocked condition, two crank arms axially spaced apart on the shaft and projecting oppositely 180° therefrom, each arm being coupled to a separate group of parallel-connected coil springs, a device for cocking the coil springs mounted on the shaft between the crank arms, means for taking the power output from one of the



crank arms, and means on either side of the cocking device for supporting the shaft.

4,204,104

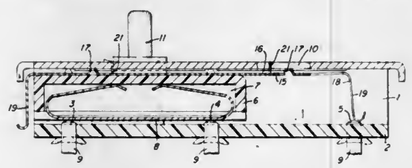
SLIDE SWITCH

Thomas J. Quigley, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Oct. 30, 1978, Ser. No. 956,177

Int. Cl.[2] H01H *1/44, 9/00, 15/24*

U.S. Cl. 200—164 R **8 Claims**



1. A slide switch comprising an elongated case formed from a metal housing provided in one side with a longitudinal slot and also provided with an insulating base, a row of three fixed electric contacts inside the case spaced apart lengthwise of said base and rigidly mounted thereon, an insulating slider inside the case provided with an actuating button extending through said slot for moving the slider back and forth in the case, a bridging contact movable by the slider from a position bridging the middle stationary contact and either of the end stationary contacts to a position bridging the middle contact and the other end contact, and a metal grounding contact in the case in engagement with said housing and movable by the slider into engagement with one end contact when the bridging contact is moved into engagement with the other end contact, said grounding contact being longer than the slider and having an abutment at each side of said button in its path of movement, and the distance between said abutments being such that when the button is moved toward said other end contact a predetermined distance it will engage one of said abutments and then push it in the same direction far enough to pull said grounding contact into engagement with said one end contact at the opposite end of the case, whereby the end contact engaged by the grounding contact is electrically connected by it to said metal housing.

4,204,105

MICROWAVE ENERGY MODERATING BAG

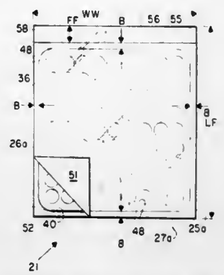
Algis S. Leveckis, Ludlow, Ky., and Stephanie S. Gelman, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 14, 1978, Ser. No. 896,421

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 E **4 Claims**

1. In an improved microwave energy moderating cooking bag for enclosing foodstuff to be warmed or cooked uniformly in a microwave oven and which bag includes microwave energy moderating wall portions comprising perforated electrically conductive sheet material having perimetrical edges, said conductive sheet material being substantially fully perforated with a multiplicity of apertures of predetermined sizes



with respect to a predetermined nominal frequency of microwave energy, the improvement wherein said electrically conductive sheet material is so configured and disposed that adjacent side-by-side segments of said perimetrical edges are sufficiently offset with respect to each other that edge-to-edge electric field relations are substantially obviated intermediate said adjacent side-by-side segments.

4,204,106

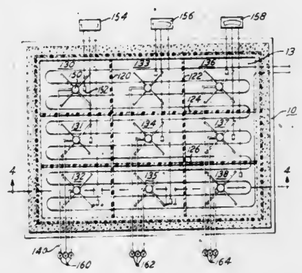
ELECTRICAL HEATING SYSTEM FOR BUILDING STRUCTURES

Jerrold L. Colten, South Bend, Ind., assignor to Bristol Products, Inc., Bristol, Ind.

Filed Jan. 8, 1979, Ser. No. 1,863

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—213 **14 Claims**



1. A heating system for building structures, comprising side walls defining an inner area with earth disposed beneath said area and supporting said side walls, heat absorbing and releasing fill material substantially filling said area and having an upper surface, means for sensing the amount of moisture in said fill material, a water distribution means disposed in said fill material, a line connecting said water distribution means to a source of water, a slab forming a floor of the building structure supported by said fill material on said upper surface forming a heat exchanging relationship with said fill material, and an electrical heating cable in thermal communication with said fill material for heating said fill material.

4,204,107

THICK-FILM THERMAL PRINTING HEAD AND METHOD OF MANUFACTURING THE SAME

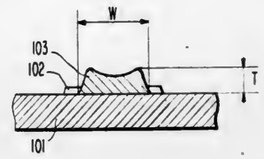
Toshio Ohkubo; Yuji Kajiwara, and Tsutomu Itano, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,258

Claims priority, application Japan, May 31, 1977, 52/64313

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—216 **5 Claims**



1. A thermal printing head comprising: an insulative substrate, a pair of first and second conductive layers disposed on said substrate and having inner ends spaced from each other, and a resistive layer disposed on said substrate, extending between said first and second conductive layers, and electrically connected with said inner ends of said conductive layer so as to provide an electrical current path between said inner ends of said conductive layers, said resistive layer having a central portion extending along said electrical current path which is thinner than the edge portions of said resistive layer extending along said electrical current path so that the surface of said resistive layer is concave in a direction substantially perpendicular to said electrical current path whereby electrical current passing through said resistive layer produces a temperature rise over a wide area of the top surface of said resistive layer to transfer heat to a thermally sensitive recording medium in contact with said resistive layer.

4,204,108

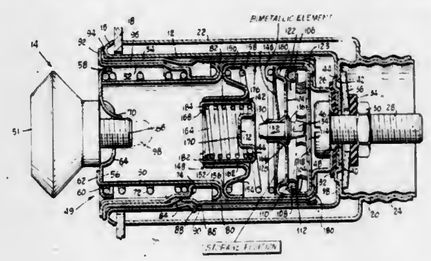
MANUAL ELECTRIC CIGAR LIGHTER

Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Jan. 12, 1978, Ser. No. 868,935

Int. Cl.[2] F23Q *7/24*

U.S. Cl. 219—265 **26 Claims**



1. A manual cigar lighter, comprising in combination:
(a) a holder device including a socket having two contacts forming part of a cigar lighter circuit,
(b) an ignitor plug receivable in the socket, said plug having a manually operable part,
(c) a heating element carried at the inner end of the plug,
(d) means for establishing a circuit from the holder device contacts through the heating element, said means including an electrical switch having cooperable parts carried by the ignitor plug, one of said switch parts having an open circuit position, and a closed-circuit position,
(e) means for closing said switch and energizing said heating

element in response to actuation of said manually operable part,

(f) means responsive to heating of said heating element, for opening said switch to de-energize the element, said means including a bimetallic member carried by said plug and which always normally has a first position when cold and a second position when sufficiently heated, said member having a bimetallic actuator portion which is free and clear of attachment to any other parts, said actuator portion being adapted for abutting engagement, when in its second position, with one of the cooperable parts of said switch to effect said opening of the switch, and

(g) a pair of switch biasing devices, one of said devices normally acting to bias said one part of the switch toward its closed-circuit position when the manually operable part of the ignitor plug is actuated, and the other of said biasing devices normally biasing said one part of the switch toward its open circuit position, when the manually operable part of the ignitor plug is released.

4,204,109

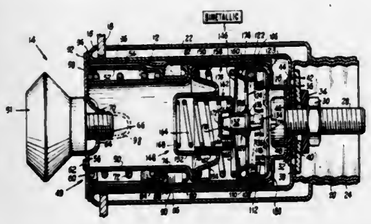
AUTOMATIC ELECTRIC CIGAR LIGHTER

Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Sun Chemical Corporation, New York, N.Y.

Division of Ser. No. 841,836, Oct. 13, 1977, Pat. No. 4,168,422. This application Sep. 14, 1978, Ser. No. 942,359

Int. Cl.[2] F23Q *7/22*

U.S. Cl. 219—265 **12 Claims**



1. A cigar lighter igniting unit, comprising in combination:

(a) an electrical resistance heating coil having electrical terminal elements constituting electrical contacts,

(b) metallic means simultaneously mechanically securing said terminal elements in spaced-apart relation to constitute a unitary assemblage and insulating said elements from each other, said means comprising an anodized aluminum mounting member having electrically insulating surface areas directly engaged with said terminal elements,

(c) cooperable contacts engageable respectively with said terminal element contacts for establishing the flow of electricity through the heating coil, and

(d) means mounting said unitary assemblage for movement to effect engagement and disengagement between said respective pairs of contacts.

4,204,110

DECORATIVE PERSONAL ELECTRIC HEATING APPLIANCE

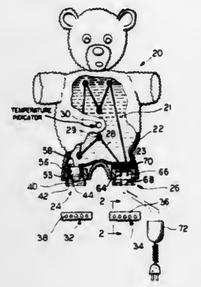
Helen E. Smit, and Julie A. Smit, both of 1045 Hinman Ave., Evanston, Ill. 60202

Filed Mar. 7, 1977, Ser. No. 774,958

Int. Cl.[2] H05B *1/00*; A61F *7/04*

U.S. Cl. 219—313 **13 Claims**

1. A decorative personal heating appliance comprising means defining a decorative exterior covering enclosing an internal fluid-containing bladder having a fill opening therein, electric heater means inside said bladder for heating the fluid contained therein, electrical connector means associated with said electric heater means and extending from said bladder means into a first open recess in said decorative covering for enabling an external power source to be connected to said heater means, whereby said power source may be disconnected from said heater means while said appliance is in use, detachable electrical connection means for applying energy from an external power source via said connector means to said heater means, means comprising a removable stopper for



controlling said opening and for enabling a filling or emptying of said bladder via said opening, said opening and stopper being positioned in a second open recess in said decorative exterior covering, and removable child-proof cap means camouflaged to blend in with said exterior covering for closing each of said open recesses for concealing said stopper means and said connector means.

4,204,111

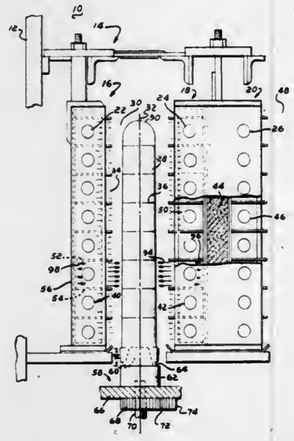
HEATING IMPROVEMENTS IN A PREFORM REHEAT SYSTEM

Jon D. Yonko, Dayton, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 19, 1977, Ser. No. 843,565

Int. Cl.[2] H05B *1/00*; F27B *9/06*; B29C *17/07*

U.S. Cl. 219—411 **13 Claims**



1. In the process of raising elongated thermoplastic preforms to molding temperature which includes programming heat into predetermined vertical zones of advancing preforms rotating about their axes from vertically adjacent heaters at different temperatures extending longitudinally of such axes,

the improvement therein comprising, in combination:

preventing heat waves emanating from one heater toward an oppositely disposed zone of a preform from overlapping into an area through which waves are issuing from a next adjacent heater; and

reflecting heat waves emitted from the back sides of a pair of directly oppositely disposed heaters away from the preform zone interposed between said pair back toward such just-mentioned zone through use of vertically disposed reflectors situated adjacent the back sides of said pair.

4,204,112

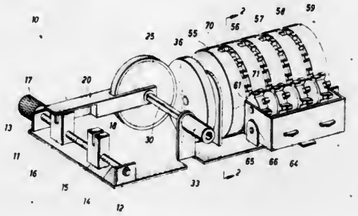
BIDIRECTIONAL PRESETTABLE ODOMETER

Don W. Lane, 4501 Telephone Rd. #33, Houston, Tex. 77087

Filed Jan. 27, 1978, Ser. No. 873,084

Int. Cl.[2] G01C *22/00*

U.S. Cl. 235—95 R **8 Claims**



1. Apparatus which functions as a trip measuring device cooperative with a speedometer cable which rotates at a speed proportionate to vehicle speed which comprises:

(a) a supportive framework for the apparatus;

(b) input means supported by said framework which input means is adapted to be rotated by a speedometer cable at a speed proportionate to vehicle speed;

(c) multiplying means connected to said input means for multiplying the input rotation received at said input means by a scale factor input to said multiplying means, said multiplying means adjustable between specified minimum and maximum scale factors;

(d) a multi-decade indicator means driven by said multiplying means, said indicator means being selectively adjustable to a desired beginning value visually indicated by said indicator means; and

(e) control means for controllably operating said indicator means to increment in ascending or descending order as required by rotation of the speedometer cable to said input means which control means comprises a drive system operatively connected between said multiplying means and said indicator means wherein positive and negative scale factors input to said multiplying means are implemented by variably positioning a driven member relative to a driving member to selectively achieve rotational reversal of the driven member dependent on the polarity of the scale factor.

4,204,113

SYSTEM FOR KEEPING ACCOUNT OF PREDETERMINED HOMOGENOUS UNITS

Georges Giraud, and Jean H. Mollier, both of 20, rue Dieumegard, 93406 Saint-Ouen, France

Filed Sep. 12, 1978, Ser. No. 941,733

Claims priority, application France, Sep. 16, 1977, 77 28049

Int. Cl.[2] G06F *15/20*; G06K *5/00, 19/06*

U.S. Cl. 235—375 **18 Claims**

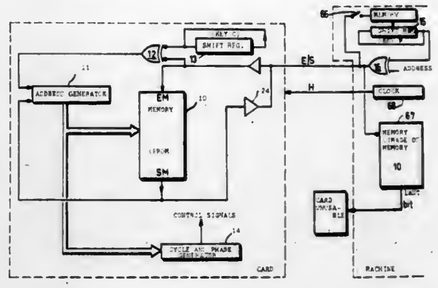
1. A system for keeping account of predetermined homogeneous units, which comprises:

an information-carrying article including a memory for storing information and circuits for controlling said memory;

an external device for operating on information stored in said article memory; and

means for coupling said article and said external device for the exchange of data;

said article memory including a validating field accessible by said external device, said validating field having a plurality of information bits, and said article memory further including a plurality of zones corresponding to said information bits of said validating field, each of said informa-



tion bits indicating whether the corresponding zone is validated.

4,204,114

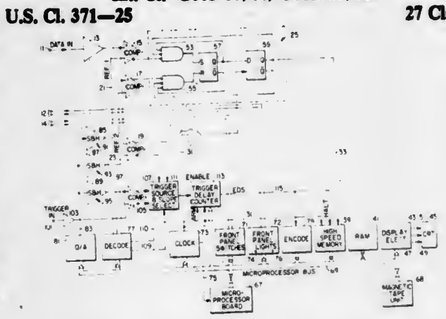
METHOD AND APPARATUS FOR COMPARING LOGIC FUNCTIONS BY ACQUIRING SIGNALS ONE AT A TIME FROM CIRCUIT NODES

William E. Shoemaker, Los Altos, and David W. Wilson, San Jose, both of Calif., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Feb. 24, 1978, Ser. No. 880,876

Int. Cl.[2] G06F *11/06*; G01R *15/12*

U.S. Cl. 371—25 **27 Claims**



1. A method of testing a logic system having a common clock oscillator and which has a plurality of nodes wherein the logic signal at each node is in synchronism with said common clock oscillator, comprising the steps of:

recording in sequence as reference signals from a known good system (a) a periodic waveform that has a specific frequency ratio to the system common clock oscillator output, and (b) the logic signal at each of a plurality of nodes,

comparing the frequency of a periodic waveform of a system under test with the frequency of the periodic waveform of the known good system, the frequency of said periodic waveform of the system under test having said specific frequency ratio to a clock oscillator output of the system under test,

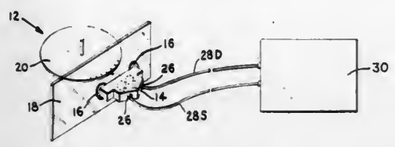
deriving from the recorded signals a set of reference signals that are modified in frequency in proportion to the ratio of the periodic waveform frequencies of the known good system and the system under test, whereby compensation is provided for the effect of different clock oscillator frequencies, and

comparing signals from a plurality of nodes of the system under test with corresponding modified reference signals, whereby the performance of the system under test is determined.

4,204,115
REMOVABLY ATTACHABLE WATT-HOUR METER MONITOR DEVICE

Austin G. Boldridge, Jr., Freehold, N.J., assignor to Conversational Systems, Inc., New York, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,789
Int. Cl.[2] G01D 5/34; G02B 5/16
U.S. Cl. 250—227 4 Claims

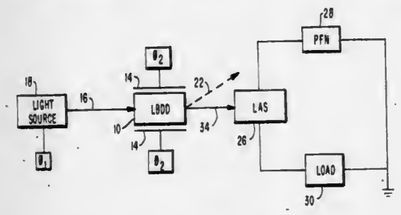


1. Apparatus for indicating the rotation of a disc having an indicator mark on its periphery, said disc being positioned within a transparent enclosure, said apparatus comprising a housing, said housing having a centerline and an opening in the region of said centerline, first and second spherical lenses, means for positioning within said housing said spherical lens symmetrically on opposite sides of said centerline with first portions thereof facing said opening, first and second fibre optical cables extending into said housing, each of said cables being positioned adjacent second portions of said first and second spherical lenses, respectively, said second portions being on diameters of the respective spherical lenses and opposite said first portions, a light source external to said housing and positioned adjacent the end of said first optical cable remote from said first spherical lens, a light detector external to said housing and positioned adjacent the end of said second optical cable remote from said second spherical lens, and attaching means for removably attaching said housing to said transparent enclosure with the plane of said spherical lenses in the plane of said disc and said opening of said housing facing said disc.

4,204,116
LIGHT ACTIVATED SWITCH SYSTEM HAVING HIGH DI/DT CAPABILITY

Michael W. Cresswell, Plum Borough, and Richard J. Fiedor, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 24, 1978, Ser. No. 927,441
Int. Cl.[2] G01D 5/34
U.S. Cl. 250—229 6 Claims

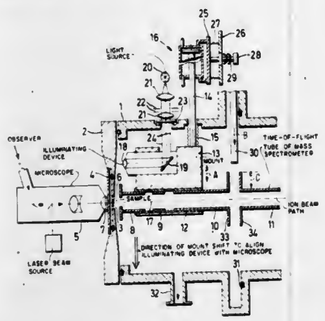


6. A light activated switch system comprising:
(a) a pulse forming circuit including:
a power supply;
a ladder network including at least one capacitor coupled to at least one inductor;
switch means for coupling said power supply and said ladder network in response to a first signal for generating a current in said network;
(b) a load;
(c) means for producing an incandescent light in response to a second signal, said incandescent light having a rise period;
(d) a light activated semiconductor controlled rectifier between said load and said pulse forming circuit responsive to said incandescent light for delivering said current to said load, said rectifier having a switching time characteristic;
(e) deflecting means between said incandescent light and said rectifier remotely controllable for directing said incandescent light onto said rectifier at a specified time in the rise period of said incandescent light in response to a third signal for decreasing the switching time characteristic of said light activated switch.

4,204,117
SAMPLE ANALYZER

Lothar Aberle, Sindorf; Walter Bank, Cologne; Franz Hillenkamp, Frankfurt; Raimund Kaufmann, Dusseldorf-Meerbusch; Rainer Nitsche, Frankfurt; Eberhard Unsöld, Munich, and Reiner Wechsung, Cologne, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Köln-Bayental, Fed. Rep. of Germany

Filed Aug. 30, 1978, Ser. No. 938,329
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739828
Int. Cl.[2] B01D 59/44
U.S. Cl. 250—287 12 Claims



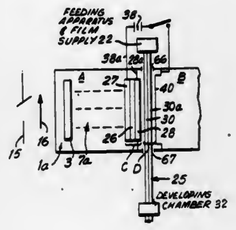
1. In a sample analyzer including a microscope for focusing an electromagnetic radiation on the sample to cause ion emission therefrom and visually observing the sample; a mass spectrometer for the mass analysis of the emitted ions; an illuminating means for lighting the sample for the microscopic visual observation thereof; the improvement comprising
(a) an ion optical system for directing ions emitted by the sample into the mass spectrometer;
(b) displaceably supported carrier means carrying said ion optical system and at least one part of said illuminating means; said carrier means having a first position in which said ion optical system is in an operating position in alignment with the sample and a second position in which said illuminating means is in an operating position in alignment with the sample; and
(c) actuating means for selectively moving said carrier means into said positions in a direction generally perpendicular to the axis of said ion optical system.

4,204,118
APPARATUS FOR PRODUCING X-RAY IMAGES BY ELECTRICAL CHARGES

Edward E. Sheldon, 30 E. 40 St., New York, N.Y. 10016

Filed Jun. 3, 1977, Ser. No. 803,130
Int. Cl.[2] G01D 9/00; G03G 13/00, 15/00; H01J 31/50
U.S. Cl. 250—315.2 9 Claims

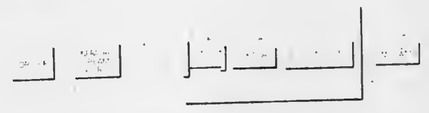
1. A device comprising in combination a vacuum tube comprising photocathode means for receiving image produced by radiation and converting said radiation image into a beam of electrons having the pattern of said image, a first image producing composite screen, said screen receiving said beam of electrons and comprising an electrically conducting layer transmitting said electrons and a layer which in response to the impingement by said electron beam produces electron bombardment induced electrical conductivity changes having the pattern corresponding to said electron beam, and a second image producing screen, said first screen mounted within said tube, connected to at least one wall of said tube and being stationary in relation to said tube, at least one of said first and second screen having uniform electrical charges deposited on its surface, said conductivity changes in said first screen converting said uniform electrical charges into a pattern of electrical charges corresponding to said radiation image, and said second screen movable and adapted to travel into said vacuum tube and to travel away from said tube carrying said pattern of electrical charges thereon.



4,204,119
METHOD OF READING THERMOLUMINESCENT DOSIMETER

Yoshitake Yasuno, Kyoto; Masafumi Watari, Moriguchi; Hiroshi Tsutsui; Masaru Ikedo, both of Neyagawa, and Osamu Yamamoto, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 21, 1977, Ser. No. 835,341
Claims priority, application Japan, Sep. 22, 1976, 51-113926; Sep. 22, 1976, 51-113932
Int. Cl.[2] G01T 1/11
U.S. Cl. 250—337 6 Claims

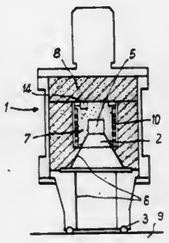


1. A thermoluminescent dosimeter for use in a system wherein the dosimeter is exposed to radiation and is then heated to a temperature for production of thermoluminescence by irradiation with infrared rays, said dosimeter comprising:
a substrate having a pair of opposed main sides;
a thermoluminescent material layer disposed on one main side of said substrate; and
an infrared ray absorbing layer disposed on the other main side of said substrate.

4,204,120
PROCESS AND APPARATUS FOR THE MEASUREMENT OF THE FACTOR OF INFRA-RED ABSORPTION OR EMISSION OF MATERIALS

Michel J. Riboulet, Calmont, and Gerard R. Segui, Toulouse, both of France, assignors to Centre National d'Etudes Spatiales, Paris, France

Filed May 22, 1978, Ser. No. 908,021
Claims priority, application France, May 20, 1977, 77 15497
Int. Cl.[2] G01T 1/00
U.S. Cl. 250—341 10 Claims

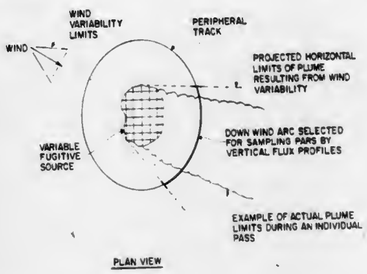


1. A method of measuring the infra-red radiation absorptivity or emissivity factor of a sample which is at ambient temperature, said method comprising the steps of:
maintaining the temperature of a thermopile constant, except for temperature fluctuations due to the absorptivity or emissivity of the sample, at a value substantially above said ambient temperature;
exposing said sample to radiation exclusively from said thermopile; and
measuring the voltage across said thermopile, said measured voltage providing a measure of the absorptivity or emissivity of said sample.

4,204,121
CYLINDRICAL METHOD OF QUANTIFYING FUGITIVE EMISSION RATES FROM POLLUTION SOURCES

George H. Milly, Potomac, Md., assignor to Geomet, Incorporated, Gaithersburg, Md.

Continuation-in-part of Ser. No. 895,427, Apr. 12, 1978, Pat. No. 4,135,092. This application Jan. 8, 1979, Ser. No. 1,997
Int. Cl.[2] G01J 1/00; G01N 31/00
U.S. Cl. 250—343 18 Claims



1. Cylindrical method of quantifying fugitive emission rates from pollution sources comprising:
A. driving a pollutant sensor in a peripheral arc surrounding a pollution source;
B. gauging wind velocity and direction at an index point downwind of the pollution source;
C. advancing said pollutant sensor to said index point;
D. outlining at said index point an arcuate pollution detection plane, said plane being oriented transversely and vertically with respect to the wind;

E. sensing pollutant concentration at a series of height intervals within the vertical and lateral confines of said arcuate pollution detection plane, so as to obtain integrated products of cross wind concentration and wind speed; and

F. displaying said products as a vertical profile of total mass flux of pollutant through said detection plane.

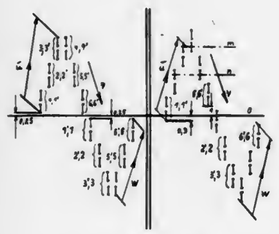
4,204,122

METHOD OF AND DEVICE FOR SCANNING PICTURES

Josef F. Menke, Glücksburg, Fed. Rep. of Germany, assignor to Electro Optik GmbH & Co. KG, Glücksburg, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,597
Int. Cl.² G01J 1/00; H01J 31/49
U.S. Cl. 250—347 8 Claims





4. In an apparatus for generating a raster image of an object, in particular when using thermal or infra-red radiation, said apparatus having suitable optical means to guide images of individual strips of the object over a set of detectors consisting of a set of detectors having a given size defined by the width of the set plus the spacing between two individual detectors mounted normally to the direction of motion of the image strips, where said optical means is a rotating dihedral polygonal prism raster having a given size (3), the improvement comprising:

resolving at least two images of said object during one revolution of said prism by providing individual pairs of faces (1;1'-6;6') of said polygonal prism (3) which are additionally dihedral by that angle which shall effect the displacement of the image strip by ½ the size of the detector set upward and downward.

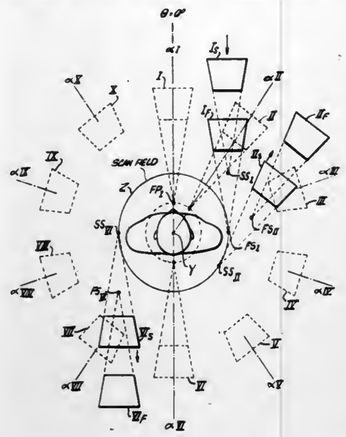
4,204,123

RADIONUCLIDE BODY FUNCTION IMAGER

Hugh F. Stoddart, Groton, Mass., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,189
Int. Cl.² G01T 1/20
U.S. Cl. 250—363 S 7 Claims

1. A transverse radionuclide scan field imaging apparatus comprising a plurality of highly focused closely laterally adjacent collimators arranged inwardly focused in an array which surrounds a scan field, each collimator being moveable relative to its adjacent collimator; means for rotating said array about said scan field from one scan position to another scan position; meams for imparting travel to said collimators such that for



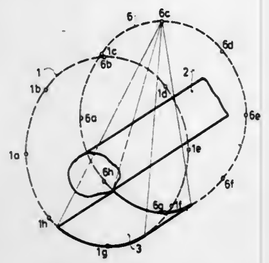
each such scan position the focal point of each said collimator uniformly samples at least one half of the scan field.

4,204,124

DEVICE FOR MEASURING RADIATION ABSORPTION IN A THREE-DIMENSIONAL OBJECT

Günter Kowalski, Rellingen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1978, Ser. No. 897,448
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1977, 2726635
Int. Cl.² A61B 6/00
U.S. Cl. 250—445 T 3 Claims



1. A device for measuring radiation absorption in a section of a three dimensional object which lies between a first plane and a parallel second plane comprising:

radiation source means which project wedge-shaped beams of radiation from a plurality of positions in said first plane and from a plurality of positions in said second plane, through said object, to illuminate a detector area bounded by said first plane and second plane and

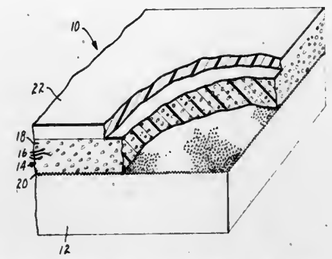
a two-dimensional radiation detector disposed on said detector area.

4,204,125

HIGH RESOLUTION X-RAY INTENSIFYING SCREEN WITH ANTIREFLECTING SUBSTRATE

Carol L. Fatuzzo, Pine Springs, Minn., and George D. Foos, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 27, 1978, Ser. No. 890,673
Int. Cl.² H01J 1/62
U.S. Cl. 250—486 13 Claims



1. A screen adapted for converting a first form of electromagnetic radiation into light comprising

a luminous sheet for emitting light of a given wavelength in response to excitation by radiation at another wavelength, such as upon x-ray bombardment, and having an antireflecting surface thereon characterized by a plurality of small, generally long and thin protuberances generally extending normal to said surface a distance not greater than about 1000 nm, the average amplitude of which is not less than 100 nm and having an average peak-to-peak spacing therebetween of not less than 20 nm to substantially prevent light emitted within the sheet which is directed toward the antireflecting surface from being either diffusely or specularly reflected, thus inhibiting reflected radiation from passing back through the sheet to impinge upon a light sensitive medium positioned adjacent the screen and minimizing the lateral spreading of emitted light, resulting in a significant increase in the resolution with which an image in said one form of electromagnetic radiation is imaged by the corresponding emitted light onto the photosensitive medium.

4,204,126

GUIDED FLOW WIND POWER MACHINE WITH TUBULAR FANS

Richard E. Digga, P.O. Box 776, Carthage, Mo. 64836

Continuation of Ser. No. 852,054, Nov. 16, 1977, abandoned, which is a continuation of Ser. No. 624,385, Oct. 21, 1975, abandoned. This application Aug. 21, 1978, Ser. No. 935,504
Int. Cl.² F03D 9/02
U.S. Cl. 290—55 11 Claims

1. An apparatus for converting wind energy to electric power and for selectively storing excess electric power comprising:

a rotatable main frame assembly;

a plurality of power cells secured to said main frame assembly, each said power cell including a plurality of pairs of intermeshing fan wheels;

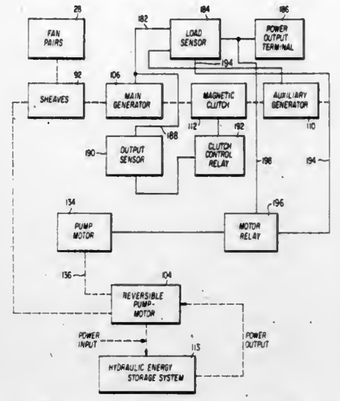
power train means connected to said pairs of fan wheels;

electrical generator means coupled to said power train means for generating electrical power;

a power storage system coupled to said electrical generator means for selectively storing excess power generated thereby;

wherein said power storage system comprises a plurality of massive weights, an hydraulic system for elevating said weights and reversible pump-motor means coupled to said hydraulic system and to said electrical generator means for raising said weights to store energy and for driving said electrical generator means to utilize stored energy; and

wherein said hydraulic systrm further comprises an hydraulic cylinder, connected to each of said weights, surrounding each of a plurality of pistons and hydraulic circuit means coupling said hydraulic cylinders with said reversible pump-motor including a buffer reservoir and a plurality of solenoid valve means for selectively coupling said buffer reservoir with each of said hydraulic cylinders.

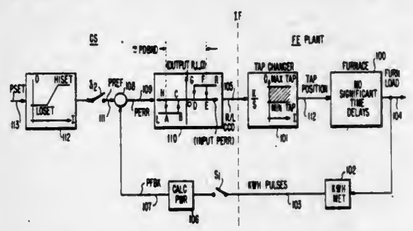


4,204,127

LOAD REGULATION AS PART OF AN ADAPTIVE PRIORITY DETERMINATION POWER DEMAND CONTROL SYSTEM

Woodward C. Carter, II, Maitland, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 14, 1978, Ser. No. 896,262
Int. Cl.² G05B 13/02, 11/32
U.S. Cl. 307—39 16 Claims



1. In a power demand control system for controlling loads drawing energy from a power source, at least one load being adjustable in reference to a level of power to be consumed including:

a power source meter common to said loads;

an individual power meter associated with said one adjustable load;

means responsive to said common power meter for selecting loads and for predicting a demand error relative to an assigned demand limit at the end of a control period, said demand error being predicted on a selection of available loads to be controlled for minimizing said demand error; and

means responsive to said predicted demand error for effectively controlling such selected available loads;

the combination of:

means responsive to said predicted demand error and operative as a result of said one adjustable load being selected for establishing a reference setting point defining said reference level of power to be consumed by said adjustable load;

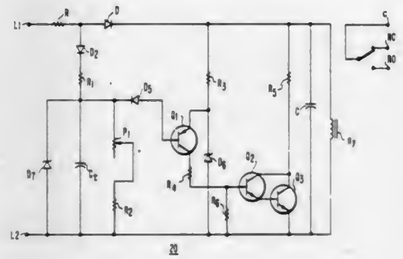
feedback means responsive to said individual power meter for providing a feedback error relative to said setting point and for establishing said reference level of power consumed by said adjustable load, thereby to change said reference level of power consumed by said adjustable load in accordance with said setting point, whereby said demand error is minimized.

4,204,128

ADJUSTABLE TIME DELAY RELAY

Andrew P. Kruper, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 13, 1978, Ser. No. 885,923
Int. Cl.[2] H01H *43/06*
U.S. Cl. 307—141 **15 Claims**



1. A time delay relay adapted for energization under normal conditions by an associated external power source, said relay comprising:

a power switching device comprising input terminals and output terminals;

energy storage means connected across said input terminals for maintaining energization of said power switching device during a predetermined delay period following failure of the associated power source;

shorting means connected across said input terminals and said energy storage means, and operable when actuated to establish a low impedance path across said energy storage means and said input terminals;

timing means separate from said energy storage means and connected to said shorting means, said timing means being operable upon failure of an associated external power source to initiate said predetermined delay period and upon expiration of said predetermined delay period to actuate said shorting means and rapidly dissipate the energy stored in said energy storage means, whereby said power switching device becomes de-energized; and

means for connecting the associated electrical power source to said timing means and to said energy storage means;

the values of said timing means components and the capacity of said energy storage means being selected such that said energy storage means can maintain energization of said input terminals throughout the duration of said predetermined time delay; whereby upon failure of the associated power source, said energy storage means will maintain energization of said input terminals until said timing means has operated said shorting means.

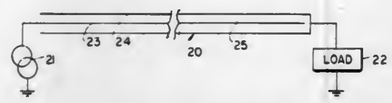
4,204,129

CAPACITANCE-COMPENSATED CABLE

Loren H. Hutchins, Jr., Portsmouth, N.H., assignor to Simplex Wire and Cable Company, Portsmouth, N.H.

Continuation-in-part of Ser. No. 668,267, Mar. 18, 1976, abandoned. This application Dec. 9, 1977, Ser. No. 859,163
Int. Cl.[2] H01B *9/04, 7/30*
U.S. Cl. 307—147 **10 Claims**

1. In an electric-transmission system including a generator of a varying amplitude voltage, an electric load having an inductive power factor, and a transmission line having conductive links interconnecting said generator and said load, the improvement in which said conductive link includes a cable having a first-conductor part extending lengthwise of said cable, a second conductor part extending lengthwise of said cable, and solid dielectric material extending lengthwise of said cable and separating said first-and second-conductor parts in capacitive relationship distributed along the length of said cable, the amount of capacitance between said conductor parts being in excess of that required to match the inductive reactance of said conductive link, said first-conductor part being



electrically connected at one end of said cable to said generator and said second-conductor part being electrically connected at the other end of said cable to said load whereby the capacitance between said conductor parts is electrically connected in series between said generator and said load, in which the cross-sectional area of said first-conductor part decreases along the length of said cable from a maximum at said one end of said cable to a minimum at said other end of said cable and in which the cross-sectional area of said second conductor part increases along the length of said cable from a minimum at said one end of said cable to a maximum at said other end of said cable.

4,204,130

MULTICOLLECTOR TRANSISTOR LOGIC CIRCUIT

James H. Harris, Danbury, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1978, Ser. No. 891,240
Int. Cl.[2] H01L *27/04*; H03K *19/08*
U.S. Cl. 307—215 **11 Claims**



7. An integrated transistor logic arrangement including at least first and second logic circuits, each of said first and second logic circuits comprising:

first and second power supply terminals;

a first transistor having first and second regions of first conductivity type separated by a third region of second conductivity type;

at least one second transistor having fourth and fifth regions of first conductivity type separated by a sixth region of second conductivity type;

the fourth region of said second transistor being electrically connected in common with the second region of said first transistor, the sixth region of said second transistor being electrically connected in common with the third region of said first transistor;

the first region of said first transistor being electrically connected to said first power supply terminal;

circuit means for supplying current from said second power supply terminal to the commonly connected third region of said first transistor and the sixth region of said second transistor;

the commonly connected third region of said first transistor and sixth region of said second transistor being the input of the logic circuit, the fifth region of said second transistor being the output of the logic circuit;

the first and second power supply terminals of the first logic circuit being connected in common with the first and second power supply terminals of the second logic circuit, respectively; and,

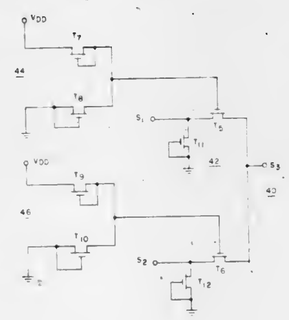
the input of the second logic circuit being connected to the output of the first logic circuit.

4,204,131

DEPLETION CONTROLLED SWITCH

Harold W. Dozier, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Oct. 11, 1977, Ser. No. 840,679
Int. Cl.[2] H03K *17/60*
U.S. Cl. 307—251 **3 Claims**



1. A bidirectional switch for use in an integrated circuit, comprising:

a first FET connected between a first option line capable of being at a high and low potential during operation of the integrated circuit and a designated line whereby the input function may originate on either the option line or the designated line,

a second FET connected between a second option line capable of being at a high and low potential during operation of the integrated circuit and a designated line whereby the input function may originate on either the option line or the designated line,

first means for selectively causing the FETs to be operable in either the depletion mode or the enhancement mode,

second means for applying a gate potential to the first FET to couple the first option line to the designated line in the event the first FET is operable in the depletion mode, or to isolate the first option line from the designated line in the event the first FET is operable in the enhancement mode, and

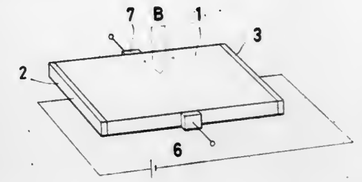
third means for applying a gate potential to the second FET to couple the second option line to the designated line in the event the second FET is operable in the depletion mode, or to isolate the second option line from the designated line in the event the second FET is operable in the enhancement mode.

4,204,132

HIGHLY SENSITIVE HALL ELEMENT

Shoei Kataoka, Tanashi; Yoshinobu Sugiyama, Musashi-Murayama, and Hiroyuki Fujisada, Kawasaki, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Aug. 8, 1977, Ser. No. 822,658
Claims priority, application Japan, Aug. 11, 1976, 51-94788; Aug. 11, 1976, 51-94789
Int. Cl.[2] H03B *7/00*
U.S. Cl. 307—309 **8 Claims**



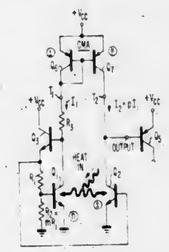
1. A highly sensitive Hall element comprising a semiconductor possessing a Hall effect and exhibiting an electron transfer effect in a high electric field, input current electrodes provided at the opposite ends of said semiconductor, at least one Hall output electrode provided at one side of said semiconductor, and means for applying to said input current electrodes a voltage large enough to lower the electron concentration available for the Hall effect in said semiconductor, the lowered electron concentration resulting in an increase in the Hall coefficient to thereby considerably enhance the sensitivity of the Hall element.

4,204,133

TEMPERATURE-SENSITIVE CONTROL CIRCUITS

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 14, 1977, Ser. No. 842,078
Int. Cl.[2] H03K *1/00, 17/00*
U.S. Cl. 307—310 **7 Claims**



1. A temperature-sensitive control circuit comprising:

first and second transistors arranged to sense substantially the same temperature, each having base and emitter and collector electrodes;

a first source of current connected to the collector of said first transistor for supplying a first prescribed level of current of a polarity as may be conducted as collector current by said first transistor;

direct coupled collector-to-base feedback means provided said first transistor to apply an emitter-to-base potential thereto for conditioning said first transistor to conduct as collector current said first prescribed level of current from said first source of current;

means for scaling up the emitter-to-base potential of said first transistor in fixed proportion—i.e., for multiplying it by a constant greater than unity;

means for applying the scaled up, or multiplied, potential as the emitter-to-base potential of said second transistor; and an output terminal to which the collector electrode of said second transistor connects.

4,204,134

COOLANT LOOP FOR THE ROTOR OF A TURBOGENERATOR WITH A SUPERCONDUCTIVE EXCITER WINDING

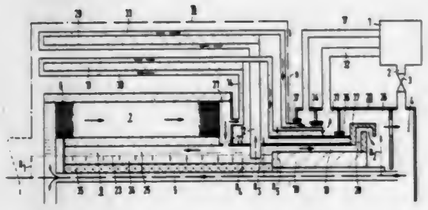
Werner Fritz, Bochum, and Erich Weghaupt, Mülheim an der Ruhr, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,288

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713885

Int. Cl.² H02K 9/00

U.S. Cl. 310—52 **12 Claims**



1. In a coolant circulatory loop for a turbogenerator rotor having a superconductive field winding, cooling ducts and a damper and cold shielding surrounding the field winding, means external to the rotor for transferring deeply-cooled liquid helium thereto for cooling the field winding, damper and cold shielding, the damper and cold shielding being cooled by an at least partly vaporized partial flow of helium that has flowed through the field winding, a rotating mixing chamber mixing deeply-cooled liquid helium from the external transferring means with liquid helium which has flowed through the cooling ducts of the field winding, means for feeding liquid helium in forced circulation from said mixing chamber to the cooling ducts of the field winding wherein it is heated due to winding losses and pressure reduction and is partly evaporated, means located in the rotating rotor for recooling the non-evaporated helium by removing heat of vaporization therefrom and returning the thus recooled helium to said mixing chamber forming a closed liquid helium loop inside the rotor with a separate partial flow of helium cooling the damper and cold shielding, cooling means external to the rotor for recooling the partial flow of helium after it has cooled the damper and cold shielding and means for feeding the recooled partial flow of helium back to said mixing chamber, the amount of helium flowing from said closed liquid helium loop inside the rotor through said mixing chamber being a multiple of the at least partly vaporized partial flow of helium flowing through the damper and cold shielding to said external cooling means.

4,204,135

PIEZOELECTRIC ELEMENTS OF ORGANIC HIGH MOLECULAR WEIGHT MATERIALS

Naohiro Murayama, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

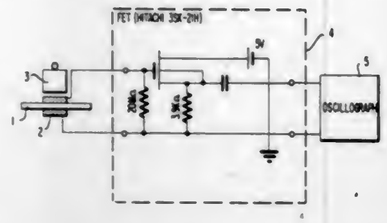
Continuation of Ser. No. 587,782, Jun. 17, 1975, abandoned, which is a continuation of Ser. No. 424,029, Dec. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 204,263, Dec. 2, 1971, abandoned. This application May 21, 1976, Ser. No. 688,818

Claims priority, application Japan, Dec. 2, 1970, 45/106022

Int. Cl.² H01L 41/18

U.S. Cl. 310—357 **15 Claims**

1. A polymeric piezoelectric element comprising an unoriented shaped and polarized element of a copolymer of at least about 50% by weight of vinylidene fluoride and tetrafluoroethylene, said element having a piezoelectric modulus in excess of about 10^{-8} cgsesu.



4,204,136

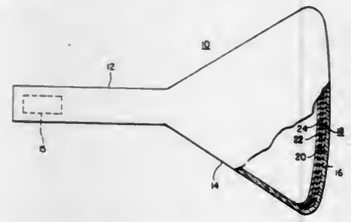
DUAL LAYER PHOSPHOR SCREEN FOR CATHODE RAY TUBE

Donald M. Phillips, Cayuta, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 17, 1978, Ser. No. 887,895

Int. Cl.² H01J 29/18, 29/30

U.S. Cl. 313—473 **4 Claims**



1. A cathode ray tube having a high brightness with low noise level, high resolution cathodoluminescent display screen disposed upon the interior surface of the tube faceplate, which display screen comprises a thin electrophoretically deposited first phospher layer of very finely divided phosphor disposed upon the interior surface of the tube faceplate and a second gravity settled phosphor layer which is disposed on the first phosphor layer.

4,204,137

FLUORESCENT LAMP WITH REFRACTORY METAL ELECTRODE SUPPORTS AND GLASS FLARE SEAL STRUCTURE

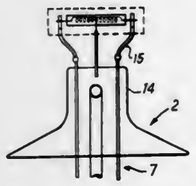
Ashutosh Roy, London, England, assignor to Thorn Electrical Industries Limited, London, England

Filed Jul. 18, 1977, Ser. No. 816,564

Claims priority, application United Kingdom, Jul. 19, 1976, 30007/76; Oct. 8, 1976, 42004/76

Int. Cl.² H01J 61/30, 61/36, 61/42

U.S. Cl. 313—491 **6 Claims**



1. In a fluorescent discharge lamp comprising a tubular light transmitting envelope having a fluorescent coating on the interior wall thereof, coil electrodes at opposite ends therein, support wires connected to said coil electrodes passing through respective end walls of said envelope and sealed therethrough, and a fill comprising gas and mercury, an improved electrode support assembly comprising:

a glass flare adapted to be sealed in said envelope to form an end wall thereof, said flare being composed of soda-lime glass;

said support wires having

first portions sealed in said glass flare and comprising a metal alloy having a coefficient of thermal expansion matching that of said soda-lime glass; and

second portions which are disposed outside said glass flare and in operation of the lamp are exposed to electron bombardment, said second portions being welded to said first portions and comprising a refractory metal.

4,204,138

PERMANENT MAGNET-CONTAINING MAGNETRON

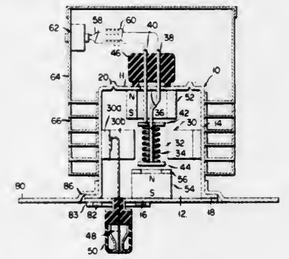
Tokuju Koinuma, Kawasaki, and Norio Tashiro, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 19, 1978, Ser. No. 897,726

Claims priority, application Japan, Apr. 27, 1977, 52-53700[U]

Int. Cl.² H01J 25/50

U.S. Cl. 315—39.51 **3 Claims**



1. A magnetron comprising:

a highly evacuated cylindrical yoke cup member fabricated from a soft magnetic material, said cup member including a flange at its open end;

a resonant cavity unit having a plurality of anode vanes disposed coaxially within said yoke cup member, said anode vanes defining a central space within said yoke cup member;

a cathode positioned within said central space;

at least one permanent magnet within said cup member for driving said resonant cavity unit in cooperation with said cup member;

an end cap made of soft magnetic material for hermetically sealing the open end of said cup member;

an antenna;

means for coupling said antenna through said end cap to said resonant cavity; and

a fitting board having a bore therethrough, said bore having a diameter larger than that of said yoke cup member without said flange and smaller than the diameter of said cup member including said flange, said fitting board further including a flange rest about said bore, the closed end of said yoke cup member being inserted through said bore such that said flange of said yoke cup member engages said flange rest when said cup member is inserted through said bore.

4,204,139

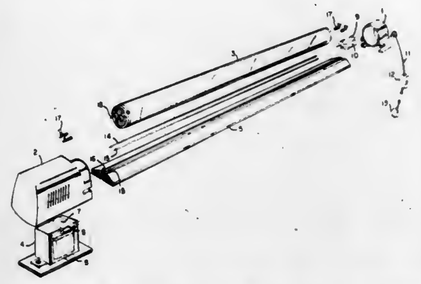
INTEGRAL FLUORESCENT LAMP-BALLAST UNIT

Robert M. Shimer, Topsfield; Joseph A. Dombrowski, Manchester, and Sheppard Cohen, Danvers, all of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 27, 1978, Ser. No. 890,278

Int. Cl.² H01J 25/50, 13/46, 19/78; H01K 1/62

U.S. Cl. 315—58 **6 Claims**



1. An integral fluorescent lamp-ballast unit comprising: a fluorescent lamp fastened to an end cap at one end and a housing at the other end; an elongated support member extending between the end cap and the housing, fastened to both, and serving as a backing for the lamp; and a ballast circuit disposed in the housing and/or the end cap, the ballast circuit including a choke, a preheat lamp starter and a circuit breaker, the circuit breaker being in close proximity to the choke ballast so as to be heated thereby, the circuit breaker being normally closed during normal lamp operation but becoming open and opening the circuit when the choke overheats.

4,204,140

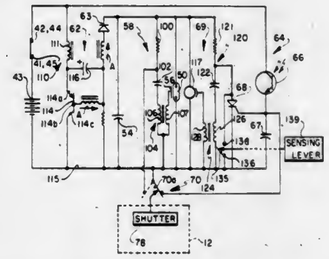
SAFETY CIRCUIT FOR ELECTRONIC FLASH APPARATUS

Roger L. Willis, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,451

Int. Cl.² H05B 41/32

U.S. Cl. 315—241 P **9 Claims**



1. In electronic flash apparatus having a flashtube energizable for illuminating a scene, and a dischargeable firing capacitor coupled to said flashtube for producing a discharge current to energize said flashtube, the improvement comprising:

(a) an energizable quench circuit coupled to said firing capacitor for diverting said discharge current from said flashtube, thereby terminating energization of said flashtube;

(b) a safety circuit including a switch coupled to said quench circuit, said switch having (1) a normal, deactuated condition, and (2) an actuated condition in which said quench circuit is energized by said safety circuit; and

(c) a housing member movably associated with said switch and having (1) a first position in which said switch is

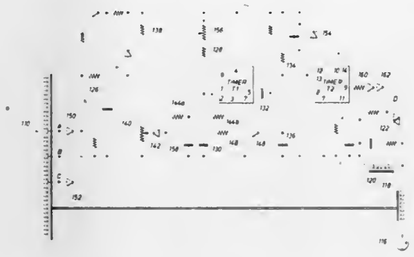
maintained in its deactuated condition, and (2) a second position in which said switch is moved to its actuated condition, thereby energizing said quench circuit for discharging said firing capacitor.

4,204,141

ADJUSTABLE DC PULSE CIRCUIT FOR VARIATION OVER A PREDETERMINED RANGE USING TWO TIMER NETWORKS

Eric L. H. Nuver, San Marcos, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,157
Int. Cl.² H04B *39/02*
U.S. Cl. 315—311 **18 Claims**



1. In a dimming circuit for a high intensity discharge lamp comprising
- a reactive ballast including a first portion and a second portion, each in series with the lamp, said first portion connectable for at least partial current bypass to cause lamp dimming,
- a gated semiconductor having its main terminals connected across said first reactive ballast portion,

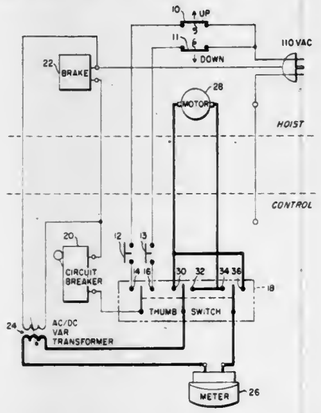
the improvement in a gating circuit connectable to the gate of said gated semiconductor for providing a positionable unipolar dc pulse thereto within a time range of one-half of the line voltage applied to the lamp, said improvement comprising
- a rectifier operably connectable to ac line voltage for producing rectified line voltage,
- first timer means having a trigger input actionable when a voltage applied thereto is below a predetermined level for producing a dc pulse output, the duration of which is determined by the length of time that the voltage across a time constant network, discharged prior to application of the trigger input, builds to a predetermined control voltage level, said control voltage internally determining the level at which a threshold input actuates the timing conclusion event of said first timer means,
  - said first timer trigger input being operably connected to said rectified line voltage,
- a first time constant network connected to the threshold input of said first timer means,
- second timer means having a trigger input actionable when a voltage applied thereto is below a predetermined level for producing a dc pulse output, the duration of which is determined by the length of time that the voltage across a time constant network, discharged prior to application of the trigger input, builds to a predetermined control voltage level, said control voltage internally determining the level at which a threshold input actuates the timing conclusion event of said second timing means,
  - said second timer input operably connected to the dc pulse output of said first timer,
  - the output of said second timer being connected to the gate of the gated semiconductor,
- a second time constant network being connected to the threshold input of said second timer means, and
- variable voltage means connected to change the control voltage level of said first timer means, a change of said first timer control voltage level causing a narrowing of first timer pulse output, and advancement of the dc pulse output of said second timer.

4,204,142

HOIST MOTOR CONTROL SYSTEM

David M. Scruggs, 27587 Brookside La., San Juan Capistrano, Calif. 92675

Filed Dec. 27, 1977, Ser. No. 864,371
Int. Cl.² H02K *11/00*
U.S. Cl. 318—257 **4 Claims**



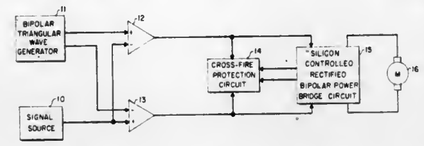
1. An improved electric motor hand control of the type having a trigger for controlling current to a motor proportionally to trigger depression, the improvement comprising:
- switching means for setting the rotational direction of said motor; and
- interlock means for preventing movement of said switching means for setting said rotational direction when said trigger is depressed;
- wherein said switching means comprises a three position switch manually movable to a first position for rotating said motor forward, a middle position for turning said motor off, and a third position for rotating said motor in reverse; and
- wherein said interlock means comprises:
- a first spring leaf having a fixed end and a free end;
- a first actuator connected to said trigger and disposed adjacent to said first leaf for deflecting said first leaf when said trigger is depressed;
- a first blocking pin attached to said first leaf free end and disposed adjacent to said three position switch for blocking movability of said switch to said first position when said first leaf is deflected;
- a second spring leaf having a fixed end and a free end;
- a second actuator connected to said trigger and disposed adjacent to said second leaf for deflecting said second leaf when said trigger is depressed; and
- a second blocking pin attached to said second leaf free end and disposed adjacent to said three position switch for blocking movability of said switch to said third position when said second leaf is deflected.

4,204,143

PULSE WIDTH MODULATED POWER AMPLIFIER FOR DIRECT CURRENT MOTOR CONTROL

Randolph D. Coleman, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,989
Int. Cl.² H02P *7/28*
U.S. Cl. 318—341 **3 Claims**



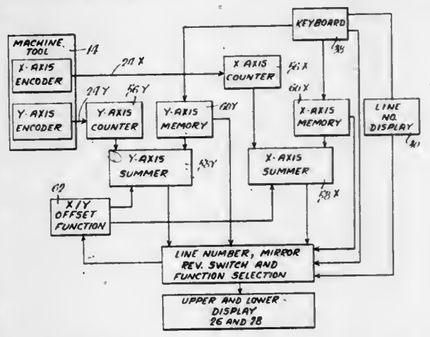
1. A pulse width modulating power amplifier for direct current motor control comprising:
- a signal source of input drive signals;
- generating means for producing simultaneous positive and negative waveforms;
- clockwise modulating means, having a first input connected to said signal source and a second input connected to said generating means, for producing clockwise drive pulses;
- counterclockwise modulating means, having a first input connected to said signal source and a second input connected to said generating means, for producing counterclockwise drive pulses;
- a silicon controlled rectifier power bridge having a first input connected to said clockwise modulating means, a second input connected to said counter-clockwise means, and having first and second outputs for providing a direct current of reversible polarity and wherein said silicon conrolled rectifier power bridge comprises:
- a power supply;
- a first switching transistor connected to said power supply;
- a second switching transistor connected to said power supply;
- a first silicon controlled rectifier connected to said first switching transistor;
- a second silicon controlled rectifier connected to said second switching transistor and said first silicon controlled rectifier so as to form a bridge circuit;
- a reversible direct current motor having first and second terminals, said first terminal connected to said first switching transistor and said second terminal connected to said switching transistor;
- a first diode connected in parallel to said first silicon controlled rectifier;
- a second diode connected in parallel to said second silicon controlled rectifier;
- a third switching transistor, connected to said second silicon controlled rectifier, said first switching transistor and said counterclockwise modulating means, and
- a fourth switching transistor connected to said first silicon controlled rectifier, said second switching transistor and said clockwise modulating means; and
- a cross-fire protection means having a first input connected to said clockwise modulating means, a second input connected to said counterclockwise modulating means, a third input connected to said first output of said silicon controlled rectifier power bridge means and a fourth input connected to said second output of said silicon controlled rectifier power bridge means for preventing the driving of said silicon controlled rectifier power bridge means to a short circuit condition and wherein said cross fire protection means comprises:
- a first NAND gate having first and second inputs, said first input connected to said counterclockwise modulating means and said second input connected to said first silicon controlled rectifier;
- a second NAND gate having first and second inputs, said first input connected to said clockwise modulating means and said second input connected to said second silicon controlled rectifier;
- a set reset flip-flop having not set and not reset inputs and having Q and not-Q outputs, said not set input connected to said second NAND gate and said not reset input connected to said first NAND gate;
- a first shunting transistor operatively connected to said counterclockwise modulating means, and to said Q-output of said set-reset flip-flop; and
- a second shunting transistor operatively connected to said first shunting transistor, said clockwise modulating means, and said not-Q output of said set reset flip-flop.

4,204,144

POSITION CONTROL SYSTEM

Richard D. Hill, Skokie, Ill., assignor to Midgitronics Inc., Oregon, Wis.

Filed Oct. 13, 1977, Ser. No. 841,729
Int. Cl.² G05B *19/42*
U.S. Cl. 318—568 **10 Claims**



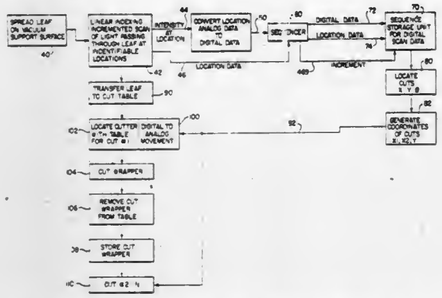
1. A method of positioning a movable element of a machine tool in a series of preselected positions comprising the steps of:
- (a) establishing a reference coordinate;
- (b) selecting a series of preselected positions;
- (c) determining the X and Y coordinates relative to said reference coordinate of each of the positions in the series of preselected positions;
- (d) entering and remembering each of said X and Y coordinates;
- (e) determining the actual X and Y positions of the movable element with respect to said reference coordinate;
- (f) selecting a first of said positions from the series of preselected positions;
- (g) summing said X coordinate of the actual position of the movable element with the X coordinate of the selected first position to provide a difference therebetween;
- (h) summing said Y coordinate of the actual position of the movable element with the Y coordinate of the selected first position to provide a difference therebetween;
- (i) displaying the differences in a display;
- (j) moving the movable element so that the differences are zero at the selected position;
- (k) selecting a second of said positions from said series; and
- (l) repeating steps (g) through (j).

4,204,145

METHOD OF SELECTING THE CUTTING POSITION FOR A CIGAR WRAPPER ON A TOBACCO LEAF

Charles M. Hevenor, Jr., Bolton, and Kenneth O. Wood, Ellington, both of Conn., assignors to Gulf & Western Corporation, New York, N.Y.

Filed May 2, 1978, Ser. No. 902,245
Int. Cl.² G05B *19/42*
U.S. Cl. 318—568 **6 Claims**



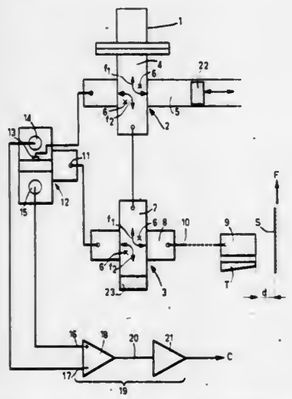
1. A method of selecting the cutting position of a cigar wrapper cutter having a given shape with respect to a natural tobacco leaf using a remotely created leaf image of a given tobacco leaf, which remotely created image includes the outline of the given leaf, the position of the leaf stem and the areas with holes in said leaf, said method comprising the steps of:
(a) providing an outline image of the given cutter shape;
(b) shifting the outline image with respect to said leaf image until said outline image is in a selected position avoiding the outline, the stem and any hole areas of said leaf image; and,
(c) then, creating cutting coordinates indicative of said selected position for use in controlling a cutting position of said cigar wrapper cutter on said given leaf.

4,204,146

SERVO-CONTROL METHOD AND DEVICE

Jean Peiffert, 42 Allee de Persepolis, Orsay, Essonne, and Roger S. Barbedienne, 11, rue de Neuvill, Eragny sur Oise, Val d'Oise, both of France

Filed Jun. 1, 1978, Ser. No. 911,612
Int. Cl.² G05B *1/06*
U.S. Cl. 318—640 **11 Claims**



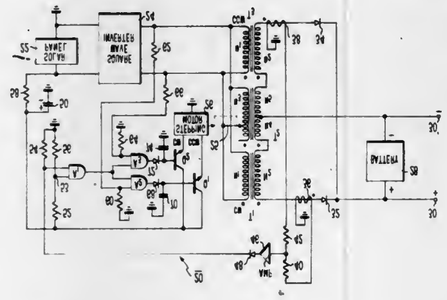
1. A method of servo-controlling the distance of an object from a transiting surface to be followed by said object and capable of reflecting microwaves, by exploiting a control signal, including the steps of disposing before the surface to be followed at least one radiating unit fast with the object and providing directive microwave radiation of a radient wave, simultaneously picking up the radiation reflected by said surface on said radiating unit, forming a reference phase by adjusting the phase of a portion of the radiated wave fed to a comparison means, comparing said reference phase with the reflected microwaves and using the signal resulting from such comparison to effect the required servo-control in relation to a predetermined distance that is a multiple of a quarter-microwave.

4,204,147

POWER TRANSFER APPARATUS

Robert D. Larrabee, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 4, 1977, Ser. No. 821,786
Int. Cl.² H02J *7/00, 7/10*
U.S. Cl. 323—4 **3 Claims**



1. The combination of:
a source of electrical power whose value may vary;
a load;
adjustable power transfer means for coupling the power from said source to said load;
sensing means coupled to said load for sensing a load parameter indicative of the power delivered by said power transfer means to said load and for producing a control signal in response thereto indicative of the level of said power;
said sensing means including means for providing first and second current paths between said power transfer means and said load, through which paths current may flow in a given direction to said load, and means for comparing the relative values of the currents in said first and second paths for producing said control signal manifesting said relative values; and
means responsive to said control signal for adjusting the power transfer means to alter the value of at least the current delivered by said power transfer means to said load in a sense to maximize said load parameter over a range of values of power produced by said source.

4,204,148

REGULATION CIRCUIT

Robert F. Gaertner, San Marcos, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,554
Int. Cl.² G05F *1/58, 1/64*
U.S. Cl. 323—22 SC **5 Claims**

1. A power supply regulation circuit for providing timing gate signals to a power section of a power supply, the occurrence times of the power section gate signals determining the dc output level of the power section, comprising:
a first gated semiconductor device;
a second gated semiconductor device having its gate connected to said first device and connectable to a voltage source for supplying the power section gate signals at the time said second device is conductive;
a first network connected to one of the terminals of said first device for supplying a control voltage to render said first device conductive by sensing the dc output level from the power section being regulated;
a second network connected to another of the terminals of said first device for rendering said first device conductive, said second network supplying a reference level derived from an applied ac source voltage;



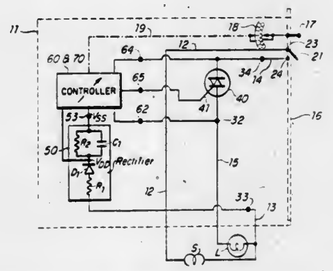
said first device turning on when the relative levels of sensed dc output level and the applied reference level differ by a predetermined amount,
said first network including a disconnect network connected to said ac source voltage, and absence of ac source voltage causing said reference level supplied by said second network to become zero, said absence of ac source voltage causing a disconnection of said first network to thereafter prevent operation of said first gated device.

4,204,149

ELECTRONIC CONTROLLED-DURATION SWITCHING

James J. Cleary, 1828 S. Magnolia Ave., Yuma, Ariz. 85369, and John M. Cleary, 426 Washington Valley Rd., Martinsville, N.J. 08836

Filed Jul. 18, 1977, Ser. No. 816,739
Int. Cl.² H05B *39/02, 39/04*
U.S. Cl. 323—24 **10 Claims**



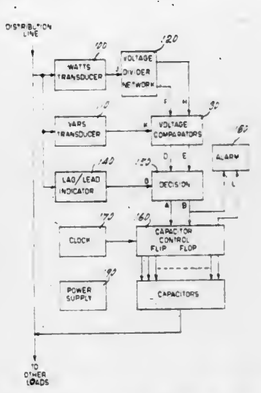
1. An electronic controlled system comprising
an electronic switch;
means for controlling said electronic switch for a prescribed time interval;
means for biasing the controlling means; and
means for connecting said electronic switch in a first circuit with an energy source and a load and simultaneously connecting said controlling means in a second circuit with said energy source and said load for triggering said controlling means for each operation of the connecting means for said prescribed time interval.

4,204,150

APPARATUS AND METHOD FOR REGULATING THE POWER FACTOR IN AN ELECTRICAL DISTRIBUTING-NETWORK LINE

Serge Mathieu, Ste-Foy, Canada, assignor to H.O.P. Consulab Inc., Quebec, Canada

Filed Oct. 16, 1978, Ser. No. 951,955
Claims priority, application Canada, Jun. 20, 1978, 305891
Int. Cl.² H02J *3/18*
U.S. Cl. 323—102 **18 Claims**



1. A method for regulating the power factor in an electrical distributing-network line, comprising:
(a) measuring a first component of the line power by means of a transducer, the output from which is a continuous voltage proportional to said component of the power supplied by the line;
(b) measuring a second component of the line power by means of a transducer, the output from which is a continuous voltage proportional to said second component of the power supplied by the line;
(c) dividing the voltage supplied by the first component by means of voltage dividers to obtain two voltages L_1 and L_2, the values of which represent the limits prescribed for the power factor in the line;
(d) comparing the voltage supplied by the transducer of the second component with reference voltages L_1 and L_2 to obtain two logic levels indicating one of the following three operations:
(i) connecting one or more capacitors if the power factor is below said limit L_1;
(ii) disconnecting one or more capacitors if the power factor is above said limit L_2;
(iii) carrying out no operation if the power factor is above said limit L_1 and below said limit L_2.

4,204,151

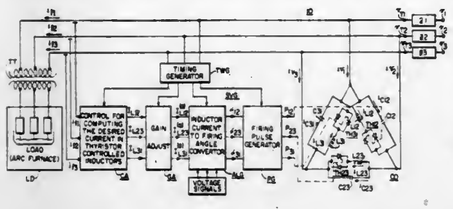
STATIC VAR GENERATOR WITH NON-LINEAR FREQUENCY DEPENDENT DYNAMIC GAIN ADJUSTER

Laszlo Gyugyi, Penn Hills, and Michael B. Brennen, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 3, 1978, Ser. No. 892,805
Int. Cl.² H02J *3/18*
U.S. Cl. 323—119 **11 Claims**

1. A VAR generator of the type which is connected to an electrical system for the purpose of supplying reactive power to the electrical system, comprising:
(a) calculating means for determining an estimated amount of reactive power that is to be provided to said electrical system during a given period of time, said calculating means providing an estimated reactive power output signal which is related to said estimated amount of reactive power;

(b) gain adjust means connected to receive said estimated reactive power output signal from said calculating means, the gain of said gain adjust means being variable to adjust the magnitude of said estimated reactive power output signal to provide a gain adjusted output signal, said variable gain being nonlinearly related to the difference between said estimated amount of reactive power and a



stored value which is related of the actual amount of reactive power delivered during a previous time period; and

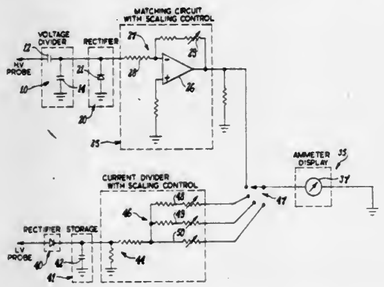
(c) reactive power producing means connected to said electrical system and said gain adjust means for providing reactive power during said time period in correspondence to said gain adjusted output signal.

4,204,152

HIGH AND LOW VOLTAGE MEASURING APPARATUS EMPLOYING A SINGLE DISPLAY AND IMPEDANCE MATCHING

James A. Imrie, 18 Amberley Crescent, Frankston, Victoria 3199, Australia

Filed Jul. 5, 1978, Ser. No. 922,195
Int. Cl.[2] G01R *19/00, 15/08, 15/04*
U.S. Cl. 324—390 **11 Claims**



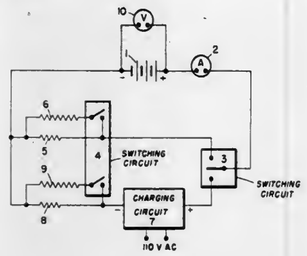
1. Diagnostic apparatus for measuring voltages in an ignition circuit of an internal combustion engine, said apparatus comprising, in combination: a high voltage measuring circuit and a low voltage measuring circuit, said high voltage measuring circuit comprising a capacitive voltage divider having a first capacitive means for connection to a point of measurement in said circuit to provide connection between said point and a second capacitive means of said divider, the voltage developed across said second capacitive means constituting the output of said voltage divider and being connected to a rectifying means comprising a first switching diode connected across said second capacitive means, the output of said rectifying means being connected to means for matching impedance at said rectifying means to a direct current voltage display means connectable to the output of said impedance matching means such that a displayed voltage is related to the high voltage in said ignition circuit, said impedance matching means comprising an operational amplifier having its inverting and non-inverting inputs connected to the output of said rectifying means, said first switching diode being connected across said second capacitive means such that unwanted portions of the high voltage in said ignition circuit do not pass to said operational amplifier, said low voltage measuring circuit comprising a voltage storage means, a further rectifying means for connection to a point of measurement in said circuit to provide connection between said point and said voltage storage means, said further rectifying means comprising a second switching diode and said voltage storage means comprising a capacitive storage means, said second switching diode being connected to said capacitive storage means such that unwanted portions of the low voltage in said ignition circuit do not pass to said capacitive storage means, the output of said voltage storage means being connected to the input of a voltage dividing means having its output connectable to said direct current voltage display means, said voltage dividing means comprising resistive elements.

4,204,153

METHOD OF DETERMINING THE OPEN CIRCUIT VOLTAGE OF A BATTERY IN A CLOSED CIRCUIT

William E. Brown, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 1, 1978, Ser. No. 939,157
Int. Cl.[2] G01N *27/42*
U.S. Cl. 324—429 **3 Claims**



1. A method of determining the open circuit voltage of a battery or cell operating in a closed circuit, without interrupting said circuit or substantially destabilizing said battery or cell, said method comprising:

(1) measuring the battery or cell current (I_1) and voltage (E_1) under a given load,

(2) altering said load by a fractional amount and remeasuring the battery or cell current (I_2) and voltage (E_2) under the altered load, and

(3) calculating the open circuit voltage (E_{oc}) of the battery or cell from the relationship

$$E_{oc}=E_1+(\Delta E/\Delta I)I_1,$$

where ΔE is the absolute difference between E_1 and E_2 and ΔI is the absolute difference between I_1 and I_2, the algebraic sign of I_1 being negative when the battery or cell is on charge and positive on discharge.

4,204,154

PORTABLE DEVICE FOR USE IN STARTING AIR-START UNITS FOR AIRCRAFT AND HAVING CABLE LEAD TESTING CAPABILITY

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; William R. Rosier, Tracy, and George G. Volk, Lancaster, both of Calif.

Filed Mar. 9, 1978, Ser. No. 885,066
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—51 **1 Claim**

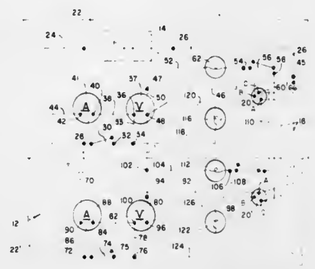
1. In a portable device particularly suited for use in initiating operation of air-start units for aircraft, an improved circuit comprising:

A. a D. C. voltage source including a positive and a negative terminal;

B. a pair of terminal plugs, each plug of said pair being characterized by a first, second and third terminal, the second terminal of each plug being connected in series with the negative terminal of the voltage source;

C. a pair of subcircuits, each subcircuit of said pair of subcircuits comprising a first normally open switch connected to the positive terminal of said voltage source, means including a lead for connecting the first terminal of one plug of said pair in series with said first switch, whereby a positive voltage is applied to said first terminal of said one plug when said first switch is closed, amperage measuring means interconnected in series between said first switch and the first terminal of said one plug, and voltage measuring means connected between the negative terminal and said first switch for measuring voltages applied across said first switch when the switch is closed;

D. means including a pair of electrical cables, each including a first lead for connecting the first terminal of one plug to one side of an air-start unit and a second lead for connecting the second terminal of said one plug to the other side of the air-start unit, whereby a voltage is applied across said air-start unit in response to a closing of said first normally open switch; and



E. means for examining the electrical continuity of the leads of each cable of said pair of cables including within said first and second subcircuit test circuit means for connecting the third terminal of each plug to the negative terminal of said voltage source, each of said test circuit means including a second normally open switch interposed in series between the negative terminal of the voltage source and the third terminal of one plug of said pair and a lamp connected in series between the second normally open switch and the negative terminal, whereby a circuit is completed through said lamp, between the negative terminal of the voltage source and the third terminal of the one plug upon closing of said second normally open switch, said third terminal of each plug being adapted to receive in electrically connected relation one end of one lead of one cable of said pair of cables so that the first terminal of each plug of said pair of plugs may be connected to the third terminal of the other plug of the pair simultaneously, in order that a voltage may be applied across each lead of said pair in response to a simultaneous closing of the first and second normally open switches of the subcircuits of said pair of subcircuits, and the flow of current therethrough detected at said lamps and measured at the amperage measuring means of said subcircuits.

4,204,155

AUTOMATIC FOUR-POINT PROBE

Malvin D. Terry, Phoenix, Ariz., assignor to Advanced Semiconductor Materials/America, Phoenix, Ariz.

Filed Jul. 28, 1978, Ser. No. 928,994
Int. Cl.[2] G01R *31/02, 27/14*
U.S. Cl. 324—158 F **1 Claim**

1. In an automatic mechanism for locating an electrical measurement probe and placing it in contact with a flat substrate on which electrical measurements are to be made, said mechanism including

a base,

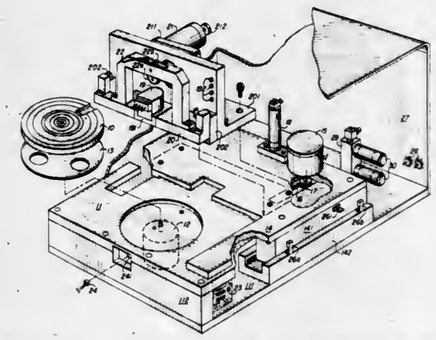
a rotatable support for said substrate carried by said base,

a carriage for said probe carried by said base,

electrical stepper motor means for moving said carriage relative to said substrate support and for rotating said substrate support,

cam means carried on said probe carriage for moving said probe vertically relative to said substrate support, and

means for automatically controlling said stepper motor means and said cam means to automatically position said probe on said substrate at preselected locations,



the improvements whereby torsional and lateral forces between said probe and said substrate and electrical interference with said measurements are inhibited, comprising:

(a) means for de-energizing said stepping motor means when said probe is positioned at each of said preselected locations;

(b) brake means for preventing rotation of said substrate support and movement of said carriage when said stepper motor means are de-energized; and

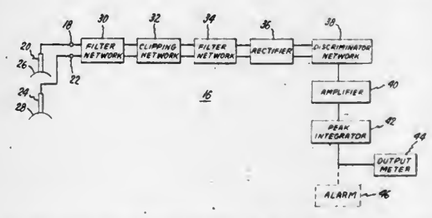
(c) means for mounting said cam means on said carriage such that vertical force exerted on said probe is applied perpendicularly to said substrate.

4,204,156

APPARATUS FOR ALIGNING BRUSHES OF A DYNAMOELECTRIC MACHINE

Fred H. Sawada, Scotia, and Melvin Howenstein, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,214
Int. Cl.[2] G01R *31/02*; G08B *21/00*
U.S. Cl. 324—158 MG **8 Claims**



1. Apparatus for aligning brushes of a dynamoelectric machine to minimize arcing of the brushes, said apparatus comprising:

means for receiving from a brush of the dynamoelectric machine a composite signal including noise signals and high-frequency information signals, said composite signal produced during an operating mode of the dynamoelec-

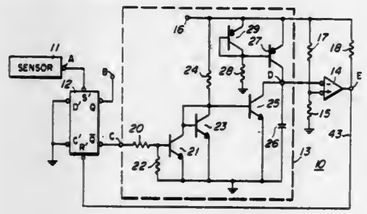
tric machine wherein a buck or boost current is superimposed on a preselected level of excitation current applied to the machine;
a first filter network for removing low-frequency components of said noise signals from said composite signal;
a clipping network connected to said first filter network for removing from said composite signal all components having an absolute value of amplitude in excess of a preselected value.
a second filter network for removing from said composite signal substantially all of the components of said noise signals input to said second network filter and having frequencies less than a cutoff value determined from the fundamental slot and bar frequencies of the dynamoelectric machine;
means for rectifying the filtered and clipped signal from said second filter network to provide a rectified signal;
means for amplifying and integrating said rectified signal to produce an output signal, said output signal, together with the level of said boost or buck current, being indicative of brush alignment adjustment required to minimize brush arcing; and
an output meter for displaying said output signal.

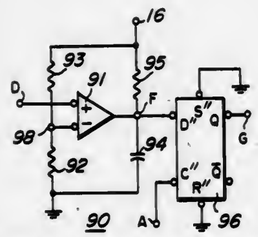
4,204,157

PERIODIC ENGINE SPEED MONITORING CIRCIT UTILIZING SAMPLING CIRCUITRY

Rupin J. Javeri, Elk Grove Village, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 12, 1978, Ser. No. 905,253
Int. Cl.² G01P 3/42
U.S. Cl. 324—166 **3 Claims**





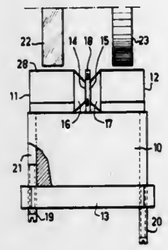
1. An engine speed monitoring circuit comprising:
sensor means for producing variable period signal pulses wherein the period of the pulses is related to engine speed;
means coupled to said sensor means for receiving said signal pulses and periodically generating, in response thereto, a signal having a magnitude varying at at least a predetermined rate and having a peak magnitude related to the period of the signal pulses, the peak magnitude thereby also being related to engine speed, and wherein said peak magnitude occurs at the occurrence of said input signal pulses; and
sampling means coupled to said sensor means and said varying magnitude signal generating means for producing an output signal having a magnitude related to the peak magnitude of said varying magnitude signal by utilizing said signal pulses to insure that the magnitude of said varying signal, only substantially at the occurrence of said signal pulses, determines said output signal, said output signal magnitude being maintained after the occurrence of each of said signal pulses until the next updating of the output signal magnitude at the next occurrence of said signal pulses,
said sampling means including a controllable gate means connected in series between said varying magnitude signal generating means and said output signal, said gate means having a control terminal receiving said signal pulses which result in effectively closing said gate means only during the occurrence of said signal pulses to provide a series signal path between said varying magnitude signal generating means and said output signal only at the occurrence of said signal pulses.

4,204,158

HALL EFFECT POSITION DETECTOR USING A SINGLE PERMANENT MAGNET

Jean-Pierre Ricouard, Suresnes, and Bruno Schorter, Morsang, Orge, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,714
Claims priority, application France, Apr. 20, 1977, 77 11875
Int. Cl.² G01R 33/12
U.S. Cl. 324—208 **10 Claims**



1. A Hall-effect position detector comprising a Hall-effect crystal, a stationary magnetic exciter circuit for the Hall-effect crystal which exciter circuit has an axis of symmetry, the exciter circuit being arranged to cooperate with a movable part movable in the immediate proximity of said detector and which comprises soft-magnetic elements which during their movement are respectively and alternately situated on either side of the axis of symmetry with a trailing end of one soft-magnetic element situated on one side of said axis substantially coinciding with a leading end of a soft-magnetic element situated on the other wise of the said axis of symmetry, the magnetic exciter circuit comprising a single permanent magnet having one pole face oriented towards the movable part and provided with two symmetrical soft-magnetic pole pieces on said pole face arranged to cooperate with said movable part and between which a narrow gap is formed in which the Hall-effect crystal is disposed on said axis of symmetry.

4,204,159

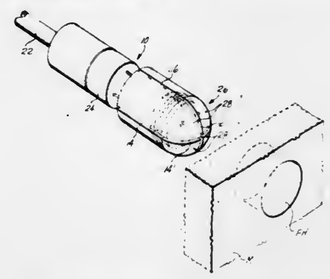
EDDY-CURRENT TEST PROBE WITH SEGMENTED CIRCUMFERENTIAL TEST GAP AND METHOD FOR INSPECTION OF MATERIALS

Suren Sarian, 145 N. El Camino Real #211, San Mateo, Calif. 94401, and Duane P. Johnson, 702 El Granada Blvd., El Granada, Calif. 94018

Filed Apr. 18, 1978, Ser. No. 897,344
Int. Cl.² G01R 33/12
U.S. Cl. 324—232 **26 Claims**

1. An eddy-current inspection tool, comprising:
a plurality of eddy-current generators angularly grouped about an axis;
each said eddy-current generator comprising:

an inner body of low reluctance material, including:
an elongated core part which is parallel to and spaced radially outwardly from said axis,
a first magnetic field guide extending generally radially at one end of said core part, and
a second magnetic field guide extending generally radially at the second end of said core part, said magnetic field guides being apart axially at a common radial boundary of said eddy-current generator, to form an axial gap;
an exciting coil of insulated electrically conductive wire surrounding said core part;



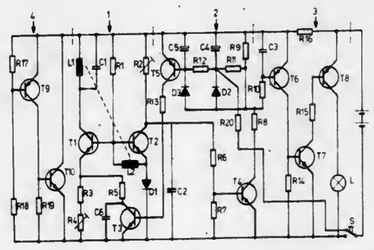
high reluctance material surrounding said coil and extending radially from said coil into said axial gap and terminating substantially even with gap bordering surface portions of said first and second magnetic field guides, said surface portions and said axial gap together forming a circumferential test region which in use is positioned contiguous the material being tested; and
external sheathing of high reluctance material on said eddy-current generator except at the circumferential test region,
said high reluctance materials being positioned to substantially eliminate the parallel reluctance of said coil.

4,204,160

METAL DETECTOR CIRCUIT WITH AUTOMATIC OPTIMUM SENSITIVITY ADJUSTMENT

Walter Voll, Industriestrasse 40,, 8728 Hassfurt, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,809
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722511
Int. Cl.² G01V 3/08
U.S. Cl. 324—236 **6 Claims**



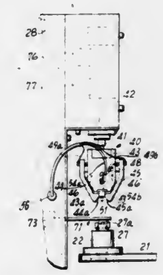
1. A metal detector comprising:
(a) oscillator circuit means comprising
(i) a first transistor;
(ii) a second transistor;
(iii) adjustable resistor means coupled to the emitter of the first transistor; and
(iv) inductor means coupled to the base of the second transistor to control the conductive state thereof;
the oscillator circuit means being arranged to generate an electromagnetic field and the second transistor being arranged to provide an output signal in response to and corresponding to any disturbance of the electromagnetic field caused by the presence of a metal article in the electromagnetic field;
(b) indicating circuit means arranged to receive the output signal and to indicate the presence of the metal article in response to the output signal;
(c) regulating circuit means arranged to receive the output signal and to control the resistance value of the adjustable resistor means, the regulating circuit means comprising:
(i) charging circuit means comprising at least one capacitor, and discharging means coupled to the at least one capacitor; and
(ii) a regulating transistor having a base electrode coupled to said at least one capacitor of the charging circuit means and having a further electrode so connected with the adjustable resistor means as to reduce the resistance value thereof only during the presence of the output signal provided by the second transistor;
(d) precharging circuit means coupled to the charging circuit means to enable the charging circuit means to be precharged; and
(e) power supply means selectively connectible to said precharging circuit means and to said oscillator, indicating and regulating circuit means.

4,204,161

APPARATUS FOR RAPIDLY TESTING ELECTROCHEMICAL CELLS

John J. Strickland, Alachua, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Mar. 1, 1978, Ser. No. 882,354
Int. Cl.² G01N 27/42
U.S. Cl. 324—426 **14 Claims**

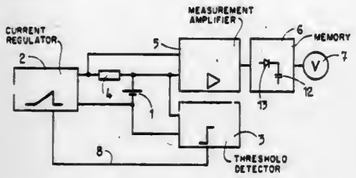


1. Apparatus for applying and receiving electrical signals at the external terminals of electrochemical cells having a central terminal and a casing terminal, comprising:
a probe assembly;
actuating means for moving the probe assembly into contact with the cell during testing;
a probe carried by the probe assembly and disposed to contact the central terminal of the cell during testing;
casing terminal contacting means carried by the probe assembly so as to be resiliently and yieldably biased into contact with the cell casing when said probe is moved into contact with the central terminal of the cell, said casing terminal contacting means being electrically isolated from said probe; and
signal conductors electrically connected to said probe and casing terminal contacting means for applying and receiving electrical signals.

4,204,162
METHOD OF CONTROLLING THE CONDITION OF AN ELECTRIC BATTERY AND APPARATUS FOR CARRYING OUT THIS METHOD

Jacques H. Froidevaux, La Chaux-de-Fonds, Switzerland, assignor to Electronic Time Company ETIC S.A., La Chaux-de-Fonds, Switzerland

Filed Jan. 16, 1978, Ser. No. 869,582
Claims priority, application Switzerland, Jan. 21, 1977, 717/77
Int. Cl.² G01N *27/42*
U.S. Cl. 324—430 **7 Claims**

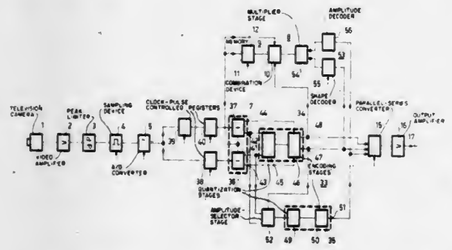


1. A method of determining the freshness of an electric battery, said method comprising:
discharging the battery with a load current having an amplitude increasing linearly as a function of time,
measuring the value of the voltage of said battery as said battery is discharged, and
measuring the amplitude of said load current when said value of said battery voltage decreases to a predetermined value, said measured load current amplitude being representative of said battery freshness.

4,204,163
MINIMUM GROUP PULSE CODE MODEM HAVING SHAPE AND AMPLITUDE CODES

Frank de Jager, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 21, 1978, Ser. No. 917,494
Claims priority, application Netherlands, Jul. 6, 1977, 7707475
Int. Cl.² H03K *13/22*
U.S. Cl. 375—25 **1 Claim**

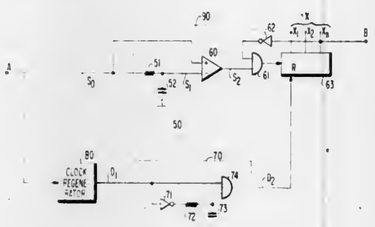


1. A transmission system for the transmission of signal elements of an information signal, which elements are spaced at fixed clock intervals, by means of a pulse code comprising a plurality of pulses, said system comprising a transmitter and a receiver, the transmitter being provided with a pulse code modulation device, which, before the transmission to the receiver, converts the signal elements applied to the input of said device into said pulse code, while the receiver is provided with a pulse code demodulation device which reproduces the transmitted information signal from said pulse code; wherein on the transmission side, the pulse code modulation device takes the form of a minimum-group pulse code modulator, for the pulse code conversion of adjoining minimum groups of two signal elements of the information signal, comprising a shape encoder, which in each group interval encodes a common shape of normalized amplitude of the signal variation of the two signal elements at the input of the minimum group pulse code modulator by a pulse code, and furthermore comprising an amplitude encoder which in each group interval, encodes an associated amplitude value by a pulse code, the pulse codes generated by the shape encoder and by the amplitude encoder in each group interval being jointly transmitted as a composite pulse code, while in the receiver, for the reproduction of the transmitted information signal, the composite pulse code being applied to a pulse code demodulation device, in the form of a minimum-group pulse code demodulator for the adjoining minimum groups of two signal elements which have been transmitted in pulse code, which minimum-group pulse code demodulator for this purpose comprises a multiplier stage for multiplying the normalized-amplitude shape, which has been transmitted in pulse code, in each group interval, by the associated amplitude value.

4,204,164
NOISE DETECTOR CIRCUIT

Kouzou Kage, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1978, Ser. No. 930,837
Claims priority, application Japan, Aug. 8, 1977, 52-94144
Int. Cl.² H04B *1/10*
U.S. Cl. 455—135 **8 Claims**



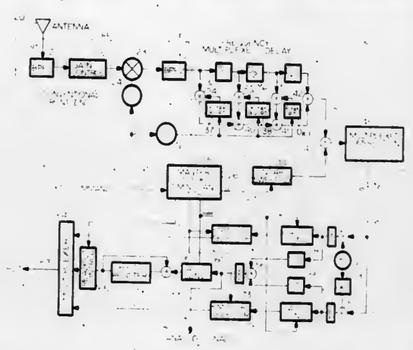
1. A noise detector circuit for a radio receiver, comprising:
a delay circuit for slightly delaying a received signal containing noise,
a comparator for comparing the level of said received signal with the output level of said delay circuit to generate a pulse sequence having a number of pulses per unit time that is proportional to the level of said noise, and
a counter for counting the number of the output pulses of said comparator to detect the level of said noise.

4,204,165
MULTICHANNEL COHERENT RECEIVER

Patrick J. Ready, Woodland Hills, Calif., assignor to Typoligics, Inc.

Filed May 1, 1978, Ser. No. 901,328
Int. Cl.² H04B *17/00*
U.S. Cl. 455—226 **21 Claims**

1. A radio receiver comprising an input circuit for receiving a radio signal;
a local oscillator;
means for mixing a radio signal at said input circuit with at least one local oscillator frequency to produce a convenient intermediate frequency product of said radio signal and said local oscillator frequency;
a variable frequency oscillator generator having a predetermined scan rate;
a delay line including a plurality of taps;
means for introducing the intermediate frequency product of said mixing means into said tapped delay line;
a respective oscillator for each of said taps, each of said oscillators having a frequency which is a function of $(k-n)RT$ where $K-1$ is the number of taps, R is the scan rate of the variable frequency oscillator generator, T is a constant and n is the number of a particular tap;
means for mixing the output of each of said taps with the output of its respective oscillator to provide a plurality of outputs;
means for combining the plurality of outputs to produce frequency multiplexed delayed products;
means for mixing the output of said variable frequency oscillation generator with the output of said combining means;

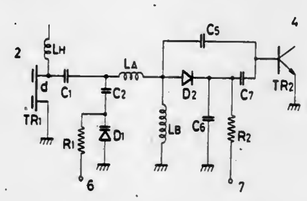


a filter having a variable delay-frequency characteristic matched to the time variation rate of said variable frequency oscillation generator coupled to the output of said last mixing means and having a maximum delay value T; and
means connected to the output of said filter for utilizing the signal whereon;
whereby said receiver develops a Fourier transformation of input signals with amplitude and phase information preserved.

4,204,166
VERY HIGH FREQUENCY TUNER

Itiro Araki, Shijonawate, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 15, 1979, Ser. No. 20,846
Claims priority, application Japan, Mar. 15, 1978, 53-30697
Int. Cl.² H04B *1/18*
U.S. Cl. 455—289 **4 Claims**

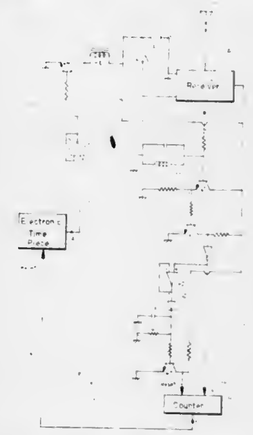


1. A very high frequency tuner for selection of a broadcasting signal through variation of a reactance value formed across a voltage controlled variable reactance device responsive to a tuning control signal, comprising
high frequency amplifier means,
tuned coupling means coupled to said high frequency amplifier means for selectively withdrawing a tuned high frequency signal,
local oscillator means for providing an oscillation frequency signal the frequency of which is different by a given frequency difference from said selectively withdrawn tuned high frequency signal,
mixer means responsive to said tuned high frequency signal from said tuned coupling means and said local oscillation frequency from said local oscillator means for providing an intermediate frequency signal,
said tuned coupling means comprising
a first inductance coil coupled in series between said high frequency amplifier means and said mixer means,
a voltage controlled variable reactance device coupled to the input of said first inductance coil in a shunt fashion so as to be responsive to a tuning control voltage, whereby a reactance value formed thereacross is variable as a function of the tuning control voltage,
a second inductance coil coupled to the output of said first inductance coil in a shunt fashion,
a first capacitor coupled to the output of said first inductance coil in a shunt fashion,
switching means responsive to a band selection switching control signal for achieving a parallel tuning circuit including said voltage controlled variable reactance device and said first and second inductance coils in the low frequency band mode and for achieving a π-type tuning circuit including said voltage controlled variable reactance device, said first inductance coil and said first capacitor in the high frequency band mode, and
coupling means for coupling the output of said tuned coupling means to said mixer means, said very high frequency tuner further comprising
means for providing a tuning control voltage to said voltage controlled variable reactance device, and
means for providing a band selection switching control signal representing selection of high or low frequency band.

4,204,167
ELECTRONIC TIME PIECE AUTOMATIC CALIBRATING DEVICE

Yung-Ho Liu, 4th Fl., No. 6, La. 1, 10th St., Houkong, Shihlin, Taipei, Taiwan

Filed May 24, 1978, Ser. No. 909,281
Int. Cl.² H04B *1/16*; G04C *11/02*
U.S. Cl. 455—231 **5 Claims**



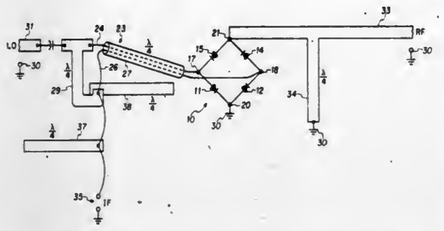
1. An electronic timepiece calibrating device comprising, in combination, a receiver for receiving a time signal from a broadcasting station, an electronic timepiece having resetting means for returning said timepiece to a zero setting, means controlled by said electronic timepiece for energizing said receiver, means connected to said receiver for converting the time signal from said receiver to a series of impulses, means for counting said series of impulses and for generating an output pulse when said series of impulses correspond in number to the frequency of said time signal and means for feeding said output pulse to said electronic timepiece to actuate said resetting means.

4,204,168

SIGNAL CONVERTER USING A QUAD DIODE RACE

Kenneth L. Brown, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 7, 1977, Ser. No. 840,210
Int. Cl.² H03C *1/58*
U.S. Cl. 455—330 **9 Claims**



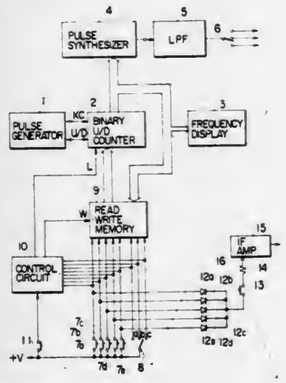
1. A mixer for mixing a radio frequency signal in the 500 to 5000 MHz region with a local oscillator signal to obtain an intermediate frequency signal, comprising:
a substrate,
a quad-diode race, carried on said substrate and having first and second pairs of input connection ports,
said first pair of connection ports having one port connected to ground and another port connected to receive the radio frequency signal, and
a balun connected to deliver the local oscillator frequency to said second pair of input connection ports
said connections to said first and second pairs of input connection ports being made on a single side of said substrate.

4,204,169

MUTING CIRCUIT IN AN ELECTRONIC TUNING TYPE RECEIVER

Reisuke Sato, and Tomohisa Yokogawa, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 8, 1978, Ser. No. 913,925
Claims priority, application Japan, Jun. 10, 1977, 52/68496
Int. Cl.² H04B *1/10*
U.S. Cl. 455—175 **5 Claims**



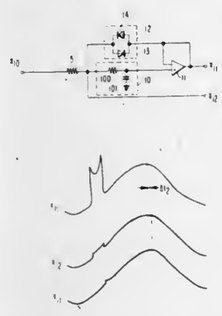
1. An electronic tuning type receiver of the type in which the output from a manually controlled up-down counter is used to control the tuning section of the receiver, and in which the contents of a read-write memory addressed by the actuation of band selection and channel selection switches may be loaded into said counter to thereby cause said tuning section to select a desired band and channel, said receiver further comprising:
a preset switch movable between a first position and a second position in which it provides at its output a preset signal;
a control circuit for detecting the actuation of at least one of said band selection and channel selection switches and providing a load signal in response to which the addressed contents of said memory are loaded into said counter and a write-signal in response to which the contents of the counter are loaded into the addressed memory, said control circuit providing said load and write signals when said preset switch is in said first and second positions, respectively;
muting means for muting the signal in said receiver in response to a muting signal;
coupling means for supplying a muting signal to said muting means in response to actuation of one of said channel selection switches; and
a muting control switch connected between said coupling means and said muting means for interrupting said muting signal when said preset switch is in said second position.

4,204,170

IMPULSE NOISE LIMITER CIRCUIT

Kouzou Kage, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1978, Ser. No. 867,410
Claims priority, application Japan, Jan. 7, 1977, 52-1042
Int. Cl.² H03K *1/10, 5/08*
U.S. Cl. 328—165 **2 Claims**



1. An impulse noise limiter circuit for removing impulse noise contained in a signal, comprising:
a delay circuit having an input and an output for delaying said signal;
a voltage follower circuit having an inverting input, a non-inverting input and an output, the output of said delay circuit being connected to said non-inverting input and the output of said voltage follower circuit being coupled to said inverting input; and
a pair of diodes connected in parallel and in opposite polarity to each other and connected between the input of said delay circuit and the output of said voltage follower circuit, whereby said voltage follower circuit provides isolation between the output of the delay circuit and said pair of diodes.

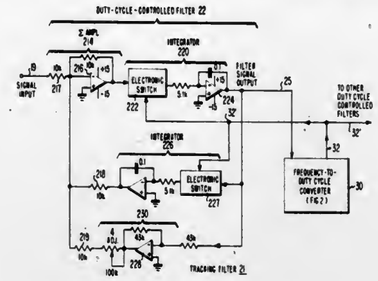
4,204,171

FILTER WHICH TRACKS CHANGING FREQUENCY OF INPUT SIGNAL

Eldon M. Sutphin, Jr., Merrimack, N.H., assignor to RCA Corporation, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,889
Int. Cl.² H03B *3/04*
U.S. Cl. 328—167 **6 Claims**

1. A tracking filter, comprising
a duty-cycle-controlled variable-frequency band-pass filter having a signal input terminal receptive to an electrical signal having many frequency components and having a signal output terminal for a selected frequency component which varies in frequency in direct proportion with engine speed, and having a frequency control input terminal,
a frequency-to-duty-cycle converter coupled to said output terminal and operative repeatedly to translate each period



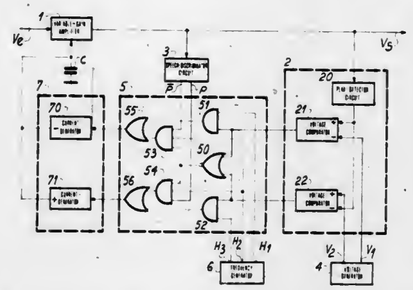
of said selected frequency component to a rectangular wave having a duty cycle proportional to the frequency of said selected frequency component, and
means to apply said rectangular wave to the control input terminal of said duty-cycle-controlled filter, whereby the filter tracks changes in the frequency of the selected frequency component passed by the filter.

4,204,172

AUTOMATIC GAIN CONTROL DEVICE FOR A SINGLE-SIDEBAND RECEIVER

Jean-Claude Ben Sadou, and Pierre Deman, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 20, 1978, Ser. No. 952,954
Claims priority, application France, Oct. 25, 1977, 77 32051
Int. Cl.² H03G *3/20*
U.S. Cl. 330—134 **5 Claims**



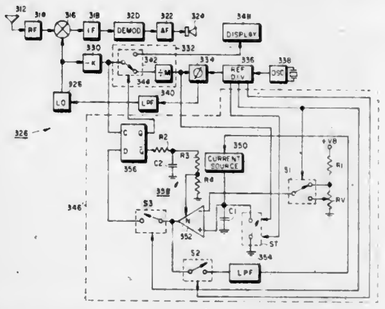
1. An automatic gain control device for a single-sideband receiver, comprising:
at least one variable-gain amplifier having an output for producing an output signal, a discriminator circuit for delivering one of a first or a second signal according to whether or not speech is present in a signal received by said receiver,
detecting means coupled to said amplifier for producing one of a third or a fourth signal according to whether the level of said output signal is above a value V_a, V_a being a predetermined value corresponding to a predetermined correct listening level of said receiver, or below a value V_b, V_b being a predetermined value corresponding to a hearing threshold level of said receiver, and
a control circuit, coupled to said discriminator circuit and to said detection means, said control circuit comprising controlling means for bringing the output level of said variable-gain amplifier to said value V_a with a first time constant value when said third signal is present, to said value V_a with a second time constant value when said third and fourth signals are absent and said first signal is present simultaneously, to said value V_b with a third time constant value when said third and fourth signals are absent and said second signal is present simultaneously, and to said value V_b with a fourth time constant value whenever said fourth signal is present.

4,204,173

TUNING CIRCUIT WITH PROVISIONS FOR REDUCING PULSE WIDTH JITTER

Felix Aschwanden, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,204
Claims priority, application United Kingdom, Aug. 22, 1977, 35167/77
Int. Cl.² H03B *3/04;* H03K *4/02, 4/08;* G01R *17/06*
U.S. Cl. 331—1 A **13 Claims**



1. Apparatus comprising:
first means for generating a first input signal having a ramp-like waveform;
second means for providing a second input signal;
comparison means for generating an output signal in response to said first and second input signals having a first level when the magnitude of said first input signal exceeds the magnitude of said second input signal and a second level when the magnitude of said second input signal exceeds the magnitude of said first input signal;
correction means for generating a correction signal representing the duration of one of said levels;
offset means for shifting one of said first and second input signals relative to the other in response to said correction signal to inhibit a change of said duration; and
utilization means for utilizing said output signal.

4,204,174

PHASE LOCKED LOOP VARIABLE FREQUENCY GENERATOR

Nigel J. R. King, Wokingham, England, assignor to Racal Communications Equipment Limited, England

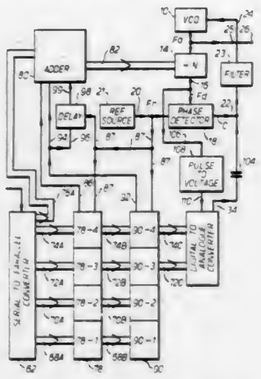
Filed Nov. 9, 1978, Ser. No. 959,240
Claims priority, application United Kingdom, Jul. 22, 1978, 30779/78
Int. Cl.² H03B *3/04*
U.S. Cl. 331—10 **8 Claims**

1. An electrical circuit arrangement for producing a variable frequency output, comprising:
a variable frequency source producing an output frequency;
an integrally adjustable frequency divider connected to receive the output frequency to produce a divided frequency;
a reference frequency source;
a phase comparator connected to compare the phase of the

divided frequency with the phase of the reference frequency whereby to produce an output whose sign and level depend on the phase difference;

means feeding the output of the phase comparator to the variable frequency source to control its output frequency in a sense tending to reduce the said phase difference to zero;

means for periodically varying the division factor of the divider whereby its average value is such that the output frequency has a desired value;



means operative within each period of variation of the division factor to cause repeated and temporary shifts in the phase of the divided frequency with respect to the reference frequency whereby to offset the effect on its output signal which the phase differences detected by the phase detector up to that shift would otherwise have; and

means for offsetting the residual variations of the output signal of the phase detector between the said shifts.

4,204,175

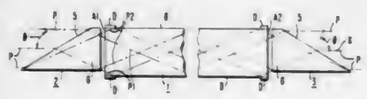
SLAB LASER ASSEMBLY

Gary D. Baldwin, Columbia, and Robert W. Rampolla, Ellicott City, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1978, Ser. No. 870,899

Int. Cl.[2] H01S 3/06

U.S. Cl. 331—94.5 D **6 Claims**



1. A laser assembly comprising, a rectangular parallelepiped laser slab having a pair of optically polished longitudinal internal reflection faces extending between flat right-angled opposite ends through the centers of which a longitudinal axis of symmetry of said slab passes,

said slab having input and output radiation beam paths aligned with said longitudinal axis of symmetry exteriorly of said slab at its opposite ends, respectively, and

Brewster angle coupling prism members disposed adjacent to said opposite ends, respectively,

one of said members being operative to transform said input radiation beam path into divided criss-crossing beam paths in presentation to one of said opposite ends and another said member being operative to reunite and transform internally-reflected criss-crossing beam paths arriving at the other of said opposite ends into said output radiation beam.

4,204,176

VARIABLE EQUALIZER

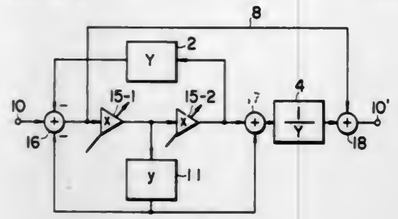
Yoshitaka Takasaki, Tokorozawa; Yasuhiro Kita, Hachioji; Junichi Nakagawa, Tokorozawa, and Kohei Ishizuka, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 3, 1978, Ser. No. 893,014

Claims priority, application Japan, Apr. 18, 1977, 52-43561

Int. Cl.[2] H03H 7/14

U.S. Cl. 333—28 R **5 Claims**



1. A variable equalizer comprising:

a forward pass circuit in which a variable amplifier having no frequency-dependency and a first circuit having an inverse characteristic to a reference frequency characteristic are arranged in the order mentioned between an input and an output of said variable equalizer,

a feed back pass circuit which feeds back part of an output of said variable amplifier to an input thereof and which has said reference frequency characteristic, and

a feed forward pass circuit which adds part of said input of said variable amplifier to an output of said first circuit and which has no frequency-dependency.

4,204,177

NON-RECURSIVE DIGITAL FILTER WITH REDUCED OUTPUT SAMPLING FREQUENCY

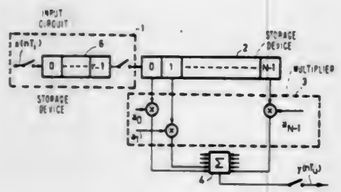
Ludwig D. J. Eggermont, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 631,384, Nov. 12, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,549

Claims priority, application Netherlands, Dec. 18, 1974, 7416479

Int. Cl.[2] H03H 7/28; H03K 5/156; G11C 19/00, 21/00

U.S. Cl. 333—166 **10 Claims**



1. A non-recursive digital filter for generating digital-coded output samples which occur at a given output sampling frequency (f_u) and which are related in a predetermined way to a sequence of digital-coded input samples occurring at an input sampling frequency (f_i), the input sampling frequency being a multiple (r) of the output sampling frequency comprising:

a first storage device arranged to store a given number of successive input samples;

an input circuit for supplying successive input samples to said first storage device;

a multiplier;

means for supplying said input samples stored in said first storage device to said multiplier;

means for supplying weight factors which correspond to the relationship between the input and output samples to said multiplier;

said multiplier forming sequentially a product of each of said N input samples and its corresponding weight factor;

an adder coupled to said multiplier and arranged to supply within one output sampling period ($1/f_u$), an output sample which is given by the mathematical sum of the products formed within that period;

said input circuit further comprising:

a second storage device arranged to store a group of input samples formed by a given number of successive input samples; and

means for writing said group of input samples into said first storage device synchronously with the occurrence of the output samples, the rapid writing of said group of input samples into said first storage device being made possible by first writing the input samples of which the said group consists sequentially into said second storage device.

4,204,178

ACOUSTIC WAVE DEVICES

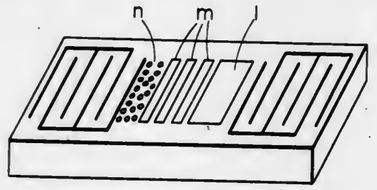
Richard F. Mitchell, Merstham, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,116

Claims priority, application United Kingdom, Apr. 7, 1977, 14806/77; Feb. 20, 1978, 14806/78

Int. Cl.[2] H03H 9/02, 9/26, 9/32

U.S. Cl. 333—194 **8 Claims**



1. An acoustic wave device comprising a substrate structurally orientated to enhance the propagation of acoustic surface skimming bulk waves in the substrate adjacent a predetermined surface of the substrate, said substrate having a pair of opposing end faces arranged to multiply reflect said waves propagating adjacent said surface so as to form a resonant cavity capable of supporting an acoustic surface skimming bulk standing wave at a predetermined frequency, a transducer disposed on said surface and within said cavity for coupling with acoustic surface skimming bulk standing wave energy at said frequency, and velocity reducing means provided at said surface in said cavity in addition to said transducer to reduce the velocity of said acoustic surface skimming bulk waves thereby enhancing the propagation of said waves, said velocity reducing means and said transducer extending over substantially the whole distance between said pair of end faces.

4,204,179

MECHANISM FOR CHANGING INDUCTANCE OF A PUSH-BUTTON TUNER

Takeshi Kataoka; Hiroshi Matsumoto, and Hisashi Matsui, all of Ueda, Japan, assignors to Ono Seiko Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1978, Ser. No. 953,969

Claims priority, application Japan, Oct. 29, 1977, 52-129854

Int. Cl.[2] H03J 5/06, 5/08, 5/32

U.S. Cl. 334—7 **3 Claims**

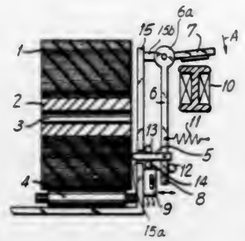
1. A mechanism for changing inductance of a tuner comprising: a push-button assembly having a push-button plate provided with a push-button at one end and a coil spring received thereon at the other end thereof, which is arranged horizontally and slidably through rectangular holes disposed in the front and the rear walls positioned in parallel on a base respectively, and on which a channeling plate provided with a pair of projections is pivotably positioned, said channeling plate being retainable at a desired position by means of a retaining plate supported by a vertical wall positioned on the push-button plate, under which a sliding metal plate having a convexed cam thereon is arranged slidably in lengthwise direction of the push-button; a pair of sliding cam plates arranged horizontally and slidably through rectangular holes disposed in a pair of side walls arranged on the base at right angles to said front and rear walls, said sliding cam plates being provided with cam portions with which the projections for the channeling plate are collidable intermittently when the push-button plate is advanced by the depression of the push-button hereby to permit the sliding cam plate to be shifted conversely through a rotation means; a rotation means formed in a letter T having a pair of depending studs engageable with slits arranged in the portions of the sliding cam plates protruding through holes arranged in one of the vertical walls and another depending stud also engageable with a hole for a core carriage foot; a rotation shaft provided with a pointed end and an annular ring formed integrally therewith being connected with the rotation means by the insertion of said pointed end through a hole positioned in the center between said pair of depending studs with the under surface of said annular ring touching with the surface of the rotation means; a core carriage comprising a vertical wall having holes for horizontal guide shaft, a foot provided with a hole at its end with which one of the depending studs of the rotation means being engageable and a plurality of cores horizontally mounted thereon, said core carriage being so arranged slidable back and forth corresponding to the sliding movement of the sliding cam plates through the rotation means and the rotation shaft connected with each other as to allow the cores to be shiftable with respect to coil bodies arranged at the back of the core carriage with the resultant changing of inductance of the tuner; a clutch sliding plate provided with cam portions at front portion thereof being arranged horizontally and slidably through the side walls so that the end portion thereof may slide along the under surface of an end cam portion of an L-shaped lever plate mounted on a bracket, against the biasing force of coil spring positioned on the clutch sliding plate hereby to lift up or tilt the lever plate away from the base when a depending foot of the push-button plate engages with a cam portion of the clutch sliding plate by the forward advancement of the push-button, with the resultant declutching of a clutch mechanism; and a manual tuning shaft mounted on a hanger plate the rotation of which is transmitted, through two meshing gears disposed at the end of manual shaft and worm gear shaft, respectively, to a worm gear shaft which is in meshing engagement with a gear or a gear wheel constituting a part of the clutch mechanism, the gear wheel being arranged rotatable simultaneously with the rotation means by means of the manual tuning shaft, whenever the clutch mechanism is closed, through other members of the clutch mechanism, hereby to permit the sliding cam plates to be shifted conversely.

4,204,180

END OF PAPER ROLL DETECTION ASSEMBLY

Kiyofumi Usui; Chihiro Otsuki, and Sadaharu Inukai, all of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 24, 1978, Ser. No. 889,673
Claims priority, application Japan, Mar. 24, 1977, 52-35786
Int. Cl.² H01H 9/00; G08B 21/00; B65H 25/00
U.S. Cl. 335—205 **13 Claims**



1. An end of a paper roll detecting assembly for detecting a predetermined amount of paper remaining on a paper roll having a hollow core comprising:

a frame;

paper roll support means for holding said paper roll;

displacing means adapted to be displaced between a first position away from said paper roll and a second position towards said paper roll when the predetermined amount of paper remains on said paper roll;

detecting means mounted on said displacing means including bar means insertable into the hollow core of said paper roll for detecting the predetermined amount of paper remaining on said paper roll; and

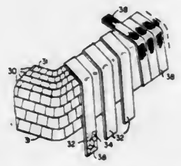
switch means actuated by displacement of said displacing means to said second position.

4,204,181

ELECTRICAL COIL, INSULATED BY CURED RESINOUS INSULATION

James D. B. Smith, Wilkins Township, Allegheny County, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 680,633, Apr. 27, 1976, Pat. No. 4,137,275.
This application Oct. 30, 1978, Ser. No. 956,125
Int. Cl.² H01F 27/32
U.S. Cl. 336—96 **7 Claims**



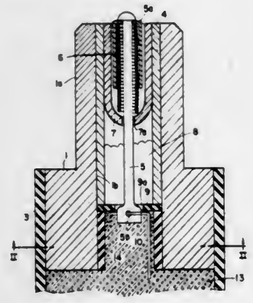
1. An insulated electrical coil having a cured body of resinous insulation applied to the coil, the insulation comprising a cured resinous composition consisting essentially of (1) 100 parts by weight of an epoxy resin mixture consisting essentially of: a first epoxy resin consisting of a diglycidyl ether of an aliphatic diol and a second epoxy resin selected from the group consisting of bisphenol A epoxy resins, bisphenol F epoxy resins, novolac epoxy resins, glycidyl ester epoxy resins, hydantoin epoxy resins, cycloaliphatic epoxy resins and mixtures thereof, (2) about 25 parts to 200 parts by weight of an organic carboxylic acid anhydride and (3) 0.002 part to 1.00 part of a metal acetylacetonate selected from the group consisting of chromium (III) acetylacetonate, titanyl acetylacetonate, aluminum (III) acetylacetonate, manganese (III) acetylacetonate, cobalt (II) acetylacetonate, cobalt (III) acetylacetonate, nickel (II) acetylacetonate, vanadium (III) acetylacetonate, zirconium (IV) acetylacetonate, sodium (I) acetylacetonate, potassium (I) acetylacetonate and mixtures thereof, acting as a latent catalyst.

4,204,182

INDICATING OR STRIKER PIN FOR ELECTRIC FUSES

Edward J. Knapp, Jr., Merrimac, Mass., assignor to Gould Inc., Ill.

Filed May 1, 1978, Ser. No. 901,471
Int. Cl.² H01H 85/30
U.S. Cl. 337—244 **5 Claims**



1. A solderless indicating and striker pin device to be shunted across electric fuses comprising

(a) a first fuse terminal (1);

(b) electroconductive pin means (5) conductively connected to said first fuse terminal (1) and spring (6) biased in a direction longitudinally thereof;

(c) a partition (9) of electric insulating material extending transversely to said pin means (5) and defining a passageway for the passage of said pin means (5) from a first space to one side to a second space to the other side of said partition (9);

(d) a second fuse terminal (2) arranged in spaced relation from said first fuse terminal (1);

(e) a fusible element (10) conductively connected with one end thereof to said second terminal (2) and engaging with the other and thereof said pin means (5) on said other side of said partition (9); and

(f) the point of engagement of said fusible element (10) and said pin means (5) being the point of highest resistance of the current path extending between said first terminal (1) and said second terminal (2) so that a break of said fusible element (10) will be initiated at said point by the highest generation of heat at said point.

4,204,183

TAPERED STRAP ELEMENT FOR AN ELECTRICAL FUSE

Donald D. Blewitt, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

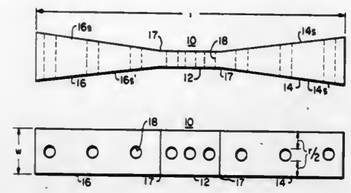
Continuation of Ser. No. 667,792, Mar. 17, 1976, abandoned.
This application May 9, 1978, Ser. No. 904,349
Int. Cl.² H01H 85/08
U.S. Cl. 337—295 **14 Claims**

1. A current limiting fuse, comprising:

(a) fuse housing means;

(b) fuse terminal means disposed at either end of said housing means; and

(c) fuse element means, interconnected with said terminal means for interrupting electric current, said fuse element means having outer surfaces which are substantially flat, the length of said fuse element means being significantly larger than the width thereof, the depth of said fuse element means being tapered along a significant portion of the length thereof, said width of said fuse element means being significantly larger at its smallest point than said depth is at its largest point.

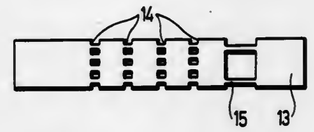


4,204,184

FUSE-ELEMENT FOR ELECTRIC FUSES

Tibor Csizy; Arpad Karpat; Janos Melis, and Zoltan Szemerey, all of Budapest, Hungary, assignors to Villamos Berendezés és Készülék Müvek, Budapest, Hungary

Continuation of Ser. No. 687,542, May 18, 1976, abandoned.
This application Apr. 10, 1978, Ser. No. 894,837
Claims priority, application Hungary, May 19, 1975, VI 1044
Int. Cl.² H01H 85/10
U.S. Cl. 337—295 **12 Claims**



1. A fuse element of an electric fuse for protecting a circuit comprising in combination:

a first portion having at least a first zone of reduced cross-section and predetermined length for being blown in response to a severe overload of relatively short duration, and

a second portion connected in series with said first portion and having a second zone of reduced cross-section and predetermined length for being blown in response to a moderate overload of relatively long duration, each of said portions being composed of a predetermined and substantially identical metal, the cross-section of said second zone being smaller, and its length longer than the corresponding cross-section and length of said first zone, respectively, whereby the protected circuit will be disconnected from a power supply through said first and second portions in response to said relatively short and severe, and said relatively long, and moderate overloads, respectively.

4,204,185

INTEGRAL TRANSDUCER ASSEMBLIES EMPLOYING THIN HOMOGENEOUS DIAPHRAGMS

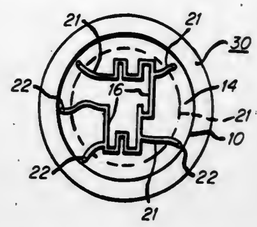
Anthony D. Kurtz, Englewood, and Richard A. Weber, Denville, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Oct. 13, 1977, Ser. No. 841,679
Int. Cl.² G01L 1/22
U.S. Cl. 338—4 **6 Claims**

1. A transducer, comprising:

(a) an annular base member fabricated from a semiconductor material of a given conductivity, said annular member having a central aperture defining an active area; which aperture is characterized as being formed by a chemical capable of selectively etching said given conductivity semiconductor,

(b) a composite layer covering said aperture and comprising a first cover layer immediately above said aperture and fabricated from a highly doped conductivity layer, a second thicker layer located on said first layer and fabricated from a semiconductor material, and



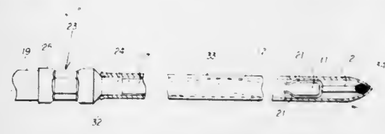
(c) at least one piezoresistive sensor element deposited on said second layer and within the area overlying said aperture whereby upon deflection of said composite layer, said element exhibits a resistance according to the magnitude of said deflection.

4,204,186

TEMPERATURE PROBE

Michael S. Parisi, and John A. Pauly, both of Milford, Mass., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Aug. 16, 1978, Ser. No. 934,031
Int. Cl.² H01C 7/02, 7/04
U.S. Cl. 338—30 **9 Claims**



1. A temperature probe assembly comprising:

an elongated electrically conductive unitary housing defining a housing cavity and having a closed end and an open end;

a thermistor positioned within said housing cavity adjacent to said closed end and having first and second leads, said first lead being electrically connected to the interior surface of said closed end;

a resilient coaxial cable having an inner conductor connected to said second lead of said thermistor and an outer conductor insulated from said inner conductor and connected to said electrically conductive housing, said coaxial cable extending into said open end of said housing and being of greater length than said housing so as to be compressed into said housing cavity and longitudinally deformed thereby, said deformed cable exerting a force on said thermistor that maintains said first lead against said closed end; and

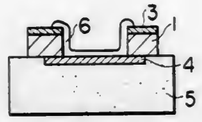
a coupling means securing said housing to said coaxial cable so as to prevent relative longitudinal movement therebetween.

4,204,187

PRINTED CIRCUIT SUBSTRATE WITH RESISTANCE ELEMENTS

Takeshi Kakuhashi, and Yasufumi Miyake, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Mar. 7, 1978, Ser. No. 884,298
Claims priority, application Japan, Nov. 14, 1977, 52-137155
Int. Cl.[2] H01C *1/012*
U.S. Cl. 338—307 7 Claims



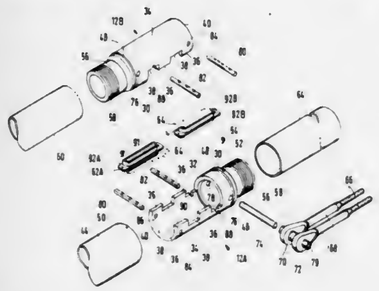
1. A printed substrate incorporating resistive elements comprising in combination:
(a) an insulating support;
(b) a layer of resistive material of predetermined dimensions embedded in said insulating support and having an outer surface flush with an outer surface of said insulating support;
(c) first and second regions of highly conductive material positioned in contact with spaced-apart portions of said layer of resistive material, said first and second regions of highly conductive material being positioned upon at least portions of said outer surface of said resistive layer; and
(d) first and second conductor pattern film layers formed on said first and second regions of highly conductive material respectively at a position opposite said layer of resistive material.

4,204,188

CABLE FOR SEA SEISMIC EXPLORATION

Helmut Welchart, Hanover, and Jürgen Schmidt, Husum, both of Fed. Rep. of Germany, assignors to Prakla-Seismos GmbH, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,220
Claims priority, application Fed. Rep. of Germany, May 4, 1977, 2719951
Int. Cl.[2] G01V *1/00*; H04B *13/00*
U.S. Cl. 367-154 27 Claims



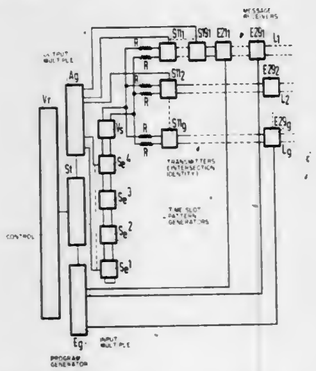
1. A measuring cable for use in making seismic measurements in an ocean-like environment, the cable having a plurality of hose sections each comprising a hose jacket, a material within the hose jacket tending to contribute to the buoyancy thereof, internal means for supporting the shape of the hose jacket, a plurality of measuring elements within the hose jacket, electrical conductors for interconnecting the elements, and coupling means for interchangeably interconnecting the hose sections, each of said coupling means comprising
two substantially identical matable coupler halves each including
a sleeve portion connectable to one end of a hose jacket,
a tubular, substantially cylindrical portion fixedly attached to one end of said sleeve portion and having an axial opening, and
a semi-tubular coupling member extending from said cylindrical portion away from said sleeve portion, said coupling member being curviform in cross section and occupying substantially 180° of arc,
said coupling member being shaped to mate with the substantially identical portion on an adjacent hose section so that the joined coupling members define a hollow, substantially cylindrical, closed volume,
each of said coupling members having longitudinally extending edges with a plurality of alternating protrusions and recesses, said protrusions and recesses being rectangular in shape and overlapping a plane passing through the central axis of the joined halves and the mean connection lines between the joined halves;
a generally cylindrical tubular coupling jacket surrounding and tightly fitting over the joined coupling members;
connector means within the volume defined by said coupling means for interconnecting electrical conductors extending from within the hose sections to said coupling means;
at least one load cable extending longitudinally through each of said hose sections, such said load cable having end fittings attached to the coupler halves at opposite ends of the hose section;
each of said hose sections being provided with a coupler half at opposite ends thereof, said semi-tubular coupler members being open in substantially opposite radial directions.

4,204,189

SYSTEM FOR LONG DISTANCE TRANSMISSION OF SIGNALS IN BOTH DIRECTIONS

Reinhard Weyer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 599,488, Jul. 28, 1975, abandoned, which is a continuation of Ser. No. 395,052, Sep. 7, 1973, abandoned, which is a continuation of Ser. No. 213,019, Sep. 28, 1972, abandoned. This application May 1, 1978, Ser. No. 901,829
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1972, 2244173
Int. Cl.[2] G08G *1/07*
U.S. Cl. 340—40 3 Claims



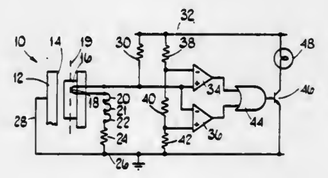
1. A circuit arrangement for the transmission of signals in both directions for controlling traffic lights at a plurality of intersection installations on a time multiplex basis, said circuit arrangement comprising:
a central station and a plurality of individual stations remote from said central station for connection to and controlling the traffic lights of a plurality of traffic light intersection installations;
a plurality of transmission lines each having one end connected to said central station and another end connected to a respective individual station;
a plurality of first transmitters in said central station for each transmission line and operable in respective frequencies to transmit intersection installation identification signals;
a time slot generator in said central station connected to all of said transmission lines and operable to produce time slot pattern signals as traffic light control signals;
first receiving means in each of said individual stations connected to the respective transmission line and operable at the frequencies of said first transmitters for receiving the installation identification signals;
second receiving means in each of said individual stations connected to the respective transmission line for receiving the time slot pattern traffic light control signals;
traffic light control means connected to said first and second receiving means and adapted for connection to the traffic light installations for controlling the traffic lights in accordance with the signals received by said first and second receiving means;
means connected to said first and second receiving means for checking the orderly receipt of the traffic control signals;
a second transmitter in each of said individual stations connected to said checking means and to the respective transmission line for sending traffic signal messages indicating the received signals back to said central station; and
third receiving means in said central station connected to the respective transmission lines for receiving said messages,
said traffic light control means comprising a plurality of switches connected to and operated in response to the signals received by said first and second receiving means, said switches including connections for operating the traffic lights.

4,204,190

BRAKE PAD WEAR DETECTION SYSTEM

David Wiley, Brownhills, and David G. Williams, Birmingham, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Dec. 5, 1978, Ser. No. 966,724
Claims priority, application United Kingdom, Dec. 7, 1977, 51237/77
Int. Cl.[2] B60T *17/22*
U.S. Cl. 340—52 A 5 Claims



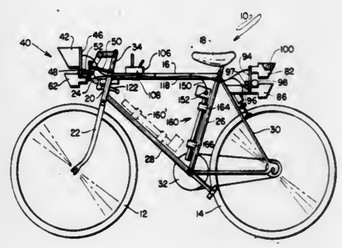
1. A brake pad wear detection system comprising a brake having a brake pad and a conductive braking face, the brake pad and the conductive braking face engaging during braking, a voltage supply line, an earth line, a first impedance means one end of which is connected to the voltage supply line, a second impedance means one end of which is connected to the earth line, a sensor loop connected in series between the first and second impedance means and embedded in the brake pad and positioned so as to be broken when the wear to the pad exceeds the working limit, indicator means and means connected to the common point of the first impedance means and the sensor loop for detecting if the potential at said common point is between first and second predetermined voltages, the detecting means operating the indicator means upon contact between the braking face and the sensor loop and also upon breakage of the sensor loop.

4,204,191

LIGHTING SYSTEM FOR BICYCLES

Travis J. Daniels, 1838 Dysart Ave., Columbus, Ohio 43219

Filed Apr. 7, 1977, Ser. No. 785,343
Int. Cl.[2] B62J *5/00*
U.S. Cl. 340—134 12 Claims



1. A lighting system for bicycles having a frame with forwardly and rearwardly disposed portions, including handlebars for guidance, actuable brake means and a seat for providing operator support comprising:
a forward lighting assembly mounted at said forwardly disposed portion and including a headlamp retaining housing, a forward right turn indicator lamp retaining housing and a forward left turn indicator lamp retaining housing, each said forward right and left turn indicator lamp retaining housings being comfigured having an outwardly forwardly disposed lenticulated lens formed of a plurality of discrete lenticules formed as corner cubes which are arranged to protrude outwardly from each said indicator lamp, said assembly being mountable for turning movement with said handlebars;
a rearward lighting assembly mountable in stationary fashion rearwardly of said seat and including a stoplight retaining housing, a rearward right turn indicator lamp retaining housing and a rearward left turn indicator lamp and stoplight retaining housings being configured having an outwardly rearwardly disposed lenticulated lens formed of a plurality of discrete lenticules formed as corner cubes each of which is arranged to protrude outwardly from each said housing;
a battery power supply;
manually actuable switch means including first switch means actuable for energizing said headlamp from said power supply, second switch means manually actuable to a first position to effect the energization of said forward and rearward lighting assembly right turn indicator lamps, and manually actuable to a second position to effect the energization of said forward and rearward lighting assembly left turn indicator lamps, and third switch means manually

actuable to effect the dual energization of both said right and left turn indicator lamps of said forward and rearward lighting assembly, said manually actuable switch means being mounted within a switch housing fixedly mountable upon said frame in the vicinity of said handlebars for providing manual access thereto by said operator;

an illumination network including an oscillator circuit responsive to said actuation of said second switch means into said first and second positions and to said actuation of said third switch means to effect said respective right turn indicator lamps, said left turn indicator lamps and said both right and left turn indicator lamps energization in oscillatory fashion from said battery power supply;

housing means for retaining said battery power supply and illumination network, removably mountable upon said frame and including electrical connector means accessible externally of said housing means and electrically connected with said illumination network and said battery power supply; and

a wiring harness mounted with said frame and effecting electrical communication between said forward lighting assembly, said rearward lighting assembly, said manually actuable switch means within said switch housing, said batter power supply and said illumination network and including a connector manually removably connectable with said housing means electrical connector means.

4,204,192
Patent Not Issued For This Number

4,204,193
ADAPTIVE ALIGNMENT FOR PATTERN RECOGNITION SYSTEM
Eugene N. Schroeder, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 3, 1978, Ser. No. 957,634
Int. Cl.² G06K 9/04
U.S. Cl. 340—146.3 H **9 Claims**

1. In a pattern recognition system including means for scanning a space to define discrete elemental areas for recognition of individual patterns, said system including means for associating said areas with respective signal levels corresponding to a measured characteristic, the improvement characterized by:

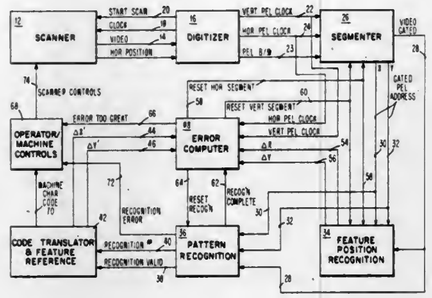
means for identifying a pattern among a predefined set of recognizable patterns, said identifying means including means for storing pattern identity information for respective members of said set of recognizable patterns based on a predefined alignment in the scanning space and means for comparing the identity information with said signal levels to identify a recognizable pattern from said set thereof;

means for measuring the coordinates of one or more selected alignment features based on said signal levels for the respective areas;

means for storing ideal feature alignment coordinates for each recognizable pattern;

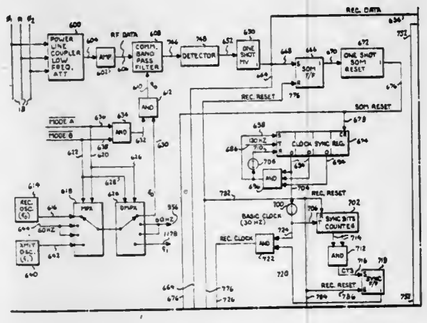
means for computing the differences between the measured feature coordinates and the ideal feature coordinates for a recognizable pattern that has been identified by said identifying means; and

means for adjusting the coordinates of a subsequent space for scanning in accordance with said coordinate differences to



enhance the pattern alignment capabilities of the pattern recognition system.

4,204,194
METER TERMINAL UNIT FOR USE IN AUTOMATIC REMOTE METER READING AND CONTROL SYSTEM
Anthony P. Bogacki, Chester, N.H., assignor to General Electric Company, Somersworth, N.H.
Division of Ser. No. 799,550, May 23, 1977, Pat. No. 4,161,720.
This application Apr. 24, 1978, Ser. No. 899,873
Int. Cl.² H04M 11/04
U.S. Cl. 340—147 SY **4 Claims**



1. Apparatus for synchronizing a serial stream of data signals with a clock signal comprising;

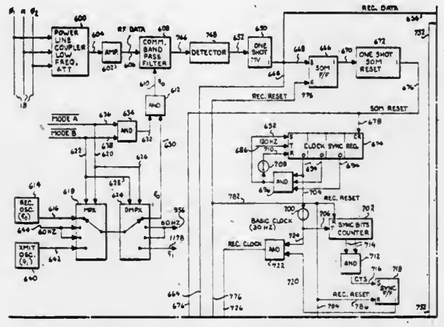
(a) a source of alternating current

(b) data signal generating means electrically energizable by said alternating current for directly generating a serial stream of data signals having states representative of binary data wherein the data signals are generated asynchronously of the alternating current;

(c) clock signal generating means including synchronization means electrically responsive to said alternating current and said data signals to provide a repetitively occurring clock signal which is synchronized with said data signals; and

(d) means for combining said clock signal and said data signals whereby said data signals are provided as binary data synchronized by said clock signal.

4,204,195
METER TERMINAL UNIT FOR USE IN AUTOMATIC REMOTE METER READING AND CONTROL SYSTEM
Anthony P. Bogacki, Chester, N.H., assignor to General Electric Company, Somersworth, N.H.
Division of Ser. No. 799,550, May 23, 1977, Pat. No. 4,161,720.
This application Apr. 24, 1978, Ser. No. 899,728
Int. Cl.² H04Q 11/00; H04M 11/04
U.S. Cl. 340—151 **3 Claims**



1. In a meter terminal unit of the type for use in an automatic meter reading system, the combination comprising:

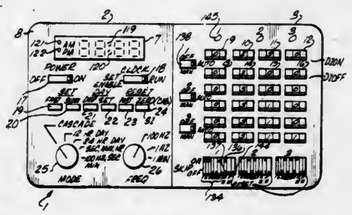
(a) a source of alternating current,

(b) a meter including a readable encoder electrically energizable by said alternating current for directly generating a serial stream of data signals having binary states representative of a meter measurement wherein the data signals are generated asynchronously of the alternating current;

(c) clock signal generating means including synchronization means electrically responsive to said alternating current and said data signals from said encoder to provide a repetitively occurring clock signal which is synchronized with said data signals; and,

(d) means for combining said clock signal and said data signals whereby said data signals are provided as identifiable measurement data synchronized by said clock signal.

4,204,196
MODULAR ELECTRONIC TIMER
Michael P. Sveda, 25 Fallen Oaks Dr., Thousand Oaks, Calif. 91360
Filed Nov. 17, 1978, Ser. No. 961,492
Int. Cl.² H01H 43/00
U.S. Cl. 340—309.4 **10 Claims**



1. A modular electronic timer comprising:

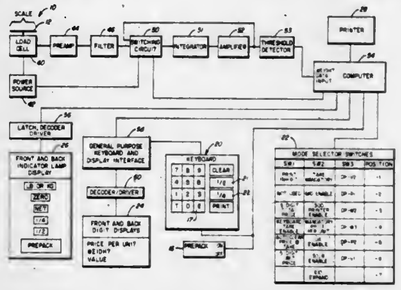
a common bus;

circuit means for generating and applying to the common bus a plurality of parallel pulse signals that in combination define a timing interval divided into a sequence of time slots;

a plurality of independently operable decoders connected to the common bus so that all the decoders continuously monitor the parallel pulse signals; and

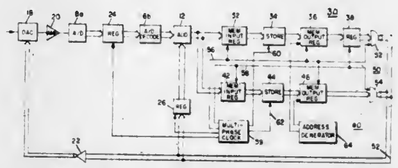
each of the independently operable decoders including gating means operable to produce an output command signal, and manually adjustable means for completing a plurality of signal flow paths from the common bus to the gating means to cause the gating means to produce the output command signal during a selected one of the time slots.

4,204,197
DIGITAL SCALE
Richard C. Loshbough, and Edward G. Pryor, both of Westerville, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio
Filed Aug. 15, 1977, Ser. No. 824,858
Int. Cl.² H03K 13/20; G01G 19/413
U.S. Cl. 340—347 NT **17 Claims**



1. In a digital scale an analog to digital converter means comprising in combination an integrator means having an input and an output, means for applying an analog input signal to the integrator input to drive the integrator output from a datum level to a level dependent upon the magnitude of the analog input signal, switch means for applying a reference signal to the integrator input, program controlled means interconnected with the integrator output and with the switch means, the program controlled means having a counting and timing program loop of instructions of fixed duration for counting the excursions around the loop during the time required for the reference signal to drive the integrator output back to a predetermined level near the datum level.

4,204,198
RADAR ANALOG TO DIGITAL CONVERTER
Andree N. Filipov, Silver Spring; Richard N. Johnson, Gaithersburg, and Christopher N. Winslow, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 20, 1977, Ser. No. 862,319
Int. Cl.² H03K 13/02
U.S. Cl. 340—347 AD **2 Claims**



1. Apparatus for conversion of a present analog radar signal to a K-bit digital form, comprising:

(a) first means receiving said analog radar signal for generating a signal repesenting a change from a previous point in time in said analog radar signal,

(b) said first means having digital-to-analog conversion means therein,

(c) second means connected to said first means and receiving the signal generated thereby for converting said signal generated by said first means to an N-bit digital signal

representing said change in said analog radar signal where N is less than K,

(d) adder means receiving a K-bit digital signal representing a previous point in time and said N-bit digital signal for adding said N-bit digital signal to said K-bit digital signal and for providing an updated K-bit digital output signal representative of said current analog radar signal,

(e) register means connected to provide an input to said adder means,

(f) storage means having an input and an output for storing a plurality of radar signals and being updated by said adder providing N-bit corrections to the data stored therein,

said storage means comprising first and second storage devices for alternately receiving data from said adder means and for alternately providing storage data to said digital-to-analog converter and to said register means,

(g) said adder means having:

a first input connected to said second means, a second input connected to an output of said register means, and an output connected to said storage means input.

4,204,199

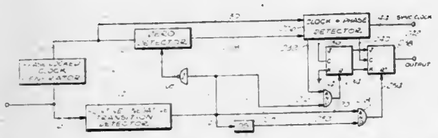
METHOD AND MEANS FOR ENCODING AND DECODING DIGITAL DATA

Jordan Isailovic, Torrance, Calif., assignor to MCA Disco-Vision, Inc., Los Angeles, Calif.

Division of Ser. No. 848,550, Nov. 4, 1977. This application Jul. 21, 1978, Ser. No. 927,256

Int. Cl.² G06F *3/00*

U.S. Cl. 340—347 DD **7 Claims**



1. An apparatus for decoding digital data present in a succession of data cell times, comprising:

a digital data source for supplying an encoded digital data signal changing between first and second levels spaced at variable length intervals, said transitions only occurring at the start of data cell time and at mid data cell time and no transitions occurring a one quarter data cell time and three quarter data cell time;

means for generating a clock signal having a repetition rate of twice the data cell time, said clock signal having a same predetermined direction of transition at both the start of data cell time and at mid data cell time;

clock and phase generating means responsive to said clock signal generating means for generating a plurality of separate phase timing signals, each of said phase timing signals being a series of pulses having a duration less than a data cell time and having a predetermined direction of transition and having a phase displacement between corresponding pulses in the same data cell time in each of said other separate phase timing signals;

first detection means responsive to said encoded digital data signal for generating a first train of pulses, each pulse in said first train identifies each transition in said encoded digital data signal;

second detection means responsive to said clock signal generating means and to said first detection means for generating a second train of pulses, each pulse in said second train identifies the end of data cell time of one of said encoded digital data signals having a duration of at least two consecutive data cell times having the same predetermined signal level;

first decoding means responsive to said clock and phase generating means and to the output of said first detection means for generating a first level decode signal containing transitions indicative of transitions in the encoded digital data signal which occur at mid data cell time;

second decoding means responsive to said clock and phase generating means and to the output of said first detection means and to the output of said first decoding means for altering said first level decoded signal to contain additional non-redundant transitions indicative of the second transition in pairs of transitions generated by said first detection means, which pairs of transitions are separated by a single data cell time; and

said second train of pulses from said second detection means being applied to said clock and phase generating means for synchronizing the outputs of said clock and phase generating means with said encoded digital data signal.

4,204,200

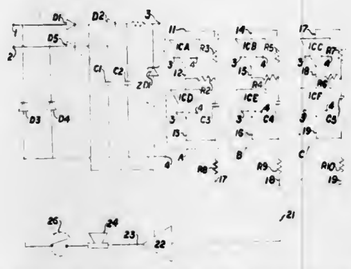
ELECTRONIC HORN ARRANGEMENT

Earl L. Beyl, Jr., Louisville, Ky., assignor to Traintronics, Inc., Goshen, Ky.

Filed Oct. 11, 1978, Ser. No. 950,275

Int. Cl.² G08B *3/00*

U.S. Cl. 340—384 E **4 Claims**



1. The invention claimed is a broad spectrum frequency varying horn arrangement which includes direct current power supply means, at least two wave signal generating oscillating circuit means adapted to provide square wave pulsed voltage output of selected amplitude and different fixed frequency, mixing means to additively mix the instantaneous output signals of each signal generating ocillator means to provide a stepwise varying output signal and amplifier means to receive the mixed signals of the oscillator circuit means, amplify said signal and transmit said signal to an audible sound generator means.

4,204,201

MODULAR ALARM SYSTEM

Stewart J. Williams, Orinda, and Shailer T. Pickton, Lafayette, both of Calif., assignors to Systron Donner Corporation, Concord, Calif.

Filed Dec. 19, 1978, Ser. No. 970,922

Int. Cl.² G08B *19/00*

U.S. Cl. 340—521 **14 Claims**

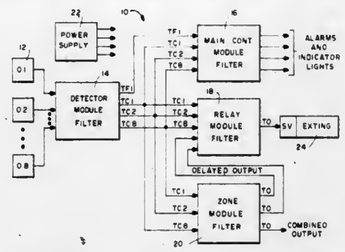
1. A modulized alarm system, comprising:

(a) a plurality of sensing devices, each of which includes means for distinguishing between the presence or absence of a particular condition;

(b) a detector module connected at its input to said sensing devices and having means including logic circuitry for producing an equal plurality of identical logit output signals indicative of and in response to the presence of said condition at said sensing devices, respectively, and filter means for preventing signals of predetermined maximum duration at its input from reaching its logic circuitry;

(c) a plurality of modules different from one another and from said detector module, each of said different modules being adapted for interconnection at its input with said detector modules and the other different modules by logic

output signals identical in kind to said logic output signals, each of said different modules having means including logic circuitry responsive to a logic output signal at its input for performing at least one particular function distinct from the other different modules and filter means for preventing signals of predetermined maximum duration at its input from reaching its logic circuitry; and



(d) means for powering said sensing devices and said modules including individual power regulating means associated with and connected to each of said modules for regulating power from said powering means to the logic circuitry of said associated module.

4,204,202

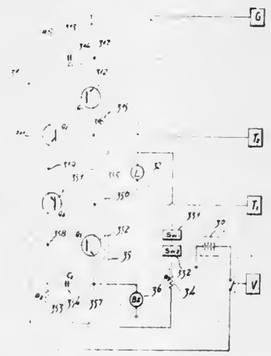
SECURITY ATTACHE CASE WITH AUTOMATIC ALARM SYSTEM

George C. Pai, No. 23, Lane 76, An-Ho Rd., Taipei, Taiwan

Filed Jul. 13, 1978, Ser. No. 924,444

Int. Cl.² G08B *13/14*

U.S. Cl. 340—571 **4 Claims**



1. An attache case comprising:

a case body;

a handle for carrying the case, said handle being connected to said case body through pairs of metal studs;

a lock;

an inside container fixed to the bottom of the case body;

an alarm; and

alarm circuitry for generating alarm signals, said alarm circuitry including:

a setting circuit which consists of a first silicon controlled switch formed by a PNP and an NPN transistor, and an operating circuit which consists of a second silicon controlled switch formed by a PNP and an NPN transistor; said first and second silicon controlled switches having a common anode which is connected to a power supply through a switch and the cathodes of each silicon controlled switch being bypassed to ground through a resistor and a capacitor, the cathode gate of the first silicon controlled switch being used as a setting trigger point, and the cathode gate of said second silicon controlled switch being used as an operation trigger point, said alarm being connected between the cathode of said second silicon controlled switch and ground;

means for providing setting signals to said setting trigger point;

and means for providing alarm signals to said operation trigger point.

4,204,203

LEVEL INDICATOR

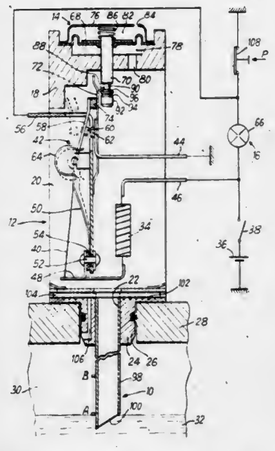
Michel Verne, Aubervilliers, France, assignor to Societe Anonyme DBA, Paris, France

Filed Jul. 21, 1978, Ser. No. 927,265

Claims priority, application France, Jul. 26, 1977, 77 22955

Int. Cl.² G08B *21/00*

U.S. Cl. 340—620 **11 Claims**



1. A level indicator for a liquid contained in a reservoir, comprising a tubular probe immersed in the liquid and opening to a depth which defines the minimum permissible level of said liquid in the reservoir, a gas pressure source including a housing which defines a gas-filled chamber communicating with said probe and means for increasing the pressure inside said chamber when said gas pressure source is activated, a locking device responsive to the variations of the pressure reigning inside said chamber and moving from a first position to a second position when said pressure rises above a predetermined value due to the liquid level in the reservoir being above said minimum permissible level and thus closing said tubular probe, and a warning device responsive to the position occupied by said locking device after said gas pressure source is activated, said warning device being brought into operation when the locking device then remains in its first position and out of operation as the locking device then reaches its second position.

4,204,204

ON/OFF SWITCH ARRANGEMENTS FOR A TOUCH CONTROL BAR GRAPH DEVICE

Martin H. Pitstick, Cleves, Ohio, assignor to General Electric Company, Louisville, Ky.

Filed May 25, 1978, Ser. No. 909,593

Int. Cl.² G08B *5/36*

U.S. Cl. 340—712 **29 Claims**

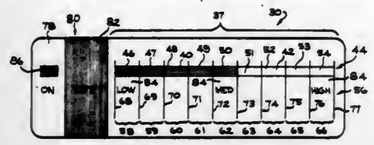
1. In combination with a touch control bar graph device, an ON/OFF switch arrangement comprising:

an ON touch-sensitive area positioned adjacent to but spaced from the touch control bar graph device;

a de-energizing touch-sensitive area positioned in the space

between said ON touch-sensitive area and the touch control bar graph device; and

circuit means responsive to said ON touch-sensitive area and to said de-energizing touch-sensitive area for enabling operation of the touch control bar graph device in response to the touching of said ON touch-sensitive area and for disabling operation of the touch control bar graph



device in response to the touching of said de-energizing touch-sensitive area;

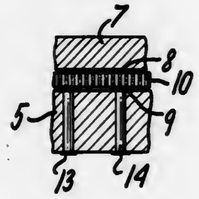
whereby any attempt by a user to enable operation of the touch control bar graph device by moving a finger directly between said ON touch-sensitive area and the touch control bar graph device results in disbling of the touch control bar graph device.

4,204,205

ELECTRONIC DISPLAY DEVICE

Kenjiro Yagi, and Hirotomo Hirai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Continuation-in-part of Ser. No. 653,002, Jan. 28, 1976, abandoned. This application Jan. 24, 1978, Ser. No. 871,963
Claims priority, application Japan, Feb. 5, 1975, 50-15132
Int. Cl.² G02F *1/13*
U.S. Cl. 340—719 **7 Claims**



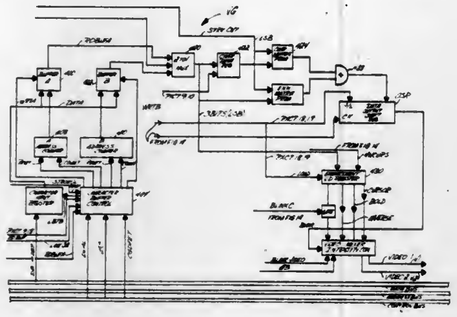
1. An electronic display device comprising: a display panel having front and rear major surfaces; a printed circuit board superposed beneath and spaced apart from the rear surface of said display panel; electrodes on the spaced-apart and facing major surfaces of said display panel and printed circuit board, wherein said electrodes on said rear major surface of said display panel have a certain width dimension and said electrodes on said facing major surface of said printed circuit board having a certain width dimension; a connector comprised of alternate segments of electrically conductive rubber and electrically non-conductive rubber alternately adjacently disposed along the width dimensions of said electrodes and extending in the direction normal to said electrodes between said electrodes for electrically connecting opposed ones of said electrodes on said facing major surfaces of said display panel and said printed circuit board, wherein said alternate segments of conductive and non-conductive rubber have a width dimension in the direction of the electrode width dimensions substantially less than the electrode width dimensions; and electronic circuitry mounted on said printed circuit board and being electrically connected to said electrodes for driving said display panel.

4,204,206

VIDEO DISPLAY SYSTEM

Richard E. Bakula, Indialantic, and Edward C. McCarthy, Indian Harbor Beach, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Aug. 30, 1977, Ser. No. 829,045
Int. Cl.² G06K *15/20*
U.S. Cl. 340—721 **15 Claims**



1. Apparatus for displaying at least two groups of characters on different areas of a common video display screen, comprising:

main memory means for storing the characters which are to be displayed in each group of characters, said characters associated with each group being stored at addressable locations identified by a plurality of address vectors, said main memory means also storing lists of address vectors associated with each said group of characters to be displayed;

vector memory means for storing a selected list of address vectors identifying a said group of characters which is to be displayed;

first means responsive to said address vector stored in said vector memory means for addressing said main memory means to retrieve the characters which are to be displayed, and for providing said characters to a video display means;

video display means having a display screen upon which said groups of characters are to be displayed, said display means being responsive to said characters supplied thereto by said first means for displaying said screen in frames by cyclically scanning said screen from a first screen boundary to a second screen boundary whereby said characters are displayed in progression from said first screen boundary to said second screen boundary;

second means for loading said vector memory means with different lists of address vectors from said main memory means at least twice during each said scanning of said screen whereby at least two groups of characters are displayed in each said frame, said groups being displayed in progression and on different areas of said screen.

4,204,207

VIDEO DISPLAY OF IMAGES WITH VIDEO ENHANCEMENTS THERETO

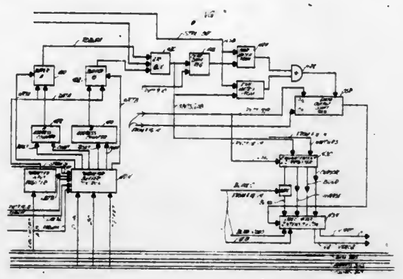
Richard E. Bakula, Indialantic, and Edward C. McCarthy, Indian Harbor Beach, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Aug. 30, 1977, Ser. No. 829,043
Int. Cl.² G06K *15/20*
U.S. Cl. 340—723 **8 Claims**

1. A video display system for displaying dot pattern images of data characters on a display screen with dot pattern modifications to the video characteristics thereof and comprising:

means for providing a plurality of coded data characters each representing a dot pattern image to be displayed and a like plurality of coded enhancement characters each representing one or more of a plurality of video dot pattern modification enhancements with each said enhancement character being associated with only one of said data characters,

means responsive to each said coded data character for providing dot pattern video signals for forming the dot pattern image represented thereby,



means responsive to each said coded enhancement character for modifying the dot pattern video signals for the associated data character in accordance with the video dot pattern enhancement therefor as represented by said coded enhancement character, and

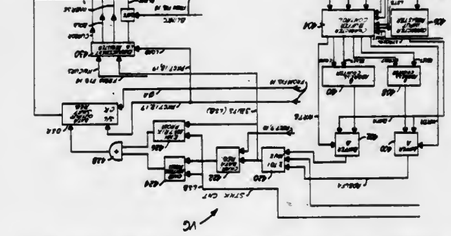
means responsive to said modified video signals for forming a video image with said video dot pattern enhancement.

4,204,208

DISPLAY OF VIDEO IMAGES

Edward C. McCarthy, Indian Harbor Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Aug. 30, 1977, Ser. No. 829,044
Int. Cl.² G06K *15/20*
U.S. Cl. 340—745 **12 Claims**



1. A video display system for displaying video images comprising:

means for supplying an associated pair of coded characters including first and second coded characters;

said second coded character representing a second graphical image, from a second set of related graphical images independent from said first set, to be displayed;

a plurality of storage means each storing video display instructions for forming each graphical image in one of said sets of related graphical images;

means responsive to said first and second coded characters for simultaneously obtaining from said plurality of storage means the respective video instructions for forming said first and second graphical images;

means for combining said video display instructions for forming said first and second graphical images; and

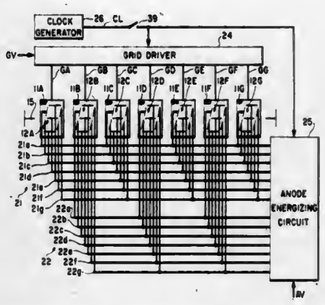
video display means responsive to said combined video display instructions for forming a graphical image having the combined video characteristics of said first and second graphical images.

4,204,209

FLUORESCENT DISPLAY DEVICE COMPRISING A PAIR OF ANODE CONNECTION GROUPS

Jun-ichi Snehiro, Izumi, Japan, assignor to Nippon Electric Kagoshima, Ltd., Izumi, Japan

Filed Nov. 7, 1978, Ser. No. 958,554
Claims priority, application Japan, Nov. 7, 1977, 52-133865
Int. Cl.² H01J *17/48*
U.S. Cl. 340—758 **5 Claims**



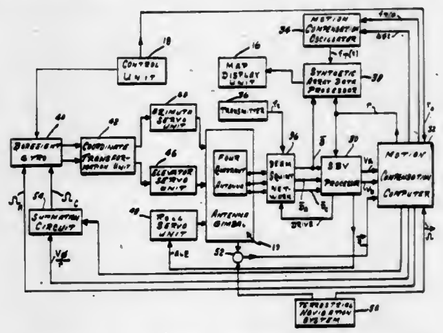
1. A fluorescent display device comprising two end grids, at least two intermediate grids between and in substantial alignment with said end grids, a plurality of anode units in one-to-one correspondence to all said grids, and a hot cathode over said anode units with all said grids interposed therebetween, each of said anode units being composed of a predetermined number of segmented fluorescent anodes arranged in a preselected configuration, wherein the improvement comprises a first group of anode connections for predetermined ones of said anode units with each of said connections connected to a prescribed one of the segmented anodes of each of said predetermined anode units and a second group of anode connections for the remaining anode units with each of said second-group anode connections connected to a preselected one of the segmented anodes of each of said remaining anode units, said predetermined anode units being every other one of all said anode units.

4,204,210

SYNTHETIC ARRAY RADAR COMMAND AIR LAUNCHED MISSILE SYSTEM

Eddy Hose, Fullerton, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 15, 1972, Ser. No. 288,243
Int. Cl.² G01S *9/02*
U.S. Cl. 343—6 R **2 Claims**

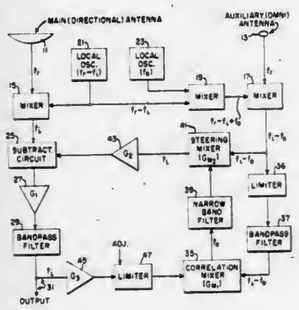


1. A synthetic array radar command air launched missile guidance system comprising:

a. a four-quadrant antenna;

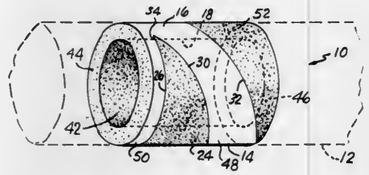
b. a radar transmitter;
c. a beam squint network fed by the four-quadrant antenna and the transmitter;
d. a single beam velocimeter fed by the beam squint network and having a feedback to the beam squint network;
e. a synthetic array data processor fed by the beam squint network;
f. a map display fed by the synthetic array data processor;
g. a motion compensation computer fed by the single beam processor;
h. a roll servo control fed by the motion compensation computer and feeding the four-quadrant antenna;
i. a motion compensation oscillator fed by the motion compensation computer and feeding the synthetic array data processor;
j. a terrestrial navigation system feeding the motion compensation computer;
k. a summation circuit fed by the motion compensation computer;
l. a boresight gyro fed by the motion compensation computer and the summation circuit;
m. means for coordinate transforming fed by the boresight gyro;
n. an azimuth servo control fed by the coordinate transforming means and feeding the four-quadrant antenna; and
o. an elevation servo control fed by the coordinate transforming means and feeding the four-quadrant antenna.

4,204,211
CONTROLLABLE SATURATION SIDELOBE CANCELLER
Arthur A. Cavelos, North Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed Jun. 24, 1974, Ser. No. 482,078
Int. Cl.[2] G01S *3/06*
U.S. Cl. 343—100 LE **3 Claims**



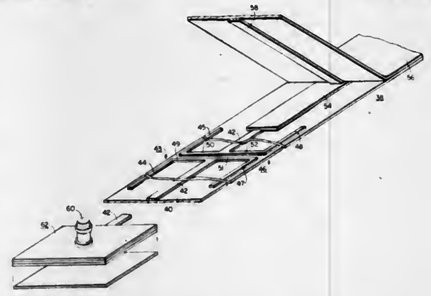
1. In a canceller:
(a) a main signal transmission channel having an output terminal and an input terminal coupled to receive a signal which may include both desired and undesired signal content;
(b) an auxiliary signal transmission channel coupled to receive a signal including primarily said undesired signal;
(c) cross correlaton means connected to the output terminal of said main signal transmission channel and to said auxiliary signal transmission channel for detecting the relative amplitude and phase of said main and auxiliary channel signals and generating a correlation signal indicative of the result of such correlation, said cross correlation means including an overload limiter interposed in the connection to said main signal transmission channel for limiting the amplitude of said main channel signal as applied therethrough for correlation with said auxiliary channel signal;
(d) a compensating cross feed network coupled to said auxiliary signal transmission channel to receive said undesired signal and to said cross correlation means to receive said correlation signal, said cross feed network being responsive to the signals coupled thereto to generate a correction signal of amplitude and phase corresponding to the undesired signal content of the main signal transmission channel as applied through said correlation limiter; and
(e) means interposed between said main channel input and output terminals for subtracting said correction signal from said main channel signal thereby to reduce the undesired signal content thereof.

4,204,212
CONFORMAL SPIRAL ANTENNA
Arthur R. Sindoris, Cary, N.C.; Frederick G. Farrar, Kensington, and Daniel H. Schaubert, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 6, 1978, Ser. No. 966,839
Int. Cl.[2] H01Q *1/38*
U.S. Cl. 343—700 MS **9 Claims**



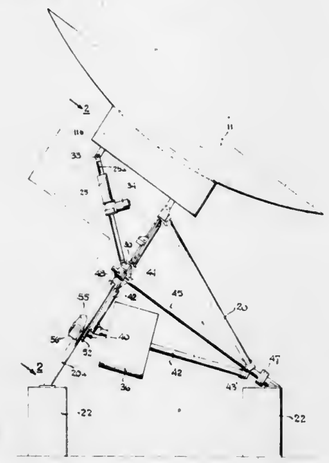
1. An electrically small microstrip antenna, which comprises:
a substantially cylindrical dielectric tube having inner and outer cylindrical surfaces;
a conductive ground plane formed on said inner cylindrical surface of said dielectric tube;
a strip of conductive material formed in a spiral on said outer cylindrical surface of said dielectric tube so that portions of said outer surface include exposed dielectric; and
input feed means connected to said spiral strip of conductive material for driving same.

4,204,213
FLEXIBLE DIPOLE ANTENNA
Myron S. Wheeler, Catonsville, and Stephen L. Creasy, Columbia, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Aug. 15, 1978, Ser. No. 933,930
Int. Cl.[2] H01Q *1/28*
U.S. Cl. 343—706 **15 Claims**



1. A flexible lightweight dipole antenna comprising:
(A) an elongated flexible substrate member;
(B) a layer of electrically conductive material disposed over said substrate member in a predetermined pattern which includes a first conductor extending along the length of said substrate member, and first and second dipole antenna elements respectively disposed on either side of, and connected to, said first conductor and defining a first radiating and/or receiving element;
(C) a flexible, electrically insulating layer disposed over said first conductor;
(D) a second conductor positioned over said insulation layer and having a width which is less than the distance between said first and second dipole antenna elements;
(E) an elongated flexible covering layer covering said second conductor; and
(F) a connector assembly for signal transfer with said antenna, connected to said first and second conductors.

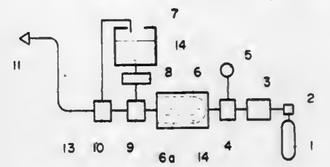
4,204,214
SLEWING AND TRACKING MECHANISM FOR DISH STRUCTURE
Charles J. Fassnacht, Thousand Oaks, Calif., assignor to Datron Systems, Inc., Chatsworth, Calif.
Filed Nov. 6, 1978, Ser. No. 958,015
Int. Cl.[2] H01Q *3/00*
U.S. Cl. 343—766 **8 Claims**



1. A drive mechanism for a dish structure comprising:
an azimuth drive member having an arcuate section forming a segment of a circle,
means for connecting the ends of said arcuate secsection to said dish for pivotal motion relative thereto,
means for rotatably supporting said drive member for rotation about a polar axis,
a chain fixedly attached to the rim of the arcuate section of said drive member,
a sprocket wheel,
means for rotatably mounting said sprocket wheel with the teeth thereof in engagement with said chain, and
means for rotatably driving said sprocket wheel to cause said drive member and said dish to be driven about a polar axis.

4,204,215
INK JET SYSTEM FOR ISSUING INK UNDER A PREDETERMINED UNIFORM PRESSURE IN AN INK JET SYSTEM PRINTER
Masazumi Nakarai, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Japan
Filed Dec. 15, 1977, Ser. No. 860,959
Claims priority, application Japan, Dec. 17, 1976, 51-154769
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **11 Claims**

1. An ink source device for an ink jet system including a nozzle for emitting ink liquid therefrom, said ink source device comprising:
a primary static pressure chamber for containing an ink liquid therein;
a gas pressure control means for generating a gas pressure of a predetermined fixed value;
said gas pressure control means being operatively connected to the primary static pressure chamber, and said primary pressure chamber being responsive to the predetermined



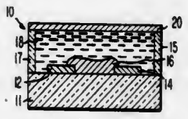
fixed gas pressure generated from said gas pressure control means, thereby applying said predetermined fixed gas pressure to said ink liquid contained in the pressure chamber as its initial supply pressure; and
means for connecting said primary pressure chamber to said nozzle for supplying said ink liquid of said predetermined fixed gas pressure to said nozzle.

4,204,216
ELECTRICALLY CONDUCTING DOPED POLYACETYLENE FILM EXHIBITING N-TYPE ELECTRICAL CONDUCTIVITY AND METHOD OF PREPARING SAME
Alan J. Heeger, Wynnewood; Alan G. MacDiarmid, Drexel Hill; Chwan K. Chiang, Upper Darby, and Shek-Chung Gau, Philadelphia, all of Pa., assignors to University Patents, Inc., Norwalk, Conn.
Filed May 4, 1978, Ser. No. 902,666
Int. Cl.[2] H01L *29/28*
U.S. Cl. 357—8 **27 Claims**

1. An electrically conducting polycrystalline film of polyacetylene, at least a portion of which is electron donor-doped to a controlled degree with a metal dopant whose Pauling electronegativity value is no greater than 1.6, said controlled degree of doping being such as to provide the electron donor-doped polyacetylene with a preselected room temperature n-type electrical conductivity ranging from that characteristic of semiconductor behavior to that characteristic of metallic behavior.

24. A semiconductor device including at least one p-n junction formed at least in part by electrically conducting film means comprising the polycrystalline film of claim 1.

4,204,217
TRANSISTOR USING LIQUID CRYSTAL
Lawrence A. Goodman, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 733,446, Oct. 18, 1976, abandoned. This application Jul. 19, 1978, Ser. No. 926,014
The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.
Int. Cl.[2] H01L *29/78, 49/02*; G02F *1/13*
U.S. Cl. 357—23 **11 Claims**



1. A transistor comprising

a first electrode;
a second electrode spaced apart from said first electrode;
a body of semiconductor material between and in contact with said first electrode and said second electrode;
an insulating substrate having thereon said first electrode, said second electrode and said body;
a layer of liquid crystal material in contact with and on the semiconductor body; and
a third electrode in contact with the layer of liquid crystal.

4,204,218

SUPPORT STRUCTURE FOR THIN SEMICONDUCTOR WAFER

William M. Fox, and Michael A. Novotny, both of Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 1, 1978, Ser. No. 882,176
Int. Cl.[2] H01L *29/06*
U.S. Cl. 357—55 3 Claims



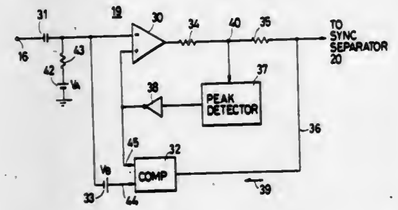
1. A semiconductor device comprising a semiconductor chip having two opposed, substantially parallel major surfaces, said chip having a thickness of less than about two mils and having a conductive electrode pattern on one major surface thereof, said conductive electrode pattern having a thickness dimension above said one major surface CHARACTERIZED IN THAT said one major surface includes a metal frame member encompassing said conductive electrode pattern and having a thickness of at least about twice the thickness of said pattern above said surface, said metal frame member constituting a support element providing mechanical strength and rigidity for said chip and having no electrical function relative to said device.

4,204,219

NOISE CANCELLATION CIRCUIT

Tomoaki Uchida, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Aug. 9, 1978, Ser. No. 932,291
Claims priority, application Japan, Aug. 12, 1977, 52-96629
Int. Cl.[2] H04N *5/21, 5/44*
U.S. Cl. 358—155 9 Claims



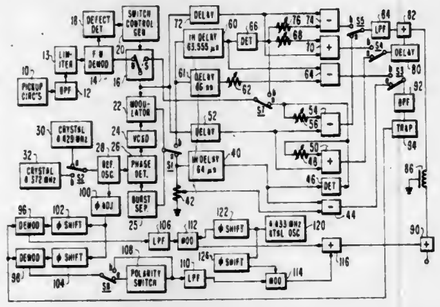
1. A circuit for cancellation of noise in an electrical signal, comprising:
differential amplifier means having a first input terminal receptive of said electrical signal and a second input terminal receptive of a feedback signal applied thereto for generating a first output signal representative of the difference in magnitude between said electrical signal and said feedback signal;
peak detector means connected to be responsive to said first output signal through a summation point for detecting a peak value of said electrical signal to generate a voltage signal representative of the detected peak value, said voltage signal being said feedback signal;
comparator means having a first input terminal connected to be responsive to said electrical signal and a second input terminal connected to be responsive to said feedback signal to provide a second output signal to said peak detector means through said summation point to produce an offset voltage thereat when the voltage at the first input terminal of the comparator is reduced to a level below the voltage at the second input terminal of said comparator; and
biasing means for biasing the first input terminal of said comparator means to a certain potential level with respect to the first input terminal of said differential amplifier means.

4,204,220

DUAL STANDARD VIDEO DISC PLAYER

Ernst A. O. Rutishauser, Widen, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,379
Claims priority, application United Kingdom, Jun. 24, 1977, 26626/77
Int. Cl.[2] H04N *5/76*
U.S. Cl. 358—8 8 Claims



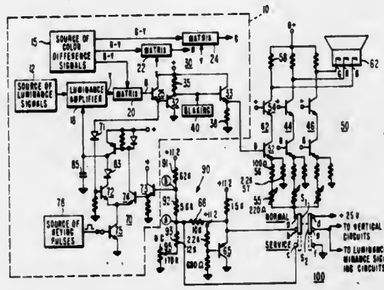
1. In a dual-mode video record player for alternative use in (1) the playback of records bearing composite color video signals of a first type inclusive of a chrominance signal component and an accompanying color synchronizing component, wherein said chrominance signal component comprises modulated color subcarrier waves having a first color subcarrier frequency and said accompanying color synchronizing component comprises periodic bursts of oscillations of said first subcarrier frequency, and (2) the playback of records bearing composite color video signals of a second type inclusive of a chrominance signal component and an accompanying color synchronizing component, wherein said chrominance signal component comprises modulated color subcarrier waves having a second color subcarrier frequency and said accompanying color synchronizing component comprises periodic bursts of oscillations of said second color subcarrier frequency; said record player including signal pickup means for recovering composite color video signals from a record during playback operations; the combination comprising:
dual-mode oscillation generating means for developing reference oscillations of a first frequency when operating in a first mode and for developing reference oscillations of a second frequency when operating in a second mode; said generating means including switch means for selectively altering the generating means operating mode between said first and second modes;
a voltage controlled oscillator;
heterodyning means responsive to an output of said voltage controlled oscillator and to said recovered signals for developing an output inclusive of an up-converted chrominance signal component and accompanying color synchronizing component, with the color subcarrier frequency of said up-converted chrominance signal component and accompanying color synchronizing component corresponding in frequency to the difference between the output frequency of said voltage controlled oscillator and the color subcarrier frequency of the chrominance component and accompanying color synchronizing component of said recovered signals;
phase detector means responsive to said up-converted color synchronizing component and to reference oscillations developed by said generating means for developing an error voltage indicative of departures from a predetermined phase relationship between said up-converted color synchronizing component and said reference oscillations;
means for utilizing said error voltage to alter the operation of said voltage controlled oscillator in a sense opposing said departures; and
output signal forming means responsive to an output of said heterodyning means;
wherein the frequency difference between said first reference oscillation frequency and said second reference oscillation frequency substantially corresponds to the frequency difference between said first color subcarrier frequency and said second color subcarrier frequency.

4,204,221

PREDICTABLY BIASED KINESCOPE DRIVER ARRANGEMENT IN A VIDEO SIGNAL PROCESSING SYSTEM

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,171
Int. Cl.[2] H04N *5/16*
U.S. Cl. 358—34 13 Claims



1. In a video signal processing system including a video signal channel for processing an image representative video signal having periodically recurring image intervals, and blanking intervals disposed between adjacent image intervals and containing a blanking level determinative of image brightness; bias supply means; a kinescope for reproducing images in response to video signals applied thereto; and kinescope driver means for coupling video signals from said channel to said kinescope; apparatus comprising:
comparator means having first and second inputs for comparing, during said blanking intervals, signals applied to said inputs to provide an output control signal indicative of the difference in magnitude between the input signals;
means for deriving a reference potential from said bias supply means;
means for coupling said reference potential to said kinescope driver means for providing a reference potential to which video signals amplified by said kinescope driver means are referenced;
adjustable voltage divider means coupled to said bias supply means, for providing an adjustable brightness control voltage;
means for coupling an adjustable brightness control voltage derived from said adjustable voltage divider means to said first input of said comparator means;
means for coupling video signals from said channel to said second input of said comparator means;
means for coupling said output of said comparator means to said channel, for varying said blanking level in a direction to reduce said difference to a minimum; and wherein
said reference potential to which signals amplified by said driver means are referenced is coupled to a point in said adjustable voltage divider means.

9. In a color television receiver including a video signal transmission path for processing a color image representative video signal, said transmission path including a luminance channel for processing a luminance component of said video signal having periodically recurring image intervals and image blanking intervals disposed between adjacent image intervals and containing a blanking level determinative of image brightness, and a chrominance channel for processing a chrominance component of said video signal; bias supply means; means for combining signals processed by said luminance and chrominance channels; a kinescope for reproducing images in response to video signals applied thereto; and kinescope driver means for coupling combined video signals from said combining means to said kinescope; apparatus comprising:
a source of keying signals coincident with a portion of said blanking interval containing said blanking level;
comparator means responsive to said keying signals and having first and second inputs for comparing, during said portion of said blanking intervals, signals applied to said inputs to provide an output control signal indicative of the difference in magnitude between said input signals;
means for deriving a reference potential from said bias supply means;
means for coupling said reference potential to said kinescope driver means for providing a reference potential to which signals amplified by said kinescope driver means are referenced;
adjustable voltage divider means coupled to said bias supply means, for providing an adjustable brightness control voltage;
means for coupling an adjustable brightness control voltage derived from said adjustable voltage divider means to said first comparator input;
means for coupling output signals from said combining means to said second comparator input;
means for coupling said output of said comparator means to said video signal transmission path, for varying said blanking level in a direction to reduce said difference to a minimum; and wherein
said reference potential to which signals amplified by said driver means are referenced is coupled to a point in said adjustable voltage divider means.

4,204,222

HIGH OUTPUT LED MATRIX COLOR TV SCREEN WITH VERTICAL TRIAD AND TRICOLOR FACEPLATE

Antoine Zacharie, C.P. 100, 74 Rue Zacharie, Sacre-Coeur, Saguenay, Quebec, Canada (G0T 1Y0)

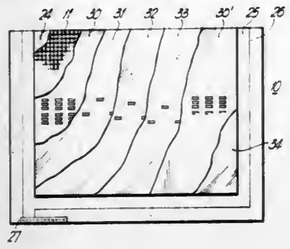
Filed Jun. 19, 1978, Ser. No. 916,712
Int. Cl.[2] H04N *9/30*
U.S. Cl. 358—59 6 Claims

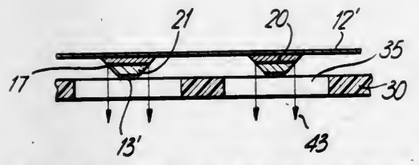
1. A digital scanning colour television video screen having a plurality of conductors arranged in a matrix forming a plurality of crosspoints with each crosspoint including a separate source of light energizable via the matrix to form an image, the screen comprising:
a plurality of horizontal conductors arranged in groups of three conductors each, said groups being disposed vertically across the screen in uniformly spaced relation with each group corresponding to a single horizontal scan line;
a plurality of vertical conductors disposed horizontally across the screen in uniformly spaced relation to form the

matrix, the intersection of the conductors of each horizontal scan line with a single vertical conductor forming a vertically disposed plurality of crosspoint triads;

light-emitting diode means connected across each crosspoint, each said means having a junction that is energizable via the matrix to emit white light and which is disposed relative to its crosspoint to provide an unobstructed path for incident light emitted by said junction; and

tricolour faceplate means having disposed thereon a plurality of colour triads corresponding to the crosspoint triads and aligned in overlying registry therewith.





4,204,223

METHOD AND APPARATUS FOR MAKING COLOR CORRECTIONS IN THE MANUFACTURE OF PRINTING PLATES

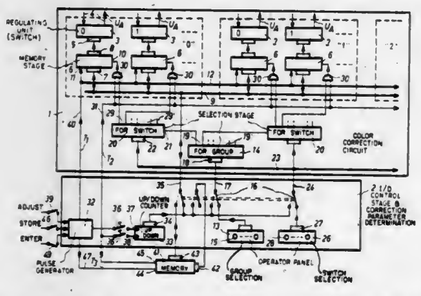
Uwe Gast, Rammsee; Dennis Kiralfy, Quickborn; Klaus Schaefer, Rendsburg; Eckhard Slawik, Grafing, and Klaus Wellendorf, Heikendorf, all of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 912,097

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2725864

Int. Cl.² G03F 3/00

U.S. Cl. 358—80 **6 Claims**



1. Apparatus for color correction in the manufacture of printing forms comprising a correction circuit including a group selection stage, means for energizing the group selection stage to select a particular group and at least two setting members in each group, selection stages associated with each group, means for energizing the selection stages to select a particular setting member in the group, said setting members receiving the signals to be corrected and having at least two registers for storing the digital adjusting values, a storage medium for storing said digital adjusting values, transfer means connected to the setting members and said storage means and computer means operately connected to said stages, said energizing means and said transfer means.

2. The method of color correction in the manufacture of printing forms wherein a correction circuit is used to determine adjusting values for each correction parameter and such values are used in correction circuit for the color correction process and wherein the determination and correction are separate processes, wherein for each correction parameter in the correction circuits there is provided a setting member mounted in the path of a signal to be corrected, said setting members being controlled by stored digital adjusting values, varying said signals in an analog manner in dependence of said digital adjusting values, adjusting the setting members of a correction circuit to the digital adjusting values which result in a desired correction, transferring the digital adjusting values determined in the correction circuit into a storage medium outside of the correction circuits for a later use, and feeding said stored digital adjusting values for an actual color correction to at least one correction circuit and storing them in the associated setting members of said correction circuit, and said process being controlled by computer means.

4,204,224

PROCESS AND APPARATUS FOR MEASURING THE LENGTH OF MOVING SHAPED ARTICLES PARTICULARLY RED-HOT SEMIFINISHED ARTICLES

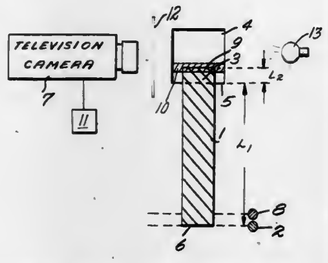
Gunther Buken, Im Börner 41, 6462 Geinhausen 2, and Raimund Lang, Friedenstrasse 5, 8755 Alzenau 2, both of Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 911,840

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725353

Int. Cl.² H04N 7/18

U.S. Cl. 358—107 **8 Claims**



1. A process for the non-contact measurement of the length of a moving shaped body wherein there is provided a high-speed television camera for scanning the body, providing a window, providing a slotted diaphragm and a counter, said process comprising triggering a starting signal by the side of the shaped body which lies in the direction of movement, said starting signal triggering said camera which is aligned on said window, said window being located at a distance l_1 from the point where the starting signal is triggered and determining the length l_2 of the end of the moving shaped body which projects into the window by means of the slotted diaphragm which is moving at a high rate of speed and the counter connected to said slotted diaphragm by stopping the counter when the slotted diaphragm reaches the edge of the shaped body, in which the sum of l_1 and l_2 gives the total length of the moving body.

4,204,225

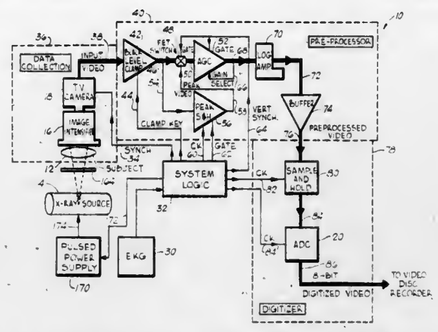
REAL-TIME DIGITAL X-RAY SUBTRACTION IMAGING

Charles A. Mistretta, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 906,686, May 16, 1978, abandoned. This application Nov. 15, 1978, Ser. No. 960,830

Int. Cl.² H04N 5/32

U.S. Cl. 358—111 **65 Claims**



1. A method of producing visible difference images derived from an X-ray image of an anatomical subject, comprising

the steps of directing X-rays through the anatomical subject for producing an X-ray image,

converting said X-ray image into television fields comprising trains of analog video signals,

converting said analog video signals into digital video signals,

producing integrated digital video signals by integrating said digital video signals over a predetermined time interval corresponding to a plurality of successive television fields,

producing digital difference video signals by performing a substraction between the digital video signals for a selected time different from said time interval and the corresponding integrated digital video signals,

converting said digital difference video signals into analog difference video signals,

and converting said analog difference video signals into visible television difference images representing changes in the X-ray image.

4,204,226

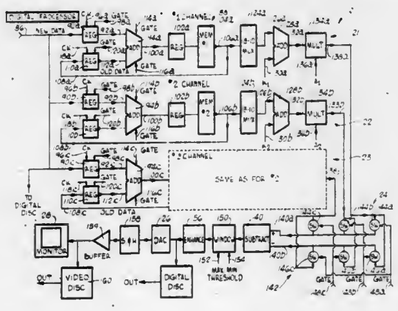
REAL-TIME DIGITAL X-RAY TIME INTERVAL DIFFERENCE IMAGING

Charles A. Mistretta; Robert A. Kruger, and Theodore L. Houk, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 16, 1978, Ser. No. 906,631

Int. Cl.² H04N 5/32

U.S. Cl. 358—111 **35 Claims**



1. A method of producing visible difference images derived from an X-ray image of an anatomical subject,

comprising the steps of directing X-rays through an anatomical subject to produce an X-ray image,

converting said X-ray image into series of television fields comprising trains of analog video signals,

converting said analog video signals into corresponding digital video signals,

integrating said digital video signals over a series of successive time intervals each corresponding with a plurality of successive television fields and thereby producing a series of successive separate sets of integrated digital video signals,

performing a series of successive subtractions between each successive separate set of integrated video signals and the immediately preceding set of integrated video signals and thereby producing a series of successive separate sets of digital difference video signals,

converting said digital difference video signals into analog difference video signals,

and converting said analog difference video signals into a series of successive visible television difference images representing changes in the X-ray image between the successive time intervals.

4,204,227

TELEVISION PICTURE COMPRESSOR

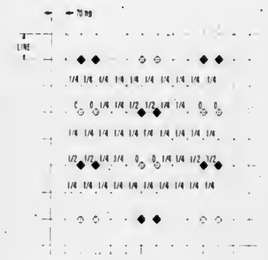
Thomas M. Gurley, Maple Shade, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 862,180

Claims priority, application United Kingdom, Mar. 21, 1977, 11904/77

Int. Cl.² H04N 9/02, 5/22

U.S. Cl. 358—138 **18 Claims**



1. A color television picture compressor for reducing the size of the television picture in the raster for use with a video synchronizer of the type which samples the incoming video signal at a frequency n times as high as the color subcarrier and normally provides a predetermined number of samples per line and lines per field for a full field raster, comprising:

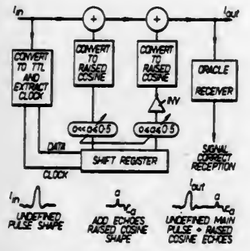
means coupled to said video synchronizer for deleting samples per line and lines per field for compressing the picture in the television raster and

means for averaging the surrounding picture samples to be deleted of the same color subcarrier phase into the value of the compressed picture sample to be maintained to thereby reduce the size of the picture while reducing the moire pattern.

4,204,228
DIGITAL TESTING APPARATUS

Arthur G. Mason, Chandlers Ford, and Peter R. Hutt, Petersfield, both of England, assignors to Independent Broadcasting Authority, London, England

Filed May 9, 1978, Ser. No. 904,291
Claims priority, application United Kingdom, May 10, 1977, 19609
Int. Cl.² H04N 5/00, 9/62
U.S. Cl. 358—139 41 Claims



1. Apparatus for producing a test signal having a predetermined amount of distortion, comprising

(a) means (10, 11) for generating a plurality of first pulses;

(b) delay means (17) for deriving from said first pulses a plurality of distortion pulses having an amplitude proportional to the amplitude of the first pulses;

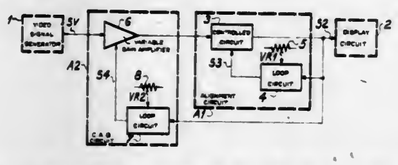
(c) attenuation means (22) for controlling the amplitude of the distortion pulses; and

(d) adder circuit means (23) for adding the distortion pulses to the first pulses, whereby the distortion pulses are added in spaced relation to the first pulses.

4,204,229
VIDEO CONTRAST EXPANDING ARRANGEMENT

Philippe Henze, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 17, 1978, Ser. No. 952,126
Claims priority, application France, Oct. 21, 1977, 77 31740
Int. Cl.² H04N 5/52
U.S. Cl. 358—169 11 Claims

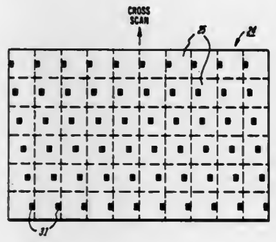


1. Arrangement for expanding the contrast of a video signal intended for an image display, by extending the signal in a contrast range defined between a first and a second potential level, comprising: means for aligning the video signal with the first level which are formed by an aligning circuit which is inserted in the video chain via a first input and an output and which receives at a second input a first control signal produced by a first detecting circuit, and means for aligning the video signal with the second level which are connected to the output of the aligning circuit and which are formed by an automatic gain control (AGC) circuit which is inserted in the video chain via a first input and an output and which receives at a second input a second control signal produced by a second detecting circuit, the control signals being a function of the peak variations in the video signal relative to respective ones of the alignment levels, the said detecting circuits each forming part of servo loop circuits which supply the respective control signals, a first loop circuit being connected between the second input and the output of the aligning circuit and the second loop circuit being connected between the second input of the AGC circuit and a point of connection to the video chain corresponding to the output of the arrangement.

4,204,230
HIGH RESOLUTION INPUT SCANNER USING A TWO DIMENSIONAL DETECTOR ARRAY

Robert A. Sprague, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1978, Ser. No. 954,507
Int. Cl.² H04N 3/14
U.S. Cl. 358—213 28 Claims



1. An input scanner comprising the combination of

a two dimensional array of photosensitive detectors, said detectors having respective photosensitive zones which are laterally offset from one another in a line scanning direction;

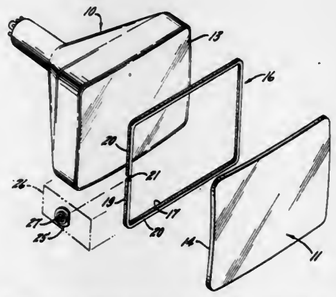
means for sequentially imaging successive scan line length segments of a subject onto said array at a predetermined framing rate as said subject moves in a cross scan direction relative to said array, whereby said detectors sequentially generate data samples representing respective pixels of successive scan lines; and

means coupled to said array for reading said data samples out of said detectors at said framing rate.

4,204,231
CATHODE RAY TUBE WITH LAMINATED PANEL AND METHOD OF MAKING SAME

Marvin M. Permenter, Rockford, Ill., assignor to Clinton Electronics Corporation, Rockford, Ill.

Filed Mar. 20, 1978, Ser. No. 890,612
Int. Cl.² H04N 5/65
U.S. Cl. 358—247 5 Claims

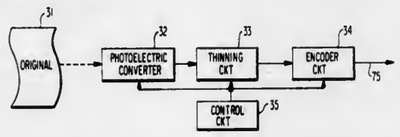


1. A method for securing a front panel to the front display face of a cathode ray tube, said method comprising the steps of, fastening the rear side of said panel to said display face with a strip of tape having pressure-sensitive adhesive on its front and rear sides, said tape extending around the margins of the rear side of said panel and being sandwiched between the rear side of said panel and said display face, said tape spacing said panel forwardly from said display face and defining a cell between said panel and said display face, introducing a flowable bonding agent into said cell, and allowing said bonding agent to cure.

4,204,232
PATTERN TRANSMISSION SYSTEM COMPRISING AN ENCODER FOR ENCODING PARTIAL THINNED PATTERNS IN TWO SCANNING LINES ALONG ONLY ONE BOUNDARY LINE

Shoji Mizuno, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1978, Ser. No. 922,701
Claims priority, application Japan, Jul. 8, 1977, 52-82246; Jul. 8, 1977, 52-82247; Jul. 21, 1977, 52-88194; Dec. 20, 1977, 52-153919
Int. Cl.² H04N 1/40
U.S. Cl. 358—260 11 Claims



1. A system for transmitting an original pattern printed with an original pattern stroke width on a surface of a pattern carrying medium and with a first area left on said surface as a background of said original pattern, said original pattern and said first area being substantially of a first and a second tone, respectively, said system comprising:

sampling means supplied with said pattern carrying medium for sampling picture elements from said original pattern and said first area substantially along rectilinear and parallel scanning lines covering said surface in succession, each of said picture elements having four substantally equal sides and four vertices, the picture elements in the successive scanning lines being arranged substantially along straight lines that tharsversely cross said scanning lines, each of said scanning lines having a leading and a trailing end, said original pattern stroke width being generally of at least two picture elements, said sampling means thereby producing electrical signals successively representative of said picture elements and having a first and a second level when the picture elements are of said first and said second tones, respectively;

thinning means responsive to said electrical signals for thinning said original pattern into an eventually thinned pattern, with said first area accordingly widened into a second area serving in effect as a background of said thinned pattern, in accordance with a predetermined law as regards positional relations between each of the first-tone picture elements and the neighboring picture elements, said thinned pattern having a thinned pattern stroke width of a substantially single picture element and being composed of partial patterns, each consisting of at least one picture element of said first tone and having a leading and trailing side in one of said scanning lines, said leading and said trailing sides being nearer to the leading and the trailing ends of said one scanning line, respectively, said thinning means thereby producing a pre-processed signal representative of said thinned pattern and said second area;

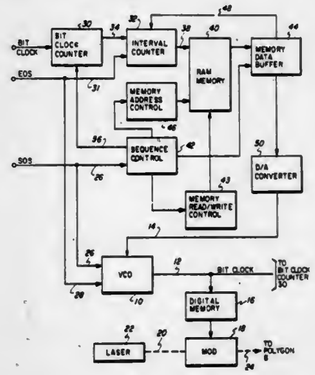
classifying means responsive to said pre-processed signal for successively classifying spatial relationships between a first of said partial patterns in a first of said scanning lines and a second partial pattern adjacent to said first partial pattern in a second scanning line next preceding in the succession said first scanning line into a first state in which said first partial pattern is connected with the leading side of said second partial pattern, a second state in which said first partial pattern is connected with the trailing side of said second partial pattern, a third state in which said first and said second partial patterns have aligned leading and trailing sides, and a fourth state in which said first and said second partial patterns have other spatial relationships, said classifying means thereby producing a discrimination signal specifying the successively classified states; and

encoding means responsive to said pre-processed and said discrimination signals for encoding said first partial pattern with reference to the classified state, said encoding means thereby producing a band-compressed signal representative of said original pattern.

4,204,233
ELECTRONIC FACET ERROR CORRECTION FOR LASER SCANNING

Gary E. Swager, San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1977, Ser. No. 847,372
Int. Cl.² H04N 1/04
U.S. Cl. 358—293 6 Claims



1. In a raster output scanner having source means for supplying a light beam which is intensity modulated in accordance with an information bearing electrical bit stream, a photosensitive recording medium, and a rotatably driven multifaceted beam scanning mechanism optically interposed between said source means and said recording medium for cyclically scanning said light beam across said recording medium to reproduce said information on said recording medium; the improvement comprising the combination of

means for generating separate velocity error signals for said facets, each of said error signals representing any difference between the velocity at which said beam is scanned across said recording medium by a respective one of said facets and a predetermined reference velocity; and

means for adjusting the bit rate of said bit stream on a facet-by-facet basis in response to said errors signals to provide a predetermined number of bits per scanning cycle despite any facet-to-facet scan velocity variations.

4,204,234
SYSTEM FOR POSITIONING SINGLE GAP MAGNETIC HEAD TO FOLLOW MOVING RECORDED DATA TRACK

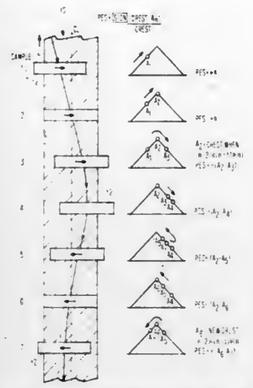
David L. Noble, Monte Sereno, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,729
Int. Cl.² G11B 21/10
U.S. Cl. 360—77 7 Claims

1. A method for positioning a magnetic head to center on a recorded data track comprising the steps of:

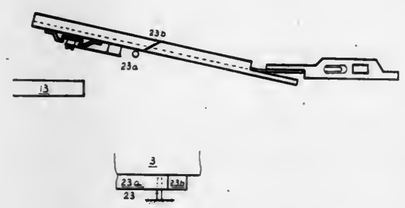
serially sampling at uniformly spaced intervals under control of a clock with said head at least three recorded data signals relating to sequential positions along the length of said data track, said head having a single transducing gap

of a width substantially the same as the width of said data track;
converting said sampled signals to digital values;
storing said sampled signals in the memory of a computing unit;



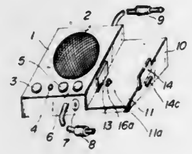
computing the maximum amplitude signal of each of said sampled signals;
computing a position error signal from said maximum amplitude signal and each of said sampled signals; and
moving said head towards the center of said data track in response to the position error signal.

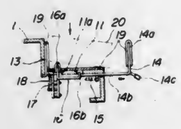
4,204,235
SUPPORT ARM ASSEMBLY FOR LOADING/UNLOADING AND APPLYING A FORCE ON A FLYING HEAD
Herbert R. Stollorz, Redwood City, Calif.
Filed Oct. 18, 1977, Ser. No. 843,272
Int. Cl.² G11B *5/60, 5/48, 17/32*
U.S. Cl. 360—103 **3 Claims**



1. In a transducer support assemblyhaving a connector for mounting said assembly to an actuator of a disk storage drive, and transducer means for reading or writing on a storage disk of said disk storage drive, including at least one transducer head with at least two air-bearing skis, an improved head arm loading arrangement, comprising:
a support arm;
first flexing means interconnecting said support arm and said connector;
second flexing means interconnecting said support arm and said transducer means;
said first flexing means providing movement of said arm relative to said connector in a first plane substantially perpendicular to said storage disk; said second flexing means providing movement of said transducer means relative to said arm in a second plane substantially perpendicular to said storage disk;
means for tilting said arm between a first, operative position and a second, inoperative position;
first restraining means defining said first operative position and limiting further movement of said arm towards said storage disk;
second restraining means providing for limited movement of said transducer means in said second plane for flying in operative proximity to said storage disk when said support arm is in said operative position.

4,204,236
SPEAKER DEVICE HAVING A HOLDING MEANS FOR A SUPERMINIATURE TAPE RECORDER
Kazuo Nakasho, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed Apr. 24, 1978, Ser. No. 898,809
Claims priority, application Japan, Apr. 5, 1977, 52-52390
Int. Cl.² G11B *31/00*
U.S. Cl. 360—137 **4 Claims**

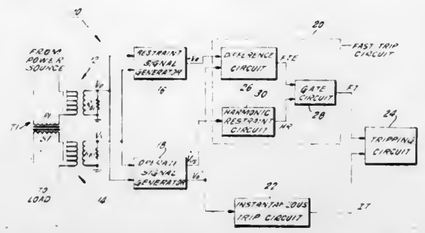




1. A speaker device adapted to have a superminiature tape recorder mounted in operative engagement therewith comprising an external speaker and holding means formed together in an integral unit, said holding means operating to hold a tape recorder placed thereon in operative relationship with said speaker device; said holding means comprising a base for placing the tape recorder thereon, a fixed plate provided on one side of said base, and a movable keep plate provided on the other side of said base for keeping the tape recorder in position; with a holding mechanism being provided, said holding mechanism comprising an engaged member extending into the base from said movable keep plate, a spring provided between the engaged member and the base, and a set lever for engaging with the movable keep plate and including a projection member projecting slightly from a hole bored in the base, with a second spring being mounted between a base plate and the lever.

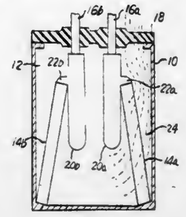
4,204,237
SOLID STATE TRANSFORMER DIFFERENTIAL RELAY
Stanley E. Zocholl, Holland, Pa., assignor to Gould Inc., Rolling Meadows, Ill.
Filed Nov. 30, 1978, Ser. No. 965,141
Int. Cl.² H02H *3/28, 7/04*
U.S. Cl. 361—36 **16 Claims**

1. A transformer differential relay for monitoring the magnitude of the currents in first and second windings of a power transformer and for disconnecting said power transformer from a power source supplying said power transformer when the relative magnitude of said currents indicate the presence of an internal fault in said power transformer, said relay comprising:
first current transformer means for generating a first voltage signal representative of the magnitude of said current flowing through said power transformer first winding;
second current transformer means for generating a second voltage signal representative of the magnitude of said current flowing through said power transformer second winding;
a solid state restraint signal generator responsive to said first and second winding voltage signals for generating a restraint signal representative of the magnitude of the larger of said first and second currents at each measurement instant;



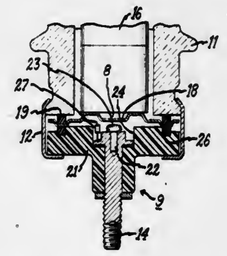
a solid state operate signal generator responsive to said first and second winding voltage signals for generating an operate signal representative of the magnitude of the vector sum of said currents flowing through said power transformer first and second windings; and
means for disconnecting said power transformer from said power source when the magnitude of said operate signal rises above a predetermined percentage of said restraint signal.

4,204,239
ABNORMAL VOLTAGE PROTECTION DEVICE
Mitsumasa Imataki; Mikio Mochizuki, and Yoshikazu Shibuya, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 22, 1978, Ser. No. 908,234
Claims priority, application Japan, May 21, 1977, 52-58989
Int. Cl.² H02H *9/04*
U.S. Cl. 361—127 **2 Claims**



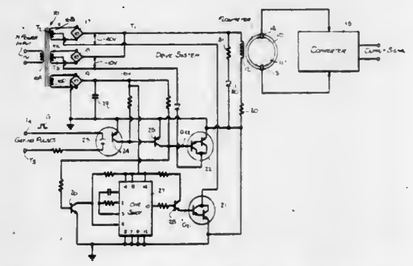
1. A three-phase abnormal voltage protection device comprising:
a metallic housing in the form of a hollow circular cylinder including a bottom, said metallic housing being connected to ground;
three independent electrodes, one for each of the three phases, disposed at equal angular intervals in a circle concentric with and within said metallic housing, said electrodes extending within said metallic housing parallel to the longitudinal axis of said metallic housing;
three stacks formed of a plurality of non-linear resistors placed one upon another, each said stack having a first end connected to a portion of a corresponding one of said electrodes remote from said bottom of said metallic housing and a second end, tilted radially outward with respect to the longitudinal axis of said metallic housing, connected to said bottom of said metallic housing.

4,204,238
SURGE VOLTAGE LIGHTNING ARRESTERS
Earl W. Stetson, Pittsfield, Mass., assignor to General Electric Company
Filed Feb. 6, 1978, Ser. No. 875,221
Int. Cl.² H02H *3/22*
U.S. Cl. 361—125 **3 Claims**



1. An improved ground disconnector for a surge arrester of the type having a metal sealing disc and an explosive cartridge, the improvement which comprises:
an embossed aluminum sealing disc having a raised portion for electrically connecting with the surge arrester and a flat portion in arc relationship with the explosive cartridge; and
a refractory metal coating having a thickness of from 0.005" to 0.030" deposited on a portion of the explosive cartridge to provide a thermal delay to the explosive.

4,204,240
HIGH-VOLTAGE IMPULSE DRIVER FOR ELECTROMAGNETIC FLOWMETER
Roy F. Schmoock, Richboro, Pa., assignor to Fischer & Porter Co., Warminster, Pa.
Filed Oct. 26, 1978, Ser. No. 954,749
Int. Cl.² G01F *1/58*
U.S. Cl. 361—152 **8 Claims**



1. In an electromagnetic flowmeter provided with a flow tube having a pair of electrodes mounted at diametrically-opposed positions therein, and an electromagnet having an excitation coil to produce a transverse magnetic field within said tube, the voltage induced in the liquid passing through said tube and intersecting said field being transferred to said electrodes to provide a flow-induced signal, an energy-efficient drive system to excite said electromagnet, said system comprising:
A a full-wave rectifier means connectable to an a-c line

supplying power having a predetermined frequency and producing a rectified voltage;

B switching means responsive to gating pulses to connect the output of said rectifier means to said coil;

C means to apply gating pulses having a predetermined period to said switching means at a rate which is low relative to said power frequency;

D means operable during each gating period when said rectifier means output is connected to said coil to apply to said coil at the outset of this period a surge of high voltage to shock-excite said coil to cause a magnet current flow therein which attains a predetermined level and to continue to apply voltage to said coil to maintain the magnet current flow in said coil substantially at said predetermined level for the remainder of the gating period, whereby a steady state field is periodically established in said flow tube, and unwanted in-phase and quadrature components are minimized without giving rise to polarization and galvanic effects; and

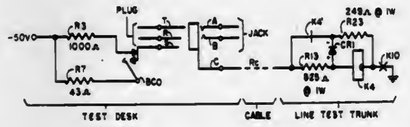
E means to sense the level of magnet current flowing through said coil to produce a control signal, and means responsive to said control signal to intermittently apply surges of voltage to said coil to maintain said magnet current at said level.

4,204,241

LOW POWER CONSUMPTION RELAY SWITCHING CIRCUIT FOR USE IN CONJUNCTION WITH A LINE TEST TRUNK INTERFACING TO A TEST DESK

Huan-Tong Yang, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 26, 1978, Ser. No. 972,747
Int. Cl.[2] H04M 3/22
U.S. Cl. 361—154 4 Claims



1. A low power consumption relay switching circuit for use in a line test trunk interfacing between a test desk including a voltage source initially operated at a first voltage level and further operable at a second voltage level, and an electronic switching center, said switching circuit including a relay comprising a coil and an associated break contact connected to said voltage source, the improvement comprising:

current direction means connected between said relay coil and said break contact and operated to conduct voltage from said voltage source to said relay coil;

first resistive means connected between said voltage source and said relay;

second resistive means connected to said voltage source through said break contact and connected in shunt with said relay coil, operated to inhibit operation of said relay by limiting current flow through said relay coil;

said relay operated in response to said second voltage level of said voltage source to disconnect said second resistive means from said voltage source;

said first resistive means operated in response to said relay operation to limit current flow through said relay coil; and

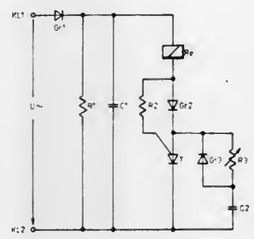
said current direction means further operated in response to said relay operation to block current flow from said voltage source to said second resistive means.

4,204,242

TIME DELAY CIRCUIT FOR TIMING RELAYS

Gerd L. Metzner, Berlin, Fed. Rep. of Germany, assignor to Schleicher GmbH & Co. Relais-Werke KG, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,663
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1977, 2727073
Int. Cl.[2] H01H 7/14
U.S. Cl. 361—198 3 Claims



1. In a time delay circuit for timing relays operated with alternating current, the circuit having first and second input terminals adapted to receive an alternating voltage, a rectifier for rectifying said alternating voltage to provide a direct voltage, a programmable unijunction transistor having anode, cathode and gate electrodes, a relay coil, the rectifier, relay coil and the anode and cathode electrodes of the programmable unijunction transistor connected in series across the first and second input terminals, and RC series network connected across the anode and cathode electrodes of the programmable unijunction transistor, wherein the direct voltage is applied to the anode electrode of the programmable unijunction transistor with limited filtering and used as a reference voltage, which is integrated by means of the RC series network and stored and compared with the reference voltage,

the relay coil being energized as a result of the integrated output of the RC series network exceeding the reference voltage at the gate electrode of the programmable unijunction transistor, the improvement wherein the entire operating voltage is used as the reference voltage, and

the direct voltage having limited filtering and therefore a relatively high amplitude is supplied to the relay coil; and

a programming resistor connected between the relay coil and the gate electrode of the programmable unijunction transistor;

a diode connected in the forward direction between the relay coil and the anode electrode of the programmable unijunction transistor; and

wherein, in each alternating voltage cycle, the reference voltage is applied across the relay coil and the programmable unijunction transistor reduced by the forward voltage of the diode.

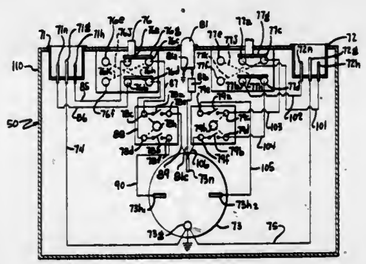
4,204,243

POLARITY INDICATING AND REVERSING UNIT

Anthony J. Ross, 526-74th St., Anna Marie Island, Holmes Beach, Fla. 33510

Filed Mar. 2, 1978, Ser. No. 882,607
Int. Cl.[2] H01R 3/06; G01R 31/02
U.S. Cl. 361—245 6 Claims

6. A polarity indicating and reversing unit comprising, first and second inlet connectors each adapted for connection to respective first and second power supply lines of the type having two-line wires plus ground, each inlet connector having an inlet ground terminal and nominal neutral and hot inlet line terminals, an outlet connector adapted for connection to a load supply line of the type having three-line wires plus ground, said outlet connector having an outlet ground terminal and first and second hot outlet line terminals and a common neutral outlet line terminal, ground conductor means electrically interconnecting the inlet ground terminals on the first and second inlet connectors to each other and to the outlet ground terminal on the outlet connector, a first double-pole polarity reversing switch means and a first double-pole relay switch means, means electrically connecting said first double-pole polarity reversing switch means and said first double-pole relay switch means in series with each other and to the nominal neutral and hot inlet line terminals of the first inlet connector and to the common neutral and first hot outlet line terminals of the outlet connector, said first double-pole relay switch means being normally open to normally electrically disconnect the neutral and hot inlet line terminals of the first inlet connector from the common neutral and first hot outlet line terminals of the outlet connector, first electroresponsive relay switch operating means electrically connected to said nominal neutral and hot inlet line terminals of the first inlet connector and responsive to the voltage thereat for closing the first double-pole relay switch means, said first double-pole polarity reversing switch means being operable from a first position electrically connecting the nominal neutral and hot inlet line terminals of the first inlet connector to the common neutral and first hot outlet line terminals respectively of the outlet connector to a second position electrically connecting the hot and neutral inlet line terminals of the first inlet connector to the common neutral and first hot outlet line terminals respectively of the



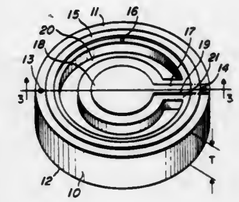
outlet connector, a second double-pole polarity reversing switch means and a second double-pole relay switch means, means electrically connecting the second double-pole polarity reversing switch means and the second double-pole relay switch means in series with each other and to the nominal neutral and hot inlet line terminals of the second inlet connector and to the common neutral and second hot outlet line terminals of the outlet connector, said second double-pole relay switch means being normally open to electrically disconnect the nominal neutral and hot inlet line terminals of the second inlet connector from the common neutral and second hot outlet line terminals of the outlet connector, second electroresponsive relay switch operating means electrically connected to said nominal neutral and hot inlet line terminals of said second inlet connector and responsive to the voltage thereat for closing the second double-pole relay switch means, said second polarity reversing switch means being operable from a first position electrically connecting the nominal neutral and hot inlet line terminals of the second inlet connector to the common neutral and second hot outlet line terminals respectively of the outlet connector to a second position electrically connecting the hot and neutral inlet line terminals of the second inlet connector to the common neutral and second hot outlet line terminals respectively of the outlet connector, and polarity indicator means for indicating when the voltage applied to the common neutral outlet line terminal of the outlet connector is above ground potential.

4,204,244

ELECTROMECHANICAL PRESSURE TRANSDUCER

Roland K. Ho, McHenry, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 23, 1978, Ser. No. 871,273
Int. Cl.[2] H01G 7/00
U.S. Cl. 361—283 3 Claims



1. A pressure transducer in which pressure changes displace a diaphragm whose position determines electrical characteristics of said transducer, comprising:

base substrate means having top and bottom substantially planar end surfaces, said top end surface having a substantially planar central portion;

flexible diaphragm means, relatively thin with respect to the distance between said top and bottom end surfaces, having a planar central portion and a peripheral portion;

mounting means for mounting said peripheral portion of said diaphragm means to said base substrate top surface, said mounting means, said diaphragm planar central portion and said substrate top surface planar portion generally forming an internal cavity, said diaphragm central portion being displaceable with respect to said top surface in response to pressure changes, and wherein said cavity maintains a fixed reference pressure and pressures applied exterior to said internal cavity cause said diaphragm means to flex and thereby alter electrical characteristics of said transducer in response to pressure changes;

said pressure transducer being a capacitive transducer having a first electrode on said top surface central planar portion of said base substrate and a second electrode on said diaphragm means planar central portion, said first and second electrodes directly facing each other across and separated from each other by a gap forming a portion of said internal cavity;

a metallic housing for said transducer; and

wherein said diaphragm means has conductive guard electrode means extending over substantially all of said planar central portion of said diaphragm means for shielding against conductive elements exterior to said internal cavity and adjacent to said diaphragm means which may create variable effects in the electrical characteristics of said transducer;

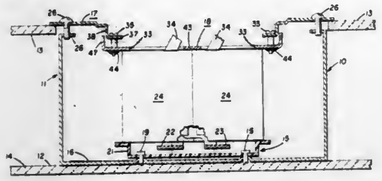
said transducer including connecting means comprising a flexible conductive gasket located on a surface of said diaphragm means parallel to said planar central portion of said diaphragm means that forms a boundary for said internal cavity, and wherein said guard electrode means comprises a conductive metallization area substantially larger than said first electrode area and deposited on the surface of said diaphragm means in contact with said flexible conductive gasket, said conductive gasket electrically connecting said metallic housing and said guard electrode means.

4,204,245

FRONT TRIM FOR PANELBOARD

Roger D. Lake, Norcross, and John M. Rhodes, Atlanta, both of Ga., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 26, 1978, Ser. No. 945,890
Int. Cl.[2] H02B 1/04
U.S. Cl. 361—358 **8 Claims**



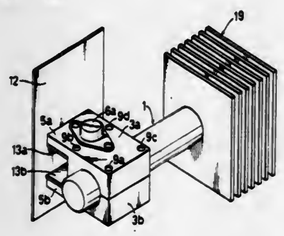
1. An electrical panelboard including a rectangular enclosure having an open front and having a front to back dimension, or depth, which is substantially less than either the length or width of said enclosure; interior means having circuit protection energizing elements; said interior means mounted within said enclosure; closure means at the front of said enclosure; said closure means including a front plate having an interior opening smaller than the open front of the enclosure and in general alignment with said open front; said closure means also including a face plate having opening means for handles of circuit breakers, mounted to said panelboard and connected with said energizing elements, to extend through; and first means accessible for operation at the front of said front plate for front to rear adjustment of said face plate while said enclosure, said interior means and said front plate remain in fixed positions; said front plate being provided with rearward extending first lip means surrounding said interior opening and said face plate being provided with forwardly extending second lip means outboard of said opening means and disposed in telescoping relationship with said first lip means; said first lip means being inboard of the second lip means; said front plate also being provided with a narrow marginal portion extending inward from the rear edge of the first lip means; said first means being secured to said marginal portion.

4,204,246

COOLING ASSEMBLY FOR COOLING ELECTRICAL PARTS WHEREIN A HEAT PIPE IS ATTACHED TO A HEAT CONDUCTING PORTION OF A HEAT CONDUCTIVE BLOCK

Hiroshi Arii, Kawasaki; Hirohito Kawada, Mitaka; Takashi Yoshida, and Chiaki Nonaka, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 766,379, Feb. 7, 1977, Pat. No. 4,120,019.
This application May 8, 1978, Ser. No. 903,397
Claims priority, application Japan, Feb. 14, 1976, 51-16469[U]
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.[2] H05K 7/20
U.S. Cl. 361—385 **1 Claim**



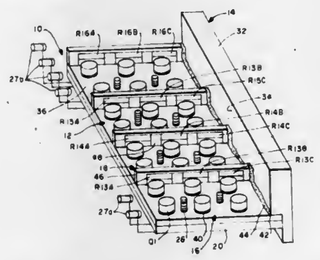
1. In a cooling assembly including a heat generating electric part having leads, a heat conductive block mounting said heat generating electric part, and a heat pipe attached to said heat conductive block for radiating the heat from said heat generating electric part to the air through said heat conductive block, the improvement in which said heatconductive block comprises a thickened portion attached to said heat pipe, and a thinned portion formed contiguously to said thickened portion, said heat generating electric part is mounted on said heat-conductive block so that at least one part of said heat generating electric part extends on the outer surface of said thinned portion, and a connector is secured to the inner surface of said thinned portion and is connected to said leads of the heat generating electric part.

4,204,247

HEAT DISSIPATING CIRCUIT BOARD ASSEMBLY

Patrick A. Wigley, Sunnyvale, Calif., assignor to CPS, Inc., Sunnyvale, Calif.

Filed Sep. 22, 1978, Ser. No. 945,094
Int. Cl.[2] H05K 7/20
U.S. Cl. 361—387 **9 Claims**



1. A heat dissipating printed circuit board assembly especially suitable for handling high voltage-to-ground circuits, comprising:

(a) a printed circuit board including

(i) a substrate support having a frontside and a backside,

(ii) a plurality of electronic components located on said frontside,

(iii) electrically conductive means located on said backside and interconnecting said components in circuit with one another in a predetermined way, and

(iv) terminal input and output means electrically connected in circuit with said electrical components;

(b) a heat conductive and electrically conductive heat dissipating block extending along one edge of said support and having a surface projecting up from and normal to the frontside of said support, said block being spaced predetermined distances from said components, said block being adapted for connection to an electrically grounded, thermally conductive frame for dissipating heat thereto;

(c) heat conductive and electrically non-conductive heat transfer means connected to said electronic components and said block for transferring heat from said components to said heat dissipating block for dissipation thereby, said heat transfer means including

(i) a heat conductive and electrically non-conductive substrate located over and in confronting relationship with the frontside of said support,

(ii) heat conductive and electrically non-conductive means thermally connecting said substrate with said electronic components, and

(iii) heat conductive and electrically non-conductive means thermally connecting said substrate with said block;

(d) at least one resistance arrangement including

(i) a network of interconnected resistors,

(ii) means for electrically interconnecting said resistors in circuit with said electronic components, and

(iii) a heat conductive and electrically non-conductive substrate supporting said resistors and extending entirely within a plane transverse to said heat transferring substrate and block, said resistor supporting substrate being in

physical contact with said resistors and said block for transferring heat from said resistors to said block for dissipation thereby; and

(e) electrically non-conductive means for encapsulating

(i) said printed circuit board including its support, electronic components and component interconnect means, while allowing said terminal input and output means to extend through said encapsulating means,

(ii) said heat transferring substrate, and

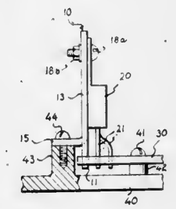
(iii) said resistance arrangement including its resistors, resistor supporting substrate and interconnect means.

4,204,248

HEAT TRANSFER MOUNTING ARRANGEMENT FOR A SOLID STATE DEVICE CONNECTED TO A CIRCUIT BOARD

Daniel S. Proffit, Lynchburg, and Maurice Regignano, Madison Heights, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Nov. 20, 1978, Ser. No. 962,094
Int. Cl.[2] H05K 7/20
U.S. Cl. 361—388 **5 Claims**



1. An improved radio construction comprising:

a. a metallic chassis;

b. a printed circuit board mounted on said chassis, said printed circuit board having holes therethrough in which electrical leads can be placed and soldered;

c. and a mounting arrangement for a solid state device comprising:

1. a metallic plate extending away from said printed circuit board and having at least two spaced projections, said spaced projections extending into respective holes in said printed circuit board, and being soldered thereto;

2. a metallic member attached to said plate in the vicinity of said spaced projections, said metallic member extending from said plate over and in contact with a portion of said chassis;

3. means fastening said metallic member to said chassis to provide a heat path from said metallic plate through said metallic member to said chassis;

4. and a solid state device attached to said metallic plate in heat transfer relation therewith, said solid state device having leads extending into respective holes in said printed circuit board and being soldered thereto.

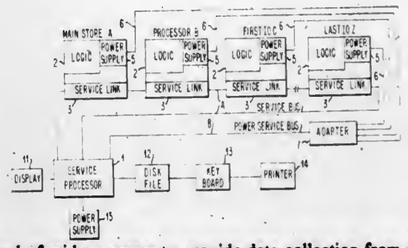
4,204,249

DATA PROCESSING SYSTEM POWER CONTROL

Malcolm Dye, Southampton, and Richard C. J. Hyde, Chandlers Ford, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,560
Claims priority, application United Kingdom, Jun. 30, 1976, 27318/76
Int. Cl.[2] G06F 11/00
U.S. Cl. 364—200 **10 Claims**

1. Data processing apparatus including a service subsystem and a plurality of other subsystems having service link communication with said service subsystem and including at least one processing sybsystem, a plurality of power supply units to provide electrical power to respective ones of said other subsystems, and power supply means dedicated to provide electrical power to enable the service subsystem to start up, the service subsystem including an adapter and a microprogram controlled processor having address and data bus means connected to said adapter, said power control adapter unit being connected between said processor and said power supply units and including measuring and logic curcuits operable under the



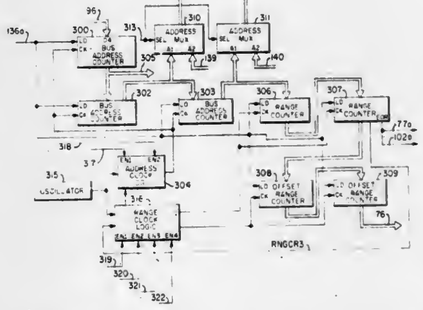
control of said processor to provide data collection from and data distribution to said plurality of power supply units, said service subsystem also including a power control microprogram storage arranged in operation of the service subsystem to control and monitor said plurality of power supply units by operation of said processor and said adapter.

4,204,250

RANGE COUNT AND MAIN MEMORY ADDRESS ACCOUNTING SYSTEM

Edward F. Getson, Jr., Lynn, Mass.; John H. Kelley, Nashua; Albert T. McLaughlin, both of Hudson, N.J., and Donald J. Rathbun, Andover, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 4, 1977, Ser. No. 821,900
Int. Cl.[2] G06F 13/00
U.S. Cl. 364—200 **4 Claims**



1. A data transfer control system in a peripheral control unit having a scratchpad memory unit and a hardware control means, said control system having architecture accommodating both the loading of memory address, range and offset range parameters in a serial stream, and the dynamic amending of said parameters during a data transfer between a disk device and a main memory unit of a data processing system wherein said peripheral control unit and said main memory unit are electrically coupled by an asynchronous communication bus, which comprises:

a. a memory address counter responsive to said hardware control means for dynamically updating memory address information to said bus during a data transfer;

b. a range counter electrically connected to said memory address counter to form a serial data path and responsive to said hardware control means for indicating the completion of a data transfer to said hardware control means;

c. an offset range counter electrically connected to said range counter in extension of said serial data path and responsive to said hardware control means for dynamically indicating to said hardware control means the occurrence of a first data byte in an information stream to be transferred; and

d. firmware control means responsive to said hardware control means between data transfers for circulating a serial stream of said parameters through said scratchpad memory unit, said memory address counter, said range counter and said offset range counter, thereby storing control information in said scratchpad memory unit for reinitiating a data transfer in the event of a data transfer error.

4,204,251

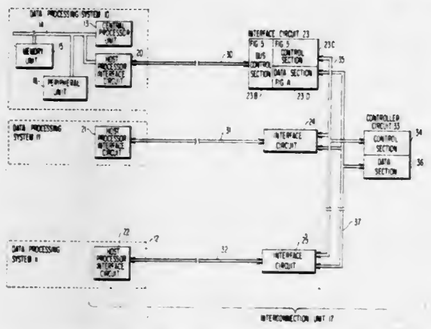
INTERCONNECTION UNIT FOR MULTIPLE DATA PROCESSING SYSTEMS

Finn Brudevold, 35 Fairbanks Ave., Wellesley, Mass. 02181

Filed Dec. 28, 1977, Ser. No. 865,116

Int. Cl.[2] G06F *15/16*

U.S. Cl. 364—200 **20 Claims**



1. An interconnection unit for interconnecting a plurality of data processing systems wherein each data processing system includes file storage means for storing blocks of information as files and system transfer means connected to the file storage means for controlling transfers of information, including the file information and control request information, between the system transfer means and said interconnection unit, said interconnection unit comprising:

A. a plurality of first signal transfer means, each said first signal transfer means being connectible to the system transfer means in one of the data processing systems for receiving informaton from and transferring information to the system transfer means in the one data processing system,

B. request selection means connected to the plurality of said first signal transfer means for transferring exclusive control of said interconnection unit to one of the data processing systems in response to the coincidence of the receipt of request control information in said first transfer means from the data processing system connected thereto and the identification of the data processing system in accordance with a selection sequence;

C. means for storing information received from the data processing systems, and

D. second signal transfer means connected to all said first signal transfer means and said information storage means for transferring information between the selected one of the data processing systems and said storage means through said first signal transfer means.

4,204,252

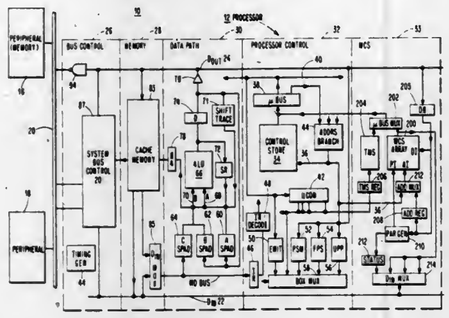
WRITEABLE CONTROL STORE FOR USE IN A DATA PROCESSING SYSTEM

George E. Hitz, Sudbury; Charles H. Kaman, Newton Highlands; Craig Mudge, Weston; James F. O'Loughlin, Westford, and Daniel T. Sullivan, Bolton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 3, 1978, Ser. No. 883,085

Int. Cl.[2] G06F *9/18, 13/00*

U.S. Cl. 364—200 **15 Claims**



1. In a data processing system including at least one data storage unit for storing operating routine instructions and data and a processor for processing such operating routine instructions and data received from said data storage unit, said processor comprising:

A. primary control store means having an output, an address input and a data input and having a plurality of addressable storage locations for storing processor instructions, pluralities of said processor instructions being grouped together to form programs utilized to control the processor during the execution of said operating routine instructions received by the processor from the data storage unit;

B. first addressing means coupled to the address input of said primary control store means for addressing certain ones of said addressable storage locations and causing the processor instructions contained in said addressed storage locations to be coupled to the output of said primary control store means;

C. instruction transmission means coupled to the output of said primary control store means for transmitting processor instructions at the output of said primary control store means throughout said processor for controlling the operation thereof;

D. secondary control store means having an output coupled to said instruction transmission means and an address input and having a plurality of addressable storage locations therein for storing processor instructions, pluralities of said processor instructions being grouped together to form programs utilized to control the operation of said processor;

E. second addressing means coupled to the address input of said secondary control store means for addressing certain ones of the addressable storage locations in said secondary control store means and causing contents of said addressed storage locations to be coupled to the output of said secondary control store means;

F. data means responsive to the output of said secondary control store means having an input for receiving data from said processor and an output coupled to the data input of said primary control store means for transferring data to said primary control store means;

G. third addressing means responsive to the output of said secondary control store means and coupled to said first addressing means, for controlling the addressing of said primary control store means in response to the output of said secondary control store means; and

H. enabling means, having an output coupled to said second addressing means and responsive to an output from said primary control store means for enabling said second addressing means to address certain ones of said addressable storage locations in said secondary control store means; whereby processor instructions stored in said secondary control store means may be used to control the processor when data is transferred to and from said primary control store means.

4,204,253

DEVICE FOR GENERATING AND CORRECTING A USER PROGRAM

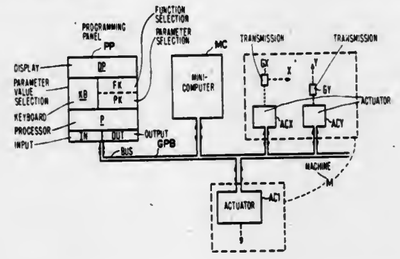
Joannes G. van den Hanenberg, and Frederikus J. de Munnik, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1978, Ser. No. 888,506

Claims priority, application Netherlands, Mar. 22, 1977, 77 03078

Int. Cl.[2] G06F *15/16, 9/19*

U.S. Cl. 364—200 **5 Claims**



1. A programming panel device for generating and correcting user programs, said device connected to a computer having a memory for controlling a machine control system, said device comprising:

a processor;

said processor storage means including means to store at least one function step in a user program;

keyboard means for data entry into said processor;

input/output means for said processor;

display means under the control of said processor for displaying function steps of said user programs;

bus means for connection of said input/output means to said computer and said machine control system; function selection means under the control of said processor for the selection of a function to be programmed comprising:

means to transfer a table of function codes and associated parameter codes for at least one function step of a user program from said computer over said bus means to said storage means of said processor;

said display means including means for displaying said function and parameter codes;

said transferred and displayed parameter codes being dependent upon the function selected by said function selection means;

parameter value input means under the control of said processor for inputting specific values for said parameters to be inserted into functions which have been selected, the inputting of a parameter value for all of the parameters in the function selected resulting in the completion of the programming of a selected function;

means to transfer said completed function to said processor storage means to be stored as a user program step;

means to transfer each of said completed user program steps to said memory of said computer over said bus means for storage in said computer and for subsequent execution by said computer for controlling said machine control system.

4,204,254

ELECTRONIC COMPUTER INCLUDING AN INFORMATION REFRESHING ARRANGEMENT

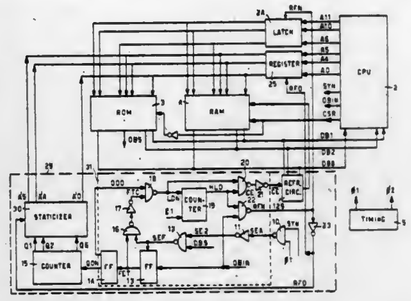
Aldo Muzzani, and Ilio Paccapelo, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A.

Filed May 19, 1978, Ser. No. 907,490

Claims priority, application Italy, May 25, 1977, 68191 A/77

Int. Cl.[2] G06F *13/02, 9/16*

U.S. Cl. 364—200 **4 Claims**



1. In an electronic computer having a dynamic operative memory formed of capacitive elements selectively recorded with an electric charge, a read only memory storing microprograms each one formed of a sequence of microinstructions, a central processing unit cooperating with said operative memory, a timing unit for timing the operations of said processing unit for fetching said microinstructions one at a time from said read only memory, and decoding means also included in said processing unit for decoding the microinstructions so fetched to be executed by said processing unit, an information refreshing arrangement for said operative memory comprising: refreshing means conditionable for periodically refreshing the information stored in the capacitive elements of said operative memory, logic means for recognizing a signal indicating the beginning of any microinstruction fetching operation and conditioning means operable under the control of said logic means and said timing unit for conditioning said refreshing means during the operation of said decoding means.

4,204,255

APPARATUS FOR ADJUSTING A VEHICLE SEAT

Heinz P. Cremer, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co KG, Remscheid, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 831,865, Sep. 9, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,394

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1976, 2640528

Int. Cl.[2] B60N *1/02*; G06F *15/20*

U.S. Cl. 364—425 **6 Claims**

3. Apparatus for adjusting the optimal position of a vehicle seat for a person under varying driving conditions comprising:

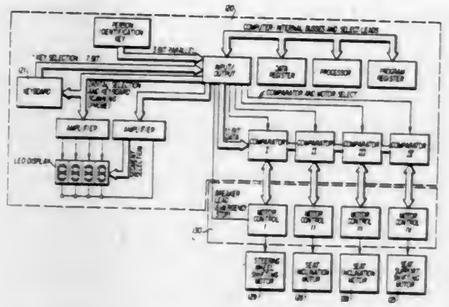
a vehicle seat;

means for adjusting at least one position of said vehicle seat;

computer means having a memory for vehicle-specific entry parameters and being useful for determining the optimal position of said vehicle seat;

entry means associated with said computer means for entering into said computer personal input data for said person and input data for said driving conditions, said computer means being operable to determine said optimal seat position in response to said input data and to generate output signals corresponding to said optimal seat position; and

control means associated with said computer means and responsive to said output signals for controlling said seat



adjustment means to thereby position said vehicle seat into the optimal position thereof.

4,204,256

INPUT-OUTPUT UNIT FOR A MICROPROCESSOR ENGINE CONTROL SYSTEM

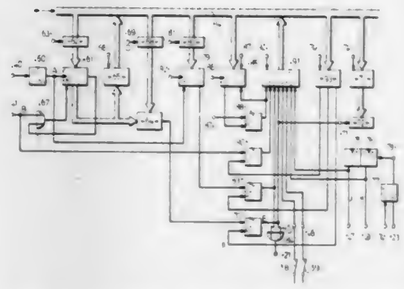
Winfried Klötzner, Maulbronn-Schmie, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 916,827

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732781

Int. Cl.[2] **G06F** *15/20;* **G05B** *15/02;* **F02D** *5/02*

U.S. Cl. 364—431 **15 Claims**



1. In a system for controlling repetitive operations of a machine dependent on operating parameters such as the operation of electrical ignition in an internal combustion engine, which system comprises a microprocessor, a clock pulse generator, a read-only memory (ROM, PROM), a random access memory (RAM), a data bus and an address bus, both interconnecting said microprocessor with said read-only memory and said random access memory, and read and write enable connections for enabling the reading of said memories and writing into said random access memory the data on said data bus at the memory address specified on the said address bus,

an input-output unit for said system connected to said address bus and read and write connections including a decoding circuit, connected to said data bus, and connected to said microprocessor also through "clear" and "interrupt" connections for receiving a clearing command from said microprocessor and for providing an interrupt to said microprocessor, said input-output unit comprising:

a counter (**61**) for counting shaft rotation rate dependent signals arranged for operation in successive counting invervals, the length of which intervals are determined by setting of said counter through said data bus (**14**), and the position in time of which intervals is controlled by at least one timing reference mark of said machine, said counter having a multibit count state output and having input connections for having a count value set therein for initiation of counting and termination of and for counting said signals;

a comparator (**64**) and a buffer store (**68**) therefor, said comparator having one multibit comparison input connected to the count-state output of said counter (**61**) and its other multibit comparison input connected to said buffer store (**68**), and having an output for indicating at least one comparison condition of signals at said inputs thereof, said buffer being arranged to have its content written through said data bus;

a selectable multi-channel final stage array (**75, 76, 49, 50**) and providing a plurality of output command channels,

and select logic circuits (**72, 73**) for sequential preselection of said channels of said final stage array, said select logic circuits being connected to said data bus for their control and to said final stage array for channel preselection in response to a signal of a control signal sequence (F) and including circuits for transferring timed signals (E) obtained in response to the output of said comparator to the channels preselected in sequence,

said decoding circuit (**100**) being constituted so as to provide stepwise control of the various circuit components connected with said data bus (**14**) as selected over said address bus (**15**).

4,204,257

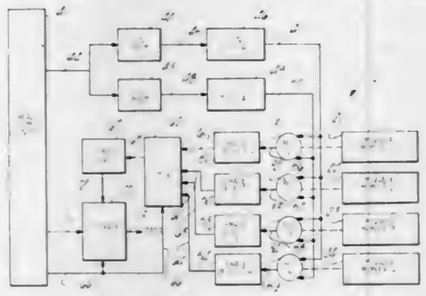
NUMERICAL CONTROL RESOLVER POSITION MEASURING DEVICE

William R. Hungerford, Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 28, 1978, Ser. No. 964,226

Int. Cl.[2] **G06F** *15/46;* **H03K** *13/02*

U.S. Cl. 364—474 **14 Claims**



1. An absolute resolver position measuring device for a numerical control apparatus that controls a machine having at least one movable member wherein a resolver is operatively connected to the movable member such that the rotor of the resolver rotates as the member moves, comprising:

real time counter means for counting real time and for providing a multi-digit digital data word that is cyclically redundant;

memory means addressable by said real time counter means, said memory means for cyclically providing sequences of digital data words which digital data words represent quadrature sinusoidal waveforms;

first digital to analog converter means responsive to digital data words from said memory means for providing an approximately sinusoidal waveform to energize a first stator winding of said resolver;

second digital to analog converter means responsive to digital data words from said memory means for providing an approximately sinusoidal waveform to energize a second stator winding of said resolver, the sinusoidal outputs of said first and second digital to analog converter means being in a quadrature relationship;

phase detecting means responsive to the waveform from the rotor of said resolver for indicating when the waveform provided by said resolver rotor reaches a predetermined phase relationship; and

storage means for storing the output of said real time counter means in response to the output indicative of said phase detecting means such that the contents of said storage means represents the position of the rotor and the movable member.

4,204,258

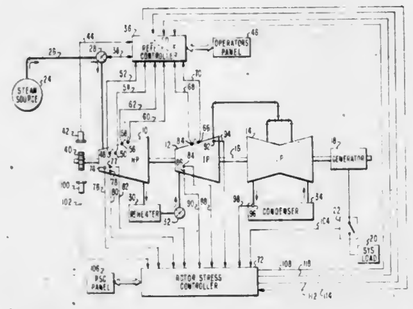
TURBINE ACCELERATION GOVERNING SYSTEM

William E. Zitelli, Monroeville, and Alan T. Heltsley, Chester Upland, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 3, 1978, Ser. No. 948,263

Int. Cl.[2] **F01B** *25/06;* **F01K** *13/02*

U.S. Cl. 364—494 **9 Claims**



1. In a turbine speed control system which is operative to control the speed of a steam turbine through a turbine start-up operation by regulating the position of at least one steam admission valve of said turbine in accordance with a speed control function based on a computed speed error between an adjustable speed reference signal and a signal representative of the actual speed of said turbine, said speed reference signal being adjusted, at times, to converge to a desired speed demand signal at a selected acceleration, an improvement comprising:

a first controller operative to control the speed of said turbine at selected accelerations from turning gear to a predetermined turbine speed value;

a second controller selectively operative to govern said turbine accelerations as controlled by said first controller in accordance with calculated present and anticipated rotor stresses of said steam turbine, said second controller performing said rotor stress calculations concurrently with the speed control operations of said first controller;

means for generating a plurality of signals representative of actual temperature differences of predetermined portions of said steam turbine and for providing said differential temperature representative signals to said first controller;

and wherein said first controller is further operative to reduce said turbine acceleration to substantially zero upon the detection of at least one of said representative temperature difference signals exceeding a preset limit value respectively associated therewith, said first controller being still further operative to detect when said turbine speed is controllably held substantially fixed in one of a number of predetermined critical speed zones as a result of said acceleration governing by said second controller or as a result of a temperature difference signal exceeding its preset limit value and to adjust said turbine speed outside of said one critical speed zone during either one of said detected turbine speed states.

4,204,259

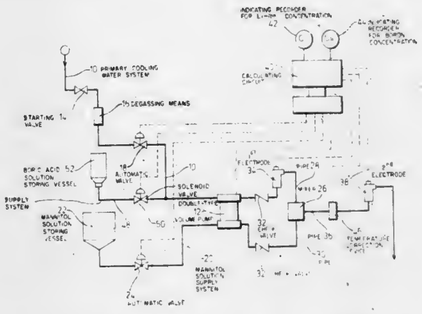
AUTOMATIC APPARATUS FOR CONTINUOUS DETERMINATION OF BORON AND LITHIUM CONCENTRATIONS

Ikuo Yabe, Tokyo, Japan, assignor to Nikkiso Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1978, Ser. No. 895,367

Int. Cl.[2] **G06F** *15/52;* **G01N** *27/42*

U.S. Cl. 438—497 **6 Claims**



1. An automatic apparatus for continuous determination of boron and lithium-ion concentrations in the primary cooling water used in a pressurized water reactor plant comprising, means for conducting a source of boric acid sample water containing lithium ions to a mixer, means for conducting a mannitol solution to said mixer thereby to form in said mixer a boric acid-mannitol complex sample water, a first electrode contacting said boric acid sample water to measure the conductivity thereof, a second electrode contacting the boric acid-mannitol complex sample water as it leaves the mixer to measure the conductivity thereof, a calculating circuit connected with each of the said electrodes for receiving the conductivity measurements emanating therefrom, said calculating circuit including elements for calculating the boron and lithium-ion concentrations of the sample water by utilization of the conductivity measurements, and at least one indicating recorder connected to said calculating circuit for indicating and recording the boron and lithium-ion concentrations.

4,204,260

RECURSIVE PERCENTILE ESTIMATOR

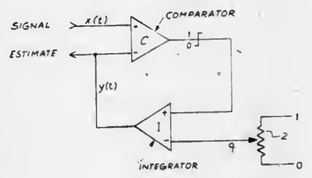
Paul A. Nysen, Clovelly, Australia, assignor to Unisearch Limited, Australia

Filed Jun. 7, 1978, Ser. No. 913,326

Claims priority, application Australia, Jun. 14, 1977, PD0425

Int. Cl.[2] **G06F** *15/36*

U.S. Cl. 364—554 **6 Claims**



1. A recursive percentile estimator, comprising

a comparator for comparing a time varying signal quantity and a time varying estimate signal corresponding to a predetermined percentile, said comparator having an output, a first input to which said signal quantity is supplied and a second input to which said estimate signal is supplied;

an integrator having a first input connected to the output of said comparator, a second input and an output connected to the second input of said comparator, said integrator providing said estimate signal at its output; and

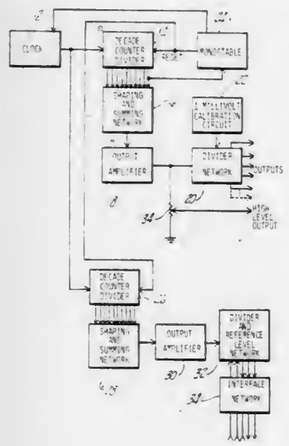
probability means connected to the second input of said integrator for providing a signal corresponding to a cumulative probability equivalent to said predetermined percentile.

4,204,261

COMPLEX ANALOG SIGNAL GENERATOR

Frederick B. Ruszala, Sterling Heights, and Kenneth J. Cook, Troy, both of Mich., assignors to The Valeron Corporation, Oak Park, Mich.

Filed Mar. 1, 1978, Ser. No. 882,357
Int. Cl.[2] G06T 1/00; G06G 7/26
U.S. Cl. 364—607 **20 Claims**



16. An electronic circuit for generating a simulated electrocardiogram waveform, comprising:

multistage counter means for sequentially providing an output signal at each stage;

a plurality of analog signal shaping circuits each coupled to a stage of the counter, said shaping circuits including:

a resisitive-capacitive integrator to form a P segment of said simulated electrocardiogram waveform;

a resistive-capacitive integrator having an input and output, and an inverting amplifier connected to the output of said resistive-capacitive integrator to form a Q segment of said simulated electrocardiogram waveform;

a resisitive-capacitive differentiator having an input and an output, a unidirectional conductive means connected to the output of said resistive-capacitive differentiator, and a resistive-capacitive integrator connected to the output of said

resistive-capacitive differentiator to form an R segment of said simulated electrocardiogram waveform;

a resistive-capacitive integrator having an input and an output, and an inverting amplifier having an input connected to the output of said resistive-capacitive integrator to form an S segment of said simulated electrocardiogram waveform;

a resistive-capacitive integrator having two inputs and one output to form a T segment of said simulated electrocardiogram waveform; and

means for summing the outputs of the analog signal shaping circuits to provide a completed simulated electrocardiogram waveform.

20. In a biological waveform simulator device, an electronic circuit for modulating a carrier frequency signal with an information containing signal for transmission to a remote device, comprising:

analog switch means having two signal inputs and a power supply input for energizing components thereof, said switch means operative to amplitude modulate said carrier frequency signal on one input with said information signal on the other input wherein the amplitude modulated signal is transmitted to the remote device; and

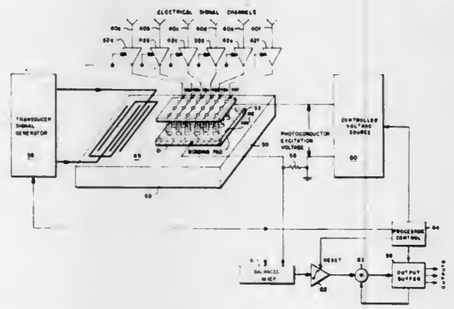
power supply means operative to rectify said carrier frequency signal and coupling the rectified output to the power supply input of the switch means to thereby power said analog switch means.

4,204,262

OPTICAL SIGNAL PROCESSING APPARATUS

Michael M. Fitelson, 214 Stonecrest Dr., Dewitt, N.Y. 13214, and Dennis R. Morgan, 7734 Forestwag Ct., Liverpool, N.Y. 13088

Filed May 25, 1977, Ser. No. 800,155
Int. Cl.[2] G06G 9/00, 7/19
U.S. Cl. 364—822 **9 Claims**



1. A simultaneous space and time signal processing apparatus for use with a source of a plurality of phase-related time-varying input signals, comprising:

(a) acousto-optic means including a strain-sensitive light transmissive medium and means for inducing time and space varying strain disturbances in said medium;

(b) a light source array comprising a plurality of light sources of number corresponding to the number of said time-varying signals and spatially interrelated correspondingly to the phase relationships of said input signals, each of said light sources being driven by one of said input signals to produce a light output signal corresponding to the drive signal amplitude and being positioned adjacent said medium to project such light output signals thereon, the light signals thus incident upon said acousto-optic means being modulated by said light transmission medium in accordance with the time and space varying strain disturbances therein;

(c) means for sensing the light signals incident upon and modulated by said acousto-optic means and for deriving therefrom an electrical signal which is representative of the summed amplitudes of the light signals so sensed; and

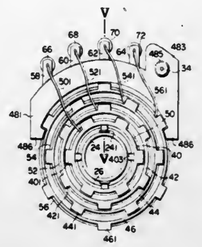
(d) means for demodulating said electrical signal to produce an output signal representative of the time-varying input signals having a predetermined phase relationship.

4,204,263

FLYBACK TRANSFORMER

Shoji Onoue, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1978, Ser. No. 898,284
Claims priority, application Japan, Apr. 20, 1977, 52-45578; Apr. 22, 1977, 52-51025[U]
Int. Cl.[2] H02M 7/06; H01F 27/30
U.S. Cl. 363—68 **7 Claims**



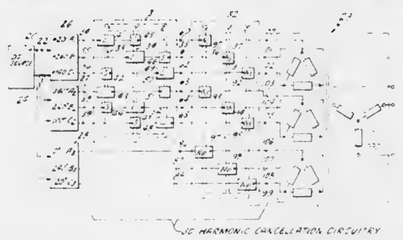
1. A flyback transformer comprising a magnetic core, primary and secondary windings wound around said magnetic core, said secondary winding including a plurality of coil units and a plurality of rectifying diodes, said coil units and said rectifying diodes being alternately connected in series, a coil bobbin on which said primary winding is wound, a plurality of concentric layer bobbins with different diameters on which said secondary winding is wound, each of said coil units being wound in a single layer around each of said layer bobbins, means for forming a predetermined space between said layer bobbins when the layer bobbins are assembled in layers and means mounted on an outermost layer bobbin of said layer bobbins for supporting said rectifying diodes.

4,204,264

HARMONIC CANCELLATION FOR MULTI-BRIDGE, THREE-PHASE CONVERTERS

Kenneth Lipman, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 27, 1978, Ser. No. 964,305
Int. Cl.[2] H02M 1/12
U.S. Cl. 363—71 **4 Claims**



1. A method of cancelling the signal harmonics of the output fundamental signals of a three-phase converter, each output fundamental signal provided as the sum of equal phase angle fundamental signals from one of three sets of corresponding phase outputs of an N number of converter bridges, where N is a non-power of two, comprising the steps of:

adjusting the phase angle of the fundamental signals to provide a phase displacement of the fundamental signals of each bridge by 60/N degrees relative to the fundamental signals provided at corresponding phase outputs of at least one other bridge;

grouping the highest power of two number of bridges in a first group and all the remaining bridges in a second group;

adding to each displaced fundamental signal in said first group and said second group, the difference signal magnitude between the particular fundamental signal and the displaced fundamental signals from corresponding phase outputs in the related one of said groups and the difference signal magitude between displaced fundamental signals of at least one other set of corresponding phase outputs of the related ones of said groups, to provide a first group fundamental signal for each displaced fundamental signal in said first group and a second group fundamental signal for each displaced fundamental signal in said second group, each having a phase angle corresponding to one of the converter phases, said second group fundamental signals having all signal harmonics of an order less than 6·N−1 displaced by one hundred eighty degrees from the equal order signal harmonics of said first group fundamental signals of equal phase angle; and

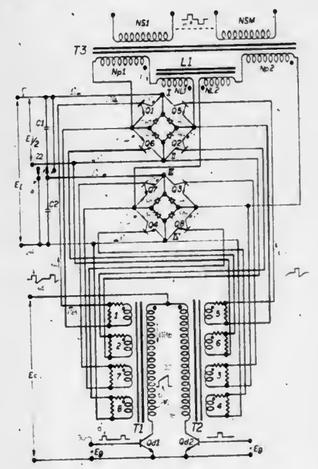
summing said first group fundamental signals with said second group fundamental signals having equal phase angle to provide a sum fundamental signal for each set of corresponding phase outputs from the N bridges, each sum fundamental signal representative of the output fundamental signal in one phase of the three-phase converter, each having a first harmonic of order (6·N−1).

4,204,265

STATIC CONVERTER SUITABLE FOR HIGH INPUT VOLTAGE APPLICATIONS

James A. McLeod, 224 Unit N, Red Oak Dr. East, Sunnyvale, Calif. 94086

Filed Aug. 14, 1978, Ser. No. 933,157
Int. Cl.[2] H02M 7/537
U.S. Cl. 363—71 **10 Claims**



1. A static converter, comprising:

first and second input terminals across which a power supply potential may be applied;

drive signal generating means for developing first and second drive signals that are 180° out of phase relative to each other;

output transformer means including first and second primary windings wound about a common magnetic core, and at least one secondary winding across which a load may be connected;

current balancing inductor means including first and second inductor windings wound in opposite directions about a common magnetic core; and

first and second bridge means connected across said first and second terminals, said first and second bridge means being responsive to said first drive signal and operative to couple a first circuit including said first primary winding and said first inductor winding connected in series, and a

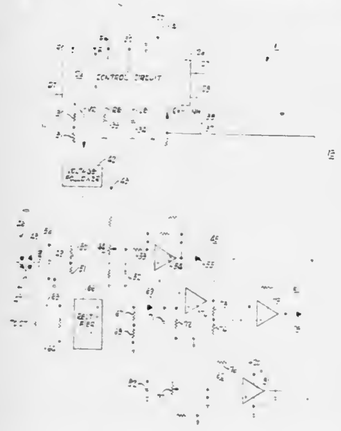
second circuit including said second primary winding and said second inductor winding connected in series across said first and second pair of input terminals such that current flows therethrough in one direction, said first and second bridge means being responsive to said second drive signal and operative to couple said first circuit and said second circuit across said first and second pair of input terminals such that current flows therethrough in the opposite direction, said inductor windings insuring that during the switching times the current through the last bridge to turn OFF or through the first bridge to turn ON will be held to a predetermined level.

4,204,266

INVERTER DRIVE CIRCUIT

Neil Kammiller, Lakewood, and Pantelis P. Paradissis, Amherst, both of Ohio, assignors to Lorain Products Corporation, Lorain, Ohio

Filed Jul. 28, 1978, Ser. No. 928,864
Int. Cl.[2] H02P *13/18*
U.S. Cl. 363—98 **32 Claims**



1. An inverter circuit having controllable semiconductors connected for a controllable output alternating voltage, comprising, in combination:

a control circuit connected to control the conduction time of said semiconductors, said control circuit having controllable input means connected to control the conduction time of said semiconductors;

means establishing a voltage reference signal;

means connected to sense the amount of output current from said semiconductors and to develop a current signal;

rectifier means having a plurality of outputs connected to rectify a signal proportional to said current signal;

a current limit setting potentiometer connected to said reference voltage signal to establish a reference signal representative of a maximum value of inverter output current;

a first current limit means including

(i) an operational amplifier connected as a comparator and having first and second inputs;

(ii) means connecting said comparator first input to one of the outputs of said rectifier means; and

(iii) means connecting said current limit setting potentiometer reference signal to said second input of said comparator; and

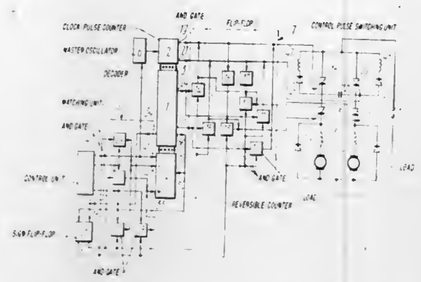
means connecting the output of said comparator to said controllable input means of said control circuit whereby the output voltage of said inverter is decreased upon the output of said comparator changing state when said rectified signal exceeds said reference signal.

4,204,267

DIGITAL CONTROL DEVICE FOR D.C. THYRISTOR-PULSE CONVERTER

Anatoly Y. Kalinichenko, Moscow, U.S.S.R., assignor to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia, Moscow, U.S.S.R.

Filed Apr. 10, 1978, Ser. No. 895,276
Int. Cl.[2] H02P *13/24*
U.S. Cl. 363—85 **1 Claim**



1. A digital control device for controlling a d.c. thyristor-pulse converter, comprising:

a decoder having first and second information inputs, a first time-shiftable control pulse output, a second time-shiftable control pulse output, a first switching output of control pulses for switching control stages, and a second switching output of control pulses for switching control stages;

a clock pulse counter having an input, a first time-fixed control pulse output, a second time-fixed control pulse output, and information outputs connected to said first information inputs of said decoder;

a master oscillator having an input, and an output connected to said input of said clock pulse counter;

a reversible counter having a reset input connected to said first switching output of said decoder, an initial state setting input, a subtract input, an add input, and information outputs connected to said second information inputs of said decoder;

a control unit having a position selection output, a position return output, and an initial position setting output connected to said input of said master oscillator and to said initial position setting input of said reversible counter;

a control pulse switching unit comprising first and second flip-flops and first, second, third, fourth, fifth and sixth AND gates; wherein

said first flip-flop has a counting input and an output;

said second flip-flop has a counting input and an output;

said first AND gate of said control pulse switching units has a first input connected to said second time-shiftable control pulse output of said decoder, a second input, and an output connected to a control electrode of a first thyristor of the converter and to said counting input of said first flip-flop, said control electrode also being connected to said first output of said clock pulse counter;

said second AND gate of said control pulse switching unit has a first input connected to said first time-shiftable control pulse output of said decoder, a second input, and an output connected to a control electrode of a second thyristor of the converter and to said counting input of said second flip-flop, said control electrode also being connected to said second output of said clock pulse counter;

said third AND gate of said control pulse switching unit has a first input connected to said output of said second flip-flop, a second input, and an output connected to a control electrode of a third thyristor of the converter;

said fourth AND gate of said control pulse switching unit has a first input connected to said output of said first flip-flop, a second input, and an output connected to a control electrode of a fourth thyristor of the converter;

said fifth AND gate of said control pulse switching unit has a first input connected to said first time-shiftable control pulse output of said decoder, a second input, and an output connected to said control electrodes of said first and third thyristors of the converter; and

said sixth AND gate of said control pulse switching unit has a first input connected to said second time-shiftable control pulse output of said decoder, a second input, and an output connected to said control electrodes of said second and fourth thyristors of the converter; and

a matching unit for matching the states of said control pulse switching unit and of said reversible counter with the state of said control unit comprising a sign flip-flop and first, second, third and fourth AND gates; wherein

said sign flip-flop of said matching units has a first input connected to said first switching output of said decoder, a second input connected to said second switching output of said decoder and to said initial state setting output of said control unit, a first output connected to said second inputs of said first, second, third and fourth AND gates of said control pulse switching unit, and a second output connected to said second inputs of said fifth and sixth AND gates of said control pulse switching unit;

said first AND gate of said matching unit has a first input connected to said position selection output of said control unit, a second input connected to said second output of said sign flip-flop, and an output connected to said subtract input of said reversible counter;

said second AND gate of said matching unit has a first input connected to said position selection output of said control unit, a second input connected to said first output of said sign flip-flop, and an output connected to said add input of said reversible counter;

said third AND gate of said matching unit has a first input connected to said position return output of said control unit, a second input connected to said first output of said sign flip-flop, and an output connected to said subtract input of said reversible counter; and

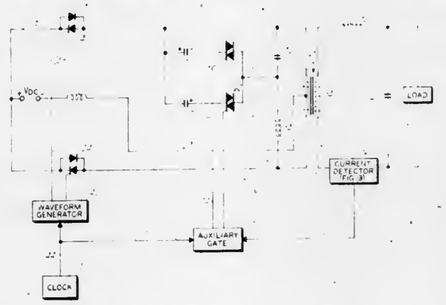
said fourth AND gate of said matching unit has a first input connected to said position return output of said control unit, a second input connected to said second ouput of said sign flip-flop, and an output connected to said add input of said reversible counter.

4,204,268

AUXILIARY COMMUTATION CIRCUIT FOR AN INVERTER

Joseph R. Vivirito, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 930,469, Aug. 2, 1978, abandoned. This application Dec. 26, 1978, Ser. No. 973,339
Int. Cl.[2] H02M *7/515*
U.S. Cl. 363—135 **10 Claims**



1. An inverter for converting DC electrical energy into an output waveform having a substantially sinusoidal fundamental component, comprising:

an input means for receiving electrical energy from a DC source;

semiconductor switch means coupled to said input means, including a means for providing a control waveform of a frequency related to said fundamental sinusoidal component to said semiconductor switch means for periodically translating said switch means between its nonconducting and its conducting states;

main commutation means connected to said semiconductor switch means which stores electrical energy for commutating the semiconductor switch means to its nonconducting state; and

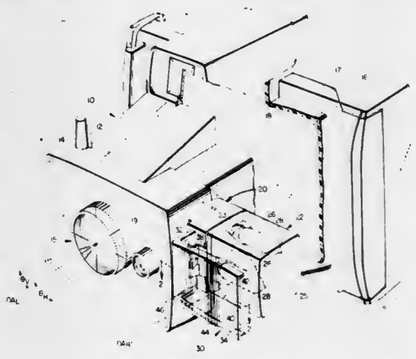
auxiliary means including a pair of capacitors on which electrical energy is stored during inverter operation, and which is operable in response to an overcurrent condition for providing additional electrical energy for commutation.

4,204,269

OPTICAL ELEMENT FOR REDISTRIBUTING THE LIGHT OUTPUT OF A PHOTOFLASH LAMP ASSEMBLY OR THE LIKE

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 27, 1977, Ser. No. 864,316
Int. Cl.[2] G03B *15/02*
U.S. Cl. 362—17 **22 Claims**



1. Photographic apparatus for use with an artificial lighting assembly of the type which includes an inwardly curving reflector having a given focal length and optical axis and an artificial light source having a principal diameter that is at least one-half of the focal length of the reflector and wherein the light source is positioned along the optical axis of the reflector so that the intensity of the illumination provided by the artificial lighting assembly at any point on a plane normal to the optical axis of the reflector decreases as the point's distance from the optical axis of the reflector increases, said apparatus comprising:

means for mounting the artificial lighting assembly so that light therefrom can be directed toward a scene to be photographed; and

optical means, mounted in a predetermined spaced apart relationship with the lighting assembly, for intercepting rays of light from the artificial lighting assembly to change the angular direction of travel of at least certain of such rays such that the distribution of illumination intensity provided by the artificial lighting assembly on the normal plane is changed to a preferred distribution which is more uniform over the normal plane, said optical means comprising a transparent, generally planar member having a first surface facing the scene and a second surface, spaced from said first surface, facing the artificial lighting assembly, said second surface being configured to define a refracting surface of predetermined size centrally disposed

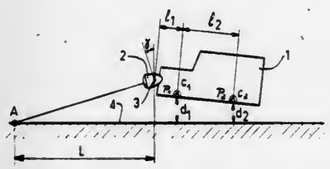
about the optical axis of the reflector, the index of refraction of said transparent member being selected and said refracting surface being structured to operate by total internal reflection to retroreflect rays from the scene which are incident normal to said first surface, rays from the artificial lighting assembly which are parallel with the optical axis of the reflector and incident on said refracting surface thereby being deviated by said refracting surface to locations on the normal plane which are further removed from the optical axis of the reflector, and rays from the artificial lighting assembly which are incident upon said refracting surface at angles oblique to the optical axis of the reflector being diviated by said refracting surface such that the distribution of the intensity of illumination on the normal plane attributed exclusively to such oblique rays remains substantially unchanged.

4,204,270

METHOD AND APPARATUS FOR ADJUSTING THE ORIENTATION OF VEHICLE HEADLIGHTS

Emmanuel H. Poirier d'Ange d'Orsay, Toulouse, France, assignor to Societe pour l'Equipement de Vehicules, Issy-les-Moulineaux, France

Filed Sep. 26, 1977, Ser. No. 836,897
Claims priority, application France, Sep. 24, 1976, 76 28796
Int. Cl.[2] B60Q *1/10*
U.S. Cl. 362—71 **16 Claims**



4. Apparatus for adjusting the position of a headlight with respect to the body of a vehicle comprising, a headlight, means mounting the headlight for adjustment about an axis parallel to the roadway and perpendicular to the vehicle path, motor means for rotating the headlight to an adjustment angle α with respect to the vehicle body, a first sensor C_1 mounted near the front of the vehicle for sensing the height d_1 of the vehicle body relative to the roadway at a point P_1 of the vehicle body, a second sensor C_2 mounted near the rear of the vehicle for sensing the height d_2 of the vehicle body relative to the roadway at a point P_2 near the rear of the vehicle body, means for deriving a voltage $V_1(\alpha_o)$ indicative of the desired angle α, where

$$V_1(\alpha_o)=K_1(d_2-d_1)+K_2d_1+K_3,$$

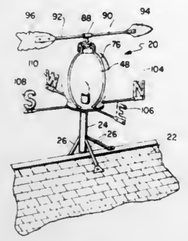
K_1, K_2 and K_3 being constants, and K_1 and K_2 being related by the expression $K_1l_2+K_2l_1\simeq 1$, where l_1 is the distance between the axis of rotation of the headlight and point P_1 projected on a line P_1P_2 through the points P_1 and P_2, and l_2 is the distance between points P_1 and P_2, sensing means for generating a voltage $V(\alpha)$ indicative of the angle α between the headlight and the vehicle body, means for comparing $V_1(\alpha_o)$ with $V(\alpha)$, and means responsive to a difference between $V_1(\alpha_o)$ and $V(\alpha)$ for generating a signal to operate said motor means to adjust the headlight to cause said voltage $V(\alpha)$ to substantially equal $V_1(\alpha_o)$.

4,204,271

ILLUMINATED WEATHER VANE

Henry L. Braly, 5 Neptune Dr., Mumford Cove, Groton, Conn. 06340

Filed Feb. 13, 1978, Ser. No. 877,252
Int. Cl.[2] F21S *1/02, 3/10*
U.S. Cl. 362—145 **8 Claims**



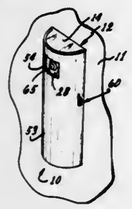
1. An illuminated weather vane assembly comprising:
a base;
a lamp socket mounted on said base;
a translucent globe supported on said base enclosing said lamp socket;
a vane support member mounted adjacent said globe distant from said base including an upright pivot shaft secured thereto at one end and having a free end tapered to a point directed away from said base;
a plurality of globe support bars mounted, respectively, to said base and said support member and encircling said globe in a contiguous manner; and
a wind direction vane including a conical bearing substantially equidistant from its ends adapted to be freely received on the free end of said pivot shaft.

4,204,272

MINIATURE FLASHLIGHT UNIT

Sunyong P. Kim, 535 N. Cahuenga Blvd., Los Angeles, Calif. 90004

Filed Sep. 11, 1978, Ser. No. 941,039
Int. Cl.[2] F21L *7/00*
U.S. Cl. 362—200 **7 Claims**



1. A miniature flashlight unit comprising:
a molded support member having a rectangular flat back wall with outwardly extending flat top and bottom walls and an outwardly extending shelf intermediate said top and bottom walls for defining a light compartment and a battery compartment;
the back wall of said support member molded with two pairs of integrally formed clips extending outwardly therefrom for engaging a pair of batteries lying in parallel relationship in said battery compartment;
a first contact member having a bulb holder extending upwardly through a central opening in said shelf and a laterally extending mounting portion disposed below said shelf and including a spring strip portion extending downwardly and inwardly so as to engage the top of one of said batteries;
a bulb in said bulb holder;

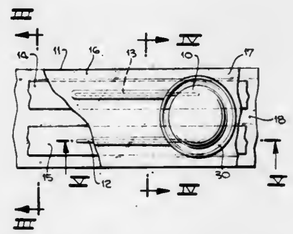
a second contact member having a laterally extending mounting portion disposed below said shelf and including an upper laterally inwardly extending spring strip portion for engaging the base terminal of the bulb disposed in said bulb holder and a lower laterally inwardly extending spring strip portion for engaging the top of the other of said batteries;
a third contact member having a central mounting portion disposed in the bottom wall and having a first upwardly and outwardly extending spring strip portion on one side thereof contacting the bottom of one of said batteries and a second upwardly and outwardly extending spring strip portion on the other side thereof contacting the bottom of the other of said batteries;
said bulb disposed in said bulb holder having a relative flat face with an integrally formed lens thereon having a short focal length for directing the available light rays of the bulb onto a desired area to be illuminated; and
a molded cover for fitting over and engaging the outer peripheries of the top and bottom walls and the intermediate shelf, said cover having an opening therein opposite the lens on the face of said bulb to permit the light rays thereof to pass therethrough to illuminate the area.

4,204,273

CONSTRUCTION OF ILLUMINATING RIBBON OF LIGHT BULBS

Gerald M. Goldberg, 10501-1 Larwin Ave., Chatsworth, Calif. 91311

Continuation of Ser. No. 764,385, Jan. 31, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,657
Int. Cl.[2] F21S *3/00*
U.S. Cl. 362—217 **3 Claims**



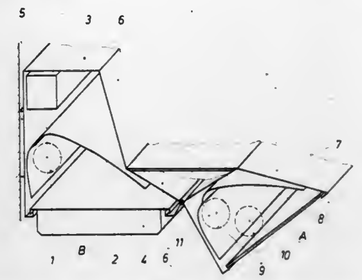
1. A flexible cable and light bulb assembly comprising: a flexible conductor of strip configuration including a pair of copper conductors laminated between a pair of insulating material layers with first portions of said layers in contact with each other and other portions of said layers in contact only with said conductors, one of said layers comprising vinyl having an elastic deformation characteristic capable of taking a temporary set on deformation within its elastic limit;
a plurality of incandescent light bulbs, each having a pair of wire leads with free ends said free end penetrating said one of said layers and engaging said conductors; and
means for retaining said bulbs to said conductor with said leads free ends held in electrical contact laterally against said conductors, said means for retaining including portions of said vinyl layer overlying said leads, engaging and pressing said free ends laterally against said conductors.

4,204,274

WALL LIGHT FIXTURE, PARTICULARLY FOR HOSPITAL ROOMS

Willi Lüderitz, Westerbachstrasse 27, 4990 Lübbecke, Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,514
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 7719975[U]
Int. Cl.[2] F21V *1/00*
U.S. Cl. 362—239 **12 Claims**



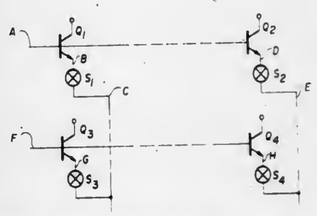
1. A wall light fixture arrangement for hospital rooms, sickrooms and the like, comprising: a room light fixture; a reading light fixture; means for connecting said room light fixture and said reading light fixture; and means for tilting said room light fixture and said reading light fixture relative to each other from a room lighting position to a reading position, said room light fixture and said reading light fixture being also tiltable relative to each other from a reading position to a room light position; said room lighting fixture and said reading light fixture being separately tiltable independently of each other, said room lighting fixture being tiltable relative to said reading light fixture to reinforce the light intensities of each other for concentrating light on a predetermined area.

4,204,275

UNISOLATED EAROM MEMORY ARRAY

David L. Taylor, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 20, 1978, Ser. No. 953,317
Int. Cl.[2] G11C *11/40, 13/00*
U.S. Cl. 365—163 **8 Claims**



4. A bipolar monolithic memory array comprising:
an N-conductivity type substrate;
a plurality of P-conductivity type regions in said substrate each of said P-conductivity type regions extending laterally and being spaced from each other in a longitudinal direction to form a plurality of longitudinally spaced rows of P-conductivity type regions,
a plurality of N-conductivity type regions located within each of said P-type regions, the N-conductivity type regions within a P-conductivity type region being spaced laterally from each other,
a plurality of memory means for programably retaining a logic state, one of said memory means being associated

with each N-conductivity type region, each of said memory means being aligned in a longitudinal direction with its respective N-conductivity type region to form columns of memory means;

a plurality of laterally extending conductors each contacting a P-conductivity type region at a plurality of surface areas, each of said surface areas being associated with and being longitudinally aligned with a different one of each of the N-conductivity type regions associated with said P-conductivity type region forming a row; and

a plurality of logitudinally extened conductors each contacting a surface of each memory means in a column.

4,204,276

WRITE-READ DRIVE ARRANGEMENT FOR A BIPOLAR SEMICONDUCTOR MEMORY

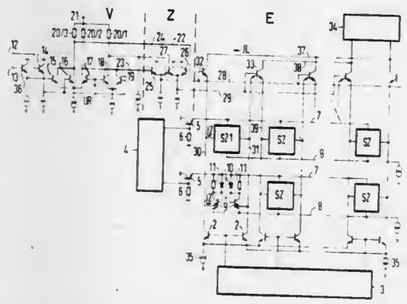
Hans Glock, Hoefa, and Herbert Mayer, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,408

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740565

Int. Cl.² G11C *11/40*

U.S. Cl. 365—189 **2 Claims**



1. In a driving arrangement for driving a bipolar semiconductor memory arranged in the form of a matrix having switching transistors, bit lines and read amplifier means, of the type wherein a preliminary stage includes a write-in and data input and has two information outputs and a status output which is fed with operating state signals, and an intermediate stage and an end stage, with first and second signal lines, connected serially behind the preliminary stage logically linking a read-out amplifier to the outputs of the preliminary stage, the improvement therein, wherein:

the intermediate stage comprises a circuit arrangement connecting the outputs of the preliminary stage to the first and second signal lines, said circuit arrangement comprising

a first switching transistor having an input connected to and operated in accordance with the status signals on the status output and having two outputs;

a second switching transistor including an input connected to and operated by one of the information outputs and an output connected to one of the outputs of said first switching transistor and to the first signal line of the end stage; and

a third switching transistor having an input connected to and operated by another of the information inputs and an output connected to the other output of said first switching transistor and to the second signal line of the end stage; and

the matrix includes a maximum of one additional switching transistor for each bit line connected to and driven by a selected signal line to connect the respective bit line to the read amplifier means.

4,204,277

DYNAMIC READ-WRITE RANDOM ACCESS MEMORY

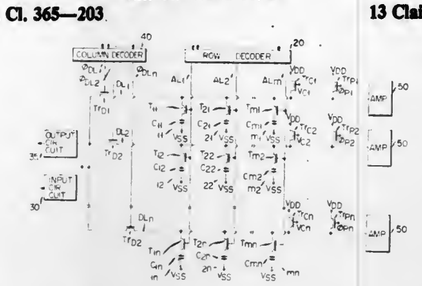
Hiroyuki Kinoshita, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 10, 1978, Ser. No. 876,947

Claims priority, application Japan, Feb. 10, 1977, 52-13899

Int. Cl.² G11C *11/40*

U.S. Cl. 365—203 **13 Claims**



2. A dynamic read-write random access memory which comprises (a) a plurality of data lines; (b) a plurality of memory cells with each cell selectably connected to one of said corresponding data lines to drive said one of said data lines toward one of first and second reference potentials depending upon the stored content of said cell; and (c) an MOS transistor connected between each of said data lines and terminals having said second reference potential; and (d) means for supplying the gates of said transistors with a potential deviation preventing voltage sufficient to prevent the potential of said data lines from being deviated from said first reference potential in an opposite direction to that of said second reference potential to minimize loss of said content of any of said cells which are not being accessed.

4,204,278

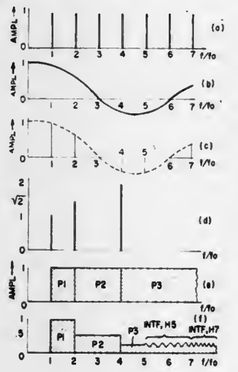
METHODS AND APPARATUS FOR THE GENERATION AND TRANSMISSION OF SIGNALS FOR ECHO LOCATION AND OTHER SIGNALLING PURPOSES, AS IN GEOPHYSICAL EXPLORATION

David E. Nelson, Rochester, N.Y., assignor to Hydroacoustics Inc., Rochester, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,405

Int. Cl.² G01V *1/22*

U.S. Cl. 367—39 **32 Claims**



1. The method of transmitting signals having a spectrum extending over a frequency range of more than an octave with the energy due to certain spectral harmonics minimized, which comprises the steps of

generating repeatedly at least one signal having a waveform with at least two levels which divide the duration of the signal in proportion to the order of the spectral harmonics which are to be minimized, and

changing the duration of said signal as it is repeated during said transmission with the ratio of the duration of the longest to the shortest signal not exceeding a factor of 2 to 1 such that the repetition frequency of said signal sweeps over an octave.

4,204,279

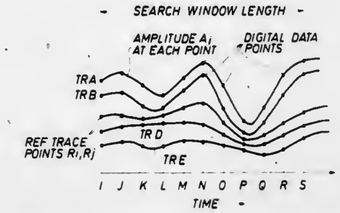
METHOD FOR ENHANCING SEISMIC DATA

Alvin L. Parrack, Bellaire, and Delbert R. Lunsford, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,810

Int. Cl.² G01V *1/36*

U.S. Cl. 367—40 **21 Claims**



1. A machine implemented method for enhancing digital data in a seismic record, said data having a coherent signal component comprising a measure of the similarity between spatially related time series data, and a noise component, and for improving the signal to noise ratio thereof, comprising the steps of:

determining, for a search window defined about a selected time on a selected seismic reference trace, the coherent signal associated with said reference trace and a plurality of adjacent seismic traces;

computing, by use of said coherent signal, the component of said coherent signal extant in said reference trace and replacing in time alignment with said reference trace on an output signal record medium, that portion of said reference trace included in said search window with said component of the reference trace comprising said coherent signal portion;

replacing, in time alignment with said reference trace on an output noise record medium, that portion of said reference trace included in said search window, with the remainder of said reference trace which does not comprise said coherent signal portion; and

repeating the above steps for other selected times and other selected reference traces until all data comprising said record is so processed.

4,204,280

UNDERWATER SIGNAL DISCRIMINATION SYSTEM

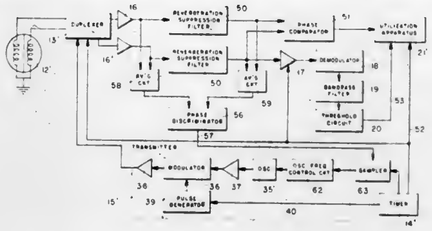
Jack H. Slaton, Arcadia, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1962, Ser. No. 239,384

Int. Cl.² G01S *9/66*

U.S. Cl. 367—95 **13 Claims**

1. In an underwater-target detection apparatus of the echo-ranging type wherein a receiver signal, resulting from transmission of search pulses, comprises reverberation and at times a target echo, said reverberation presenting a frequency spectrum of greater bandwidth than said target echo and presenting an amplitude-modulation envelope generally including pulses of character similar to said search pulses, and said target echo occurring at an unpredictable frequency within a comparatively wide frequency band substantially centered upon the reverberation mean frequency, a receiver circuit for effecting discrimination of target echoes from reverberation, said receiver circuit comprising: first filter means having a rejection notch characteristic centered upon the reverberation mean frequency, and of comparatively limited bandwidth substantially matching that of the major energy portion of said reverberation, for converting said receiver signal to a modified signal with strong attenuation of reverberation in only a correspondingly limited central portion of its frequency spectrum



and without substantially affecting target echoes occurring at frequencies outside of said rejection notch; demodulator means for deriving from said modified signal a unipolar signal corresponding to the modulation envelope of said modified signal; and second filter means having a bandpass response characteristic with upper cutoff frequency substantially equal to half said limited bandwidth of the first filter means rejection notch, for isolating, from said unipolar signal, only such signal pulses as correspond to target echoes.

4,204,281

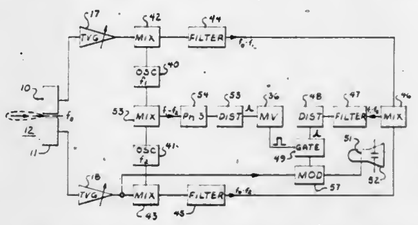
SIGNAL PROCESSING SYSTEM FOR UNDERWATER TRANSDUCER

Julius Hagemann, 412 S. MacArthur Ave., Panama City, Fla. 32407

Filed Mar. 24, 1959, Ser. No. 801,674

Int. Cl.² G01S *9/66, 3/84*

U.S. Cl. 367—98 **4 Claims**



1. A high resolution sound wave detecting system having a fanshape beam of receiver sensitivity comprising a pair of transducers having elongated active faces coplanar and in end to end relation, an output signal channel for each transducer, means including two local oscillators of different frequencies connected to heterodyne against each other for producing timing pulses having a repetition rate equal to the frequency difference of said oscillators and individually against the output signals in the two transducer channels, means for mixing the beat frequencies of the heterodyned output signals and producing therefrom signal pulses having a repetition rate equal to the frequency difference of said oscillators, an output circuit, and means responsive to a signal pulse and a timing pulse coinciding in time for passing the signal pulse to the output circuit.

DESIGN PATENTS

GRANTED MAY 20, 1980

ERRATA

For CLASS	See PATENT NO.
D27-036	255,046
D26-104	255,055

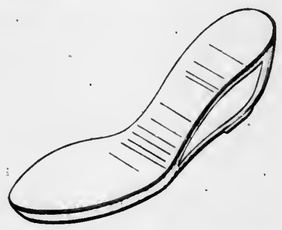
DESIGNS

MAY 20, 1980

254,996
SUPPORT FOR AN EAR PROTECTOR
Bo G. Lönnstedt, Kvarnbergsvägen 23, S-141 45 Huddinge, Sweden
Filed Jan. 9, 1978, Ser. No. 868,279
Claims priority, application Sweden, Jul. 7, 1977, 771485
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



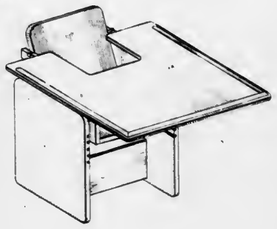
254,997
SHOE SOLE
Robert B. Hanson, Ballwin, Mo., assignor to Brown Group, Inc., St. Louis, Mo.
Filed Nov. 15, 1977, Ser. No. 851,808
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



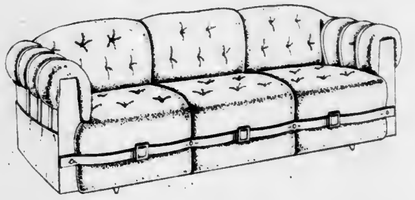
254,998
PORTABLE PODIUM
Donald O. Espeseth, Diamond Bar, Calif., assignor to Wilstac Inc., Los Angeles, Calif.
Filed Jan. 30, 1978, Ser. No. 873,284
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—27



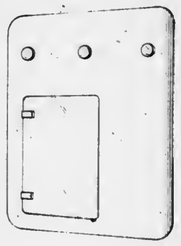
254,999
COMBINED CHAIR AND TRAY FOR THE HANDICAPPED
Berthold B. Dieter, and Charles L. Gibson, both of Terre Haute, Ind., assignors to Creative Playgrounds Corporation, Terre Haute, Ind.
Filed Jan. 30, 1978, Ser. No. 873,163
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—42



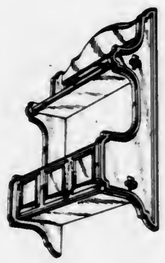
255,000
SOFA
Walter F. Dybal, Westminster, Calif., assignor to Shelly & Anderson Furniture Mfg. Co., Inc., Compton, Calif.
Filed Feb. 16, 1978, Ser. No. 878,950
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



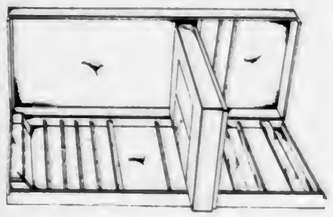
255,001
CABINET
Yolanda Quitman, 1459 Hewlett Ave., Hewlett, N.Y. 11557
Filed Jan. 25, 1978, Ser. No. 872,323
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—104



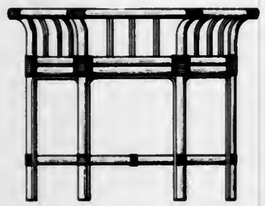
255,002
COMBINED SHELF AND DRAWER UNIT
Domingo V. Otero, Gran Via St. No. 110, Vigo (Pontevedra), Spain
Filed Aug. 10, 1977, Ser. No. 823,520
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—129



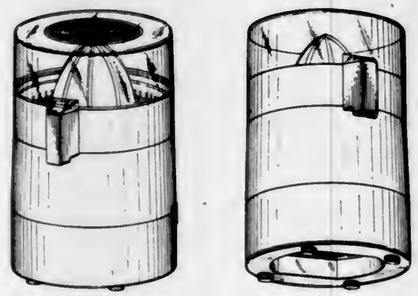
255,003
CABINET FOR A SEWING MACHINE AND ACCESSORY ITEMS
Donald M. Genaro, Haworth, N.J.; Cristian J. Felix, Flushing, N.Y.; Alvin R. Tilley, Red Bank, and Robert S. Poets, Island Heights, both of N.J., assignors to The Singer Company, Stamford, Conn.
Filed Jan. 19, 1978, Ser. No. 870,915
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



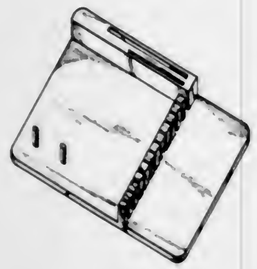
255,004
TABLE BASE
Robert K. Thorpe, Newport Beach, Calif., assignor to The Charlton Company, Compton, Calif.
Filed Dec. 27, 1977, Ser. No. 864,220
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



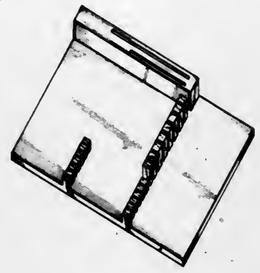
255,005
FRUIT JUICER, OR SIMILAR ARTICLE
Nathan Fuchs, Brooklyn, N.Y., assignor to Van Wyck International Corporation, New York, N.Y.
Filed May 19, 1978, Ser. No. 907,762
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—49



255,006
KNIFE HOLDING BOARD
George A. Pallotta, Jr., 3430 Milbert Dr., Salt Lake City, Utah 84106
Filed Jun. 15, 1977, Ser. No. 804,862
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—74



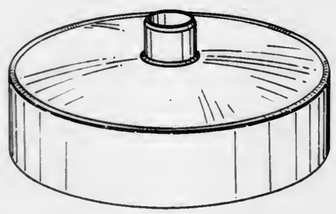
255,007
KNIFE HOLDING BOARD
George A. Pallotta, Jr., 3430 Milbert Dr., Salt Lake City, Utah 84106
Filed Jun. 15, 1977, Ser. No. 804,863
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—74



255,008
COOKING APPLIANCE HANDLE
Melvin H. Boldt, Glenview; Thurber H. Morrison, Evanston, and Robert W. Becker, Naperville, all of Ill., assignors to National Presto Industries, Inc., Eau Claire, Wis.
Filed Oct. 3, 1977, Ser. No. 838,922
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—132



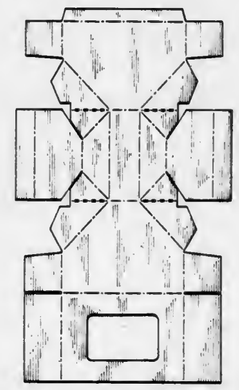
255,009
BURNER
Stephen H. Matusiak, and Gerald W. Matusiak, both of Etobicoke, Canada, assignors to Almatic Industries Limited, Mississauga, Canada
Filed Oct. 7, 1977, Ser. No. 840,508
Term of patent 14 years
Int. Cl. D23—*03*; D7—*02*
U.S. Cl. D7—136



255,010
PRODUCE HAMPER
Peter K. Boller, Willowdale, Canada, assignor to Consumers Glass Company Limited, Etobicoke, Canada
Filed Feb. 10, 1977, Ser. No. 767,436
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—220



255,011
CARTON BLANK
Leonard M. Cooper, Kankakee, and Gary L. Adreon, Bourbonnais, both of Ill., assignors to Olinkraft, Inc., Denver, Colo.
Filed Dec. 2, 1977, Ser. No. 856,828
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



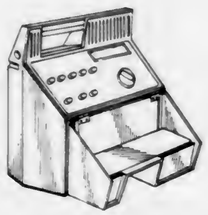
255,012
DISPENSER CAP FOR A PRESSURIZED CONTAINER
Efrem M. Ostrowsky, Highland Park, Ill., assignor to Ethyl Products Company, Baton Rouge, La.
Filed Nov. 17, 1977, Ser. No. 852,340
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D09—258



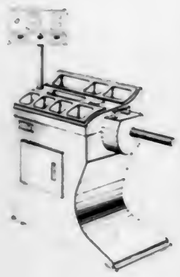
255,013
THERMOMETER SUPPORT BASE
John F. O'Brien, and Gary R. Keithley, both of Dayton, Ohio, assignors to Magic Touch Manufacturing Corp., Dayton, Ohio
Filed Jan. 27, 1978, Ser. No. 872,882
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—60



255,014
TEST AND MEASUREMENT INSTRUMENT FOR ANALYZING DIGITAL SIGNALS
James A. Hill, 19605 SW. Jann Ct., Aloha, Oreg. 97005; Edward B. Gerlinger, 3023 16th Pl., Forest Grove, Oreg. 97116; Robert H. Leith, 1444 SE. Brookwood, Hillsboro, Oreg. 97123, and Jaime A. Navia, 5225 SW. Murray Blvd., Beaverton, Oreg. 97005
Filed Mar. 4, 1977, Ser. No. 774,559
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—75



255,015
WHEEL BALANCER
Yukiyoshi Hihara, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan
Filed Dec. 8, 1977, Ser. No. 858,721
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—82



255,016
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,756
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



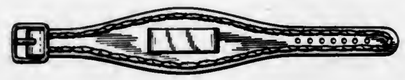
255,017
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,757
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



255,018
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,758
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



255,019
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,759
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



255,020
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,765
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



255,021
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,766
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



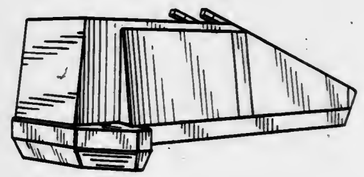
255,022
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,767
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



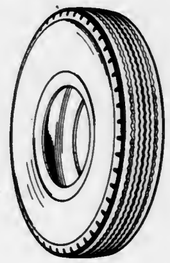
255,023
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,752
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—15



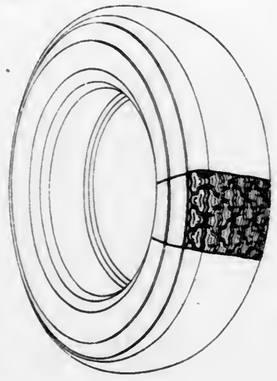
255,024
BODY FOR AN AERIAL LIFT PLATFORM
Michael L. Meister; Robert W. Fee, both of Wichita, and Richard J. Robbins, Derby, all of Kans., assignors to A-T-O Inc., Willoughby, Ohio
Filed Feb. 23, 1978, Ser. No. 880,861
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—61



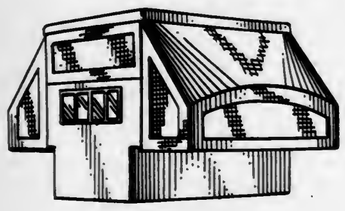
255,025
VEHICLE TIRE
Hiroyoshi Takigawa, Kodaira, and Nobuhiro Miyamura, Higashi Murayama, both of Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan
Filed Oct. 18, 1978, Ser. No. 952,881
Claims priority, application Japan, May 4, 1978, 53-18107
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



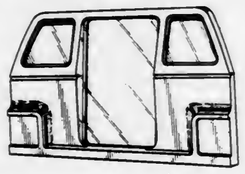
255,026
TIRE
Jean-Claude Peron, Greenville, S.C., assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed May 1, 1978, Ser. No. 902,286
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



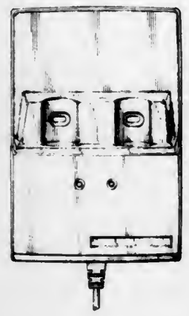
255,027
CAMPER FOR PICK-UP TRUCK
Larry L. Hemminger, Stoystown, Pa., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Jun. 30, 1978, Ser. No. 920,977
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156

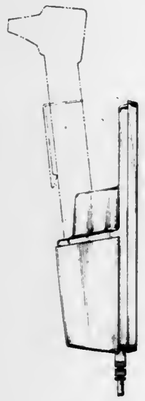


255,028
PICK-UP TRUCK REAR PANEL
John Collins, Elkhart, Ind., assignor to Leer, Inc., Ind.
Filed Mar. 27, 1978, Ser. No. 890,850
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—196

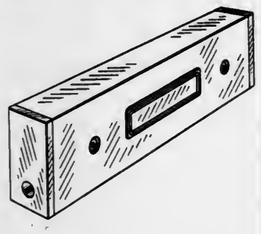


255,029
CHARGER UNIT FOR BATTERY POWERED DIAGNOSTIC INSTRUMENTS
Alan W. Brownlie, Skaneateles, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Dec. 20, 1977, Ser. No. 862,763
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—6

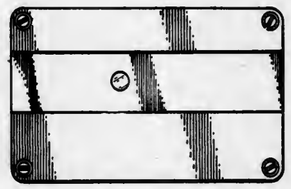




255,030
HOUSING FOR A MAGNETIC CONTACT SWITCH
Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol, Inc., Beaverton, Oreg.
Filed Oct. 23, 1978, Ser. No. 953,581
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



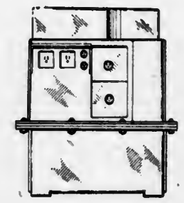
255,031
HOUSING FOR PHOTOELECTRIC SENSOR AND CONTROL CIRCUIT RESPONSIVE THERETO
Anthony R. Lazzara, Portola Valley, Calif., assignor to Scientific Technology, Inc., Mountain View, Calif.
Filed Mar. 6, 1978, Ser. No. 884,038
Term of patent 14 years
Int. Cl. D13—*99, 03*
U.S. Cl. D13—99

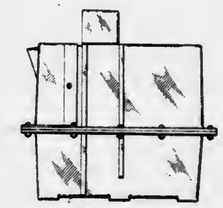


255,032
CONTROL UNIT FOR PAGING SYSTEM
Peter L. Maddock, Sollentuna, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Aug. 23, 1978, Ser. No. 936,649
Claims priority, application Sweden, Mar. 3, 1978, 78-0629
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—92

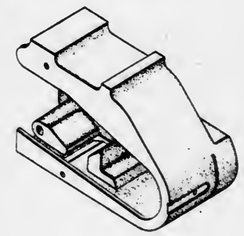


255,033
COMBINED PUMP AND FILTER FOR AQUARIUMS OR THE LIKE
Peter C. Alexson, 1516 River Rd., Corona, Calif. 91720
Filed May 23, 1977, Ser. No. 799,737
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—8

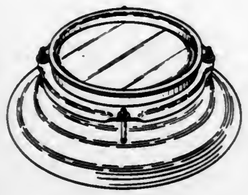




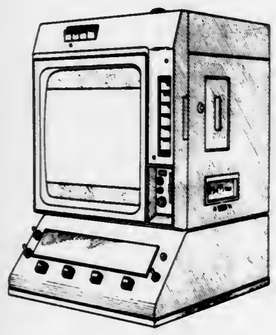
255,034
MACHINE HOUSING FOR BELT-TYPE SURFACE FINISHING TOOL
Walter N. Welsch, Tonawanda, and Elwin H. Fleckenstein, Alden, both of N.Y., assignors to Dynabrade, Inc., Tonawanda, N.Y.
Filed Jul. 29, 1977, Ser. No. 820,361
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



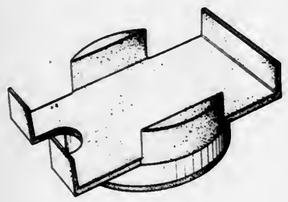
255,035
DRUM
Roger W. North, 1332 SE. 16th, Portland, Oreg. 97214
Filed Sep. 12, 1977, Ser. No. 832,581
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22



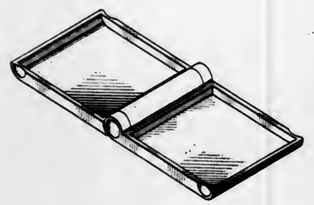
255,036
PSYCHOLOGICAL TEST MACHINE
Rudy J. Horwitz, 1321 Lombard St., Philadelphia, Pa. 19147
Filed May 17, 1978, Ser. No. 907,179
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—60



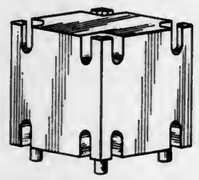
255,037
NOTE PAD HOLDER
Jerome A. Grunstad, West St. Paul, Minn., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Apr. 3, 1978, Ser. No. 893,113
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92



255,038
HOUSING FOR USE WITH MANIPULATIVE GAMES
Hitoshi Itakura, Tateishi, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 31, 1978, Ser. No. 873,966
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—15



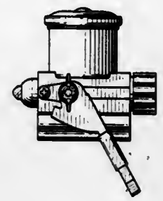
255,039
TOY CONSTRUCTION PIECE
John A. Gale, Excelsior, Minn., assignor to American Guidance Service, Inc., Circle Pines, Minn.
Division of Ser. No. 694,171, Jun. 9, 1976, abandoned. This application Jun. 9, 1976, Ser. No. 913,742
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108



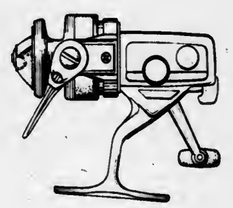
255,040
BASKETBALL PRACTICE GOAL
Ken C. Cochran, P.O. Box 1073, and Walter Fuller, P.O. Box 535, both of Salina, Kans. 67401
Filed Jan. 23, 1978, Ser. No. 871,412
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—201



255,041
FISHING SIGNAL DEVICE
Lawrence L. Muehl, Frankfort, S. Dak., assignor to Dakota Cateye, Inc., Frankfort, S. Dak.
Filed Feb. 24, 1978, Ser. No. 881,157
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



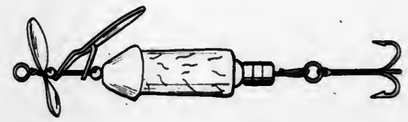
255,042
FISHING REEL
Kanji Iinuma, Koganei, Japan, assignor to Daiwa Seiko, Inc., Higashikurume, Japan
Filed Jan. 19, 1978, Ser. No. 870,776
Claims priority, application Japan, Sep. 13, 1977, 52-38195
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



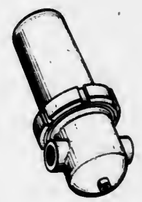
255,043
FISHING LURE
John B. Lapetina, 1862 E. Ocean View Ave., Norfolk, Va. 23503
Filed Feb. 7, 1979, Ser. No. 10,156
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



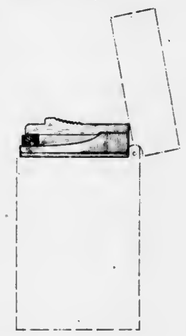
255,044
FISHING LURE
Philip J. Correa, 566 Fosdick Rd., Carver, Mass. 02330
Filed Feb. 21, 1979, Ser. No. 13,134
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



255,045
FILTER CASING
Dirk G. Kronsbein, Düsseldorf, Fed. Rep. of Germany, assignor to Ultrafilter GmbH, Düsseldorf, Fed. Rep. of Germany
Filed Aug. 26, 1977, Ser. No. 828,194
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1977, 7706092[U]
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



255,046
OPERATING ASSEMBLY FOR A CIGARETTE LIGHTER
Jean Dinh Van, Paris, France, assignor to S. T. Dupont, Paris, France
Filed Jul. 27, 1977, Ser. No. 819,335
Claims priority, application France, Feb. 4, 1977, 77 39960
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



255,047
DISPENSER FOR AIR-TREATING MATERIAL
Arthur W. Müller, Reinach, and Max A. Hilesle, Binningen, both of Switzerland, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Mar. 20, 1978, Ser. No. 888,433
Claims priority, application Switzerland, Sep. 23, 1977, 109458/77
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



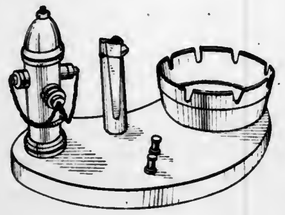
255,048
INTRAMEDULLARY BRUSH
Joseph E. Miller, Westmunt, Canada, assignor to Howmedica, Inc.
Filed Oct. 17, 1977, Ser. No. 843,115
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26



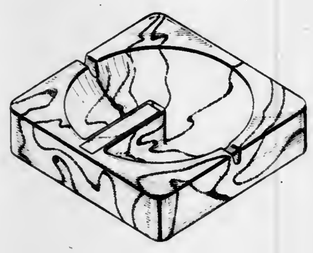
255,049
BUILDING
William O. Moers, Addison, Ill., assignor to Tenderfoot International, Inc., Melbourne, Fla.
Filed Dec. 4, 1978, Ser. No. 965,733
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



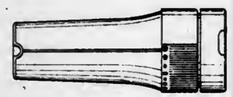
255,050
SMOKER'S STATION
Jacob Wacker, and Joanne Wacker, both of Highland Park, N.J., assignors to J & J Wacker Inc., Highland Park, N.J.
Filed Apr. 10, 1978, Ser. No. 894,907
Term of patent 14 years
Int. Cl. D27—*03, 05*
U.S. Cl. D27—16



255,051
ASH TRAY
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 18, 1978, Ser. No. 907,384
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—29



255,052
POLYFUNCTIONAL HAND-HELD HAIRDRYER
Heinz-Ulrich Haase, Kronberg, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Oct. 3, 1977, Ser. No. 839,113
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 738600
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13





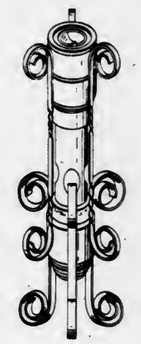
255,053
SHAVER
Hans-Ulrich Schade, Pfuhl, Fed. Rep. of Germany, assignor to Payer-Lux Eduard Payer, Austria
Continuation-in-part of Ser. No. 733,811, Oct. 19, 1976, abandoned. This application May 10, 1978, Ser. No. 904,724
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D28—49



255,054
COMBINED LIPSTICK AND MAGNIFYING CASING THEREFOR
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Jun. 7, 1977, Ser. No. 804,412
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—89



255,055
LAMP
Charles Campo, 1901 S. Fifth St., Philadelphia, Pa. 19148
Filed Jun. 26, 1978, Ser. No. 919,399
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—104



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF MAY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Bristol Corporation: *See—*
Stonoga, Dorothea E.; and Flint-Smith, Virginia K., 4,203,516, Cl. 206-216.000.

A. Nattermann & Cie. GmbH: *See—*
Prahl, Gertraud, 4,203,433, Cl. 128-80.00A.

Aavid Engineering, Inc.: *See—*
Johnson, Philip A.; and McCarthy, Alfred F., 4,203,488, Cl. 165-80.00B.

AB CE Johansson: *See—*
Nilsson, Gunnar, 4,203,225, Cl. 33-174.00L.

AB Zirlstor: *See—*
Pupp, Herwig; and Andersson, Birger O., 4,203,795, Cl. 156-446.000.

Abbey, William C., to Simmonds Precision Products, Inc. Surge control for centrifugal compressors. 4,203,701, Cl. 415-1.000.

Abbott Laboratories: *See—*
Genese, Joseph N., 4,203,443, Cl. 128-272.300.

Abe, Akira: *See—*
Takamizawa, Minoru; Abe, Akira; Ono, Yoshiaki; Sugimori, Yutaka; Kishibayashi, Tetsuo; and Ino, Makoto, 4,204,030, Cl. 428-447.000.

Aberle, Lothar; Bank, Walter; Hillenkamp, Franz; Kaufmann, Raimund; Nitsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, to Leybold-Heraeus GmbH. Sample analyzer. 4,204,117, Cl. 250-287.000.

Abura, Yoshinori; Toyomi, Yuritugu; and Nishino, Motohisa, to Matsushita Electric Works, Ltd. Facial treatment device. 4,203,431, Cl. 128-39.000.

Achia, Biddanda U.; and Shaw, David H., to Exxon Research & Engineering Co. Polyvinylpyrrolidone dewaxing aid for bright stocks. 4,203,824, Cl. 208-33.000.

Acieries Reunies de Burbach-Eich-Dudelange S.A. Arbed: *See—*
Blanpain, Jacques; and Delehouzee, Leon, 4,203,188, Cl. 29-420.000.

Acorn Engineering Co.: *See—*
Morris, Earl L.; Hafner, Walter V.; and Sally, Theodore J., 4,203,173, Cl. 4-427.000.

Adams, John D.: *See—*
Burnett, William C.; and Adams, John D., 4,203,535, Cl. 222-411.000.

Adhikary, Parimal K. Derivatives of imidazo[2,1-b] thiazole. 4,204,067, Cl. 548-154.000.

Adjusta-Mounts, Inc.: *See—*
Underwood, James L.; and Shapiro, Sol, 4,203,362, Cl. 101-327.000.

Adolphi, Heinrich: *See—*
Kiehs, Karl; and Adolphi, Heinrich, 4,203,977, Cl. 424-211.000.

Advanced Semiconductor Materials/America: *See—*
Terry, Malvin D., 4,204,155, Cl. 324-158.00F.

Agency of Industrial Science & Technology: *See—*
Suzuki, Hiroshi; Ito, Yukio; Yasumoto, Yosiro; Kinomura, Sigeru; and Nagashima, Kazuo, 4,203,873, Cl. 252-545.000.

Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See—*
Kataoka, Shoei; Sugiyama, Yoshinobu; and Fujisada, Hiroyuki, 4,204,132, Cl. 307-309.000.

AGFA-Gevaert, A.G.: *See—*
Blochl, Hanns; Fryda, Georg; Schlick, Erich; and Schnall, Gunther, 4,203,386, Cl. 118-653.000.
Stemme, Otto; Lermann, Peter; Schrooder, Rolf; and Karl, Horst, 4,203,662, Cl. 354-173.000.

AGFA-GEVAERT N.V.: *See—*
Claeys, Danie A.; Reyniers, Albert A.; and Janssens, Wilhelmus, 4,203,765, Cl. 430-252.000.

Agnihotri, Chaitanya B., to Stone & Webster Engineering Corporation. Process for the recovery of ethane and heavier hydrocarbon components from methane-rich gases. 4,203,742, Cl. 62-24.000.

AGRAM: *See—*
Hasquenoph, Denis, 4,203,226, Cl. 33-185.00V.

Ahlgrim, Michael; Mietens, Gerhard; Krieger, Wilfried; and Sorbe, Gunter, to Hoechst Aktiengesellschaft. Electrical power transmitting apparatus. 4,203,637, Cl. 339-5.00R.

Ahmed, Adel A. A., to RCA Corporation. Temperature-sensitive control circuits. 4,204,133, Cl. 307-310.000.

Air Products & Chemicals, Inc.: *See—*
Bechara, Ibrahim S.; Mascioli, Rocco L.; and Zaluska, Philip J., 4,204,062, Cl. 544-351.000.

Aisan Industry Co., Ltd.: *See—*
Yorioka, Keigo, 4,203,400, Cl. 123-119.00A.

Aizawa, Hiroshi: *See—*
Uchidoi, Masanori; Tsunekawa, Tokuichi; Aizawa, Hiroshi; Taguchi, Tetsuya; Ito, Tadashi; and Takishima, Yoshiyuki, 4,203,660, Cl. 354-31.000.

Akaba, Hayao: *See—*
Ii, Tadao; Tanaka, Takashi; and Akaba, Hayao, 4,203,666, Cl. 356-124.000.

Aki, Osami: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,203,899, Cl. 548-194.000.

Akimoto, Taizo: *See—*
Takahashi, Koji; Akimoto, Taizo; and Watanabe, Shigeru, 4,203,671, Cl. 356-402.000.

Akimov, Boris V.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Akzo N.V.: *See—*
deJong, Geert J., 4,203,868, Cl. 252-439.000.

Akzona Incorporated: *See—*
Drachenberg, Werner; and Wolters, Heinrich, 4,203,939, Cl. 264-130.000.
Greven, Hendrik M., 4,203,975, Cl. 424-177.000.
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,204,060, Cl. 544-218.000.
Zengel, Hans; and Bergfeld, Manfred, 4,203,916, Cl. 260-453.00P.

Albany International Corporation: *See—*
Barthelemy, Kenneth E., 4,203,846, Cl. 210-486.000.

Aleshin, Valentin N.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Alexander-Cooper, Inc.: *See—*
Alexander, William J., III; Cooper, John S.; and Moore, Charles E., 4,203,563, Cl. 242-66.000.

Alexander, William J., III; Cooper, John S.; and Moore, Charles E., to Alexander-Cooper, Inc. Loom take-up cloth roll doffer. 4,203,563, Cl. 242-66.000.

Alfred Walter AG: *See—*
Walter, Alfred, 4,203,320, Cl. 73-150.00R.

Algieri, Aldo A.; and Crenshaw, Ronnie R., to Bristol-Myers Company. Furan compounds. 4,203,909, Cl. 260-347.200.

Alioto, Ronald L.: *See—*
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,203,985, Cl. 424-249.000.

Allen, Joseph C., to Texaco Inc. Fluid for recovering hydrocarbons. 4,203,853, Cl. 252-8.55D.

Allied Chemical Corporation: *See—*
Garner, Eugene F., 4,203,786, Cl. 149-19.910.
Mastroianni, Martin J.; and Orfeo, Sabatino R., 4,204,084, Cl. 174-25.00G.
Yeh, Chuen Y.; and Ulmer, Harry E., 4,203,923, Cl. 260-586.00P.

Aluminiumpari Tervezo es Kutato Intezet: *See—*
Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, 4,203,689, Cl. 406-123.000.

Alvarez-Ossorio, Rafael P.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; and Fernandez de Gamboa, Cristina R., 4,204,063, Cl. 546-99.000.

Alza Corporation: *See—*
Michaels, Alan S., 4,203,442, Cl. 128-260.000.
Theeuwes, Felix, 4,203,439, Cl. 128-260.000.
Theeuwes, Felix, 4,203,440, Cl. 128-260.000.
Theeuwes, Felix, 4,203,441, Cl. 128-260.000.

Amedei, Giuseppe: *See—*
Rivetti, Enrico; Amedei, Giuseppe; and Bertone, Antonino, 4,203,631, Cl. 303-52.000.

Amerace Corporation: *See—*
Mayer, Robert W.; and Smorzaniuk, Adam, 4,203,385, Cl. 116-270.000.
Siebens, Larry N., 4,203,641, Cl. 339-75.00P.

American Can Company: *See—*
Meyers, George L., 4,203,355, Cl. 93-58.00R.
Vandlik, Robert P.; and Herdzina, Frank J., 4,203,314, Cl. 72-427.000.

American Cyanamid Company: *See—*
Brown, Dale G., 4,203,918, Cl. 260-465.00D.

Chang, Eugene Y. C.; and Kaizerman, Samuel, 4,203,889, Cl. 260-45.8NT.

American Home Products Corporation: *See—*
Freed, Meier E., 4,203,987, Cl. 424-250.000.

American Optical Corporation: *See—*
Persson, Staffan B., 4,203,651, Cl. 350-181.000.

American Safety Equipment Corporation: *See—*
Mattchen, Terry M., 4,203,222, Cl. 433-129.000.

American Sterilizer Company: *See—*
Gillis, John R.; and Halleck, Frank E., 4,203,943, Cl. 422-27.000.
Young, Jack H.; and Halleck, Frank E., 4,203,947, Cl. 422-114.000.

Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, to Sodip SA. Hollow fiber apparatus for the fractionation of fluid especially useful as an artificial kidney. 4,203,844, Cl. 210-321.00B.

Ammeraal Nederland B.V.: *See—*
Ammeraal, Thomas C. M., 4,203,512, Cl. 198-594.000.

Ammeraal, Thomas C. M., to Ammeraal Nederland B.V. Helical conveyor. 4,203,512, Cl. 198-594.000.

AMP Incorporated: *See—*
Campari, Luigi, 4,203,333, Cl. 81-9.50A.
Desso, Jerome A.; Ritchie, Leon T.; and Yeager, Marvin L., 4,203,646, Cl. 339-205.000.
Gilissen, Hermanus P. J.; van Dijk, Petrus R. M.; and van der Sanden, Ludovicus C., 4,203,203, Cl. 29-846.000.

Anchor Hocking Corporation: *See—*
Rubbright, Harry A.; and Springer, Donald A., 4,203,486, Cl. 165-48.00R.

Anderson, Richard J.; and Henrick, Clive A., to Zoecon Corporation. 4-Aryl-3-butenoic acids and lower alkyl esters. 4,204,071, Cl. 560-100.000.

Andersson, Birger O.: *See—*
Pupp, Herwig; and Andersson, Birger O., 4,203,795, Cl. 156-446.000.

Andrejewski, Werner: *See—*
Dorffel, Jorg; Andrejewski, Werner; and Bartz, Wilfried, 4,204,014, Cl. 427-385.500.

Anno, Nobuo: *See—*
Tomita, Takao; Anno, Nobuo; and Yamamoto, Hitoshi, 4,203,507, Cl. 188-317.000.

Anosov, Alexei M.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Antonov, Alexei I.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Aono, Shigeo; and Hosaka, Akio, to Nissan Motor Company, Limited. Closed-loop emission control apparatus for internal combustion engine with a circuit for generating offset voltage that cancels error introduced during use. 4,203,394, Cl. 123-32.0EE.

Aradi, Emil; Blickle, Tibor; Monostori, Endre; Nemeth, Jeno; Pallai, Ivanne; and Varga, Janos, to MTA Muszaki Kemiai Kutato Intezet; and Keszthelyi Agrartudomanyi Egyetem. Contacting and drying of material in a spouted system. 4,203,228, Cl. 34-10.000.

Araki, Itiro, to Sanyo Electric Co., Ltd. Very high frequency tuner. 4,204,166, Cl. 455-289.000.

Archer, Keith: *See—*
Thorp, Anthony J.; Clamp, Frank; Feld, Raoul; Page-Gibson, Joseph E.; and Archer, Keith, 4,203,861, Cl. 252-182.100.

Arcilesi, Donald A.; and Doty, Warren R., to Oxy Metal Industries Corporation. Method for treating polymeric substrates prior to plating employing accelerating composition containing an alkyl amine. 4,204,013, Cl. 427-304.000.

Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, to Sony Corporation. Cooling assembly for cooling electrical parts wherein a heat pipe is attached to a heat conducting portion of a heat conductive block. 4,204,246, Cl. 361-385.000.

Arnett, Carroll D.; Wright, Jeremy; and Zenker, Nicolas, to Merck & Co., Inc. Reductive alkylation. 4,204,069, Cl. 548-325.000.

Aronoff, Melvin S.: *See—*
Zilbermann, Andre H.; and Aronoff, Melvin S., 4,203,485, Cl. 165-2.000.

Arrasmith, Fred V., to International Business Machines Corporation. Jam detector. 4,203,589, Cl. 271-258.000.

Artemov, Konstantin V.: *See—*
Ivanov, Jury N.; Artemov, Konstantin V.; Suris, Leonid I.; and Bozhenov, Jury F., 4,203,372, Cl. 410-67.000.

Arthur, David M. Method of attaching a rail and a tie plate to a cross tie. 4,203,193, Cl. 29-526.00R.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Tagashira, Yoshiaki; Takagi, Hitoshi; and Inagaki, Katsumi, 4,203,835, Cl. 210-33.000.

Asahimatsu Koridofu Kabushiki Kaisha: *See—*
Kudo, Shiro; and Hayashi, Mitsuyoshi, 4,204,005, Cl. 426-518.000.

Asanagi, Etsuo, to Chiyoda Chemical Engineering & Construction Co., Ltd. Process for desulfurization of exhaust gases recovering gypsum as by-product. 4,203,954, Cl. 423-243.000.

Aschwanden, Felix, to RCA Corporation. Tuning circuit with provisions for reducing pulse width jitter. 4,204,173, Cl. 331-1.00A.

ASEA Aktiebolag: *See—*
Stenkvist, Sven-Einar, 4,204,082, Cl. 13-9.00R.

Astra Pharmaceutical Products, Inc.: *See—*
Bamberg, Peter; Ekstrom, Bertil A.; Forsgren, Ulf E.; and Sjoberg, Berndt O. H., 4,203,972, Cl. 424-114.000.

Augenstein, Reiner: *See—*
Bruller, Eduard; Augenstein, Reiner; and Bihler, Otto, 4,203,477, Cl. 140-105.000.

Australasian Training Aids Pty. Ltd.: *See—*
Knight, Lindsay C.; and Casey, Roy E., 4,203,232, Cl. 35-25.000.

Auwarter, Wilhelm: *See—*
Fenner, Hans; Auwarter, Wilhelm; and Stark, Karl-Heinz, 4,203,623, Cl. 296-178.000.

Avon Industrial Polymers Limited: *See—*
Burnham, Jack; and Washbourn, Jack, 4,203,353, Cl. 92-159.000.

Babcock & Wilcox Company, The: *See—*
Edgecombe, David A., 4,203,273, Cl. 53-399.000.
Knoebel, Paul S.; and Wennerstrom, Jerald M., 4,203,391, Cl. 122-4.00D.

Bachman, David L.; and Bihuniak, Peter P., to Corning Glass Works. Ribbon burner. 4,203,553, Cl. 239-420.000.

Bachmann, Gerhard: *See—*
Dietze, Wolfgang; and Bachmann, Gerhard, 4,203,940, Cl. 264-154.000.

Back, Horst, to SKF Kugellagerfabriken GmbH. Seal and locking arrangement for a bearing assembly. 4,203,634, Cl. 308-187.200.

Bafford, Richard A.; and Mageli, Orville L., to Pennwalt Corporation. Process for di-organic peroxides. 4,204,075, Cl. 568-562.000.

Bahre, Karl; and Krohm, Reinhold, to Klokner-Werke Aktiengesellschaft. Continuous-operation crushing machine. 4,203,557, Cl. 241-186.00R.

Bailey, James E.; and Cho, Yong K., to Illinois Water Treatment Company. High loading of immobilized enzymes on activated carbon supports. 4,204,041, Cl. 435-177.000.

Bailey, Wayne; and Kemp, Robert. Radiant energy gasification apparatus. 4,203,731, Cl. 48-99.000.

Baker, Alan S., to Imperial Chemical Industries Limited. Block or graft copolymers and their use as surfactants. 4,203,877, Cl. 260-18.00R.

Baker, Don R.; and McClellan, Malcolm B., to Stauffer Chemical Co. Fungicidal use of chloro-substituted phenoxy ethers. 4,203,998, Cl. 424-283.000.

Baker, William, III; and Harris, Charles R., to Smith International, Inc. Longitudinal axis roller drill bit with gage inserts protection. 4,203,496, Cl. 175-329.000.

Bakula, Richard E.; and McCarthy, Edward C., to Harris Corporation. Video display system. 4,204,206, Cl. 340-721.000.

Bakula, Richard E.; and McCarthy, Edward C., to Harris Corporation. Video display of images with video enhancements thereto. 4,204,207, Cl. 340-723.000.

Baldwin, Gary D.; and Rampolla, Robert W., to Westinghouse Electric Corp. Slab laser assembly. 4,204,175, Cl. 331-94.50D.

Ball Corporation: *See—*
Pardee, Robert P., 4,203,856, Cl. 252-54.600.

Ballinger, Dale O., to Honeywell Inc. Solar cell. 4,203,419, Cl. 126-430.000.

Baltschun, Horst, to SMG Suddeutsche Maschinenbau-Gesellschaft mbH. Hydraulically driven press. 4,203,359, Cl. 100-209.000.

Bamberg, Peter; Ekstrom, Bertil A.; Forsgren, Ulf E.; and Sjoberg, Berndt O. H., to Astra Pharmaceutical Products, Inc. Penicillin composition. 4,203,972, Cl. 424-114.000.

Bandag Incorporated: *See—*
Brodie, Edwin T.; and Brewer, Donaldee, 4,203,793, Cl. 156-394.000.

Bange, Joseph B.: *See—*
Hurley, Donald L.; Wessel, Francis H.; and Bange, Joseph B., 4,203,570, Cl. 251-14.000.

Bangert, Hans; and Fengler, Georg, to O & K Orenstein & Koppel Aktiengesellschaft. Rapid-change device for attachments on earth moving machines. 4,203,238, Cl. 37-118.00R.

Bank, Walter: *See—*
Aberle, Lothar; Bank, Walter; Hillenkamp, Franz; Kaufmann, Raimund; Nitsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,204,117, Cl. 250-287.000.

Barbedienne, Roger S.: *See—*
Peiffert, Jean; and Barbedienne, Roger S., 4,204,146, Cl. 318-640.000.

Barcus, Lester M.; and Berry, John F. Sonic transducer mounting. 4,204,096, Cl. 179-146.00R.

Bargeman, Harry. Snare drum control mechanism. 4,203,343, Cl. 84-415.000.

Barrett, Alfred J.; and Warner, Samuel M., to United States of America, Air Force. Negative gravity swivel device. 4,203,458, Cl. 137-38.000.

Barthelemy, Kenneth E., to Albany International Corporation. Disc sector. 4,203,846, Cl. 210-486.000.

Barton, Derek H. R.; and Willis, Brian J., to Fritzsche Dodge & Olcott Inc. Process for the production of spirodienones and spirocyclic ketones. 4,203,925, Cl. 568-362.000.

Bartz, Wilfried: *See—*
Dorffel, Jorg; Andrejewski, Werner; and Bartz, Wilfried, 4,204,014, Cl. 427-385.500.

BASF Aktiengesellschaft: *See—*
Kurtz, Walter; and Dehnert, Johannes, 4,203,894, Cl. 260-156.000.
Matthies, Paul; Kunde, Joachim; and Hoerauf, Werner, 4,204,049, Cl. 526-65.000.
Mueller, Herbert; and Huchler, Otto H., 4,203,908, Cl. 260-346.110.

Batchelor, Robert L.; and Feldman, Charles F., to Gulf Oil Corporation. Manufactured glass laminates. 4,204,029, Cl. 428-441.000.

Battelle Memorial Institute: *See—*
Schaer, Glenn R., 4,204,034, Cl. 429-54.000.

Battigelli, Jean A.; and Bouquet, Francois, to Saint-Gobain Industries. Glass fiberization by centrifugal feed of glass into attenuating blast. 4,203,745, Cl. 65-6.000.

Battigelli, Jean A.; Bouquet, Francois; Fezenko, Igor; and Massol, Jean-Jacques, to Saint-Gobain Industries. Method for centrifugal fiberization of hard glass. 4,203,746, Cl. 65-6.000.

Battigelli, Jean A.; Bouquet, Francois; and Fezenko, Igor, to Saint-Gobain Industries. Glass fiberization spinner. 4,203,748, Cl. 65-14.000.

Battigelli, Jean A.; Bouquet, Francois; and Massol, Jean-Jacques, to Saint-Gobain Industries. Glass composition and fibers. 4,203,774, Cl. 106-50.000.

Bauer, Ernest G.: *See—*
Chaffee, Robert C.; and Bauer, Ernest G., 4,203,720, Cl. 432-222.000.

Bauer, Ronald S., to Shell Oil Company. Epoxy resin traffic paint compositions. 4,203,878, Cl. 260-18.0EP.

Bauer, William V.; Isaacs, Jose A. C.; and Lamonte, Oliverio M., to Lummus Company, The. Coke desulphurization. 4,203,960, Cl. 423-461.000.

Baumann, Frederick W.; and Kaczkowski, Bernard C., to General Electric Company. Method of positioning components of a centrifugal casting machine for a mold stripping operation. 4,203,483, Cl. 164-116.000.

Baumoel, Joseph. Sonic liquid level detector. 4,203,324, Cl. 73-290.00V.

Bayer Aktiengesellschaft: *See—*
Brack, Alfred; and Kuhlthau, Hans-Peter, 4,203,722, Cl. 8-467.000.
Finke, Ulrich; Moretto, Hans-Heinrich; Niederprum, Hans; and Vorbruggen, Helmut, 4,203,914, Cl. 556-428.000.
Hohmann, Walter; Wunderlich, Klaus; and Seidler, Helmut, 4,203,885, Cl. 260-369.000.
Margotte, Dieter; and Nouvertne, Werner, 4,204,047, Cl. 525-67.000.
Meyer, Horst, 4,203,928, Cl. 568-424.000.
Wellner, Wolfgang; and Gruber, Hermann, 4,204,051, Cl. 528-55.000.

BBC Brown, Boveri & Company, Limited: *See—*
Kunzli, Roland; Melton, Keith; and Mercier, Olivier, 4,203,313, Cl. 72-364.000.

Beale, John H.; and Moss, Ernest K., to Celotex Corporation, The. Phenolic foam laminated structural panel. 4,204,020, Cl. 428-310.000.

Beatrice Foods Co.: *See—*
Schwitters, Stephen W., 4,203,461, Cl. 137-343.000.

Bechara, Ibrahim S.; Mascioli, Rocco L.; and Zaluska, Philip J., to Air Products & Chemicals, Inc. Amine salts of tertiary amino acids. 4,204,062, Cl. 544-351.000.

Becker, Gordon P., to Ferro Corporation. Article of manufacture having composite layer affording abrasion resistant and release properties. 4,204,021, Cl. 428-325.000.

Becker, Kurt; Buogert, Hermann; Schwarzer, Siegfried; and Seidel, Hans-Georg, to Hermann Heye KG. Multi-station glass-forming machine. 4,203,752, Cl. 65-163.000.

Beecham Group Limited: *See—*
Cole, Martin; Hood, John D.; and Butterworth, Dennis, 4,203,973, Cl. 424-114.000.

Beguin, Pierre, to Portescap. Assembly comprising a timepiece pallet anchor and its frame. 4,203,281, Cl. 368-124.000.

BEI Electronics, Inc.: *See—*
Marks, William S., 4,203,569, Cl. 244-3.230.

Bell Telephone Laboratories, Incorporated: *See—*
Fox, William M.; and Novotny, Michael A., 4,204,218, Cl. 357-55.000.
Miller, Gabriel L., 4,203,781, Cl. 148-1.500.
Thompson, Larry F., 4,203,792, Cl. 156-272.000.
Yeh, Yu Shuan, 4,204,093, Cl. 370-95.000.

Beller, W. E., to Singer Company, The. Water level control system. 4,203,462, Cl. 137-393.000.

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Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Ben Sadou, Jean-Claude; and Deman, Pierre, to Thomson-CSF. Automatic gain control device for a single-sideband receiver. 4,204,172, Cl. 330-134.000.

Bencic, David M. Solar heat collector. 4,203,421, Cl. 126-444.000.

Bender, John F.: *See—*
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Bendix Corporation, The: *See—*
Borkowski, Donald F., 4,203,508, Cl. 188-325.000.
Cromas, Joseph C.; and Green, Thomas P., 4,203,395, Cl. 123-32.0EA.
Cunningham, Joseph A., 4,203,354, Cl. 92-169.000.
Hungerford, William R., 4,204,257, Cl. 364-474.000.
Kiwak, Robert S.; and Liu, Tung, 4,203,936, Cl. 264-26.000.
Sheridan, Earl A., 4,203,349, Cl. 91-47.000.

Bennett, Jack L., to General Motors Corporation. Power steering hydraulic system with a low pressure expansible reservoir. 4,203,287, Cl. 60-329.000.

Berger, Alfred H. Barrel engine with rocking ball drive. 4,203,396, Cl. 123-58.00B.

Bergeron, Gregory Bernard: *See—*
Mims, Matlock M., 4,203,437, Cl. 128-229.000.

Bergfeld, Manfred: *See—*
Zengel, Hans; and Bergfeld, Manfred, 4,203,916, Cl. 260-453.00P.

Bergner, Dieter; and Danner, Max, to Hoechst Aktiengesellschaft. Process for preparing basic aluminum chlorides. 4,203,812, Cl. 204-94.000.

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Meckel, Joachim F.; Rohde, Wolfgang; Siebert, Werner; Wagener, Dietrich; Flockenhaus, Claus; and Galow, Manfred, 4,203,803, Cl. 201-40.000.
Wagener, Heinrich; and van Heek, Karl-Heinrich, 4,203,833, Cl. 209-139.00R.

Bernstein, Bruce S.; Kapoor, Ramesh C.; and Hyman, Seymour. Activated polymer materials and process for making same. 4,204,018, Cl. 428-246.000.

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Moe, Walter; Bernstein, Lawrence A.; and Heller, David, 4,203,247, Cl. 46-1.00K.

Berry, John F.: *See—*
Barcus, Lester M.; and Berry, John F., 4,204,096, Cl. 179-146.00R.

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Bertheussen, Harry: *See—*
Johnsaon, M. K. Olof; Oberg, Karl-Erik; and Bertheussen, Harry, 4,203,763, Cl. 75-129.000.

Bertolacini, Ralph J., to Standard Oil Company (Indiana). Catalyst, method of preparation and use thereof in hydrodesulfurizing cracked naphtha. 4,203,829, Cl. 208-216.00R.

Bertone, Antonino: *See—*
Rivetti, Enrico; Amedei, Giuseppe; and Bertone, Antonino, 4,203,631, Cl. 303-52.000.

Bertotti, Giorgio: *See—*
Franco, Luigi; and Bertotti, Giorgio, 4,203,503, Cl. 181-272.000.

Berz, Wolfgang, to Gimag Aktiengesellschaft. Method and apparatus for purifying a gas of suspended particles. 4,203,736, Cl. 55-96.000.

Besenmatter, Walter, to Ing. Karl Vockenhuber; and DDr. Raimund Hauser, part interest to each. Optical system. 4,203,661, Cl. 354-53.000.

Bethlehem Steel Corporation: *See—*
Langhorst, Winfield S., 4,203,267, Cl. 52-148.000.

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Krysiak, William J.; and Moyer, Richard L., 4,203,556, Cl. 241-86.100.

Beyer, Nico H. H.; Huigen, Johannes H.; and van Westenbrugge, Johan K., to B.V. Neratoom. Method of sealing tube plate apertures, and repair set for use therein. 4,203,185, Cl. 29-157.30C.

Beyl, Earl L., Jr., to Traintronics, Inc. Electronic horn arrangement. 4,204,200, Cl. 340-384.00E.

Bice, Charles D.; Cooper, John H.; and Fenger, Michael L., to United States of America, Interior. Electrical cable coupler with rotatable protective covers. 4,203,640, Cl. 339-41.000.

Bihler, Otto: *See—*
Bruller, Eduard; Augenstein, Reiner; and Bihler, Otto, 4,203,477, Cl. 140-105.000.

Bihuniak, Peter P.: *See—*
Bachman, David L.; and Bihuniak, Peter P., 4,203,553, Cl. 239-420.000.

Bijkerk, Albert H.: *See—*
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,204,060, Cl. 544-218.000.

Biot, Bernard: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,203,844, Cl. 210-321.00B.

Biotronik Mess- und Therapiegerate GmbH & Co.: *See—*
Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, 4,203,447, Cl. 128-419.0PG.
Keller, John W., Jr., 4,203,448, Cl. 128-419.0PG.

Bisonaya, Rudy Y.: *See—*
Farrell, Gerald J.; and Bisonaya, Rudy Y., 4,203,464, Cl. 137-454.200.

Black, Theodore W.: *See—*
Gasper, Martin J., Jr.; and Black, Theodore W., 4,203,389, Cl. 119-3.000.

Blanpain, Jacques; and Delehouzee, Leon, to Acieries Reunies de Burbach-Eich-Dudelange S.A. Arbed. Method of producing welding wire constituted by a core of welding powder enclosed by a mantle of metal. 4,203,188, Cl. 29-420.000.

Blaylock, Robert W.: *See—*
Harris, Carl R.; and Blaylock, Robert W., 4,203,497, Cl. 177-134.000.

Bledsoe, James O., Jr.; and Cardenas, Carlos G., to SCM Corporation. Hydrogenation process for the selective preparation of 3-menthene. 4,204,080, Cl. 585-273.000.

Blessing, Hubert, to Levi Strauss & Co. Gripper belt transfer. 4,203,590, Cl. 271-265.000.

Blewitt, Donald D., to Westinghouse Electric Corp. Tapered strap element for an electrical fuse. 4,204,183, Cl. 337-295.000.

Blickle, Tibor: *See—*
Aradi, Emil; Blickle, Tibor; Monostori, Endre; Nemeth, Jeno; Pallai, Ivanne; and Varga, Janos, 4,203,228, Cl. 34-10.000.

Blochl, Hanns; Fryda, Georg; Schlick, Erich; and Schnall, Gunther, to AGFA-Gevaert, A.G. Electrostatic copier with insertable developer module. 4,203,386, Cl. 118-653.000.

Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., to Polaroid Corporation. Sulfam(na)phthaleins. 4,204,061, Cl. 260-243.300.

Bodin, Ove. Hydraulic servo-brake system for electrically operated vehicles. 4,203,629, Cl. 303-10.000.

Bodnick, Sheldon; and Brice, John C., to Exxon Research & Engineering Co. Hydrodesulfurization process. 4,203,828, Cl. 208-213.000.

Bodor, Nicolae S., to Interx Research Corporation. Soft quaternary surface active agents and method of using same. 4,204,065, Cl. 546-316.000.

Boeing Company, The: *See—*
Miller, Glen E., 4,203,539, Cl. 225-2.000.
Murphy, Richard J., 4,203,204, Cl. 29-703.000.
Pinson, George T.; and Hunter, Alex B., 4,203,347, Cl. 89-1.816.

Boettger, Friedrich; Eugster, Walter; Lenssen, Walter; and Missmahl, Bodo, to Malmadie & Co. Maschinenfabrik GmbH. Punch change mechanism for a double pressure pin press. 4,203,336, Cl. 83-550.000.

Bogacki, Anthony P., to General Electric Company. Meter terminal unit for use in automatic remote meter reading and control system. 4,204,194, Cl. 340-147.0SY.

Bogacki, Anthony P., to General Electric Company. Meter terminal unit for use in automatic remote meter reading and control system. 4,204,195, Cl. 340-151.000.

Bohm, Hans-Peter. Flying saucer or throwing disk used in sports games. 4,203,249, Cl. 46-74.00D.

Boldridge, Austin G., Jr., to Conversational Systems, Inc. Removably attachable watt-hour meter monitor device. 4,204,115, Cl. 250-227.000.

Bolhofer, William A.; Cragoe, Edward J., Jr.; and Hoffman, Jacob M., Jr., to Merck & Co., Inc. Pyridinyl ureas and pharmaceutical use. 4,203,988, Cl. 424-266.000.

Bolshov, Gennady V.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Bolt, John A., to Terrapin International Limited. Shower cabinets. 4,203,171, Cl. 4-146.000.

Bonhomme, Francois R. Electric sockets for plug and socket connectors and methods for their manufacture. 4,203,647, Cl. 339-256.00R.

Bonnell, Leonard J.; McHugh, Edward H.; Sjostrom, Douglas D.; and Johnson, Lanny L., to Dyonics, Inc. Surgical instrument suitable for closed surgery such as of the knee. 4,203,444, Cl. 128-276.000.

Borglum, Keith B. Rudder assembly. 4,203,380, Cl. 114-144.00R.

Borkowski, Donald F., to Bendix Corporation, The. Wheel cylinder attachment. 4,203,508, Cl. 188-325.000.

Borror, Alan L.: *See—*
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,204,061, Cl. 260-243.300.

Boschung, Marcel, to Marcel Boschung, Firma. Controlling mechanism for sprinkler system. 4,203,459, Cl. 137-119.000.

Boss, Gary R., to Erie Manufacturing Company. Reversible motor operated valve with spring assist. 4,203,573, Cl. 251-133.000.

Bottum, Edward W. Solar heating system and component. 4,203,422, Cl. 126-417.000.

Boulais, Richard A., to Laser Systems, Inc. Aerial surveying method to determine ground contours. 4,203,665, Cl. 356-4.009.

Bouquet, Francois: *See—*
Battigelli, Jean A.; and Bouquet, Francois, 4,203,745, Cl. 65-6.000.
Battigelli, Jean A.; Bouquet, Francois; Fezenko, Igor; and Massol, Jean-Jacques, 4,203,746, Cl. 65-6.000.
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Bourgeois, Gerard J.; Gaudiana, Russell A.; and Sahatjian, Ronald A., to Polaroid Corporation. Photographic products comprising dye developers and N-oxides. 4,203,766, Cl. 430-243.000.

Bowler, Jean; and Robinson, Graham E., to Imperial Chemical Industries Limited. Prostane derivatives. 4,204,001, Cl. 424-308.000.

Bowman, Harold M. Manhole construction. 4,203,686, Cl. 404-25.000.

Bowman, Miles A., Jr., to Dana Corporation. Vehicle load supporting structure. 4,203,617, Cl. 280-797.000.

Boyadjieff, George I.; and Gill, Jerry A., to Varco International, Inc. Slip assembly. 4,203,182, Cl. 24-263.00D.

Boyd, Donald A., to Cardinal American Corporation. Fireplace heater and grate. 4,203,417, Cl. 126-165.000.

Bozhenov, Jury F.: *See—*
Ivanov, Jury N.; Artemov, Konstantin V.; Suris, Leonid I.; and Bozhenov, Jury F., 4,203,372, Cl. 410-67.000.

Brack, Alfred; and Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Transfer printing process with naphtholactam dyes. 4,203,722, Cl. 8-467.000.

Braeger, Horst K. H., to Nordischer Maschinenbau Rud. Baader GmbH & Co KG. Machine for skinning fish or fish fillets. 4,203,179, Cl. 17-62.000.

Braly, Henry L. Illuminated weather vane. 4,204,271, Cl. 362-145.000.

Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; and Fernandez de Gamboa, Cristina R., to Laboratorios Made, S.A. N(Aminoalkyl)-naphthalimides and their derivatives. 4,204,063, Cl. 546-99.000.

Brandt, Cary. Oil burner arrangement for heating installations. 4,203,719, Cl. 431-352.000.

Brandt, Gerald B.: *See—*
Gottlieb, Milton; and Brandt, Gerald B., 4,203,326, Cl. 73-339.00R.

Brazelton, Carl L., to Stran Corporation. Aquatic exercise facility with island. 4,203,390, Cl. 119-29.000.

Brennen, Michael B.: *See—*
Gyugyi, Laszlo; and Brennen, Michael B., 4,204,151, Cl. 323-119.000.

Bressler, Wilbur L.; Lowery, Kirby, Jr.; and Vance, Fred L., Jr., to Dow Chemical Company, The. Polymerization of α-olefins with a dual transition metal catalyst. 4,204,050, Cl. 526-97.000.

Brewbaker, James L.; and Marzett, Rodrique L., to Dow Chemical Company, The. Halopolymers crosslinked with a 1,3-diaminopropane. 4,204,048, Cl. 525-343.000.

Brewer, Donaldee: *See—*
Brodie, Edwin T.; and Brewer, Donaldee, 4,203,793, Cl. 156-394.000.

Brice, John C.: *See—*
Bodnick, Sheldon; and Brice, John C., 4,203,828, Cl. 208-213.000.

Brieger, Emmet F. High pressure, fluid tight seal. 4,203,607, Cl. 277-188.00A.

Bristol-Myers Company: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,203,909, Cl. 260-347.200.

Bristol Products, Inc.: *See—*
Colten, Jerrold L., 4,204,106, Cl. 219-213.000.

British Petroleum Company Limited, The: *See—*
Hancock, Ronald D.; and Howell, Ian V., 4,203,952, Cl. 423-6.000.

Broall, Richard: *See—*
Wirtz, Peter; and Broall, Richard, 4,203,850, Cl. 252-8.050.

Brocklehurst, Charles E.; and Burton, Perry E., to Opelika Manufacturing Corp. Sheet inspection and marking system. 4,204,012, Cl. 427-288.000.

Brodie, Edwin T.; and Brewer, Donaldee, to Bandag Incorporated. Pressure vessel system for retreading tires. 4,203,793, Cl. 156-394.000.

Bromberg, Nathan S. System and method of fluorescence polarimetry. 4,203,670, Cl. 356-367.000.

Brooker, Bernard F. Ball and method for making it. 4,203,941, Cl. 264-250.000.

Brooks, Lula M. Timing assembly for oxygen respiration units. 4,203,434, Cl. 128-205.240.

Broomfield, Junior: *See—*
Wolter, Karl E.; Peters, William J.; Roberts, Donald R.; McReynolds, Robert D.; Broomfield, Junior; and Crews, Ernest R., 4,203,253, Cl. 47-10.000.

Brouwer, Egbert K. Filter press. 4,203,845, Cl. 210-386.000.

Brown, Alvin E.; and Van Over, William E., to Du Pont de Nemours, E. I., and Company. Apparatus for the ultrasonic measurement of the flow velocity of fluent media. 4,203,322, Cl. 73-194.00A.

Brown Company: *See—*
Cortigene, Louis R.; and Wright, Robert G., 4,203,388, Cl. 119-1.000.

Brown, Dale G., to American Cyanamid Company. Halo-substituted benzospiro cyclopropane carboxylates as insecticides and ixodicides. 4,203,918, Cl. 260-465.00D.

Brown, Harry A., Jr.; and Durgin, Robert F., to United States of America, Army. Stable aqueous foam formulation, and method of use thereof for visual obscuration and area denial. 4,203,974, Cl. 424-166.000.

Brown, Kenneth L., to Rockwell International Corporation. Signal converter using a quad diode race. 4,204,168, Cl. 455-330.000.

Brown, Michael J., to GAF Corporation. Phosphoryl hydrazines. 4,203,932, Cl. 260-923.000.

Brown, Michael J., to GAF Corporation. Insecticidal 1-sec. and tert.-alkyl-2-disubstituted-phosphoryl hydrazines. 4,203,979, Cl. 424-220.000.

Brown, Stephen D. Target with removable score sheet. 4,203,600, Cl. 273-407.000.

Brown, William E., to Dow Chemical Company, The. Method of determining the open circuit voltage of a battery in a closed circuit. 4,204,153, Cl. 324-429.000.

Bruchez, Raymond J.: *See—*
Hanloser, Kurt J.; Bruchez, Raymond J.; and Gill, James T., Jr., 4,203,285, Cl. 60-261.000.

Brudevold, Finn. Interconnection unit for multiple data processing systems. 4,204.251, Cl. 364-200.000.

Bruller, Eduard; Augenstein, Reiner; and Bihler, Otto, to Otto Bihler Maschinenfabrik GmbH & Co. KG. Material working machine mounting tools in several planes. 4,203,477, Cl. 140-105.000.

Brundbjerg, Niels. Air purifier of the regenerating type. 4,203,948, Cl. 422-121.000.

Bruney, Paul F. Audio image recovery system. 4,204,092, Cl. 179-1.00G.

Brunswick Corporation: *See—*
Puryear, John W., 4,203,565, Cl. 242-84.10R.

Bryant, Cal L.: *See—*
Wynn, Edward J.; and Bryant, Cal L., 4,203,695, Cl. 414-40.000.

Bubula, Thomas J.; Franz, Maurice F.; Johnson, Gordon W.; and Rinaldo, James D., to Caterpillar Tractor Co. Controls for combined hydrostatic and multiple speed range transmission units with automatic speed control and braking functions. 4,203,293, Cl. 60-490.000.

Buchanan, Thomas M., to United States of America, America. Neisseria gonorrhoeae vaccine. 4,203,971, Cl. 424-92.000.

Buchholz, Jeffrey C., to General Motors Corporation. On-board detection of antiknock compounds in automotive gasoline. 4,203,807, Cl. 204-1.00T.

Buchwald, Holger: *See—*
Krull, Manfred; Buchwald, Holger; and Kirsch, Wilhelm, 4,203,435, Cl. 128-156.000.

Buckson, Gerald I., to Du Pont de Nemours, E. I., and Company. Method and apparatus for optically inspecting cylindrical articles. 4,203,673, Cl. 356-446.000.

Bud Antle, Inc.: *See—*
Cayton, David W., 4,203,697, Cl. 414-345.000.

Budal, Kjell; and Falnes, Johannes. System for the conversion of sea wave energy. 4,203,294, Cl. 60-497.000.

Bugaut, Andree; and Laudon, Monique, to L'Oreal. Diaminobenzoquinones. 4,204,059, Cl. 544-166.000.

Buhrer, Erwin. Foundry molding machine for the production of mold halves in mold boxes. 4,203,484, Cl. 164-227.000.

Buken, Gunther; and Lang, Raimund. Process and apparatus for measuring the length of moving shaped articles particularly red-hot semifinished articles. 4,204,224, Cl. 358-107.000.

Bull, David W., to Nartron Corporation. Electrical switch. 4,204,102, Cl. 200-153.00J.

Bulten-Kanthal AB: *See—*
Thorssell, Olof L., 4,203,323, Cl. 73-194.00E.

Bunker Ramo Corporation: *See—*
Fukushima, Hiroyuki; Yoshida, Minoru; and Inoue, Hiromasa, 4,203,196, Cl. 29-566.300.
Krolak, Ronald F.; and Warywoda, Joseph, 4,203,643, Cl. 339-107.000.

Buogert, Hermann: *See—*
Becker, Kurt; Buogert, Hermann; Schwarzer, Siegfried; and Seidel, Hans-Georg, 4,203,752, Cl. 65-163.000.

Burckardt, Dieter, to Zahnradfabrik Friedrichshafen, AG. Steering valve for hydrostatic drive. 4,203,290, Cl. 60-420.000.

Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, to Wacker-Chemie GmbH. Stabilization of organopolysiloxanes. 4,203,913, Cl. 556-401.000.

Burnett, Edward L.; and Stack, Eugene V., to Dow Chemical Company, The. Manufacture of polytetrafluoroethylene tubes. 4,203,938, Cl. 264-127.000.

Burnett, William C.; and Adams, John D., to Burnett, William C. Method and apparatus for low-dust discharge of particulate material through a nozzle. 4,203,535, Cl. 222-411.000.

Burnham, Bradshaw; and Nichols, Charles F., to United States of America, Navy. Jammer apprehending amplifier for proximity fuzes. 4,203,365, Cl. 102-214.000.

Burnham, Jack; and Washbourn, Jack, to Avon Industrial Polymers Limited; and Westinghouse Brake & Signal Co. Ltd. Piston means for piston-cylinder arrangements. 4,203,353, Cl. 92-159.000.

Burns-Biotec Laboratories, Inc.: *See—*
Harris, Delbert L.; Goodnow, Robert A.; Glock, Robert D.; and Kinyon, Joann M., 4,203,968, Cl. 424-92.000.

Burroughs Wellcome Co.: *See—*
Caldwell, Albert G.; and Whittaker, Norman, 4,204,068, Cl. 548-313.000.
Telling, Ronald C.; Passingham, Roy J.; Kitchener, Brian L.; and Hopkinson, David G., 4,203,801, Cl. 435-284.000.

Burton, Perry E.: *See—*
Brocklehurst, Charles E.; and Burton, Perry E., 4,204,012, Cl. 427-288.000.

Bushev, Alexandr V.: *See—*
Ermakov, Vladimir E.; Makarov, Viktor B.; Seidaliev, Fikrat S. O.; Nikiforov, Alexandr M.; Bushev, Alexandr V.; and Dozortsev, July K., 4,203,309, Cl. 72-96.000.

Butruille, Yves: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,203,844, Cl. 210-321.00B.

Butterworth, Dennis: *See—*
Cole, Martin; Hood, John D.; and Butterworth, Dennis, 4,203,973, Cl. 424-114.000.

Buxmann, Kurt, to Swiss Aluminium Ltd. Static mixer for the production of metal alloys. 4,203,580, Cl. 266-216.000.

B.V. Neratoom: *See—*
Beyer, Nico H. H.; Huigen, Johannes H.; and van Westenbrugge, Johan K., 4,203,185, Cl. 29-157.30C.

Bye, Ashley D., to Imperial Chemical Industries Limited. Transition metal composition and production thereof. 4,203,867, Cl. 252-429.00B.

Byrd, Erwin S., Jr. Liquid-cooled smoking device. 4,203,455, Cl. 131-173.000.

Cagle, David G. Soccer court. 4,203,594, Cl. 273-411.000.

Cal-Wood Door: *See—*
Naslund, Edwin N.; and MacDonald, Ian, 4,203,255, Cl. 49-399.000.

Caldwell, Albert G.; and Whittaker, Norman, to Burroughs Wellcome Co. Nitrogen heterocycles. 4,204,068, Cl. 548-313.000.

Cam Gears Limited: *See—*
Rogers, Peter R., 4,203,683, Cl. 403-132.000.

Campari, Luigi, to AMP Incorporated. Coaxial cable stripping device. 4,203,333, Cl. 81-9.50A.

Campbell, Charles R.; Heckle, William A.; and Mathews, Marion J., III, to Monsanto Company. Electroplating cathodes for electrochemical synthesis. 4,203,808, Cl. 204-23.000.

Canon Kabushiki Kaisha: *See—*
Hanada, Hiroshi, 4,203,652, Cl. 350-182.000.
Kishi, Hirotoshi; Hattori, Hiroyuki; and Shimizu, Katsuichi, 4,203,587, Cl. 271-293.000.
Tosaka, Umi; Kondo, Hideyo; Murai, Keiichi; and Toma, Hitoshi, 4,203,764, Cl. 430-67.000.
Uchidoi, Masanori; Tsunekawa, Tokuichi; Aizawa, Hiroshi; Taguchi, Tetsuya; Ito, Tadashi; and Takishima, Yoshiyuki, 4,203,660, Cl. 354-31.000.

Canron Corp.: *See—*
Stewart, John K.; and von Beckmann, Helmuth, 4,203,367, Cl. 104-7.00B.

Canup, Robert E., to Texaco Inc. Distributorless ignition method and system for a multicylinder internal combustion engine. 4,203,404, Cl. 123-148.0ND.

Cardenas, Carlos G.: *See—*
Bledsoe, James O., Jr.; and Cardenas, Carlos G., 4,204,080, Cl. 585-273.000.

Cardi, Paul. Pressure equalizing valve. 4,203,467, Cl. 137-557.000.

Cardinal American Corporation: *See—*
Boyd, Donald A., 4,203,417, Cl. 126-165.000.

Carl Freudenberg, Firma: *See—*
Krull, Manfred; Buchwald, Holger; and Kirsch, Wilhelm, 4,203,435, Cl. 128-156.000.

Carl Robert Eckelmann AG: *See—*
Janning, Jorg; Kaminsky, Walter; Sinn, Hansjorg; and Tysarcyk, Stanislav, 4,203,804, Cl. 202-121.000.

Carlo, Dennis J.; Hagopian, Arpi; and Kniskern, Peter J., to Merck & Co., Inc. Swine atropic rhinitis vaccine. 4,203,970, Cl. 424-92.000.

Carlstedt, Bo R., to Ingenjorsfirman Orrje & Co AB. Coalescence system. 4,203,843, Cl. 210-262.000.

Carpaneti, Edoardo: *See—*
Vargiu, Silvio; Carpaneti, Edoardo; and Passalenti, Beppino, 4,203,816, Cl. 204-159.160.

Carpaneto, Tomaso: *See—*
Facco, Giuseppe; and Carpaneto, Tomaso, 4,203,717, Cl. 431-182.000.

Carr, Norman L.; Schleppy, Ronald, Jr.; Schmid, Bruce K.; and Shah, Yatish T., to Gulf Research & Development Company. Combined coal liquefaction-gasification process. 4,203,823, Cl. 208-10.000.

Carr, Norman L.; and McGinnis, Edgar L., to Gulf Research & Development Company. Process for separating solids from coal liquids. 4,203,839, Cl. 210-71.000.

Carter, Tommie B.: *See—*
Hallack, Richard D.; and Carter, Tommie B., 4,203,836, Cl. 210-42.00R.

Carter, Woodward C., II, to Westinghouse Electric Corp. Load regulation as part of an adaptive priority determination power demand control system. 4,204,127, Cl. 307-39.000.

Casey, Roy E.: *See—*
Knight, Lindsay C.; and Casey, Roy E., 4,203,232, Cl. 35-25.000.

Cassella Aktiengesellschaft: *See—*
Muller, Rolf; and Ribka, Joachim, 4,204,056, Cl. 542-416.000.

Casutt, Toni: *See—*
Minery, Aime, 4,203,272, Cl. 53-374.000.

Caterpillar Tractor Co.: *See—*
Bubula, Thomas J.; Franz, Maurice F.; Johnson, Gordon W.; and Rinaldo, James D., 4,203,293, Cl. 60-490.000.
Miller, Robert G., 4,203,375, Cl. 74-335.000.

Cavelos, Arthur A., to General Electric Company. Controllable saturation sidelobe canceller. 4,204,211, Cl. 343-100.0LE.

Cayton, David W., to Bud Antle, Inc. Transfer apparatus for palletized loads. 4,203,697, Cl. 414-345.000.

CBS Inc.: *See—*
Malek, Jack H.; and Siegel, Herman M., 4,203,251, Cl. 46-107.000.

Ceagfilter und Entstaubungstechnik GmbH: *See—*
Winter, Karl; and Staschik, Guunter, 4,203,734, Cl. 55-26.000.

Celotex Corporation, The: *See—*
Beale, John H.; and Moss, Ernest K., 4,204,020, Cl. 428-310.000.

Central Glass Company, Limited: *See—*
Enomoto, Takamitsu; Tanaka, Kyoji; Kawamoto, Hiromi; Mizuno, Tamotsu; and Fujinaga, Masao, 4,203,955, Cl. 423-308.000.

Centre de Recherches Metallurgiques: *See—*
Economopoulos, Marios; and Respen, Yves J., 4,203,783, Cl. 148-12.400.

Centre National d'Etudes Spatiales: *See—*
Riboulet, Michel J.; and Segui, Gerard R., 4,204,120, Cl. 250-341.000.

Centre Technique des Industries Mechaniques: *See—*
Vieu, Alain; and Flambard, Christian, 4,203,315, Cl. 73-1.00R.

Centro Richerche Fiat S.p.A.: *See—*
Franco, Luigi; and Bertotti, Giorgio, 4,203,503, Cl. 181-272.000.
Rivetti, Enrico; Amedei, Giuseppe; and Bertone, Antonino, 4,203,631, Cl. 303-52.000.

Cepelinski, Jacob, to Mitel Corporation. Tone applying line circuit. 4,204,094, Cl. 179-18.0FA.

Chaffee, Robert C.; and Bauer, Ernest G., to Gilmore & Tatge Mfg. Co. Oil burner. 4,203,720, Cl. 432-222.000.

Chakrabarti, Paritosh M., to GAF Corporation. Phosphate-free machine dishwashing composition. 4,203,858, Cl. 252-135.000.

Chamberlain, Albert E.: *See—*
Gall, John C.; Ozimek, Chester E.; and Chamberlain, Albert E., 4,203,681, Cl. 400-697.000.

Champion International Corporation: *See—*
Southworth, Ronald W., 4,203,229, Cl. 34-46.000.

Chang, Eugene Y. C.; and Kaizerman, Samuel, to American Cyanamid Company. Polyurethane compositions stabilized with ketoximes. 4,203,889, Cl. 260-45.8NT.

Chapman, Darwin E., to Creative Phototronics, Inc. Digital exposure meter. 4,203,668, Cl. 356-215.000.

Chapman, Frank X.; Gallant, Charles R.; and Stull, Charles V., to Gould Inc. Seismic-proof bus duct joint. 4,204,085, Cl. 174-86.000.
Chapuis, Henri: *See—*
Lequeux, Christian; and Chapuis, Henri, 4,203,474, Cl. 138-96.00R.
Chase, John D.: *See—*
Woods, Hanbury J.; Chase, John D.; and Galvez, Buenaventura B., 4,204,077, Cl. 568-697.000.
Chavannes, Marc A. Method of forming wire reinforced corrugated board. 4,203,790, Cl. 156-179.000.
Chavannes, Marc A. Reinforced paper products. 4,204,016, Cl. 428-108.000.
Chelle, Rene, to Societe Anonyme S.E.T.R.I.C. Method of gasifying and agitating a fermentation culture. 4,204,042, Cl. 435-253.000.
Chemische Werke Huels, AG: *See—*
Dorffel, Jorg; Andrejewski, Werner; and Bartz, Wilfried, 4,204,014, Cl. 427-385.500.
Chen, Tsang J., to Eastman Kodak Company. Photographic elements having hydrophilic colloid layers containing hydrophobic addenda uniformly loaded in latex polymer particles. 4,203,716, Cl. 430-207.000.
Cheng, Richard C. M. Model track section. 4,203,548, Cl. 238-10.00F.
Chevron Research Company: *See—*
Reynolds, Richard N., Jr., 4,203,904, Cl. 260-343.600.
Chiang, Chwan K.: *See—*
Heeger, Alan J.; MacDiarmid, Alan G.; Chiang, Chwan K.; and Gau, Shek-Chung, 4,204,216, Cl. 357-8.000.
Chiba, Norio: *See—*
Noda, Yoichiro; Matsumura, Michio; Chiba, Norio; and Hata, Masahito, 4,203,815, Cl. 204-159.200.
Chirash, William: *See—*
Johnson, James R.; and Chirash, William, 4,203,852, Cl. 252-8.800.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Asanagi, Etsuo, 4,203,954, Cl. 423-243.000.
Cho, Yong K.: *See—*
Bailey, James E.; and Cho, Yong K., 4,204,041, Cl. 435-177.000.
Cholet, Jacques; Laurent, Jean; Magneville, Pierre; and Duconge, Claude, to Institute Francais du Petrole. Device for emitting acoustic waves in a liquid medium. 4,203,501, Cl. 181-120.000.
Ciba-Geigy Corporation: *See—*
Hubele, Adolf, 4,204,002, Cl. 424-309.000.
Ramey, Chester E.; and Luzzi, John L., 4,203,890, Cl. 260-45.80N.
Sturm, Elmar, 4,203,978, Cl. 424-211.000.
Cislo, Casimer J.; and Cummings, Seth B., Jr., to General Motors Corporation. Automotive vehicle suspension. 4,203,615, Cl. 280-689.000.
Claeys, Danie A.; Reyniers, Albert A.; and Janssens, Wilhelmus, to AGFA-GEVAERT N.V. Etch bleaching liquid with iron(III)ions. 4,203,765, Cl. 430-252.000.
Clairol Incorporated: *See—*
Kunz, Raymond W., 4,203,230, Cl. 34-99.000.
Clamp, Frank: *See—*
Thorp, Anthony J.; Clamp, Frank; Feld, Raoul; Page-Gibson, Joseph E.; and Archer, Keith, 4,203,861, Cl. 252-182.100.
Clark, Dana A. Inflatable solar collector. 4,203,425, Cl. 126-426.000.
Clear, Theodore E. Methods for manufacturing cementitious reinforced panels. 4,203,788, Cl. 156-44.000.
Cleary, James J.; and Cleary, John M. Electronic controlled-duration switching. 4,204,149, Cl. 323-24.000.
Cleary, John M.: *See—*
Cleary, James J.; and Cleary, John M., 4,204,149, Cl. 323-24.000.
Clifton, Jerry L.; Gentile, Ralph; Hurlbut, Russell G.; and King, James L., to Eastman Kodak Company. Film positioning apparatus. 4,203,664, Cl. 355-64.000.
Clinton Electronics Corporation: *See—*
Permenter, Marvin M., 4,204,231, Cl. 358-247.000.
Coburn Optical Industries, Inc.: *See—*
Haddock, Fred, 4,203,259, Cl. 51-97.0NC.
Coffey, Rufus G., to Rheem Manufacturing Company. Device to feed a ribbon of sausage support loops into clip attachment apparatus. 4,203,335, Cl. 83-232.000.
Coffman Manufacturing Corp.: *See—*
Coffman, Ronald D., 4,203,572, Cl. 251-95.000.
Coffman, Ronald D., to Coffman Manufacturing Corp. Locking ball valve. 4,203,572, Cl. 251-95.000.
Coggin, Charles H., Jr.; and Sakakura, Tatsuo R., to Nitto Boseki Co., Ltd. Precision winder for the drawing and packaging of synthetic fibers. 4,203,559, Cl. 242-18.00G.
Cohen, David B. Efficiency of human learning employing the electroencephalograph and a long-term learning diagnostic-remedial process. 4,203,452, Cl. 128-732.000.
Cohen, Frederic S.; and Hyland, Albert L., to Polaroid Corporation. Multiple duty battery. 4,204,036, Cl. 429-152.000.
Cohen, Sheppard: *See—*
Shimer, Robert M.; Dombrowski, Joseph A.; and Cohen, Sheppard, 4,204,139, Cl. 315-58.000.
Cole, Martin; Hood, John D.; and Butterworth, Dennis, to Beecham Group Limited. Antibiotics. 4,203,973, Cl. 424-114.000.
Coleman, Randolph D., to United States of America, Navy. Pulse width modulated power amplifier for direct current motor control. 4,204,143, Cl. 318-341.000.
Colgate-Palmolive Company: *See—*
Dugan, Bernard B., 4,203,857, Cl. 252-92.000.
Johnson, James R.; and Chirash, William, 4,203,852, Cl. 252-8.800.
Ramachandran, Pallassana N., 4,203,851, Cl. 252-8.600.
Collin, Andre: *See—*
Collin, Maurice; Lapointe, Michel; and Collin, Andre, 4,203,345, Cl. 84-478.000.
Collin, Maurice; Lapointe, Michel; and Collin, Andre. Automatic visual teaching device for the learning of music or component parts thereof. 4,203,345, Cl. 84-478.000.
Collins, Marcus H.; and Smith, John K., to Eaton Corporation. Variable width tire building drum with interdigitated shoes. 4,203,794, Cl. 156-415.000.
Collins, Walter W., to Jenkins Metal Corporation. Simulated belt buckle and appendage. 4,203,167, Cl. 2-322.000.
Colombo, Paolo; and Radici, Pierino, to Societa Italiana Resine S.I.R. S.p.A. Process for purifying gaseous formaldehyde. 4,203,735, Cl. 55-26.000.
Colten, Jerrold L., to Bristol Products, Inc. Electrical heating system for building structures. 4,204,106, Cl. 219-213.000.
Compagnie Industrielle de Mecanismes: *See—*
Noel, Jean P.; and Party, Marcel, 4,203,621, Cl. 292-216.000.
Constantine, Paul; Ettinger, Melvyn; and Rubin, Harry S., to Instructo/McGraw-Hill, Inc. Transparency storage and display apparatus. 4,203,659, Cl. 353-120.000.
Contamoil Corporation: *See—*
Snowden, James E., Jr.; and Snowden, Esther A., 4,203,725, Cl. 23-230.0HC.
Conti, Rino, to Dart Industries Inc. Shelf display system. 4,203,373, Cl. 108-152.000.
Continental Group, Inc., The: *See—*
Hasegawa, Gary K., 4,203,528, Cl. 220-269.000.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Peter, Julius; Johannsen, Peter; and Mauk, Gerhard, 4,203,480, Cl. 152-209.0NT.
Conversational Systems, Inc.: *See—*
Boldridge, Austin G., Jr., 4,204,115, Cl. 250-227.000.
Cook, Kenneth J.: *See—*
Ruszala, Frederick B.; and Cook, Kenneth J., 4,204,261, Cl. 364-607.000.
Cook, Sanford L.; Molisani, Justin J.; and Dennison, Kenneth I., Jr., to Standard Keil Hardware Manufacturing Company, a Division of Buildex Incorporated. Safety latch. 4,203,622, Cl. 292-221.000.
Cooke, Horise M.: *See—*
Vyse, Gerrard N.; and Cooke, Horise M., 4,203,321, Cl. 73-168.000.
Cookson, Richard C.; Schulte-Elte, Karl-Heinrich; and Hauser, Arnold, to Firmenich, S.A. Process for preparing a furanic compound. 4,203,907, Cl. 260-346.110.
Coombes, Alan: *See—*
Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, 4,203,447, Cl. 128-419.0PG.
Cooper, John H.: *See—*
Bice, Charles D.; Cooper, John H.; and Fenger, Michael L., 4,203,640, Cl. 339-41.000.
Cooper, John S.: *See—*
Alexander, William J., III; Cooper, John S.; and Moore, Charles E., 4,203,563, Cl. 242-66.000.
Cooper, Robin D. G.: *See—*
Koppel, Gary A.; and Cooper, Robin D. G., 4,203,896, Cl. 260-239.00A.
Cope, Steven A., to Du Pont de Nemours, E. I., and Company. Electrolytic cell with flow detection means. 4,203,819, Cl. 204-247.000.
Coppelman, Marcy. Work table for occupational therapy. 4,203,593, Cl. 272-117.000.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Thermoplastic compositions of polynorbornene and polyolefin resin. 4,203,884, Cl. 260-33.6AQ.
Corbellini, Margherita; Greco, Alberto; and Osellame, Mirko, to Snamprogetti, S.p.A. Chemical compositions based on titanium trihalides and methods for their production and use. 4,203,866, Cl. 252-429.00C.
Corbett, Clifford F., to Foseco International Limited. Calculating apparatus. 4,203,542, Cl. 235-85.00R.
Corey, Kenneth J., to Lewis, Donald J. Method for lining a flange face for lined pipe and product of method. 4,203,475, Cl. 138-109.000.
Corning Glass Works: *See—*
Bachman, David L.; and Bihuniak, Peter P., 4,203,553, Cl. 239-420.000.
Davis, Allen D., Jr.; Johns, Herbert L.; and Lachman, Irwin M., 4,203,772, Cl. 106-40.00R.
Schultz, Peter C.; and Wusirika, Raja R., 4,203,744, Cl. 65-3.00A.
Shay, George C., 4,203,750, Cl. 65-99.00A.
Simon, Raphael A., 4,204,027, Cl. 428-428.000.
Corsetti, Sheryll L. Adjusting tool for air delivery register. 4,203,332, Cl. 81-3.00R.
Cortigene, Louis R.; and Wright, Robert G., to Brown Company. Animal litter and process. 4,203,388, Cl. 119-1.000.
Cosden Technology, Inc.: *See—*
Mayes, Warden W., 4,203,826, Cl. 208-64.000.
Cowles, Arthur L.; and Ensign, Thomas C., to Minnesota Mining and Manufacturing Company. Liquid level sensing apparatus. 4,203,325, Cl. 73-304.00R.
Cowley, Gerald, to Erco Industries Limited. Chlorine dioxide generation process. 4,203,961, Cl. 423-478.000.
Coxon, DeWayne; and Gates, Timothy P., to Jordan College. Solar heat air system. 4,203,424, Cl. 126-422.000.
CPS, Inc.: *See—*
Wigley, Patrick A., 4,204,247, Cl. 361-387.000.
Cragoe, Edward J., Jr.: *See—*
Bolhofer, William A.; Cragoe, Edward J., Jr.; and Hoffman, Jacob M., Jr., 4,203,988, Cl. 424-266.000.

Cramer, Jurgen, to Hoechst Aktiengesellschaft. Process for the manufacture of p-benzoquinone-diketals. 4,203,811, Cl. 204-78.000.
Cramer, Jurgen; and Lindner, Werner, to Hoechst Aktiengesellschaft. Apparatus for carrying out electrochemical reactions and correspondingly suitable bipolar electrodes. 4,203,821, Cl. 204-268.000.
Crandell, Walter R., to Fast Heat Element Mfg. Co., Inc. Method for making a ceramic bond heater. 4,203,197, Cl. 29-611.000.
Crane, Charles J. Calf-tying practice dummy. 4,203,233, Cl. 35-29.00R.
Cranfield, Peter J., to National Research Development Corporation. Triazines and their use in bonding resins to biological tissue. 4,203,220, Cl. 433-228.000.
Creasy, Stephen L.: *See—*
Wheeler, Myron S.; and Creasy, Stephen L., 4,204,213, Cl. 343-706.000.
Creative Phototronics, Inc.: *See—*
Chapman, Darwin E., 4,203,668, Cl. 356-215.000.
Cremer, Heinz P., to Keiper Automobiltechnik GmbH & Co KG. Apparatus for adjusting a vehicle seat. 4,204,255, Cl. 364-425.000.
Crenshaw, Ronnie R.: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,203,909, Cl. 260-347.200.
Cresswell, Michael W.; and Fiedor, Richard J., to Westinghouse Electric Corp. Light activated switch system having high di/dt capability. 4,204,116, Cl. 250-229.000.
Crews, Ernest R.: *See—*
Wolter, Karl E.; Peters, William J.; Roberts, Donald R.; McReynolds, Robert D.; Broomfield, Junior; and Crews, Ernest R., 4,203,253, Cl. 47-10.000.
Cromas, Joseph C.; and Green, Thomas P., to Bendix Corporation, The. Closed-loop idle speed control system for fuel-injected engines using pulse width modulation. 4,203,395, Cl. 123-32.0EA.
Crosby, Guy A.: *See—*
Wang, Patricia C.; Wingard, Robert E., Jr.; and Crosby, Guy A., 4,204,007, Cl. 426-548.000.
Crownover, Frederick S. Glove and tool device with two tool elements. 4,203,495, Cl. 172-370.000.
Crutchfield, Marvin M.; Papanu, Victor D.; and Warren, Craig B., to Monsanto Company. Copolymers of acetal carboxylates. 4,204,052, Cl. 525-398.000.
Cryer, Edward, to Lucas Industries Limited. Electrical switch. 4,204,099, Cl. 200-4.000.
Csizy, Tibor; Karpat, Arpad; Melis, Janos; and Szemerey, Zoltan, to Villamos Berendezes es Keszuvek Muvek. Fuse-element for electric fuses. 4,204,184, Cl. 337-295.000.
Cullinan, George J.; and Gerzon, Koert, to Eli Lilly and Company. Amide derivatives of VLB, leurosidine, leurocristine and related dimeric alkaloids. 4,203,898, Cl. 260-244.400.
Cummings, Seth B., Jr.: *See—*
Cislo, Casimer J.; and Cummings, Seth B., Jr., 4,203,615, Cl. 280-689.000.
Cunningham, Joseph A., to Bendix Corporation, The. Hydraulic piston with metallic O-ring groove and non-metallic slidable surfaces. 4,203,354, Cl. 92-169.000.
Current, Wayne A., to Singer Company, The. Package for sewing machine needles. 4,203,518, Cl. 206-380.000.
Cytologiska Centrallaboratoriet AB: *See—*
Stormby, Nils G., 4,203,797, Cl. 156-521.000.
Dal Pont, Giorgio. Endosseal implant for dental prosthesis. 4,203,218, Cl. 433-176.000.
Dale, Gerald, to Medeci Developments Limited. Urine collection device. 4,203,169, Cl. 4-144.100.
Dana Corporation: *See—*
Bowman, Miles A., Jr., 4,203,617, Cl. 280-797.000.
Daniels, Travis J. Lighting system for bicycles. 4,204,191, Cl. 340-134.000.
Danielsson, Dan G.: *See—*
Kjellander, Jan O.; and Danielsson, Dan G., 4,204,045, Cl. 435-301.000.
Danner, Max: *See—*
Bergner, Dieter; and Danner, Max, 4,203,812, Cl. 204-94.000.
Dansereau, John L., to Federal-Mogul Corporation. Process for separating and recovering aluminum and steel from bimetal scrap. 4,203,762, Cl. 75-68.00R.
Darrow, Burr: *See—*
Zemek, Albert W.; Tomko, Frederick; Matson, Crawford; and Darrow, Burr, 4,203,583, Cl. 269-234.000.
Dart Industries Inc.: *See—*
Conti, Rino, 4,203,373, Cl. 108-152.000.
Datron Systems, Inc.: *See—*
Fasanacht, Charles J., 4,204,214, Cl. 343-766.000.
Datsenko, Nikolai M. Device for separating heavier impurities from solid bodies in fluid flow. 4,203,832, Cl. 209-44.000.
Daugherty, Yvonne B. Rack for holding soap bars. 4,203,568, Cl. 248-309.00R.
Davenport, James D.; Dreikorn, Barry A.; and Elsasser, A. Frederick, to Eli Lilly and Company. Fungicidal 3-phenyl-5-(substituted methyl-)isoxazoles. 4,203,994, Cl. 424-272.000.
Davies, David L., to Tasco, Inc. Abrasive belt machining apparatus. 4,203,261, Cl. 51-141.000.
Davis, Allen D., Jr.; Johns, Herbert L.; and Lachman, Irwin M., to Corning Glass Works. Porous zirconia containing ceramics. 4,203,772, Cl. 106-40.00R.
Davis, Duane L. Apparatus for testing and straightening arrow shafts and the like. 4,203,308, Cl. 72-34.000.
Dayco Corporation: *See—*
Vitellaro, Frank A., 4,203,476, Cl. 138-122.000.
DDr. Raimund Hauser: *See—*
Besenmatter, Walter, 4,203,661, Cl. 354-53.000.
De Visu International: *See—*
Thenon, Christian, 4,203,234, Cl. 35-76.000.
Deason, James R.: *See—*
Yen, Chung H.; and Deason, James R., 4,203,989, Cl. 424-267.000.
DeBoynton, William L., to Perkin-Elmer Corporation, The. Rotary-to-linear-motion converter. 4,203,328, Cl. 74-25.000.
Decker, Herbert, to Triumph Werke Nurnberg A.G. Flexible shaft coupling. 4,203,304, Cl. 64-13.000.
Deere & Company: *See—*
Stecklein, Gary L., 4,203,684, Cl. 403-158.000.
de Graaf, Stephanus A. G.: *See—*
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,204,060, Cl. 544-218.000.
Deguemp, Jean-Antoine E. Magnetic prosthetic element. 4,203,216, Cl. 32-2.000.
Dehnert, Johannes: *See—*
Kurtz, Walter; and Dehnert, Johannes, 4,203,894, Cl. 260-156.000.
Deininger, Horst, to Zahnradfabrik Friedrichshafen, AG. Hydraulic auxiliary power steering with energy supply arrangement. 4,203,292, Cl. 60-445.000.
de Jager, Frank, to U.S. Philips Corporation. Minimum group pulse code modem having shape and amplitude codes. 4,204,163, Cl. 375-25.000.
deJong, Geert J., to Akzo N.V. Process for preparing carbon which adsorbs metal ions. 4,203,868, Cl. 252-439.000.
de Jonge, Cornelis R. H. I.: *See—*
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,204,060, Cl. 544-218.000.
Delehouzee, Leon: *See—*
Blanpain, Jacques; and Delehouzee, Leon, 4,203,188, Cl. 29-420.000.
Della Mura, Pasquale: *See—*
Kupers, Walter; and Della Mura, Pasquale, 4,203,997, Cl. 424-280.000.
Delmon, Bernard M.; Portenart, Michel C.; and Viehe, Heinz, to Unibra Societe Anonyme. Catalytic process for preparing nitriles from amides. 4,203,917, Cl. 260-465.00B.
Delorme, Gerard L. Y. Process for reproducing pictorial works and works achieved with said process. 4,203,789, Cl. 156-59.000.
Delta and Pine Land Company: *See—*
Downing, James D., 4,203,254, Cl. 47-58.000.
De Luca, Paul V.; and Gautier, Charles L., to Porta Systems Corp. Telephone main distributing frame. 4,204,095, Cl. 179-98.000.
DeLuca, Raymond F.; and Schwemm, Gene, to Georgia-Pacific Corporation. Flexible sheet material dispensing of rolls in succession. 4,203,562, Cl. 242-55.300.
Deman, Pierre: *See—*
Ben Sadou, Jean-Claude; and Deman, Pierre, 4,204,172, Cl. 330-134.000.
de Munnik, Frederikus J.: *See—*
van den Hanenberg, Joannes G.; and de Munnik, Frederikus J., 4,204,253, Cl. 364-200.000.
Denka Chemical Corporation: *See—*
Woskow, Marvin Z., 4,203,905, Cl. 260-346.300.
Denki Onkyo Co., Ltd.: *See—*
Onoue, Shoji, 4,204,263, Cl. 363-68.000.
Dennison, Kenneth I., Jr.: *See—*
Cook, Sanford L.; Molisani, Justin J.; and Dennison, Kenneth I., Jr., 4,203,622, Cl. 292-221.000.
DePenti, Kenneth L., to Midland-Ross Corporation. Locksetting mechanism for a rigid jaw coupler. 4,203,523, Cl. 213-100.00W.
Deraedt, Roger: *See—*
Pierdet, Andre; Torelli, Vesperto; and Deraedt, Roger, 4,203,981, Cl. 424-243.000.
Dereppe, Michel; and Leva, Jean, to Solvay & Cie. Moldable compositions based on thermoplastic polymers, synthetic elastomers and vegetable fibrous materials, and use of these compositions for calendering and thermoforming. 4,203,876, Cl. 260-17.40R.
Desso, Jerome A.; Ritchie, Leon T.; and Yeager, Marvin L., to AMP Incorporated. Clip for electrically connecting planar elements, such as solar cells, and the like, in series. 4,203,646, Cl. 339-205.000.
Dethlefsen, Rolf, to Gould Inc. Hybrid circuit breaker with varistor in parallel with vacuum interrupter. 4,204,101, Cl. 200-144.0AP.
DeWald, Raymond C.; Ellis, Ronald M.; and Fitzpatrick, Stephen T., to Firestone Tire & Rubber Company, The. Plastisol resins having improved clarity. 4,203,879, Cl. 260-23.0XA.
DeWall, Richard A. Respiratory gas assembly for bubble oxygenator. 4,203,944, Cl. 422-47.000.
De Wall, Richard A. Bubble oxygenator. 4,203,945, Cl. 422-47.000.
Diamond, Julius; and Douglas, George H., to William H. Rorer, Inc. Amidinoureas. 4,203,920, Cl. 260-553.00A.
Diamond, Julius; and Douglas, George H., to William H. Rorer, Inc. Anti-ulcer amidinoureas. 4,204,000, Cl. 424-304.000.
Diamond Shamrock Corporation: *See—*
Schenker, Barry A.; Sugano, Thomas T.; Stillman, Neil W.; and O'Leary, Kevin J., 4,203,822, Cl. 204-301.000.
Temple, Ralph E.; and Gooding, William T., Jr., 4,203,773, Cl. 106-40.00R.
Wiseman, Russell M., 4,203,820, Cl. 204-263.000.
Dickson, Thomas D., Jr. Rotary foodstuff mill and milling process. 4,203,555, Cl. 241-15.000.

Didier Engineering GmbH: *See—*
Meckel, Joachim F.; Rohde, Wolfgang; Siebert, Werner; Wagener, Dietrich; Flockenhaus, Claus; and Galow, Manfred, 4,203,803, Cl. 201-40.000.

Didier-Werke AG: *See—*
Luhrsen, Ernst, 4,203,538, Cl. 222-603.000.

Dietz, William A., to Schurz Corporation. Coupling for joining parts of fluid conveying and fluid controlling devices, and valves utilizing said couplings. 4,203,468, Cl. 137-624.110.

Dietze, Wolfgang; and Bachmann, Gerhard, to Siemens Aktiengesellschaft. Crystal wafer rack structures and the method of producing the same. 4,203,940, Cl. 264-154.000.

Digby, Dennis: *See—*
Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, 4,203,447, Cl. 128-419.0PG.

Diggs, Richard E. Apparatus for desalinating water. 4,203,805, Cl. 202-176.000.

Diggs, Richard E. Apparatus for desalinating water. 4,203,806, Cl. 202-176.000.

Diggs, Richard E. Guided flow wind power machine with tubular fans. 4,204,126, Cl. 290-55.000.

Digital Equipment Corporation: *See—*
Hitz, George E.; Kaman, Charles H.; Mudge, Craig; O'Loughlin, James F.; and Sullivan, Daniel T., 4,204,252, Cl. 364-200.000.

Diker-Moe Associates: *See—*
Moe, Walter; Bernstein, Lawrence A.; and Heller, David, 4,203,247, Cl. 46-1.00K.

Dill, W. Preston: *See—*
United States of America, National Aeronautics and Space Administration; Dill, W. Preston; Taylor, Rueben E.; and Jeffers, Eldon L., 4,204,037, Cl. 435-3.000.

Dinglinger, Gunter, to Messer Griesheim GmbH. Apparatus for metering small amounts of a low boiling liquefied gas. 4,203,299, Cl. 62-49.000.

Di Perna, James. System for oil and water separation. 4,203,842, Cl. 210-242.00S.

Dixon, Alan G., to Girling Limited. Brake control units. 4,203,630, Cl. 303-24.00C.

Dobbs, Herbert H. Cartridge for reducing bore erosion and extending barrel life. 4,203,364, Cl. 102-38.0WR.

Dr. Ing. Rudolf Hell GmbH: *See—*
Gast, Uwe; Kiralfy, Dennis; Schaefer, Klaus; Slawik, Eckhard; and Wellendorf, Klaus, 4,204,223, Cl. 358-80.000.

Dombrowski, Joseph A.: *See—*
Shimer, Robert M.; Dombrowski, Joseph A.; and Cohen, Sheppard, 4,204,139, Cl. 315-58.000.

Dominion Engineering Works Limited: *See—*
Koeller, Paul, 4,203,703, Cl. 415-113.000.

Donley, Harold E., to PPG Industries, Inc. Conductive metal oxide film for solar energy control. 4,204,028, Cl. 428-432.000.

Donnelly, William R. Exothermic composition and hot pack. 4,203,418, Cl. 126-263.000.

Dorf, Carl: *See—*
Wiener, Joseph, 4,203,219, Cl. 433-74.000.

Dorffel, Jorg; Andrejewski, Werner; and Bartz, Wilfried, to Chemische Werke Huels, AG. Liquid coating compositions containing little or no solvent. 4,204,014, Cl. 427-385.500.

Doty, Warren R.: *See—*
Arcilesi, Donald A.; and Doty, Warren R., 4,204,013, Cl. 427-304.000.

Douglas, George H.; Mir, Ghulam N.; Won, Chong M.; and Studt, William L., to William H. Rorer, Inc. Antisecretory triazinones. 4,203,984, Cl. 424-249.000.

Douglas, George H.: *See—*
Diamond, Julius; and Douglas, George H., 4,203,920, Cl. 260-553.00A.
Diamond, Julius; and Douglas, George H., 4,204,000, Cl. 424-304.000.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; and Won, Chong M., 4,203,983, Cl. 424-249.000.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,203,985, Cl. 424-249.000.

Dow Chemical Company, The: *See—*
Bressler, Wilbur L.; Lowery, Kirby, Jr.; and Vance, Fred L., Jr., 4,204,050, Cl. 526-97.000.
Brewbaker, James L.; and Marzett, Rodrique L., 4,204,048, Cl. 525-343.000.
Brown, William E., 4,204,153, Cl. 324-429.000.
Burnett, Edward L.; and Stack, Eugene V., 4,203,938, Cl. 264-127.000.
Kaiser, Mark E., 4,203,900, Cl. 548-239.000.
Martin, Charles W.; and Ward, Eldon L., 4,203,999, Cl. 424-286.000.

Downing, James D., to Delta and Pine Land Company. Flame treatment apparatus. 4,203,254, Cl. 47-58.000.

Dozier, Harold W., to Mostek Corporation. Depletion controlled switch. 4,204,131, Cl. 307-251.000.

Dozortsev, July K.: *See—*
Ermakov, Vladimir E.; Makarov, Viktor B.; Seidaliev, Fikrat S. O.; Nikiforov, Alexandr M.; Bushev, Alexandr V.; and Dozortsev, July K., 4,203,309, Cl. 72-96.000.

Drachenberg, Werner; and Wolters, Heinrich, to Akzona Incorporated. Process and apparatus for treatment of the exit surface of spinnerets. 4,203,939, Cl. 264-130.000.

Dreikorn, Barry A.: *See—*
Davenport, James D.; Dreikorn, Barry A.; and Elsasser, A. Frederick, 4,203,994, Cl. 424-272.000.

Dresser Industries, Inc.: *See—*
Hollier, Thomas R.; and Johnson, Robert E., 4,203,266, Cl. 52-116.000.

Drythanol Limited: *See—*
Yarrow, Hyman; and Whitefield, Martin, 4,203,969, Cl. 424-83.000.

Duconge, Claude: *See—*
Cholet, Jacques; Laurent, Jean; Magneville, Pierre; and Duconge, Claude, 4,203,501, Cl. 181-120.000.

Duerr, Jonathan H.; and Twitchen, Antony C., to Trend Communications Limited. Print head control. 4,203,679, Cl. 400-320.000.

Dugan, Bernard B., to Colgate-Palmolive Company. Detergent-scrubber article and method for manufacture. 4,203,857, Cl. 252-92.000.

Dulaney, Burrell C. Device for stopping fluid flow from a pipe. 4,203,472, Cl. 137-828.000.

Dunn, Stanley A., to J. E. Enterprises, Inc. Packet for providing thermal protection for documents. 4,203,521, Cl. 206-525.000.

Dunnington, Bruce W.; and Gernert, William B., to Glennel Corporation, The. Abrasive drill. 4,203,262, Cl. 51-204.000.

Du Pont de Nemours, E. I., and Company: *See—*
Brown, Alvin E.; and Van Over, William E., 4,203,322, Cl. 73-194.00A.
Buckson, Gerald I., 4,203,673, Cl. 356-446.000.
Cope, Steven A., 4,203,819, Cl. 204-247.000.
Grossa, Mario; and Sandner, Helmut G., 4,203,770, Cl. 430-270.000.
Smith, Edmund H., Jr., 4,203,672, Cl. 356-431.000.

Dupuis, Jean M., to Northern Telecom Limited. Apparatus for simultaneously loading a multiplicity of pins into a loading fixture for a pin insertion machine. 4,203,698, Cl. 414-404.000.

Durgin, Robert F.: *See—*
Brown, Harry A., Jr.; and Durgin, Robert F., 4,203,974, Cl. 424-166.000.

Dye, Malcolm; and Hyde, Richard C. J., to International Business Machines Corporation. Data processing system power control. 4,204,249, Cl. 364-200.000.

Dynapol: *See—*
Wang, Patricia C.; Wingard, Robert E., Jr.; and Crosby, Guy A., 4,204,007, Cl. 426-548.000.

Dyonics, Inc.: *See—*
Bonnell, Leonard J.; McHugh, Edward H.; Sjostrom, Douglas D.; and Johnson, Lanny L., 4,203,444, Cl. 128-276.000.

E. A. Storz GmbH & Co. KG: *See—*
Hafner, Franz X., 4,203,577, Cl. 254-100.000.

E. R. Squibb & Sons, Inc.: *See—*
Gordon, Eric M.; and Koster, William H., 4,203,992, Cl. 424-271.000.
Gordon, Eric M., 4,203,993, Cl. 424-271.000.

Eagle Electric Mfg. Co., Inc.: *See—*
Tansi, Hakki M., 4,203,638, Cl. 339-14.00P.

Eastman Kodak Company: *See—*
Chen, Tsang J., 4,203,716, Cl. 430-207.000.
Clifton, Jerry L.; Gentile, Ralph; Hurlbut, Russell G.; and King, James L., 4,203,664, Cl. 355-64.000.
Guestaux, Claude, 4,203,769, Cl. 430-631.000.
Willis, Roger L., 4,204,140, Cl. 315-241.00P.

Eaton Corporation: *See—*
Collins, Marcus H.; and Smith, John K., 4,203,794, Cl. 156-415.000.
Soeters, Raymond A., Jr., 4,203,397, Cl. 123-90.160.

Ebauches, S.A.: *See—*
Ziegler, Jacques; Schneiter, Ali; and Grandjean, Remy, 4,203,280, Cl. 368-187.000.

Eberle, William J., to General Battery Corporation. Method of dumping and collecting corrosive substances from automotive batteries. 4,203,699, Cl. 414-415.000.

Eberlein, Werner: *See—*
Schutt, Wolfgang; Jensen, Hans-Ludwig; Eberlein, Werner; and Schoppe, Gunter, 4,203,817, Cl. 204-180.00R.

Ebner, Peter R., to Itek Corporation. Phototypesetter carriage detent mechanism. 4,203,330, Cl. 74-527.000.

Economopoulos, Marios; and Respen, Yves J., to Centre de Recherches Metallurgiques. Process for improving the quality of steel sections. 4,203,783, Cl. 148-12.400.

Edgecombe, David A., to Babcock & Wilcox Company, The. Tubing with formed ends for heat exchangers. 4,203,273, Cl. 53-399.000.

Ediny, Jury G.: *See—*
Vasilevsky, Petr N.; Ediny, Jury G.; and Parfinenko, Ivan V., 4,203,429, Cl. 128-1.00R.

Eek, Lars: *See—*
Emgard, Lennart; Lascelles, Alan; and Eek, Lars, 4,204,006, Cl. 426-520.000.

Egener, Ernst-Gunter; and Kindermann, Wolfgang, to Kraftwerk Union Aktiengesellschaft. Monitoring device for steam-turbine valves. 4,203,471, Cl. 137-637.000.

Eggermont, Ludwig D. J., to U.S. Philips Corporation. Non-recursive digital filter with reduced output sampling frequency. 4,204,177, Cl. 333-166.000.

Ehlers, Klaus-Peter: *See—*
Schroter, Klaus; Scheibitz, Wolfgang; and Ehlers, Klaus-Peter, 4,203,956, Cl. 423-321.00S.

Eichenberg, Norbert: *See—*
Liebal, Eberhard; and Eichenberg, Norbert, 4,203,753, Cl. 65-163.000.

Eidelman, Lev G.: *See—*
Goriletsky, Valentin I.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; and Eidelman, Lev G., 4,203,951, Cl. 422-249.000.

Eiseman, Fred S., to GAF Corporation. Halophenoxyalkoxy phosphorous-containing sulfides. 4,203,757, Cl. 71-87.000.

Ekstrom, Bertil A.: *See—*
Bamberg, Peter; Ekstrom, Bertil A.; Forsgren, Ulf E.; and Sjoberg, Berndt O. H., 4,203,972, Cl. 424-114.000.

Electric Power Research Institute, Inc.: *See—*
Gottlieb, Milton; and Brandt, Gerald B., 4,203,326, Cl. 73-339.00R.
King, Randall N., 4,204,035, Cl. 429-104.000.

Electro Optik GmbH & Co. KG: *See—*
Menke, Josef F., 4,204,122, Cl. 250-347.000.

Electronic Time Company ETIC S.A.: *See—*
Froidevaux, Jacques H., 4,204,162, Cl. 324-430.000.

Eli Lilly and Company: *See—*
Cullinan, George J.; and Gerzon, Koert, 4,203,898, Cl. 260-244.400.
Davenport, James D.; Dreikorn, Barry A.; and Elsasser, A. Frederick, 4,203,994, Cl. 424-272.000.
Koppel, Gary A.; and Cooper, Robin D. G., 4,203,896, Cl. 260-239.00A.
Nakatsukasa, Walter M.; Marconi, Gary G.; Neuss, Norbert; and Hamill, Robert L., 4,204,039, Cl. 435-118.000.

Elkay Manufacturing Company: *See—*
Farrell, Gerald J.; and Bisonaya, Rudy Y., 4,203,464, Cl. 137-454.200.

Elliott, Eugene W.: *See—*
Jessup, James L.; and Elliott, Eugene W., 4,203,445, Cl. 128-283.000.

Ellis, Herbert B., to United States of America, Air Force. Line-of-sight stabilization reflector assembly. 4,203,654, Cl. 350-285.000.

Ellis, Ronald M.: *See—*
DeWald, Raymond C.; Ellis, Ronald M.; and Fitzpatrick, Stephen T., 4,203,879, Cl. 260-23.0XA.

Ellithorpe, Ernest R.; and Ellithorpe, Richard C., to Western Sulfur Remelters Ltd. Apparatus for sulfur melting by lateral displacement of heating element. 4,203,625, Cl. 299-6.000.

Ellithorpe, Richard C.: *See—*
Ellithorpe, Ernest R.; and Ellithorpe, Richard C., 4,203,625, Cl. 299-6.000.

Elsasser, A. Frederick: *See—*
Davenport, James D.; Dreikorn, Barry A.; and Elsasser, A. Frederick, 4,203,994, Cl. 424-272.000.

Elstrom, Britt, administrator: *See—*
Elstrom, Tore, deceased; Gustavsen, Per F.; and Kjohl, Olav, 4,204,053, Cl. 528-259.000.

Elstrom, Tore, deceased (by Elstrom, Britt, administrator); Gustavsen, Per F.; and Kjohl, Olav, to Norsk Hydro a.s. Method for the production of urea of high mechanical strength. 4,204,053, Cl. 528-259.000.

Emgard, Lennart; Lascelles, Alan; and Eek, Lars, to Frigoscandia Contracting AB. Method of thermally treating unpackaged food products. 4,204,006, Cl. 426-520.000.

Energy for Independence, Inc.: *See—*
Ryerson, Joseph L., 4,203,946, Cl. 422-98.000.

Energy Systems Incorporated: *See—*
Hanson, Robert C.; and Hanson, Leon C., 4,203,300, Cl. 62-52.000.

Enokida, Kenji: *See—*
Ichise, Wataru; Kinjo, Yasuo; Enokida, Kenji; and Nihei, Hideharu, 4,203,860, Cl. 252-181.200.

Enomoto, Shogo: *See—*
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,203,724, Cl. 23-230.00B.

Enomoto, Takamitsu; Tanaka, Kyoji; Kawamoto, Hiromi; Mizuno, Tamotsu; and Fujinaga, Masao, to Central Glass Company, Limited. Process of preparing calcium hydrogen phosphate anhydride suitable as material for phosphors. 4,203,955, Cl. 423-308.000.

Ensign, Thomas C.: *See—*
Cowles, Arthur L.; and Ensign, Thomas C., 4,203,325, Cl. 73-304.00R.

Enter, Rudolf: *See—*
Osmera, Miroslav; Enter, Rudolf; and McCallum, Robert, 4,203,675, Cl. 400-144.200.

Enters, Edward W.; and Kuhn, Weldon R., to Gilson Brothers Company. Snowblower. 4,203,237, Cl. 37-43.00E.

Erb, Edgar M.: *See—*
Heiser, Joseph I.; and Erb, Edgar M., 4,203,791, Cl. 156-252.000.

Erco Industries Limited: *See—*
Cowley, Gerald, 4,203,961, Cl. 423-478.000.
Medves, James S., 4,203,957, Cl. 423-323.000.

Erdmannsdorfer, Hans, to Filterwerk Mann & Hummel GmbH. Separator device for removing oil from an air stream. 4,203,739, Cl. 55-323.000.

Erickson, Alfred C.; and Erickson, Clyde W. Foldable snow shoe. 4,203,236, Cl. 36-123.000.

Erickson, Clyde W.: *See—*
Erickson, Alfred C.; and Erickson, Clyde W., 4,203,236, Cl. 36-123.000.

Erie Manufacturing Company: *See—*
Boss, Gary R., 4,203,573, Cl. 251-133.000.

Ermakov, Vladimir E.; Makarov, Viktor B.; Seidaliev, Fikrat S. O.; Nikiforov, Alexandr M.; Bushev, Alexandr V.; and Dozortsev, July K. Method of pilger rolling of tubes. 4,203,309, Cl. 72-96.000.

Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V. Method of making standby primary current sources. 4,203,202, Cl. 29-623.200.

Esquire, Inc.: *See—*
Gaertner, Robert F.; 4,204,148, Cl. 323-22.0SC.
Nuver, Eric L. H., 4,204,141, Cl. 315-311.000.

Ethyl Corporation: *See—*
Hayes, Thomas H., 4,203,552, Cl. 239-337.000.
Raley, Garland E.; Miller, C. W.; and Smith, D. L., 4,203,715, Cl. 425-131.100.

Eto, Kunihiko: *See—*
Nishimura, Hideo; Noda, Shigeo; and Eto, Kunihiko, 4,203,691, Cl. 408-8.000.

Ettinger, Melvyn: *See—*
Constantine, Paul; Ettinger, Melvyn; and Rubin, Harry S., 4,203,659, Cl. 353-120.000.

Etudes Techniques et Representations Industrielles E.T.R.I.: *See—*
Saint-Amand, Henri, 4,203,704, Cl. 416-93.00R.

Eugster, Walter: *See—*
Boettger, Friedrich; Eugster, Walter; Lenssen, Walter; and Missmahl, Bodo, 4,203,336, Cl. 83-550.000.

Evans, Timothy W., to Upjohn Company, The. Process for the recovery of spectinomycin. 4,203,903, Cl. 260-340.300.

Evergreen Weigh, Inc.: *See—*
Harris, Carl R.; and Blaylock, Robert W., 4,203,497, Cl. 177-134.000.

Exxon Research & Engineering Co.: *See—*
Achia, Biddanda U.; and Shaw, David H., 4,203,824, Cl. 208-33.000.
Bodnick, Sheldon; and Brice, John C., 4,203,828, Cl. 208-213.000.
Hatsell, William A., 4,203,676, Cl. 400-208.000.
Hatsell, William A., 4,203,677, Cl. 400-214.000.
Horner, Ian M., 4,203,186, Cl. 29-157.30R.
Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,203,871, Cl. 252-518.000.
Kmak, Walter S.; and Monzo, Charles, 4,203,825, Cl. 208-48.00R.
Metrailer, William J.; and Mueller, David E., 4,203,759, Cl. 75-0.5BA.
Sims, J. Robert, Jr.; Mitchell, Willard N.; and Williamson, Charles W., 4,203,942, Cl. 264-559.000.

Fabreges, Michel, to Regie Nationale des Usines Renault. Electronic control circuit for an electromagnetic decelerator. 4,203,632, Cl. 303-100.000.

Facco, Giuseppe; and Carpaneto, Tomaso, to Italimpliant Societa Italiana Impianti per Asioni. Flat flame burner assembly. 4,203,717, Cl. 431-182.000.

Fachbach, Heinz; Thien, Gerhard; and Kirchweger, Karl, to List, Hans. Internal combustion engine with a sound-reducing encapsulation. 4,203,407, Cl. 123-198.00E.

Fachbach, Heinz; Thien, Gerhard; and Meurer, Peter C., to List, Hans. Low-noise-level internal combustion engine. 4,203,409, Cl. 123-198.00E.

Fackler, Kenneth C., to M & W Gear Company. Thermostatically responsive valve mechanism. 4,203,545, Cl. 236-93.00A.

Falnes, Johannes: *See—*
Budal, Kjell; and Falnes, Johannes, 4,203,294, Cl. 60-497.000.

Farr, David R.; and Horman, Ian, to Societe d'Assistance Technique pour Produits Nestle S.A. Infusing bag containing combination of dried extract and ligneous adsorbent and process of preparing same. 4,204,004, Cl. 426-77.000.

Farr, James B., to Tecumseh Products Company. Unified pump and generator arrangement. 4,203,710, Cl. 417-53.000.

Farrar, Frederick G.: *See—*
Sindoris, Arthur R.; Farrar, Frederick G.; and Schaubert, Daniel H., 4,204,212, Cl. 343-700.0MS.

Farrell, Gerald J.; and Bisonaya, Rudy Y., to Elkay Manufacturing Company. Diaphragm valve for faucets. 4,203,464, Cl. 137-454.200.

Fassnacht, Charles J., to Datron Systems, Inc. Slewing and tracking mechanism for dish structure. 4,204,214, Cl. 343-766.000.

Fast Heat Element Mfg. Co., Inc.: *See—*
Crandell, Walter R., 4,203,197, Cl. 29-611.000.

Fatuzzo, Carol L.; and Foss, George D., to Minnesota Mining and Manufacturing Company. High resolution X-ray intensifying screen with antireflecting substrate. 4,204,125, Cl. 250-486.000.

Faunce, Frank R., to McCord, William F. Dentifrice with topical and systemic phosphate fluoride system. 4,203,966, Cl. 424-52.000.

Featherstone, Ivy. Collapsible tube holding bracket. 4,203,567, Cl. 248-108.000.

Federal-Mogul Corporation: *See—*
Dansereau, John L., 4,203,762, Cl. 75-68.00R.

Fedotov, Oleg A.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Feikema, Roger H. Velocipede having separable frame parts. 4,203,612, Cl. 280-287.000.

Feld, Raoul: *See—*
Thorp, Anthony J.; Clamp, Frank; Feld, Raoul; Page-Gibson, Joseph E.; and Archer, Keith, 4,203,861, Cl. 252-182.100.

Feldman, Charles F.: *See—*
Batchelor, Robert L.; and Feldman, Charles F., 4,204,029, Cl. 428-441.000.

Feng, Bai-Cwo; and Feng, George C., to International Business Machines Corporation. Two layer resist system. 4,204,009, Cl. 427-36.000.

Feng, George C.: *See—*
Feng, Bai-Cwo; and Feng, George C., 4,204,009, Cl. 427-36.000.

Fenger, Michael L.: *See—*
Bice, Charles D.; Cooper, John H.; and Fenger, Michael L., 4,203,640, Cl. 339-41.000.

Fengler, Georg: *See—*
Bangert, Hans; and Fengler, Georg, 4,203,238, Cl. 37-118.00R.

Fenner, Hans; Auwarter, Wilhelm; and Stark, Karl-Heinz, to Ramseier & Jenzer AG, Carosseriewerke Bern. Bus construction. 4,203,623, Cl. 296-178.000.

Fernandez de Gamboa, Cristina R.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; and Fernandez de Gamboa, Cristina R., 4,204,063, Cl. 546-99.000.

Ferro Corporation: *See—*
Becker, Gordon P., 4,204,021, Cl. 428-325.000.

Fezenko, Igor, to Saint-Gobain Industries. Glass fiberization spinner alloy and use thereof. 4,203,747, Cl. 65-6.000.

Fezenko, Igor: *See—*
Battigelli, Jean A.; Bouquet, Francois; Fezenko, Igor; and Massol, Jean-Jacques, 4,203,746, Cl. 65-6.000.
Battigelli, Jean A.; Bouquet, Francois; and Fezenko, Igor, 4,203,748, Cl. 65-14.000.

Fiala, Jindrich, to Georg Fischer Aktiengesellschaft. Slinging wheel for centrifugal jet machines. 4,203,263, Cl. 51-434.000.

Fiedor, Richard J.: *See—*
Cresswell, Michael W.; and Fiedor, Richard J., 4,204,116, Cl. 250-229.000.

Filipov, Andree N.; Johnson, Richard N.; and Winslow, Christopher N., to United States of America, Army. Radar analog to digital converter. 4,204,198, Cl. 340-347.0AD.

Filterwerk Mann & Hummel GmbH: *See—*
Erdmannsdorfer, Hans, 4,203,739, Cl. 55-323.000.

Finke, Klaus W., to Robert Finke Kunststoff-Spritzguss-Werk. Tilting nozzle closure with dual sealing surfaces. 4,203,534, Cl. 222-402.130.

Finke, Ulrich; Moretto, Hans-Heinrich; Niederprum, Hans; and Vorbruggen, Helmut, to Bayer Aktiengesellschaft. Silyl esters of perfluoroalkanesulphonic acid esters and a process for their preparation. 4,203,914, Cl. 556-428.000.

Firestone Tire & Rubber Company, The: *See—*
DeWald, Raymond C.; Ellis, Ronald M.; and Fitzpatrick, Stephen T., 4,203,879, Cl. 260-23.0XA.
Halasa, Adel F.; Ravagnani, Frederick J.; and Schonfeld, Steven E., 4,203,874, Cl. 260-3.000.
Ranik, William J., Jr., 4,203,481, Cl. 152-330.0RF.

Firmenich, S.A.: *See—*
Cookson, Richard C.; Schulte-Elte, Karl-Heinrich; and Hauser, Arnold, 4,203,907, Cl. 260-346.110.

Fischer & Porter Co.: *See—*
Schmoock, Roy F., 4,204,240, Cl. 361-152.000.

Fisher, Michael H.; and Tolman, Richard L., to Merck & Co., Inc. Sugar derivatives of C-076 compounds. 4,203,976, Cl. 424-180.000.

Fitelson, Michael M.; and Morgan, Dennis R. Optical signal processing apparatus. 4,204,262, Cl. 364-822.000.

Fitzpatrick, Stephen T.: *See—*
DeWald, Raymond C.; Ellis, Ronald M.; and Fitzpatrick, Stephen T., 4,203,879, Cl. 260-23.0XA.

Fivian, Daniel A., to Maag Gear-Wheel & Machine Company Limited. Apparatus for grinding cylindrical gears. 4,203,260, Cl. 51-123.00G.

Flambard, Christian: *See—*
Vieu, Alain; and Flambard, Christian, 4,203,315, Cl. 73-1.00R.

Flanagan, John J. Surfactant system. 4,203,872, Cl. 252-542.000.

Flautt, Robert A.: *See—*
Reynoir, Ronald H.; Flautt, Robert A.; and Leavitt, Clyde M., 4,203,504, Cl. 182-10.000.

Fletcher-Terry Company, The: *See—*
Insolio, Thomas A., 4,203,209, Cl. 30-164.950.

Flint-Smith, Virginia K.: *See—*
Stonoga, Dorothea E.; and Flint-Smith, Virginia K., 4,203,516, Cl. 206-216.000.

Flockenhaus, Claus: *See—*
Meckel, Joachim F.; Rohde, Wolfgang; Siebert, Werner; Wagener, Dietrich; Flockenhaus, Claus; and Galow, Manfred, 4,203,803, Cl. 201-40.000.

FMC Corporation: *See—*
Hare, Ronald B., 4,203,633, Cl. 305-28.000.

Fodor, Joseph E. Solar heater. 4,203,428, Cl. 126-449.000.

Fogle, James W., to Saran Industries, Inc. Knife. 4,203,214, Cl. 30-355.000.

Foley, James W.: *See—*
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,204,061, Cl. 260-243.300.

Ford Motor Company: *See—*
Giardini, Dante S., 4,203,393, Cl. 123-30.00D.
Nichols, Robert W., 4,203,288, Cl. 60-345.000.

Forman, Harold. High speed tear tape applicator for shrink wrap film packaging. 4,203,270, Cl. 53-133.000.

Forsgren, Ulf E.: *See—*
Bamberg, Peter; Ekstrom, Bertil A.; Forsgren, Ulf E.; and Sjoberg, Berndt O. H., 4,203,972, Cl. 424-114.000.

Foseco International Limited: *See—*
Corbett, Clifford F., 4,203,542, Cl. 235-85.00R.

Foss, Dale R.: *See—*
Minard, James V.; Goldman, Loeb J.; and Foss, Dale R., 4,203,642, Cl. 339-75.0MP.

Foss, George D.: *See—*
Fatuzzo, Carol L.; and Foss, George D., 4,204,125, Cl. 250-486.000.

Foster Wheeler Energy Corporation: *See—*
Tracy, James L., 4,203,718, Cl. 431-188.000.

Foto, Anthony J.: *See—*
Fujitaki, Roy K., 4,203,519, Cl. 206-387.000.

Fox, William M.; and Novotny, Michael A., to Bell Telephone Laboratories, Incorporated. Support structure for thin semiconductor wafer. 4,204,218, Cl. 357-55.000.

Fraenkel, Herbert; Gough, Patrick B.; and Maughan, William S., to Sortex North America, Inc. Method and apparatus for sorting agricultural products. 4,203,522, Cl. 209-558.000.

Framatome: *See—*
Vieu, Alain; and Flambard, Christian, 4,203,315, Cl. 73-1.00R.

Frame, Robert R., to UOP Inc. Process for treating sour petroleum distillates. 4,203,827, Cl. 208-206.000.

Franco, Luigi; and Bertotti, Giorgio, to Centro Richerche Fiat S.p.A. Exhaust silencer for a railway locomotive. 4,203,503, Cl. 181-272.000.

Frank, Arlen W., to United States of America, Agriculture. Tris(N-carbalkoxylaminomethyl)phosphines. 4,204,072, Cl. 560-158.000.

Frank, William R.; and Manz, David F., to General Motors Corporation. Passive occupant restraint system. 4,203,618, Cl. 280-804.000.

Franz, Maurice F.: *See—*
Bubula, Thomas J.; Franz, Maurice F.; Johnson, Gordon W.; and Rinaldo, James D., 4,203,293, Cl. 60-490.000.

Frederick, Charles V. Method and means for burning corncobs and corn. 4,203,374, Cl. 110-258.000.

Freed, Meier E., to American Home Products Corporation. 3-[Pyridinylalkyl and piperidinylalkyl]-2,3,4,4a-tetrahydro-1H-pyrazino[1,2-a]quinoxalin-5(6H)-ones. 4,203,987, Cl. 424-250.000.

Frenz, Norbert W., Jr.: *See—*
Mead, Ralph T.; Greatbatch, Wilson; Rudolph, Frank W.; and Frenz, Norbert W., Jr., 4,203,201, Cl. 29-623.100.

Freyn, Fritz, to List, Hans. Means for securing an injection nozzle. 4,203,402, Cl. 123-139.0AW.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Rossner, Heinrich-Otto; and Seelig, Henri F., 4,203,760, Cl. 75-12.000.

Fried. Krupp Huttenwerke AG: *See—*
Raquet, Erwin; Tacke, Gerhard; and Heller, Wilhelm, 4,203,546, Cl. 238-1.000.

Friedman, Elizabeth, administratrix: *See—*
Friedman, Meyer, deceased; and Friedman, Elizabeth, administratrix, 4,203,457, Cl. 135-5.00C.

Friedman, Mendel, to United States of America, Agriculture. Method of protecting proteins for animal feed. 4,203,892, Cl. 260-112.00R.

Friedman, Meyer, deceased; and by Friedman, Elizabeth, administratrix. Attachable portable umbrella. 4,203,457, Cl. 135-5.00C.

Frigoscandia Contracting AB: *See—*
Emgard, Lennart; Lascelles, Alan; and Eek, Lars, 4,204,006, Cl. 426-520.000.

Fritz, Werner; and Weghaupt, Erich, to Kraftwerk Union Aktiengesellschaft. Coolant loop for the rotor of a turbogenerator with a superconductive exciter winding. 4,204,134, Cl. 310-52.000.

Fritzsche Dodge & Olcott Inc.: *See—*
Barton, Derek H. R.; and Willis, Brian J., 4,203,925, Cl. 568-362.000.

Froidevaux, Jacques H., to Electronic Time Company ETIC S.A. Method of controlling the condition of an electric battery and apparatus for carrying out this method. 4,204,162, Cl. 324-430.000.

Frumkin, Felix M.: *See—*
Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; Zvenigorodsky, Evgeny I.; and Gabor, Antal, 4,203,688, Cl. 406-85.000.

Fryda, Georg: *See—*
Blochl, Hanns; Fryda, Georg; Schlick, Erich; and Schnall, Gunther, 4,203,386, Cl. 118-653.000.

Fugi Jukogyo Kabushiki Kaisha: *See—*
Kodama, Masayuki, 4,203,498, Cl. 180-70.0MS.

Fuji Photo Film Co., Ltd.: *See—*
Inouye, Kozo; and Naito, Hideki, 4,203,768, Cl. 430-388.000.
Suzuki, Fumiyuki; Okutu, Toshimitu; and Ohe, Keitaro, 4,204,070, Cl. 560-94.000.
Takahashi, Koji; Akimoto, Taizo; and Watanabe, Shigeru, 4,203,671, Cl. 356-402.000.

Fujii, Hideo; and Kato, Minoru, to Nippondenso Co., Ltd. Ignition device for an internal combustion engine. 4,203,403, Cl. 123-148.0AC.

Fujiie, Satosi: *See—*
Saito, Yoshio; Shibata, Yoshio; and Fujiie, Satosi, 4,203,478, Cl. 141-206.000.

Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,203,758, Cl. 71-100.000.

Fujinaga, Masao: *See—*
Enomoto, Takamitsu; Tanaka, Kyoji; Kawamoto, Hiromi; Mizuno, Tamotsu; and Fujinaga, Masao, 4,203,955, Cl. 423-308.000.

Fujisada, Hiroyuki: *See—*
Katsoka, Shoei; Sugiyama, Yoshinobu; and Fujisada, Hiroyuki, 4,204,132, Cl. 307-309.000.

Fujisaki, Masayuki: *See—*
Obata, Yukio; and Fujisaki, Masayuki, 4,203,307, Cl. 68-17.00R.

Fujisawa Pharmaceutical Company, Limited: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,203,897, Cl. 260-239.100.

Fujitaki, Roy K., to Foto, Anthony J. Tape cartridge holder. 4,203,519, Cl. 206-387.000.

Fujiu, Morio: *See—*
Suhara, Yasuji; Maruyama, Hiromi; Sawada, Toyoaki; Ogawa, Mayumi; Yokose, Kazuteru; Fujiu, Morio; and Watanabe, Kimihiro, 4,204,044, Cl. 435-280.000.

Fujiwhara, Mitsuto; Matsuo, Syunji; Kaneko, Yutaka; Masukawa, Toyoaki; and Kawasaki, Mikio, to Konishiroku Photo Industry Co., Ltd. Amplification process for light-sensitive color photographic material. 4,203,767, Cl. 430-376.000.

Fukui, Toshiyasu: *See—*
Terai, Shiro; Tanabe, Zenichi; and Fukui, Toshiyasu, 4,203,490, Cl. 165-134.00R.

Fukushima, Hiroyuki; Yoshida, Minoru; and Inoue, Hiromasa, to Bunker Ramo Corporation. Wire insertion tool. 4,203,196, Cl. 29-566.300.

Fuller, Colin A.: *See—*
Kegg, Jack P.; Fuller, Colin A.; and Kegg, Geoffrey E., 4,203,177, Cl. 16-24.000.

Funaki, Yuji; Oshita, Hirofumi; Tanaka, Shizuya; Yamamoto, Shigeo; and Kato, Toshiro, to Sumitomo Chemical Company, Limited. 1-Phenyl-2-azolyl-4,4-dimethyl-1-penten-3-ols and the fungicidal use thereof. 4,203,995, Cl. 424-273.00R.

G. D. Searle & Co.: *See—*
Yen, Chung H.; and Deason, James R., 4,203,989, Cl. 424-267.000.
Yen, Chung H., 4,203,990, Cl. 424-267.000.

Gabor, Antal: *See—*
Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; Zvenigorodsky, Evgeny I.; and Gabor, Antal, 4,203,688, Cl. 406-85.000.

Gaertner, Robert F., to Esquire, Inc. Regulation circuit. 4,204,148, Cl. 323-22.0SC.

Gaertner, Van R., to Monsanto Company. Method for increasing the sucrose content of growing plants. 4,203,756, Cl. 71-86.000.

GAF Corporation: *See—*
Brown, Michael J., 4,203,932, Cl. 260-923.000.
Brown, Michael J., 4,203,979, Cl. 424-220.000.
Chakrabarti, Paritosh M., 4,203,858, Cl. 252-135.000.
Eiseman, Fred S., 4,203,757, Cl. 71-87.000.
Gruber, Bruce A.; and Lorenz, Donald H., 4,203,919, Cl. 260-465.00D.
Schneider, Louis; and Graham, David E., 4,203,901, Cl. 260-326.50S.

Gall, John C.; Ozimek, Chester E.; and Chamberlain, Albert E., to Sears, Roebuck and Co. Single element typewriter with error correction feature. 4,203,681, Cl. 400-697.000.

Gallant, Charles R.: *See—*
Chapman, Frank X.; Gallant, Charles R.; and Stull, Charles V., 4,204,085, Cl. 174-86.000.

Gallo-Torres, Hugo E., to Hoffmann-La Roche Inc. Diagnostic test for malabsorption. 4,203,967, Cl. 424-9.000.

Galow, Manfred: *See—*
Meckel, Joachim F.; Rohde, Wolfgang; Siebert, Werner; Wagener, Dietrich; Flockenhaus, Claus; and Galow, Manfred, 4,203,803, Cl. 201-40.000.

Galvez, Buenaventura B.: *See—*
Woods, Hanbury J.; Chase, John D.; and Galvez, Buenaventura B., 4,204,077, Cl. 568-697.000.

Garner, Eugene F., to Allied Chemical Corporation. Polyethylene binder for pyrotechnic composition. 4,203,786, Cl. 149-19.910.

Garner, James W.; and Kelso, Robert G., to Grow Chemical Corp. High solids urethanes and application thereof. 4,203,875, Cl. 260-13.000.

Garofalo, Vito M., to Hi-Flier Manufacturing Company, The. Molded model airplane. 4,203,250, Cl. 46-79.000.

Gartner, Karl, to Josef Gartner & Co., Firma. Climatizing apparatus. 4,203,487, Cl. 165-50.000.

Gasper, Martin J., Jr.; and Black, Theodore W., to Rodale Resources, Inc. Dissolved oxygen regulator. 4,203,389, Cl. 119-3.000.

Gast, Uwe; Kiralfy, Dennis; Schaefer, Klaus; Slawik, Eckhard; and Wellendorf, Klaus, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for making color corrections in the manufacture of printing plates. 4,204,223, Cl. 358-80.000.

Gates, James T. Four way reversing valve for air conditioning systems. 4,203,469, Cl. 137-625.430.

Gates, Timothy P.: *See—*
Coxon, DeWayne; and Gates, Timothy P., 4,203,424, Cl. 126-422.000.

Gau, Shek-Chung: *See—*
Heeger, Alan J.; MacDiarmid, Alan G.; Chiang, Chwan K.; and Gau, Shek-Chung, 4,204,216, Cl. 357-8.000.

Gaudiana, Russell A.: *See—*
Bourgeois, Gerard J.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,203,766, Cl. 430-243.000.

Gauthier, Francis: *See—*
Millet, Christian; and Gauthier, Francis, 4,203,650, Cl. 350-96.210.

Gautier, Charles L.: *See—*
De Luca, Paul V.; and Gautier, Charles L., 4,204,095, Cl. 179-98.000.

Gaylord, John A.; and Marks, Kenneth A., to H. Koch & Sons Division, Gulf & Western Manufacturing Company. Canopy release manipulating handle. 4,203,181, Cl. 24-230.00A.

Gehman, David R.: *See—*
Kirn, William A.; and Gehman, David R., 4,203,859, Cl. 252-174.230.

Gelenkwellenbau GmbH: *See—*
Sehlbach, Gerd; and Klischat, Ditmar, 4,203,306, Cl. 64-23.000.

Gelman, Stephanie S.: *See—*
Leveckis, Algis S.; and Gelman, Stephanie S., 4,204,105, Cl. 219-10.55E.

General Battery Corporation: *See—*
Eberle, William J., 4,203,699, Cl. 414-415.000.
Heiser, Joseph I.; and Erb, Edgar M., 4,203,791, Cl. 156-252.000.

General Electric Company: *See—*
Baumann, Frederick W.; and Kaczkowski, Bernard C., 4,203,483, Cl. 164-116.000.
Bogacki, Anthony P., 4,204,194, Cl. 340-147.0SY.
Bogacki, Anthony P., 4,204,195, Cl. 340-151.000.
Cavelos, Arthur A., 4,204,211, Cl. 343-100.0LE.
Goedde, Edwin J.; Holub, Fred F.; and Wilson, Phillip S., 4,203,887, Cl. 260-40.00R.
Lee, Gim F., Jr., 4,203,931, Cl. 525-4.000.
LeGrand, Donald G.; and Vitale, Gina G., 4,204,025, Cl. 428-409.000.
Le Grand, Donald G.; and Vitale, Gina G., 4,204,026, Cl. 428-409.000.
Morris, Jesse L.; and Sugalski, Raymond K., 4,203,206, Cl. 29-731.000.
Pitstick, Martin H., 4,204,204, Cl. 340-712.000.
Proffit, Daniel S.; and Regignano, Maurice, 4,204,248, Cl. 361-388.000.
Sawada, Fred H.; and Howenstein, Melvin, 4,204,156, Cl. 324-158.0MG.
Stetson, Earl W., 4,204,238, Cl. 361-125.000.
Strickland, John J., 4,204,161, Cl. 324-426.000.

General Motors Corporation: *See—*
Bennett, Jack L., 4,203,287, Cl. 60-329.000.
Buchholz, Jeffrey C., 4,203,807, Cl. 204-1.00T.
Cislo, Casimer J.; and Cummings, Seth B., Jr., 4,203,615, Cl. 280-689.000.
Frank, William R.; and Manz, David F., 4,203,618, Cl. 280-804.000.
Kingsley, Charles A.; Spaulding, James R.; and Gifford, William E., 4,203,401, Cl. 123-136.000.
Rissi, Paul, 4,203,465, Cl. 137-487.500.
Snarski, Thomas R., 4,203,958, Cl. 423-351.000.

General Signal Corporation: *See—*
McMullen, James; and Vokac, James, 4,203,387, Cl. 118-715.000.

Genese, Joseph N., to Abbott Laboratories. Additive transfer unit with interlocking means. 4,203,443, Cl. 128-272.300.

Gentile, Albert: *See—*
Tausendfreundt, Jay; and Gentile, Albert, 4,203,208, Cl. 30-155.000.

Gentile, Ralph: *See—*
Clifton, Jerry L.; Gentile, Ralph; Hurlbut, Russell G.; and King, James L., 4,203,664, Cl. 355-64.000.

Geodesic Shelters, Inc.: *See—*
Ivers, Robert P.; and Thimsen, Mark J., 4,203,265, Cl. 52-81.000.

Geomet, Incorporated: *See—*
Milly, George H., 4,204,121, Cl. 250-343.000.

Georg Fischer Aktiengesellschaft: *See—*
Fiala, Jindrich, 4,203,263, Cl. 51-434.000.
Pavlovsky, Rudolf, 4,203,183, Cl. 29-33.00A.

Georgia-Pacific Corporation: *See—*
DeLuca, Raymond F.; and Schwemm, Gene, 4,203,562, Cl. 242-55.300.

Gernert, William B.: *See—*
Dunnington, Bruce W.; and Gernert, William B., 4,203,262, Cl. 51-204.000.

Gerzon, Koert: *See—*
Cullinan, George J.; and Gerzon, Koert, 4,203,898, Cl. 260-244.400.

Getson, Edward F., Jr.; Kelley, John H.; McLaughlin, Albert T.; and Rathbun, Donald J., to Honeywell Information Systems Inc. Range count and main memory address accounting system. 4,204,250, Cl. 364-200.000.

Giardini, Dante S., to Ford Motor Company. Plasma jet ignition engine and method. 4,203,393, Cl. 123-30.00D.

Gibson, Stan, to Graphic Holdings, Ltd. Arm, wrist and shoulder friction type exercising device. 4,203,591, Cl. 272-67.000.

Gibson, Vernon W., Sr., to SEPCO Corporation. Process and apparatus for assembling spiral wound gaskets into gauge rings. 4,203,191, Cl. 29-451.000.

Giesselmann, Hannes; and Skogward, Kenneth, to Husqvarna Aktiebolag. Sewing machine with data circuits. 4,203,378, Cl. 112-158.00E.

Gifford, William E.: *See—*
Kingsley, Charles A.; Spaulding, James R.; and Gifford, William E., 4,203,401, Cl. 123-136.000.

Gilissen, Hermanus P. J.; van Dijk, Petrus R. M.; and van der Sanden, Ludovicus C., to AMP Incorporated. Electrical connector and method of manufacture. 4,203,203, Cl. 29-846.000.

Gill, Harnek S.; and Turner, Charles R., to Schaefer Corporation. Control circuit for refrigerator fan. 4,203,301; Cl. 62-131.000.

Gill, James T., Jr.: *See—*
Hanloser, Kurt J.; Bruchez, Raymond J.; and Gill, James T., Jr., 4,203,285, Cl. 60-261.000.

Gill, Jerry A.: *See—*
Boyadjieff, George I.; and Gill, Jerry A., 4,203,182, Cl. 24-263.00D.

Gillis, John R.; and Halleck, Frank E., to American Sterilizer Company. Method of biocidal sterilization using cyclic subatmospheric pressure conditioning. 4,203,943, Cl. 422-27.000.

Gilmore & Tatge Mfg. Co.: *See—*
Chaffee, Robert C.; and Bauer, Ernest G., 4,203,720, Cl. 432-222.000.

Gilson Brothers Company: *See—*
Enters, Edward W.; and Kuhn, Weldon R., 4,203,237, Cl. 37-43.00E.

Gimag Aktiengesellschaft: *See—*
Berz, Wolfgang, 4,203,736, Cl. 55-96.000.

Gipson, Robert M., to Texaco Development Corp. Boride catalyst for epoxidizing olefinic compounds. 4,203,910, Cl. 260-348.290.

Giraud, Georges; and Mollier, Jean H. System for keeping account of predetermined homogenous units. 4,204,113, Cl. 235-375.000.

Girling Limited: *See—*
Dixon, Alan G., 4,203,630, Cl. 303-24.00C.

Giros, Marcel. Apparatus and method for treatment of elongated flexible material. 4,203,540, Cl. 226-119.000.

Giroux, Hector. Telescopic straight edge. 4,203,227, Cl. 33-458.000.

Glacier Metal Company Limited, The: *See—*
Gray, Stuart A. B., 4,203,184, Cl. 29-149.5DP.

Gladden, Robert S., Jr.; Johnson, Richard J.; Karmazyn, Michael J.; and Tate, Donald L., to Tate Architectural Products, Inc. Structural member and composite panel including same. 4,203,268, Cl. 52-630.000.

Glenn, William E., Jr.; and Ludeke, Carl A., to New York Institute of Technology. Solar air conditioning method and apparatus. 4,203,298, Cl. 62-2.000.

Glennel Corporation, The: *See—*
Dunnington, Bruce W.; and Gernert, William B., 4,203,262, Cl. 51-204.000.

Glock, Hans; and Mayer, Herbert, to Siemens Aktiengesellschaft. Write-read drive arrangement for a bipolar semiconductor memory. 4,204,276, Cl. 365-189.000.

Glock, Robert D.: *See—*
Harris, Delbert L.; Goodnow, Robert A.; Glock, Robert D.; and Kinyon, Joann M., 4,203,968, Cl. 424-92.000.

Goedde, Edwin J.; Holub, Fred F.; and Wilson, Phillip S., to General Electric Company. Modified polyester composition. 4,203,887, Cl. 260-40.00R.

Goldberg, Gerald M. Construction of illuminating ribbon of light bulbs. 4,204,273, Cl. 362-217.000.

Goldman, Loeb J.: *See—*
Minard, James V.; Goldman, Loeb J.; and Foss, Dale R., 4,203,642, Cl. 339-75.0MP.

Goncalves, Antonin, to L'Oreal. Support for toilet bowl deodorizer block. 4,203,172, Cl. 4-231.000.

Gooding, William T., Jr.: *See—*
Temple, Ralph E.; and Gooding, William T., Jr., 4,203,773, Cl. 106-40.00R.

Goodman, Lawrence A., to RCA Corporation. Transistor using liquid crystal. 4,204,217, Cl. 357-23.000.

Goodnow, Robert A.: *See—*
Harris, Delbert L.; Goodnow, Robert A.; Glock, Robert D.; and Kinyon, Joann M., 4,203,968, Cl. 424-92.000.

Goodwin, George I. Container with related indicia. 4,203,240, Cl. 40-310.000.

Goodyear Tire & Rubber Company, The: *See—*
Menapace, Henry R., 4,204,081, Cl. 585-274.000.

Gordon, Eric M.; and Koster, William H., to E. R. Squibb & Sons, Inc. β-Bromopenicillanic acid sulfone. 4,203,992, Cl. 424-271.000.

Gordon, Eric M., to E. R. Squibb & Sons, Inc. 6α-Bromopenicillanic acid sulfone. 4,203,993, Cl. 424-271.000.

Gorlietsky, Valentin I.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; and Eidelman, Lev G. Apparatus for growing single crystals from melt with additional feeding of comminuted charge. 4,203,951, Cl. 422-249.000.

Gottlieb, Milton; and Brandt, Gerald B., to Electric Power Research Institute, Inc. Method and means for improved optical temperature sensor. 4,203,326, Cl. 73-339.00R.

Gough, Patrick B.: *See—*
Fraenkel, Herbert; Gough, Patrick B.; and Maughan, William S., 4,203,522, Cl. 209-558.000.

Gould Inc.: *See—*
Chapman, Frank X.; Gallant, Charles R.; and Stull, Charles V., 4,204,085, Cl. 174-86.000.
Dethlefsen, Rolf, 4,204,101, Cl. 200-144.0AP.
Knapp, Edward J., Jr., 4,204,182, Cl. 337-244.000.
Luke, Roger D.; and Rhodes, John M., 4,204,245, Cl. 361-358.000.
Shennett, George D., Jr., 4,203,645, Cl. 339-147.00R.
Shoemaker, William E.; and Wilson, David W., 4,204,114, Cl. 371-25.000.
Zocholl, Stanley E., 4,204,237, Cl. 361-36.000.

Graham, David E.: *See—*
Schneider, Louis; and Graham, David E., 4,203,901, Cl. 260-326.50S.

Grandine, Joseph D., 2nd, to Millipore Corporation. Making porous membranes and the membrane products. 4,203,847, Cl. 210-490.000.

Grandine, Joseph D., II, to Millipore Corporation. Processes of making a porous membrane material from polyvinylidene fluoride, and products. 4,203,848, Cl. 210-490.000.

Grandjean, Remy: *See—*
Ziegler, Jacques; Schneiter, Ali; and Grandjean, Remy, 4,203,280, Cl. 368-187.000.

Grantham, Daniel H., to United Technologies Corporation. Method for producing HBr. 4,203,813, Cl. 204-103.000.

Grantham, Daniel H., to United Technologies Corporation. Hydrogen gas generation utilizing a bromide electrolyte and radiant energy. 4,203,814, Cl. 204-129.000.

Graphic Controls Corporation: *See—*
Hepworth, William W., 4,203,682, Cl. 401-198.000.

Graphic Holdings, Ltd.: *See—*
Gibson, Stan, 4,203,591, Cl. 272-67.000.

Gravitter, Robert U.; and Isaacson, William O., to Horner Flooring Company. Affixing cushioning pads to floor sleepers. 4,203,541, Cl. 227-40.000.

Gray, Michael L.: *See—*
Bellinger, Robert M.; and Gray, Michael L., 4,203,741, Cl. 62-24.000.

Gray, Stuart A. B., to Glacier Metal Company Limited, The. Bearings. 4,203,184, Cl. 29-149.5DP.

Greatbatch, Wilson: *See—*
Mead, Ralph T.; Greatbatch, Wilson; Rudolph, Frank W.; and Frenz, Norbert W., Jr., 4,203,201, Cl. 29-623.100.

Greaves, Bruce B. Electrolyzers. 4,203,818, Cl. 204-212.000.

Greco, Alberto: *See—*
Corbellini, Margherita; Greco, Alberto; and Osellame, Mirko, 4,203,866, Cl. 252-429.00C.

Green, Thomas P.: *See—*
Cromas, Joseph C.; and Green, Thomas P., 4,203,395, Cl. 123-32.0EA.

Gregory, Martha D.: *See—*
Williams, Alice J.; and Gregory, Martha D., 4,203,239, Cl. 40-152.100.

Greiner, Richard W., to Hercules Incorporated. Aqueous fortified rosin dispersions. 4,203,776, Cl. 106-238.000.

Greven, Hendrik M., to Akzona Incorporated. Psychopharmacological peptides suitable for therapeutic administration. 4,203,975, Cl. 424-177.000.

Griesel B.V.: *See—*
Schwind, Heinz G., 4,203,351, Cl. 92-69.00R.

Griffin, Kenneth E. Sign standard. 4,203,242, Cl. 40-610.000.

Grimsrud, Lars. Assembly for dividing a hollow hypodermic needle into two separated flow conduits. 4,203,436, Cl. 128-214.00R.

Grossa, Mario; and Sandner, Helmut G., to Du Pont de Nemours, E. I., and Company. Negative tonable photohardenable element. 4,203,770, Cl. 430-270.000.

Grow Chemical Corp.: *See—*
Garner, James W.; and Kelso, Robert G., 4,203,875, Cl. 260-13.000.

Grube, William L., to MacLean-Fogg Company. Fastener applying tool. 4,203,187, Cl. 29-283.500.

Gruber, Bruce A.; and Lorenz, Donald H., to GAF Corporation. (Acetoxyalkyl) 2-cyano-3,3-diphenylacrylate intermediates for making copolymerizable, ultraviolet light absorber compounds. 4,203,919, Cl. 260-465.00D.

Gruber, Hermann: *See—*
Wellner, Wolfgang; and Gruber, Hermann, 4,204,051, Cl. 528-55.000.

Gruber, Thomas J.; and Smith, Harris W. Heat exchanger. 4,203,415, Cl. 126-110.00R.

GTE Automatic Electric Laboratories Incorporated: *See—*
Reed, Charles J., 4,203,510, Cl. 198-437.000.
Yang, Huan-Tong, 4,204,241, Cl. 361-154.000.

GTE Sylvania Incorporated: *See—*
Shimer, Robert M.; Dombrowski, Joseph A.; and Cohen, Sheppard, 4,204,139, Cl. 315-58.000.

Guestaux, Claude, to Eastman Kodak Company. Radiation-sensitive elements having an antistatic layer containing amorphous vanadium pentoxide. 4,203,769, Cl. 430-631.000.

Guilgue, Jean L., to Metalimphy. Method for identification of coded labels. 4,203,544, Cl. 235-449.000.

Gulf Canada Limited: *See—*
Woods, Hanbury J.; Chase, John D.; and Galvez, Buenaventura B., 4,204,077, Cl. 568-697.000.

Gulf Oil Corporation: *See—*
Batchelor, Robert L.; and Feldman, Charles F., 4,204,029, Cl. 428-441.000.

Gulf Research & Development Company: *See—*
Carr, Norman L.; Schleppy, Ronald, Jr.; Schmid, Bruce K.; and Shah, Yatish T., 4,203,823, Cl. 208-10.000.
Carr, Norman L.; and McGinnis, Edgar L., 4,203,839, Cl. 210-71.000.
Sabourin, Edward T.; and Selwitz, Charles M., 4,204,078, Cl. 568-705.000.
Wu, Ching-Yong; and Kobylinski, Thaddeus P., 4,203,926, Cl. 568-319.000.

Gulf & Western Corporation: *See—*
Hevenor, Charles M., Jr.; and Wood, Kenneth O., 4,204,145, Cl. 318-568.000.

Guntly, Thomas G.: *See—*
Schultz, Curtis L.; and Guntly, Thomas G., 4,203,405, Cl. 123-187.50R.

Gupta, Krishna M. Porosimeter. 4,203,317, Cl. 73-38.000.

Gurley, Thomas M., to RCA Corporation. Television picture compressor. 4,204,227, Cl. 358-138.000.

Gustavsen, Per F.: *See—*
Elstrom, Tore, deceased; Gustavsen, Per F.; and Kjohl, Olav, 4,204,053, Cl. 528-259.000.

Gyugyi, Laszlo; and Brennen, Michael B., to Westinghouse Electric Corp. Static VAR generator with non-linear frequency dependent dynamic gain adjuster. 4,204,151, Cl. 323-119.000.

H. Koch & Sons Division, Gulf & Western Manufacturing Company: *See—*
Gaylord, John A.; and Marks, Kenneth A., 4,203,181, Cl. 24-230.00A.

H.O.P. Consulab Inc.: *See—*
Mathieu, Serge, 4,204,150, Cl. 323-102.000.

Hackenjos, Ernst, to Jaeger, Rolf. Filter media. 4,203,935, Cl. 261-98.000.

Hackett, Barrie H.; and Wissley, Rudolph W., to International Telephone and Telegraph Corporation. Method of construction of electrical heating panels. 4,203,198, Cl. 29-611.000.

Haddock, Fred, to Coburn Optical Industries, Inc. Apparatus for edging ophthalmic lenses. 4,203,259, Cl. 51-97.0NC.

Hadlick, Paul E., Jr. Shingle stripper. 4,203,210, Cl. 30-172.000.

Hafner, Franz X., to E. A. Storz GmbH & Co. KG. Car jacks. 4,203,577, Cl. 254-100.000.

Hafner, Walter V.: *See—*
Morris, Earl L.; Hafner, Walter V.; and Sally, Theodore J., 4,203,173, Cl. 4-427.000.

Hagemann, Julius. Signal processing system for underwater transducer. 4,204,281, Cl. 367-98.000.

Hager, Daniel. Non-return valve. 4,203,466, Cl. 137-543.000.

Hagopian, Arpi: *See—*
Carlo, Dennis J.; Hagopian, Arpi; and Kniskern, Peter J., 4,203,970, Cl. 424-92.000.

Halasa, Adel F.; Ravagnani, Frederick J.; and Schonfeld, Steven E., to Firestone Tire & Rubber Company, The. Method, composition and product with improved adhesion between a metal member and a contiguous cured rubber skim stock. 4,203,874, Cl. 260-3.000.

Hall, David E.; and Stencel, Edgar L., to VSI Corporation. Blind bolt fastener for low bearing strength materials. 4,203,346, Cl. 85-70.000.

Hallack, Richard D.; and Carter, Tommie B. Method and apparatus for removing precipitated suspended solids from an effluent. 4,203,836, Cl. 210-42.00R.

Halleck, Frank E.: *See—*
Gillis, John R.; and Halleck, Frank E., 4,203,943, Cl. 422-27.000.
Young, Jack H.; and Halleck, Frank E., 4,203,947, Cl. 422-114.000.

Hamburger, Herman, to Zolor Corporation. Articulated boom-dipper-bucket assembly for a tunnel boring machine. 4,203,626, Cl. 299-33.000.

Hamill, Robert L.: *See—*
Nakatsukasa, Walter M.; Marconi, Gary G.; Neuss, Norbert; and Hamill, Robert L., 4,204,039, Cl. 435-118.000.

Hanada, Hiroshi, to Canon Kabushiki Kaisha. Beam shaping optical system. 4,203,652, Cl. 350-182.000.

Hancock, Ronald D.; and Howell, Ian V., to British Petroleum Company Limited, The. Process for the removal of heavy metals and transition metals other than platinum from solution. 4,203,952, Cl. 423-6.000.

Hangauer, David G., Jr., to Textron, Inc. Aqueous colloidal dispersions of tertiary amine salts of urea-urethane polymers and method for manufacture. 4,203,883, Cl. 260-29.2TN.

Hanloser, Kurt J.; Bruchez, Raymond J.; and Gill, James T., Jr., to United States of America, Air Force. Partial swirl augmentor for a turbofan engine. 4,203,285, Cl. 60-261.000.

Hansen, Elmer K. Tool and disk mounting assembly. 4,203,494, Cl. 172-166.000.

Hanson, Joseph B., to Standard Oil Company (Indiana). Polyamine derivatives of oxidized olefinic substituted dicarboxylic acid compounds. 4,203,730, Cl. 44-71.000.

Hanson, Leon C.: *See—*
Hanson, Robert C.; and Hanson, Leon C., 4,203,300, Cl. 62-52.000.

Hanson, Robert C.; and Hanson, Leon C., to Energy Systems Incorporated. Horizontal direct fired water bath propane vaporizer. 4,203,300, Cl. 62-52.000.

Hare, Ronald B., to FMC Corporation. Reduced noise producing idler wheel. 4,203,633, Cl. 305-28.000.

Harris, Carl R.; and Blaylock, Robert W., to Evergreen Weigh, Inc. Portable load scale for mining trucks and the like. 4,203,497, Cl. 177-134.000.

Harris, Charles R.: *See—*
Baker, William, III; and Harris, Charles R., 4,203,496, Cl. 175-329.000.

Harris Corporation: *See—*
Bakula, Richard E.; and McCarthy, Edward C., 4,204,206, Cl. 340-721.000.
Bakula, Richard E.; and McCarthy, Edward C., 4,204,207, Cl. 340-723.000.
McCarthy, Edward C., 4,204,208, Cl. 340-745.000.
Taylor, David L., 4,204,275, Cl. 365-163.000.

Harris, Delbert L.; Goodnow, Robert A.; Glock, Robert D.; and Kinyon, Joann M., to Iowa State University Research Foundation, Inc.; and Burns-Biotec Laboratories, Inc. Combination vaccine for swine dysentery and method of use. 4,203,968, Cl. 424-92.000.

Harris, James H., to International Business Machines Corporation. Multicollector transistor logic circuit. 4,204,130, Cl. 307-215.000.

Hart, Robert L.; Paul, Frank W.; and Sauer, Wolfgang J., to United States of America, Commerce. Universal jig fixture for castings. 4,203,582, Cl. 269-32.000.

Harvey Hubbell, Incorporated: *See—*
Pye, Richard T., 4,204,024, Cl. 428-379.000.

Hasegawa, Gary K., to Continental Group, Inc., The. Self-storing pull strip for easy opening containers. 4,203,528, Cl. 220-269.000.

Hashimoto, Masashi: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,203,897, Cl. 260-239.100.

Haskins, Albert R. Load handling system. 4,203,368, Cl. 104-92.000.

Hasquenoph, Denis, to AGRAM. Path tracking device for spreading or spraying agricultural treatment products or the like. 4,203,226, Cl. 33-185.00V.

Hata, Masahito: *See—*
Noda, Yoichiro; Matsumura, Michio; Chiba, Norio; and Hata, Masahito, 4,203,815, Cl. 204-159.200.

Hatsell, William A., to Exxon Research & Engineering Co. Ribbon mounting apparatus. 4,203,676, Cl. 400-208.000.

Hatsell, William A., to Exxon Research & Engineering Co. Printer ribbon lift assembly. 4,203,677, Cl. 400-214.000.

Hattori, Hiroyuki: *See—*
Kishi, Hirotoshi; Hattori, Hiroyuki; and Shimizu, Katsuichi, 4,203,587, Cl. 271-293.000.

Hauser, Arnold: *See—*
Cookson, Richard C.; Schulte-Elte, Karl-Heinrich; and Hauser, Arnold, 4,203,907, Cl. 260-346.110.

Havezov, Ivan: *See—*
Stoeppler, Markus; and Havezov, Ivan, 4,203,840, Cl. 210-83.000.

Hawkes, Ivor, to United States of America, Interior. Method of anchoring a vibrating wire into a hollow gauge body. 4,203,192, Cl. 29-452.000.

Hawrylo, Frank Z., to RCA Corporation. Method of epitaxially depositing cadmium sulfide. 4,203,785, Cl. 148-171.000.

Hayashi, Hisao: *See—*
Matsushita, Takeshi; Mamine, Takayoshi; Hayashi, Hisao; and Nishiyama, Kazuo, 4,203,780, Cl. 148-1.500.

Hayashi, Mitsuyoshi: *See—*
Kudo, Shiro; and Hayashi, Mitsuyoshi, 4,204,005, Cl. 426-518.000.

Hayashi, Tadayoshi: *See—*
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,203,949, Cl. 422-179.000.

Hayes, Fay A.; and Hayes, Leonard L. Method of heating plastic pipe. 4,203,721, Cl. 432-10.000.

Hayes, Leonard L.: *See—*
Hayes, Fay A.; and Hayes, Leonard L., 4,203,721, Cl. 432-10.000.

Hayes, Thomas H., to Ethyl Corporation. Pressurized atomizer. 4,203,552, Cl. 239-337.000.

Hayfield, Peter C. S.: *See—*
Warne, Michael A.; and Hayfield, Peter C. S., 4,203,810, Cl. 204-38.00B.

Hayssen Manufacturing Company: *See—*
James, Robert C., 4,203,694, Cl. 414-28.000.

Hazenbroek, Jack. Gizzard processing system. 4,203,178, Cl. 17-50.000.

Heckle, William A.: *See—*
Campbell, Charles R.; Heckle, William A.; and Mathews, Marion J., III, 4,203,808, Cl. 204-23.000.

Heeger, Alan J.; MacDiarmid, Alan G.; Chiang, Chwan K.; and Gau, Shek-Chung, to University Patents, Inc. Electrically conducting doped polyacetylene film exhibiting n-type electrical conductivity and method of preparing same. 4,204,216, Cl. 357-8.000.

Hefele, Josef, to Kufner Textilwerke KG. Raster-like heat sealable adhesives on substrates. 4,204,017, Cl. 428-160.000.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Pollich, Gerhard, 4,203,361, Cl. 101-177.000.

Heine, Charles A. Slipper holder. 4,203,175, Cl. 5-503.000.

Heiner, Robert James: *See—*
Mims, Matlock M., 4,203,437, Cl. 128-229.000.

Heinzl, Joachim, to Siemens Aktiengesellschaft. Process and an arrangement for reducing the redundancy of binary character sequences which describe characters or graphic patterns. 4,204,090, Cl. 178-30.000.

Heiser, Joseph I.; and Erb, Edgar M., to General Battery Corporation. Method of making a multi-slit self-sealing ignition-arrester battery vent. 4,203,791, Cl. 156-252.000.

Held, Gerhard R. Gear finishing machine. 4,203,258, Cl. 51-95.0GH.

Heller, David: *See—*
Moe, Walter; Bernstein, Lawrence A.; and Heller, David, 4,203,247, Cl. 46-1.00K.

Heller, Wilhelm: *See—*
Raquet, Erwin; Tacke, Gerhard; and Heller, Wilhelm, 4,203,546, Cl. 238-1.000.

Hellige GmbH: *See—*
Hofert, Wilhelm A.; Schlussel, Peter F.; Sutor, Anton H.; and Ullrich, Georg J., 4,203,446, Cl. 128-329.00R.

Heltsley, Alan T.: *See—*
Zitelli, William E.; and Heltsley, Alan T., 4,204,258, Cl. 364-494.000.

Henrick, Clive A.: *See—*
Anderson, Richard J.; and Henrick, Clive A., 4,204,071, Cl. 560-100.000.

Hepworth, William W., to Graphic Controls Corporation. Insert molded instrument marker pen with anchored stylus. 4,203,682, Cl. 401-198.000.

Hercules Incorporated: *See—*
Greiner, Richard W., 4,203,776, Cl. 106-238.000.

Herdzina, Frank J.: *See—*
Vandlik, Robert P.; and Herdzina, Frank J., 4,203,314, Cl. 72-427.000.

Herion-Werke KG: *See—*
Ruchser, Erich, 4,203,571, Cl. 251-31.000.

Herman Miller, Inc.: *See—*
Mitchell, Terry L.; and Immink, David A., 4,203,609, Cl. 280-47.110.
Hermann Heye KG: *See—*
Becker, Kurt; Buogert, Hermann; Schwarzer, Siegfried; and Seidel, Hans-Georg, 4,203,752, Cl. 65-163.000.
Herting, Karl-Heinz: *See—*
Reichel, Hilmar; Klauke, Guenter; Herting, Karl-Heinz; and Pointner, Martin, 4,203,531, Cl. 228-1.00A.
Hess, W. Graig, to United Technologies Corporation. Radial wafer airfoil construction. 4,203,706, Cl. 416-97.00A.
Heuze, Philippe, to Thomson-CSF. Video contrast expanding arrangement. 4,204,229, Cl. 358-169.000.
Hevenor, Charles M., Jr.; and Wood, Kenneth O., to Gulf & Western Corporation. Method of selecting the cutting position for a cigar wrapper on a tobacco leaf. 4,204,145, Cl. 318-568.000.
Hexagear Industries Limited: *See—*
On, Lo Hou, 4,203,550, Cl. 239-102.000.
Hi-Flier Manufacturing Company, The: *See—*
Garofalo, Vito M., 4,203,250, Cl. 46-79.000.
Hickman, Jack L. Raised rib and stock elevator attachment for shotguns. 4,203,243, Cl. 42-73.000.
Hickman, Jack L. Gunstock elevator attachment. 4,203,244, Cl. 42-73.000.
Hiebert, Jacob: *See—*
Warkentin, Aaron J.; and Hiebert, Jacob, 4,203,274, Cl. 53-537.000.
Hildebrandt, Bodo; Janele, Erich; and Steigerwald, Franz, to Wella Aktiengesellschaft. Container. 4,203,517, Cl. 206-221.000.
Hill, Michael D. Burglar alarm. 4,203,383, Cl. 116-95.000.
Hill, Richard D., to Midgitronics Inc. Position control system. 4,204,144, Cl. 318-568.000.
Hillenkamp, Franz: *See—*
Aberle, Lothar; Bank, Walter; Hillenkamp, Franz; Kaufmann, Raimund; Nitsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,204,117, Cl. 250-287.000.
Hills-McCanna Company: *See—*
Priese, Werner K., 4,203,460, Cl. 137-240.000.
Hirai, Akira; Nishimoto, Kazuyuki; and Kuroki, Hisataka, to Matsushita Electric Industrial Co., Ltd. Flame-retardant silicone composition having X-ray shielding ability. 4,203,886, Cl. 260-37.0SB.
Hirai, Hirotomo: *See—*
Yagi, Kenjiro; and Hirai, Hirotomo, 4,204,205, Cl. 340-719.000.
Hirai, Mitsuru, to Yoshida Kogyo K.K. Apparatus for feeding workpieces intermittently. 4,203,514, Cl. 198-774.000.
Hitachi, Ltd.: *See—*
Maeda, Yoshio; Matsumoto, Koichi; and Nishiwaki, Koji, 4,203,669, Cl. 356-332.000.
Nakae, Hideo; Ozaki, Toshinori; Nakane, Kazunori; and Shimaguchi, Takashi, 4,203,195, Cl. 29-505.000.
Obata, Yukio; and Fujisaki, Masayuki, 4,203,307, Cl. 68-17.00R.
Sakai, Akira; and Matsumura, Jube, 4,203,297, Cl. 60-660.000.
Shimizu, Norio; Odawara, Youji; Yamaguchi, Tetsuo; Saitou, Setsuo; Nakaoka, Azuma; and Ichihashi, Kazuaki, 4,203,841, Cl. 210-205.000.
Suganuma, Tsuneo; Ishida, Koji; Satoh, Shin; Sugie, Mamoru; Katsuyama, Toshio; and Toda, Gyozo, 4,203,743, Cl. 65-3.00A.
Sugawara, Katsuro; Nakazawa, Yukiyoshi; and Itoh, Katsuhiko, 4,203,799, Cl. 156-601.000.
Takasaki, Yoshitaka; Kita, Yasuhiro; Nakagawa, Junichi; and Ishizuka, Kohei, 4,204,176, Cl. 333-28.00R.
Hitz, George E.; Kaman, Charles H.; Mudge, Craig; O'Loughlin, James F.; and Sullivan, Daniel T., to Digital Equipment Corporation. Writeable control store for use in a data processing system. 4,204,252, Cl. 364-200.000.
Ho, Roland K., to Motorola, Inc. Electromechanical pressure transducer. 4,204,244, Cl. 361-283.000.
Hodges, Kenneth M. Tennis ball feeder and random server. 4,203,413, Cl. 124-78.000.
Hoechst Aktiengesellschaft: *See—*
Ahlgrim, Michael; Mietens, Gerhard; Krieger, Wilfried; and Sorbe, Gunter, 4,203,637, Cl. 339-5.00R.
Bergner, Dieter; and Danner, Max, 4,203,812, Cl. 204-94.000.
Cramer, Jurgen, 4,203,811, Cl. 204-78.000.
Cramer, Jurgen; and Lindner, Werner, 4,203,821, Cl. 204-268.000.
Konz, Elmar; and Pistorius, Rudolf, 4,204,076, Cl. 568-648.000.
Munster, Gerhard, 4,203,959, Cl. 423-400.000.
Schroter, Klaus; Scheibitz, Wolfgang; and Ehlers, Klaus-Peter, 4,203,956, Cl. 423-321.00S.
Vertesy, Laszlo; and Huber, Gerhard, 4,204,058, Cl. 544-4.000.
Wirtz, Peter; and Broall, Richard, 4,203,850, Cl. 252-8.050.
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., to Akzona Incorporated. Novel monochloro-s-triazine derivatives. 4,204,060, Cl. 544-218.000.
Hoerauf, Werner: *See—*
Matthies, Paul; Kunde, Joachim; and Hoerauf, Werner, 4,204,049, Cl. 526-65.000.
Hofert, Wilhelm A.; Schlussel, Peter F.; Sutor, Anton H.; and Ulirich, Georg J., to Hellige GmbH. Precision spring lancet. 4,203,446, Cl. 128-329.00R.
Hoffman, Jacob M., Jr.: *See—*
Bolhofer, William A.; Cragoe, Edward J., Jr.; and Hoffman, Jacob M., Jr., 4,203,988, Cl. 424-266.000.
Hoffmann-La Roche Inc.: *See—*
Gallo-Torres, Hugo E., 4,203,967, Cl. 424-9.000.
Holland, George W.; and Rosen, Perry, 4,204,074, Cl. 562-503.000.
Kienzle, Frank, 4,204,073, Cl. 560-231.000.
Kompis, Ivan; and Wick, Alexander E., 4,203,980, Cl. 424-229.000.
Suhara, Yasuji; Maruyama, Hiromi; Sawada, Toyoaki; Ogawa, Mayumi; Yokoue, Kazuteru; Fujiu, Morio; and Watanabe, Kimihiro, 4,204,044, Cl. 435-280.000.
Hoge, John H.; and Hubbard, John H. Process for removal of discrete particulates and solutes from liquids by foam flotation. 4,203,837, Cl. 210-44.000.
Hohmann, Walter; Wunderlich, Klaus; and Seidler, Helmut, to Bayer Aktiengesellschaft. Process for the mononitration of anthraquinone. 4,203,885, Cl. 260-369.000.
Hohn, Max G.: *See—*
Schuster, Waldemar; and Hohn, Max G., 4,203,352, Cl. 92-94.000.
Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. 16-Substituted prostaglandins. 4,204,074, Cl. 562-503.000.
Hollier, Thomas R.; and Johnson, Robert E., to Dresser Industries, Inc. Mast leveling and support apparatus. 4,203,266, Cl. 52-116.000.
Hollister Incorporated: *See—*
Jessup, James L.; and Elliott, Eugene W., 4,203,445, Cl. 128-283.000.
Holub, Fred F.: *See—*
Goedde, Edwin J.; Holub, Fred F.; and Wilson, Phillip S., 4,203,887, Cl. 260-40.00R.
Hom, Jim M.: *See—*
Jones, Robert J.; O'Rell, Michael K.; and Hom, Jim M., 4,203,922, Cl. 260-570.00R.
Homeier, Edwin H.: *See—*
Imai, Tamotsu; and Homeier, Edwin H., 4,204,066, Cl. 546-348.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kamiya, Tadashi, 4,203,500, Cl. 180-219.000.
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,203,949, Cl. 422-179.000.
Okada, Motohiro, 4,203,616, Cl. 280-737.000.
Tomita, Takao; Anno, Nobuo; and Yamamoto, Hitoshi, 4,203,507, Cl. 188-317.000.
Yamaguchi, Yoshinobu; and Takasu, Hitoyuki, 4,203,408, Cl. 123-198.0DC.
Honeywell Inc.: *See—*
Ballinger, Dale O., 4,203,419, Cl. 126-430.000.
Kojima, Tadashi; and Seki, Kazuo, 4,203,779, Cl. 136-233.000.
Singh, Gurnam, 4,203,327, Cl. 73-721.000.
Honeywell Information Systems Inc.: *See—*
Getson, Edward F., Jr.; Kelley, John H.; McLaughlin, Albert T.; and Rathbun, Donald J., 4,204,250, Cl. 364-200.000.
Hood, John D.: *See—*
Cole, Martin; Hood, John D.; and Butterworth, Dennis, 4,203,973, Cl. 424-114.000.
Hood, Peter, to Refuse Derived Fuels (London) Limited. Treatment of waste. 4,203,376, Cl. 110-346.000.
Hoogovens IJmuiden, B.V.: *See—*
van der Harst, Pieter A., 4,203,547, Cl. 238-8.000.
Hopkins, Richard B., to Knoll International, Inc. Writing tablet. 4,203,624, Cl. 297-162.000.
Hopkinson, David G.: *See—*
Telling, Ronald C.; Passingham, Roy J.; Kitchener, Brian L.; and Hopkinson, David G., 4,203,801, Cl. 435-284.000.
Horman, Ian: *See—*
Farr, David R.; and Horman, Ian, 4,204,004, Cl. 426-77.000.
Horner Flooring Company: *See—*
Gravitter, Robert U.; and Isaacson, William O., 4,203,541, Cl. 227-40.000.
Horner, Ian M., to Exxon Research & Engineering Co. Heat transfer. 4,203,186, Cl. 29-157.30R.
Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., to Exxon Research & Engineering Co. Method of making lead and bismuth ruthenate and iridate pyrochlore compounds. 4,203,871, Cl. 252-518.000.
Horwitt, Laurence G.; and Mattis, Donald J., to Sun Chemical Corporation. Manual electric cigar lighter. 4,204,108, Cl. 219-265.000.
Horwitt, Laurence G.; and Mattis, Donald J., to Sun Chemical Corporation. Automatic electric cigar lighter. 4,204,109, Cl. 219-265.000.
Hosaka, Akio: *See—*
Aono, Shigeo; and Hosaka, Akio, 4,203,394, Cl. 123-32.0EE.
Hose, Eddy, to United States of America, Air Force. Synthetic array radar command air launched missile system. 4,204,210, Cl. 343-6.00R.
Houk, Theodore L.: *See—*
Mistretta, Charles A.; Kruger, Robert A.; and Houk, Theodore L., 4,204,226, Cl. 358-111.000.
Howell, Ian V.: *See—*
Hancock, Ronald D.; and Howell, Ian V., 4,203,952, Cl. 423-6.000.
Howenstein, Melvin: *See—*
Sawada, Fred H.; and Howenstein, Melvin, 4,204,156, Cl. 324-158.0MG.
Howie, Wilbert A. Sound admitting aerial toy. 4,203,252, Cl. 46-178.000.
Hoya Lens Corporation: *See—*
Ii, Tadao; Tanaka, Takashi; and Akaba, Hayao, 4,203,666, Cl. 356-124.000.
Hoyer, August, to Xerox Corporation. Multifeed detector. 4,203,586, Cl. 271-34.000.
Hsu, Ying-Yen, to Timex Corporation. Liquid crystal composition. 4,203,862, Cl. 252-299.000.
Hubbard, John H.: *See—*
Hoge, John H.; and Hubbard, John H., 4,203,837, Cl. 210-44.000.
Hubele, Adolf, to Ciba-Geigy Corporation. Methods of using N-(substituted)-N-alkoxy carbonyl anilino compounds. 4,204,002, Cl. 424-309.000.

Huber, Gerhard: *See—*
Vertesy, Laszlo; and Huber, Gerhard, 4,204,058, Cl. 544-4.000.
Huchler, Otto H.: *See—*
Mueller, Herbert; and Huchler, Otto H., 4,203,908, Cl. 260-346.110.
Hughes Aircraft Company: *See—*
Jamison, John W.; Welty, William R.; and Masciello, Vincent A., deceased, 4,203,257, Cl. 51-2.00R.
Huigen, Johannes H.: *See—*
Beyer, Nico H. H.; Huigen, Johannes H.; and van Westenbrugge, Johan K., 4,203,185, Cl. 29-157.30C.
Hungerford, William R., to Bendix Corporation, The. Numerical control resolver position measuring device. 4,204,257, Cl. 364-474.000.
Hunter, Alex B.: *See—*
Pinson, George T.; and Hunter, Alex B., 4,203,347, Cl. 89-1.816.
Hurlbut, Russell G.: *See—*
Clifton, Jerry L.; Gentile, Ralph; Hurlbut, Russell G.; and King, James L., 4,203,664, Cl. 355-64.000.
Hurley, Donald L.; Wessel, Francis H.; and Bange, Joseph B., to Western States Machine Company, The. Power-operated loading gate for centrifugal machines incorporating an auxiliary drive device. 4,203,570, Cl. 251-14.000.
Huschka, Hans: *See—*
Knotik, Karl; Leichter, Peter; Proksch, Emil; and Huschka, Hans, 4,203,863, Cl. 252-301.10W.
Husqvarna Aktiebolag: *See—*
Giesselmann, Hannes; and Skogward, Kenneth, 4,203,378, Cl. 112-158.00E.
Hutchins, Loren H., Jr., to Simplex Wire and Cable Company. Capacitance-compensated cable. 4,204,129, Cl. 307-147.000.
Hutt, Peter R.: *See—*
Mason, Arthur G.; and Hutt, Peter R., 4,204,228, Cl. 358-139.000.
Hyde, Richard C. J.: *See—*
Dye, Malcolm; and Hyde, Richard C. J., 4,204,249, Cl. 364-200.000.
Hydes, Paul C.; and Malerbi, Bernard W., to Johnson, Matthey & Co., Limited. Compositions containing platinum. 4,203,912, Cl. 260-429.00R.
Hydroacoustics Inc.: *See—*
Nelson, David E., 4,204,278, Cl. 367-39.000.
Hyland, Albert L.: *See—*
Cohen, Frederic S.; and Hyland, Albert L., 4,204,036, Cl. 429-152.000.
Hyman, Seymour: *See—*
Bernstein, Bruce S.; Kapoor, Ramesh C.; and Hyman, Seymour, 4,204,018, Cl. 428-246.000.
Ichihashi, Kazuaki: *See—*
Shimizu, Norio; Odawara, Youji; Yamaguchi, Tetsuo; Saitou, Setsuo; Nakaoka, Azuma; and Ichihashi, Kazuaki, 4,203,841, Cl. 210-205.000.
Ichise, Wataru; Kinjo, Yasuo; Enokida, Kenji; and Nihei, Hideharu, to Tokyo Shibaura Electric Co., Ltd. Nitrogen-emitting composition to be used with flash getter materials. 4,203,860, Cl. 252-181.200.
ICI Americas Inc.: *See—*
Rashbrook, Robert B., 4,203,888, Cl. 260-45.70P.
Igarashi, Taizo: *See—*
Ishizaki, Takaharu; Igarashi, Taizo; and Shimizu, Hirozumi, 4,203,729, Cl. 44-51.000.
Ii, Tadao; Tanaka, Takashi; and Akaba, Hayao, to Hoya Lens Corporation. Lensmeter. 4,203,666, Cl. 356-124.000.
Ikedo, Masaru: *See—*
Yasuno, Yoshitake; Watari, Masafumi; Tsutsui, Hiroshi; Ikedo, Masaru; and Yamamoto, Osamu, 4,204,119, Cl. 250-337.000.
Illinois Water Treatment Company: *See—*
Bailey, James E.; and Cho, Yong K., 4,204,041, Cl. 435-177.000.
Imai, Tamotsu; and Homeier, Edwin H., to UOP Inc. Preparation of alkyl pyridines. 4,204,066, Cl. 546-348.000.
Imataki, Mitsumasa; Mochizuki, Mikio; and Shibuya, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Abnormal voltage protection device. 4,204,239, Cl. 361-127.000.
IMI Marston Limited: *See—*
Warne, Michael A.; and Hayfield, Peter C. S., 4,203,810, Cl. 204-38.00B.
Immink, David A.: *See—*
Mitchell, Terry L.; and Immink, David A., 4,203,609, Cl. 280-47.110.
Imperial Chemical Industries Limited: *See—*
Baker, Alan S., 4,203,877, Cl. 260-18.00R.
Bowler, Jean; and Robinson, Graham E., 4,204,001, Cl. 424-308.000.
Bye, Ashley D., 4,203,867, Cl. 252-429.00B.
Imperial Knife Associated Companies, Inc.: *See—*
Tausendfreundt, Jay; and Gentile, Albert, 4,203,208, Cl. 30-155.000.
Imrie, James A. High and low voltage measuring apparatus employing a single display and impedance matching. 4,204,152, Cl. 324-390.000.
Inagaki, Katsumi: *See—*
Tagashira, Yoshiaki; Takagi, Hitoshi; and Inagaki, Katsumi, 4,203,835, Cl. 210-33.000.
Independent Broadcasting Authority: *See—*
Mason, Arthur G.; and Hutt, Peter R., 4,204,228, Cl. 358-139.000.
Inficon Leybold-Heraeus, Inc.: *See—*
Morgan, Michael J., 4,203,199, Cl. 29-612.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Muzzani, Aldo; and Paccapelo, Ilio, 4,204,254, Cl. 364-200.000.
Ing. Karl Vockenhuber: *See—*
Besenmatter, Walter, 4,203,661, Cl. 354-53.000.
Ingenjorsfirman Orrje & Co AB: *See—*
Carlstedt, Bo R., 4,203,843, Cl. 210-262.000.
Ino, Haruko; and Ino, Risaburo. Apparatus for cleaning water containing foreign particles such as suspended matters or oil. 4,203,849, Cl. 210-522.000.
Ino, Makoto: *See—*
Takamizawa, Minoru; Abe, Akira; Ono, Yoshiaki; Sugimori, Yutaka; Kishibayashi, Tetsuo; and Ino, Makoto, 4,204,030, Cl. 428-447.000.
Ino, Risaburo: *See—*
Ino, Haruko; and Ino, Risaburo, 4,203,849, Cl. 210-522.000.
Inoue, Hiromasa: *See—*
Fukushima, Hiroyuki; Yoshida, Minoru; and Inoue, Hiromasa, 4,203,196, Cl. 29-566.300.
Inouye, Kozo; and Naito, Hideki, to Fuji Photo Film Co., Ltd. Silver halide color photographic material and method for formation of color photographic images. 4,203,768, Cl. 430-388.000.
Insolio, Thomas A., to Fletcher-Terry Company, The. Attachment for hand glass cutter. 4,203,209, Cl. 30-164.950.
Institut National de la Recherche Agronomique: *See—*
Pery, Pierre; Luffau, Gerard; Poulain nee Charley, Joelle; and Petit, Agnes, 4,203,893, Cl. 260-121.000.
Institute Francais du Petrole: *See—*
Cholet, Jacques; Laurent, Jean; Magneville, Pierre; and Duconge, Claude, 4,203,501, Cl. 181-120.000.
Instructo/McGraw-Hill, Inc.: *See—*
Constantine, Paul; Ettinger, Melvyn; and Rubin, Harry S., 4,203,659, Cl. 353-120.000.
Interlego A.G.: *See—*
Tapdrup, Erik P., 4,203,248, Cl. 46-22.000.
International Business Machines Corporation: *See—*
Arrasmith, Fred V., 4,203,589, Cl. 271-258.000.
Dye, Malcolm; and Hyde, Richard C. J., 4,204,249, Cl. 364-200.000.
Feng, Bai-Cwo; and Feng, George C., 4,204,009, Cl. 427-36.000.
Harris, James H., 4,204,130, Cl. 307-215.000.
Key, Brian D.; Smith, James; and Kerigan, Shaun C., 4,204,089, Cl. 178-30.000.
Kitcher, James R.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,203,800, Cl. 156-643.000.
Kunz, Barton H.; Shlatz, Myron F.; and Spears, Jesse W., 4,203,585, Cl. 271-4.000.
Noble, David L., 4,204,234, Cl. 360-77.000.
Schroeder, Eugene N., 4,204,193, Cl. 340-146.30H.
Staiger, Dieter, 4,203,543, Cl. 371-24.000.
International Telephone and Telegraph Corporation: *See—*
Hackett, Barrie H.; and Wissley, Rudolph W., 4,203,198, Cl. 29-611.000.
Sawyer, Edgar W., Jr., 4,203,864, Cl. 252-314.000.
Interx Research Corporation: *See—*
Bodor, Nicolae S., 4,204,065, Cl. 546-316.000.
Inui, Taiji: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,204,038, Cl. 435-78.000.
Inukai, Sadaharu: *See—*
Usui, Kiyofumi; Otsuki, Chihiro; and Inukai, Sadaharu, 4,204,180, Cl. 335-205.000.
Iowa State University Research Foundation, Inc.: *See—*
Harris, Delbert L.; Goodnow, Robert A.; Glock, Robert D.; and Kinyon, Joann M., 4,203,968, Cl. 424-92.000.
Isaacs, Jose A. C.: *See—*
Bauer, William V.; Isaacs, Jose A. C.; and Lamonte, Oliverio M., 4,203,960, Cl. 423-461.000.
Isaacson, William O.: *See—*
Gravitter, Robert U.; and Isaacson, William O., 4,203,541, Cl. 227-40.000.
Isailovic, Jordan, to MCA Disco-Vision, Inc. Method and means for encoding and decoding digital data. 4,204,199, Cl. 340-347.0DD.
Ishida, Koji: *See—*
Suganuma, Tsuneo; Ishida, Koji; Satoh, Shin; Sugie, Mamoru; Katsuyama, Toshio; and Toda, Gyozo, 4,203,743, Cl. 65-3.00A.
Ishigaki, Yukinobu; and Muraoka, Teruo, to Victor Company of Japan, Limited. Cancellation of interference distortions caused by intermodulation between FM signals on adjacent channels. 4,204,091, Cl. 179-1.0GB.
Ishihara Sangyo Kaisha Limited: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,203,758, Cl. 71-100.000.
Ishizaki, Takaharu; Igarashi, Taizo; and Shimizu, Hirozumi, to Nippon Oil & Fats Co. Ltd. Method for producing coal dispersing oil compositions. 4,203,729, Cl. 44-51.000.
Ishizuka, Kohei: *See—*
Takasaki, Yoshitaka; Kita, Yasuhiro; Nakagawa, Junichi; and Ishizuka, Kohei, 4,204,176, Cl. 333-28.00R.
Ishizuka, Masaaki: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,204,038, Cl. 435-78.000.
Isoard, Bernard, to Rhone-Poulenc-Textile. Process and device for the winding-up of textile yarn. 4,203,560, Cl. 242-45.000.
Isotton, Adriano, to Mariani, Angelo. Termination on electric power cables for normal, high and very high voltages. 4,204,083, Cl. 174-9.00F.
Italimpliant Societa Italiana Impianti per Asioni: *See—*
Facco, Giuseppe; and Carpaneto, Tomaso, 4,203,717, Cl. 431-182.000.

Itano, Tsutomu: *See—*
Ohkubo, Toshio; Kajiwara, Yuji; and Itano, Tsutomu, 4,204,107, Cl. 219-216.000.

Itek Corporation: *See—*
Ebner, Peter R., 4,203,330, Cl. 74-527.000.

Itemadani, Eiji: *See—*
Narikiyo, Kazuhiko; Itemadani, Eiji; and Maeda, Yoshinobu, 4,203,224, Cl. 33-149.00R.

Ito, Hiroshi: *See—*
Shindo, Yoshio; and Ito, Hiroshi, 4,203,331, Cl. 74-606.00R.

Ito, Sadayoshi: *See—*
Ohta, Takaaki; and Ito, Sadayoshi, 4,203,628, Cl. 303-6.00C.

Ito, Tadashi: *See—*
Uchidoi, Masanori; Tsunekawa, Tokuichi; Aizawa, Hiroshi; Taguchi, Tetsuya; Ito, Tadashi; and Takishima, Yoshiyuki, 4,203,660, Cl. 354-31.000.

Ito, Yukio: *See—*
Suzuki, Hiroshi; Ito, Yukio; Yasumoto, Yosiro; Kinomura, Sigeru; and Nagashima, Kazuo, 4,203,873, Cl. 252-545.000.

Itoh, Katsuhiko: *See—*
Sugawara, Katsuro; Nakazawa, Yukiyoshi; and Itoh, Katsuhiko, 4,203,799, Cl. 156-601.000.

Ivanov, Jury N.; Artemov, Konstantin V.; Suris, Leonid I.; and Bozhenov, Jury F. Container securing device. 4,203,372, Cl. 410-67.000.

Ivers, Robert P.; and Thimsen, Mark J., to Geodesic Shelters, Inc. Hub and strut system for geodesic domes. 4,203,265, Cl. 52-81.000.

J. E. Enterprises, Inc.: *See—*
Dunn, Stanley A., 4,203,521, Cl. 206-525.000.

J. I. Case Company: *See—*
Youngers, Stephen A., 4,203,291, Cl. 60-433.000.

J-Mark, Inc.: *See—*
Makela, Martin A., 4,203,611, Cl. 280-163.000.

Jacob, Hermann. Method for purifying particulate mould material. 4,203,777, Cl. 134-7.000.

Jaeger, Rolf: *See—*
Hackenjos, Ernst, 4,203,935, Cl. 261-98.000.

Jahrig, Siegfried; and Liebig, Reinhard, to Siemens Aktiengesellschaft. Driving apparatus for electric power circuit breakers. 4,204,103, Cl. 200-153.08C.

James, Robert C., to Hayssen Manufacturing Company. Squaring reams of paper for wrapping. 4,203,694, Cl. 414-28.000.

Jamison, John W.; Welty, William R.; and Masciello, Vincent A., deceased (by Masciello, Doris E., heir), to Hughes Aircraft Company. Printed circuit board hole cleaner. 4,203,257, Cl. 51-2.00R.

Janele, Erich: *See—*
Hildebrandt, Bodo; Janele, Erich; and Steigerwald, Franz, 4,203,517, Cl. 206-221.000.

Janiszewski, Stephen, to Teletype Corporation. Means for establishing various communication conditions in a cryptographic system. 4,204,088, Cl. 178-22.000.

Janning, Jorg; Kaminsky, Walter; Sinn, Hansjorg; and Tysarcyk, Stanislav, to Carl Robert Eckelmann AG. Apparatus for the pyrolysis of pieces of rubber or like material, especially used motor vehicle tires. 4,203,804, Cl. 202-121.000.

Janssens, Wilhelmus: *See—*
Claeys, Danie A.; Reyniers, Albert A.; and Janssens, Wilhelmus, 4,203,765, Cl. 430-252.000.

Javeri, Rupin J., to Motorola, Inc. Periodic engine speed monitoring circit utilizing sampling circuitry. 4,204,157, Cl. 324-166.000.

Jean Walterscheid GmbH: *See—*
Kunze, Dieter, 4,203,613, Cl. 280-460.00A.

Jeffers, Eldon L.: *See—*
United States of America, National Aeronautics and Space Administration; Dill, W. Preston; Taylor, Rueben E.; and Jeffers, Eldon L., 4,204,037, Cl. 435-3.000.

JENAer Glaswerk, Schott: *See—*
Kiefer, Werner; Krause, Dieter; Scheidler, Herwig; Schulze, Hans-Wilhelm; and Kristen, Klaus, 4,203,264, Cl. 52-1.000.

Jenkins Metal Corporation: *See—*
Collins, Walter W., 4,203,167, Cl. 2-322.000.

JENOPTIK JENA G.m.b.H.: *See—*
Schutt, Wolfgang; Jensen, Hans-Ludwig; Eberlein, Werner; and Schoppe, Gunter, 4,203,817, Cl. 204-180.00R.

Jensen, Hans-Ludwig: *See—*
Schutt, Wolfgang; Jensen, Hans-Ludwig; Eberlein, Werner; and Schoppe, Gunter, 4,203,817, Cl. 204-180.00R.

Jensen, Roger S. Self-centering hole saw adapter. 4,203,692, Cl. 408-96.000.

Jessup, James L.; and Elliott, Eugene W., to Hollister Incorporated. Gas-venting filter assembly for collection device. 4,203,445, Cl. 128-283.000.

Jockel, Heinz: *See—*
Supp, Emil; Jockel, Heinz; Krumm, Hagen; and Marschner, Friedemann, 4,203,915, Cl. 260-449.500.

Johannsen, Peter: *See—*
Peter, Julius; Johannsen, Peter; and Mauk, Gerhard, 4,203,480, Cl. 152-209.0NT.

Johansson, Rolf G. Car hoist. 4,203,505, Cl. 187-81.700.

Johns, Herbert L.: *See—*
Davis, Allen D., Jr.; Johns, Herbert L.; and Lachman, Irwin M., 4,203,772, Cl. 106-40.00R.

Johnson, Duane P.: *See—*
Sarian, Suren; and Johnson, Duane P., 4,204,159, Cl. 324-232.000.

Johnson, Earl R., to Loffland Brothers Company. Hydraulic elevating ramp. 4,203,575, Cl. 254-88.000.

Johnson, Gordon W.: *See—*
Bubula, Thomas J.; Franz, Maurice F.; Johnson, Gordon W.; and Rinaldo, James D., 4,203,293, Cl. 60-490.000.

Johnson, James R.; and Chirash, William, to Colgate-Palmolive Company. Softener, bleach and anti-cling composition. 4,203,852, Cl. 252-8.800.

Johnson, Lanny L.: *See—*
Bonnell, Leonard J.; McHugh, Edward H.; Sjostrom, Douglas D.; and Johnson, Lanny L., 4,203,444, Cl. 128-276.000.

Johnson, Matthey & Co., Limited: *See—*
Hydes, Paul C.; and Malerbi, Bernard W., 4,203,912, Cl. 260-429.00R.

Johnson, Philip A.; and McCarthy, Alfred F., to Aavid Engineering, Inc. Self-fastened heat sinks. 4,203,488, Cl. 165-80.00B.

Johnson, Richard J.: *See—*
Gladden, Robert S., Jr.; Johnson, Richard J.; Karmazyn, Michael J.; and Tate, Donald L., 4,203,268, Cl. 52-630.000.

Johnson, Richard N.: *See—*
Filipov, Andree N.; Johnson, Richard N.; and Winslow, Christopher N., 4,204,198, Cl. 340-347.0AD.

Johnson, Robert E.: *See—*
Hollier, Thomas R.; and Johnson, Robert E., 4,203,266, Cl. 52-116.000.

Johnsson, M. K. Olof; Oberg, Karl-Erik; and Bertheussen, Harry, to Scandinavian Lancers Aktiebolag. Method of manufacturing a lead alloy steel and a steel made according to the method. 4,203,763, Cl. 75-129.000.

Jones Medical Instrument Company: *See—*
Jones, William C., 4,203,316, Cl. 73-3.000.

Jones, Robert J.; O'Rell, Michael K.; and Hom, Jim M., to TRW Inc. Fluorinated aromatic diamine. 4,203,922, Cl. 260-570.00R.

Jones, William C., to Jones Medical Instrument Company. Device and method for calibrating pulmonary function testing equipment. 4,203,316, Cl. 73-3.000.

Joosten, Joannes J. W. M., to Oce-van der Grinten N.V. Device for copying sheetlike originals. 4,203,588, Cl. 271-246.000.

Jordan College: *See—*
Coxon, DeWayne; and Gates, Timothy P., 4,203,424, Cl. 126-422.000.

Josef Gartner & Co., Firma: *See—*
Gartner, Karl, 4,203,487, Cl. 165-50.000.

Jouet, Etienne, to Spirec l'Echangeur Spirale Ever Clean. Method and apparatus for the manufacture of a heat exchanger. 4,203,205, Cl. 29-727.000.

Joullie, Maurice; Maillard, Gabriel; Lakah, Lucien; Warolin, Christian J. M.; and Pascal, Yves R. A., to Metabio-Joullie. M-Trifluoromethylphenyl-piperazine. 4,203,986, Cl. 424-250.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kondo, Kenichi; and Komaki, Shojiro, 4,203,278, Cl. 368-73.000.
Yagi, Kenjiro; and Hirai, Hirotomo, 4,204,205, Cl. 340-719.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Uehara, Kazuo, 4,203,712, Cl. 417-218.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Usui, Kiyofumi; Otsuki, Chihiro; and Inukai, Sadaharu, 4,204,180, Cl. 335-205.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Yamada, Senichi; and Kato, Yoshio, 4,203,782, Cl. 148-12.00E.

Kaczkowski, Bernard C.: *See—*
Baumann, Frederick W.; and Kaczkowski, Bernard C., 4,203,483, Cl. 164-116.000.

Kaetzel, Pierre, to Samibem, S.A. Forkless haymaking machine. 4,203,277, Cl. 56-377.000.

Kage, Kouzou, to Nippon Electric Co., Ltd. Noise detector circuit. 4,204,164, Cl. 455-135.000.

Kage, Kouzou, to Nippon Electric Co., Ltd. Impulse noise limiter circuit. 4,204,170, Cl. 328-165.000.

Kahn, Henry; and Libit, Sidney M., to Kahn, Henry. Dental cap package. 4,203,515, Cl. 206-63.500.

Kaiser, Mark E., to Dow Chemical Company, The. Process for preparing 2-oxazolines. 4,203,900, Cl. 548-239.000.

Kaizerman, Samuel: *See—*
Chang, Eugene Y. C.; and Kaizerman, Samuel, 4,203,889, Cl. 260-45.8NT.

Kajiwara, Yuji: *See—*
Ohkubo, Toshio; Kajiwara, Yuji; and Itano, Tsutomu, 4,204,107, Cl. 219-216.000.

Kakuhashi, Takeshi; and Miyake, Yasufumi, to Nitto Electric Industrial Co., Ltd. Printed circuit substrate with resistance elements. 4,204,187, Cl. 338-307.000.

Kali-Chemie Aktiengesellschaft: *See—*
Simoleit, Hartmut; and Walter, Ludwig, 4,203,953, Cl. 423-243.000.

Kalinichenko, Anatoly Y., to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia. Digital control device for d.c. thyristor-pulse converter. 4,204,267, Cl. 363-85.000.

Kalopissis, Gregoire, to L'Oreal. Sulfur containing heterocyclic amino acid derivatives. 4,204,064, Cl. 546-245.000.

Kaman, Charles H.: *See—*
Hitz, George E.; Kaman, Charles H.; Mudge, Craig; O'Loughlin, James F.; and Sullivan, Daniel T., 4,204,252, Cl. 364-200.000.

Kaminsky, Walter: *See—*
Janning, Jorg; Kaminsky, Walter; Sinn, Hansjorg; and Tysarcyk, Stanislav, 4,203,804, Cl. 202-121.000.

Kamiya, Minoru. Timepiece which permits freely adjusting the level of sounds produced therein and given out thereof. 4,203,279, Cl. 368-243.000.

Kamiya, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for preventing turnover of a motorized two-wheeled vehicle. 4,203,500, Cl. 180-219.000.

Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, to Fujisawa Pharmaceutical Company, Limited. Penam derivatives. 4,203,897, Cl. 260-239.100.

Kammiller, Neil; and Paradissis, Pantelis P., to Lorain Products Corporation. Inverter drive circuit. 4,204,266, Cl. 363-98.000.

Kaneko, Yutaka: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Kaneko, Yutaka; Masukawa, Toyoaki; and Kawasaki, Mikio, 4,203,767, Cl. 430-376.000.

Kapoor, Ramesh C.: *See—*
Bernstein, Bruce S.; Kapoor, Ramesh C.; and Hyman, Seymour, 4,204,018, Cl. 428-246.000.

Karl, Horst: *See—*
Stemme, Otto; Lermann, Peter; Schrooder, Rolf; and Karl, Horst, 4,203,662, Cl. 354-173.000.

Karmazyn, Michael J.: *See—*
Gladden, Robert S., Jr.; Johnson, Richard J.; Karmazyn, Michael J.; and Tate, Donald L., 4,203,268, Cl. 52-630.000.

Karpat, Arpad: *See—*
Csizy, Tibor; Karpat, Arpad; Melis, Janos; and Szemerey, Zoltan, 4,204,184, Cl. 337-295.000.

Kataoka, Shoei; Sugiyama, Yoshinobu; and Fujisada, Hiroyuki, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Highly sensitive Hall element. 4,204,132, Cl. 307-309.000.

Kataoka, Takeshi; Matsumoto, Hiroshi; and Matsui, Hisashi, to Ono Seiko Co., Ltd. Mechanism for changing inductance of a push-button tuner. 4,204,179, Cl. 334-7.000.

Kato, Minoru: *See—*
Fujii, Hideo; and Kato, Minoru, 4,203,403, Cl. 123-148.0AC.

Kato, Toshiro: *See—*
Funaki, Yuji; Oshita, Hirofumi; Tanaka, Shizuya; Yamamoto, Shigeo; and Kato, Toshiro, 4,203,995, Cl. 424-273.00R.

Kato, Yoshio: *See—*
Yamada, Senichi; and Kato, Yoshio, 4,203,782, Cl. 148-12.00E.

Katsuyama, Toshio: *See—*
Suganuma, Tsuneo; Ishida, Koji; Satoh, Shin; Sugie, Mamoru; Katsuyama, Toshio; and Toda, Gyozo, 4,203,743, Cl. 65-3.00A.

Kauffman, Robert N.: *See—*
Smith, James D. B.; and Kauffman, Robert N., 4,204,181, Cl. 336-96.000.

Kaufmann, Raimund: *See—*
Aberle, Lothar; Bank, Walter; Hillenkamp, Franz; Kaufmann, Raimund; Nitsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,204,117, Cl. 250-287.000.

Kawada, Hirohito: *See—*
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,204,246, Cl. 361-385.000.

Kawakita, Kenji: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,203,899, Cl. 548-194.000.

Kawamoto, Hiromi: *See—*
Enomoto, Takamitsu; Tanaka, Kyoji; Kawamoto, Hiromi; Mizuno, Tamotsu; and Fujinaga, Masao, 4,203,955, Cl. 423-308.000.

Kawasaki, Mikio: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Kaneko, Yutaka; Masukawa, Toyoaki; and Kawasaki, Mikio, 4,203,767, Cl. 430-376.000.

Kegel, Werner. Apparatus for monitoring and indicating the onset of parturition. 4,203,450, Cl. 128-630.000.

Kegg, Geoffrey E.: *See—*
Kegg, Jack P.; Fuller, Colin A.; and Kegg, Geoffrey E., 4,203,177, Cl. 16-24.000.

Kegg, Jack P.; Fuller, Colin A.; and Kegg, Geoffrey E. Castor. 4,203,177, Cl. 16-24.000.

Keiper Automobiltechnik GmbH & Co KG: *See—*
Cremer, Heinz P., 4,204,255, Cl. 364-425.000.

Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, to Biotronik Mess- und Therapiegerate GmbH & Co. Security maintenance for programmable pacer reprogramming. 4,203,447, Cl. 128-419.0PG.

Keller, John W., Jr., to Biotronik Mess- und Therapiegerate GmbH & Co. Programmably variable voltage multiplier for implanted stimulator. 4,203,448, Cl. 128-419.0PG.

Kelley, John H.: *See—*
Getson, Edward F., Jr.; Kelley, John H.; McLaughlin, Albert T.; and Rathbun, Donald J., 4,204,250, Cl. 364-200.000.

Kelly, Robert C., to Upjohn Company, The. 9-Deoxy-6,9α-epoxymethano-PG C-1 amines. 4,204,057, Cl. 542-426.000.

Kelso, Robert G.: *See—*
Garner, James W.; and Kelso, Robert G., 4,203,875, Cl. 260-13.000.

Kemp, Robert: *See—*
Bailey, Wayne; and Kemp, Robert, 4,203,731, Cl. 48-99.000.

Kendall Company, The: *See—*
Witt, Edward, 4,204,023, Cl. 428-355.000.

Kerigan, Shaun C.: *See—*
Key, Brian D.; Smith, James; and Kerigan, Shaun C., 4,204,089, Cl. 178-30.000.

Kerman, Kenneth C. Combination air filter and vacuum cleaning system. 4,203,738, Cl. 55-287.000.

Kernforschungsanlage Julich Gesellschaft mit Beschrankter Haftung: *See—*
Stoeppler, Markus; and Havezov, Ivan, 4,203,840, Cl. 210-83.000.

Keszthelyi Agrartudomanyi Egyetem: *See—*
Aradi, Emil; Blickle, Tibor; Monostori, Endre; Nemeth, Jeno; Pallai, Ivanne; and Varga, Janos, 4,203,228, Cl. 34-10.000.

Ketley, Arthur D.: *See—*
Kramm, David E.; and Ketley, Arthur D., 4,204,010, Cl. 427-44.000.

Key, Brian D.; Smith, James; and Kerigan, Shaun C., to International Business Machines Corporation. Keyboard method and apparatus for accented characters. 4,204,089, Cl. 178-30.000.

Keyes, Melvin H., to Technicon Instruments Corporation. Copolymerization of proteins on an inorganic support. 4,204,040, Cl. 435-176.000.

Kidd, Dennis E.: *See—*
Schwartz, Harold O.; and Kidd, Dennis E., 4,203,337, Cl. 84-1.010.

Kiefer, Werner; Krause, Dieter; Scheidler, Herwig; Schulze, Hans-Wilhelm; and Kristen, Klaus, to JENAer Glaswerk, Schott. Fireproof building element. 4,203,264, Cl. 52-1.000.

Kiehs, Karl; and Adolphi, Heinrich. Phosphoric acid esters, composition and use. 4,203,977, Cl. 424-211.000.

Kienzle, Frank, to Hoffmann-La Roche Inc. Process for producing carotenoids. 4,204,073, Cl. 560-231.000.

Kim, Sunyong P. Miniature flashlight unit. 4,204,272, Cl. 362-200.000.

Kimball International, Inc.: *See—*
Welsh, Alan B.; and Robinson, John W., 4,203,339, Cl. 84-1.190.

Kindermann, Wolfgang: *See—*
Egener, Ernst-Gunter; and Kindermann, Wolfgang, 4,203,471, Cl. 137-637.000.

King, James L.: *See—*
Clifton, Jerry L.; Gentile, Ralph; Hurlbut, Russell G.; and King, James L., 4,203,664, Cl. 355-64.000.

King, Nigel J. R., to Racal Communications Equipment Limited. Phase locked loop variable frequency generator. 4,204,174, Cl. 331-10.000.

King, Randall N., to Electric Power Research Institute, Inc. Sodium insert container for a sodium-sulfur cell and its method of use. 4,204,035, Cl. 429-104.000.

Kingsley, Charles A.; Spaulding, James R.; and Gifford, William E., to General Motors Corporation. Evaporative emissions canister. 4,203,401, Cl. 123-136.000.

Kinjo, Yasuo: *See—*
Ichise, Wataru; Kinjo, Yasuo; Enokida, Kenji; and Nihei, Hideharu, 4,203,860, Cl. 252-181.200.

Kinomura, Sigeru: *See—*
Suzuki, Hiroshi; Ito, Yukio; Yasumoto, Yosiro; Kinomura, Sigeru; and Nagashima, Kazuo, 4,203,873, Cl. 252-545.000.

Kinoshita, Hiroyuki, to Tokyo Shibaura Electric Co., Ltd. Dynamic read-write random access memory. 4,204,277, Cl. 365-203.000.

Kinyon, Joann M.: *See—*
Harris, Delbert L.; Goodnow, Robert A.; Glock, Robert D.; and Kinyon, Joann M., 4,203,968, Cl. 424-92.000.

Kiralfy, Dennis: *See—*
Gast, Uwe; Kiralfy, Dennis; Schaefer, Klaus; Slawik, Eckhard; and Wellendorf, Klaus, 4,204,223, Cl. 358-80.000.

Kirchoff, George F.; and Schneiter, Fred E., to Thiokol Corporation. Pelletizable, rapid and cool burning solid nitrogen gas generant. 4,203,787, Cl. 149-35.000.

Kirchweger, Karl: *See—*
Fachbach, Heinz; Thien, Gerhard; and Kirchweger, Karl, 4,203,407, Cl. 123-198.00E.

Kirn, William A.; and Gehman, David R., to Rohm and Haas Company. Solubilized acrylic polymers and carpet shampoos containing the same. 4,203,859, Cl. 252-174.230.

Kirsch, Wilhelm: *See—*
Krull, Manfred; Buchwald, Holger; and Kirsch, Wilhelm, 4,203,435, Cl. 128-156.000.

Kishi, Hirotoshi; Hattori, Hiroyuki; and Shimizu, Katsuichi, to Canon Kabushiki Kaisha. Sheet sorter device. 4,203,587, Cl. 271-293.000.

Kishibayashi, Tetsuo: *See—*
Takamizawa, Minoru; Abe, Akira; Ono, Yoshiaki; Sugimori, Yutaka; Kishibayashi, Tetsuo; and Ino, Makoto, 4,204,030, Cl. 428-447.000.

Kita, Yasuhiro: *See—*
Takasaki, Yoshitaka; Kita, Yasuhiro; Nakagawa, Junichi; and Ishizuka, Kohei, 4,204,176, Cl. 333-28.00R.

Kitchener, Brian L.: *See—*
Telling, Ronald C.; Passingham, Roy J.; Kitchener, Brian L.; and Hopkinson, David G., 4,203,801, Cl. 435-284.000.

Kitcher, James R.; Ozols, Gunars M.; and Zingerman, Bryant N., to International Business Machines Corporation. Reactive ion etching process for metals. 4,203,800, Cl. 156-643.000.

Kiwak, Robert S.; and Liu, Tung, to Bendix Corporation, The. Water slurry process for manufacturing phenolic resin bonded friction materials. 4,203,936, Cl. 264-26.000.

Kiyota, Fumio: *See—*
Takemura, Kazutoshi; Oda, Takashi; and Kiyota, Fumio, 4,204,031, Cl. 428-539.500.

Kjellander, Jan O.; and Danielsson, Dan G., to Orion-Yhtyma Oy. Device for examining microorganisms. 4,204,045, Cl. 435-301.000.

Kjohl, Olav: *See—*
Elstrom, Tore, deceased; Gustavsen, Per F.; and Kjohl, Olav, 4,204,053, Cl. 528-259.000.

Klauke, Guenter: *See—*
Reichel, Hilmar; Klauke, Guenter; Herting, Karl-Heinz; and Pointner, Martin, 4,203,531, Cl. 228-1.00A.

Klezl, Peter, to OMV Aktiengesellschaft. Pointing compound. 4,203,881, Cl. 260-28.50A.

Klischat, Ditmar: *See—*
Sehlbach, Gerd; and Klischat, Ditmar, 4,203,306, Cl. 64-23.000.

Klokner-Werke Aktiengesellschaft: *See—*
Bahre, Karl; and Krohm, Reinhold, 4,203,557, Cl. 241-186.00R.

Klotzner, Winfried, to Robert Bosch GmbH. Input-output unit for a microprocessor engine control system. 4,204,256, Cl. 364-431.000.

Kmak, Walter S.; and Monzo, Charles, to Exxon Research & Engineering Co. Method for removing coronene from heat exchangers. 4,203,825, Cl. 208-48.00R.

Knapp, Edward J., Jr., to Gould Inc. Indicating or striker pin for electric fuses. 4,204,182, Cl. 337-244.000.

Knight, Lindsay C.; and Casey, Roy E., to Australasian Training Aids Pty. Ltd. Night effects simulator. 4,203,232, Cl. 35-25.000.

Kniskern, Peter J.: *See—*
Carlo, Dennis J.; Hagopian, Arpi; and Kniskern, Peter J., 4,203,970, Cl. 424-92.000.

Knoebel, Paul S.; and Wennerstrom, Jerald M., to Babcock & Wilcox Company, The. Fluidized bed fuel feeder. 4,203,391, Cl. 122-4.00D.

Knoll International, Inc.: *See—*
Hopkins, Richard B., 4,203,624, Cl. 297-162.000.

Knopp, Arthur A.; Nash, John E.; and Lewis, Richard P., to Syntex (U.S.A.) Inc. Gas-driven handpiece having vibration isolating means. 4,203,221, Cl. 433-117.000.

Knotik, Karl; Leichter, Peter; Proksch, Emil; and Huschka, Hans, to Nukem GmbH. Process for the production of solid particles. 4,203,863, Cl. 252-301.10W.

Kobayashi, Yasuhisa: *See—*
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,203,949, Cl. 422-179.000.

Kobylinski, Thaddeus P.: *See—*
Wu, Ching-Yong; and Kobylinski, Thaddeus P., 4,203,926, Cl. 568-319.000.

Koch, Edward G. Male therapeutic device. 4,203,432, Cl. 128-79.000.

Kochs Adler AG: *See—*
Ludwig, Rolf, 4,203,377, Cl. 112-58.000.

Kodama, Masayuki, to Fugi Jukogyo Kabushiki Kaisha. Transmission apparatus for motor vehicle. 4,203,498, Cl. 180-70.0MS.

Koeller, Paul, to Dominion Engineering Works Limited. Hydraulic turbo machine wicket gate seals. 4,203,703, Cl. 415-113.000.

Kohler, George O.: *See—*
Saunders, Robert M.; and Kohler, George O., 4,204,008, Cl. 426-583.000.

Koinuma, Tokuju; and Tashiro, Norio, to Tokyo Shibaura Electric Co., Ltd. Permanent magnet-containing magnetron. 4,204,138, Cl. 315-39.510.

Kojima, Tadashi; and Seki, Kazuo, to Honeywell Inc. Flame detection thermocouple. 4,203,779, Cl. 136-233.000.

Komaki, Shojiro: *See—*
Kondo, Kenichi; and Komaki, Shojiro, 4,203,278, Cl. 368-73.000.

Kompis, Ivan; and Wick, Alexander E., to Hoffmann-La Roche Inc. Benzylpyrimidine derivatives. 4,203,980, Cl. 424-229.000.

Kondo, Hideyo: *See—*
Tosaka, Umi; Kondo, Hideyo; Murai, Keiichi; and Toma, Hitoshi, 4,203,764, Cl. 430-67.000.

Kondo, Kenichi; and Komaki, Shojiro, to Kabushiki Kaisha Daini Seikosha. Alarm electronic timepiece. 4,203,278, Cl. 368-73.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Kaneko, Yutaka; Masukawa, Toyoaki; and Kawasaki, Mikio, 4,203,767, Cl. 430-376.000.

Kono, Teruhisa, to Sumitomo Electric Industries, Ltd. Parallel proportioning valve for use in a dual braking system. 4,203,627, Cl. 303-6.00C.

Konta, Yukio, to Tomy Kogyo Co., Inc. Pinball flipper mechanism. 4,203,603, Cl. 273-129.00W.

Konz, Elmar; and Pistorius, Rudolf, to Hoechst Aktiengesellschaft. Hydroquinone dimethyl ether. 4,204,076, Cl. 568-648.000.

Koppel, Gary A.; and Cooper, Robin D. G., to Eli Lilly and Company. Acetoxy azetidin-2-one antibiotics via thiazolidine ring cleavage. 4,203,896, Cl. 260-239.00A.

Koppel, Mikhail A.: *See—*
Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; Zvenigorodsky, Evgeny I.; and Gabor, Antal, 4,203,688, Cl. 406-85.000.

Koster, William H.: *See—*
Gordon, Eric M.; and Koster, William H., 4,203,992, Cl. 424-271.000.

Kowalski, Gunter, to U.S. Philips Corporation. Device for measuring radiation absorption in a three-dimensional object. 4,204,124, Cl. 250-445.00T.

Koyo Jidoki Corporation Ltd.: *See—*
Yamashita, Kyoichi, 4,203,798, Cl. 156-567.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Egener, Ernst-Gunter; and Kindermann, Wolfgang, 4,203,471, Cl. 137-637.000.
Fritz, Werner; and Weghaupt, Erich, 4,204,134, Cl. 310-52.000.

Kral, Fred G., to Mattel, Inc. Ball bumper. 4,203,602, Cl. 273-121.00A.

Kramm, David E.; and Ketley, Arthur D., to W. R. Grace & Co. Radiation curable, ethylenically unsaturated thixotropic agent and method of preparation. 4,204,010, Cl. 427-44.000.

Krause, Dieter: *See—*
Kiefer, Werner; Krause, Dieter; Scheidler, Herwig; Schulze, Hans-Wilhelm; and Kristen, Klaus, 4,203,264, Cl. 52-1.000.

Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, to Aluminiumpari Tervezo es Kutato Intezet. Self-adjusting power distributor. 4,203,689, Cl. 406-123.000.

Krebs Engineers: *See—*
Martin, David L., 4,203,834, Cl. 209-211.000.

Krieger, Wilfried: *See—*
Ahlgrim, Michael; Mietens, Gerhard; Krieger, Wilfried; and Sorbe, Gunter, 4,203,637, Cl. 339-5.00R.

Kristen, Klaus: *See—*
Kiefer, Werner; Krause, Dieter; Scheidler, Herwig; Schulze, Hans-Wilhelm; and Kristen, Klaus, 4,203,264, Cl. 52-1.000.

Krohm, Reinhold: *See—*
Bahre, Karl; and Krohm, Reinhold, 4,203,557, Cl. 241-186.00R.

Krolak, Ronald F.; and Warywoda, Joseph, to Bunker Ramo Corporation. Electrical ribbon connector and hood. 4,203,643, Cl. 339-107.000.

Krosnick, Teresa A. Musical education toy. 4,203,344, Cl. 84-470.00R.

Kruger, Robert A.: *See—*
Mistretta, Charles A.; Kruger, Robert A.; and Houk, Theodore L., 4,204,226, Cl. 358-111.000.

Krull, Manfred; Buchwald, Holger; and Kirsch, Wilhelm, to Carl Freudenberg, Firma. Wound dressing. 4,203,435, Cl. 128-156.000.

Krumm, Hagen: *See—*
Supp, Emil; Jockel, Heinz; Krumm, Hagen; and Marschner, Friedemann, 4,203,915, Cl. 260-449.500.

Kruper, Andrew P., to Westinghouse Electric Corp. Adjustable time delay relay. 4,204,128, Cl. 307-141.000.

Krylov, Nikolai I.; Toder, Ilya A.; Sidorov, Oleg F.; Tarabaev, Gennady I.; and Pinsky, Gennady I. Mill stand roll assembly. 4,203,310, Cl. 72-247.000.

Krysiak, William J.; and Moyer, Richard L., to Betz Laboratories, Inc. Grinding device. 4,203,556, Cl. 241-86.100.

Kubota Tekko Kabushiki Kaisha: *See—*
Shimizu, Koh; Uchimura, Terumi; Uede, Ken-Ichi; and Nakamura, Katuyoshi, 4,203,838, Cl. 210-63.00R.

Kudlich, Hans: *See—*
Zimmer, Peter; Kudlich, Hans; Schweitzer, Karl; and Mayr, Walter, 4,203,554, Cl. 239-585.000.

Kudo, Shiro; and Hayashi, Mitsuyoshi, to Asahimatsu Koridofu Kabushiki Kaisha. Process for producing fibrous food materials. 4,204,005, Cl. 426-518.000.

Kufner Textilwerke KG: *See—*
Hefele, Josef, 4,204,017, Cl. 428-160.000.

Kuhlthau, Hans-Peter: *See—*
Brack, Alfred; and Kuhlthau, Hans-Peter, 4,203,722, Cl. 8-467.000.

Kuhn, Weldon R.: *See—*
Enters, Edward W.; and Kuhn, Weldon R., 4,203,237, Cl. 37-43.00E.

Kulite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D.; and Weber, Richard A., 4,204,185, Cl. 338-4.000.

Kunde, Joachim: *See—*
Matthies, Paul; Kunde, Joachim; and Hoerauf, Werner, 4,204,049, Cl. 526-65.000.

Kunz, Barton H.; Shlatz, Myron F.; and Spears, Jesse W., to International Business Machines Corporation. Document feed for a copier machine. 4,203,585, Cl. 271-4.000.

Kunz, Raymond W., to Clairol Incorporated. Hair dryer with compactable bonnet. 4,203,230, Cl. 34-99.000.

Kunze, Dieter, to Jean Walterscheid GmbH. Adjusting device for the draft link of a three-point mounting device. 4,203,613, Cl. 280-460.00A.

Kunzli, Roland; Melton, Keith; and Mercier, Olivier, to BBC Brown, Boveri & Company, Limited. Method and apparatus for the expansion of a hollow article. 4,203,313, Cl. 72-364.000.

Kupers, Walter; and Della Mura, Pasquale, to Merck Patent Gesellschaft mit beschrankter Haftung. Directly-pressable ascorbic acid-containing granulates. 4,203,997, Cl. 424-280.000.

Kuraray Company, Limited: *See—*
Minatono, Shobu; Takamatsu, Hideo; Yamauchi, Junnosuke; and Terao, Katsuyoshi, 4,204,046, Cl. 525-65.000.

Kurashiki Boseki Kabushiki Kaisha: *See—*
Tanabe, Naoto; Okada, Kenzoh; and Maeda, Norio, 4,204,011, Cl. 427-57.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Murayama, Naohiro, 4,204,135, Cl. 310-357.000.

Kurer, Peter F., to Pinnockchoice Limited. Attachment of tooth crowns. 4,203,217, Cl. 433-220.000.

Kuroki, Hisataka: *See—*
Hirai, Akira; Nishimoto, Kazuyuki; and Kuroki, Hisataka, 4,203,886, Cl. 260-37.0SB.

Kuroki, Katsuro; and Tanaka, Osamu, to Nippon Steel Corporation. Grain oriented electromagnetic steel sheet. 4,203,784, Cl. 148-111.000.

Kurtz, Anthony D.; and Weber, Richard A., to Kulite Semiconductor Products, Inc. Integral transducer assemblies employing thin homogeneous diaphragms. 4,204,185, Cl. 338-4.000.

Kurtz, Walter; and Dehnert, Johannes, to BASF Aktiengesellschaft. Azo dyes containing sulfonic acid groups and oxdiazolyl radicals. 4,203,894, Cl. 260-156.000.

Kurygina, Dina V.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Kuylenstierna, Ulf V.: *See—*
Reinhardt, Hans; and Kuylenstierna, Ulf V., 4,203,964, Cl. 423-658.500.

Kuzyko, Igor S.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Laboratorios Made, S.A.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; and Fernandez de Gamboa, Cristina R., 4,204,063, Cl. 546-99.000.

LaChance, Ernest J., Sr. Novel secure cap with depressible lock. 4,203,527, Cl. 220-253.000.

Lachman, Irwin M.: *See—*
Davis, Allen D., Jr.; Johns, Herbert L.; and Lachman, Irwin M., 4,203,772, Cl. 106-40.00R.

La Grange, Mark. Golf game. 4,203,604, Cl. 273-176.0FB.

Laine, Jean-Claude, to Saint-Gobain Industries. Method of pressing and pressing machine for hollow glassware. 4,203,749, Cl. 65-68.000.

Laitram Corporation, The: *See—*
Lapeyre, James M., 4,203,302, Cl. 62-259.000.

Lakah, Lucien: *See—*
Joullie, Maurice; Maillard, Gabriel; Lakah, Lucien; Warolin, Christian J. M.; and Pascal, Yves R. A., 4,203,986, Cl. 424-250.000.

Laleman, Charles. Use of blood in the cement, mortar and concrete industry for obtaining a lightened material. 4,203,674, Cl. 366-2.000.

Lambertson, Theodore C. Metal tub made from flat metal sheets. 4,203,379, Cl. 113-120.00B.

Lamonte, Oliverio M.: *See—*
Bauer, William V.; Isaacs, Jose A. C.; and Lamonte, Oliverio M., 4,203,960, Cl. 423-461.000.

Lane, Don W. Bidirectional presettable odometer. 4,204,112, Cl. 235-95.00R.

Lang, Raimund: *See—*
Buken, Gunther; and Lang, Raimund, 4,204,224, Cl. 358-107.000.

Langhorst, Winfield S., to Bethlehem Steel Corporation. Multiple strand tower guy assembly. 4,203,267, Cl. 52-148.000.

Lankheet, Jay A. Vinyl liner and sealing groove assembly for pools. 4,203,170, Cl. 4-172.000.

Lapeyre, James M., to Laitram Corporation, The. Floor mounted air conditioner. 4,203,302, Cl. 62-259.000.

Lapointe, Michel: *See—*
Collin, Maurice; Lapointe, Michel; and Collin, Andre, 4,203,345, Cl. 84-478.000.

Laporte Industries Limited: *See—*
Thorp, Anthony J.; Clamp, Frank; Feld, Raoul; Page-Gibson, Joseph E.; and Archer, Keith, 4,203,861, Cl. 252-182.100.

Larrabee, Robert D., to RCA Corporation. Power transfer apparatus. 4,204,147, Cl. 323-4.000.

Larsson, Tore I., to Tetra Pak International AB. Arrangement for joining material webs. 4,203,796, Cl. 156-504.000.

Lascelles, Alan: *See—*
Emgard, Lennart; Lascelles, Alan; and Eek, Lars, 4,204,006, Cl. 426-520.000.

Laser Systems, Inc.: *See—*
Boulais, Richard A., 4,203,665, Cl. 356-4.000.

Laudon, Monique: *See—*
Bugaut, Andree; and Laudon, Monique, 4,204,059, Cl. 544-166.000.

Laurent, Jean: *See—*
Cholet, Jacques; Laurent, Jean; Magneville, Pierre; and Duconge, Claude, 4,203,501, Cl. 181-120.000.

Lautenschlager, Eugene P.; Robinson, Peter J.; and Vitek, Randall M., to Northwestern University. Periodontal probe. 4,203,223, Cl. 433-75.000.

Leavitt, Clyde M.: *See—*
Reynoir, Ronald H.; Flautt, Robert A.; and Leavitt, Clyde M., 4,203,504, Cl. 182-10.000.

LeBlanc, Leo J. Process for producing core or mold parts from sand. 4,203,482, Cl. 164-12.000.

Lechler, Gerhard. Apparatus for measuring bearing forces. 4,203,319, Cl. 73-141.00A.

Leclerc, Jean-Francois; and Waegaert, Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Process for the repetitive and optimalized layout of shapes having the determined contour of a cigar wrapper within each of the elements of a series of tobacco leaves. 4,203,453, Cl. 131-20.00R.

Lee, Gim F., Jr., to General Electric Company. Flame retardant thermoplastic polyphenylene ether resin compositions. 4,203,931, Cl. 525-4.000.

Leet, Henry P.: *See—*
Pierce, Russell W.; Teppo, Edward A.; and Leet, Henry P., 4,203,667, Cl. 356-152.000.

LeGrand, Donald G.; and Vitale, Gina G., to General Electric Company. Glass-polycarbonate laminate. 4,204,025, Cl. 428-409.000.

Le Grand, Donald G.; and Vitale, Gina G., to General Electric Company. Glass-polycarbonate laminates. 4,204,026, Cl. 428-409.000.

Leichter, Peter: *See—*
Knotik, Karl; Leichter, Peter; Proksch, Emil; and Huschka, Hans, 4,203,863, Cl. 252-301.10W.

LeMay, Robert C.: *See—*
Rose, Robert N., 4,203,761, Cl. 75-40.000.

Lenssen, Walter: *See—*
Boettger, Friedrich; Eugster, Walter; Lenssen, Walter; and Missmahl, Bodo, 4,203,336, Cl. 83-550.000.

Lequeux, Christian; and Chapuis, Henri. Device for mechanically protecting the annular edge of a tube. 4,203,474, Cl. 138-96.00R.

Lermann, Peter: *See—*
Stemme, Otto; Lermann, Peter; Schrooder, Rolf; and Karl, Horst, 4,203,662, Cl. 354-173.000.

Les Cables de Lyon: *See—*
Millet, Christian; and Gauthier, Francis, 4,203,650, Cl. 350-96.210.

Lesas, Claude H.; and Pierre, Michel, to S. A. Beghin-Say. Paper structures containing improved cross-linked cellulose fibers. 4,204,054, Cl. 536-56.000.

Lesas, Claude H.; and Pierre, Michel, to S. A. Beghin-Say. Cross-linked cellulose fibers. 4,204,055, Cl. 536-56.000.

Lester, William M. Dispensing closure for a squeezable container. 4,203,536, Cl. 222-495.000.

Leva, Jean: *See—*
Dereppe, Michel; and Leva, Jean, 4,203,876, Cl. 260-17.40R.

Leva, Max. Tower packing element. 4,203,934, Cl. 261-98.000.

Leveckis, Algis S.; and Gelman, Stephanie S., to Procter & Gamble Company, The. Microwave energy moderating bag. 4,204,105, Cl. 219-10.55E.

Levi Strauss & Co.: *See—*
Blessing, Hubert, 4,203,590, Cl. 271-265.000.

Levine, Robert A.: *See—*
Wardlaw, Stephen C.; and Levine, Robert A., 4,204,015, Cl. 428-34.000.

Levine, Stewart A. Apparatus for producing a pulsating spray of water. 4,203,551, Cl. 239-195.000.

Levitt, Joseph: *See—*
Schwartz, Jerome; and Levitt, Joseph, 4,203,693, Cl. 409-81.000.

Lewandowski, Joseph T.: *See—*
Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,203,871, Cl. 252-518.000.

Lewis, Donald J.: *See—*
Corey, Kenneth J., 4,203,475, Cl. 138-109.000.

Lewis, Richard P.: *See—*
Knopp, Arthur A.; Nash, John E.; and Lewis, Richard P., 4,203,221, Cl. 433-117.000.

Leybold-Heraeus GmbH: *See—*
Aberle, Lothar; Bank, Walter; Hillenkamp, Franz; Kaufmann, Raimund; Nitsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,204,117, Cl. 250-287.000.

Libit, Sidney M.: *See—*
Kahn, Henry; and Libit, Sidney M., 4,203,515, Cl. 206-63.500.

Liebal, Eberhard; and Eichenberg, Norbert, to Messrs. J. Walter Co. Maschinen GmbH. Turret glass press. 4,203,753, Cl. 65-163.000.

Liebig, Reinhard: *See—*
Jahrig, Siegfried; and Liebig, Reinhard, 4,204,103, Cl. 200-153.0SC.

Lin, Kou C.; and Woods, Edmund E., to Westinghouse Electric Corp. Adhesive coated electrical conductors. 4,204,087, Cl. 174-120.0SR.

Lindberg, Gunnar V. Tray unloading device. 4,203,696, Cl. 414-331.000.

Lindner, Werner: *See—*
Cramer, Jurgen; and Lindner, Werner, 4,203,821, Cl. 204-268.000.

Lingl Corporation: *See—*
Lingl, Hans, 4,203,937, Cl. 264-101.000.

Lingl, Hans, to Lingl Corporation. Process and apparatus for the manufacture of prefabricated lined wall sections. 4,203,937, Cl. 264-101.000.

Lipman, Kenneth, to United Technologies Corporation. Harmonic cancellation for multi-bridge, three-phase converters. 4,204,264, Cl. 363-71.000.

Lippman, Alfred, to Toth Aluminum Corporation. Process for consolidation of fine alumina particles. 4,203,962, Cl. 423-625.000.

List, Hans: *See—*
Fachbach, Heinz; Thien, Gerhard; and Kirchweger, Karl, 4,203,407, Cl. 123-198.00E.
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Freyn, Fritz, 4,203,402, Cl. 123-139.0AW.

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Kiwak, Robert S.; and Liu, Tung, 4,203,936, Cl. 264-26.000.

Liu, Yung-Ho. Electronic time piece automatic calibrating device. 4,204,167, Cl. 455-231.000.

Locatelli, Renato: *See—*
Bertelli, Guido; Roma, Pierpaolo; and Locatelli, Renato, 4,203,882, Cl. 260-28.50A.

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Johnson, Earl R., 4,203,575, Cl. 254-88.000.

Long, Leonard L. Air travel insurance assemblage and method of validating. 4,203,620, Cl. 283-23.000.

Longo, John M.: *See—*
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Lopez, Manuel A., to Technoresinas Espanola, S.A. Device for converting a uniform circular movement into a variable or uniform longitudinal movement. 4,203,329, Cl. 74-89.200.

Lorain Products Corporation: *See—*
Kammiller, Neil; and Paradissis, Pantelis P., 4,204,266, Cl. 363-98.000.

Lord, Thomas J., to United Aircraft Products, Inc. Air inlet control for aircraft or the like. 4,203,566, Cl. 244-57.000.

L'Oreal: *See—*
Bugaut, Andree; and Laudon, Monique, 4,204,059, Cl. 544-166.000.

Goncalves, Antonin, 4,203,172, Cl. 4-231.000.
Kalopissis, Gregoire, 4,204,064, Cl. 546-245.000.

Lorenz, Donald H.: *See—*
Gruber, Bruce A.; and Lorenz, Donald H., 4,203,919, Cl. 260-465.00D.

Loshbough, Richard C.; and Pryor, Edward G., to Reliance Electric Company. Digital scale. 4,204,197, Cl. 340-347.0NT.

Lowery, Kirby, Jr.: *See—*
Bressler, Wilbur L.; Lowery, Kirby, Jr.; and Vance, Fred L., Jr., 4,204,050, Cl. 526-97.000.

Lubrizol Corporation, The: *See—*
Steckel, Thomas F., 4,203,855, Cl. 252-42.700.

Lucas Industries Limited: *See—*
Cryer, Edward, 4,204,099, Cl. 200-4.000.
Wiley, David; and Williams, David G., 4,204,190, Cl. 340-52.00A.

Ludeke, Carl A.: *See—*
Glenn, William E., Jr.; and Ludeke, Carl A., 4,203,298, Cl. 62-2.000.

Luderitz, Willi. Wall light fixture, particularly for hospital rooms. 4,204,274, Cl. 362-239.000.

Ludwig, Rolf, to Kochs Adler AG. Sewing of a bead seam with loose thread loops. 4,203,377, Cl. 112-58.000.

Luffau, Gerard: *See—*
Pery, Pierre; Luffau, Gerard; Poulain nee Charley, Joelle; and Petit, Agnes, 4,203,893, Cl. 260-121.000.

Luhrsen, Ernst, to Didier-Werke AG. Refractory spout brick. 4,203,538, Cl. 222-603.000.

Luke, Roger D.; and Rhodes, John M., to Gould Inc. Front trim for panelboard. 4,204,245, Cl. 361-358.000.

Lummus Company, The: *See—*
Bauer, William V.; Isaacs, Jose A. C.; and Lamonte, Oliverio M., 4,203,960, Cl. 423-461.000.

Lunsford, Delbert R.: *See—*
Parrack, Alvin L.; and Lunsford, Delbert R., 4,204,279, Cl. 367-40.000.

Luscan, Bernard; and Reichard, Michel, to Societe Europeenne de Propulsion. Combustion chamber for a ramjet and booster rocket. 4,203,284, Cl. 60-245.000.

Luzzi, John L.: *See—*
Ramey, Chester E.; and Luzzi, John L., 4,203,890, Cl. 260-45.80N.

M&T Chemicals Inc.: *See—*
Stoloff, Alfred; and Williams, Anthony L., 4,203,880, Cl. 260-23.0XA.

M & W Gear Company: *See—*
Fackler, Kenneth C., 4,203,545, Cl. 236-93.00A.

Maag Gear-Wheel & Machine Company Limited: *See—*
Fivian, Daniel A., 4,203,260, Cl. 51-123.00G.

MacDiarmid, Alan G.: *See—*
Heeger, Alan J.; MacDiarmid, Alan G.; Chiang, Chwan K.; and Gau, Shek-Chung, 4,204,216, Cl. 357-8.000.

MacDonald, Ian: *See—*
Naslund, Edwin N.; and MacDonald, Ian, 4,203,255, Cl. 49-399.000.

MacLean-Fogg Company: *See—*
Grube, William L., 4,203,187, Cl. 29-283.500.

Madwed, Steven R. Method for silk-screen printing. 4,203,360, Cl. 101-129.000.

Maeda, Norio: *See—*
Tanabe, Naoto; Okada, Kenzoh; and Maeda, Norio, 4,204,011, Cl. 427-57.000.

Maeda, Yoshinobu: *See—*
Narikiyo, Kazuhiko; Itemadani, Eiji; and Maeda, Yoshinobu, 4,203,224, Cl. 33-149.00R.

Maeda, Yoshio; Matsumoto, Koichi; and Nishiwaki, Koji, to Hitachi, Ltd. Wavelength reading apparatus for monochromator. 4,203,669, Cl. 356-332.000.

Mageli, Orville L.: *See—*
Bafford, Richard A.; and Mageli, Orville L., 4,204,075, Cl. 568-562.000.

Magneville, Pierre: *See—*
Cholet, Jacques; Laurent, Jean; Magneville, Pierre; and Duconge, Claude, 4,203,501, Cl. 181-120.000.

Maillard, Gabriel: *See—*
Joullie, Maurice; Maillard, Gabriel; Lakah, Lucien; Warolin, Christian J. M.; and Pascal, Yves R. A., 4,203,986, Cl. 424-250.000.

Major, Emery: *See—*
Rainin, Edgar A.; and Major, Emery, 4,203,168, Cl. 3-13.000.

Makarov, Viktor B.: *See—*
Ermakov, Vladimir E.; Makarov, Viktor B.; Seidaliev, Fikrat S. O.; Nikiforov, Alexandr M.; Bushev, Alexandr V.; and Dozortsev, July K., 4,203,309, Cl. 72-96.000.

Makela, Martin A., to J-Mark, Inc. Running board for light trucks. 4,203,611, Cl. 280-163.000.

Malek, Jack H.; and Siegel, Herman M., to CBS Inc. Toy ball with gear-driven figure. 4,203,251, Cl. 46-107.000.

Malerbi, Bernard W.: *See—*
Hydes, Paul C.; and Malerbi, Bernard W., 4,203,912, Cl. 260-429.00R.

Malmadie & Co. Maschinenfabrik GmbH: *See—*
Boettger, Friedrich; Eugster, Walter; Lenssen, Walter; and Missmahl, Bodo, 4,203,336, Cl. 83-550.000.

Mamine, Takayoshi: *See—*
Matsushita, Takeshi; Mamine, Takayoshi; Hayashi, Hisao; and Nishiyama, Kazuo, 4,203,780, Cl. 148-1.500.

Manufacture Metallurgique de Tournus: *See—*
Vaussanvin, Marcel, 4,203,357, Cl. 99-340.000.

Manz, David F.: *See—*
Frank, William R.; and Manz, David F., 4,203,618, Cl. 280-804.000.

Mar, Bob. Safety containers. 4,203,532, Cl. 222-153.000.

Marcal Paper Mills, Inc.: *See—*
Smaw, Jesse B., 4,203,584, Cl. 270-40.000.

Marcel Boschung, Firma: *See—*
Boschung, Marcel, 4,203,459, Cl. 137-119.000.

Marconi, Gary G.: *See—*
Nakatsukasa, Walter M.; Marconi, Gary G.; Neuss, Norbert; and Hamill, Robert L., 4,204,039, Cl. 435-118.000.

Margotte, Dieter; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Thermoplastic moulding composition. 4,204,047, Cl. 525-67.000.

Margraf, Adolf. Pocket or tube filters. 4,203,737, Cl. 55-287.000.

Margueratt, Oatway, to Seeburn Metal Products Limited. Double fingered bumper jack body. 4,203,578, Cl. 254-109.000.

Mariani, Angelo: *See—*
Isotton, Adriano, 4,204,083, Cl. 174-9.00F.

Marker, Hannes. Safety ski binding. 4,203,614, Cl. 280-637.000.

Marks, Kenneth A.: *See—*
Gaylord, John A.; and Marks, Kenneth A., 4,203,181, Cl. 24-230.00A.

Marks, William S., to BEI Electronics, Inc. Fin and nozzle unit for a free-flight rocket. 4,203,569, Cl. 244-3.230.

Marschner, Friedemann: *See—*
Supp, Emil; Jockel, Heinz; Krumm, Hagen; and Marschner, Friedemann, 4,203,915, Cl. 260-449.500.

Martin, Charles W.; and Ward, Eldon L., to Dow Chemical Company, The. Bis(dithiocarbamate) salts. 4,203,999, Cl. 424-286.000.

Martin, David L., to Krebs Engineers. Hydrocyclone underflow density control. 4,203,834, Cl. 209-211.000.

Maruoka, Hiroyuki, to Nissan Motor Company, Limited. Electrostatic apparatus for controlling flow rate of liquid. 4,203,398, Cl. 123-119.0EC.

Maruyama, Hiromi: *See—*
Suhara, Yasuji; Maruyama, Hiromi; Sawada, Toyoaki; Ogawa, Mayumi; Yokose, Kazuteru; Fujiu, Morio; and Watanabe, Kimihiro, 4,204,044, Cl. 435-280.000.

Marzett, Rodrique L.: *See—*
Brewbaker, James L.; and Marzett, Rodrique L., 4,204,048, Cl. 525-343.000.

Maschinenfabrik Peter Zimmer Aktiengesellschaft: *See—*
Zimmer, Peter; Kudlich, Hans; Schweitzer, Karl; and Mayr, Walter, 4,203,554, Cl. 239-585.000.

Masciello, Doris E., heir: *See—*
Jamison, John W.; Welty, William R.; and Masciello, Vincent A., deceased, 4,203,257, Cl. 51-2.00R.

Masciello, Vincent A., deceased: *See—*
Jamison, John W.; Welty, William R.; and Masciello, Vincent A., deceased, 4,203,257, Cl. 51-2.00R.

Mascioli, Rocco L.: *See—*
Bechara, Ibrahim S.; Mascioli, Rocco L.; and Zaluska, Philip J., 4,204,062, Cl. 544-351.000.

Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Catalyst converter for cleaning exhausts of cars. 4,203,949, Cl. 422-179.000.

Mason, Arthur G.; and Hutt, Peter R., to Independent Broadcasting Authority. Digital testing apparatus. 4,204,228, Cl. 358-139.000.

Mason, Paul B.: *See—*
Stella, Joseph A.; and Mason, Paul B., 4,203,655, Cl. 352-78.00R.

Massachusetts Institute of Technology: *See—*
Meissner, Herman P., 4,204,033, Cl. 429-33.000.

Massey, Harold: *See—*
Rose, Robert N., 4,203,761, Cl. 75-40.000.

Massol, Jean-Jacques: *See—*
Battigelli, Jean A.; Bouquet, Francois; Fezenko, Igor; and Massol, Jean-Jacques, 4,203,746, Cl. 65-6.000.
Battigelli, Jean A.; Bouquet, Francois; and Massol, Jean-Jacques, 4,203,774, Cl. 106-50.000.

Mastroianni, Martin J.; and Orfeo, Sabatino R., to Allied Chemical Corporation. Apparatus with dielectric gas mixtures in substantially uniform field. 4,204,084, Cl. 174-25.00G.

Masukawa, Toyoaki: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Kaneko, Yutaka; Masukawa, Toyoaki; and Kawasaki, Mikio, 4,203,767, Cl. 430-376.000.

Mathews, Arlene L. Trash bag protector. 4,203,479, Cl. 150-3.000.

Mathews, Marion J., III: *See—*
Campbell, Charles R.; Heckle, William A.; and Mathews, Marion J., III, 4,203,808, Cl. 204-23.000.

Mathieu, Serge, to H.O.P. Consulab Inc. Apparatus and method for regulating the power factor in an electrical distributing-network line. 4,204,150, Cl. 323-102.000.

Matlock, Patricia: *See—*
Matlock, William C.; and Matlock, Patricia, 4,203,426, Cl. 126-425.000.

Matlock, William C.; and Matlock, Patricia. Solar energy converter carousel mounted rack. 4,203,426, Cl. 126-425.000.

Matson, Crawford: *See—*
Zemek, Albert W.; Tomko, Frederick; Matson, Crawford; and Darrow, Burr, 4,203,583, Cl. 269-234.000.

Matsui, Hirofumi. Green sand composition for casting. 4,203,771, Cl. 106-38.350.

Matsui, Hisashi: *See—*
Kataoka, Takeshi; Matsumoto, Hiroshi; and Matsui, Hisashi, 4,204,179, Cl. 334-7.000.

Matsumoto, Hiroshi: *See—*
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Maeda, Yoshio; Matsumoto, Koichi; and Nishiwaki, Koji, 4,203,669, Cl. 356-332.000.

Matsumura, Hiromu: *See—*
Narisada, Masayuki; Matsumura, Hiromu; and Nagata, Wataru, 4,203,982, Cl. 424-246.000.

Matsumura, Jube: *See—*
Sakai, Akira; and Matsumura, Jube, 4,203,297, Cl. 60-660.000.

Matsumura, Michio: *See—*
Noda, Yoichiro; Matsumura, Michio; Chiba, Norio; and Hata, Masahito, 4,203,815, Cl. 204-159.200.

Matsuo, Syunji: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Kaneko, Yutaka; Masukawa, Toyoaki; and Kawasaki, Mikio, 4,203,767, Cl. 430-376.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hirai, Akira; Nishimoto, Kazuyuki; and Kuroki, Hisataka, 4,203,886, Cl. 260-37.0SB.
Narikiyo, Kazuhiko; Itemadani, Eiji; and Maeda, Yoshinobu, 4,203,224, Cl. 33-149.00R.
Obata, Shuichi; and Sugihara, Takayuki, 4,203,606, Cl. 274-23.00R.
Yasuno, Yoshitake; Watari, Masafumi; Tsutsui, Hiroshi; Ikedo, Masaru; and Yamamoto, Osamu, 4,204,119, Cl. 250-337.000.

Matsushita Electric Works, Ltd.: *See—*
Abura, Yoshinori; Toyomi, Yuritugu; and Nishino, Motohisa, 4,203,431, Cl. 128-39.000.

Matsushita, Takeshi; Mamine, Takayoshi; Hayashi, Hisao; and Nishiyama, Kazuo, to Sony Corporation. Fe Ion implantation into semiconductor substrate for reduced lifetime sensitivity to temperature. 4,203,780, Cl. 148-1.500.

Matsushita, Yoshihiro: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,203,899, Cl. 548-194.000.

Matt, Richard J.: *See—*
Thompson, Richard T.; and Matt, Richard J., 4,203,509, Cl. 193-37.000.

Mattchen, Terry M., to American Safety Equipment Corporation. Automatic chuck for drill. 4,203,222, Cl. 433-129.000.

Mattel, Inc.: *See—*
Kral, Fred G., 4,203,602, Cl. 273-121.00A.

Matthies, Paul; Kunde, Joachim; and Hoerauf, Werner, to BASF Aktiengesellschaft. Hydrolytic polymerization of epsilon-caprolactam. 4,204,049, Cl. 526-65.000.

Mattis, Donald J.: *See—*
Horwitt, Laurence G.; and Mattis, Donald J., 4,204,108, Cl. 219-265.000.
Horwitt, Laurence G.; and Mattis, Donald J., 4,204,109, Cl. 219-265.000.

Maughan, William S.: *See—*
Fraenkel, Herbert; Gough, Patrick B.; and Maughan, William S., 4,203,522, Cl. 209-558.000.

Mauk, Gerhard: *See—*
Peter, Julius; Johannsen, Peter; and Mauk, Gerhard, 4,203,480, Cl. 152-209.0NT.

Mayer, Herbert: *See—*
Glock, Hans; and Mayer, Herbert, 4,204,276, Cl. 365-189.000.

Mayer, Robert W.; and Smorzaniuk, Adam, to Amerace Corporation. Fluid pressure indicator. 4,203,385, Cl. 116-270.000.

Mayes, Warden W., to Cosden Technology, Inc. Process for producing high purity aromatic compounds. 4,203,826, Cl. 208-64.000.

Mayr, Walter: *See—*
Zimmer, Peter; Kudlich, Hans; Schweitzer, Karl; and Mayr, Walter, 4,203,554, Cl. 239-585.000.

MCA Disco-Vision, Inc.: *See—*
Isailovic, Jordan, 4,204,199, Cl. 340-347.0DD.

McAlister, George, to Plastic-Craft, Inc. Paint can accessory. 4,203,537, Cl. 222-570.000.

McCallum, Robert: *See—*
Osmera, Miroslav; Enter, Rudolf; and McCallum, Robert, 4,203,675, Cl. 400-144.200.

McCarthy, Alfred F.: *See—*
Johnson, Philip A.; and McCarthy, Alfred F., 4,203,488, Cl. 165-80.00B.

McCarthy, Edward C., to Harris Corporation. Display of video images. 4,204,208, Cl. 340-745.000.

McCarthy, Edward C.: *See—*
Bakula, Richard E.; and McCarthy, Edward C., 4,204,206, Cl. 340-721.000.
Bakula, Richard E.; and McCarthy, Edward C., 4,204,207, Cl. 340-723.000.

McClain, Harold F. Stone cutting apparatus. 4,203,414, Cl. 125-23.00C.

McClellan, Malcolm B.: *See—*
Baker, Don R.; and McClellan, Malcolm B., 4,203,998, Cl. 424-283.000.

McCord, William F.: *See—*
Faunce, Frank R., 4,203,966, Cl. 424-52.000.

McCormick, Harold: *See—*
Wolpert, Richard W.; Wolpert, Alan T.; Bender, John F.; and McCormick, Harold, 4,203,644, Cl. 339-128.000.

McElwaine, David C., to Polaroid Corporation. Feed shuttle mechanism for motion picture film strips. 4,203,656, Cl. 352-194.000.

McGinnis, Edgar L.: *See—*
Carr, Norman L.; and McGinnis, Edgar L., 4,203,839, Cl. 210-71.000.

McGrath, N. Christian, to Sprague Electric Company. Batch method for making solid-electrolyte capacitors. 4,203,194, Cl. 29-570.000.

McHugh, Edward H.: *See—*
Bonnell, Leonard J.; McHugh, Edward H.; Sjostrom, Douglas D.; and Johnson, Lanny L., 4,203,444, Cl. 128-276.000.

McKean, Walter A. Copper foil hypochlorite treatment method and product produced. 4,203,809, Cl. 204-32.00R.

McKellen, Patrick E., to Unigate Limited Co. Electro-chemical cells or batteries. 4,204,032, Cl. 429-13.000.

McLane, Jack S. Heat exchanger. 4,203,392, Cl. 122-17.000.

McLaughlin, Albert T.: *See—*
Getson, Edward F., Jr.; Kelley, John H.; McLaughlin, Albert T.; and Rathbun, Donald J., 4,204,250, Cl. 364-200.000.

McLeod, James A. Static converter suitable for high input voltage applications. 4,204,265, Cl. 363-71.000.

McMullen, James; and Vokac, James, to General Signal Corporation. Cage for low pressure silicon dioxide deposition reactors. 4,203,387, Cl. 118-715.000.

McNeilab, Inc.: *See—*
Umen, Michael J., 4,203,991, Cl. 424-267.000.

McReynolds, Robert D.: *See—*
Wolter, Karl E.; Peters, William J.; Roberts, Donald R.; McReynolds, Robert D.; Broomfield, Junior; and Crews, Ernest R., 4,203,253, Cl. 47-10.000.

Mead Corporation, The: *See—*
Sanders, Frederick W., 4,203,619, Cl. 282-27.500.

Mead, Ralph T.; Greatbatch, Wilson; Rudolph, Frank W.; and Frenz, Norbert W., Jr., to Wilson Greatbatch Ltd. Methods for making lithium-iodine cell. 4,203,201, Cl. 29-623.100.

Meckel, Joachim F.; Rohde, Wolfgang; Siebert, Werner; Wagener, Dietrich; Flockenhaus, Claus; and Galow, Manfred, to Bergwerksverband GmbH; and Didier Engineering GmbH. Charging of coke ovens with preheated coal. 4,203,803, Cl. 201-40.000.

Medeci Developments Limited: *See—*
Dale, Gerald, 4,203,169, Cl. 4-144.100.

Medves, James S., to Erco Industries Limited. Modified phosphorus furnace operation. 4,203,957, Cl. 423-323.000.

Meissner, Herman P., to Massachusetts Institute of Technology. Electrical cell construction. 4,204,033, Cl. 429-33.000.

Melis, Janos: *See—*
Csizy, Tibor; Karpat, Arpad; Melis, Janos; and Szemerey, Zoltan, 4,204,184, Cl. 337-295.000.

Melton, Keith: *See—*
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Menapace, Henry R., to Goodyear Tire & Rubber Company, The. Selective hydrogenation of cyclopentadiene to form cyclopentene. 4,204,081, Cl. 585-274.000.

Menke, Josef F., to Electro Optik GmbH & Co. KG. Method of and device for scanning pictures. 4,204,122, Cl. 250-347.000.

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Kunzli, Roland; Melton, Keith; and Mercier, Olivier, 4,203,313, Cl. 72-364.000.

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Arnett, Carroll D.; Wright, Jeremy; and Zenker, Nicolas, 4,204,069, Cl. 548-325.000.
Bolhofer, William A.; Cragoe, Edward J., Jr.; and Hoffman, Jacob M., Jr., 4,203,988, Cl. 424-266.000.
Carlo, Dennis J.; Hagopian, Arpi; and Kniskern, Peter J., 4,203,970, Cl. 424-92.000.
Fisher, Michael H.; and Tolman, Richard L., 4,203,976, Cl. 424-180.000.
Shih, David H., 4,203,902, Cl. 260-326.310.

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Kupers, Walter; and Della Mura, Pasquale, 4,203,997, Cl. 424-280.000.

Messer Griesheim GmbH: *See—*
Dinglinger, Gunter, 4,203,299, Cl. 62-49.000.

Messrs. J. Walter Co. Maschinen GmbH: *See—*
Liebal, Eberhard; and Eichenberg, Norbert, 4,203,753, Cl. 65-163.000.

Metabio-Joullie: *See—*
Joullie, Maurice; Maillard, Gabriel; Lakah, Lucien; Warolin, Christian J. M.; and Pascal, Yves R. A., 4,203,986, Cl. 424-250.000.

Metalimphy: *See—*
Guilgue, Jean L., 4,203,544, Cl. 235-449.000.

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Supp, Emil; Jockel, Heinz; Krumm, Hagen; and Marschner, Friedemann, 4,203,915, Cl. 260-449.500.

Metrailer, William J.; and Mueller, David E., to Exxon Research & Engineering Co. Process for the preparation of a vanadium-containing metallic ash concentrate. 4,203,759, Cl. 75-0.5BA.

Metzner, Gerd L., to Schleicher GmbH & Co. Relais-Werke KG. Time delay circuit for timing relays. 4,204,242, Cl. 361-198.000.

Meurer, Peter C.: *See—*
Fachbach, Heinz; Thien, Gerhard; and Meurer, Peter C., 4,203,409, Cl. 123-198.00E.

Meyer, Horst, to Bayer Aktiengesellschaft. Process for the preparation of 2-nitrobenzaldehyde. 4,203,928, Cl. 568-424.000.

Meyers, George L., to American Can Company. Packaging structure and apparatus useful in its assembly. 4,203,355, Cl. 93-58.00R.

Michaels, Alan S., to Alza Corporation. Device for delivering drug to a fluid environment. 4,203,442, Cl. 128-260.000.

Midgitronics Inc.: *See—*
Hill, Richard D., 4,204,144, Cl. 318-568.000.

Midland-Ross Corporation: *See—*
DePenti, Kenneth L., 4,203,523, Cl. 213-100.00W.

Mietens, Gerhard: *See—*
Ahlgrim, Michael; Mietens, Gerhard; Krieger, Wilfried; and Sorbe, Gunter, 4,203,637, Cl. 339-5.00R.

Mihalik, Nicholas. Scooter. 4,203,610, Cl. 280-87.04R.

Mikolajczak, Kenneth L.; and Smith, Cecil R., Jr., to United States of America, Agriculture. Synthetic cephalotaxine esters having antileukemic P388 activity. 4,203,996, Cl. 424-274.000.

Miller, C. W.: *See—*
Raley, Garland E.; Miller, C. W.; and Smith, D. L., 4,203,715, Cl. 425-131.100.

Miller, Donald M., to United States of America, Energy. Torque-balanced vibrationless rotary coupling. 4,203,303, Cl. 64-12.000.

Miller, Gabriel L., to Bell Telephone Laboratories, Incorporated. Laser deformation of semiconductor junctions. 4,203,781, Cl. 148-1.500.

Miller, Glen E., to Boeing Company, The. Method and apparatus for cutting optical fibers. 4,203,539, Cl. 225-2.000.

Miller, John R., to Southern Railway Company. Railway ballast cleaning apparatus. 4,203,493, Cl. 171-16.000.

Miller, Richard T. Smoking pipe. 4,203,456, Cl. 131-230.000.

Miller, Robert G., to Caterpillar Tractor Co. Electronic switching control for rear transmission. 4,203,375, Cl. 74-335.000.

Millet, Christian; and Gauthier, Francis, to Les Cables de Lyon. Connector for simultaneous end-to-end connection of groups of seven optical fibres. 4,203,650, Cl. 350-96.210.

Millipore Corporation: *See—*
Grandine, Joseph D., 2nd, 4,203,847, Cl. 210-490.000.
Grandine, Joseph D., II, 4,203,848, Cl. 210-490.000.

Mills, Earl G.: *See—*
Rose, Robert N., 4,203,761, Cl. 75-40.000.

Milly, George H., to Geomet, Incorporated. Cylindrical method of quantifying fugitive emission rates from pollution sources. 4,204,121, Cl. 250-343.000.

Mims, Matlock M., to Bergeron, Gregory Bernard; and Heiner, Robert James. Apparatus and method for alleviating physiological conditions by directed spray of liquid toward body tissue. 4,203,437, Cl. 128-229.000.

Minard, James V.; Goldman, Loeb J.; and Foss, Dale R., to United States of America, Air Force. Adjustable connector. 4,203,642, Cl. 339-75.0MP.

Minatono, Shobu; Takamatsu, Hideo; Yamauchi, Junnosuke; and Terao, Katsuyoshi, to Kuraray Company, Limited. Pressure sensitive adhesive composition. 4,204,046, Cl. 525-65.000.

Minery, Aime, to Casutt, Toni. Mechanism for closing egg containers. 4,203,272, Cl. 53-374.000.

Minks, Floyd M. Fluid flow measurement apparatus. 4,203,574, Cl. 251-139.000.

Minnesota Mining and Manufacturing Company: *See—*
Cowles, Arthur L.; and Ensign, Thomas C., 4,203,325, Cl. 73-304.00R.
Fatuzzo, Carol L.; and Foss, George D., 4,204,125, Cl. 250-486.000.

Mir, Ghulam N.: *See—*
Douglas, George H.; Mir, Ghulam N.; Won, Chong M.; and Studt, William L., 4,203,984, Cl. 424-249.000.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; and Won, Chong M., 4,203,983, Cl. 424-249.000.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,203,985, Cl. 424-249.000.

Missioux, Jean L. Installation for tempering long cylindrical pieces in form and in thin layer. 4,203,579, Cl. 266-117.000.

Missmahl, Bodo: *See—*
Boettger, Friedrich; Eugster, Walter; Lenssen, Walter; and Missmahl, Bodo, 4,203,336, Cl. 83-550.000.

Mistretta, Charles A., to Wisconsin Alumni Research Foundation. Real-time digital X-ray subtraction imaging. 4,204,225, Cl. 358-111.000.

Mistretta, Charles A.; Kruger, Robert A.; and Houk, Theodore L., to Wisconsin Alumni Research Foundation. Real-time digital X-ray time interval difference imaging. 4,204,226, Cl. 358-111.000.

Mitchell, Richard F., to U.S. Philips Corporation. Acoustic wave devices. 4,204,178, Cl. 333-194.000.

Mitchell, Terry L.; and Immink, David A., to Herman Miller, Inc. Transport vehicle. 4,203,609, Cl. 280-47.110.

Mitchell, Willard N.: *See—*
Sims, J. Robert, Jr.; Mitchell, Willard N.; and Williamson, Charles W., 4,203,942, Cl. 264-559.000.

Mitel Corporation: *See—*
Cepelinski, Jacob, 4,204,094, Cl. 179-18.0FA.

Mitrovich, Svetislav, to Xerox Corporation. High-speed printer with self-adjusting cable preload mechanism. 4,203,680, Cl. 400-335.000.

Mitsubishi Chemical Industries Limited: *See—*
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,203,724, Cl. 23-230.00B.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Imataki, Mitsumasa; Mochizuki, Mikio; and Shibuya, Yoshikazu, 4,204,239, Cl. 361-127.000.

Miyake, Yasufumi: *See—*
Kakuhashi, Takeshi; and Miyake, Yasufumi, 4,204,187, Cl. 338-307.000.

Miyata, Koji, to Toyota Shatai Kabushiki Kaisha. Apparatus for preventing or damping vibrations and noise in a vehicle. 4,203,499, Cl. 180-89.120.

Mizuno, Shoji, to Nippon Electric Co., Ltd. Pattern transmission system comprising an encoder for encoding partial thinned patterns in two scanning lines along only one boundary line. 4,204,232, Cl. 358-260.000.

Mizuno, Tamotsu: *See—*
Enomoto, Takamitsu; Tanaka, Kyoji; Kawamoto, Hiromi; Mizuno, Tamotsu; and Fujinaga, Masao, 4,203,955, Cl. 423-308.000.

Mjulendorf, Oleg S.: *See—*
Goriletsky, Valentin I.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; and Eidelman, Lev G., 4,203,951, Cl. 422-249.000.

Mobil Oil Corporation: *See—*
Rollmann, Louis D.; and Walsh, Dennis E., 4,203,830, Cl. 208-236.000.
Rollmann, Louis D., 4,203,869, Cl. 252-455.00Z.

Mochizuki, Mikio: *See—*
Imataki, Mitsumasa; Mochizuki, Mikio; and Shibuya, Yoshikazu, 4,204,239, Cl. 361-127.000.

Moe, Walter; Bernstein, Lawrence A.; and Heller, David, to Diker-Moe Associates. Toy vehicle launcher and toy vehicle for use therewith. 4,203,247, Cl. 46-1.00K.

Mohr, Robert G.: *See—*
VandenHoek, Harold L.; Speet, Larry A.; and Mohr, Robert G., 4,203,639, Cl. 339-22.00R.

Molisani, Justin J.: *See—*
Cook, Sanford L.; Molisani, Justin J.; and Dennison, Kenneth I., Jr., 4,203,622, Cl. 292-221.000.

Mollica, Francesco, to Mollica S.r.l. Knife for tableware and kitchen use. 4,203,213, Cl. 30-343.000.

Mollica S.r.l.: *See—*
Mollica, Francesco, 4,203,213, Cl. 30-343.000.

Mollier, Jean H.: *See—*
Giraud, Georges; and Mollier, Jean H., 4,204,113, Cl. 235-375.000.

Monadnock Lifetime Products, Inc.: *See—*
Starrett, Paul D., 4,203,599, Cl. 273-84.00R.

Monostori, Endre: *See—*
Aradi, Emil; Blickle, Tibor; Monostori, Endre; Nemeth, Jeno; Pallai, Ivanne; and Varga, Janos, 4,203,228, Cl. 34-10.000.

Monsanto Company: *See—*
Campbell, Charles R.; Heckle, William A.; and Mathews, Marion J., III, 4,203,808, Cl. 204-23.000.
Coran, Aubert Y.; and Patel, Raman, 4,203,884, Cl. 260-33.6AQ.
Crutchfield, Marvin M.; Papanu, Victor D.; and Warren, Craig B., 4,204,052, Cl. 525-398.000.
Gaertner, Van R., 4,203,756, Cl. 71-86.000.
Yonko, Jon D., 4,204,111, Cl. 219-411.000.

Montedison S.p.A.: *See—*
Bertelli, Guido; Roma, Pierpaolo; and Locatelli, Renato, 4,203,882, Cl. 260-28.50A.

Montgomery, John R.; and Richards, James S. Device for affecting deflection control of an elongated musical instrument shaft. 4,203,342, Cl. 84-293.000.

Monzo, Charles: *See—*
Kmak, Walter S.; and Monzo, Charles, 4,203,825, Cl. 208-48.00R.

Moody, Joe W. Football game. 4,203,605, Cl. 273-247.000.

Moore, Charles E.: *See—*
Alexander, William J., III; Cooper, John S.; and Moore, Charles E., 4,203,563, Cl. 242-66.000.

Moretto, Hans-Heinrich: *See—*
Finke, Ulrich; Moretto, Hans-Heinrich; Niederprum, Hans; and Vorbruggen, Helmut, 4,203,914, Cl. 556-428.000.

Morgan, Dennis R.: *See—*
Fitelson, Michael M.; and Morgan, Dennis R., 4,204,262, Cl. 364-822.000.

Morgan, Michael J., to Inficon Leybold-Heraeus, Inc. Solid state sensor. 4,203,199, Cl. 29-612.000.

Mori, Ikuo, to Nippon Kogaku K.K. Inverted telephoto type wide angle lens system. 4,203,653, Cl. 350-216.000.

Morimoto, Akira: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,203,899, Cl. 548-194.000.

Moriya, Yoshiyuki: *See—*
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,203,949, Cl. 422-179.000.

Morris, Earl L.; Hafner, Walter V.; and Sally, Theodore J., to Acorn Engineering Co. Overflow inhibitor for plumbing fixtures. 4,203,173, Cl. 4-427.000.

Morris, Jesse L.; and Sugalski, Raymond K., to General Electric Company. Assembly machine. 4,203,206, Cl. 29-731.000.

Moss, Ernest K.: *See—*
Beale, John H.; and Moss, Ernest K., 4,204,020, Cl. 428-310.000.

Mostek Corporation: *See—*
Dozier, Harold W., 4,204,131, Cl. 307-251.000.

Motoren- und Turbinen-Union Munchen GmbH: *See—*
Weiler, Wolfgang, 4,203,283, Cl. 60-39.360.

Motorola, Inc.: *See—*
Ho, Roland K., 4,204,244, Cl. 361-283.000.
Javeri, Rupin J., 4,204,157, Cl. 324-166.000.

Mowry, Dale A. Storm window assembly. 4,203,256, Cl. 49-465.000.

Moyer, Richard L.: *See—*
Krysiak, William J.; and Moyer, Richard L., 4,203,556, Cl. 241-86.100.

MTA Muszaki Kemiai Kutato Intezet: *See—*
Aradi, Emil; Blickle, Tibor; Monostori, Endre; Nemeth, Jeno; Pallai, Ivanne; and Varga, Janos, 4,203,228, Cl. 34-10.000.

MTD Products Inc.: *See—*
Plamper, Gerhard R., 4,203,276, Cl. 56-202.000.

Mudge, Craig: *See—*
Hitz, George E.; Kaman, Charles H.; Mudge, Craig; O'Loughlin, James F.; and Sullivan, Daniel T., 4,204,252, Cl. 364-200.000.

Mueller, David E.: *See—*
Metrailer, William J.; and Mueller, David E., 4,203,759, Cl. 75-0.5BA.

Mueller, Herbert; and Huchler, Otto H., to BASF Aktiengesellschaft. Manufacture of cyclic ethers. 4,203,908, Cl. 260-346.110.

Mukai, Sadayoshi; Otani, Yoshiaki; and Yamaguchi, Osamu. Method of purifying triaryl phosphate. 4,203,933, Cl. 260-990.000.

Mullen, James P. Tire removal indicator device. 4,203,382, Cl. 116-28.00R.

Muller, Rolf; and Ribka, Joachim, to Cassella Aktiengesellschaft. Process and intermediates for preparing fiber-reactive phthalocyanine dyes. 4,204,056, Cl. 542-416.000.

Munster, Gerhard, to Hoechst Aktiengesellschaft. Process for the preparation of nitrous oxide. 4,203,959, Cl. 423-400.000.

Murai, Keiichi: *See—*
Tosaka, Umi; Kondo, Hideyo; Murai, Keiichi; and Toma, Hitoshi, 4,203,764, Cl. 430-67.000.

Muraoka, Teruo: *See—*
Ishigaki, Yukinobu; and Muraoka, Teruo, 4,204,091, Cl. 179-1.0GB.

Murayama, Naohiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Piezoelectric elements of organic high molecular weight materials. 4,204,135, Cl. 310-357.000.

Murphy, Richard J., to Boeing Company, The. Apparatus for the automated assembly of major subassemblies. 4,203,204, Cl. 29-703.000.

Muschelknautz, Horst, to Voith Turbo GmbH & Co., KG. Hydrodynamic control coupling. 4,203,289, Cl. 60-358.000.

Muzzani, Aldo; and Paccapelo, Ilio, to Ing. C. Olivetti & C., S.p.A. Electronic computer including an information refreshing arrangement. 4,204,254, Cl. 364-200.000.

MX-Processer Reinhardt & Co. AB: *See—*
Reinhardt, Hans; and Kuylenstierna, Ulf V., 4,203,964, Cl. 423-658.500.

Myers, Harry K., Jr., to Sun Oil Company of Pennsylvania. Codimer of norbornadiene and cyclohexadiene. 4,203,930, Cl. 585-22.000.

Nagamoto, Itsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Racket and a method for manufacturing same. 4,203,596, Cl. 273-73.00J.

Naganawa, Hiroshi: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,204,038, Cl. 435-78.000.

Nagashima, Kazuo: *See—*
Suzuki, Hiroshi; Ito, Yukio; Yasumoto, Yosiro; Kinomura, Sigeru; and Nagashima, Kazuo, 4,203,873, Cl. 252-545.000.

Nagata, Wataru: *See—*
Narisada, Masayuki; Matsumura, Hiromu; and Nagata, Wataru, 4,203,982, Cl. 424-246.000.

Nagel, Hartmut: *See—*
Walter, Siegfried; Schneider, Michael; and Nagel, Hartmut, 4,203,363, Cl. 101-409.000.

Naito, Hideki: *See—*
Inouye, Kozo; and Naito, Hideki, 4,203,768, Cl. 430-388.000.

Nakae, Hideo; Ozaki, Toshinori; Nakane, Kazunori; and Shimaguchi, Takashi, to Hitachi, Ltd. Method of production of vibration absorbing metallic material. 4,203,195, Cl. 29-505.000.

Nakagawa, Junichi: *See—*
Takasaki, Yoshitaka; Kita, Yasuhiro; Nakagawa, Junichi; and Ishizuka, Kohei, 4,204,176, Cl. 333-28.00R.

Nakaguti, Osamu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,203,897, Cl. 260-239.100.

Nakamoto, Masao: *See—*
Ochiai, Hiroyoshi; and Nakamoto, Masao, 4,203,215, Cl. 30-383.000.

Nakamura, Katuyoshi: *See—*
Shimizu, Koh; Uchimura, Terumi; Uede, Ken-Ichi; and Nakamura, Katuyoshi, 4,203,838, Cl. 210-63.00R.

Nakamura, Shigefumi; Tokuda, Hiromi; and Nohira, Hidetaka, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system. 4,203,399, Cl. 123-119.00A.

Nakane, Kazunori: *See—*
Nakae, Hideo; Ozaki, Toshinori; Nakane, Kazunori; and Shimaguchi, Takashi, 4,203,195, Cl. 29-505.000.

Nakaoka, Azuma: *See—*
Shimizu, Norio; Odawara, Youji; Yamaguchi, Tetsuo; Saitou, Setsuo; Nakaoka, Azuma; and Ichihashi, Kazuaki, 4,203,841, Cl. 210-205.000.

Nakarai, Masazumi, to Sharp Kabushiki Kaisha. Ink jet system for issuing ink under a predetermined uniform pressure in an ink jet system printer. 4,204,215, Cl. 346-140.00R.

Nakasho, Kazuo, to Olympus Optical Company Limited. Speaker device having a holding means for a superminiature tape recorder. 4,204,236, Cl. 360-137.000.

Nakatsukasa, Walter M.; Marconi, Gary G.; Neuss, Norbert; and Hamill, Robert L., to Eli Lilly and Company. Process for producing deoxynarasin antibiotics. 4,204,039, Cl. 435-118.000.

Nakazawa, Yukiyoshi: *See—*
Sugawara, Katsuro; Nakazawa, Yukiyoshi; and Itoh, Katsuhiko, 4,203,799, Cl. 156-601.000.

Napolitano, Vincenzo. Tire retreading automatic press. 4,203,713, Cl. 425-23.000.

Narikiyo, Kazuhiko; Itemadani, Eiji; and Maeda, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Insertion space checking jig for electronic components. 4,203,224, Cl. 33-149.00R.

Narisada, Masayuki; Matsumura, Hiromu; and Nagata, Wataru, to Shionogi & Co., Ltd. Arylmalonamidomethoxycephalosporins. 4,203,982, Cl. 424-246.000.

Nartron Corporation: *See—*
Bull, David W., 4,204,102, Cl. 200-153.00J.

Nash, John E.: *See—*
Knopp, Arthur A.; Nash, John E.; and Lewis, Richard P., 4,203,221, Cl. 433-117.000.

Naslund, Edwin N.; and MacDonald, Ian, to Cal-Wood Door. Fire-resistant composite wood structure particularly adapted for use in fire doors. 4,203,255, Cl. 49-399.000.

National Research Development Corporation: *See—*
Cranfield, Peter J., 4,203,220, Cl. 433-228.000.

Natsuume, Shinichi: *See—*
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,203,949, Cl. 422-179.000.

Naumenko, Viktor A.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

NCR Canada Ltd. - NCR Canada Ltee: *See—*
Osmera, Miroslav; Enter, Rudolf; and McCallum, Robert, 4,203,675, Cl. 400-144.200.

Nelson, David E., to Hydroacoustics Inc. Methods and apparatus for the generation and transmission of signals for echo location and other signalling purposes, as in geophysical exploration. 4,204,278, Cl. 367-39.000.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-deoxy-9,10-didehydro-PGD_2 analogs. 4,203,924, Cl. 568-379.000.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-cis-4,5-didehydro PGF_1 compounds. 4,204,079, Cl. 568-838.000.

Nemeth, Jeno: *See—*
Aradi, Emil; Blickle, Tibor; Monostori, Endre; Nemeth, Jeno; Pallai, Ivanne; and Varga, Janos, 4,203,228, Cl. 34-10.000.

Nemoto, Tsuneo, to Sony Corporation. Tape reel. 4,203,564, Cl. 242-71.800.

Neuss, Norbert: *See—*
Nakatsukasa, Walter M.; Marconi, Gary G.; Neuss, Norbert; and Hamill, Robert L., 4,204,039, Cl. 435-118.000.

New Archery Products Corp.: *See—*
Simo, Miroslav A., 4,203,601, Cl. 273-421.000.

New York Institute of Technology: *See—*
Glenn, William E., Jr.; and Ludeke, Carl A., 4,203,298, Cl. 62-2.000.

NGK Spark Plug Co., Ltd.: *See—*
Tanaka, Hiroshi; and Sakurai, Kenji, 4,203,690, Cl. 407-119.000.
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, 4,203,733, Cl. 51-295.000.

Nichols, Charles F.: *See—*
Burnham, Bradshaw; and Nichols, Charles F., 4,203,365, Cl. 102-214.000.

Nichols, Robert W., to Ford Motor Company. Hydrokinetic torque converter mechanism with compound impeller. 4,203,288, Cl. 60-345.000.

Nicholson, Terence P. Corrugated gaskets. 4,203,608, Cl. 277-235.00B.

Niederprum, Hans: *See—*
Finke, Ulrich; Moretto, Hans-Heinrich; Niederprum, Hans; and Vorbruggen, Helmut, 4,203,914, Cl. 556-428.000.

Nielsen, Donald R., to PPG Industries, Inc. Catalyst for hydrogenation of glycolic acid. 4,203,870, Cl. 252-459.000.

Nihei, Hideharu: *See—*
Ichise, Wataru; Kinjo, Yasuo; Enokida, Kenji; and Nihei, Hideharu, 4,203,860, Cl. 252-181.200.

Nikiforov, Alexandr M.: *See—*
Ermakov, Vladimir E.; Makarov, Viktor B.; Seidaliev, Fikrat S. O.; Nikiforov, Alexandr M.; Bushev, Alexandr V.; and Dozortsev, July K., 4,203,309, Cl. 72-96.000.

Nikkiso Co., Ltd.: *See—*
Yabe, Ikuo, 4,204,259, Cl. 438-497.000.

Nilsson, Gunnar, to AB CE Johansson. Position indicator for control measurements of surfaces. 4,203,225, Cl. 33-174.00L.

Nippon Electric Co., Ltd.: *See—*
Kage, Kouzou, 4,204,164, Cl. 455-135.000.
Kage, Kouzou, 4,204,170, Cl. 328-165.000.
Mizuno, Shoji, 4,204,232, Cl. 358-260.000.
Ohkubo, Toshio; Kajiwara, Yuji; and Itano, Tsutomu, 4,204,107, Cl. 219-216.000.

Nippon Electric Kagoshima, Ltd.: *See—*
Suehiro, Jun-ichi, 4,204,209, Cl. 340-758.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Nagamoto, Itsushi, 4,203,596, Cl. 273-73.00J.
Takahashi, Hiroyoshi, 4,203,341, Cl. 84-255.000.

Nippon Kogaku K.K.: *See—*
Mori, Ikuo, 4,203,653, Cl. 350-216.000.

Nippon Oil & Fats Co. Ltd.: *See—*
Ishizaki, Takaharu; Igarashi, Taizo; and Shimizu, Hirozumi, 4,203,729, Cl. 44-51.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
Takada, Masahiro; Uhara, Hiroyuki; and Sato, Takahisa, 4,203,906, Cl. 260-346.400.

Nippon Soken, Inc.: *See—*
Tanaka, Eizi; Nishimatsu, Akira; and Ohashi, Michiniro, 4,203,296, Cl. 60-602.000.

Nippon Steel Corporation: *See—*
Kuroki, Katsuro; and Tanaka, Osamu, 4,203,784, Cl. 148-111.000.

Nippondenso Co., Ltd.: *See—*
Fujii, Hideo; and Kato, Minoru, 4,203,403, Cl. 123-148.0AC.
Nakamura, Shigefumi; Tokuda, Hiromi; and Nohira, Hidetaka, 4,203,399, Cl. 123-119.00A.
Terai, Shiro; Tanabe, Zenichi; and Fukui, Toshiyasu, 4,203,490, Cl. 165-134.00R.

Nishimatsu, Akira: *See—*
Tanaka, Eizi; Nishimatsu, Akira; and Ohashi, Michiniro, 4,203,296, Cl. 60-602.000.

Nishimoto, Kazuyuki: *See—*
Hirai, Akira; Nishimoto, Kazuyuki; and Kuroki, Hisataka, 4,203,886, Cl. 260-37.0SB.

Nishimura, Hideo; Noda, Shigeo; and Eto, Kunihiko, to Toyoda Koki Kabushiki Kaisha. Contact detecting apparatus. 4,203,691, Cl. 408-8.000.

Nishino, Motohisa: *See—*
Abura, Yoshinori; Toyomi, Yuritugu; and Nishino, Motohisa, 4,203,431, Cl. 128-39.000.

Nishiwaki, Koji: *See—*
Maeda, Yoshio; Matsumoto, Koichi; and Nishiwaki, Koji, 4,203,669, Cl. 356-332.000.

Nishiyama, Kazuo: *See—*
Matsushita, Takeshi; Mamine, Takayoshi; Hayashi, Hisao; and Nishiyama, Kazuo, 4,203,780, Cl. 148-1.500.

Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, to Ishihara Sangyo Kaisha Limited. Herbicidal phenoxy-phenoxyalkane thio esters. 4,203,758, Cl. 71-100.000.

Nissan Motor Company, Limited: *See—*
Aono, Shigeo; and Hosaka, Akio, 4,203,394, Cl. 123-32.0EE.
Maruoka, Hiroyuki, 4,203,398, Cl. 123-119.0EC.

Nitsche, Rainer: *See—*
Aberle, Lothar; Bank, Walter; Hillenkamp, Franz; Kaufmann, Raimund; Nitsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,204,117, Cl. 250-287.000.

Nitto Boseki Co., Ltd.: *See—*
Coggin, Charles H., Jr.; and Sakakura, Tatsuo R., 4,203,559, Cl. 242-18.00G.

Nitto Electric Industrial Co., Ltd.: *See—*
Kakuhashi, Takeshi; and Miyake, Yasufumi, 4,204,187, Cl. 338-307.000.

Noble, David L., to International Business Machines Corporation. System for positioning single gap magnetic head to follow moving recorded data track. 4,204,234, Cl. 360-77.000.

Noda, Shigeo: *See—*
Nishimura, Hideo; Noda, Shigeo; and Eto, Kunihiko, 4,203,691, Cl. 408-8.000.

Noda, Yoichiro; Matsumura, Michio; Chiba, Norio; and Hata, Masahito, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process for producing crosslinked and foamed resin sheet. 4,203,815, Cl. 204-159.200.

Noel, Jean P.; and Party, Marcel, to Compagnie Industrielle de Mecanismes. Lock in particular for an automobile vehicle. 4,203,621, Cl. 292-216.000.

Nohira, Hidetaka: *See—*
Nakamura, Shigefumi; Tokuda, Hiromi; and Nohira, Hidetaka, 4,203,399, Cl. 123-119.00A.

Nonaka, Chiaki: *See—*
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,204,246, Cl. 361-385.000.

Nordin, Ivan C.: *See—*
Parcell, Robert F.; and Nordin, Ivan C., 4,203,895, Cl. 260-239.00E.

Nordischer Maschinenbau Rud. Baader GmbH & Co KG: *See—*
Braeger, Horst K. H., 4,203,179, Cl. 17-62.000.

Nordstrom, Larry A.; and Szechy, Daniel J., to Scope Data Incorporated. Electronic control circuit for a high speed bidirectional printer. 4,203,678, Cl. 400-320.000.

Norsk Hydro a.s.: *See—*
Elstrom, Tore, deceased; Gustavsen, Per F.; and Kjohl, Olav, 4,204,053, Cl. 528-259.000.

North American Specialties Corp.: *See—*
Seidler, Jack, 4,203,648, Cl. 339-275.00T.

Northern Engraving Company: *See—*
Peters, Arnis E., 4,203,657, Cl. 353-26.00R.
Peters, Arnis E., 4,203,658, Cl. 353-26.00R.

Northern Telecom Limited: *See—*
Dupuis, Jean M., 4,203,698, Cl. 414-404.000.

Northwestern University: *See—*
Lautenschlager, Eugene P.; Robinson, Peter J.; and Vitek, Randall M., 4,203,223, Cl. 433-75.000.

Norton, Richard V., to Suntech, Inc. Fuel composition comprising a coal-oil slurry. 4,203,728, Cl. 44-51.000.

Nouvertne, Werner: *See—*
Margotte, Dieter; and Nouvertne, Werner, 4,204,047, Cl. 525-67.000.

Novotny, Michael A.: *See—*
Fox, William M.; and Novotny, Michael A., 4,204,218, Cl. 357-55.000.

Nukem GmbH: *See—*
Knotik, Karl; Leichter, Peter; Proksch, Emil; and Huschka, Hans, 4,203,863, Cl. 252-301.10W.

Nunciato, David J.; White, Norman H.; and Woodburn, William A., to Union Carbide Corporation. Method for decoking fired heater tubes. 4,203,778, Cl. 134-7.000.

Nuver, Eric L. H., to Esquire, Inc. Adjustable DC pulse circuit for variation over a predetermined range using two timer networks. 4,204,141, Cl. 315-311.000.

Nysen, Paul A., to Unisearch Limited. Recursive percentile estimator. 4,204,260, Cl. 364-554.000.

O & K Orenstein & Koppel Aktiengesellschaft: *See—*
Bangert, Hans; and Fengler, Georg, 4,203,238, Cl. 37-118.00R.

O/R Inc.: *See—*
Ostrom, David E., 4,203,340, Cl. 84-1.260.

Obata, Shuichi; and Sugihara, Takayuki, to Matsushita Electric Industrial Co., Ltd. Pickup arm device. 4,203,606, Cl. 274-23.00R.

Obata, Yukio; and Fujisaki, Masayuki, to Hitachi, Ltd. Detergent supplying device of a washing machine. 4,203,307, Cl. 68-17.00R.

Oberg, Karl-Erik: *See—*
Johnsson, M. K. Olof; Oberg, Karl-Erik; and Bertheussen, Harry, 4,203,763, Cl. 75-129.000.

Oce-van der Grinten N.V.: *See—*
Joosten, Joannes J. W. M., 4,203,588, Cl. 271-246.000.

Ochiai, Hiroyoshi; and Nakamoto, Masao, to Taniguchi, Hideaki. Endless chain for a chain saw. 4,203,215, Cl. 30-383.000.

Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, to Takeda Chemical Industries, Ltd. Thiazolylacetamido compounds. 4,203,899, Cl. 548-194.000.

O'Connor, Joseph M.; and Pasternak, Stephen F., to Peerless of America, Inc. Tubular articles of manufacture and method of making same. 4,203,311, Cl. 72-254.000.

Oda, Takashi: *See—*
Takemura, Kazutoshi; Oda, Takashi; and Kiyota, Fumio, 4,204,031, Cl. 428-539.500.

Odawara, Youji: *See—*
Shimizu, Norio; Odawara, Youji; Yamaguchi, Tetsuo; Saitou, Setsuo; Nakaoka, Azuma; and Ichihashi, Kazuaki, 4,203,841, Cl. 210-205.000.

Ogawa, Mayumi: *See—*
Suhara, Yasuji; Maruyama, Hiromi; Sawada, Toyoaki; Ogawa, Mayumi; Yokose, Kazuteru; Fujiu, Morio; and Watanabe, Kimihiro, 4,204,044, Cl. 435-280.000.

Ogura, Masaaki; Seko, Nachio; and Yano, Takato, to Ricoh Company, Ltd. Computer controlled electrostatic copying machine. 4,203,663, Cl. 355-14.00C.

Ohashi, Michiniro: *See—*
Tanaka, Eizi; Nishimatsu, Akira; and Ohashi, Michiniro, 4,203,296, Cl. 60-602.000.

Ohe, Keitaro: *See—*
Suzuki, Fumiyuki; Okutu, Toshimitu; and Ohe, Keitaro, 4,204,070, Cl. 560-94.000.

Ohkubo, Toshio; Kajiwara, Yuji; and Itano, Tsutomu, to Nippon Electric Co., Ltd. Thick-film thermal printing head and method of manufacturing the same. 4,204,107, Cl. 219-216.000.

Ohta, Takaaki; and Ito, Sadayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Anti-brake-vibration type proportioning valve. 4,203,628, Cl. 303-6.00C.

Okada, Kenzoh: *See—*
Tanabe, Naoto; Okada, Kenzoh; and Maeda, Norio, 4,204,011, Cl. 427-57.000.

Okada, Motohiro, to Honda Giken Kogyo Kabushiki Kaisha. Air bag device for cars. 4,203,616, Cl. 280-737.000.

Okada, Taiiti: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,203,899, Cl. 548-194.000.

Oki, Toshikazu: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,204,038, Cl. 435-78.000.

Oku, Teruo: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,203,897, Cl. 260-239.100.

Okubo, Yoshikazu. Vaulting box. 4,203,525, Cl. 220-4.00C.

Okutu, Toshimitu: *See—*
Suzuki, Fumiyuki; Okutu, Toshimitu; and Ohe, Keitaro, 4,204,070, Cl. 560-94.000.

O'Leary, Kevin J.: *See—*
Schenker, Barry A.; Sugano, Thomas T.; Stillman, Neil W.; and O'Leary, Kevin J., 4,203,822, Cl. 204-301.000.

Ollivier, Christian: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,203,844, Cl. 210-321.00B.

O'Loughlin, James F.: *See—*
Hitz, George E.; Kaman, Charles H.; Mudge, Craig; O'Loughlin, James F.; and Sullivan, Daniel T., 4,204,252, Cl. 364-200.000.

Olympus Optical Company Limited: *See—*
Nakasho, Kazuo, 4,204,236, Cl. 360-137.000.

OMV Aktiengesellschaft: *See—*
Klezl, Peter, 4,203,881, Cl. 260-28.50A.

On, Lo Hou, to Hexagear Industries Limited. Shower heads. 4,203,550, Cl. 239-102.000.

Ono Seiko Co., Ltd.: *See—*
Kataoka, Takeshi; Matsumoto, Hiroshi; and Matsui, Hisashi, 4,204,179, Cl. 334-7.000.

Ono, Yoshiaki: *See—*
Takamizawa, Minoru; Abe, Akira; Ono, Yoshiaki; Sugimori, Yutaka; Kishibayashi, Tetsuo; and Ino, Makoto, 4,204,030, Cl. 428-447.000.

Onoue, Shoji, to Denki Onkyo Co., Ltd. Flyback transformer. 4,204,263, Cl. 363-68.000.

Opelika Manufacturing Corp.: *See—*
Brocklehurst, Charles E.; and Burton, Perry E., 4,204,012, Cl. 427-288.000.

Ore-Lube Corporation, The: *See—*
Silverstein, Joseph J., 4,203,854, Cl. 252-25.000.

O'Rell, Michael K.: *See—*
Jones, Robert J.; O'Rell, Michael K.; and Hom, Jim M., 4,203,922, Cl. 260-570.00R.

Orfeo, Sabatino R.: *See—*
Mastroianni, Martin J.; and Orfeo, Sabatino R., 4,204,084, Cl. 174-25.00G.

Orion-Yhtyma Oy: *See—*
Kjellander, Jan O.; and Danielsson, Dan G., 4,204,045, Cl. 435-301.000.

Osellame, Mirko: *See—*
Corbellini, Margherita; Greco, Alberto; and Osellame, Mirko, 4,203,866, Cl. 252-429.00C.

Oshita, Hirofumi: *See—*
Funaki, Yuji; Oshita, Hirofumi; Tanaka, Shizuya; Yamamoto, Shigeo; and Kato, Toshiro, 4,203,995, Cl. 424-273.00R.

Osmera, Miroslav; Enter, Rudolf; and McCallum, Robert, to NCR Canada Ltd. - NCR Canada Ltee. Pressure printer. 4,203,675, Cl. 400-144.200.

Ostrom, David E., to O/R Inc. Electronic musical instrument. 4,203,340, Cl. 84-1.260.

Otani, Yoshiaki: *See—*
Mukai, Sadayoshi; Otani, Yoshiaki; and Yamaguchi, Osamu, 4,203,933, Cl. 260-990.000.

Otsuki, Chihiro: *See—*
Usui, Kiyofumi; Otsuki, Chihiro; and Inukai, Sadaharu, 4,204,180, Cl. 335-205.000.

Otto Bihler Maschinenfabrik GmbH & Co. KG: *See—*
Bruller, Eduard; Augenstein, Reiner; and Bihler, Otto, 4,203,477, Cl. 140-105.000.

Owens-Illinois, Inc.: *See—*
Stoll, Andrew J., III, 4,203,526, Cl. 220-71.000.

Oxy Metal Industries Corporation: *See—*
Arcilesi, Donald A.; and Doty, Warren R., 4,204,013, Cl. 427-304.000.

Oyama, Yoshio, to Yoshida Kogyo K.K. Apparatus for automatically applying top end stops to a slide fastener chain. 4,203,207, Cl. 29-767.000.

Ozaki, Toshinori: *See—*
Nakae, Hideo; Ozaki, Toshinori; Nakane, Kazunori; and Shimaguchi, Takashi, 4,203,195, Cl. 29-505.000.

Ozimek, Chester E.: *See—*
Gall, John C.; Ozimek, Chester E.; and Chamberlain, Albert E., 4,203,681, Cl. 400-697.000.

Ozols, Gunars M.: *See—*
Kitcher, James R.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,203,800, Cl. 156-643.000.

Paccapelo, Ilio: *See—*
Muzzani, Aldo; and Paccapelo, Ilio, 4,204,254, Cl. 364-200.000.

Page-Gibson, Joseph E.: *See—*
Thorp, Anthony J.; Clamp, Frank; Feld, Raoul; Page-Gibson, Joseph E.; and Archer, Keith, 4,203,861, Cl. 252-182.100.

Pai, George C. Security attache case with automatic alarm system. 4,204,202, Cl. 340-571.000.

Pall Corporation: *See—*
Silverwater, Bernard F., 4,203,384, Cl. 116-267.000.

Pallai, Ivanne: *See—*
Aradi, Emil; Blickle, Tibor; Monostori, Endre; Nemeth, Jeno; Pallai, Ivanne; and Varga, Janos, 4,203,228, Cl. 34-10.000.

Panico, Joseph J. Cardiovascular analysis, method and apparatus. 4,203,451, Cl. 128-672.000.

Papanu, Victor D.: *See—*
Crutchfield, Marvin M.; Papanu, Victor D.; and Warren, Craig B., 4,204,052, Cl. 525-398.000.

Papuchon, Michel: *See—*
Velasco, Gonzalo; and Papuchon, Michel, 4,203,649, Cl. 350-96.140.

Paradissis, Pantelis P.: *See—*
Kammiller, Neil; and Paradissis, Pantelis P., 4,204,266, Cl. 363-98.000.

Parcell, Robert F.; and Nordin, Ivan C., to Warner-Lambert Company. Process for the preparation of cis-(±)-3,4-dihydro-N,N,2-trimethyl-2H-1-benzopyran-3-amine and intermediates produced thereby. 4,203,895, Cl. 260-239.00E.

Pardee, Robert P., to Ball Corporation. Lubricants comprising fluoroalkyl esters. 4,203,856, Cl. 252-54.600.

Parfinenko, Ivan V.: *See—*
Vasilevsky, Petr N.; Ediny, Jury G.; and Parfinenko, Ivan V., 4,203,429, Cl. 128-1.00R.

Parisi, Michael S.; and Pauly, John A., to Walter Kidde & Company, Inc. Temperature probe. 4,204,186, Cl. 338-30.000.

Parker, Lawrence J., to Shelter Insulation, Inc. Polyisocyanurate foam laminate and process. 4,204,019, Cl. 428-310.000.

Parnaby, Derek. 6/30 Coal washing plant. 4,203,831, Cl. 209-13.000.

Parrack, Alvin L.; and Lunsford, Delbert R., to Texaco Inc. Method for enhancing seismic data. 4,204,279, Cl. 367-40.000.

Party, Marcel: *See—*
Noel, Jean P.; and Party, Marcel, 4,203,621, Cl. 292-216.000.

Pascal, Yves R. A.: *See—*
Joullie, Maurice; Maillard, Gabriel; Lakah, Lucien; Warolin, Christian J. M.; and Pascal, Yves R. A., 4,203,986, Cl. 424-250.000.

Passalenti, Beppino: *See—*
Vargiu, Silvio; Carpaneti, Edoardo; and Passalenti, Beppino, 4,203,816, Cl. 204-159.160.

Passingham, Roy J.: *See—*
Telling, Ronald C.; Passingham, Roy J.; Kitchener, Brian L.; and Hopkinson, David G., 4,203,801, Cl. 435-284.000.

Pasternak, Stephen F.: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 4,203,311, Cl. 72-254.000.

Patel, Dahyabhai M.: *See—*
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,203,985, Cl. 424-249.000.

Patel, Raman: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,203,884, Cl. 260-33.6AQ.

Patterson, Paul L., to Varian Associates, Inc. Thermionic detector. 4,203,726, Cl. 23-232.00E.

Paul, Frank W.: *See—*
Hart, Robert L.; Paul, Frank W.; and Sauer, Wolfgang J., 4,203,582, Cl. 269-32.000.

Pauly, John A.: *See—*
Parisi, Michael S.; and Pauly, John A., 4,204,186, Cl. 338-30.000.

Pavlovsky, Rudolf, to Georg Fischer Aktiengesellschaft. Machine for trimming castings. 4,203,183, Cl. 29-33.00A.

Peerless of America, Inc.: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 4,203,311, Cl. 72-254.000.

Peiffert, Jean; and Barbedienne, Roger S. Servo-control method and device. 4,204,146, Cl. 318-640.000.

Pellizzi, Anthony: *See—*
Stuff, Alfred; and Pellizzi, Anthony, 4,203,598, Cl. 273-77.00A.

Pelton, John F., to Union Carbide Corporation. Apparatus for refining molten aluminum. 4,203,581, Cl. 266-217.000.

Pennwalt Corporation: *See—*
Bafford, Richard A.; and Mageli, Orville L., 4,204,075, Cl. 568-562.000.
Warkentin, Aaron J.; and Hiebert, Jacob, 4,203,274, Cl. 53-537.000.

Perkin-Elmer Corporation, The: *See—*
DeBoynton, William L., 4,203,328, Cl. 74-25.000.

Perkins, Robert W., to Spiral Tubing Corporation. Corrugated tubing with variable depth corrugations and method of making the same. 4,203,312, Cl. 72-299.000.

Permenter, Marvin M., to Clinton Electronics Corporation. Cathode ray tube with laminated panel and method of making same. 4,204,231, Cl. 358-247.000.

Perrott, Francis C. Transportation systems. 4,203,369, Cl. 104-130.000.

Persson, Staffan B., to American Optical Corporation. Optical apparatus for varying focal power along one principal meridian while maintaining constant focal power along the other principal meridian. 4,203,651, Cl. 350-181.000.

Pery, Pierre; Luffau, Gerard; Poulain nee Charley, Joelle; and Petit, Agnes, to Institut National de la Recherche Agronomique. Coupling products of cytidine-diphosphocholine and amino-compounds for pharmaceutical use. 4,203,893, Cl. 260-121.000.

Peter, Julius; Johannsen, Peter; and Mauk, Gerhard, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic vehicle tire. 4,203,480, Cl. 152-209.0NT.

Peters, Arnis E., to Northern Engraving Company. Micro image cassette and viewer. 4,203,657, Cl. 353-26.00R.

Peters, Arnis E., to Northern Engraving Company. Micro image storage and retrieval apparatus. 4,203,658, Cl. 353-26.00R.

Peters, Leo: *See—*
Roth, Mario; Siemonsen, Hans-Peter; Schmidt, Gunther; Sonntag, Hubert; and Peters, Leo, 4,203,751, Cl. 65-106.000.

Peters, William J.: *See—*
Wolter, Karl E.; Peters, William J.; Roberts, Donald R.; McReynolds, Robert D.; Broomfield, Junior; and Crews, Ernest R., 4,203,253, Cl. 47-10.000.

Petersen, Gunnar C. Packaging apparatus. 4,203,269, Cl. 53-77.000.

Peterson, Jay B. Fishing lure holder. 4,203,245, Cl. 43-25.200.

Petit, Agnes: *See—*
Pery, Pierre; Luffau, Gerard; Poulain nee Charley, Joelle; and Petit, Agnes, 4,203,893, Cl. 260-121.000.

Phaal, Cornelius. Method of making an abrasive product. 4,203,732, Cl. 51-293.000.

Phillips, Donald M., to Westinghouse Electric Corp. Dual layer phosphor screen for cathode ray tube. 4,204,136, Cl. 313-473.000.

Phillips Petroleum Company: *See—*
Bellinger, Robert M.; and Gray, Michael L., 4,203,741, Cl. 62-24.000.
Stapp, Paul R., 4,203,865, Cl. 252-429.00R.
Stapp, Paul R., 4,203,927, Cl. 568-401.000.

Pickton, Shailer T.: *See—*
Williams, Stewart J.; and Pickton, Shailer T., 4,204,201, Cl. 340-521.000.

Pierce, Russell W.; Teppo, Edward A.; and Leet, Henry P., to United States of America, Navy. Covert recovery or signalling system. 4,203,667, Cl. 356-152.000.

Pierdet, Andre; Torelli, Vesperto; and Deraedt, Roger, to Roussel Uclaf. Novel 17 α-aryl-steroids. 4,203,981, Cl. 424-243.000.

Pierre, Michel: *See—*
Lesas, Claude H.; and Pierre, Michel, 4,204,054, Cl. 536-56.000.
Lesas, Claude H.; and Pierre, Michel, 4,204,055, Cl. 536-56.000.
Pieschke, Lawrence J. Baffle for gas heater vents. 4,203,356, Cl. 98-66.00R.
Pinnockchoice Limited: *See—*
Kurer, Peter F., 4,203,217, Cl. 433-220.000.
Pinsky, Gennady I.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Sidorov, Oleg F.; Tarabaev, Gennady I.; and Pinsky, Gennady I., 4,203,310, Cl. 72-247.000.
Pinson, George T.; and Hunter, Alex B., to Boeing Company, The. Shock suppressing apparatus and method for a rocket launcher. 4,203,347, Cl. 89-1.816.
Pioneer Electronic Corporation: *See—*
Sato, Reisuke; and Yokogawa, Tomohisa, 4,204,169, Cl. 455-175.000.
Pistorius, Rudolf: *See—*
Konz, Elmar; and Pistorius, Rudolf, 4,204,076, Cl. 568-648.000.
Pitstick, Martin H., to General Electric Company. On/off switch arrangements for a touch control bar graph device. 4,204,204, Cl. 340-712.000.
Plamper, Gerhard R., to MTD Products Inc. Lawn mower and grass catcher. 4,203,276, Cl. 56-202.000.
Plastic-Craft, Inc.: *See—*
McAlister, George, 4,203,537, Cl. 222-570.000.
Plummer, William T., to Polaroid Corporation. Optical element for redistributing the light output of a photoflash lamp assembly or the like. 4,204,269, Cl. 362-17.000.
Podgorny, Anatoly N.; Varshavsky, Ilya L.; Solovei, Viktor V.; and Sinegubova, Elena V. Thermal absorption compressor. 4,203,711, Cl. 417-207.000.
Pointner, Martin: *See—*
Reichel, Hilmar; Klauke, Guenter; Herting, Karl-Heinz; and Pointner, Martin, 4,203,531, Cl. 228-1.00A.
Poirier d'Ange d'Orsay, Emmanuel H., to Societe pour l'Equipement de Vehicules. Method and apparatus for adjusting the orientation of vehicle headlights. 4,204,270, Cl. 362-71.000.
Polarojd Corporation: *See—*
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,204,061, Cl. 260-243.300.
Bourgeois, Gerard J.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,203,766, Cl. 430-243.000.
Cohen, Frederic S.; and Hyland, Albert L., 4,204,036, Cl. 429-152.000.
McElwaine, David C., 4,203,656, Cl. 352-194.000.
Plummer, William T., 4,204,269, Cl. 362-17.000.
Stella, Joseph A.; and Mason, Paul B., 4,203,655, Cl. 352-78.00R.
Pollich, Gerhard, to Heidelberger Druckmaschinen Aktiengesellschaft. Sheet-fed rotary printing machine. 4,203,361, Cl. 101-177.000.
Polygraph Leipzig Kombinat fuer Polygraphiscje Maschinen und Ausrustungen: *See—*
Walter, Siegfried; Schneider, Michael; and Nagel, Hartmut, 4,203,363, Cl. 101-409.000.
Ponlot, Jacques: *See—*
Ponlot, Victor; and Ponlot, Jacques, 4,203,463, Cl. 137-403.000.
Ponlot, Victor; and Ponlot, Jacques. Flow-regulating device for perfusion-transfusion apparatus. 4,203,463, Cl. 137-403.000.
Porta Systems Corp.: *See—*
De Luca, Paul V.; and Gautier, Charles L., 4,204,095, Cl. 179-98.000.
Portenart, Michel C.: *See—*
Delmon, Bernard M.; Portenart, Michel C.; and Viehe, Heinz, 4,203,917, Cl. 260-465.00B.
Portescap: *See—*
Beguin, Pierre, 4,203,281, Cl. 368-124.000.
Potier, M. Pierre, to Saint-Gobain Industries. Apparatus for bending glass sheets. 4,203,754, Cl. 65-273.000.
Poulain nee Charley, Joelle: *See—*
Pery, Pierre; Luffau, Gerard; Poulain nee Charley, Joelle; and Petit, Agnes, 4,203,893, Cl. 260-121.000.
PPG Industries, Inc.: *See—*
Donley, Harold E., 4,204,028, Cl. 428-432.000.
Nielsen, Donald R., 4,203,870, Cl. 252-459.000.
Prahl, Gertraud, to A. Nattermann & Cie. GmbH. Spreading device for treatment of hip dysplasties. 4,203,433, Cl. 128-80.00A.
Prakla-Seismos GmbH: *See—*
Weichart, Helmut; and Schmidt, Jurgen, 4,204,188, Cl. 340-7.00R.
Priese, Werner K., to Hills-McCanna Company. Ball valve with compound closure movement. 4,203,460, Cl. 137-240.000.
Procter & Gamble Company, The: *See—*
Leveckis, Algis S.; and Gelman, Stephanie S., 4,204,105, Cl. 219-10.55E.
Proffit, Daniel S.; and Regignano, Maurice, to General Electric Company. Heat transfer mounting arrangement for a solid state device connected to a circuit board. 4,204,248, Cl. 361-388.000.
Proksch, Emil: *See—*
Knotik, Karl; Leichter, Peter; Proksch, Emil; and Huschka, Hans, 4,203,863, Cl. 252-301.10W.
Proulx, Raymond E. Flail feedout mechanism for a rotary mower. 4,203,212, Cl. 30-276.000.
Pryor, Edward G.: *See—*
Loshbough, Richard C.; and Pryor, Edward G., 4,204,197, Cl. 340-347.0NT.
Pupp, Herwig; and Andersson, Birger O., to AB Ziristor. Machine for the manufacture of packing containers. 4,203,795, Cl. 156-446.000.
Puryear, John W., to Brunswick Corporation. Fishing reel spool locking knob. 4,203,565, Cl. 242-84.10R.
Pye, Richard T., to Harvey Hubbell, Incorporated. Electrical insulation composition having low power factor. 4,204,024, Cl. 428-379.000.
Quatkemeyer, Tony. Horseshoe type game device. 4,203,592, Cl. 273-336.000.
Quick, Thomas R. Faucet stem nut splitter. 4,203,211, Cl. 30-272.00R.
Quigley, Thomas J., to Stackpole Components Company. Slide switch. 4,204,104, Cl. 200-164.00R.
Racal Communications Equipment Limited: *See—*
King, Nigel J. R., 4,204,174, Cl. 331-10.000.
Radici, Pierino: *See—*
Colombo, Paolo; and Radici, Pierino, 4,203,735, Cl. 55-26.000.
Radkevich, Alexei V.: *See—*
Goriletsky, Valentin I.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; and Eidelman, Lev G., 4,203,951, Cl. 422-249.000.
Radzun, Bruno. Electric pendulum clock with torsion spring. 4,203,282, Cl. 368-180.000.
Rainin, Edgar A.; and Major, Emery, to Rainin, Edgar A. Intraocular lens. 4,203,168, Cl. 3-13.000.
Raley, Garland E.; Miller, C. W.; and Smith, D. L., to Ethyl Corporation. Rotating joint for extrusion die. 4,203,715, Cl. 425-131.100.
Ramachandran, Pallassana N., to Colgate-Palmolive Company. Fabric softening compositions and methods for manufacture thereof. 4,203,851, Cl. 252-8.600.
Ramer, James L. Method for operating a rotary engine. 4,203,410, Cl. 123-205.000.
Ramey, Chester E.; and Luzzi, John L., to Ciba-Geigy Corporation. Hindered piperidine carboxylic acids, metal salts thereof and stabilized compositions. 4,203,890, Cl. 260-45.80N.
Rampolla, Robert W.: *See—*
Baldwin, Gary D.; and Rampolla, Robert W., 4,204,175, Cl. 331-94.50D.
Ramseier & Jenzer AG, Carosseriewerke Bern: *See—*
Fenner, Hans; Auwarter, Wilhelm; and Stark, Karl-Heinz, 4,203,623, Cl. 296-178.000.
Ranik, William J., Jr., to Firestone Tire & Rubber Company, The. Pneumatic tire, rim and combination thereof. 4,203,481, Cl. 152-330.0RF.
Rapistan Incorporated: *See—*
Sapila, Martin B., 4,203,370, Cl. 104-162.000.
Raquet, Erwin; Tacke, Gerhard; and Heller, Wilhelm, to Fried. Krupp Huttenwerke AG. Oscillation dampening system for a railway track. 4,203,546, Cl. 238-1.000.
Rashbrook, Robert B., to ICI Americas Inc. Polyester films. 4,203,888, Cl. 260-45.70P.
Rathbun, Donald J.: *See—*
Getson, Edward F., Jr.; Kelley, John H.; McLaughlin, Albert T.; and Rathbun, Donald J., 4,204,250, Cl. 364-200.000.
Raudat, John L., to Standard-Knapp, Inc. Indexing apparatus for case packer. 4,203,271, Cl. 53-250.000.
Ravagnani, Frederick J.: *See—*
Halasa, Adel F.; Ravagnani, Frederick J.; and Schonfeld, Steven E., 4,203,874, Cl. 260-3.000.
Rawson, Francis F. H., to USM Corporation. Method and mechanism for applying thermoplastic heels to shoes. 4,203,189, Cl. 29-432.000.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,204,133, Cl. 307-310.000.
Aschwanden, Felix, 4,204,173, Cl. 331-1.00A.
Goodman, Lawrence A., 4,204,217, Cl. 357-23.000.
Gurley, Thomas M., 4,204,227, Cl. 358-138.000.
Hawrylo, Frank Z., 4,203,785, Cl. 148-171.000.
Larrabee, Robert D., 4,204,147, Cl. 323-4.000.
Rutishauser, Ernst A. O., 4,204,220, Cl. 358-8.000.
Shanley, Robert L., II, 4,204,221, Cl. 358-34.000.
Sutphin, Eldon M., Jr., 4,204,171, Cl. 328-167.000.
Ready, Patrick J., to Typoligics, Inc. Multichannel coherent receiver. 4,204,165, Cl. 455-226.000.
Reed, Charles J., to GTE Automatic Electric Laboratories Incorporated. Pneumatic diverter for hybrid thick film substrate processing equipment. 4,203,510, Cl. 198-437.000.
Reedhead, Frederick W.; Reedhead, Rowland E.; and Reynolds, George W. Throatless tennis racquet. 4,203,597, Cl. 273-73.00E.
Reedhead, Rowland E.: *See—*
Reedhead, Frederick W.; Reedhead, Rowland E.; and Reynolds, George W., 4,203,597, Cl. 273-73.00E.
Refuse Derived Fuels (London) Limited: *See—*
Hood, Peter, 4,203,376, Cl. 110-346.000.
Regie Nationale des Usines Renault: *See—*
Fabreges, Michel, 4,203,632, Cl. 303-100.000.
Regignano, Maurice: *See—*
Proffit, Daniel S.; and Regignano, Maurice, 4,204,248, Cl. 361-388.000.
Reichard, Michel: *See—*
Luscan, Bernard; and Reichard, Michel, 4,203,284, Cl. 60-245.000.
Reichel, Hilmar; Klauke, Guenter; Herting, Karl-Heinz; and Pointner, Martin, to Siemens Aktiengesellschaft. Ultrasonic soldering bath having an ultrasonic probe extending into the solder bath. 4,203,531, Cl. 228-1.00A.
Reichert, Dieter. Anti-theft switch for vehicles. 4,204,100, Cl. 200-52.00R.
Reinhardt, Hans; and Kuylenstierna, Ulf V., to MX-Processer Reinhardt & Co. AB. Re-extracting metal chloride complex from an organic extraction solution. 4,203,964, Cl. 423-658.500.
Reisberg, Joseph, to Shell Oil Company. Chemical flood oil recovery with highly saline reservoir water. 4,203,491, Cl. 166-274.000.

Reiter, Gerhard, to Timken Company, The. Wheel mounting and tapered roller bearing therefor. 4,203,635, Cl. 308-213.000.
Reliance Electric Company: *See—*
Loshbough, Richard C.; and Pryor, Edward G., 4,204,197, Cl. 340-347.0NT.
Respen, Yves J.: *See—*
Economopoulos, Marios; and Respen, Yves J., 4,203,783, Cl. 148-12.400.
Rex-Rotary International/A.S.: *See—*
Zeuthen, Karl G., 4,203,533, Cl. 222-241.000.
Reyniers, Albert A.: *See—*
Claeys, Danie A.; Reyniers, Albert A.; and Janssens, Wilhelmus, 4,203,765, Cl. 430-252.000.
Reynoir Company, The: *See—*
Reynoir, Ronald H.; Flautt, Robert A.; and Leavitt, Clyde M., 4,203,504, Cl. 182-10.000.
Reynoir, Ronald H.; Flautt, Robert A.; and Leavitt, Clyde M., to Reynoir Company, The. Method and system for escaping from an offshore drilling platform. 4,203,504, Cl. 182-10.000.
Reynolds, George W.: *See—*
Reedhead, Frederick W.; Reedhead, Rowland E.; and Reynolds, George W., 4,203,597, Cl. 273-73.00E.
Reynolds, Richard N., Jr., to Chevron Research Company. Alkylation of aniline with a lactone in the presence of a base. 4,203,904, Cl. 260-343.600.
Rheem Manufacturing Company: *See—*
Coffey, Rufus G., 4,203,335, Cl. 83-232.000.
Rhodes, John M.: *See—*
Luke, Roger D.; and Rhodes, John M., 4,204,245, Cl. 361-358.000.
Rhone-Poulenc-Textile: *See—*
Isoard, Bernard, 4,203,560, Cl. 242-45.000.
Ribka, Joachim: *See—*
Muller, Rolf; and Ribka, Joachim, 4,204,056, Cl. 542-416.000.
Riboulet, Michel J.; and Segui, Gerard R., to Centre National d'Etudes Spatiales. Process and apparatus for the measurement of the factor of infra-red absorption or emission of materials. 4,204,120, Cl. 250-341.000.
Ricci, Donald C., to Sno-Go Inc. Vehicle safety device. 4,203,423, Cl. 126-271.100.
Richards, James S.: *See—*
Montgomery, John R.; and Richards, James S., 4,203,342, Cl. 84-293.000.
Richmon, Sidney. Elevator control. 4,203,506, Cl. 187-29.00R.
Rickard, Lawrence C. Compound archery bow. 4,203,412, Cl. 124-23.00R.
Ricoh Company, Ltd.: *See—*
Ogura, Masaaki; Seko, Nachio; and Yano, Takato, 4,203,663, Cl. 355-14.00C.
Ricouard, Jean-Pierre; and Schorter, Bruno, to U.S. Philips Corporation. Hall effect position detector using a single permanent magnet. 4,204,158, Cl. 324-208.000.
Riken Corporation: *See—*
Takemura, Kazutoshi; Oda, Takashi; and Kiyota, Fumio, 4,204,031, Cl. 428-539.500.
Rinaldo, James D.: *See—*
Bubula, Thomas J.; Franz, Maurice F.; Johnson, Gordon W.; and Rinaldo, James D., 4,203,293, Cl. 60-490.000.
Rissi, Paul, to General Motors Corporation. Precision pressure control valve. 4,203,465, Cl. 137-487.500.
Ritchie, Leon T.: *See—*
Desso, Jerome A.; Ritchie, Leon T.; and Yeager, Marvin L., 4,203,646, Cl. 339-205.000.
Rivetti, Enrico; Amedei, Giuseppe; and Bertone, Antonino, to Centro Richerche Fiat S.p.A. Hydraulic servo-assisted braking system for motor vehicles. 4,203,631, Cl. 303-52.000.
Roberson, Walter H., Sr. Closure plug assembly. 4,203,473, Cl. 138-93.000.
Robert Bosch GmbH: *See—*
Klotzner, Winfried, 4,204,256, Cl. 364-431.000.
Robert Finke Kunststoff-Spritzguss-Werk: *See—*
Finke, Klaus W., 4,203,534, Cl. 222-402.130.
Roberts, Donald R.: *See—*
Wolter, Karl E.; Peters, William J.; Roberts, Donald R.; McReynolds, Robert D.; Broomfield, Junior; and Crews, Ernest R., 4,203,253, Cl. 47-10.000.
Robinson, Graham E.: *See—*
Bowler, Jean; and Robinson, Graham E., 4,204,001, Cl. 424-308.000.
Robinson, John W.: *See—*
Welsh, Alan B.; and Robinson, John W., 4,203,339, Cl. 84-1.190.
Robinson, Peter J.: *See—*
Lautenschlager, Eugene P.; Robinson, Peter J.; and Vitek, Randall M., 4,203,223, Cl. 433-75.000.
Rock, Gail A. Method of collecting anti-hemophilic factor VIII from blood and blood plasma using heparin or sodium heparin. 4,203,891, Cl. 260-112.00B.
Rockwell International Corporation: *See—*
Brown, Kenneth L., 4,204,168, Cl. 455-330.000.
Rodale Resources, Inc.: *See—*
Gasper, Martin J., Jr.; and Black, Theodore W., 4,203,389, Cl. 119-3.000.
Rogers, Peter R., to Cam Gears Limited. Ball joints. 4,203,683, Cl. 403-132.000.
Rohde, Wolfgang: *See—*
Meckel, Joachim F.; Rohde, Wolfgang; Siebert, Werner; Wagener, Dietrich; Flockenhaus, Claus; and Galow, Manfred, 4,203,803, Cl. 201-40.000.
Rohm and Haas Company: *See—*
Kirn, William A.; and Gehman, David R., 4,203,859, Cl. 252-174.230.
Roldan, Cristobal M.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; and Fernandez de Gamboa, Cristina R., 4,204,063, Cl. 546-99.000.
Rollmann, Louis D.; and Walsh, Dennis E., to Mobil Oil Corporation. Visbreaking process for demetalation and desulfurization of heavy oil. 4,203,830, Cl. 208-236.000.
Rollmann, Louis D., to Mobil Oil Corporation. ZSM-5 Containing aluminum-free shells on its surface. 4,203,869, Cl. 252-455.00Z.
Roma, Pierpaolo: *See—*
Bertelli, Guido; Roma, Pierpaolo; and Locatelli, Renato, 4,203,882, Cl. 260-28.50A.
Rose, Robert N., to LeMay, Robert C.; Mills, Earl G.; Stackpole, Chester S.; and Massey, Harold, part interest to each. Process of smelting with submerged burner. 4,203,761, Cl. 75-40.000.
Rosen, Perry: *See—*
Holland, George W.; and Rosen, Perry, 4,204,074, Cl. 562-503.000.
Rosier, William R.: *See—*
United States of America, National Aeronautics and Space Administration; Rosier, William R.; and Volk, George G., 4,204,154, Cl. 324-51.000.
Ross, Anthony J. Polarity indicating and reversing unit. 4,204,243, Cl. 361-245.000.
Rossner, Heinrich-Otto; and Seelig, Henri F., to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for producing steel from sponge metal by using a gas plasma. 4,203,760, Cl. 75-12.000.
Roth, Mario; Siemonsen, Hans-Peter; Schmidt, Gunther; Sonntag, Hubert; and Peters, Leo, to Saint-Gobain Industries. Method and apparatus for making convex sheets of glass having a small radius of curvature. 4,203,751, Cl. 65-106.000.
Roussel Uclaf: *See—*
Pierdet, Andre; Torelli, Vesperto; and Deraedt, Roger, 4,203,981, Cl. 424-243.000.
Roy, Ashutosh, to Thorn Electrical Industries Limited. Fluorescent lamp with refractory metal electrode supports and glass flare seal structure. 4,204,137, Cl. 313-491.000.
Roy, Ram B., to Technicon Instruments Corporation. Stabilized reagents. 4,203,921, Cl. 260-553.00A.
Rubbright, Harry A.; and Springer, Donald A., to Anchor Hocking Corporation. Food preparation apparatus and process. 4,203,486, Cl. 165-48.00R.
Rubenstein, Kenneth E.; and Ullman, Edwin F., to Syva Company. Inhibitable enzyme amplification assay. 4,203,802, Cl. 435-188.000.
Rubin, Harry S.: *See—*
Constantine, Paul; Ettinger, Melvyn; and Rubin, Harry S., 4,203,659, Cl. 353-120.000.
Ruchser, Erich, to Herion-Werke KG. Multiway switching valve. 4,203,571, Cl. 251-31.000.
Ruckstuhl, Konrad. Method of and apparatus for treating waste materials. 4,203,755, Cl. 71-9.000.
Rudolph, Frank W.: *See—*
Mead, Ralph T.; Greatbatch, Wilson; Rudolph, Frank W.; and Frenz, Norbert W., Jr., 4,203,201, Cl. 29-623.100.
Ruszala, Frederick B.; and Cook, Kenneth J., to Valeron Corporation, The. Complex analog signal generator. 4,204,261, Cl. 364-607.000.
Rutishauser, Ernst A. O., to RCA Corporation. Dual standard video disc player. 4,204,220, Cl. 358-8.000.
Rybicki, Robert C., to United Technologies Corporation. Elastomeric rotor load reaction system. 4,203,708, Cl. 416-134.00A.
Ryerson, Joseph L., to Energy for Independence, Inc. Ozone detecting element. 4,203,946, Cl. 422-98.000.
S. A. Beghin-Say: *See—*
Lesas, Claude H.; and Pierre, Michel, 4,204,054, Cl. 536-56.000.
Lesas, Claude H.; and Pierre, Michel, 4,204,055, Cl. 536-56.000.
Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Process for the preparation of nitrophenyl hydroxy substituted acetylenes. 4,204,078, Cl. 568-705.000.
Sacharnoski, Max, Sr. Fishing lure sound producer. 4,203,246, Cl. 43-42.310.
Sahatjian, Ronald A.: *See—*
Bourgeois, Gerard J.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,203,766, Cl. 430-243.000.
Saint-Amand, Henri, to Etudes Techniques et Representations Industrielles E.T.R.I. Electric fan and especially a fan of the flat type. 4,203,704, Cl. 416-93.00R.
Saint-Gobain Industries: *See—*
Battigelli, Jean A.; and Bouquet, Francois, 4,203,745, Cl. 65-6.000.
Battigelli, Jean A.; Bouquet, Francois; Fezenko, Igor; and Massol, Jean-Jacques, 4,203,746, Cl. 65-6.000.
Battigelli, Jean A.; Bouquet, Francois; and Fezenko, Igor, 4,203,748, Cl. 65-14.000.
Battigelli, Jean A.; Bouquet, Francois; and Massol, Jean-Jacques, 4,203,774, Cl. 106-50.000.
Fezenko, Igor, 4,203,747, Cl. 65-6.000.
Laine, Jean-Claude, 4,203,749, Cl. 65-68.000.
Potier, M. Pierre, 4,203,754, Cl. 65-273.000.
Roth, Mario; Siemonsen, Hans-Peter; Schmidt, Gunther; Sonntag, Hubert; and Peters, Leo, 4,203,751, Cl. 65-106.000.

Saito, Yoshio; Shibata, Yoshio; and Fujiie, Satosi, to Tokico, Ltd. Automatic shut off dispensing nozzle. 4,203,478, Cl. 141-206.000.

Saitou, Setsuo: *See—*
Shimizu, Norio; Odawara, Youji; Yamaguchi, Tetsuo; Saitou, Setsuo; Nakaoka, Azuma; and Ichihashi, Kazuaki, 4,203,841, Cl. 210-205.000.

Sakai, Akira; and Matsumura, Jube, to Hitachi, Ltd. Governing system for use in sliding-pressure type turbine power plant. 4,203,297, Cl. 60-660.000.

Sakakura, Tatsuo R.: *See—*
Coggin, Charles H., Jr.; and Sakakura, Tatsuo R., 4,203,559, Cl. 242-18.00G.

Sakashita, Nobuyuki: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,203,758, Cl. 71-100.000.

Sakurai, Kenji: *See—*
Tanaka, Hiroshi; and Sakurai, Kenji, 4,203,690, Cl. 407-119.000.

Sally, Theodore J.: *See—*
Morris, Earl L.; Hafner, Walter V.; and Sally, Theodore J., 4,203,173, Cl. 4-427.000.

Samibem, S.A.: *See—*
Kaetzel, Pierre, 4,203,277, Cl. 56-377.000.

Sanchez, Richard E. Automotive vehicle speed arrestor. 4,203,685, Cl. 404-6.000.

Sanders, Frederick W., to Mead Corporation, The. Production of pressure-sensitive carbonless record sheets using alkane dioic acid hot melt systems and products thereof. 4,203,619, Cl. 282-27.500.

Sandford, Geoffrey P. Railway sleeper. 4,203,549, Cl. 238-111.000.

Sandner, Helmut G.: *See—*
Grossa, Mario; and Sandner, Helmut G., 4,203,770, Cl. 430-270.000.

Sanne, Oddmund, to Sanne & Wendel A/S. Safety valve for gas pipes. 4,203,470, Cl. 137-625.460.

Sanne & Wendel A/S: *See—*
Sanne, Oddmund, 4,203,470, Cl. 137-625.460.

Sanyo Electric Co., Ltd.: *See—*
Araki, Itiro, 4,204,166, Cl. 455-289.000.

Sanz, Antonio M.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; and Fernandez de Gamboa, Cristina R., 4,204,063, Cl. 546-99.000.

Sapila, Martin B., to Rapistan Incorporated. In-floor towline automatic re-entry spur. 4,203,370, Cl. 104-162.000.

Saran Industries, Inc.: *See—*
Fogle, James W., 4,203,214, Cl. 30-355.000.

Sarian, Suren; and Johnson, Duane P. Eddy-current test probe with segmented circumferential test gap and method for inspection of materials. 4,204,159, Cl. 324-232.000.

Sato, Reisuke; and Yokogawa, Tomohisa, to Pioneer Electronic Corporation. Muting circuit in an electronic tuning type receiver. 4,204,169, Cl. 455-175.000.

Sato, Takahisa: *See—*
Takada, Masahiro; Uhara, Hiroyuki; and Sato, Takahisa, 4,203,906, Cl. 260-346.400.

Satoh, Shin: *See—*
Suganuma, Tsuneo; Ishida, Koji; Satoh, Shin; Sugie, Mamoru; Katsuyama, Toshio; and Toda, Gyozo, 4,203,743, Cl. 65-3.00A.

Sauer, Wolfgang J.: *See—*
Hart, Robert L.; Paul, Frank W.; and Sauer, Wolfgang J., 4,203,582, Cl. 269-32.000.

Saunders, Robert M.; and Kohler, George O., to United States of America, Agriculture. Preparation of protein concentrates from whey and seed products. 4,204,008, Cl. 426-583.000.

Sawada, Fred H.; and Howenstein, Melvin, to General Electric Company. Apparatus for aligning brushes of a dynamoelectric machine. 4,204,156, Cl. 324-158.0MG.

Sawada, Toyoaki: *See—*
Suhara, Yasuji; Maruyama, Hiromi; Sawada, Toyoaki; Ogawa, Mayumi; Yokose, Kazuteru; Fujiu, Morio; and Watanabe, Kimihiro, 4,204,044, Cl. 435-280.000.

Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, to Mitsubishi Chemical Industries Limited. Method and apparatus for the measurement of antigens and antibodies. 4,203,724, Cl. 23-230.00B.

Sawyer, Edgar W., Jr., to International Telephone and Telegraph Corporation. Method of forming low temperature dispersions. 4,203,864, Cl. 252-314.000.

Scandinavian Lancers Aktjebolag: *See—*
Johnsson, M. K. Olof; Oberg, Karl-Erik; and Bertheussen, Harry, 4,203,763, Cl. 75-129.000.

Scarpiello, Daniel A., to SCM Corporation. Process for conjugating unconjugated unsaturation of fatty acids or esters thereof. 4,203,911, Cl. 260-405.600.

Schaefer Corporation: *See—*
Gill, Harnek S.; and Turner, Charles R., 4,203,301, Cl. 62-131.000.

Schaefer, Klaus: *See—*
Gast, Uwe; Kiralfy, Dennis; Schaefer, Klaus; Slawik, Eckhard; and Wellendorf, Klaus, 4,204,223, Cl. 358-80.000.

Schaer, Glenn R., to Battelle Memorial Institute. Electrochemical cell. 4,204,034, Cl. 429-54.000.

Schaubert, Daniel H.: *See—*
Sindoris, Arthur R.; Farrar, Frederick G.; and Schaubert, Daniel H., 4,204,212, Cl. 343-700.0MS.

Scheffler, Glenn W.; and Tanrikut, Yasar, to United Technologies Corporation. Staged vaporization of liquid hydrocarbon fuels. 4,203,963, Cl. 423-650.000.

Scheibitz, Wolfgang: *See—*
Schroter, Klaus; Scheibitz, Wolfgang; and Ehlers, Klaus-Peter, 4,203,956, Cl. 423-321.00S.

Scheidler, Herwig: *See—*
Kiefer, Werner; Krause, Dieter; Scheidler, Herwig; Schulze, Hans-Wilhelm; and Kristen, Klaus, 4,203,264, Cl. 52-1.000.

Schenker, Barry A.; Sugano, Thomas T.; Stillman, Neil W.; and O'Leary, Kevin J., to Diamond Shamrock Corporation. Method of producing sols by electrodialysis. 4,203,822, Cl. 204-301.000.

Scheppele, Lyle W., to Toledo Stamping & Manufacturing Company. Metering apparatus. 4,203,513, Cl. 198-620.000.

Schleicher GmbH & Co. Relais-Werke KG: *See—*
Metzner, Gerd L., 4,204,242, Cl. 361-198.000.

Schleppy, Ronald, Jr.: *See—*
Carr, Norman L.; Schleppy, Ronald, Jr.; Schmid, Bruce K.; and Shah, Yatish T., 4,203,823, Cl. 208-10.000.

Schlick, Erich: *See—*
Blochl, Hanns; Fryda, Georg; Schlick, Erich; and Schnall, Gunther, 4,203,386, Cl. 118-653.000.

Schlussel, Peter F.: *See—*
Hofert, Wilhelm A.; Schlussel, Peter F.; Sutor, Anton H.; and Ullrich, Georg J., 4,203,446, Cl. 128-329.00R.

Schmid, Bruce K.: *See—*
Carr, Norman L.; Schleppy, Ronald, Jr.; Schmid, Bruce K.; and Shah, Yatish T., 4,203,823, Cl. 208-10.000.

Schmidt, Gunther: *See—*
Roth, Mario; Siemonsen, Hans-Peter; Schmidt, Gunther; Sonntag, Hubert; and Peters, Leo, 4,203,751, Cl. 65-106.000.

Schmidt, Jurgen: *See—*
Weichart, Helmut; and Schmidt, Jurgen, 4,204,188, Cl. 340-7.00R.

Schmit, John W. Lockable covering apparatus for telephone dials. 4,204,097, Cl. 179-189.00D.

Schmoock, Roy F., to Fischer & Porter Co. High-voltage impulse driver for electromagnetic flowmeter. 4,204,240, Cl. 361-152.000.

Schnall, Gunther: *See—*
Blochl, Hanns; Fryda, Georg; Schlick, Erich; and Schnall, Gunther, 4,203,386, Cl. 118-653.000.

Schneider, Louis; and Graham, David E., to GAF Corporation. Process for making N-(N'-methylenepyrrolidonyl)-2-substituted anilines. 4,203,901, Cl. 260-326.50S.

Schneider, Michael: *See—*
Walter, Siegfried; Schneider, Michael; and Nagel, Hartmut, 4,203,363, Cl. 101-409.000.

Schneiter, Ali: *See—*
Ziegler, Jacques; Schneiter, Ali; and Grandjean, Remy, 4,203,280, Cl. 368-187.000.

Schneiter, Fred E.: *See—*
Kirchoff, George F.; and Schneiter, Fred E., 4,203,787, Cl. 149-35.000.

Schnitzer, Johann G. Cereal mill. 4,203,558, Cl. 241-247.000.

Schoenfelder, James L. Portable solar heat tube. 4,203,420, Cl. 126-426.000.

Schonfeld, Steven E.: *See—*
Halasa, Adel F.; Ravagnani, Frederick J.; and Schonfeld, Steven E., 4,203,874, Cl. 260-3.000.

Schoppe, Gunter: *See—*
Schutt, Wolfgang; Jensen, Hans-Ludwig; Eberlein, Werner; and Schoppe, Gunter, 4,203,817, Cl. 204-180.00R.

Schorter, Bruno: *See—*
Ricouard, Jean-Pierre; and Schorter, Bruno, 4,204,158, Cl. 324-208.000.

Schroeder, Eugene N., to International Business Machines Corporation. Adaptive alignment for pattern recognition system. 4,204,193, Cl. 340-146.30H.

Schrooder, Rolf: *See—*
Stemme, Otto; Lermann, Peter; Schrooder, Rolf; and Karl, Horst, 4,203,662, Cl. 354-173.000.

Schroter, Klaus; Scheibitz, Wolfgang; and Ehlers, Klaus-Peter, to Hoechst Aktiengesellschaft. Process and apparatus for recovering alcoholic phosphoric acid solutions from acid phosphates. 4,203,956, Cl. 423-321.00S.

Schulte-Elte, Karl-Heinrich: *See—*
Cookson, Richard C.; Schulte-Elte, Karl-Heinrich; and Hauser, Arnold, 4,203,907, Cl. 260-346.110.

Schults, Neal. Automatic swimming pool cover and cover washer. 4,203,174, Cl. 4-172.000.

Schultz, Curtis L.; and Guntly, Thomas G., to Tecumseh Products Company. Primer. 4,203,405, Cl. 123-187.50R.

Schultz, Peter C.; and Wusirika, Raja R., to Corning Glass Works. Method of making nitrogen-doped graded index optical waveguides. 4,203,744, Cl. 65-3.00A.

Schultz, William G., to United States of America, Agriculture. Method of removing pigment from annatto seed. 4,204,043, Cl. 435-267.000.

Schulze, Hans-Wilhelm: *See—*
Kiefer, Werner; Krause, Dieter; Scheidler, Herwig; Schulze, Hans-Wilhelm; and Kristen, Klaus, 4,203,264, Cl. 52-1.000.

Schurz Corporation: *See—*
Dietz, William A., 4,203,468, Cl. 137-624.110.

Schuster, Samuel J. Receptacle for receiving articles for storage in sterilized condition. 4,203,520, Cl. 206-439.000.

Schuster, Waldemar; and Hohn, Max G. Piston for multi-stage operation. 4,203,352, Cl. 92-94.000.

Schutt, Wolfgang; Jensen, Hans-Ludwig; Eberlein, Werner; and Schoppe, Gunter, to JENOPTIK JENA G.m.b.H. Method of and device for moving liquid samples. 4,203,817, Cl. 204-180.00R.

Schwartz, Harold O.; and Kidd, Dennis E., to Wurlitzer Company, The. Large scale integrated circuit chip for an electronic organ. 4,203,337, Cl. 84-1.010.

Schwartz, Jerome; and Levitt, Joseph, to Taylor Lock Company. Duplicating machine for tubular keys. 4,203,693, Cl. 409-81.000.

Schwarzer, Siegfried: *See—*
Becker, Kurt; Buogert, Hermann; Schwarzer, Siegfried; and Seidel, Hans-Georg, 4,203,752, Cl. 65-163.000.

Schweitzer, Karl: *See—*
Zimmer, Peter; Kudlich, Hans; Schweitzer, Karl; and Mayr, Walter, 4,203,554, Cl. 239-585.000.

Schwemm, Gene: *See—*
DeLuca, Raymond F.; and Schwemm, Gene, 4,203,562, Cl. 242-55.300.

Schwind, Heinz G., to Griesel B.V. Fluid motor actuator for rotating a shaft back and forth. 4,203,351, Cl. 92-69.00R.

Schwitters, Stephen W., to Beatrice Foods Co. Freezer door for a soft-serve freezer. 4,203,461, Cl. 137-343.000.

SCM Corporation: *See—*
Bledsoe, James O., Jr.; and Cardenas, Carlos G., 4,204,080, Cl. 585-273.000.
Scarpiello, Daniel A., 4,203,911, Cl. 260-405.600.

Scope Data Incorporated: *See—*
Nordstrom, Larry A.; and Szechy, Daniel J., 4,203,678, Cl. 400-320.000.

Scruggs, David M. Hoist motor control system. 4,204,142, Cl. 318-257.000.

Sea Horse Corporation, The: *See—*
Sumner, Maurice N., 4,203,687, Cl. 405-170.000.

Sears, Roebuck and Co.: *See—*
Gall, John C.; Ozimek, Chester E.; and Chamberlain, Albert E., 4,203,681, Cl. 400-697.000.

Sebok, Antal: *See—*
Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, 4,203,689, Cl. 406-123.000.

Sederquist, Richard A., to United Technologies Corporation. Steam reforming reactor designed to reduce catalyst crushing. 4,203,950, Cl. 422-197.000.

Seeburn Metal Products Limited: *See—*
Margueratt, Oatway, 4,203,578, Cl. 254-109.000.

Seelig, Henri F.: *See—*
Rossner, Heinrich-Otto; and Seelig, Henri F., 4,203,760, Cl. 75-12.000.

Segui, Gerard R.: *See—*
Riboulet, Michel J.; and Segui, Gerard R., 4,204,120, Cl. 250-341.000.

Sehlbach, Gerd; and Klischat, Ditmar, to Gelenkwellenbau GmbH. Telescoping power take-off shaft with lockable length adjustment. 4,203,306, Cl. 64-23.000.

Seidaliev, Fikrat S. O.: *See—*
Ermakov, Vladimir E.; Makarov, Viktor B.; Seidaliev, Fikrat S. O.; Nikiforov, Alexandr M.; Bushev, Alexandr V.; and Dozortsev, July K., 4,203,309, Cl. 72-96.000.

Seidel, Hans-Georg: *See—*
Becker, Kurt; Buogert, Hermann; Schwarzer, Siegfried; and Seidel, Hans-Georg, 4,203,752, Cl. 65-163.000.

Seidler, Helmut: *See—*
Hohmann, Walter; Wunderlich, Klaus; and Seidler, Helmut, 4,203,885, Cl. 260-369.000.

Seidler, Jack, to North American Specialties Corp. Solder bearing terminal. 4,203,648, Cl. 339-275.00T.

Seki, Kazuo: *See—*
Kojima, Tadashi; and Seki, Kazuo, 4,203,779, Cl. 136-233.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Noda, Yoichiro; Matsumura, Michio; Chiba, Norio; and Hata, Masahito, 4,203,815, Cl. 204-159.200.

Seko, Nachio: *See—*
Ogura, Masaaki; Seko, Nachio; and Yano, Takato, 4,203,663, Cl. 355-14.00C.

Selwitz, Charles M.: *See—*
Sabourin, Edward T.; and Selwitz, Charles M., 4,204,078, Cl. 568-705.000.

Seme, Joseph P., Sr. Articulating part handling device. 4,203,700, Cl. 414-732.000.

SEPCO Corporation: *See—*
Gibson, Vernon W., Sr., 4,203,191, Cl. 29-451.000.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
Leclerc, Jean-Francois; and Waegaert, Pierre, 4,203,453, Cl. 131-20.00R.

Shah, Yatish T.: *See—*
Carr, Norman L.; Schleppy, Ronald, Jr.; Schmid, Bruce K.; and Shah, Yatish T., 4,203,823, Cl. 208-10.000.

Shanley, Robert L., II, to RCA Corporation. Predictably biased kinescope driver arrangement in a video signal processing system. 4,204,221, Cl. 358-34.000.

Shapiro, Sol: *See—*
Underwood, James L.; and Shapiro, Sol, 4,203,362, Cl. 101-327.000.

Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; Zvenigorodsky, Evgeny I.; and Gabor, Antal, to Zavod Stroitelnykh Mashin. Method of unloading bulk materials from vessels. 4,203,688, Cl. 406-85.000.

Sharp Kabushiki Kaisha: *See—*
Nakarai, Masazumi, 4,204,215, Cl. 346-140.00R.

Shaw, David H.: *See—*
Achia, Biddanda U.; and Shaw, David H., 4,203,824, Cl. 208-33.000.

Shay, George C., to Corning Glass Works. Manufacture of flat glass. 4,203,750, Cl. 65-99.00A.

Sheldon, Edward E. Apparatus for producing X-ray images by electrical charges. 4,204,118, Cl. 250-315.200.

Shell Oil Company: *See—*
Bauer, Ronald S., 4,203,878, Cl. 260-18.0EP.
Reisberg, Joseph, 4,203,491, Cl. 166-274.000.

Shelter Insulation, Inc.: *See—*
Parker, Lawrence J., 4,204,019, Cl. 428-310.000.

Shennett, George D., Jr., to Gould Inc. Device for inserting a fuse into an electric circuit. 4,203,645, Cl. 339-147.00R.

Sheridan, Earl A., to Bendix Corporation, The. Brake booster. 4,203,349, Cl. 91-47.000.

Shibamoto, Norio: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,204,038, Cl. 435-78.000.

Shibata, Yoshio: *See—*
Saito, Yoshio; Shibata, Yoshio; and Fujiie, Satosi, 4,203,478, Cl. 141-206.000.

Shibuya, Yoshikazu: *See—*
Imataki, Mitsumasa; Mochizuki, Mikio; and Shibuya, Yoshikazu, 4,204,239, Cl. 361-127.000.

Shigehara, Itaru: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,203,758, Cl. 71-100.000.

Shih, David H., to Merck & Co., Inc. Process for preparing 6- and 2-substituted-1-carbadethiapen-2-em-3-carboxylic acids. 4,203,902, Cl. 260-326.310.

Shimaguchi, Takashi: *See—*
Nakae, Hideo; Ozaki, Toshinori; Nakane, Kazunori; and Shimaguchi, Takashi, 4,203,195, Cl. 29-505.000.

Shimer, Robert M.; Dombrowski, Joseph A.; and Cohen, Sheppard, to GTE Sylvania Incorporated. Integral fluorescent lamp-ballast unit. 4,204,139, Cl. 315-58.000.

Shimizu, Hirozumi: *See—*
Ishizaki, Takaharu; Igarashi, Taizo; and Shimizu, Hirozumi, 4,203,729, Cl. 44-51.000.

Shimizu, Katsuichi: *See—*
Kishi, Hirotoshi; Hattori, Hiroyuki; and Shimizu, Katsuichi, 4,203,587, Cl. 271-293.000.

Shimizu, Koh; Uchimura, Terumi; Uede, Ken-Ichi; and Nakamura, Katuyoshi, to Kubota Tekko Kabushiki Kaisha. Process for the treatment of sludge. 4,203,838, Cl. 210-63.00R.

Shimizu, Norio; Odawara, Youji; Yamaguchi, Tetsuo; Saitou, Setsuo; Nakaoka, Azuma; and Ichihashi, Kazuaki, to Hitachi, Ltd. Apparatus for high-efficient microbiological oxidation treatment. 4,203,841, Cl. 210-205.000.

Shin-Etsu Chemical Co. Ltd.: *See—*
Takamizawa, Minoru; Abe, Akira; Ono, Yoshiaki; Sugimori, Yutaka; Kishibayashi, Tetsuo; and Ino, Makoto, 4,204,030, Cl. 428-447.000.

Shindo, Yoshio; and Ito, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission with overdrive. 4,203,331, Cl. 74-606.00R.

Shinshu Seiki Kabushiki Kaisha: *See—*
Usui, Kiyofumi; Otsuki, Chihiro; and Inukai, Sadaharu, 4,204,180, Cl. 335-205.000.

Shionogi & Co., Ltd.: *See—*
Narisada, Masayuki; Matsumura, Hiromu; and Nagata, Wataru, 4,203,982, Cl. 424-246.000.

Shiu, Desmond K. Moxa burner and mount for multiple moxa burners. 4,203,438, Cl. 128-254.000.

Shlatz, Myron F.: *See—*
Kunz, Barton H.; Shlatz, Myron F.; and Spears, Jesse W., 4,203,585, Cl. 271-4.000.

Shoemaker, William E.; and Wilson, David W., to Gould Inc. Method and apparatus for comparing logic functions by acquiring signals one at a time from circuit nodes. 4,204,114, Cl. 371-25.000.

Sidorov, Oleg F.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Sidorov, Oleg F.; Tarabaev, Gennady I.; and Pinsky, Gennady I., 4,203,310, Cl. 72-247.000.

Siebens, Larry N., to Amerace Corporation. Double bushing insert. 4,203,641, Cl. 339-75.00P.

Siebert, Werner: *See—*
Meckel, Joachim F.; Rohde, Wolfgang; Siebert, Werner; Wagener, Dietrich; Flockenhaus, Claus; and Galow, Manfred, 4,203,803, Cl. 201-40.000.

Siegel, Herman M.: *See—*
Malek, Jack H.; and Siegel, Herman M., 4,203,251, Cl. 46-107.000.

Siegel, Israel. Space reversible differential temperature engine. 4,203,295, Cl. 60-531.000.

Siemens Aktiengesellschaft: *See—*
Dietze, Wolfgang; and Bachmann, Gerhard, 4,203,940, Cl. 264-154.000.
Glock, Hans; and Mayer, Herbert, 4,204,276, Cl. 365-189.000.
Heinzl, Joachim, 4,204,090, Cl. 178-30.000.
Jahrig, Siegfried; and Liebig, Reinhard, 4,204,103, Cl. 200-153.0SC.
Reichel, Hilmar; Klauke, Guenter; Herting, Karl-Heinz; and Pointner, Martin, 4,203,531, Cl. 228-1.00A.
Weyer, Reinhard, 4,204,189, Cl. 340-40.000.

Siemonsen, Hans-Peter: *See—*
Roth, Mario; Siemonsen, Hans-Peter; Schmidt, Gunther; Sonntag, Hubert; and Peters, Leo, 4,203,751, Cl. 65-106.000.

Silverstein, Joseph J., to Ore-Lube Corporation, The. Stable lubricant composition containing molybdenum disulfide and method of preparing same. 4,203,854, Cl. 252-25.000.
Silverwater, Bernard F., to Pall Corporation. Magnetic pressure indicator with deactuator for bimetallic temperature-sensitive elements. 4,203,384, Cl. 116-267.000.
Simmonds Precision Products, Inc.: *See—*
Abbey, William C., 4,203,701, Cl. 415-1.000.
Simo, Miroslav A., to New Archery Products Corp. Arrowhead. 4,203,601, Cl. 273-421.000.
Simoleit, Hartmut; and Walter, Ludwig, to Kali-Chemie Aktiengesellschaft. Process for removing SO_2 from waste gases. 4,203,953, Cl. 423-243.000.
Simon, Raphael A., to Corning Glass Works. Photochromic sheet glass process. 4,204,027, Cl. 428-428.000.
Simplex Wire and Cable Company: *See—*
Hutchins, Loren H., Jr., 4,204,129, Cl. 307-147.000.
Simpson, Charles H. Process for reducing the sulfur content of coal. 4,203,727, Cl. 44-1.0SR.
Simpson Enterprises: *See—*
Simpson, Ralph E.; and Simpson, Michael L., 4,203,416, Cl. 126-212.000.
Simpson, Michael L.: *See—*
Simpson, Ralph E.; and Simpson, Michael L., 4,203,416, Cl. 126-212.000.
Simpson, Ralph E.; and Simpson, Michael L., to Simpson Enterprises. Means for holding a cooking vessel in position on a burner grate. 4,203,416, Cl. 126-212.000.
Sims, J. Robert, Jr.; Mitchell, Willard N.; and Williamson, Charles W., to Exxon Research & Engineering Co. Process for tubular water-bath polypropylene films. 4,203,942, Cl. 264-559.000.
Sindoris, Arthur R.; Farrar, Frederick G.; and Schaubert, Daniel H., to United States of America, Army. Conformal spiral antenna. 4,204,212, Cl. 343-700.0MS.
Sinegubova, Elena V.: *See—*
Podgorny, Anatoly N.; Varshavsky, Ilya L.; Solovei, Viktor V.; and Sinegubova, Elena V., 4,203,711, Cl. 417-207.000.
Singer Company, The: *See—*
Beller, W. E., 4,203,462, Cl. 137-393.000.
Current, Wayne A., 4,203,518, Cl. 206-380.000.
Singh, Gurnam, to Honeywell Inc. Piezoresistive silicon strain sensors and pressure transducers incorporating them. 4,203,327, Cl. 73-721.000.
Sinn, Hansjorg: *See—*
Janning, Jorg; Kaminsky, Walter; Sinn, Hansjorg; and Tysarcyk, Stanislav, 4,203,804, Cl. 202-121.000.
Sjoberg, Berndt O. H.: *See—*
Bamberg, Peter; Ekstrom, Bertil A.; Forsgren, Ulf E.; and Sjoberg, Berndt O. H., 4,203,972, Cl. 424-114.000.
Sjostrom, Douglas D.: *See—*
Bonnell, Leonard J.; McHugh, Edward H.; Sjostrom, Douglas D.; and Johnson, Lanny L., 4,203,444, Cl. 128-276.000.
SKF Kugellagerfabriken GmbH: *See—*
Back, Horst, 4,203,634, Cl. 308-187.200.
Skogward, Kenneth: *See—*
Giesselmann, Hannes; and Skogward, Kenneth, 4,203,378, Cl. 112-158.00E.
Slaton, Jack H., to United States of America, Navy. Underwater signal discrimination system. 4,204,280, Cl. 367-95.000.
Slawik, Eckhard: *See—*
Gast, Uwe; Kiralfy, Dennis; Schaefer, Klaus; Slawik, Eckhard; and Wellendorf, Klaus, 4,204,223, Cl. 358-80.000.
Smaw, Jesse B., to Marcal Paper Mills, Inc. Methods and apparatus for interfolding bundles of interfolded webs. 4,203,584, Cl. 270-40.000.
SMG Suddeutsche Maschinenbau-Gesellschaft mbH: *See—*
Baltschun, Horst, 4,203,359, Cl. 100-209.000.
Smit, Helen E.; and Smit, Julie A. Decorative personal electric heating appliance. 4,204,110, Cl. 219-313.000.
Smit, Julie A.: *See—*
Smit, Helen E.; and Smit, Julie A., 4,204,110, Cl. 219-313.000.
Smith, Cecil R., Jr.: *See—*
Mikolajczak, Kenneth L.; and Smith, Cecil R., Jr., 4,203,996, Cl. 424-274.000.
Smith, D. L.: *See—*
Raley, Garland E.; Miller, C. W.; and Smith, D. L., 4,203,715, Cl. 425-131.100.
Smith, Edmund H., Jr., to Du Pont de Nemours, E. I., and Company. Scanning beam displacement compensation control system. 4,203,672, Cl. 356-431.000.
Smith, Harris W.: *See—*
Gruber, Thomas J.; and Smith, Harris W., 4,203,415, Cl. 126-110.00R.
Smith International, Inc.: *See—*
Baker, William, III; and Harris, Charles R., 4,203,496, Cl. 175-329.000.
Smith, James: *See—*
Key, Brian D.; Smith, James; and Kerigan, Shaun C., 4,204,089, Cl. 178-30.000.
Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Electrical coil, insulated by cured resinous insulation. 4,204,181, Cl. 336-96.000.
Smith, John K.: *See—*
Collins, Marcus H.; and Smith, John K., 4,203,794, Cl. 156-415.000.
Smith, William T. Expanding piston. 4,203,406, Cl. 123-197.00A.
Smorzaniuk, Adam: *See—*
Mayer, Robert W.; and Smorzaniuk, Adam, 4,203,385, Cl. 116-270.000.
Snamprogetti, S.p.A.: *See—*
Corbellini, Margherita; Greco, Alberto; and Osellame, Mirko, 4,203,866, Cl. 252-429.00C.
Snarski, Thomas R., to General Motors Corporation. Process for producing oxygen-free nitrogen atmosphere. 4,203,958, Cl. 423-351.000.
Sno-Go Inc.: *See—*
Ricci, Donald C., 4,203,423, Cl. 126-271.100.
Snowden, Esther A.: *See—*
Snowden, James E., Jr.; and Snowden, Esther A., 4,203,725, Cl. 23-230.0HC.
Snowden, James E., Jr.; and Snowden, Esther A., to Contamoil Corporation. Method and test kit for the on-site determination of the presence of contaminant material in lubricating oil. 4,203,725, Cl. 23-230.0HC.
Snyder, George F.; and Stewart, Robert M., to United States Steel Corporation. Adhesives coatings and laminates utilizing ethylene copolymers and coal-tar pitch. 4,204,022, Cl. 428-337.000.
Societa Italiana Resine S.I.R. S.p.A.: *See—*
Colombo, Paolo; and Radici, Pierino, 4,203,735, Cl. 55-26.000.
Vargiu, Silvio; Carpaneti, Edoardo; and Passalenti, Beppino, 4,203,816, Cl. 204-159.160.
Societe Anonyme DBA: *See—*
Verne, Michel, 4,204,203, Cl. 340-620.000.
Societe Anonyme S.E.T.R.I.C.: *See—*
Chelle, Rene, 4,204,042, Cl. 435-253.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Farr, David R.; and Horman, Ian, 4,204,004, Cl. 426-77.000.
Societe Europeenne de Propulsion: *See—*
Luscan, Bernard; and Reichard, Michel, 4,203,284, Cl. 60-245.000.
Societe pour l'Equipement de Vehicules: *See—*
Poirier d'Ange d'Orsay, Emmanuel H., 4,204,270, Cl. 362-71.000.
Sodip SA: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,203,844, Cl. 210-321.00B.
Soeters, Raymond A., Jr., to Eaton Corporation. Engine valve control mechanism. 4,203,397, Cl. 123-90.160.
Sokolov, Valery S.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.
Sokolovsky, Paul J. Firearm apparatus. 4,203,348, Cl. 89-148.000.
Solovei, Viktor V.: *See—*
Podgorny, Anatoly N.; Varshavsky, Ilya L.; Solovei, Viktor V.; and Sinegubova, Elena V., 4,203,711, Cl. 417-207.000.
Solvay & Cie.: *See—*
Dereppe, Michel; and Leva, Jean, 4,203,876, Cl. 260-17.40R.
Sonntag, Hubert: *See—*
Roth, Mario; Siemonsen, Hans-Peter; Schmidt, Gunther; Sonntag, Hubert; and Peters, Leo, 4,203,751, Cl. 65-106.000.
Sony Corporation: *See—*
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,204,246, Cl. 361-385.000.
Matsushita, Takeshi; Mamine, Takayoshi; Hayashi, Hisao; and Nishiyama, Kazuo, 4,203,780, Cl. 148-1.500.
Nemoto, Tsuneo, 4,203,564, Cl. 242-71.800.
Sorbe, Gunter: *See—*
Ahlgrim, Michael; Mietens, Gerhard; Krieger, Wilfried; and Sorbe, Gunter, 4,203,637, Cl. 339-5.00R.
Sortex North America, Inc.: *See—*
Fraenkel, Herbert; Gough, Patrick B.; and Maughan, William S., 4,203,522, Cl. 209-558.000.
Southern Railway Company: *See—*
Miller, John R., 4,203,493, Cl. 171-16.000.
Southworth, Ronald W., to Champion International Corporation. Dryer system and method of controlling the same. 4,203,229, Cl. 34-46.000.
Spaulding, James R.: *See—*
Kingsley, Charles A.; Spaulding, James R.; and Gifford, William E., 4,203,401, Cl. 123-136.000.
Spears, Jesse W.: *See—*
Kunz, Barton H.; Shlatz, Myron F.; and Spears, Jesse W., 4,203,585, Cl. 271-4.000.
Speet, Larry A.: *See—*
VandenHoek, Harold L.; Speet, Larry A.; and Mohr, Robert G., 4,203,639, Cl. 339-22.00R.
Sperry Rand Corporation: *See—*
Wynn, Edward J.; and Bryant, Cal L., 4,203,695, Cl. 414-40.000.
Spiral Tubing Corporation: *See—*
Perkins, Robert W., 4,203,312, Cl. 72-299.000.
Spirec l'Echangeur Spirale Ever Clean: *See—*
Jouet, Etienne, 4,203,205, Cl. 29-727.000.
Sprague Electric Company: *See—*
McGrath, N. Christian, 4,203,194, Cl. 29-570.000.
Sprague, Robert A., to Xerox Corporation. High resolution input scanner using a two dimensional detector array. 4,204,230, Cl. 358-213.000.

Springer, Donald A.: *See—*
Rubbright, Harry A.; and Springer, Donald A., 4,203,486, Cl. 165-48.00R.
Square Two Golf Corporation: *See—*
Stuff, Alfred; and Pellizzi, Anthony, 4,203,598, Cl. 273-77.00A.
Stack, Eugene V.: *See—*
Burnett, Edward L.; and Stack, Eugene V., 4,203,938, Cl. 264-127.000.
Stackpole, Chester S.: *See—*
Rose, Robert N., 4,203,761, Cl. 75-40.000.
Stackpole Components Company: *See—*
Quigley, Thomas J., 4,204,104, Cl. 200-164.00R.
Staiger, Dieter, to International Business Machines Corporation. Pattern generation system. 4,203,543, Cl. 371-24.000.
Standard Keil Hardware Manufacturing Company, a Division of Buildex Incorporated: *See—*
Cook, Sanford L.; Molisani, Justin J.; and Dennison, Kenneth I., Jr., 4,203,622, Cl. 292-221.000.
Standard-Knapp, Inc.: *See—*
Raudat, John L., 4,203,271, Cl. 53-250.000.
Standard Oil Company (Indiana): *See—*
Bertolacini, Ralph J., 4,203,829, Cl. 208-216.00R.
Hanson, Joseph B., 4,203,730, Cl. 44-71.000.
Stapp, Paul R., to Phillips Petroleum Company. Method and a catalyst for the oxidation of a conjugated diolefin. 4,203,865, Cl. 252-429.00R.
Stapp, Paul R., to Phillips Petroleum Company. Olefin oxidation process. 4,203,927, Cl. 568-401.000.
Stark, Karl-Heinz: *See—*
Fenner, Hans; Auwarter, Wilhelm; and Stark, Karl-Heinz, 4,203,623, Cl. 296-178.000.
Starrett, Paul D., to Monadnock Lifetime Products, Inc. Police stick. 4,203,599, Cl. 273-84.00R.
Staschik, Guunter: *See—*
Winter, Karl; and Staschik, Guunter, 4,203,734, Cl. 55-26.000.
Stauffer Chemical Co.: *See—*
Baker, Don R.; and McClellan, Malcolm B., 4,203,998, Cl. 424-283.000.
Steckel, Thomas F., to Lubrizol Corporation, The. Phenoxide-halo carboxylic acid condensate additives for lubricants. 4,203,855, Cl. 252-42.700.
Stecklein, Gary L., to Deere & Company. Articulated joint including Belleville spring seals maintained in preselected compressed state. 4,203,684, Cl. 403-158.000.
Steel Engineering Company Limited, The: *See—*
Wallace, Trevor E., 4,203,350, Cl. 91-235.000.
Steelcase, Inc.: *See—*
VandenHoek, Harold L.; Speet, Larry A.; and Mohr, Robert G., 4,203,639, Cl. 339-22.00R.
Steigerwald, Franz: *See—*
Hildebrandt, Bodo; Janele, Erich; and Steigerwald, Franz, 4,203,517, Cl. 206-221.000.
Steiner, Janos: *See—*
Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, 4,203,689, Cl. 406-123.000.
Stella, Joseph A.; and Mason, Paul B., to Polaroid Corporation. Tapered pressure pad to prevent film scratching. 4,203,655, Cl. 352-78.00R.
Stemme, Otto; Lermann, Peter; Schrooder, Rolf; and Karl, Horst, to AGFA-Gevaert, A.G. Trigger mechanism for photographic camera provided with motor-driven film-transport mechanism. 4,203,662, Cl. 354-173.000.
Stencel, Edgar L.: *See—*
Hall, David E.; and Stencel, Edgar L., 4,203,346, Cl. 85-70.000.
Stenkvist, Sven-Einar, to ASEA Aktiebolag. DC Arc furnace having starting electrode. 4,204,082, Cl. 13-9.00R.
Stepp, William J. Windmill with automatic feathering control and storm protection. 4,203,707, Cl. 416-119.000.
Stetson, Earl W., to General Electric Company. Surge voltage lightning arresters. 4,204,238, Cl. 361-125.000.
Stewart, John K.; and von Beckmann, Helmuth, to Canron Corp. Lift and line beam extension. 4,203,367, Cl. 104-7.00B.
Stewart, Robert M.: *See—*
Snyder, George F.; and Stewart, Robert M., 4,204,022, Cl. 428-337.000.
Stillings, William G. Yarn cutter. 4,203,561, Cl. 242-47.000.
Stillman, Neil W.: *See—*
Schenker, Barry A.; Sugano, Thomas T.; Stillman, Neil W.; and O'Leary, Kevin J., 4,203,822, Cl. 204-301.000.
Stoddart, Hugh F., to Union Carbide Corporation. Radionuclide body function imager. 4,204,123, Cl. 250-363.00S.
Stoeppler, Markus; and Havezov, Ivan, to Kernforschungsanlage Julich Gesellschaft mit Beschrankter Haftung. Method of and apparatus for centrifugal separation of liquid phases. 4,203,840, Cl. 210-83.000.
Stoll, Andrew J., III, to Owens-Illinois, Inc. Plastic drum assembly. 4,203,526, Cl. 220-71.000.
Stollorz, Herbert R. Support arm assembly for loading/unloading and applying a force on a flying head. 4,204,235, Cl. 360-103.000.
Stoloff, Alfred; and Williams, Anthony L., to M&T Chemicals Inc. Lubricant composition for halogen-containing polymers. 4,203,880, Cl. 260-23.0XA.
Stone & Webster Engineering Corporation: *See—*
Agnihotri, Chaitanya B., 4,203,742, Cl. 62-24.000.
Stonoga, Dorothea E.; and Flint-Smith, Virginia K., to A. Bristol Corporation. Greeting card. 4,203,516, Cl. 206-216.000.
Stormby, Nils G., to Cytologiska Centrallaboratoriet AB. Method of and apparatus for applying cover-slips to slides carrying specimens for microscopic examination. 4,203,797, Cl. 156-521.000.
Strader, Walter F. Muffler. 4,203,502, Cl. 181-238.000.
Stran Corporation: *See—*
Brazelton, Carl L., 4,203,390, Cl. 119-29.000.
Strande, Edward J., to Tektronix, Inc. Multiple circuit switch assembly. 4,204,098, Cl. 200-1.00R.
Stratoflex, Inc.: *See—*
Vyse, Gerrard N.; and Cooke, Horise M., 4,203,321, Cl. 73-168.000.
Strickland, John J., to General Electric Company. Apparatus for rapidly testing electrochemical cells. 4,204,161, Cl. 324-426.000.
Stringham, Roger S.: *See—*
United States of America, National Aeronautics and Space Administration; Toy, Madeline S.; and Stringham, Roger S., 4,203,723, Cl. 8-115.500.
Striplin, Charles D. Holder for vegetables such as broccoli. 4,203,180, Cl. 24-17.00B.
Strouse, Adler Company, The: *See—*
Winzelberg, Leo L., 4,203,449, Cl. 128-473.000.
Studt, William L.: *See—*
Douglas, George H.; Mir, Ghulam N.; Won, Chong M.; and Studt, William L., 4,203,984, Cl. 424-249.000.
Stuff, Alfred; and Pellizzi, Anthony, to Square Two Golf Corporation. Golf club. 4,203,598, Cl. 273-77.00A.
Stull, Charles V.: *See—*
Chapman, Frank X.; Gallant, Charles R.; and Stull, Charles V., 4,204,085, Cl. 174-86.000.
Sturm, Elmar, to Ciba-Geigy Corporation. Amidino-phosphoric acid thiol esters for combating pests. 4,203,978, Cl. 424-211.000.
Sudo, Tadamitsu: *See—*
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,203,724, Cl. 23-230.00B.
Suehiro, Jun-ichi, to Nippon Electric Kagoshima, Ltd. Fluorescent display device comprising a pair of anode connection groups. 4,204,209, Cl. 340-758.000.
Sugalski, Raymond K.: *See—*
Morris, Jesse L.; and Sugalski, Raymond K., 4,203,206, Cl. 29-731.000.
Sugano, Thomas T.: *See—*
Schenker, Barry A.; Sugano, Thomas T.; Stillman, Neil W.; and O'Leary, Kevin J., 4,203,822, Cl. 204-301.000.
Suganuma, Tsuneo; Ishida, Koji; Satoh, Shin; Sugie, Mamoru; Katsuyama, Toshio; and Toda, Gyozo, to Hitachi, Ltd. Method of producing optical fiber. 4,203,743, Cl. 65-3.00A.
Sugawara, Katsuro; Nakazawa, Yukiyoshi; and Itoh, Katsuhiko, to Hitachi, Ltd. Method for monitoring thickness of epitaxial growth layer on substrate. 4,203,799, Cl. 156-601.000.
Sugie, Mamoru: *See—*
Suganuma, Tsuneo; Ishida, Koji; Satoh, Shin; Sugie, Mamoru; Katsuyama, Toshio; and Toda, Gyozo, 4,203,743, Cl. 65-3.00A.
Sugihara, Takayuki: *See—*
Obata, Shuichi; and Sugihara, Takayuki, 4,203,606, Cl. 274-23.00R.
Sugimori, Yutaka: *See—*
Takamizawa, Minoru; Abe, Akira; Ono, Yoshiaki; Sugimori, Yutaka; Kishibayashi, Tetsuo; and Ino, Makoto, 4,204,030, Cl. 428-447.000.
Sugiyama, Yoshinobu: *See—*
Kataoka, Shoei; Sugiyama, Yoshinobu; and Fujisada, Hiroyuki, 4,204,132, Cl. 307-309.000.
Suhara, Yasuji; Maruyama, Hiromi; Sawada, Toyoaki; Ogawa, Mayumi; Yokose, Kazuteru; Fujiu, Morio; and Watanabe, Kimihiro, to Hoffmann-La Roche Inc. Process for the manufacture of optically active α-hydroxycarboxylic acids. 4,204,044, Cl. 435-280.000.
Sullivan, Daniel T.: *See—*
Hitz, George E.; Kaman, Charles H.; Mudge, Craig; O'Loughlin, James F.; and Sullivan, Daniel T., 4,204,252, Cl. 364-200.000.
Sumitomo Chemical Company, Limited: *See—*
Funaki, Yuji; Oshita, Hirofumi; Tanaka, Shizuya; Yamamoto, Shigeo; and Kato, Toshiro, 4,203,995, Cl. 424-273.00R.
Sumitomo Electric Industries, Ltd.: *See—*
Kono, Teruhisa, 4,203,627, Cl. 303-6.00C.
Suzuki, Fumio, 4,204,086, Cl. 174-102.00R.
Sumitomo Light Metal Industries, Ltd.: *See—*
Terai, Shiro; Tanabe, Zenichi; and Fukui, Toshiyasu, 4,203,490, Cl. 165-134.00R.
Sumner, Maurice N., to Sea Horse Corporation, The. Under water crane. 4,203,687, Cl. 405-170.000.
Sun Chemical Corporation: *See—*
Horwitt, Laurence G.; and Mattis, Donald J., 4,204,108, Cl. 219-265.000.
Horwitt, Laurence G.; and Mattis, Donald J., 4,204,109, Cl. 219-265.000.
Sun Oil Company of Pennsylvania: *See—*
Myers, Harry K., Jr., 4,203,930, Cl. 585-22.000.
Suntech, Inc.: *See—*
Norton, Richard V., 4,203,728, Cl. 44-51.000.
Supp, Emil; Jockel, Heinz; Krumm, Hagen; and Marschner, Friedemann, to Metallgesellschaft. Process of producing methanol. 4,203,915, Cl. 260-449.500.
Suris, Leonid I.: *See—*
Ivanov, Jury N.; Artemov, Konstantin V.; Suris, Leonid I.; and Bozhenov, Jury F., 4,203,372, Cl. 410-67.000.
Sutor, Anton H.: *See—*
Hofert, Wilhelm A.; Schlussel, Peter F.; Sutor, Anton H.; and Ullrich, Georg J., 4,203,446, Cl. 128-329.00R.

Sutphin, Eldon M., Jr., to RCA Corporation. Filter which tracks changing frequency of input signal. 4,204,171, Cl. 328-167.000.

Sutton, John R. Elevating assembly for an offshore platform. 4,203,576, Cl. 254-89.00R.

Suzuki, Fumio, to Sumitomo Electric Industries, Ltd. Process for the production of highly expanded polyolefin insulated wires and cables. 4,204,086, Cl. 174-102.00R.

Suzuki, Fumiyuki; Okutu, Toshimitu; and Ohe, Keitaro, to Fuji Photo Film Co., Ltd. Process for preparing polyethylene terephthalate and its low molecular weight oligomers. 4,204,070, Cl. 560-94.000.

Suzuki, Hiroshi; Ito, Yukio; Yasumoto, Yosiro; Kinomura, Sigeru; and Nagashima, Kazuo, to Agency of Industrial Science & Technology. Anionic detergent composition containing a builder mixture comprising an imidobis-sulfate and sodium citrate or nitrilotriacetate. 4,203,873, Cl. 252-545.000.

Sveda, Michael P. Modular electronic timer. 4,204,196, Cl. 340-309.400.

Swager, Gary E., to Xerox Corporation. Electronic facet error correction for laser scanning. 4,204,233, Cl. 358-293.000.

Swiadek, Stanley F. Thermal energy storage system. 4,203,489, Cl. 165-104.00S.

Swiss Aluminium Ltd.: *See—*
Buxmann, Kurt, 4,203,580, Cl. 266-216.000.

Syntex (U.S.A.) Inc.: *See—*
Knopp, Arthur A.; Nash, John E.; and Lewis, Richard P., 4,203,221, Cl. 433-117.000.

Systron Donner Corporation: *See—*
Williams, Stewart J.; and Pickton, Shailer T., 4,204,201, Cl. 340-521.000.

Syva Company: *See—*
Rubenstein, Kenneth E.; and Ullman, Edwin F., 4,203,802, Cl. 435-188.000.

Szechy, Daniel J.: *See—*
Nordstrom, Larry A.; and Szechy, Daniel J., 4,203,678, Cl. 400-320.000.

Szemerey, Zoltan: *See—*
Csizy, Tibor; Karpat, Arpad; Melis, Janos; and Szemerey, Zoltan, 4,204,184, Cl. 337-295.000.

Szmuszkovicz, Jacob, to Upjohn Company, The. N-(2-Aminocyclopentyl)-N-alkanoylanilides as CNS anti-depressants. 4,204,003, Cl. 424-324.000.

Tack, Carl E., to Transdyne, Inc. Resilient pedestal wear plate. 4,203,371, Cl. 105-225.000.

Tacke, Gerhard: *See—*
Raquet, Erwin; Tacke, Gerhard; and Heller, Wilhelm, 4,203,546, Cl. 238-1.000.

Tagashira, Yoshiaki; Takagi, Hitoshi; and Inagaki, Katsumi, to Asahi Kasei Kogyo Kabushiki Kaisha. Waste water treatment method using activated carbon. 4,203,835, Cl. 210-33.000.

Taguchi, Tetsuya: *See—*
Uchidoi, Masanori; Tsunekawa, Tokuichi; Aizawa, Hiroshi; Taguchi, Tetsuya; Ito, Tadashi; and Takishima, Yoshiyuki, 4,203,660, Cl. 354-31.000.

Takada, Masahiro; Uhara, Hiroyuki; and Sato, Takahisa, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process for catalytic vapor phase oxidation. 4,203,906, Cl. 260-346.400.

Takagi, Hitoshi: *See—*
Tagashira, Yoshiaki; Takagi, Hitoshi; and Inagaki, Katsumi, 4,203,835, Cl. 210-33.000.

Takahashi, Hiroyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Damper assembly of pianos. 4,203,341, Cl. 84-255.000.

Takahashi, Koji; Akimoto, Taizo; and Watanabe, Shigeru, to Fuji Photo Film Co., Ltd. Method of detecting flesh color in color originals. 4,203,671, Cl. 356-402.000.

Takahashi, Nagashige. Device for controlling curvature of an end section in an endoscope. 4,203,430, Cl. 128-4.000.

Takahashi, Ryohei: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,203,758, Cl. 71-100.000.

Takamatsu, Hideo: *See—*
Minatono, Shobu; Takamatsu, Hideo; Yamauchi, Junnosuke; and Terao, Katsuyoshi, 4,204,046, Cl. 525-65.000.

Takamizawa, Minoru; Abe, Akira; Ono, Yoshiaki; Sugimori, Yutaka; Kishibayashi, Tetsuo; and Ino, Makoto, to Shin-Etsu Chemical Co. Ltd.; and Yoshino Gypsum Co. Ltd. Organopolysiloxane sized paperboards for gypsum wallboards. 4,204,030, Cl. 428-447.000.

Takasaki, Yoshitaka; Kita, Yasuhiro; Nakagawa, Junichi; and Ishizuka, Kohei, to Hitachi, Ltd. Variable equalizer. 4,204,176, Cl. 333-28.00R.

Takasu, Hitoyuki: *See—*
Yamaguchi, Yoshinobu; and Takasu, Hitoyuki, 4,203,408, Cl. 123-198.0DC.

Takeda Chemical Industries, Ltd.: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,203,899, Cl. 548-194.000.

Takemura, Kazutoshi; Oda, Takashi; and Kiyota, Fumio, to Riken Corporation. Iron-base sintered alloy for valve seat and its manufacture. 4,204,031, Cl. 428-539.500.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,204,038, Cl. 435-78.000.

Takishima, Yoshiyuki: *See—*
Uchidoi, Masanori; Tsunekawa, Tokuichi; Aizawa, Hiroshi; Taguchi, Tetsuya; Ito, Tadashi; and Takishima, Yoshiyuki, 4,203,660, Cl. 354-31.000.

Tanabe, Naoto; Okada, Kenzoh; and Maeda, Norio, to Kurashiki Boseki Kabushiki Kaisha. Method of driving powdery material into porous material of open-celled structure. 4,204,011, Cl. 427-57.000.

Tanabe, Zenichi: *See—*
Terai, Shiro; Tanabe, Zenichi; and Fukui, Toshiyasu, 4,203,490, Cl. 165-134.00R.

Tanaka, Eizi; Nishimatsu, Akira; and Ohashi, Michiniro, to Nippon Soken, Inc. Supercharged internal combustion engine. 4,203,296, Cl. 60-602.000.

Tanaka, Hiroshi; and Sakurai, Kenji, to NGK Spark Plug Co., Ltd. Ceramic cutting tip. 4,203,690, Cl. 407-119.000.

Tanaka, Hiroshi; and Yamamoto, Yoshihiro, to NGK Spark Plug Co., Ltd. Aluminum nitride sintered body coated with alumina. 4,203,733, Cl. 51-295.000.

Tanaka, Kyoji: *See—*
Enomoto, Takamitsu; Tanaka, Kyoji; Kawamoto, Hiromi; Mizuno, Tamotsu; and Fujinaga, Masao, 4,203,955, Cl. 423-308.000.

Tanaka, Osamu: *See—*
Kuroki, Katsuro; and Tanaka, Osamu, 4,203,784, Cl. 148-111.000.

Tanaka, Shizuya: *See—*
Funaki, Yuji; Oshita, Hirofumi; Tanaka, Shizuya; Yamamoto, Shigeo; and Kato, Toshiro, 4,203,995, Cl. 424-273.00R.

Tanaka, Takashi: *See—*
Ii, Tadao; Tanaka, Takashi; and Akaba, Hayao, 4,203,666, Cl. 356-124.000.

Taniguchi, Hideaki: *See—*
Ochiai, Hiroyoshi; and Nakamoto, Masao, 4,203,215, Cl. 30-383.000.

Tanrikut, Yasar: *See—*
Scheffler, Glenn W.; and Tanrikut, Yasar, 4,203,963, Cl. 423-650.000.

Tansi, Hakki M., to Eagle Electric Mfg. Co., Inc. Electrical receptacle and grounding strip therefor. 4,203,638, Cl. 339-14.00P.

Tapdrup, Erik P., to Interlego A.G. Toy figure with channeled leg members. 4,203,248, Cl. 46-22.000.

Tarabaev, Gennady I.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Sidorov, Oleg F.; Tarabaev, Gennady I.; and Pinsky, Gennady I., 4,203,310, Cl. 72-247.000.

Tasco, Inc.: *See—*
Davies, David L., 4,203,261, Cl. 51-141.000.

Tashiro, Norio: *See—*
Koinuma, Tokuju; and Tashiro, Norio, 4,204,138, Cl. 315-39.510.

Tate Architectural Products, Inc.: *See—*
Gladden, Robert S., Jr.; Johnson, Richard J.; Karmazyn, Michael J.; and Tate, Donald L., 4,203,268, Cl. 52-630.000.

Tate, Donald L.: *See—*
Gladden, Robert S., Jr.; Johnson, Richard J.; Karmazyn, Michael J.; and Tate, Donald L., 4,203,268, Cl. 52-630.000.

Tausendfreundt, Jay; and Gentile, Albert, to Imperial Knife Associated Companies, Inc. Biased pocket knife scissors. 4,203,208, Cl. 30-155.000.

Tawfik, Sobhy. Gem dichlorocyclopropanes and method of making same. 4,203,929, Cl. 260-648.00D.

Taylor, David L., to Harris Corporation. Unisolated EAROM memory array. 4,204,275, Cl. 365-163.000.

Taylor Lock Company: *See—*
Schwartz, Jerome; and Levitt, Joseph, 4,203,693, Cl. 409-81.000.

Taylor, Rueben E.: *See—*
United States of America, National Aeronautics and Space Administration; Dill, W. Preston; Taylor, Rueben E.; and Jeffers, Eldon L., 4,204,037, Cl. 435-3.000.

Technicon Instruments Corporation: *See—*
Keyes, Melvin H., 4,204,040, Cl. 435-176.000.
Roy, Ram B., 4,203,921, Cl. 260-553.00A.

Technoresinas Espanola, S.A.: *See—*
Lopez, Manuel A., 4,203,329, Cl. 74-89.200.

Tecumseh Products Company: *See—*
Farr, James B., 4,203,710, Cl. 417-53.000.
Schultz, Curtis L.; and Guntly, Thomas G., 4,203,405, Cl. 123-187.50R.

Tektronix, Inc.: *See—*
Strande, Edward J., 4,204,098, Cl. 200-1.00R.

Teletype Corporation: *See—*
Janiszewski, Stephen, 4,204,088, Cl. 178-22.000.

Telling, Ronald C.; Passingham, Roy J.; Kitchener, Brian L.; and Hopkinson, David G., to Burroughs Wellcome Co. Cell and virus culture systems. 4,203,801, Cl. 435-284.000.

Temple, Lowell D.; and Williams, Richard L. Method for connecting sewer pipes to manholes. 4,203,190, Cl. 29-451.000.

Temple, Ralph E.; and Gooding, William T., Jr., to Diamond Shamrock Corporation. Lightweight silicate aggregate. 4,203,773, Cl. 106-40.00R.

Teppo, Edward A.: *See—*
Pierce, Russell W.; Teppo, Edward A.; and Leet, Henry P., 4,203,667, Cl. 356-152.000.

Terai, Shiro; Tanabe, Zenichi; and Fukui, Toshiyasu, to Sumitomo Light Metal Industries, Ltd.; and Nippondenso Co., Ltd. Heat exchanger core having fin members serving as sacrificial anodes. 4,203,490, Cl. 165-134.00R.

Teraji, Tsutomu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,203,897, Cl. 260-239.100.

Terao, Katsuyoshi: *See—*
Minatono, Shobu; Takamatsu, Hideo; Yamauchi, Junnosuke; and Terao, Katsuyoshi, 4,204,046, Cl. 525-65.000.

Terentiev, Viktor I.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Terrapin International Limited: *See—*
Bolt, John A., 4,203,171, Cl. 4-146.000.

Terry, Malvin D., to Advanced Semiconductor Materials/America. Automatic four-point probe. 4,204,155, Cl. 324-158.00F.

Tetra Pak International AB: *See—*
Larsson, Tore I., 4,203,796, Cl. 156-504.000.

Texaco Development Corp.: *See—*
Gipson, Robert M., 4,203,910, Cl. 260-348.290.

Texaco Inc.: *See—*
Allen, Joseph C., 4,203,853, Cl. 252-8.55D.
Canup, Robert E., 4,203,404, Cl. 123-148.0ND.
Parrack, Alvin L.; and Lunsford, Delbert R., 4,204,279, Cl. 367-40.000.

Textron, Inc.: *See—*
Hangauer, David G., Jr., 4,203,883, Cl. 260-29.2TN.
Thompson, Richard T.; and Matt, Richard J., 4,203,509, Cl. 193-37.000.

Theeuwes, Felix, to Alza Corporation. Osmotic system with volume amplifier for increasing amount of agent delivered therefrom. 4,203,439, Cl. 128-260.000.

Theeuwes, Felix, to Alza Corporation. Device having variable volume chamber for dispensing useful agent. 4,203,440, Cl. 128-260.000.

Theeuwes, Felix, to Alza Corporation. Osmotically triggered device with gas generating means. 4,203,441, Cl. 128-260.000.

Thenon, Christian, to De Visu International. Rollable chart. 4,203,234, Cl. 35-76.000.

Thien, Gerhard: *See—*
Fachbach, Heinz; Thien, Gerhard; and Kirchweger, Karl, 4,203,407, Cl. 123-198.00E.
Fachbach, Heinz; Thien, Gerhard; and Meurer, Peter C., 4,203,409, Cl. 123-198.00E.

Thimsen, Mark J.: *See—*
Ivers, Robert P.; and Thimsen, Mark J., 4,203,265, Cl. 52-81.000.

Thiokol Corporation: *See—*
Kirchoff, George F.; and Schneiter, Fred E., 4,203,787, Cl. 149-35.000.

Thompson, James E. Baseball fielders signaling apparatus. 4,203,595, Cl. 273-25.000.

Thompson, Larry F., to Bell Telephone Laboratories, Incorporated. Method for the fabrication of devices including polymeric materials. 4,203,792, Cl. 156-272.000.

Thompson, Richard T.; and Matt, Richard J., to Textron, Inc. Cargo roller. 4,203,509, Cl. 193-37.000.

Thomson-CSF: *See—*
Ben Sadou, Jean-Claude; and Deman, Pierre, 4,204,172, Cl. 330-134.000.
Heuze, Philippe, 4,204,229, Cl. 358-169.000.
Velasco, Gonzalo; and Papuchon, Michel, 4,203,649, Cl. 350-96.140.

Thorn Electrical Industries Limited: *See—*
Roy, Ashutosh, 4,204,137, Cl. 313-491.000.

Thorp, Anthony J.; Clamp, Frank; Feld, Raoul; Page-Gibson, Joseph E.; and Archer, Keith, to Laporte Industries Limited. Inorganic compounds. 4,203,861, Cl. 252-182.100.

Thorssell, Olof L., to Bulten-Kanthal AB. Flowmetering method and device. 4,203,323, Cl. 73-194.00E.

Timex Corporation: *See—*
Hsu, Ying-Yen, 4,203,862, Cl. 252-299.000.

Timken Company, The: *See—*
Reiter, Gerhard, 4,203,635, Cl. 308-213.000.

Toda, Gyozo: *See—*
Suganuma, Tsuneo; Ishida, Koji; Satoh, Shin; Sugie, Mamoru; Katsuyama, Toshio; and Toda, Gyozo, 4,203,743, Cl. 65-3.00A.

Toder, Ilya A.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Sidorov, Oleg F.; Tarabaev, Gennady I.; and Pinsky, Gennady I., 4,203,310, Cl. 72-247.000.

Tokico, Ltd: *See—*
Saito, Yoshio; Shibata, Yoshio; and Fujiie, Satosi, 4,203,478, Cl. 141-206.000.

Tokuda, Hiromi: *See—*
Nakamura, Shigefumi; Tokuda, Hiromi; and Nohira, Hidetaka, 4,203,399, Cl. 123-119.00A.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Ichise, Wataru; Kinjo, Yasuo; Enokida, Kenji; and Nihei, Hideharu, 4,203,860, Cl. 252-181.200.
Kinoshita, Hiroyuki, 4,204,277, Cl. 365-203.000.
Koinuma, Tokuju; and Tashiro, Norio, 4,204,138, Cl. 315-39.510.

Toledo Stamping & Manufacturing Company: *See—*
Scheppele, Lyle W., 4,203,513, Cl. 198-620.000.

Tolman, Richard L.: *See—*
Fisher, Michael H.; and Tolman, Richard L., 4,203,976, Cl. 424-180.000.

Toma, Hitoshi: *See—*
Tosaka, Umi; Kondo, Hideyo; Murai, Keiichi; and Toma, Hitoshi, 4,203,764, Cl. 430-67.000.

Tomita, Takao; Anno, Nobuo; and Yamamoto, Hitoshi, to Honda Giken Kogyo Kabushiki Kaisha. Shock absorber. 4,203,507, Cl. 188-317.000.

Tomko, Frederick: *See—*
Zemek, Albert W.; Tomko, Frederick; Matson, Crawford; and Darrow, Burr, 4,203,583, Cl. 269-234.000.

Tomy Kogyo Co., Inc.: *See—*
Konta, Yukio, 4,203,603, Cl. 273-129.00W.

Torassa, Gerard: *See—*
Torassa, Jean F.; and Torassa, Gerard, 4,203,529, Cl. 220-337.000.

Torassa, Jean F.; and Torassa, Gerard. Pouring receptacle with automatic closure. 4,203,529, Cl. 220-337.000.

Torelli, Vesperto: *See—*
Pierdet, Andre; Torelli, Vesperto; and Deraedt, Roger, 4,203,981, Cl. 424-243.000.

Tosaka, Umi; Kondo, Hideyo; Murai, Keiichi; and Toma, Hitoshi, to Canon Kabushiki Kaisha. Polyester or polyurethane coated electrostatic image holding member. 4,203,764, Cl. 430-67.000.

Toth Aluminum Corporation: *See—*
Lippman, Alfred, 4,203,962, Cl. 423-625.000.

Toth, Jozsef: *See—*
Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, 4,203,689, Cl. 406-123.000.

Toy, Madeline S.: *See—*
United States of America, National Aeronautics and Space Administration; Toy, Madeline S.; and Stringham, Roger S., 4,203,723, Cl. 8-115.500.

Toyoda Koki Kabushiki Kaisha: *See—*
Nishimura, Hideo; Noda, Shigeo; and Eto, Kunihiko, 4,203,691, Cl. 408-8.000.

Toyomi, Yuritugu: *See—*
Abura, Yoshinori; Toyomi, Yuritugu; and Nishino, Motohisa, 4,203,431, Cl. 128-39.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakamura, Shigefumi; Tokuda, Hiromi; and Nohira, Hidetaka, 4,203,399, Cl. 123-119.00A.
Ohta, Takaaki; and Ito, Sadayoshi, 4,203,628, Cl. 303-6.00C.
Shindo, Yoshio; and Ito, Hiroshi, 4,203,331, Cl. 74-606.00R.

Toyota Shatai Kabushiki Kaisha: *See—*
Miyata, Koji, 4,203,499, Cl. 180-89.120.

Tracy, James L., to Foster Wheeler Energy Corporation. Register. 4,203,718, Cl. 431-188.000.

Traintronics, Inc.: *See—*
Beyl, Earl L., Jr., 4,204,200, Cl. 340-384.00E.

Transdyne, Inc.: *See—*
Tack, Carl E., 4,203,371, Cl. 105-225.000.

Tremix AB: *See—*
Wenander, Harald S., 4,203,714, Cl. 425-85.000.

Trend Communications Limited: *See—*
Duerr, Jonathan H.; and Twitchen, Antony C., 4,203,679, Cl. 400-320.000.

Triumph Werke Nurnberg A.G.: *See—*
Decker, Herbert, 4,203,304, Cl. 64-13.000.

Tromp, Gerardus M. Device to apply a paper sheet to a closet seat. 4,203,530, Cl. 221-186.000.

TRW Inc.: *See—*
Jones, Robert J.; O'Rell, Michael K.; and Hom, Jim M., 4,203,922, Cl. 260-570.00R.

Tsunekawa, Tokuichi: *See—*
Uchidoi, Masanori; Tsunekawa, Tokuichi; Aizawa, Hiroshi; Taguchi, Tetsuya; Ito, Tadashi; and Takishima, Yoshiyuki, 4,203,660, Cl. 354-31.000.

Tsutsui, Hiroshi: *See—*
Yasuno, Yoshitake; Watari, Masafumi; Tsutsui, Hiroshi; Ikedo, Masaru; and Yamamoto, Osamu, 4,204,119, Cl. 250-337.000.

Turner, Charles R.: *See—*
Gill, Harnek S.; and Turner, Charles R., 4,203,301, Cl. 62-131.000.

Twitchen, Antony C.: *See—*
Duerr, Jonathan H.; and Twitchen, Antony C., 4,203,679, Cl. 400-320.000.

Typoligics, Inc.: *See—*
Ready, Patrick J., 4,204,165, Cl. 455-226.000.

Tysarcyk, Stanislav: *See—*
Janning, Jorg; Kaminsky, Walter; Sinn, Hansjorg; and Tysarcyk, Stanislav, 4,203,804, Cl. 202-121.000.

Uchida, Tomoaki, to Victor Company of Japan, Limited. Noise cancellation circuit. 4,204,219, Cl. 358-155.000.

Uchidoi, Masanori; Tsunekawa, Tokuichi; Aizawa, Hiroshi; Taguchi, Tetsuya; Ito, Tadashi; and Takishima, Yoshiyuki, to Canon Kabushiki Kaisha. Automatic exposure control system for single reflex camera. 4,203,660, Cl. 354-31.000.

Uchimura, Terumi: *See—*
Shimizu, Koh; Uchimura, Terumi; Uede, Ken-Ichi; and Nakamura, Katuyoshi, 4,203,838, Cl. 210-63.00R.

Uede, Ken-Ichi: *See—*
Shimizu, Koh; Uchimura, Terumi; Uede, Ken-Ichi; and Nakamura, Katuyoshi, 4,203,838, Cl. 210-63.00R.

Uehara, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Single or plural variable displacement pump control with an improved flow metering valve. 4,203,712, Cl. 417-218.000.

Uhara, Hiroyuki: *See—*
Takada, Masahiro; Uhara, Hiroyuki; and Sato, Takahisa, 4,203,906, Cl. 260-346.400.

Uhing, Joachim. Device for moving objects along a predetermined path. 4,203,511, Cl. 198-458.000.

Ullman, Edwin F.: *See—*
Rubenstein, Kenneth E.; and Ullman, Edwin F., 4,203,802, Cl. 435-188.000.

Ullrich, Georg J.: *See—*
Hofert, Wilhelm A.; Schlussel, Peter F.; Sutor, Anton H.; and Ullrich, Georg J., 4,203,446, Cl. 128-329.00R.
Ulmer, Harry E.: *See—*
Yeh, Chuen Y.; and Ulmer, Harry E., 4,203,923, Cl. 260-586.00P.
Umen, Michael J., to McNeilab, Inc. (Piperidino oxoethoxy)acetic acid compounds, compositions and methods. 4,203,991, Cl. 424-267.000.
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Process for preparing antibiotics MA 144-M_1 and MA 144-M_2. 4,204,038, Cl. 435-78.000.
Underwood, James L.; and Shapiro, Sol, to Adjusta-Mounts, Inc. Adjustable self-inking stamping device. 4,203,362, Cl. 101-327.000.
Unibra Societe Anonyme: *See—*
Delmon, Bernard M.; Portenart, Michel C.; and Viehe, Heinz, 4,203,917, Cl. 260-465.00B.
Unigate Limited Co.: *See—*
McKellen, Patrick E., 4,204,032, Cl. 429-13.000.
Union Carbide Corporation: *See—*
Nunciato, David J.; White, Norman H.; and Woodburn, William A., 4,203,778, Cl. 134-7.000.
Pelton, John F., 4,203,581, Cl. 266-217.000.
Stoddart, Hugh F., 4,204,123, Cl. 250-363.00S.
Union Connector Co., Inc.: *See—*
Wolpert, Richard W.; Wolpert, Alan T.; Bender, John F.; and McCormick, Harold, 4,203,644, Cl. 339-128.000.
Union Oil Company of California: *See—*
Watanabe, David J., 4,203,492, Cl. 166-300.000.
Unisearch Limited: *See—*
Nysen, Paul A., 4,204,260, Cl. 364-554.000.
United Aircraft Products, Inc.: *See—*
Lord, Thomas J., 4,203,566, Cl. 244-57.000.
United States of America
Agriculture: *See—*
Frank, Arlen W., 4,204,072, Cl. 560-158.000.
Friedman, Mendel, 4,203,892, Cl. 260-112.00R.
Mikolajczak, Kenneth L.; and Smith, Cecil R., Jr., 4,203,996, Cl. 424-274.000.
Saunders, Robert M.; and Kohler, George O., 4,204,008, Cl. 426-583.000.
Schultz, William G., 4,204,043, Cl. 435-267.000.
Wolter, Karl E.; Peters, William J.; Roberts, Donald R.; McReynolds, Robert D.; Broomfield, Junior; and Crews, Ernest R., 4,203,253, Cl. 47-10.000.
Air Force: *See—*
Barrett, Alfred J.; and Warner, Samuel M., 4,203,458, Cl. 137-38.000.
Ellis, Herbert B., 4,203,654, Cl. 350-285.000.
Hanloser, Kurt J.; Bruchez, Raymond J.; and Gill, James T., Jr., 4,203,285, Cl. 60-261.000.
Hose, Eddy, 4,204,210, Cl. 343-6.00R.
Minard, James V.; Goldman, Loeb J.; and Foss, Dale R., 4,203,642, Cl. 339-75.0MP.
Warburton, Robert E., 4,203,286, Cl. 60-266.000.
America: *See—*
Buchanan, Thomas M., 4,203,971, Cl. 424-92.000.
Army: *See—*
Brown, Harry A., Jr.; and Durgin, Robert F., 4,203,974, Cl. 424-166.000.
Filipov, Andree N.; Johnson, Richard N.; and Winslow, Christopher N., 4,204,198, Cl. 340-347.0AD.
Sindoris, Arthur R.; Farrar, Frederick G.; and Schaubert, Daniel H., 4,204,212, Cl. 343-700.0MS.
Commerce: *See—*
Hart, Robert L.; Paul, Frank W.; and Sauer, Wolfgang J., 4,203,582, Cl. 269-32.000.
Energy: *See—*
Miller, Donald M., 4,203,303, Cl. 64-12.000.
Interior: *See—*
Bice, Charles D.; Cooper, John H.; and Fenger, Michael L., 4,203,640, Cl. 339-41.000.
Hawkes, Ivor, 4,203,192, Cl. 29-452.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Dill, W. Preston; Taylor, Rueben E.; and Jeffers, Eldon L. Method and automated apparatus for detecting coliform organisms. 4,204,037, Cl. 435-3.000.
Rosier, William R.; and Volk, George G. Portable device for use in starting air-start units for aircraft and having cable lead testing capability. 4,204,154, Cl. 324-51.000.
Toy, Madeline S.; and Stringham, Roger S. Vitra-violet process for producing flame resistant polyamides and products produced thereby. 4,203,723, Cl. 8-115.500.
Navy: *See—*
Burnham, Bradshaw; and Nichols, Charles F., 4,203,365, Cl. 102-214.000.
Coleman, Randolph D., 4,204,143, Cl. 318-341.000.
Pierce, Russell W.; Teppo, Edward A.; and Leet, Henry P., 4,203,667, Cl. 356-152.000.
Slaton, Jack H., 4,204,280, Cl. 367-95.000.
Wilkes, Gilbert, 4,203,366, Cl. 102-214.000.
U.S. Philips Corporation: *See—*
de Jager, Frank, 4,204,163, Cl. 375-25.000.
Eggermont, Ludwig D. J., 4,204,177, Cl. 333-166.000.
Kowalski, Gunter, 4,204,124, Cl. 250-445.00T.
Mitchell, Richard F., 4,204,178, Cl. 333-194.000.
Ricouard, Jean-Pierre; and Schorter, Bruno, 4,204,158, Cl. 324-208.000.
van den Hanenberg, Joannes G.; and de Munnik, Frederikus J., 4,204,253, Cl. 364-200.000.
United States Steel Corporation: *See—*
Snyder, George F.; and Stewart, Robert M., 4,204,022, Cl. 428-337.000.
United Technologies Corporation: *See—*
Grantham, Daniel H., 4,203,813, Cl. 204-103.000.
Grantham, Daniel H., 4,203,814, Cl. 204-129.000.
Hess, W. Graig, 4,203,706, Cl. 416-97.00A.
Lipman, Kenneth, 4,204,264, Cl. 363-71.000.
Rybicki, Robert C., 4,203,708, Cl. 416-134.00A.
Scheffler, Glenn W.; and Tanrikut, Yasar, 4,203,963, Cl. 423-650.000.
Sederquist, Richard A., 4,203,950, Cl. 422-197.000.
Vivirito, Joseph R., 4,204,268, Cl. 363-135.000.
Wesbecher, James J., 4,203,705, Cl. 416-95.000.
Universal Instruments Corporation: *See—*
Zemek, Albert W.; Tomko, Frederick; Matson, Crawford; and Darrow, Burr, 4,203,583, Cl. 269-234.000.
University Patents, Inc.: *See—*
Heeger, Alan J.; MacDiarmid, Alan G.; Chiang, Chwan K.; and Gau, Shek-Chung, 4,204,216, Cl. 357-8.000.
Unsold, Eberhard: *See—*
Aberle, Lothar; Bank, Walter; Hillenkamp, Franz; Kaufmann, Raimund; Nitsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,204,117, Cl. 250-287.000.
UOP Inc.: *See—*
Frame, Robert R., 4,203,827, Cl. 208-206.000.
Imai, Tamotsu; and Homeier, Edwin H., 4,204,066, Cl. 546-348.000.
Upjohn Company, The: *See—*
Evans, Timothy W., 4,203,903, Cl. 260-340.300.
Kelly, Robert C., 4,204,057, Cl. 542-426.000.
Nelson, Norman A., 4,203,924, Cl. 568-379.000.
Nelson, Norman A., 4,204,079, Cl. 568-838.000.
Szmuszkovicz, Jacob, 4,204,003, Cl. 424-324.000.
USM Corporation: *See—*
Rawson, Francis F. H., 4,203,189, Cl. 29-432.000.
Usui, Kiyofumi; Otsuki, Chihiro; and Inukai, Sadaharu, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. End of paper roll detection assembly. 4,204,180, Cl. 335-205.000.
Valeron Corporation, The: *See—*
Ruszala, Frederick B.; and Cook, Kenneth J., 4,204,261, Cl. 364-607.000.
Vance, Fred L., Jr.: *See—*
Bressler, Wilbur L.; Lowery, Kirby, Jr.; and Vance, Fred L., Jr., 4,204,050, Cl. 526-97.000.
van den Hanenberg, Joannes G.; and de Munnik, Frederikus J., to U.S. Philips Corporation. Device for generating and correcting a user program. 4,204,253, Cl. 364-200.000.
VandenHoek, Harold L.; Speet, Larry A.; and Mohr, Robert G., to Steelcase, Inc. Panel wiring system. 4,203,639, Cl. 339-22.00R.
van der Harst, Pieter A., to Hoogovens IJmuiden, B.V. Railway level crossing. 4,203,547, Cl. 238-8.000.
van der Sanden, Ludovicus C.: *See—*
Gilissen, Hermanus P. J.; van Dijk, Petrus R. M.; and van der Sanden, Ludovicus C., 4,203,203, Cl. 29-846.000.
van Dijk, Petrus R. M.: *See—*
Gilissen, Hermanus P. J.; van Dijk, Petrus R. M.; and van der Sanden, Ludovicus C., 4,203,203, Cl. 29-846.000.
Vandlik, Robert P.; and Herdzina, Frank J., to American Can Company. Positive transfer means between two independently driven mechanical presses. 4,203,314, Cl. 72-427.000.
van Heek, Karl-Heinrich: *See—*
Wagener, Heinrich; and van Heek, Karl-Heinrich, 4,203,833, Cl. 209-139.00R.
Van Note, Richard. Dissecting board and process for dissecting a specimen. 4,203,231, Cl. 35-20.000.
Van Over, William E.: *See—*
Brown, Alvin E.; and Van Over, William E., 4,203,322, Cl. 73-194.00A.
Van Pelt, R. Harrison, Jr. Ski training device. 4,203,235, Cl. 36-118.000.
van Westenbrugge, Johan K.: *See—*
Beyer, Nico H. H.; Huigen, Johannes H.; and van Westenbrugge, Johan K., 4,203,185, Cl. 29-157.30C.
Varco International, Inc.: *See—*
Boyadjieff, George I.; and Gill, Jerry A., 4,203,182, Cl. 24-263.00D.
Varga, Janos: *See—*
Aradi, Emil; Blickle, Tibor; Monostori, Endre; Nemeth, Jeno; Pallai, Ivanne; and Varga, Janos, 4,203,228, Cl. 34-10.000.
Vargiu, Silvio; Carpaneti, Edoardo; and Passalenti, Beppino, to Societa Italiana Resine S.I.R. S.p.A. Compositions hardenable by UV radiation comprising an unsaturated epoxy resin ester and an unsaturated monomer. 4,203,816, Cl. 204-159.160.
Varian Associates, Inc.: *See—*
Patterson, Paul L., 4,203,726, Cl. 23-232.00E.
Varshavsky, Ilya L.: *See—*
Podgorny, Anatoly N.; Varshavsky, Ilya L.; Solovei, Viktor V.; and Sinegubova, Elena V., 4,203,711, Cl. 417-207.000.
Vaseen, V. A., to Vaseen, Vesper Albert. Oxygen production by paramagnetic removal of magnetized oxygen from liquid air. 4,203,740, Cl. 62-18.000.
Vaseen, Vesper Albert: *See—*
Vaseen, V. A., 4,203,740, Cl. 62-18.000.

Vasilevsky, Petr N.; Ediny, Jury G.; and Parfinenko, Ivan V. Method of removing concretions from the ureter. 4,203,429, Cl. 128-1.00R.
Vaussanvin, Marcel, to Manufacture Metallurgique de Tournus. Oscillating cooking apparatus. 4,203,357, Cl. 99-340.000.
Velasco, Gonzalo; and Papuchon, Michel, to Thomson-CSF. Process for manufacturing an integrated optical structure and an opto-electronic device using said structure. 4,203,649, Cl. 350-96.140.
Vermeer, Gary J. Tractor mounted harvester unit. 4,203,275, Cl. 56-15.800.
Verne, Michel, to Societe Anonyme DBA. Level indicator. 4,204,203, Cl. 340-620.000.
Vertesy, Laszlo; and Huber, Gerhard, to Hoechst Aktiengesellschaft. Process for obtaining cephalosporin C and the salts and derivatives thereof from culture filtrates or culture solutions. 4,204,058, Cl. 544-4.000.
Victor Company of Japan, Limited: *See—*
Ishigaki, Yukinobu; and Muraoka, Teruo, 4,204,091, Cl. 179-1.0GB.
Uchida, Tomoaki, 4,204,219, Cl. 358-155.000.
Vidas, Pat. Trumpet and synthesizer apparatus capable of polyphonic operation. 4,203,338, Cl. 84-1.140.
Viehe, Heinz: *See—*
Delmon, Bernard M.; Portenart, Michel C.; and Viehe, Heinz, 4,203,917, Cl. 260-465.00B.
Vieille-Mecet, Jean-Pierre J. Y. Additional carburetor. 4,203,411, Cl. 123-127.000.
Vieu, Alain; and Flambard, Christian, to Framatome; and Centre Technique des Industries Mechaniques. Reference part, especially for nondestructive testing by ultrasonic vibrations, and a method for the fabrication of said part. 4,203,315, Cl. 73-1.00R.
Villamos Berendezes es Keszuvek Muvek: *See—*
Csizy, Tibor; Karpat, Arpad; Melis, Janos; and Szemerey, Zoltan, 4,204,184, Cl. 337-295.000.
Vitale, Gina G.: *See—*
LeGrand, Donald G.; and Vitale, Gina G., 4,204,025, Cl. 428-409.000.
Le Grand, Donald G.; and Vitale, Gina G., 4,204,026, Cl. 428-409.000.
Vitek, Randall M.: *See—*
Lautenschlager, Eugene P.; Robinson, Peter J.; and Vitek, Randall M., 4,203,223, Cl. 433-75.000.
Vitellaro, Frank A., to Dayco Corporation. Wire reinforced hose. 4,203,476, Cl. 138-122.000.
Vivirito, Joseph R., to United Technologies Corporation. Auxiliary commutation circuit for an inverter. 4,204,268, Cl. 363-135.000.
Vogt, Hans. Device for cooking foodstuffs. 4,203,358, Cl. 99-352.000.
Voith Turbo GmbH & Co., KG: *See—*
Muschelknautz, Horst, 4,203,289, Cl. 60-358.000.
Vokac, James: *See—*
McMullen, James; and Vokac, James, 4,203,387, Cl. 118-715.000.
Volk, George G.: *See—*
United States of America, National Aeronautics and Space Administration; Rosier, William R.; and Volk, George G., 4,204,154, Cl. 324-51.000.
Voll, Walter. Metal detector circuit with automatic optimum sensitivity adjustment. 4,204,160, Cl. 324-236.000.
von Beckmann, Helmuth: *See—*
Stewart, John K.; and von Beckmann, Helmuth, 4,203,367, Cl. 104-7.00B.
Vorbruggen, Helmut: *See—*
Finke, Ulrich; Moretto, Hans-Heinrich; Niederprum, Hans; and Vorbruggen, Helmut, 4,203,914, Cl. 556-428.000.
Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia: *See—*
Kalinichenko, Anatoly Y., 4,204,267, Cl. 363-85.000.
VSI Corporation: *See—*
Hall, David E.; and Stencel, Edgar L., 4,203,346, Cl. 85-70.000.
Vyse, Gerrard N.; and Cooke, Horise M., to Stratoflex, Inc. Method and apparatus for testing hydraulic and pneumatic systems. 4,203,321, Cl. 73-168.000.
W. R. Grace & Co.: *See—*
Kramm, David E.; and Ketley, Arthur D., 4,204,010, Cl. 427-44.000.
Wacker-Chemie GmbH: *See—*
Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 4,203,913, Cl. 556-401.000.
Waegaert, Pierre: *See—*
Leclerc, Jean-Francois; and Waegaert, Pierre, 4,203,453, Cl. 131-20.00R.
Wagener, Dietrich: *See—*
Meckel, Joachim F.; Rohde, Wolfgang; Siebert, Werner; Wagener, Dietrich; Flockenhaus, Claus; and Galow, Manfred, 4,203,803, Cl. 201-40.000.
Wagener, Heinrich; and van Heek, Karl-Heinrich, to Bergwerksverband GmbH. Conveying and classifying of particulate substances. 4,203,833, Cl. 209-139.00R.
Wallace, Charles W. Action sign. 4,203,241, Cl. 40-406.000.
Wallace, Trevor E., to Steel Engineering Company Limited, The. Hydraulic percussive machines. 4,203,350, Cl. 91-235.000.
Walsh, Dennis E.: *See—*
Rollmann, Louis D.; and Walsh, Dennis E., 4,203,830, Cl. 208-236.000.
Walter, Alfred, to Alfred Walter AG. Testing apparatus for multiple copy form sets. 4,203,320, Cl. 73-150.00R.
Walter Kidde & Company, Inc.: *See—*
Parisi, Michael S.; and Pauly, John A., 4,204,186, Cl. 338-30.000.
Walter, Ludwig: *See—*
Simoleit, Hartmut; and Walter, Ludwig, 4,203,953, Cl. 423-243.000.
Walter, Siegfried; Schneider, Michael; and Nagel, Hartmut, to Polygraph Leipzig Kombinat fuer Polygraphiscje Maschinen und Ausrustungen. Sheet gripper for printing cylinder and the like. 4,203,363, Cl. 101-409.000.
Wang, Patricia C.; Wingard, Robert E., Jr.; and Crosby, Guy A., to Dynapol. 4-(Dihydroxyhexoxy)dihydrochalcone sweeteners. 4,204,007, Cl. 426-548.000.
Wankel, Felix. Water foil. 4,203,381, Cl. 114-274.000.
Warburton, Robert E., to United States of America, Air Force. Cooling apparatus for an exhaust nozzle of a gas turbine engine. 4,203,286, Cl. 60-266.000.
Ward, Eldon L.: *See—*
Martin, Charles W.; and Ward, Eldon L., 4,203,999, Cl. 424-286.000.
Wardlaw, Stephen C.; and Levine, Robert A. Insulating window structure and method of forming the same. 4,204,015, Cl. 428-34.000.
Warkentin, Aaron J.; and Hiebert, Jacob, to Pennwalt Corporation. Apparatus for packing articles of fruit into boxes. 4,203,274, Cl. 53-537.000.
Warne, Michael A.; and Hayfield, Peter C. S., to IMI Marston Limited. Electrolytic process employing electrodes having coatings which comprise platinum. 4,203,810, Cl. 204-38.00B.
Warner-Lambert Company: *See—*
Parcell, Robert F.; and Nordin, Ivan C., 4,203,895, Cl. 260-239.00E.
Warner, Samuel M.: *See—*
Barrett, Alfred J.; and Warner, Samuel M., 4,203,458, Cl. 137-38.000.
Warolin, Christian J. M.: *See—*
Joullie, Maurice; Maillard, Gabriel; Lakah, Lucien; Warolin, Christian J. M.; and Pascal, Yves R. A., 4,203,986, Cl. 424-250.000.
Warren, Craig B.: *See—*
Crutchfield, Marvin M.; Papanu, Victor D.; and Warren, Craig B., 4,204,052, Cl. 525-398.000.
Warywoda, Joseph: *See—*
Krolak, Ronald F.; and Warywoda, Joseph, 4,203,643, Cl. 339-107.000.
Washbourn, Jack: *See—*
Burnham, Jack; and Washbourn, Jack, 4,203,353, Cl. 92-159.000.
Watanabe, David J., to Union Oil Company of California. Method for acidizing siliceous materials contained in high temperature formations. 4,203,492, Cl. 166-300.000.
Watanabe, Kimihiro: *See—*
Suhara, Yasuji; Maruyama, Hiromi; Sawada, Toyoaki; Ogawa, Mayumi; Yokose, Kazuteru; Fujiu, Morio; and Watanabe, Kimihiro, 4,204,044, Cl. 435-280.000.
Watanabe, Shigeru: *See—*
Takahashi, Koji; Akimoto, Taizo; and Watanabe, Shigeru, 4,203,671, Cl. 356-402.000.
Watari, Masafumi: *See—*
Yasuno, Yoshitake; Watari, Masafumi; Tsutsui, Hiroshi; Ikedo, Masaru; and Yamamoto, Osamu, 4,204,119, Cl. 250-337.000.
Watson, Kenneth, to Westland Aircraft Limited. Helicopter rotor and blade connection. 4,203,709, Cl. 416-134.00A.
Way, Lee V., Jr. Portable solar/non-solar cooker. 4,203,427, Cl. 126-451.000.
Weber, Richard A.: *See—*
Kurtz, Anthony D.; and Weber, Richard A., 4,204,185, Cl. 338-4.000.
Wechsung, Reiner: *See—*
Aberle, Lothar; Bank, Walter; Hillenkamp, Franz; Kaufmann, Raimund; Nitsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,204,117, Cl. 250-287.000.
Wegehaupt, Karl-Heinrich: *See—*
Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 4,203,913, Cl. 556-401.000.
Weghaupt, Erich: *See—*
Fritz, Werner; and Weghaupt, Erich, 4,204,134, Cl. 310-52.000.
Weichart, Helmut; and Schmidt, Jurgen, to Prakla-Seismos GmbH. Cable for sea seismic exploration. 4,204,188, Cl. 340-7.00R.
Weiler, Wolfgang, to Motoren- und Turbinen-Union Munchen GmbH. Combustion chamber, especially annular reverse-flow combustion chamber for gas turbine engines. 4,203,283, Cl. 60-39.360.
Wella Aktiengesellschaft: *See—*
Hildebrandt, Bodo; Janele, Erich; and Steigerwald, Franz, 4,203,517, Cl. 206-221.000.
Wellendorf, Klaus: *See—*
Gast, Uwe; Kiralfy, Dennis; Schaefer, Klaus; Slawik, Eckhard; and Wellendorf, Klaus, 4,204,223, Cl. 358-80.000.
Wellner, Wolfgang; and Gruber, Hermann, to Bayer Aktiengesellschaft. Process for polyurethanes from ortho-ester-blocked polyols. 4,204,051, Cl. 528-55.000.
Wells, Theodore W. Rockable TV mount. 4,203,636, Cl. 312-7.0TV.
Welsh, Alan B.; and Robinson, John W., to Kimball International, Inc. Brass keyer system for electronic organ. 4,203,339, Cl. 84-1.190.
Welty, William R.: *See—*
Jamison, John W.; Welty, William R.; and Masciello, Vincent A., deceased, 4,203,257, Cl. 51-2.00R.
Wenander, Harald S., to Tremix AB. Apparatus for vacuum processing of concrete. 4,203,714, Cl. 425-85.000.
Wennerstrom, Jerald M.: *See—*
Knoebel, Paul S.; and Wennerstrom, Jerald M., 4,203,391, Cl. 122-4.00D.
Wesbecher, James J., to United Technologies Corporation. Bonded turbine disk for improved low cycle fatigue life. 4,203,705, Cl. 416-95.000.

Wessel, Francis H.: *See—*
Hurley, Donald L.; Wessel, Francis H.; and Bange, Joseph B., 4,203,570, Cl. 251-14.000.

Western States Machine Company, The: *See—*
Hurley, Donald L.; Wessel, Francis H.; and Bange, Joseph B., 4,203,570, Cl. 251-14.000.

Western Sulfur Remelters Ltd.: *See—*
Ellithorpe, Ernest R.; and Ellithorpe, Richard C., 4,203,625, Cl. 299-6.000.

Westinghouse Brake & Signal Co. Ltd.: *See—*
Burnham, Jack; and Washbourn, Jack, 4,203,353, Cl. 92-159.000.

Westinghouse Electric Corp.: *See—*
Baldwin, Gary D.; and Rampolla, Robert W., 4,204,175, Cl. 331-94.50D.
Blewitt, Donald D., 4,204,183, Cl. 337-295.000.
Carter, Woodward C., II, 4,204,127, Cl. 307-39.000.
Cresswell, Michael W.; and Fiedor, Richard J., 4,204,116, Cl. 250-229.000.
Gyugyi, Laszlo; and Brennen, Michael B., 4,204,151, Cl. 323-119.000.
Kruper, Andrew P., 4,204,128, Cl. 307-141.000.
Lin, Kou C.; and Woods, Edmund E., 4,204,087, Cl. 174-120.0SR.
Phillips, Donald M., 4,204,136, Cl. 313-473.000.
Smith, James D. B.; and Kauffman, Robert N., 4,204,181, Cl. 336-96.000.
Wheeler, Myron S.; and Creasy, Stephen L., 4,204,213, Cl. 343-706.000.
Zitelli, William E.; and Heltsley, Alan T., 4,204,258, Cl. 364-494.000.

Westland Aircraft Limited: *See—*
Watson, Kenneth, 4,203,709, Cl. 416-134.00A.

Weyer, Reinhard, to Siemens Aktiengesellschaft. System for long distance transmission of signals in both directions. 4,204,189, Cl. 340-40.000.

Wheeler, Myron S.; and Creasy, Stephen L., to Westinghouse Electric Corp. Flexible dipole antenna. 4,204,213, Cl. 343-706.000.

White, Norman H.: *See—*
Nunciato, David J.; White, Norman H.; and Woodburn, William A., 4,203,778, Cl. 134-7.000.

Whitefield, Martin: *See—*
Yarrow, Hyman; and Whitefield, Martin, 4,203,969, Cl. 424-83.000.

Whittaker, Norman: *See—*
Caldwell, Albert G.; and Whittaker, Norman, 4,204,068, Cl. 548-313.000.

Wick, Alexander E.: *See—*
Kompis, Ivan; and Wick, Alexander E., 4,203,980, Cl. 424-229.000.

Wiebe, Gerald L. Method and apparatus for making an encapsulated plug-in blade fuse. 4,203,200, Cl. 29-623.000.

Wieland, Clarence W. Child-proof closure device. 4,203,524, Cl. 215-216.000.

Wiener, Joseph, to Dorf, Carl. Dental model assembly and production method. 4,203,219, Cl. 433-74.000.

Wigley, Patrick A., to CPS, Inc. Heat dissipating circuit board assembly. 4,204,247, Cl. 361-387.000.

Wiley, David; and Williams, David G., to Lucas Industries Limited. Brake pad wear detection system. 4,204,190, Cl. 340-52.00A.

Wilkes, Gilbert, to United States of America, Navy. FM Fuze circuit. 4,203,366, Cl. 102-214.000.

William H. Rorer, Inc.: *See—*
Diamond, Julius; and Douglas, George H., 4,203,920, Cl. 260-553.00A.
Diamond, Julius; and Douglas, George H., 4,204,000, Cl. 424-304.000.
Douglas, George H.; Mir, Ghulam N.; Won, Chong M.; and Studt, William L., 4,203,984, Cl. 424-249.000.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; and Won, Chong M., 4,203,983, Cl. 424-249.000.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,203,985, Cl. 424-249.000.

Williams, Alice J.; and Gregory, Martha D. Picture holder. 4,203,239, Cl. 40-152.100.

Williams, Anthony L.: *See—*
Stoloff, Alfred; and Williams, Anthony L., 4,203,880, Cl. 260-23.0XA.

Williams, David G.: *See—*
Wiley, David; and Williams, David G., 4,204,190, Cl. 340-52.00A.

Williams, Richard H. Flexible coupling. 4,203,305, Cl. 64-15.00R.

Williams, Richard L.: *See—*
Temple, Lowell D.; and Williams, Richard L., 4,203,190, Cl. 29-451.000.

Williams, Stewart J.; and Pickton, Shailer T., to Systron Donner Corporation. Modular alarm system. 4,204,201, Cl. 340-521.000.

Williamson, Charles W.: *See—*
Sims, J. Robert, Jr.; Mitchell, Willard N.; and Williamson, Charles W., 4,203,942, Cl. 264-559.000.

Williamson, Glen A. Water driven engine. 4,203,702, Cl. 415-60.000.

Willis, Brian J.: *See—*
Barton, Derek H. R.; and Willis, Brian J., 4,203,925, Cl. 568-362.000.

Willis, Roger L., to Eastman Kodak Company. Safety circuit for electronic flash apparatus. 4,204,140, Cl. 315-241.00P.

Wilson, David W.: *See—*
Shoemaker, William E.; and Wilson, David W., 4,204,114, Cl. 371-25.000.

Wilson Greatbatch Ltd.: *See—*
Mead, Ralph T.; Greatbatch, Wilson; Rudolph, Frank W.; and Frenz, Norbert W., Jr., 4,203,201, Cl. 29-623.100.

Wilson, Phillip S.: *See—*
Goedde, Edwin J.; Holub, Fred F.; and Wilson, Phillip S., 4,203,887, Cl. 260-40.00R.

Wingard, Robert E., Jr.: *See—*
Wang, Patricia C.; Wingard, Robert E., Jr.; and Crosby, Guy A., 4,204,007, Cl. 426-548.000.

Winslow, Christopher N.: *See—*
Filipov, Andree N.; Johnson, Richard N.; and Winslow, Christopher N., 4,204,198, Cl. 340-347.0AD.

Winter, Karl; and Staschik, Guunter, to Ceagfilter und Entstaubungstechnik GmbH. Method and apparatus for the selective adsorption of vaporous or gaseous impurities from other gases. 4,203,734, Cl. 55-26.000.

Winzelberg, Leo L., to Strouse, Adler Company, The. Stretchable underwire casing for breast pockets. 4,203,449, Cl. 128-473.000.

Wirtz, Peter; and Broall, Richard, to Hoechst Aktiengesellschaft. Foam extinguishing agent. 4,203,850, Cl. 252-8.050.

Wisconsin Alumni Research Foundation: *See—*
Mistretta, Charles A., 4,204,225, Cl. 358-111.000.
Mistretta, Charles A.; Kruger, Robert A.; and Houk, Theodore L., 4,204,226, Cl. 358-111.000.

Wiseman, Russell M., to Diamond Shamrock Corporation. Electrolytic cell brine flow meter. 4,203,820, Cl. 204-263.000.

Wissley, Rudolph W.: *See—*
Hackett, Barrie H.; and Wissley, Rudolph W., 4,203,198, Cl. 29-611.000.

Witt, Edward, to Kendall Company, The. Mixed sulfonated emulsifying agents used to produce adhesive compositions from acrylic monomers and adhesive tape using the compositions. 4,204,023, Cl. 428-355.000.

Wolpert, Alan T.: *See—*
Wolpert, Richard W.; Wolpert, Alan T.; Bender, John F.; and McCormick, Harold, 4,203,644, Cl. 339-128.000.

Wolpert, Richard W.; Wolpert, Alan T.; Bender, John F.; and McCormick, Harold, to Union Connector Co., Inc. Spring lock. 4,203,644, Cl. 339-128.000.

Wolter, Karl E.; Peters, William J.; Roberts, Donald R.; McReynolds, Robert D.; Broomfield, Junior; and Crews, Ernest R., to United States of America, Agriculture. Process for increasing oleoresin synthesis in pinus species. 4,203,253, Cl. 47-10.000.

Wolters, Heinrich: *See—*
Drachenberg, Werner; and Wolters, Heinrich, 4,203,939, Cl. 264-130.000.

Won, Chong M.: *See—*
Douglas, George H.; Mir, Ghulam N.; Won, Chong M.; and Studt, William L., 4,203,984, Cl. 424-249.000.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; and Won, Chong M., 4,203,983, Cl. 424-249.000.
Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., 4,203,985, Cl. 424-249.000.

Wood, Kenneth O.: *See—*
Hevenor, Charles M., Jr.; and Wood, Kenneth O., 4,204,145, Cl. 318-568.000.

Woodburn, William A.: *See—*
Nunciato, David J.; White, Norman H.; and Woodburn, William A., 4,203,778, Cl. 134-7.000.

Woods, Edmund E.: *See—*
Lin, Kou C.; and Woods, Edmund E., 4,204,087, Cl. 174-120.0SR.

Woods, Hanbury J.; Chase, John D.; and Galvez, Buenaventura B., to Gulf Canada Limited. Etherification processing of light hydrocarbons. 4,204,077, Cl. 568-697.000.

Woskow, Marvin Z., to Denka Chemical Corporation. Method for preparing stable, liquid tetrahydrophthalic anhydride for use in preparing polyesters. 4,203,905, Cl. 260-346.300.

Wright, Jeremy: *See—*
Arnett, Carroll D.; Wright, Jeremy; and Zenker, Nicolas, 4,204,069, Cl. 548-325.000.

Wright, Robert G.: *See—*
Cortigene, Louis R.; and Wright, Robert G., 4,203,388, Cl. 119-1.000.

Wu, Ching-Yong; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Hydroxidation of gaseous olefins with ethylbenzene hydroperoxide in a heterogeneous liquid system. 4,203,926, Cl. 568-319.000.

Wunderlich, Klaus: *See—*
Hohmann, Walter; Wunderlich, Klaus; and Seidler, Helmut, 4,203,885, Cl. 260-369.000.

Wurlitzer Company, The: *See—*
Schwartz, Harold O.; and Kidd, Dennis E., 4,203,337, Cl. 84-1.010.

Wusirika, Raja R.: *See—*
Schultz, Peter C.; and Wusirika, Raja R., 4,203,744, Cl. 65-3.00A.

Wutscher, Johann H. Snuff projector. 4,203,454, Cl. 131-170.00R.

Wynn, Edward J.; and Bryant, Cal L., to Sperry Rand Corporation. Automatic bale wagon control system. 4,203,695, Cl. 414-40.000.

Xerox Corporation: *See—*
Hoyer, August, 4,203,586, Cl. 271-34.000.
Mitrovich, Svetislav, 4,203,680, Cl. 400-335.000.
Sprague, Robert A., 4,204,230, Cl. 358-213.000.
Swager, Gary E., 4,204,233, Cl. 358-293.000.

Yabe, Ikuo, to Nikkiso Co., Ltd. Automatic apparatus for continuous determination of boron and lithium concentrations. 4,204,259, Cl. 438-497.000.

Yagi, Kenjiro; and Hirai, Hirotomo, to Kabushiki Kaisha Daini Seikosha. Electronic display device. 4,204,205, Cl. 340-719.000.

Yamada, Senichi; and Kato, Yoshio, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Steel having a uni-directional lamellar martensite structure in an austenite matrix. 4,203,782, Cl. 148-12.00E.

Yamaguchi, Osamu: *See—*
Mukai, Sadayoshi; Otani, Yoshiaki; and Yamaguchi, Osamu, 4,203,933, Cl. 260-990.000.

Yamaguchi, Tetsuo: *See—*
Shimizu, Norio; Odawara, Youji; Yamaguchi, Tetsuo; Saitou, Setsuo; Nakaoka, Azuma; and Ichihashi, Kazuaki, 4,203,841, Cl. 210-205.000.

Yamaguchi, Yoshinobu; and Takasu, Hitoyuki, to Honda Giken Kogyo Kabushiki Kaisha. Lubricating oil detector for an internal combustion engine. 4,203,408, Cl. 123-198.0DC.

Yamamoto, Hitoshi: *See—*
Tomita, Takao; Anno, Nobuo; and Yamamoto, Hitoshi, 4,203,507, Cl. 188-317.000.

Yamamoto, Osamu: *See—*
Yasuno, Yoshitake; Watari, Masafumi; Tsutsui, Hiroshi; Ikedo, Masaru; and Yamamoto, Osamu, 4,204,119, Cl. 250-337.000.

Yamamoto, Shigeo: *See—*
Funaki, Yuji; Oshita, Hirofumi; Tanaka, Shizuya; Yamamoto, Shigeo; and Kato, Toshiro, 4,203,995, Cl. 424-273.00R.

Yamamoto, Yoshihiro: *See—*
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, 4,203,733, Cl. 51-295.000.

Yamashita, Kyoichi, to Koyo Jidoki Corporation Ltd. Labeling device. 4,203,798, Cl. 156-567.000.

Yamauchi, Junnosuke: *See—*
Minatono, Shobu; Takamatsu, Hideo; Yamauchi, Junnosuke; and Terao, Katsuyoshi, 4,204,046, Cl. 525-65.000.

Yang, Huan-Tong, to GTE Automatic Electric Laboratories Incorporated. Low power consumption relay switching circuit for use in conjunction with a line test trunk interfacing to a test desk. 4,204,241, Cl. 361-154.000.

Yano, Takato: *See—*
Ogura, Masaaki; Seko, Nachio; and Yano, Takato, 4,203,663, Cl. 355-14.00C.

Yarrow, Hyman; and Whitefield, Martin, to Drythanol Limited. Dithranol compositions for topical applications. 4,203,969, Cl. 424-83.000.

Yasumoto, Yosiro: *See—*
Suzuki, Hiroshi; Ito, Yukio; Yasumoto, Yosiro; Kinomura, Sigeru; and Nagashima, Kazuo, 4,203,873, Cl. 252-545.000.

Yasuno, Yoshitake; Watari, Masafumi; Tsutsui, Hiroshi; Ikedo, Masaru; and Yamamoto, Osamu, to Matsushita Electric Industrial Co., Ltd. Method of reading thermoluminescent dosimeter. 4,204,119, Cl. 250-337.000.

Yeager, Marvin L.: *See—*
Desso, Jerome A.; Ritchie, Leon T.; and Yeager, Marvin L., 4,203,646, Cl. 339-205.000.

Yeh, Chuen Y.; and Ulmer, Harry E., to Allied Chemical Corporation. Method for promotion of phenol hydrogenation. 4,203,923, Cl. 260-586.00P.

Yeh, Yu Shuan, to Bell Telephone Laboratories, Incorporated. Variable frame rate technique for use in a time-division multiple access (TDMA) communication system. 4,204,093, Cl. 370-95.000.

Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; and Won, Chong M., to William H. Rorer, Inc. Spasmolytic triazinones. 4,203,983, Cl. 424-249.000.

Yelnosky, John; Douglas, George H.; Mir, Ghulam N.; Patel, Dahyabhai M.; Won, Chong M.; and Alioto, Ronald L., to William H. Rorer, Inc. Antidiarrheal triazinones. 4,203,985, Cl. 424-249.000.

Yen, Chung H.; and Deason, James R., to G. D. Searle & Co. Antidiarrheal diaryl-(1-azabicyclo(2.2.2)octan-2-yl)-alkanols and related compounds. 4,203,989, Cl. 424-267.000.

Yen, Chung H., to G. D. Searle & Co. Anti-diarrheal 2-substituted quinuclidines. 4,203,990, Cl. 424-267.000.

Yokogawa, Tomohisa: *See—*
Sato, Reisuke; and Yokogawa, Tomohisa, 4,204,169, Cl. 455-175.000.

Yokomichi, Isao: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,203,758, Cl. 71-100.000.

Yokose, Kazuteru: *See—*
Suhara, Yasuji; Maruyama, Hiromi; Sawada, Toyoaki; Ogawa, Mayumi; Yokose, Kazuteru; Fujiu, Morio; and Watanabe, Kimihiro, 4,204,044, Cl. 435-280.000.

Yonko, Jon D., to Monsanto Company. Heating improvements in a preform reheat system. 4,204,111, Cl. 219-411.000.

Yorgiadis, Alexander. Strain gage load cell. 4,203,318, Cl. 73-141.00A.

Yorioka, Keigo, to Aisan Industry Co., Ltd. Exhaust gas recirculation system for an internal combustion engine. 4,203,400, Cl. 123-119.00A.

Yoshida Kogyo K.K.: *See—*
Hirai, Mitsuru, 4,203,514, Cl. 198-774.000.
Oyama, Yoshio, 4,203,207, Cl. 29-767.000.

Yoshida, Minoru: *See—*
Fukushima, Hiroyuki; Yoshida, Minoru; and Inoue, Hiromasa, 4,203,196, Cl. 29-566.300.

Yoshida, Takashi: *See—*
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,204,246, Cl. 361-385.000.

Yoshino Gypsum Co. Ltd.: *See—*
Takamizawa, Minoru; Abe, Akira; Ono, Yoshiaki; Sugimori, Yutaka; Kishibayashi, Tetsuo; and Ino, Makoto, 4,204,030, Cl. 428-447.000.

Young, Jack H.; and Halleck, Frank E., to American Sterilizer Company. Load conditioning control apparatus for steam sterilization. 4,203,947, Cl. 422-114.000.

Youngers, Stephen A., to J. I. Case Company. Control mechanism for hydrostatic pump. 4,203,291, Cl. 60-433.000.

Zacharie, Antoine. High output LED matrix color TV screen with vertical triad and tricolor faceplate. 4,204,222, Cl. 358-59.000.

Zahnradfabrik Friedrichshafen, AG: *See—*
Burckardt, Dieter, 4,203,290, Cl. 60-420.000.
Deininger, Horst, 4,203,292, Cl. 60-445.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,204,038, Cl. 435-78.000.

Zaluska, Philip J.: *See—*
Bechara, Ibrahim S.; Mascioli, Rocco L.; and Zaluska, Philip J., 4,204,062, Cl. 544-351.000.

Zavod Stroitelnykh Mashin: *See—*
Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; Zvenigorodsky, Evgeny I.; and Gabor, Antal, 4,203,688, Cl. 406-85.000.

Zemek, Albert W.; Tomko, Frederick; Matson, Crawford; and Darrow, Burr, to Universal Instruments Corporation. Radial lead component insertion machine. 4,203,583, Cl. 269-234.000.

Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Preparation of trans cyclohexane 1,4 diisocyanate. 4,203,916, Cl. 260-453.00P.

Zenker, Nicolas: *See—*
Arnett, Carroll D.; Wright, Jeremy; and Zenker, Nicolas, 4,204,069, Cl. 548-325.000.

Zettler, Franz. Process and apparatus for cutting sheets into individual sheets and subsequent orderly stacking of the individual sheets. 4,203,334, Cl. 83-23.000.

Zeuthen, Karl G., to Rex-Rotary International/A.S. Toner powder supply system. 4,203,533, Cl. 222-241.000.

Ziegler, Jacques; Schneiter, Ali; and Grandjean, Remy, to Ebauches, S.A. Touch sensitive device for a timepiece. 4,203,280, Cl. 368-187.000.

Zilbermann, Andre H.; and Aronoff, Melvin S. Multizone air terminal. 4,203,485, Cl. 165-2.000.

Zimmer, Peter; Kudlich, Hans; Schweitzer, Karl; and Mayr, Walter, to Maschinenfabrik Peter Zimmer Aktiengesellschaft. Valve-needle mounting for dyestuff applicator. 4,203,554, Cl. 239-585.000.

Zingerman, Bryant N.: *See—*
Kitcher, James R.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,203,800, Cl. 156-643.000.

Zitelli, William E.; and Heltsley, Alan T., to Westinghouse Electric Corp. Turbine acceleration governing system. 4,204,258, Cl. 364-494.000.

Zocholl, Stanley E., to Gould Inc. Solid state transformer differential relay. 4,204,237, Cl. 361-36.000.

Zoecon Corporation: *See—*
Anderson, Richard J.; and Henrick, Clive A., 4,204,071, Cl. 560-100.000.

Zolor Corporation: *See—*
Hamburger, Herman, 4,203,626, Cl. 299-33.000.

Zubanov, Fedor F.: *See—*
Esaian, Levon P.; Sokolov, Valery S.; Kurygina, Dina V.; Zubanov, Fedor F.; Aleshin, Valentin N.; Bolshov, Gennady V.; Kuzyko, Igor S.; Fedotov, Oleg A.; Belysheva, Ninel K.; Anosov, Alexei M.; Antonov, Alexei I.; Terentiev, Viktor I.; Naumenko, Viktor A.; and Akimov, Boris V., 4,203,202, Cl. 29-623.200.

Zvenigorodsky, Evgeny I.: *See—*
Shapunov, Max M.; Koppel, Mikhail A.; Frumkin, Felix M.; Zvenigorodsky, Evgeny I.; and Gabor, Antal, 4,203,688, Cl. 406-85.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF MAY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AMP Incorporated: *See—*
Simmons, Reginald J., Re. 30,277, Cl. 339-74.00R.

Berman, Paul A.; Giras, Theodore C.; and Crews, Roy E., to Westinghouse Electric Corp. Modular operating centers and methods of building same for use in electric power generating plants and other industrial and commercial plants, processes and systems. Re. 30,280, Cl. 290-1.00R.

Bussjager, Rudy C.: *See—*
del Toro, James J.; and Bussjager, Rudy C., Re. 30,275, Cl. 62-115.000.

Carrier Corporation: *See—*
del Toro, James J.; and Bussjager, Rudy C., Re. 30,275, Cl. 62-115.000.

Crews, Roy E.: *See—*
Berman, Paul A.; Giras, Theodore C.; and Crews, Roy E., Re. 30,280, Cl. 290-1.00R.

del Toro, James J.; and Bussjager, Rudy C., to Carrier Corporation. Heat exchanger. Re. 30,275, Cl. 62-115.000.

Du Pont de Nemours, E. I., and Company: *See—*
Rohde, Vernon C., Re. 30,276, Cl. 233-26.000.

Giras, Theodore C.: *See—*
Berman, Paul A.; Giras, Theodore C.; and Crews, Roy E., Re. 30,280, Cl. 290-1.00R.

Leonard, Robert J.: *See—*
Stumpf, Richard J.; Watson, Waldon O.; and Leonard, Robert J., Re. 30,278, Cl. 352-5.000.

MCA Systems, Inc.: *See—*
Stumpf, Richard J.; Watson, Waldon O.; and Leonard, Robert J., Re. 30,278, Cl. 352-5.000.

Rohde, Vernon C., to Du Pont de Nemours, E. I., and Company. Apparatus for stopper removal. Re. 30,276, Cl. 233-26.000.

Simmons, Reginald J., to AMP Incorporated. Electrical tab receptacle. Re. 30,277, Cl. 339-74.00R.

Stauffer Chemical Company: *See—*
Toy, Arthur D. F.; and Uhing, Eugene H., Re. 30,279, Cl. 260-543.00P.

Stumpf, Richard J.; Watson, Waldon O.; and Leonard, Robert J., to MCA Systems, Inc. Special effects generation and control system for motion pictures. Re. 30,278, Cl. 352-5.000.

Toy, Arthur D. F.; and Uhing, Eugene H., to Stauffer Chemical Company. Process for preparing alkyl or aryl phosphorus halides and mixed isomers thereof. Re. 30,279, Cl. 260-543.00P.

Uhing, Eugene H.: *See—*
Toy, Arthur D. F.; and Uhing, Eugene H., Re. 30,279, Cl. 260-543.00P.

Watson, Waldon O.: *See—*
Stumpf, Richard J.; Watson, Waldon O.; and Leonard, Robert J., Re. 30,278, Cl. 352-5.000.

Westinghouse Electric Corp.: *See—*
Berman, Paul A.; Giras, Theodore C.; and Crews, Roy E., Re. 30,280, Cl. 290-1.00R.

LIST OF PLANT PATENTEES

Fischer, Arnold W., to Pan-American Plant Company. African violet cultivar named Grace. 4,536, 5-20-80, Cl. 69.000.

Jackson & Perkins Co.: *See—*
Warriner, William A., 4,537, Cl. 11.000.

Pan-American Plant Company: *See—*
Fischer, Arnold W., 4,536, Cl. 69.000.

Warriner, William A., to Jackson & Perkins Co. Rose plant. 4,537, 5-20-80, Cl. 11.000.

LIST OF DESIGN PATENTEES

A-T-O Inc.: *See—*
Meister, Michael L.; Fee, Robert W.; and Robbins, Richard J., 255,024, Cl. D12-61.000.

Adreon, Gary L.: *See—*
Cooper, Leonard M.; and Adreon, Gary L., 255,011, Cl. D9-245.000.

Airwick Industries, Inc.: *See—*
Muller, Arthur W.; and Hassle, Max A., 255,047, Cl. D23-150.000.

Alexson, Peter C. Combined pump and filter for aquariums or the like. 255,033, 5-20-80, Cl. D15-8.000.

Almatic Industries Limited: *See—*
Matusiak, Stephen H.; and Matusiak, Gerald W., 255,009, Cl. D7-136.000.

American Guidance Service, Inc.: *See—*
Gale, John A., 255,039, Cl. D21-108.000.

Becker, Robert W.: *See—*
Boldt, Melvin H.; Morrison, Thurber H.; and Becker, Robert W., 255,008, Cl. D7-132.000.

Boldt, Melvin H.; Morrison, Thurber H.; and Becker, Robert W., to National Presto Industries, Inc. Cooking appliance handle. 255,008, 5-20-80, Cl. D7-132.000.

Boller, Peter K., to Consumers Glass Company Limited. Produce hamper. 255,010, 5-20-80, Cl. D9-220.000.

Braun AG: *See—*
Haase, Heinz-Ulrich, 255,052, Cl. D28-13.000.

Bridgestone Tire Company, Limited: *See—*
Takigawa, Hiroyoshi; and Miyamura, Nobuhiro, 255,025, Cl. D12-143.000.

Brown Group, Inc.: *See—*
Hanson, Robert B., 254,997, Cl. D2-322.000.

Brownlie, Alan W., to Welch Allyn, Inc. Charger unit for battery powered diagnostic instruments. 255,029, 5-20-80, Cl. D13-6.000.

Campo, Charles. Lamp. 255,055, 5-20-80, Cl. D26-104.000.

Charlton Company, The: *See—*
Thorpe, Robert K., 255,004, Cl. D6-196.000.

Cochran, Ken C.; and Fuller, Walter. Basketball practice goal. 255,040, 5-20-80, Cl. D21-201.000.

Coleman Company, Inc., The: *See—*
Hemminger, Larry L., 255,027, Cl. D12-156.000.

Collins, John, to Leer, Inc. Pick-up truck rear panel. 255,028, 5-20-80, Cl. D12-196.000.

Compagnie Generale des Etablissements Michelin: *See—*
Peron, Jean-Claude, 255,026, Cl. D12-147.000.

Consumers Glass Company Limited: *See—*
Boller, Peter K., 255,010, Cl. D9-220.000.

Cooper, Leonard M.; and Adreon, Gary L., to Olinkraft, Inc. Carton blank. 255,011, 5-20-80, Cl. D9-245.000.

Correa, Philip J. Fishing lure. 255,044, 5-20-80, Cl. D22-27.000.

Creative Playgrounds Corporation: *See—*
Dieter, Berthold B.; and Gibson, Charles L., 254,999, Cl. D6-42.000.

Daiwa Seiko, Inc.: *See—*
Iinuma, Kanji, 255,042, Cl. D22-25.000.

Dakota Cateye, Inc.: *See—*
Muehl, Lawrence L., 255,041, Cl. D22-23.000.

Dieter, Berthold B.; and Gibson, Charles L., to Creative Playgrounds Corporation. Combined chair and tray for the handicapped. 254,999, 5-20-80, Cl. D6-42.000.

Dinh Van, Jean, to S. T. Dupont. Operating assembly for a cigarette lighter. 255,046, 5-20-80, Cl. D27-36.000.

Dybal, Walter F., to Shelly & Anderson Furniture Mfg. Co., Inc. Sofa. 255,000, 5-20-80, Cl. D6-63.000.

Dynabrade, Inc.: *See—*
Welsch, Walter N.; and Fleckenstein, Elwin H., 255,034, Cl. D15-126.000.

Espeseth, Donald O., to Wilstac Inc. Portable podium. 254,998, 5-20-80, Cl. D6-27.000.

Ethyl Products Company: *See—*
Ostrowsky, Efrem M., 255,012, Cl. D09-258.000.

Fee, Robert W.: *See—*
Meister, Michael L.; Fee, Robert W.; and Robbins, Richard J., 255,024, Cl. D12-61.000.

Felix, Cristian J.: *See—*
Genaro, Donald M.; Felix, Cristian J.; Tilley, Alvin R.; and Peets, Robert S., 255,003, Cl. D6-167.000.

Fleckenstein, Elwin H.: *See—*
Welsch, Walter N.; and Fleckenstein, Elwin H., 255,034, Cl. D15-126.000.

Fuchs, Nathan, to Van Wyck International Corporation. Fruit juicer, or similar article. 255,005, 5-20-80, Cl. D7-49.000.

Fuller, Walter: *See—*
Cochran, Ken C.; and Fuller, Walter, 255,040, Cl. D21-201.000.

Gale, John A., to American Guidance Service, Inc. Toy construction piece. 255,039, 5-20-80, Cl. D21-108.000.

Genal Strap, Inc.: *See—*
Hofman, Bronislaw L., 255,016, Cl. D11-3.000.
Hofman, Bronislaw L., 255,017, Cl. D11-3.000.
Hofman, Bronislaw L., 255,018, Cl. D11-3.000.
Hofman, Bronislaw L., 255,019, Cl. D11-3.000.
Hofman, Bronislaw L., 255,020, Cl. D11-3.000.
Hofman, Bronislaw L., 255,021, Cl. D11-3.000.
Hofman, Bronislaw L., 255,022, Cl. D11-3.000.
Hofman, Bronislaw L., 255,023, Cl. D11-15.000.

Genaro, Donald M.; Felix, Cristian J.; Tilley, Alvin R.; and Peets, Robert S., to Singer Company, The. Cabinet for a sewing machine and accessory items. 255,003, 5-20-80, Cl. D6-167.000.

Gerlinger, Edward B.: *See—*
Hill, James A.; Gerlinger, Edward B.; Leith, Robert H.; and Navia, Jaime A., 255,014, Cl. D10-75.000.

Gibson, Charles L.: *See—*
Dieter, Berthold B.; and Gibson, Charles L., 254,999, Cl. D6-42.000.

Grunstad, Jerome A., to Ketcham & McDougall, Inc. Note pad holder. 255,037, 5-20-80, Cl. D19-92.000.

Haase, Heinz-Ulrich, to Braun AG. Polyfunctional hand-held hairdryer. 255,052, 5-20-80, Cl. D28-13.000.

Hanson, Robert B., to Brown Group, Inc. Shoe sole. 254,997, 5-20-80, Cl. D2-322.000.

Hassle, Max A.: *See—*
Muller, Arthur W.; and Hassle, Max A., 255,047, Cl. D23-150.000.

Hemminger, Larry L., to Coleman Company, Inc., The. Camper for pick-up truck. 255,027, 5-20-80, Cl. D12-156.000.

Hihara, Yukiyoshi, to Yasui Sangyo Co., Ltd. Wheel balancer. 255,015, 5-20-80, Cl. D10-82.000.

Hill, James A.; Gerlinger, Edward B.; Leith, Robert H.; and Navia, Jaime A. Test and measurement instrument for analyzing digital signals. 255,014, 5-20-80, Cl. D10-75.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,016, 5-20-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,017, 5-20-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,018, 5-20-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,019, 5-20-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,020, 5-20-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,021, 5-20-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,022, 5-20-80, Cl. D11-3.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,023, 5-20-80, Cl. D11-15.000.

Holce, Thomas J.; and Huckins, Charles M., to Sentrol, Inc. Housing for a magnetic contact switch. 255,030, 5-20-80, Cl. D13-32.000.

Horwitz, Rudy J. Psychological test machine. 255,036, 5-20-80, Cl. D19-60.000.

Howmedica, Inc.: *See—*
Miller, Joseph E., 255,048, Cl. D24-26.000.

Huckins, Charles M.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 255,030, Cl. D13-32.000.

Iinuma, Kanji, to Daiwa Seiko, Inc. Fishing reel. 255,042, 5-20-80, Cl. D22-25.000.

Itakura, Hitoshi, to Tomy Kogyo Co., Inc. Housing for use with manipulative games. 255,038, 5-20-80, Cl. D21-15.000.

J & J Wacker Inc.: *See—*
Wacker, Jacob; and Wacker, Joanne, 255,050, Cl. D27-16.000.

Keithley, Gary R.: *See—*
O'Brien, John F.; and Keithley, Gary R., 255,013, Cl. D10-60.000.

Ketcham & McDougall, Inc.: *See—*
Grunstad, Jerome A., 255,037, Cl. D19-92.000.
Macowski, William, 255,051, Cl. D27-29.000.

Kingsford, Ted I., to Plough, Inc. Combined lipstick and magnifying casing therefor. 255,054, 5-20-80, Cl. D28-89.000.

Kronsbein, Dirk G., to Ultrafilter GmbH. Filter casing. 255,045, 5-20-80, Cl. D23-4.000.

Lapetina, John B. Fishing lure. 255,043, 5-20-80, Cl. D22-27.000.

Lazzara, Anthony R., to Scientific Technology, Inc. Housing for photoelectric sensor and control circuit responsive thereto. 255,031, 5-20-80, Cl. D13-99.000.

Leer, Inc.: *See—*
Collins, John, 255,028, Cl. D12-196.000.

Leith, Robert H.: *See—*
Hill, James A.; Gerlinger, Edward B.; Leith, Robert H.; and Navia, Jaime A., 255,014, Cl. D10-75.000.

Lonnstedt, Bo G. Support for an ear protector. 254,996, 5-20-80, Cl. D2-233.000.

Macowski, William, to Ketcham & McDougall, Inc. Ash tray. 255,051, 5-20-80, Cl. D27-29.000.

Maddock, Peter L., to Telefonaktiebolaget L M Ericsson. Control unit for paging system. 255,032, 5-20-80, Cl. D14-92.000.

Magic Touch Manufacturing Corp.: *See—*
O'Brien, John F.; and Keithley, Gary R., 255,013, Cl. D10-60.000.

Matusiak, Gerald W.: *See—*
Matusiak, Stephen H.; and Matusiak, Gerald W., 255,009, Cl. D7-136.000.

Matusiak, Stephen H.; and Matusiak, Gerald W., to Almatic Industries Limited. Burner. 255,009, 5-20-80, Cl. D7-136.000.

Meister, Michael L.; Fee, Robert W.; and Robbins, Richard J., to A-T-O Inc. Body for an aerial lift platform. 255,024, 5-20-80, Cl. D12-61.000.

Miller, Joseph E., to Howmedica, Inc. Intramedullary brush. 255,048, 5-20-80, Cl. D24-26.000.

Miyamura, Nobuhiro: *See—*
Takigawa, Hiroyoshi; and Miyamura, Nobuhiro, 255,025, Cl. D12-143.000.

Moers, William O., to Tenderfoot International, Inc. Building. 255,049, 5-20-80, Cl. D25-22.000.

Morrison, Thurber H.: *See—*
Boldt, Melvin H.; Morrison, Thurber H.; and Becker, Robert W., 255,008, Cl. D7-132.000.

Muehl, Lawrence L., to Dakota Cateye, Inc. Fishing signal device. 255,041, 5-20-80, Cl. D22-23.000.

Muller, Arthur W.; and Hassle, Max A., to Airwick Industries, Inc. Dispenser for air-treating material. 255,047, 5-20-80, Cl. D23-150.000.

National Presto Industries, Inc.: *See—*
Boldt, Melvin H.; Morrison, Thurber H.; and Becker, Robert W., 255,008, Cl. D7-132.000.

Navia, Jaime A.: *See—*
Hill, James A.; Gerlinger, Edward B.; Leith, Robert H.; and Navia, Jaime A., 255,014, Cl. D10-75.000.

North, Roger W. Drum. 255,035, 5-20-80, Cl. D17-22.000.

O'Brien, John F.; and Keithley, Gary R., to Magic Touch Manufacturing Corp. Thermometer support base. 255,013, 5-20-80, Cl. D10-60.000.

Olinkraft, Inc.: *See—*
Cooper, Leonard M.; and Adreon, Gary L., 255,011, Cl. D9-245.000.

Ostrowsky, Efrem M., to Ethyl Products Company. Dispenser cap for a pressurized container. 255,012, 5-20-80, Cl. D09-258.000.

Otero, Domingo V. Combined shelf and drawer unit. 255,002, 5-20-80, Cl. D6-129.000.

Pallotta, George A., Jr. Knife holding board. 255,006, 5-20-80, Cl. D7-74.000.

Pallotta, George A., Jr. Knife holding board. 255,007, 5-20-80, Cl. D7-74.000.

Payer-Lux Eduard Payer: *See—*
Schade, Hans-Ulrich, 255,053, Cl. D28-49.000.

Peets, Robert S.: *See—*
Genaro, Donald M.; Felix, Cristian J.; Tilley, Alvin R.; and Peets, Robert S., 255,003, Cl. D6-167.000.

Peron, Jean-Claude, to Compagnie Generale des Etablissements Michelin. Tire. 255,026, 5-20-80, Cl. D12-147.000.

Plough, Inc.: *See—*
Kingsford, Ted I., 255,054, Cl. D28-89.000.

Quitman, Yolanda. Cabinet. 255,001, 5-20-80, Cl. D6-104.000.

Robbins, Richard J.: *See—*
Meister, Michael L.; Fee, Robert W.; and Robbins, Richard J., 255,024, Cl. D12-61.000.

S. T. Dupont: *See—*
Dinh Van, Jean, 255,046, Cl. D27-36.000.

Schade, Hans-Ulrich, to Payer-Lux Eduard Payer. Shaver. 255,053, 5-20-80, Cl. D28-49.000.

Scientific Technology, Inc.: *See—*
Lazzara, Anthony R., 255,031, Cl. D13-99.000.

Sentrol, Inc.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 255,030, Cl. D13-32.000.

Shelly & Anderson Furniture Mfg. Co., Inc.: *See—*
Dybal, Walter F., 255,000, Cl. D6-63.000.

Singer Company, The: *See—*
Genaro, Donald M.; Felix, Cristian J.; Tilley, Alvin R.; and Peets, Robert S., 255,003, Cl. D6-167.000.

Takigawa, Hiroyoshi; and Miyamura, Nobuhiro, to Bridgestone Tire Company, Limited. Vehicle tire. 255,025, 5-20-80, Cl. D12-143.000.

Telefonaktiebolaget L M Ericsson: *See—*
Maddock, Peter L., 255,032, Cl. D14-92.000.

Tenderfoot International, Inc.: *See—*
Moers, William O., 255,049, Cl. D25-22.000.

Thorpe, Robert K., to Charlton Company, The. Table base. 255,004, 5-20-80, Cl. D6-196.000.

Tilley, Alvin R.: *See—*
Genaro, Donald M.; Felix, Cristian J.; Tilley, Alvin R.; and Peets, Robert S., 255,003, Cl. D6-167.000.

Tomy Kogyo Co., Inc.: *See—*
Itakura, Hitoshi, 255,038, Cl. D21-15.000.

Ultrafilter GmbH: *See—*
Kronsbein, Dirk G., 255,045, Cl. D23-4.000.

Van Wyck International Corporation: *See—*
Fuchs, Nathan, 255,005, Cl. D7-49.000.

Wacker, Jacob; and Wacker, Joanne, to J & J Wacker Inc. Smoker's station. 255,050, 5-20-80, Cl. D27-16.000.

Wacker, Joanne: *See—*
Wacker, Jacob; and Wacker, Joanne, 255,050, Cl. D27-16.000.

Welch Allyn, Inc.: *See—*
Brownlie, Alan W., 255,029, Cl. D13-6.000.

Welsch, Walter N.; and Fleckenstein, Elwin H., to Dynabrade, Inc. Machine housing for belt-type surface finishing tool. 255,034, 5-20-80, Cl. D15-126.000.

Wilstac Inc.: *See—*
Espeseth, Donald O., 254,998, Cl. D6-27.000.

Yasui Sangyo Co., Ltd.: *See—*
Hihara, Yukiyoshi, 255,015, Cl. D10-82.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 20, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
322 4,203,167

CLASS 3
13 4,203,168

CLASS 4
144.1 4,203,169
146 4,203,171
172 4,203,170
4,203,174
231 4,203,172
427 4,203,173

CLASS 5
503 4,203,175

CLASS 8
115.5 4,203,723
467 4,203,722

CLASS 13
9 R 4,204,082

CLASS 16
24 4,203,177

CLASS 17
50 4,203,178
62 4,203,179

CLASS 23
230 B 4,203,724
230 HC 4,203,725
232 E 4,203,726

CLASS 24
17 B 4,203,180
230 A 4,203,181
263 D 4,203,182

CLASS 29
33 A 4,203,183
149.5 DP 4,203,184
157.3 C 4,203,185
157.3 R 4,203,186
283.5 4,203,187
420 4,203,188
432 4,203,189
451 4,203,190
4,203,191
452 4,203,192
505 4,203,195
526 R 4,203,193
566.3 4,203,196
570 4,203,194
611 4,203,197
4,203,198
612 4,203,199
623 4,203,200
623.1 4,203,201
623.2 4,203,202
703 4,203,204
727 4,203,205
731 4,203,206
767 4,203,207
846 4,203,203

CLASS 30
155 4,203,208
164.95 4,203,209
172 4,203,210
272 R 4,203,211
276 4,203,212
343 4,203,213
355 4,203,214
383 4,203,215

CLASS 32
2 4,203,216

CLASS 33
149 R 4,203,224
174 L 4,203,225
185 V 4,203,226
458 4,203,227

CLASS 34
10 4,203,228
46 4,203,229
99 4,203,230

CLASS 35
20 4,203,231
25 4,203,232
29 R 4,203,233
76 4,203,234

CLASS 36
118 4,203,235
123 4,203,236

CLASS 37
43 E 4,203,237
118 R 4,203,238

CLASS 40
152.1 4,203,239
310 4,203,240
406 4,203,241
610 4,203,242

CLASS 42
73 4,203,243
4,203,244

CLASS 43
25.2 4,203,245
42.31 4,203,246

CLASS 44
1 SR 4,203,727
51 4,203,728
4,203,729
71 4,203,730

CLASS 46
1 K 4,203,247
22 4,203,248
74 D 4,203,249
79 4,203,250
107 4,203,251
178 4,203,252

CLASS 47
10 4,203,253
58 4,203,254

CLASS 48
99 4,203,731

CLASS 49
399 4,203,255
465 4,203,256

CLASS 51
2 R 4,203,257
95 GH 4,203,258
97 NC 4,203,259
123 G 4,203,260
141 4,203,261
204 4,203,262
293 4,203,732
295 4,203,733
434 4,203,263

CLASS 52
1 4,203,264
81 4,203,265
116 4,203,266
148 4,203,267
630 4,203,268

CLASS 53
77 4,203,269
133 4,203,270
250 4,203,271
374 4,203,272
399 4,203,273
537 4,203,274

CLASS 55
26 4,203,734
4,203,735
96 4,203,736
287 4,203,737
4,203,738
323 4,203,739

CLASS 56
15.8 4,203,275
202 4,203,276
377 4,203,277

CLASS 60
39.36 4,203,283
245 4,203,284
261 4,203,285
266 4,203,286
329 4,203,287
345 4,203,288
358 4,203,289
420 4,203,290
433 4,203,291
445 4,203,292
490 4,203,293
497 4,203,294
531 4,203,295
602 4,203,296
660 4,203,297

CLASS 62
2 4,203,298
18 4,203,740
24 4,203,741
4,203,742
49 4,203,299
52 4,203,300
115 Re.30,275
131 4,203,301
259 4,203,302

CLASS 64
12 4,203,303
13 4,203,304
15 R 4,203,305
23 4,203,306

CLASS 65
3 A 4,203,743
4,203,744
6 4,203,745
4,203,746
4,203,747
14 4,203,748
68 4,203,749
99 A 4,203,750
106 4,203,751
163 4,203,752
4,203,753
273 4,203,754

CLASS 68
17 R 4,203,307

CLASS 71
9 4,203,755
86 4,203,756
87 4,203,757
100 4,203,758

CLASS 72
34 4,203,308
96 4,203,309
247 4,203,310
254 4,203,311
299 4,203,312
364 4,203,313
427 4,203,314

CLASS 73
1 R 4,203,315
3 4,203,316
38 4,203,317
141 A 4,203,318
4,203,319
150 R 4,203,320
168 4,203,321
194 A 4,203,322
194 E 4,203,323
290 V 4,203,324
304 R 4,203,325
339 R 4,203,326
721 4,203,327

CLASS 74
25 4,203,328
89.2 4,203,329
335 4,203,375
527 4,203,330
606 R 4,203,331

CLASS 75
0.5 BA 4,203,759
12 4,203,760
40 4,203,761
68 R 4,203,762
129 4,203,763

CLASS 81
3 R 4,203,332
9.5 A 4,203,333

CLASS 83
23 4,203,334
232 4,203,335
550 4,203,336

CLASS 84
1.01 4,203,337
1.14 4,203,338
1.19 4,203,339
1.26 4,203,340
255 4,203,341
293 4,203,342
415 4,203,343
470 R 4,203,344
478 4,203,345

CLASS 85
70 4,203,346

CLASS 89
1.816 4,203,347
148 4,203,348

CLASS 91
47 4,203,349
235 4,203,350

CLASS 92
69 R 4,203,351
94 4,203,352
159 4,203,353
169 4,203,354

CLASS 93
58 R 4,203,355

CLASS 98
66 R 4,203,356

CLASS 99
340 4,203,357
352 4,203,358

CLASS 100
209 4,203,359

CLASS 101
129 4,203,360
177 4,203,361
327 4,203,362
409 4,203,363

CLASS 102
38 WR 4,203,364
214 4,203,365
4,203,366

CLASS 104
7 B 4,203,367
92 4,203,368
130 4,203,369
162 4,203,370

CLASS 105
225 4,203,371

CLASS 106
38.35 4,203,771
40 R 4,203,772
4,203,773
50 4,203,774
238 4,203,776

CLASS 108
152 4,203,373

CLASS 110
258 4,203,374
346 4,203,376

CLASS 112
58 4,203,377
158 E 4,203,378

CLASS 113
120 B 4,203,379

CLASS 114
144 R 4,203,380
274 4,203,381

CLASS 116
28 R 4,203,382
95 4,203,383
267 4,203,384
270 4,203,385

CLASS 118
653 4,203,386
715 4,203,387

CLASS 119
1 4,203,388
3 4,203,389
29 4,203,390

CLASS 122
4 D 4,203,391
17 4,203,392

CLASS 123
30 D 4,203,393
32 EA 4,203,395
32 EE 4,203,394
58 B 4,203,396
90.16 4,203,397
119 A 4,203,399
4,203,400
119 EC 4,203,398
127 4,203,411
136 4,203,401
139 AW 4,203,402
148 AC 4,203,403
148 ND 4,203,404
187.5 R 4,203,405
197 A 4,203,406
198 DC 4,203,408
198 E 4,203,407
4,203,409
205 4,203,410

CLASS 124
23 R 4,203,412
78 4,203,413

CLASS 125
23 C 4,203,414

CLASS 126
110 R 4,203,415
165 4,203,417
212 4,203,416
263 4,203,418
271.1 4,203,423
417 4,203,422
422 4,203,424
425 4,203,426
426 4,203,420
4,203,425
430 4,203,419
444 4,203,421
449 4,203,428
451 4,203,427

CLASS 128
1 R 4,203,429
4 4,203,430
39 4,203,431
79 4,203,432
80 A 4,203,433
156 4,203,435
205.24 4,203,434
214 R 4,203,436
229 4,203,437
254 4,203,438
260 4,203,439
4,203,440
4,203,441
4,203,442
272.3 4,203,443
276 4,203,444
283 4,203,445
329 R 4,203,446
419 PG 4,203,447
4,203,448
473 4,203,449
630 4,203,450
672 4,203,451
732 4,203,452

CLASS 131
20 R 4,203,453
170 R 4,203,454
173 4,203,455
230 4,203,456

CLASS 134
7 4,203,777
4,203,778

CLASS 135
5 C 4,203,457

CLASS 136
233 4,203,779

CLASS 137
38 4,203,458
119 4,203,459
240 4,203,460
343 4,203,461
393 4,203,462
403 4,203,463
454.2 4,203,464
487.5 4,203,465
543 4,203,466
557 4,203,467
624.11 4,203,468
625.43 4,203,469
625.46 4,203,470
637 4,203,471
828 4,203,472

CLASS 138
93 4,203,473
96 R 4,203,474
109 4,203,475
122 4,203,476

CLASS 140
105 4,203,477

CLASS 141
206 4,203,478

CLASS 148
1.5 4,203,780
4,203,781
12 E 4,203,782
12.4 4,203,783
111 4,203,784
171 4,203,785

CLASS 149
19.91 4,203,786
35 4,203,787

CLASS 150
3 4,203,479

CLASS 152
209 NT 4,203,480
330 RF 4,203,481

CLASS 156
44 4,203,788
59 4,203,789
179 4,203,790
252 4,203,791
272 4,203,792
394 4,203,793
415 4,203,794
446 4,203,795
504 4,203,796
521 4,203,797
567 4,203,798
601 4,203,799
643 4,203,800

CLASS 164
12 4,203,482
116 4,203,483
227 4,203,484

CLASS 165
2 4,203,485
48 R 4,203,486
50 4,203,487
80 B 4,203,488
104 S 4,203,489
134 R 4,203,490

CLASS 166
274 4,203,491
300 4,203,492

CLASS 171
16 4,203,493

CLASS 172
166 4,203,494
370 4,203,495

CLASS 174

9 F 4,204,083
25 G 4,204,084
86 4,204,085
102 R 4,204,086
120 SR 4,204,087

CLASS 175

329 4,203,496

CLASS 177

134 4,203,497

CLASS 178

22 4,204,088
30 4,204,089
4,204,090

CLASS 179

1 G 4,204,092
1 GB 4,204,091
18 FA 4,204,094
98 4,204,095
146 R 4,204,096
189 D 4,204,097

CLASS 180

70 MS 4,203,498
89.12 4,203,499
219 4,203,500

CLASS 181

120 4,203,501
238 4,203,502
272 4,203,503

CLASS 182

10 4,203,504

CLASS 187

29 R 4,203,506
81.7 4,203,505

CLASS 188

317 4,203,507
325 4,203,508

CLASS 193

37 4,203,509

CLASS 198

437 4,203,510
458 4,203,511
594 4,203,512
620 4,203,513
774 4,203,514

CLASS 200

1 R 4,204,098
4 4,204,099
52 R 4,204,100
144 AP 4,204,101
153 J 4,204,102
153 SC 4,204,103
164 R 4,204,104

CLASS 201

40 4,203,803

CLASS 202

121 4,203,804
176 4,203,805
4,203,806

CLASS 204

1 T 4,203,807
23 4,203,808
32 R 4,203,809
38 B 4,203,810
78 4,203,811
94 4,203,812
103 4,203,813
129 4,203,814
159.16 4,203,816
159.2 4,203,815
180 R 4,203,817
212 4,203,818
247 4,203,819
263 4,203,820
268 4,203,821
301 4,203,822

CLASS 206

63.5 4,203,515
216 4,203,516
221 4,203,517
380 4,203,518
387 4,203,519
439 4,203,520
525 4,203,521

CLASS 208

10 4,203,823
33 4,203,824
48 R 4,203,825
64 4,203,826
206 4,203,827
213 4,203,828
216 R 4,203,829
236 4,203,830

CLASS 209

13 4,203,831
44 4,203,832
139 R 4,203,833
211 4,203,834
558 4,203,522

CLASS 210

33 4,203,835
42 R 4,203,836
44 4,203,837
63 R 4,203,838
71 4,203,839
83 4,203,840
205 4,203,841
242 S 4,203,842
262 4,203,843
321 B 4,203,844
386 4,203,845
486 4,203,846
490 4,203,847
4,203,848
522 4,203,849

CLASS 213

100 W 4,203,523

CLASS 215

216 4,203,524

CLASS 219

10.55 E 4,204,105
213 4,204,106
216 4,204,107
265 4,204,108
4,204,109
313 4,204,110
411 4,204,111

CLASS 220

4 C 4,203,525
71 4,203,526
253 4,203,527
269 4,203,528
337 4,203,529

CLASS 221

186 4,203,530

CLASS 222

153 4,203,532
241 4,203,533
402.13 4,203,534
411 4,203,535
495 4,203,536
570 4,203,537
603 4,203,538

CLASS 225

2 4,203,539

CLASS 226

119 4,203,540

CLASS 227

40 4,203,541

CLASS 228

1 A 4,203,531

CLASS 233

26 Re.30,276

CLASS 235

85 R 4,203,542
95 R 4,204,112
375 4,204,113
449 4,203,544

CLASS 236

93 A 4,203,545

CLASS 238

1 4,203,546
8 4,203,547
10 F 4,203,548
111 4,203,549

CLASS 239

102 4,203,550
195 4,203,551
337 4,203,552
420 4,203,553
585 4,203,554

CLASS 241

15 4,203,555
86.1 4,203,556
186 R 4,203,557
247 4,203,558

CLASS 242

18 G 4,203,559
45 4,203,560
47 4,203,561
55.3 4,203,562
66 4,203,563
71.8 4,203,564
84.1 R 4,203,565

CLASS 244

3.23 4,203,569
57 4,203,566

CLASS 248

108 4,203,567
309 R 4,203,568

CLASS 250

227 4,204,115
229 4,204,116
287 4,204,117
315.2 4,204,118
337 4,204,119
341 4,204,120
343 4,204,121
347 4,204,122
363 S 4,204,123
445 T 4,204,124
486 4,204,125

CLASS 251

14 4,203,570
31 4,203,571
95 4,203,572
133 4,203,573
139 4,203,574

CLASS 252

8.05 4,203,850
8.55 D 4,203,853
8.6 4,203,851
8.8 4,203,852
25 4,203,854
42.7 4,203,855
54.6 4,203,856
92 4,203,857
135 4,203,858
174.23 4,203,859
181.2 4,203,860
182.1 4,203,861
299 4,203,862
301.1 W 4,203,863
314 4,203,864
429 B 4,203,867
429 C 4,203,866
429 R 4,203,865
439 4,203,868
455 Z 4,203,869
459 4,203,870
518 4,203,871
542 4,203,872
545 4,203,873

CLASS 254

88 4,203,575
89 R 4,203,576
100 4,203,577
109 4,203,578

CLASS 260

3 4,203,874
13 4,203,875
17.4 R 4,203,876
18 EP 4,203,878
18 R 4,203,877
23 XA 4,203,879
4,203,880
28.5 A 4,203,881
4,203,882
29.2 TN 4,203,883
33.6 AQ 4,203,884
37 SB 4,203,886
40 R 4,203,887
45.7 P 4,203,888
45.8 N 4,203,890
45.8 NT 4,203,889
112 B 4,203,891
112 R 4,203,892
121 4,203,893
156 4,203,894
239 A 4,203,896
239 E 4,203,895
239.1 4,203,897
243.3 4,204,061
244.4 4,203,898
326.31 4,203,902
326.5 S 4,203,901
340.3 4,203,903
343.6 4,203,904
346.11 4,203,907
4,203,908
346.3 4,203,905
346.4 4,203,906
347.2 4,203,909
348.29 4,203,910
369 4,203,885
405.6 4,203,911
429 R 4,203,912
449.5 4,203,915
453 P 4,203,916
465 B 4,203,917
465 D 4,203,918
4,203,919
543 P Re.30,279
553 A 4,203,920
4,203,921
570 R 4,203,922
586 P 4,203,923
648 D 4,203,929
923 4,203,932
990 4,203,933

CLASS 261

98 4,203,934
4,203,935

CLASS 264

26 4,203,936
101 4,203,937
127 4,203,938
130 4,203,939
154 4,203,940
250 4,203,941
559 4,203,942

CLASS 266

117 4,203,579
216 4,203,580
217 4,203,581

CLASS 269

32 4,203,582
234 4,203,583

CLASS 270

40 4,203,584

CLASS 271

4 4,203,585
34 4,203,586
246 4,203,588
258 4,203,589
265 4,203,590
293 4,203,587

CLASS 272

67 4,203,591
117 4,203,593

CLASS 273

25 4,203,595
73 E 4,203,597
73 J 4,203,596
77 A 4,203,598
84 R 4,203,599
121 A 4,203,602
129 W 4,203,603
176 FB 4,203,604
247 4,203,605
336 4,203,592
407 4,203,600
411 4,203,594
421 4,203,601

CLASS 274

23 R 4,203,606

CLASS 277

188 A 4,203,607
235 B 4,203,608

CLASS 280

47.11 4,203,609
87.04 R 4,203,610
163 4,203,611
287 4,203,612
460 A 4,203,613
637 4,203,614
689 4,203,615
737 4,203,616
797 4,203,617
804 4,203,618

CLASS 282

27.5 4,203,619

CLASS 283

23 4,203,620

CLASS 290

1 R Re.30,280
55 4,204,126

CLASS 292

216 4,203,621
221 4,203,622

CLASS 296

178 4,203,623

CLASS 297

162 4,203,624

CLASS 299

6 4,203,625
33 4,203,626

CLASS 303

6 C 4,203,627
4,203,628
10 4,203,629
24 C 4,203,630
52 4,203,631
100 4,203,632

CLASS 305

28 4,203,633

CLASS 307

39 4,204,127
141 4,204,128
147 4,204,129
215 4,204,130
251 4,204,131
309 4,204,132
310 4,204,133

CLASS 308

187.2 4,203,634
213 4,203,635

CLASS 310

52 4,204,134
357 4,204,135

CLASS 312

7 TV 4,203,636

CLASS 313

473 4,204,136
491 4,204,137

CLASS 315

39.51 4,204,138
58 4,204,139
241 P 4,204,140
311 4,204,141

CLASS 318

257 4,204,142
341 4,204,143
568 4,204,144
4,204,145
640 4,204,146

CLASS 323

4 4,204,147
22 SC 4,204,148
24 4,204,149
102 4,204,150
119 4,204,151

CLASS 324

51 4,204,154
158 F 4,204,155
158 MG 4,204,156
166 4,204,157
208 4,204,158
232 4,204,159
236 4,204,160
390 4,204,152
426 4,204,161
429 4,204,153
430 4,204,162

CLASS 328

165 4,204,170
167 4,204,171

CLASS 330

134 4,204,172

CLASS 331

1 A 4,204,173
10 4,204,174
94.5 D 4,204,175

CLASS 333

28 R 4,204,176
166 4,204,177
194 4,204,178

CLASS 334

7 4,204,179

CLASS 335

205 4,204,180

CLASS 336

96 4,204,181

CLASS 337

244 4,204,182
295 4,204,183
4,204,184

CLASS 338

4 4,204,185
30 4,204,186
307 4,204,187

CLASS 339

5 R 4,203,637
14 P 4,203,638
22 R 4,203,639
41 4,203,640
74 R Re.30,277
75 MP 4,203,642
75 P 4,203,641
107 4,203,643
128 4,203,644
147 R 4,203,645
205 4,203,646
256 R 4,203,647
275 T 4,203,648

CLASS 340

7 R 4,204,188
40 4,204,189
52 A 4,204,190
134 4,204,191
146.3 H 4,204,193
147 SY 4,204,194
151 4,204,195
309.4 4,204,196
347 AD 4,204,198
347 DD 4,204,199
347 NT 4,204,197
384 E 4,204,200
521 4,204,201
571 4,204,202
620 4,204,203
712 4,204,204
719 4,204,205
721 4,204,206
723 4,204,207
745 4,204,208
758 4,204,209

CLASS 343

6 R 4,204,210
100 LE 4,204,211
700 MS 4,204,212
706 4,204,213
766 4,204,214

CLASS 346

140 R 4,204,215

CLASS 350

96.14 4,203,649
96.21 4,203,650
181 4,203,651
182 4,203,652
216 4,203,653
285 4,203,654

CLASS 352

5 Re.30,278
78 R 4,203,655
194 4,203,656

CLASS 353

26 R 4,203,657
4,203,658
120 4,203,659

CLASS 354

31 4,203,660
53 4,203,661
173 4,203,662

CLASS 355

14 C 4,203,663
64 4,203,664

CLASS 356

4 4,203,665
124 4,203,666
152 4,203,667
215 4,203,668
332 4,203,669
367 4,203,670
402 4,203,671
431 4,203,672
446 4,203,673

CLASS 387

8 4,204,216
23 4,204,217
55 4,204,218

CLASS 358

8 4,204,220
34 4,204,221
59 4,204,222
80 4,204,223
107 4,204,224
111 4,204,225
4,204,226
138 4,204,227
139 4,204,228
155 4,204,219
169 4,204,229
213 4,204,230
247 4,204,231
260 4,204,232
293 4,204,233

CLASS 360

77 4,204,234
103 4,204,235
137 4,204,236

CLASS 361

36 4,204,237
125 4,204,238
127 4,204,239

152 4,204,240
154 4,204,241
198 4,204,242
245 4,204,243
283 4,204,244
358 4,204,245
385 4,204,246
387 4,204,247
388 4,204,248

CLASS 362

17 4,204,269
71 4,204,270
145 4,204,271
200 4,204,272
217 4,204,273
239 4,204,274

CLASS 363

68 4,204,263
71 4,204,264
4,204,265
85 4,204,267
98 4,204,266
135 4,204,268

CLASS 364

200 4,204,249
4,204,250
4,204,251
4,204,252
4,204,253
4,204,254
425 4,204,255
431 4,204,256
474 4,204,257
494 4,204,258
554 4,204,260
607 4,204,261
822 4,204,262

CLASS 365

163 4,204,275
189 4,204,276
203 4,204,277

CLASS 366

2 4,203,674

CLASS 367

39 4,204,278
40 4,204,279
95 4,204,280
98 4,204,281

CLASS 368

73 4,203,278
124 4,203,281
180 4,203,282
187 4,203,280
243 4,203,279
4,203,985
250 4,203,986
4,203,987
266 4,203,988
267 4,203,989
4,203,990
4,203,991
271 4,203,992
4,203,993
272 4,203,994
273 R 4,203,995
274 4,203,996
280 4,203,997
283 4,203,998
286 4,203,999
304 4,204,000
308 4,204,001
309 4,204,002
324 4,204,003

CLASS 425

23 4,203,713
85 4,203,714
131.1 4,203,715

CLASS 426

77 4,204,004
518 4,204,005
520 4,204,006
548 4,204,007
583 4,204,008

CLASS 427

36 4,204,009
44 4,204,010
57 4,204,011
288 4,204,012
304 4,204,013
385.5 4,204,014

CLASS 428

34 4,204,015
108 4,204,016
160 4,204,017
246 4,204,018
310 4,204,019
4,204,020
325 4,204,021
337 4,204,022
355 4,204,023
379 4,204,024
409 4,204,025
4,204,026
428 4,204,027
432 4,204,028
441 4,204,029
447 4,204,030
539.5 4,204,031

CLASS 429

13 4,204,032
33 4,204,033
113 4,203,703

CLASS 416

93 R 4,203,704
95 4,203,705
97 A 4,203,706
119 4,203,707
134 A 4,203,708
4,203,709

CLASS 417

53 4,203,710
207 4,203,711
218 4,203,712

CLASS 422

27 4,203,943
47 4,203,944
4,203,945
98 4,203,946
114 4,203,947
121 4,203,948
179 4,203,949
197 4,203,950
249 4,203,951

CLASS 423

6 4,203,952
243 4,203,953
4,203,954
308 4,203,955
321 S 4,203,956
323 4,203,957
351 4,203,958
400 4,203,959
461 4,203,960
478 4,203,961
625 4,203,962
650 4,203,963
658.5 4,203,964

CLASS 424

9 4,203,967
52 4,203,966
83 4,203,969
92 4,203,968
4,203,970
4,203,971
114 4,203,972
4,203,973
166 4,203,974
177 4,203,975
180 4,203,976
211 4,203,977
4,203,978
220 4,203,979
229 4,203,980
243 4,203,981
246 4,203,982
249 4,203,983
4,203,984
54 4,204,034
104 4,204,035
152 4,204,036

CLASS 430

67 4,203,764
207 4,203,716
243 4,203,766
252 4,203,765
270 4,203,770
376 4,203,767
388 4,203,768
631 4,203,769

CLASS 431

182 4,203,717
188 4,203,718
352 4,203,719

CLASS 432

10 4,203,721
222 4,203,720

CLASS 433

74 4,203,219
75 4,203,223
117 4,203,221
129 4,203,222
176 4,203,218
220 4,203,217
228 4,203,220

CLASS 435

3 4,204,037
78 4,204,038
118 4,204,039
176 4,204,040
177 4,204,041
188 4,203,802
253 4,204,042
267 4,204,043
280 4,204,044
284 4,203,801
301 4,204,045

CLASS 438

497 4,204,259

CLASS 455

135 4,204,164
175 4,204,169
226 4,204,165
231 4,204,167
289 4,204,166
330 4,204,168

CLASS 525

4 4,203,931
65 4,204,046
67 4,204,047
343 4,204,048
398 4,204,052

CLASS 526

65 4,204,049
97 4,204,050

CLASS 528

55 4,204,051
259 4,204,053

CLASS 536

56 4,204,054
4,204,055

CLASS 542

416 4,204,056
426 4,204,057

CLASS 544

4 4,204,058
166 4,204,059
218 4,204,060
351 4,204,062

CLASS 546

99 4,204,063
245 4,204,064
316 4,204,065
348 4,204,066

CLASS 548

154 4,204,067
194 4,203,899
239 4,203,900
313 4,204,068
325 4,204,069

CLASS 556

401 4,203,913
428 4,203,914

CLASS 560

94 4,204,070
100 4,204,071
158 4,204,072
231 4,204,073

CLASS 562

503 4,204,074

CLASS 568

319 4,203,926
362 4,203,925
379 4,203,924
401 4,203,927
424 4,203,928
562 4,204,075
648 4,204,076
697 4,204,077
705 4,204,078
838 4,204,079

CLASS 585

22 4,203,930
273 4,204,080
274 4,204,081

CLASSIFICATION OF DESIGNS

D2—	233	254,996		74	255,006	D11—	3	255,016		147	255,026	D19—	60	255,036		150	255,047
	322	254,997			255,007			255,017		156	255,027		92	255,037	D24—	26	255,048
D6—	27	254,998		132	255,008			255,018		196	255,028	D21—	15	255,038	D25—	22	255,049
	42	254,999		136	255,009			255,019	D13—	6	255,029		108	255,039	D26—	104	255,055
	63	255,000	D9—	220	255,010			255,020		32	255,030		201	255,040	D27—	16	255,050
	104	255,001		245	255,011			255,021		99	255,031	D22—	23	255,041		29	255,051
	129	255,002	D09—	258	255,012			255,022	D14—	92	255,032		25	255,042		36	255,046
	167	255,003	D10—	60	255,013		15	255,023	D15—	8	255,033		27	255,043	D28—	13	255,052
	196	255,004		75	255,014	D12—	61	255,024		126	255,034			255,044		49	255,053
D7—	49	255,005		82	255,015		143	255,025	D17—	22	255,035	D23—	4	255,045		89	255,054

CLASSIFICATION OF PLANTS

P.—	11	4,537		69	4,536						

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 4,203,191
4,203,301
4 : 4,203,193
4,204,149
5 : 4,203,819
6 : 4,203,168
4,203,173
4,203,180
4,203,181
4,203,182
4,203,274
4,203,305
4,203,348
4,203,413
4,203,439
4,203,442
4,203,468
4,203,519
4,203,589
4,203,603
4,203,668
4,203,802
4,203,836
4,204,007
8 : 4,203,419
4,203,458
4,203,755
9 : 4,203,705
4,203,761
4,203,950
4,204,264
01 : 4,203,347
4,203,495
04 : 4,203,233
4,203,426
4,203,727
4,204,155
05 : 4,203,569
06 : Re.30,278
4,203,174
4,203,212
4,203,222
4,203,247
4,203,255
4,203,257
4,203,322
4,203,328
4,203,340
4,203,346
4,203,379
4,203,387
4,203,396
4,203,416

4,203,437
4,203,440
4,203,441
4,203,475
4,203,489
4,203,492
4,203,496
4,203,502
4,203,515
4,203,520
4,203,524
4,203,532
4,203,555
4,203,559
4,203,561
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4,203,697
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4,204,071
4,204,096
4,204,114
4,204,142
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4,204,153
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4,204,165
4,204,196
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4,204,210
4,204,214
4,204,230
4,204,233
4,204,234
4,204,235
4,204,247
4,204,265
4,204,272

08 : 4,203,235
4,203,308
4,203,585
4,203,740
4,203,856
09 : Re.30,276
Re.30,279
4,203,209
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4,203,271
4,203,312
4,203,360
4,203,449
4,203,509
4,203,562
4,203,665
4,203,708
4,203,813
4,203,814
4,203,963
4,204,015
4,204,024
4,204,108
4,204,109
4,204,130
4,204,145
4,204,268
4,204,271
10 : 4,203,262
4,203,556
4,203,672
4,203,673
4,203,776
12 : 4,203,206
4,203,285
4,203,286
4,203,298
4,203,332
4,203,412
4,203,428
4,203,447
4,203,448
4,203,452
4,203,473
4,203,568
4,203,574
4,203,592
4,203,612
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4,203,721
4,203,790
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4,204,016
4,204,080
4,204,127
4,204,161
4,204,206
4,204,207
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4,204,243
4,204,275
4,204,281
13 : 4,203,229
4,203,362
4,203,382
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16 : 4,203,436
17 : 4,203,187
4,203,197
4,203,200
4,203,223
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4,203,311
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4,204,110
4,204,144
4,204,157
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4,204,241
4,204,244
18 : 4,203,190
4,203,214
4,203,236
4,203,339
4,203,349
4,203,354
4,203,508
4,203,604
4,203,707
4,203,715
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4,203,887
4,203,896
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4,203,994
4,204,039
4,204,106
4,204,221
19 : 4,203,275
4,203,374
4,203,380
4,203,420
4,203,494
4,203,513
4,203,684
4,203,793
4,203,968
4,204,168
20 : 4,203,291
4,203,414
4,203,479
4,203,720
4,204,065
21 : 4,203,241
4,203,246
4,203,772
4,204,105
4,204,193

22 : 4,204,200
4,203,302
4,203,472
4,203,504
4,203,552
4,203,759
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4,204,072
4,204,092
23 : 4,203,198
24 : 4,203,210
4,203,268
4,203,344
4,203,455
4,203,864
4,203,974
4,204,010
4,204,121
4,204,175
4,204,198
4,204,213
25 : 4,203,373
4,203,397
4,203,425
4,203,444
4,203,451
4,203,454
4,203,488
4,203,516
4,203,593
4,203,645
4,203,655
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4,203,942
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4,204,123
4,204,139
4,204,182
4,204,186
4,204,238
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26 : 4,203,170
4,203,240

4,203,258
4,203,287
4,203,288
4,203,388
4,203,393
4,203,401
4,203,422
4,203,424
4,203,465
4,203,482
4,203,541
4,203,600
4,203,609
4,203,615
4,203,618
4,203,639
4,203,710
4,203,762
4,203,807
4,203,875
4,203,900
4,203,903
4,203,924
4,203,936
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4,204,003
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4,204,079
4,204,102
4,204,257
4,204,261
27 : 4,203,265
4,203,300
4,203,611
4,204,125
28 : 4,203,254
29 : 4,203,175
4,203,410
4,203,432
4,203,642
4,203,756
4,203,805
4,203,806
4,204,052
4,204,126
30 : 4,203,702
33 : 4,203,192
4,203,194
4,203,330
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4,204,129
4,204,171
4,204,194
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4,203,239
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4,203,385
4,203,476
4,203,518
4,203,536
4,203,551
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4,203,742
4,203,757
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4,204,133
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35 : 4,203,510
36 : Re.30,275
4,203,199
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4,203,295
4,203,317
4,203,324
4,203,338
4,203,365
4,203,384
4,203,404
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4,203,421
4,203,456
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4,203,583
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4,203,651
4,203,659
4,203,664
4,203,716
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4,203,731
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4,203,750
4,203,800
4,203,842
4,203,854
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4,203,931
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4,204,075
4,204,084
4,204,095
4,204,118
4,204,136
4,204,140
4,204,156
4,204,211
4,204,262
4,204,278
37 : 4,203,335
4,203,493
4,204,069
4,204,212
39 : 4,203,219

4,203,256
4,203,273
4,203,276
4,203,364
4,203,391
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4,203,481
4,203,486
4,203,523
4,203,526
4,203,566
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4,203,635
4,203,686
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4,203,911
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40 : 4,203,211
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4,203,565
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41 : 4,204,098
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4,203,221
4,203,267
4,203,270
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4,203,326
4,203,327
4,203,389
4,203,617

4,203,624
4,203,640
4,203,646
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4,203,677
4,203,693
4,203,695
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4,203,823
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4,204,101
4,204,116
4,204,128
4,204,151
4,204,181
4,204,183
4,204,216
4,204,218
4,204,237
4,204,240
4,204,258
44 : 4,203,208
4,203,423
4,203,467
4,203,846
45 : 4,203,167
4,203,367
4,203,427
4,203,563
4,203,582
4,204,012
47 : 4,203,383
4,203,535
4,204,067
48 : 4,203,266
4,203,321
4,203,485

4,203,537
4,203,576
4,203,590
4,203,594
4,203,605
4,203,680
4,203,687
4,203,701
4,203,725
4,203,778
4,203,826
4,203,853
4,203,870
4,203,878
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4,203,999
4,204,019
4,204,029
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4,204,041
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4,204,112
4,204,131
4,204,141
4,204,148
4,204,279
49 : 4,203,692
4,203,787
50 : 4,203,438
51 : 4,203,395
4,203,506
4,204,104
4,204,248
53 : 4,203,204
4,203,242
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4,203,303
4,203,497
4,203,539
4,203,667
4,203,971
54 : 4,203,366
55 : 4,203,237
4,203,245
4,203,253
4,203,325
4,203,355
4,203,405
4,203,521
4,203,573
4,203,657
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DESIGN PATENTS

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PLANT PATENTS

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May 27, 1980 Volume 994 Number 4

CONTENTS

	Page
Patent and Trademark Notices	
Patent Cooperation Treaty (PCT) Information	994 OG 28
Board of Appeals Decisions Rendered in the Month of April 1980	994 OG 28
Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)	994 OG 28
Reissue Applications Filed	994 OG 28
Patent Notices	
Certificates of Correction for the Week of May 27, 1980	994 OG 30
Disclaimers	994 OG 30
Errata	994 OG 30
National Technical Information Service	994 OG 30
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	994 OG 32
Condition of Patent Applications	994 OG 33
Reissue Patents Granted (30,281)	1137
Plant Patents Granted (4,538)	1141
Patents Granted	
General and Mechanical (4,204,282)	1143
Chemical (4,204,837)	1327
Electrical (4,205,197)	1427
Design Patents Granted (255,056)	1499
Index of Patentees	PI 1
Indices of Applicants of Reissues, Plants and Designs	PI 42
Classification of	
Patents (Including Reissues)	PI 45
Designs and Plants	PI 47
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 48
Designs and Plants	PI 49
Change of Address Form and Subscription Order Form	Back Page

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UNITED STATES PATENT and TRADEMARK OFFICE

May 27, 1980 Volume 994 Number 4

CONTENTS

	Page
Patent and Trademark Notices	
Patent Cooperation Treaty (PCT) Information	994 OG 28
Board of Appeals Decisions Rendered in the Month of April 1980	994 OG 28
Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)	994 OG 28
Reissue Applications Filed	994 OG 28
Patent Notices	
Certificates of Correction for the Week of May 27, 1980	994 OG 30
Disclaimers	994 OG 30
Errata	994 OG 30
National Technical Information Service	994 OG 30
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	994 OG 32
Condition of Patent Applications	994 OG 33
Reissue Patents Granted (30,281)	1137
Plant Patents Granted (4,538)	1141
Patents Granted	
General and Mechanical (4,204,282)	1143
Chemical (4,204,837)	1327
Electrical (4,205,197)	1427
Design Patents Granted (255,056)	1499
Index of Patentees	PI 1
Indices of Applicants of Reissues, Plants and Designs	PI 42
Classification of	
Patents (Including Reissues)	PI 45
Designs and Plants	PI 47
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 48
Designs and Plants	PI 49
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Jan. 28, 1980.

Board of Appeals Decisions Rendered in the Month of April 1980

Affirmed	173
Affirmed in part	26
Reversed	61
Total	260

Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)

Notwithstanding the clear statement in the last sentence of 37 CFR 1.287(c), parties in interference cases continue to seek review by the Commissioner of decisions of the Board of Patent Interferences on motions for additional discovery under 37 CFR 1.287(c). Review of such a decision can be had along with judicial review of a decision on the question of priority. *Cochran* v. *Kresock*, 530 F.2d 385, 188 USPQ 553 (CCPA 1976); *Comstock* v. *Kroekel*, 200 USPQ 548 (Comm'r. Pat. 1978). Accordingly, parties in interference cases are reminded that a petition to the Commissioner should not be filed for the purpose of seeking review of an interlocutory decision of the Board granting or denying a motion for additional discovery under 37 CFR 1.287(c). See also *Fenstermacher* v. *Daugherty*, 189 USPQ 536 (Comm'r. Pat. 1975) and *Sheehan* v. *Doyle*, 202 USPQ 783 (Comm'r. Pat. 1978). The filing of such a petition only serves to delay the ultimate disposition of interferences on the merits. The filing of a paper for the mere purpose of delay is not permitted by the rules. 37 CFR 1.346. The Board of Patent Interferences will no longer grant a stay of proceedings pending disposition of a petition to the Commissioner seeking review of a decision of the Board on a motion for additional discovery under 37 CFR 1.287(c).

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dated: Apr. 17, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,396,067, Re. S.N. 124,917, Filed Feb. 26, 1980, Cl. 428/330, RESINOUS PRODUCT SIMULATING ONYX, Kenneth A. Schafer, Owner of Record: *Larry Singer, Kirkland, Quebec, Canada,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 164

3,469,571, Re. S.N. 125,453, Filed Feb. 28, 1980, Cl. 128/654, DEVICE FOR ADMINISTERING A FLUID INTO THE INTESTINAL TRACT, Alexander A. Vass, Owner of Record: *Inventor,* Attorney or Agent: George Gottlieb, et al., Ex. Gp.: 335

3,669,106, Re. S.N. 127,361, Filed Mar. 4, 1980, Cl. 128/132 D, SURGICAL DRAPE WITH ADHESIVE ATTACHMENT MEANS, Mark S. Schrading, et al., Owner of Record: *Kimberly-Clark Corporation, Neenah, Wis.,* Attorney or Agent: C. Frederick Leydig, et al., Ex. Gp.: 335

3,805,571, Re. S.N. 125,750, Filed Feb. 28, 1980, Cl. 72/202, APPARATUS FOR CONTINUOUS TREATMENT OF LOW-CARBON COLD-ROLLED STEEL SHEET HAVING EXCELLENT COLD WORKING PROPERTIES, Kenzo Toda, et al., Owner of Record: *Nippon Steel Corporation, Tokyo, Japan,* Attorney or Agent: John E. Lind, et al., Ex. Gp.: 321

3,952,769, Re. S.N. 128,264, Filed Mar. 7, 1980, Cl. 137/344, ALIGNMENT CONTROL APPARATUS FOR CENTER PIVOT IRRIGATION EQUIPMENT, Eduard K. Ott, Owner of Record: *Frontier Machinery Company, Walla Walla, Wash.,* Attorney or Agent: Richard J. St. John, et al., Ex. Gp.: 341

4,022,929, Re. S.N. 124,005, Filed Feb. 25, 1980, Cl. 427/69, METHOD OF ALUMINIZING THE INSIDE OF THE PANEL OF A TELEVISION PICTURE TUBE, Eberhard Nill, et al., Owner of Record: *International Standard Electric Corporation, New York, N.Y.,* Attorney or Agent: Walter J. Baum, et al., Ex. Gp.: 162

4,055,964, Re. S.N. 088,174, Filed Feb. 27, 1980, Cl. 62/238, HEAT PUMP SYSTEM, Paul F. Swenson, et al., Owner of Record: *The United States of America as represented by The United States Department of Energy, Washington, D.C.,* Attorney or Agent: John F. Pearne, et al., Ex. Gp.: 344

4,064,376, Re. S.N. 097,595, Filed Nov. 27, 1979, Cl. 179/146 H, SOUND REPRODUCTION SYSTEM AND DEVICE, Kyoto Yamada, Owner of Record: *Bodysonic Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: James C. Wray, Ex. Gp.: 235

4,077,212, Re. S.N. 127,250, Filed Mar. 4, 1980, Cl. 60/431, HYDROSTATIC TRANSMISSION CONTROL, Kenneth W. S. Foster, Owner of Record: *Renold Limited, Manchester, England,* Attorney or Agent: Stephen Frishauf, et al., Ex. Gp.: 341

4,079,149, Re. S.N. 070,271, Filed Aug. 27, 1979, Cl. 260/566, BENZYL OXIME ETHERS, Arthur C. Henry, Owner of Record: *Shell Oil Company, Houston, Tex.,* Attorney or Agent: Frank R. LaFontaine, Ex. Gp.: 126

4,091,918, Re. S.N. 124,120, Filed Feb. 25, 1980, Cl. 206/45.13, CONTAINER-CARD FILE STRUCTURE, George Soulakis, et al., Owner of Record: *Eldon Industries, Inc., Hawthorne, Calif.,* Attorney or Agent: Edward D. O'Brian, Ex. Gp.: 241

4,096,301, Re. S.N. 127,220, Filed Mar. 4, 1980, Cl. 427/430 A, APPARATUS AND METHOD FOR AUTOMATICALLY MAINTAINING AN ELECTROLESS COPPER PLAYING BATH, Leo J. Slominski, et al., Owner of Record: *MacDermid Incorporated, Waterbury, Conn.,* Attorney or Agent: Merrill F. Steward, et al., Ex. Gp.: 162

4,112,436, Re. S.N. 127,679, Filed Mar. 6, 1980, Cl. 346/140 R, GLASS NOZZLE ARRAY FOR AN INK JET PRINTER AND METHOD OF FORMING SAME, Donald R. Cone Jr., Owner of Record: *The Mead Corporation, Dayton, Ohio,* Attorney or Agent: Nathaniel R. French, et al., Ex. Gp.: 211

4,136,408, Re. S.N. 124,121, Filed Feb. 26, 1980, Cl. 4/172.12, LIGHTWEIGHT REMOVABLE COVER FOR A POOL, GREENHOUSE OR THE LIKE, Edwin L. Dahlbeck, et al., Owner of Record: *Inventors,* Attorney or Agent: Richard W. Seed, et al., Ex. Gp.: 243

4,144,170, Re. S.N. 125,634, Filed Feb. 28, 1980, Cl. 210/221, APPARATUS FOR WATER TREATMENT, Karl R. Dunkers, Owner of Record: *Inventor,* Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 176

4,146,635, Re. S.N. 123,792, Filed Feb. 22, 1980, Cl. 428/283, ANTI-SKID, WEAR- AND STRESS-RESISTING ROAD MARKING TAPE MATERIAL, Ludwig Eigenmann, Owner of Record: *Inventor,* Attorney or Agent: Michael J. Striker, et al., Ex. Gp.: 164

4,152,341, Re. S.N. 127,135, Filed Mar. 4, 1980, Cl. 260/395, TRIARYL OR DIARYLPYRIDYL METHANES, Geraint Jones, et al., Owner of Record: *Imperial Chemical Industries Limited, London, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 117

4,166,952, Re. S.N. 126,139, Filed Feb. 29, 1980, Cl. 250/288, METHOD AND APPARATUS FOR THE ELEMENTAL ANALYSIS OF SOLIDS, Bruce Noble Colby, et al., Owner of Record: *E. I. du Pont de Nemours and Company, Wilmington, Del.,* Attorney or Agent: Charles A. Weigel, Jr., Ex. Gp.: 256

4,169,769, Re. S.N. 118,543, Filed Feb. 4, 1980, Cl. 204/1 T, METHOD FOR CONVEYING A GAS SAMPLE THROUGH AN ANALYZER CHAMBER, David M. Capone, Owner of Record: *Ametek Inc., New York, N.Y.,* Attorney or Agent: Stanley J. Price Jr., Ex. Gp.: 114

PATENT NOTICES

Certificates of Correction for the Week of May 27, 1980

D. 253,069	4,168,915	4,180,782	4,186,900
3,836,717	4,169,475	4,181,205	4,187,806
3,996,077	4,170,194	4,181,570	4,187,815
4,034,772	4,170,866	4,181,987	4,187,890
4,086,074	4,171,234	4,182,083	4,187,892
4,093,668	4,173,048	4,182,249	4,187,984
4,107,416	4,173,320	4,182,498	4,188,310
4,113,159	4,173,566	4,182,882	4,188,593
4,127,883	4,173,682	4,183,862	4,188,644
4,134,541	4,174,282	4,184,016	4,188,671
4,141,035	4,174,644	4,184,139	4,188,916
4,141,868	4,174,960	4,184,840	4,189,016
4,143,970	4,176,204	4,184,942	4,189,255
4,145,899	4,177,467	4,185,008	4,189,876
4,156,282	4,178,280	4,185,211	4,189,417
4,158,228	4,178,873	4,185,642	4,189,465
4,159,741	4,179,786	4,185,681	4,189,544
4,160,156	4,179,790	4,186,067	4,189,577
4,160,271	4,179,808	4,186,086	4,189,615
4,168,316	4,180,029	4,186,639	4,189,648
4,168,705	4,180,781	4,186,886	4,189,722
			4,189,779

Disclaimers

Re. No. 29,536.—*Donald David Fearing*, Mahtomedi, Minn. MARKING TAG. Patent dated Feb. 14, 1978. Disclaimer filed Mar. 28, 1980, by the inventor.

Hereby disclaims the term of said patent subsequent to Dec. 10, 1987.

4,118,368.—*Nobuo Soma, Syoji Morimura, Takao Yoshioka* and *Tomoyuki Kurumada*, Tokyo, Japan. SYNTHETIC POLYMER STABILIZERS. Patent dated Oct. 3, 1978. Disclaimer filed Mar. 25, 1980, by the assignee, *Sankyo Company Limited*.

Hereby enters this disclaimer to claim 6 of said patent.

4,159,219.—*Richard J. Evans*, Lancaster, Pa. METHOD FOR PRODUCING AN UNBACKED TENSION FLOOR. Patent dated June 26, 1979. Disclaimer filed Mar. 31, 1980, by the assignee, *Armstrong Cork Company*.

Hereby enters this disclaimer to claims 1, 2 and 4 of said patent.

4,180,915.—*Melvin H. Lill*, San Jose and *James L. Wiederrich*, Lodi, Calif. RUNOUT COMPENSATION IN VEHICLE WHEEL ALIGNMENT MEASURING APPARATUS. Patent dated Jan. 1, 1980. Disclaimer filed Mar. 7, 1980, by the assignee, *FMC Corporation*.

Hereby disclaims the term of said patent subsequent to Feb. 13, 1996.

Erratum

All reference to Patent No. 4,191,429 to Richard J. Reitz and Edward J. Kruke, both of Ohio, for FLUID PRESSURE BRAKING SYSTEM HAVING EMERGENCY VALVE appearing in the OFFICIAL GAZETTE of Mar. 4, 1980, should be deleted since the patent should not have issued.

National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

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Copies of patent applications cited are available from the National Tchnical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY, OTJAG
Chief, Intellectual Property Division, Room 2D 444
Pentagon, Washington, D.C. 20310

Patent 4,118,668. R. F. Network Antenna Analyzer Employing Sampling Techniques and Having Remotely Located Sampling Probes. Filed Sept. 12, 1977. Patented Oct. 3, 1978. Not available NTIS.

Patent application 6–003,179. Coaxial Terminal Protection Device With Disposable Cartridge. Filed Jan. 15, 1979.

Patent application 6–008,627. Fluidic Valve. Filed Feb. 1, 1979.

Patent application 6–014,503. Temperature-Compensated Laminar Proportional Amplifier. Filed Feb. 23, 1979.

Patent application 6–019,031. Solid-Medium Coherent Optical Processor. Filed Mar. 9, 1979.

Patent application 6–019,032. Complex Spatial Modulator. Filed Mar. 9, 1979.

Patent application 6–024,234. Multislot Bicone Antenna. Filed Mar. 26, 1979.

Patent application 930,968. Fluidic Element With Substantially Zero Null Off-Set. Filed Aug. 4, 1978.

Patent application 952,521. Submillimeter Wave Generation Using Surface Acoustic Waves in Piezoelectric Materials. Filed Oct. 18, 1978.

Patent application 953,292. Null Balancing for Fluidic Sensors and Amplifiers. Filed Oct. 20, 1978.

Patent application 954,264. Method and Apparatus for Examining Structures Using Stimulated Acoustic Emission. Filed Oct. 24, 1978.

Patent application 957,779. Improved Phase Measuring Device. Filed Nov. 6, 1978.

Patent application 963,719. Flueric Notch Filter Temperature of Density Sensor. Filed Nov. 27, 1978.

Patent application 963,720. Non-Contact Flueric Temperature Sensing Method and Apparatus. Filed Nov. 27, 1978.

Patent application 966,839. Conformal Spiral Antenna. Filed Dec. 6, 1978.

Patent 4,118,676. Method and Apparatus for Driving an Optical Waveguide With Coherent Radiation. Filed Oct. 22, 1976. Patented Oct. 3, 1978. Not available NTIS.

Patent 4,119,038. Controlled Activation of Reserve Power Supplies. Filed May 13, 1977. Patented Oct. 10, 1978. Not available NTIS.

Patent 4,139,277. Acousto-Optic Memory Correlator. Filed June 7, 1977. Patented Feb. 13, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent 4,166,597. Stowable and Inflatable Vehicle. Filed May 9, 1974. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,166,598. Vehicle Enshrouding Apparatus. Filed May 30, 1974. Patented Sept. 4, 1979. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6–053,475. Control of Parasitic Mites. Filed June 29, 1979.

Patent application 6–056,652. Melting Icebergs to Produce Fresh Water and Mechanical Energy. Filed July 11, 1979.

Patent application 6–083,694. Method of Applying Herbicide. Filed Oct. 11, 1979.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 954,381. System for Testing Optical Fibers. Filed Oct. 24, 1978.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent application 6–050,554. 1,2-Diaminocyclohexane Platinum (II) Complexes Having Antineoplastic Activity. Filed June 20, 1979.

Patent 4,183,360. Multifinger Photocell Plethysmography System. Filed July 26, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,184,258. Powder Blower Device. Filed Jan. 30, 1978. Patented Jan. 22, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6–053,664. The Application of Inductively Coupled Plasma Emission Spectrometry to the Elemental Analysis of Organic Compounds and to the Determination of the Empirical Formulas for These and Other Compounds. Filed July 2, 1979.

Patent application 6–067,648. Method of Extending the Fatigue Life of Wire Rope. Filed Aug. 17, 1979.

Patent application 6–068,998. Dual Ground Plane Stripline Fed Microstrip Antennas. Filed Aug. 23, 1979.

Patent application 6–069,654. Apparatus and Method for Submicron Pattern Generation. Filed Aug. 27, 1979.

Patent application 6–078,257. Dielectric Corona Rings. Filed Sept. 24, 1979.

Patent application 6–079,010. Corner Fed Electric Microstrip Dipole Antenna. Filed Sept. 26, 1979.

Patent application 6–080,596. Omnidirectional Microstrip Antenna. Filed Oct. 1, 1979.

Patent application 6–081,737. Laser Speckle Eliminator. Filed Oct. 4, 1979.

Patent application 953,509. Quick Disconnect Electrical Connector Having Disassembly Features for Refurbishment. Filed Oct. 23, 1978.

Patent application 958,751. Field Determined Propagation Circuit. Filed Nov. 8, 1978.

Patent application 958,913. Crosstie Memory Bit Stretcher Detector. Filed Nov. 8, 1978.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 6–067,596. Indirect Microbial Detection. Filed Aug. 17, 1979.

Patent application 6–069,429. Induction Heating Gun. Filed Aug. 24, 1979.

Patent application 6–086,508. Wide Angle Optical Systems. Filed Oct. 19, 1979.

Patent application 6–088,663. Use of Glow Discharge in Fluidized Beds. Filed Oct. 26, 1979.

Patent application 6–089,779. Corrosion Resistent Thermal Barrier Coating. Filed Oct. 31, 1979.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library. Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 19, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids: Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-8-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-19-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	8-20-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	2-18-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-23-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	9-5-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-19-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-9-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-8-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	11-28-78

Expiration of patents: The patents within the range of numbers indicated below expire during April 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,083,367 to 3,088,113, inclusive
Plant Patents..... Numbers 2,244 to 2,257, inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

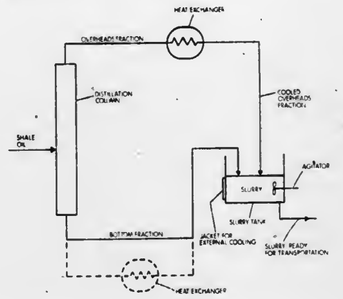
Re. 30,281
TRANSPORTATION OF WAXY HYDROCARBON MIXTURE AS A SLURRY

James E. Tackett, and Paul H. Stewart, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Original No. 3,910,299, dated Oct. 7, 1975, Ser. No. 524,008, Nov. 15, 1974. Application for reissue Aug. 25, 1978, Ser. No. 936,702

Int. Cl.[2] **F17D** *1/16*

U.S. Cl. 137—13 **19 Claims**



1. A process of transporting and/or storing a waxy hydrocarbon mixture containing 1 to about 80% by weight of wax comprising fractionating the hydrocarbon mixture into at least an overheads fraction and a bottoms fraction (contains at least a majority of the wax), mixing at a shear rate less than about 20 sec^{-1} at least a portion of the overheads fraction which has been cooled to a temperature sufficiently low so that when it is slurried with the bottoms fraction the resulting temperature will be at least below that at which the hydrocarbon mixture will be transported, with at least a major portion of the bottoms fraction which has been heated to a temperature above that at which wax crystallization is effected, to obtain a slurry and thereafter storing or transporting the slurry.

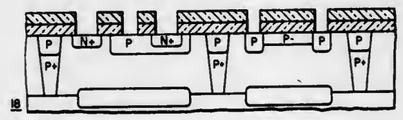
Re. 30,282
DOUBLE MASTER MASK PROCESS FOR INTEGRATED CIRCUIT MANUFACTURE

Merrill R. Hunt, San Diego, Calif.; Christopher A. Ladas, Tempe, and Sal T. Mastroianni, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Original No. 4,021,270, dated May 3, 1977, Ser. No. 700,432, Jun. 28, 1976. Application for reissue Jul. 3, 1978, Ser. No. 921,924

Int. Cl.[3] **H01L** *21/265*

U.S. Cl. 148—1.5 **17 Claims**



15. A self-aligned method of manufacturing integrated circuits comprising the steps of:

(a) providing a buried layer and an upper layer over a semiconductor substrate, said upper layer and said buried layer being of a first conductivity type, and said substrate being of a second conductivity type opposite to said first conductivity type;

(b) [depositing] *forming* a first masking layer over [the upper surface of] said upper layer;

(c) [depositing] *forming* a second masking layer [of the upper surface of] *over* said first masking layer;

(d) forming a predetermined pattern of openings in said second layer, said predetermined pattern comprising a first and a second group of openings;

(e) forming a first group of semiconductor device regions by applying impurities through openings etched through said first masking layer using said first group of openings as an etching mask;

(f) forming a second group of semiconductor device regions by applying impurities through openings etched through said first masking layer using said second group of openings as an etching mask; [g) forming shallow device regions, said shallow device regions overlaying the upper surfaces of said first and said second group of device regions and said shallow device regions being formed irrespective of said predetermined pattern of openings;]

[h)] *(g)* removing said first and said second masking layers;

[i) depositing] *(h) forming* a third masking layer over [the upper surface of] said upper layer;

[j) depositing] *(i) forming* a fourth masking layer over [the upper surface of] said third masking layer;

[k)] *(j)* forming a *second* predetermined pattern of openings in said fourth layer, said *second* predetermined pattern comprising a third and a fourth group of openings;

[l)] *(k)* forming a third group of semiconductor device regions by applying impurities through openings etched through said third masking layer using said third group of openings as an etching mask; and

[m)] *(l)* forming a group of contact openings through said third masking layer using said fourth group of openings as an etching mask.

Re. 30,283
SULFONIUM COMPOUNDS AS CORROSION INHIBITORS IN AQUEOUS ACIDIC CLEANING SOLUTIONS

Wayne W. Frenier, Tulsa, Okla., and William J. Settineri, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

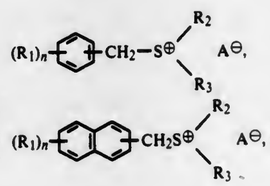
Original No. 4,101,438, dated Jul. 18, 1978, Ser. No. 669,116, Mar. 22, 1976. Continuation of Ser. No. 350,295, Apr. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 118,175, Feb. 23, 1971, Pat. No. 3,764,543. Application for reissue Feb. 13, 1979, Ser. No. 11,745

The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

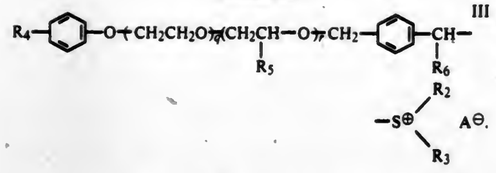
Int. Cl.[2] **C11D** *7/34;* **C23G** *1/06*

U.S. Cl. 252—151 **20 Claims**

1. An aqueous acidic cleaning solution of at least one organic acid having dissolved or dispersed therein a sulfonium salt corresponding to the formula



-continued



wherein n is 1 or 2; each R_1 independently is hydrogen or a hydrocarbyl, a hydrocarbyl whose chain length is interrupted by an atom of oxygen or sulfur, a hydrocarbyloxyor a hydrocarbylthio radical of from 1 to about 24 carbon atoms; R_2 is a hydrocarbyl or inertly-substituted hydrocarbyl radical of from 1 to about 24 carbon atoms, with the proviso that the total aggregate carbon content of R_1 and R_2 is from 7 to about 25; R_3 is an alkyl radical of from 1 to 4 carbon atoms or an inertly-substituted alkyl radical of from 2 to 4 carbon atoms, allyl, phenyl or an inertly-substituted phenyl radical; or R_2 and R_3 are joined to form a 5- or 6-membered heterocyclic ring, with the proviso that the total aggregate carbon content of R_1, R_2 and R_3 is from 10 to about 25; R_4 is alkyl of 4 to about 20 carbon atoms; R_5 is methyl or ethyl; R_6 is hydrogen, methyl or ethyl; q is an integer of from 0 to 8; r is an integer of from 0 to 10, with the proviso that the sum of q plus r is equal to or less than 10; and $A^{\ominus}$ is an anion; said sulfonium salt being present in an amount at least sufficient to inhibit the acid-induced corrosion of ferrous metals in contact with said solution and ferric ions.

Re. 30,284
POLYMERIC ALKOXYSILANES

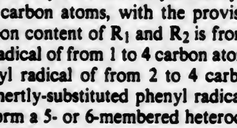
Walter L. Magee, Jr., Danbury, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Original No. 4,042,612, dated Aug. 16, 1977, Ser. No. 756,310, Jan. 3, 1977. Application for reissue Apr. 24, 1978, Ser. No. 899,683

Int. Cl.² C07F *7/18*

U.S. Cl. 556—428 **6 Claims**

1. A polymeric alkoxysilane having the average formula



wherein each R is an independently selected hydrocarbon radical or hydrocarbon ether radical free of aliphatic unsaturation, each R^1 is an independently selected hydrocarbon radical free of aliphatic unsaturation, a has a value from 1 to 3 and b has a value from [0.001] *0.0001* to 1.0.

Re. 30,285
SPRAYING DEVICES, IN PARTICULAR NEBULIZING DEVICES

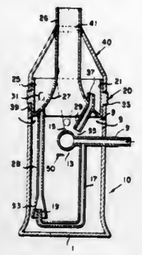
Robert S. Babington, 1113 Ingleside Ave., McLean, Va. 22101

Original No. 3,864,326, dated Feb. 4, 1975, Ser. No. 255,681, May 22, 1972. Application for reissue Feb. 4, 1977, Ser. No. 765,724

Int. Cl.² F02M *15/04*

U.S. Cl. 261—78 A **26 Claims**

1. A nebulizing unit comprising in combination, a base flask having an open top; a closure member for said flask, said closure member including at least one vertical chimney having a flaring lower end; a collar surrounding the lower end of the chimney and defining first, a support for the chimney and, secondly, with the chimney end, an annular holding reservoir; a first conduit opening into said reservoir and having a lower terminal end disposed beneath the reservoir at a point closely adjacent the bottom of the base flask; at least a second conduit opening into said holding reservoir and having one end disposed in the lowermost point thereof and the opposite end disposed below the bottom of the holding reservoir and projecting into the base flask adjacent its mouth; at least one plenum chamber having a spherical end with an aperture therein disposed within the base flask and beneath the terinal



end of said second mentioned conduit; and its opposite end disposed outside of the side wall of said base flask; a branch line in communication with said plenum chamber and having a terminal end disposed adjacent the bottom of said base flask and in registry with said first mentioned conduit opening into said holding reservoir and discharging therein.

Re. 30,286
METHOD OF PRODUCING HIGH DENSITY SILICON CARBIDE PRODUCT

John A. Coppola, and Richard H. Smoak, both of Lewiston, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Original No. 4,080,415, dated Mar. 21, 1978, Ser. No. 743,448, Nov. 22, 1976. Application for reissue Mar. 19, 1979, Ser. No. 21,878

Int. Cl.² C04B *35/56*

U.S. Cl. 264—65 **8 Claims**

1. A method of sintering silicon carbide powders containing boron or boron-containing compounds as densification aids to produce a high density silicon carbide ceramic material which comprises the step of sintering such powders in an atmosphere containing boron, wherein the partial pressure of boron in the sintering atmosphere is equal to or greater than the equilibrium vapor pressure of the boron in the silicon carbide powder during sintering of said powder, *said partial pressure of boron in the sintering atmosphere being provided by boron from a boron-containing slurry or solution applied to the interior of the sintering chamber prior to sintering, or by the addition of a boron-containing gas into the chamber during sintering.*

Re. 30,287
19 HYDROXY PROSTAGLANDINS

Arthur F. Marx, Delft, and Jean Doodewaard, Schipluiden, both of Netherlands, assignors to Gist-Brocades N.V., Netherlands

Original No. 4,054,595, dated Oct. 18, 1977, Ser. No. 561,895, Mar. 25, 1975. Application for reissue Oct. 26, 1978, Ser. No. 955,005

Claims priority, application United Kingdom, Mar. 26, 1974, 13399/74; Mar. 26, 1974, 13400/74

Int. Cl.² C07C *177/00*

U.S. Cl. 562—503 **2 Claims**

8. A compound which is selected from 9-keto-11α,15α,19-trihydroxy-prost-13(t)-enoic acid, pharmaceutically acceptable salts or aliphatic esters thereof containing 1 to 5 carbon atoms.

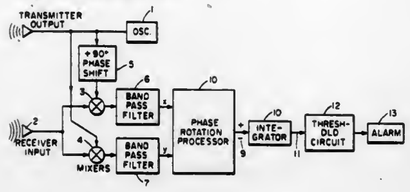
Re. 30,288
INTRUSION DETECTION SYSTEM

Kenneth R. Hackett, Boulder, Colo., assignor to Pittway Corporation, Northbrook, Ill.

Original No. 3,942,178, dated Mar. 2, 1976, Ser. No. 455,260, Mar. 27, 1974. Application for reissue Dec. 16, 1977, Ser. No. 861,214

Int. Cl.² G01S *9/02*; G08B *13/24*

U.S. Cl. 343—5 PD **13 Claims**



11. In an echo signal intrusion alarm system having enhanced detection capability for return echos from a moving object in the presence of interference and clutter return wherein a signal is transmitted into a protected zone and reflected signals are received from said zone, said system including first and second quadrature mixing means for mixing signals corresponding to the transmitted and received signals to produce direction sensitive quadrature output signals in accordance with the beat frequency between said transmitted and received signals, the improvement comprising:

means for multiplying one of said quadrature output signals by a factor obtained from the time derivative of the other quadrature output signal to obtain the four-quadrant product of the signal and factor multiplied;

limiting means operative on said time derivative to obtain said factor for making said four-quadrant product proportional to the amplitude of only said one of said quadrature output signals;

integrating means responsive to said product for cancelling opposite polarity signal components corresponding to said interference and clutter return and accumulating an integrated signal magnitude from signal components of the same polarity corresponding to a given direction of motion for said moving object; and

means responsive to a predetermined accumulated level of said integrated signal magnitude for producing an alarm signal.

PLANT PATENTS

GRANTED MAY 27, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,538

STRAWBERRY PLANT

Royce S. Bringhurst, Davis, and Victor Voth, Santa Ana, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 23, 1978, Ser. No. 953,814
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

4,539

TOMATO PLANT

Carroll G. Briggs, San Juan Bautista, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 11, 1978, Ser. No. 968,072
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—89 **1 Claim**

1. A new and distinct variety of a hybrid tomato plant substantially as herein shown and described, characterized as to novelty by uniform crop characteristics, low grading loss, high yields, low percentage of fruit with stems, low percentage of fruit ripening defects, multiple disease resistance and tolerance.

4,540

PRUNUS SUBHIRTELLA

William Flemer, III, Princeton, N.J., assignor to Treesearch, Kingston, N.J.

Filed Jan. 25, 1979, Ser. No. 6,509
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of flowering cherry tree of the species botanically known as *Prunus subhirtella,* substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the deep purplish pink color of the flower, the very abundant quantity of blooms, the semi-double form of the flowers, the ability of the flower buds to survive extremely low temperatures, and the long lastingness of the blooms averaging six days longer than other Higan Cherry Trees growing in the vicinity.

PATENTS

GRANTED MAY 27, 1980

ERRATA

For CLASS	See PATENT NO.
433-177	4,204,321
433-185	4,204,322
433-038	4,204,323
433-009	4,204,325
433-050	4,204,326
433-029	4,204,328
433-136	4,204,329
433-148	4,204,330
368-035	4,204,395
368-287	4,204,396
368-202	4,204,397
368-047	4,204,398
368-240	4,204,399
084-484	4,204,400
206-397	4,204,479
123-001	4,204,481
123-032 EE	4,204,482
123-032 EL	4,204,483
123-032 SP	4,204,484
123-034 A	4,204,485
123-041.6	4,204,486
123-041.35	4,204,487
123-073 A	4,204,488
123-073 A	4,204,489
123-102	4,204,490
239-017	4,204,631
371-027	4,204,633
371-038	4,204,634
354-281	4,204,724
355-003 R	4,204,725
355-003 DR	4,204,726
355-003 R	4,204,727
355-004	4,204,728
355-011	4,204,729
355-014 R	4,204,730
355-016	4,204,731
355-055	4,204,732
355-064	4,204,733
355-068	4,204,734
355-075	4,204,735
355-118	4,204,736
414-458	4,204,797
414-750	4,204,798

ERRATA—Continued

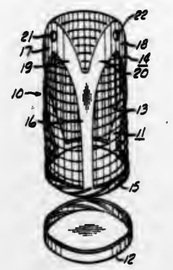
For CLASS	See PATENT NO.
065-025 A	4,204,845
430-030	4,204,865
430-306	4,204,866
430-376	4,204,867
430-461	4,204,868
430-564	4,204,869
430-213	4,204,870
430-072	4,205,005
568-451	4,205,013
585-469	4,205,017
525-404	4,205,018
525-243	4,205,019
525-275	4,205,020
525-240	4,205,021
427-004	4,205,059
370-083	4,205,200
370-081	4,205,201
370-081	4,205,202
370-110	4,205,203
235-092 CT	4,205,238
455-620	4,205,268
455-004	4,205,269
455-158	4,205,270
455-083	4,205,272
371-003	4,205,301
371-050	4,205,324
340-147 MD	4,205,325
340-147 R	4,205,326
340-208	4,205,327
340-521	4,205,328
179-100.1 G	4,205,339
357-023	4,205,342

PATENTS

GRANTED MAY 27, 1980

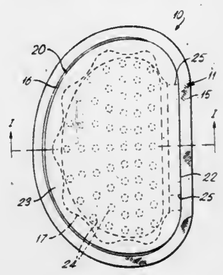
GENERAL AND MECHANICAL

4,204,282
IMPLANTABLE ARTIFICIAL SPHINCTER
Richard A. Bolt, Suite 400 Medical Arts Bldg., 1012 Volusia Ave., Daytona Beach, Fla. 32015
Filed May 8, 1978, Ser. No. 903,825
Int. Cl.[2] A61F *1/00, 1/24*
U.S. Cl. 3—1 **8 Claims**



1. An implantable artificial sphincter comprising a sleeve for supporting the terminal end of a bowel therein, said sleeve having multiple openings therethrough for the passage of anchoring fibrous granulation tissue, one end of said sleeve provided with a removable closure, said sleeve consisting of a sleeve support including a ring member for receiving said closure at said one end and a plurality of struts extending from said ring member generally in the axial direction and a mesh sleeve secured to or integral with said support.

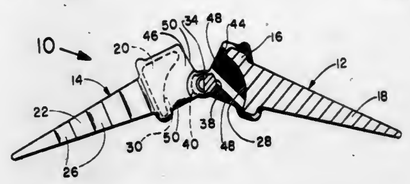
4,204,283
PROSTHETIC VALVE
Brian J. Bellhouse, Islip, England, and William G. Williams, Islington, Canada, assignors to National Research Development Corporation, London, England
Filed May 3, 1978, Ser. No. 902,746
Claims priority, application United Kingdom, May 5, 1977, 18895/77
Int. Cl.[2] A61F *1/22*
U.S. Cl. 3—1.5 **11 Claims**



1. A prosthetic valve comprising: an annular member defining a valve seat around an aperture; and an obturating flap having a major area thereof in the form of a rigid sheet with a substantially straight edge portion, and having a minor area thereof in the form of a flexible sheet extending from along the whole length of said edge portion and connecting the flap to said member to serve as a hinge;

said flap being movable about said hinge between positions in which the flap is respectively engaged and disengaged with said seat to close and open said aperture, and said major area being of similar shape and extent to said seat so that the forces acting on said flap, when closed, are transmitted to said annular member predominantly through said rigid sheet.

4,204,284
JOINT PROSTHESIS WITH CONTOURED PIN
James B. Koeneman, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed Nov. 16, 1977, Ser. No. 852,181
Int. Cl.[2] A61F *1/24*
U.S. Cl. 3—1.91 **12 Claims**



1. A joint prosthesis comprising:

(a) a first relatively inextensible component;

(b) a second relatively inextensible component that is spaced from the first component along a first axis;

(c) means defining a relatively inextensible pivot member disposed between and spaced from each of the first and second components, the pivot member having a central axis which is oriented generally perpendicular to said first axis, the first and second components being disposed entirely on opposite sides of and separated by a plane oriented generally perpendicular to said first axis and generally parallel to said central axis of the pivot member, the pivot member also having, when viewed in section taken normal to said central axis, two discrete arcuate surfaces spaced apart from one another about the circumference of the pivot member and connecting surfaces disposed between said discrete arcuate surfaces, said connecting surfaces being within the generatrix of at least one of said discrete arcuate surfaces; and

(d) means for resiliently securing the pivot member to each of the first and second components, the securing means including (i) a first portion that secures the first component to one of the arcuate surfaces of the pivot member and (ii) a second portion that secures the second component to the other of the arcuate surfaces of the pivot member, each of the first and second portions of the securing means extending about the junctions of said discrete arcuate surfaces and said connecting surfaces and having at least one exposed surface that extends outwardly from adjacent the pivot member, said at least one exposed surface of the first portion of the securing means being spaced from said at least one exposed surface of the second portion of the securing means throughout at least a majority of their respective lengths measured generally radially of said central axis of the pivot member,

the first and second components being coupled to each other only through the pivot member and the first and second portions of the securing means, the relative inextensibility of the first and second components and the pivot member being determined in comparison to the securing means, the first and second portions of the securing means deflecting in torsional shear to accommodate relative rotation between the pivot member and each of the first and second components so that the first and second components can move toward and away from each other in directions generally parallel to said first axis through frotation about a second axis that is disposed at least adja-

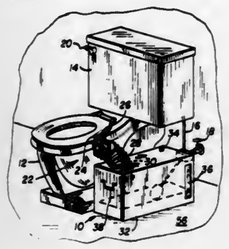
cent to and at least approximately parallel to the central axis of the pivot member.

4,204,285

OVERFLOW PROTECTION APPARATUS

Ian T. Pak, Box 258G, R. D. No. 1 Amwell R.D., Neshanic, N.J. 08853

Filed Jul. 30, 1979, Ser. No. 62,061
Int. Cl.² E03D *11/02, 11/18*
U.S. Cl. 4—427 **7 Claims**



1. An overflow protection apparatus for use with a toilet including a bowl and water flushing source operatively coupled together providing a water flow path therebetween and a water input flow path for said flushing source comprising, in combination:

(a) a bowl having an outwardly extending spout with an exit level disposed below the upper surface of said bowl and including an inlet aperture for receiving said water from said flushing source;

(b) an auxiliary reservoir disposed proximate said bowl and being provided with an inlet orifice, said reservoir having a capacity approximately equal to the amount of water provided by said flushing source in one flush; and

(c) flexible coupling means connected between said bowl spout and said reservoir inlet orifice to provide a continuous water flow path.

4,204,286

SPRING SUPPORT

Nathan Stiles, Ashburnham, and Richard T. Heininger, Gardner, both of Mass., assignors to Gem Industries Inc., Gardner, Mass.

Filed Dec. 11, 1978, Ser. No. 968,077
Int. Cl.² A47C *17/14*
U.S. Cl. 5—11 **2 Claims**



1. The combination of a bedstead having end posts at the corners thereof, a vertical plate on each post, a series of vertically aligned and spaced hooks on each plate, and a supporting tab at the lower end of each plate, the hooks being narrower than the tab,

with a spring support comprising an angle iron at each end of a spring, each angle iron having two flanges, a shorter recess at each end of one flange and a longer recess at each end of the other flange, the angle irons being selectively positioned on the tabs or on corresponding hooks,

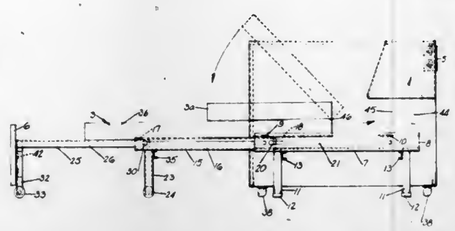
the shorter recesses fitting in the hooks, and the longer recesses including edges resting resting on the tabs.

4,204,287

KNOCK-DOWN SOFA BED WITH HINGED MATTRESS

Manning Lane, 3185 Patrisal Ct., Cincinnati, Ohio 45236; Warren J. Hauck, 8020 Brooks Rd., Harrison, Ohio 45030, and Roy O. Sweeney, 5584 Clearidge La., Cincinnati, Ohio 45239

Filed Sep. 5, 1978, Ser. No. 939,392
Int. Cl.² A47C *17/40*
U.S. Cl. 5—18 R **20 Claims**



1. A convertible sofa bed having a closed position forming a seating unit and an opened position forming a bed, said sofa bed comprising:

a self-supporting rectangular frame-like horizontal stationary section having a pair of spaced parallel end frame members, said members supporting a resilient horizontal surface defining a seating platform when said sofa bed is in the closed position;

a plurality of spaced load-bearing legs depending from and attached to the peripheral edge of said stationary section for supporting substantially entirely said section from the floor;

a first movable rectangular frame-like section formed by a pair of spaced parallel end frame members, said first movable section frame members supporting a resilient horizontal surface, said first movable section being slidable between said closed position wherein said first movable section underlies said stationary section, and an opened position wherein said first movable section is slid outwardly from said stationary section to a position where said horizontal resilient surfaces of said stationary and first movable section are substantially co-planar;

first connecting means joining said stationary section and said first movable section to permit linear sliding movement therebetween;

a second movable rectangular frame-like section formed by a pair of spaced parallel end frame members, said second movable section being slidable between said closed position wherein said second movable section underlies said first movable section, and an opened position wherein said second movable section is slid outwardly from said first movable section to a position where said horizontal resilient surfaces of said first and second sections are substantially co-planar; and

second connecting means joining said first and second movable sections to permit linear sliding movement therebetween.

4,204,288

CONVERTIBLE SEAT-BED

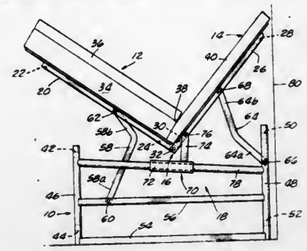
Alfred S. Villa, 2511 Domingo Rd., Fullerton, Calif. 92635; Leo Thigpen, Jr., 16655 N. Sycamore St., Orange, Calif. 92667

Filed May 26, 1978, Ser. No. 909,918
Int. Cl.² A47C *12/17*
U.S. Cl. 5—47 **14 Claims**

1. In a convertible seat-bed, or similar structure, in which a seat and a back are supported on a base and interconnected by articulated actuating means for controlling movement of the seat and back between a seat forming position in which the seat extends generally horizontally and the back extends generally in an upright position, and a bed forming position in which the seat and back extend horizontally in a generally coplanar relationship, the improvement in which the interconnecting means comprises:

a front swingable link member having a lower end pivoted on said base and an upper end pivoted on said seat;

a rear swingable link member having a lower end pivoted on said base and an upper end pivoted on said back;



means providing a hinged pivot interconnection of said seat and back along adjacent inner sides; and

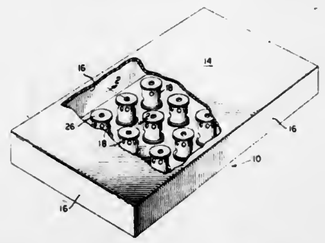
connection means positioned between said front link member and said back link member including a control member supported on said base for movements in opposite directions, and having a pivot connection with said back rearwardly spaced from said hinged interconnection.

4,204,289

WATERBED MATTRESS

Isaac Fogel, Silver Spring, Md., assignor to Classic Corporation, Jessup, Md.

Filed Apr. 14, 1978, Ser. No. 896,300
Int. Cl.² A47C *27/08*
U.S. Cl. 5—451 **7 Claims**



1. A waterbed mattress construction having baffle damper means for substantially eliminating water wave action comprising:

a top sheet and a bottom sheet, said top sheet and said bottom sheet being joined to form a sealed envelope;

a plurality of baffle damper housing means in said waterbed mattress, each of said baffle damper housing means having a pair of spaced, opposed vertical sides affixed to the interior surface of said bottom sheet and having flotation means extending said baffle damper housing means vertically to contact the interior of the top sheet when weight is resting on said top sheet, said baffle damper housing means being positioned in said waterbed mattress to prevent continuous water wave action.

4,204,290

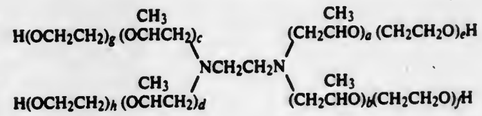
PROCESS FOR THE RAPID, CONTINUOUS NOVEL TEXTURING OR TEXTILE MATERIALS AND NOVEL-TEXTURED TEXTILE MATERIALS

Dara A. Jilla, 5006 Crooked Oak La., Charlotte, N.C. 28211

Filed Feb. 27, 1978, Ser. No. 881,665
Int. Cl.² D06P *5/08*; D06M *15/10, 15/48*; B32B *27/08*
U.S. Cl. 8—478 **8 Claims**

1. A process for imparting novel, commercially attractive tone-on-tone or heather look to a textile material, comprising impregnating suitable localized zones of substantially dry textile matrial in a precise, controlled manner with an inert solution of polymers at a temperature in the range of 150° to 250° C., said polymers being sufficiently inert as to have no substantial adverse effect upon the textile material undergoing impregnation, said impregnation of localized zones taking place while said textile material is under tensile stress whereas other localized zones of said textile material are not subjected to said impregnation step, quenching said impregnated textile material, rinsing said quenched textile material with a relatively low boiling organic liquid, exposing said rinsed textile material to dry heat at a high temperature sufficient to remove the excess of said organic liquid from the surface of the materials, and then dyeing said textured textile material, said polymers consisting essentially of:

a. at least one phase of a copolymer of dimethyl terephthalate with a tetrol compound having the general formula:



where a, b, c, d, e, f, g, and h are each integers and the total of a, b, c, and d is between 8 and 850 and the total of e, f, g, and h is between 8 and 1,000;

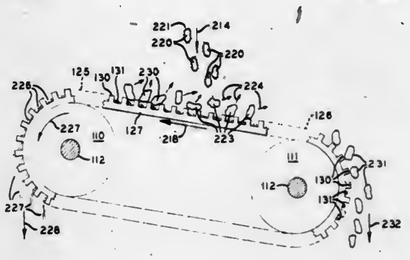
b. at least one phase of a compound which contains a cross-linkable polyester dispersed in a high boiling organic liquid selected from the class consisting of polyethylene and other polyalkylene glycols, and the methyl and ethyl-mono- and di-ethers of such glycols.

4,204,291

APPARATUS FOR REMOVING MOLD AND OTHER DETRITUS FROM RAISINS AND THE LIKE

Leo Chooljian, 5442 E. Heaton, Fresno, Calif. 93727, and Mehran Chooljian, 805 Lyon, Sanger, Calif. 93657

Filed Feb. 28, 1979, Ser. No. 16,157
Int. Cl.² A23N *9/00*
U.S. Cl. 15—3.1 **16 Claims**



1. An apparatus for removing mold and other detritus from raisins and the like comprising:

A. a member having an inclined, generally planar, upwardly disposed surface parallel to a predetermined inclined plane of reference and which has an upper end portion, a lower end portion and pockets therein;

B. means for depositing raisins to be treated on the surface between said portions; and

C. means for moving the member substantially parallel to said reference plane with a compound movement having an oscillatory component alternately toward said opposite end portions and an intermittent component progressive toward said upper end portions, whereby the mold and other detritus are separated from the raisins by the pockets and motivated with the progressive component toward

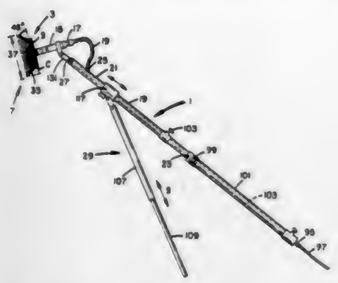
said upper end portion, and the separated raisins gravitate toward said lower end portion.

4,204,292

PORTABLE SCRUBBING TOOL

Frank R. Lester, Boynton Beach, Fla., and James Bullard, Adair, Okla., assignors to Nuvite Chemical Compounds Corporation, Brooklyn, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,354
Int. Cl.[2] A46B 13/02; A47L 11/162
U.S. Cl. 15—28 **19 Claims**



1. A lightweight, portable, pneumatic powered scrubbing tool comprising a scrubbing brush member having a substantially circular mounting plate, and a plurality of bristles affixed to one surface of the plate, at least a portion of said bristles affixed to said plate adjacent the periphery thereof and directed at an angle outwardly therefrom, a pneumatic powered motor having a motor drive shaft connected to said plate for rotating said plate, said motor positioned adjacent the other surface of said plate, and of a size so as not to extend beyond the periphery of said plate, an elongated, tubular, main support pole, means for pivotally connecting one end of said main support pole to said motor, a flexible pneumatic fluid supply hose within said main support pole extending from the other end of said main support pole and through an opening defined in a peripheral portion of the main support pole and connected to said motor, said opening located adjacent said one end of the main support pole, a quick-disconnect pneumatic fitting connected to said fluid supply hose, said fitting mounted at the other end of said main support pole, an elongated, tubular, auxiliary support pole, and means for pivotally connecting said auxiliary support pole to said main support pole, whereby said main support pole and said auxiliary support pole are adapted to be simultaneously and manually held by an operator during a scrubbing operation.

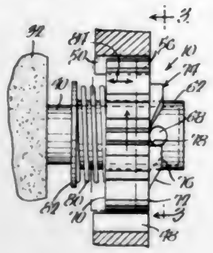
4,204,293

DIFFERENTIAL UNIT

William J. Schlapman, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 924,199, Jul. 13, 1978, abandoned. This application Mar. 12, 1979, Ser. No. 19,933
Int. Cl.[2] E01H 1/04; F16D 11/04
U.S. Cl. 15—79 R **11 Claims**

1. A differential unit providing for relative motion between two drive wheels, comprising: a shaft, a pair of gears positioned transversely with respect to said shaft and supported by said shaft, each of said gears having a pair of opposing major faces and being operably connected to one of said drive wheels, ratchet crown means on only one of said major faces of each gear and having camming surfaces for producing axial movement of said gears on said shaft, each of said camming surfaces terminating in an axial surface, the other of said major faces defining a generally flat surface extending radially of said shaft, projecting means protruding radially outwardly from said shaft adjacent to said ratchet crown means and adapted to engage an axial surface to drive said shaft and to engage said camming surface to move said gears axially, abutment means carried by said shaft adjacent to and spaced from each ratchet crown means, and biasing means between said abutment means and said flat surfaces biasing said camming surfaces toward said projection means, whereby differences in speeds of rotation of said gears will produce relative rotation of said shaft with respect to the slower rotating gear and compress said biasing means to produce axial movement of said slower gear with respect to said shaft.

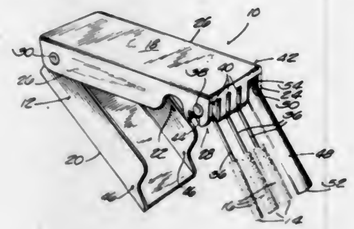


4,204,294

ELECTRICAL TERMINAL CLEANING DEVICE

Robert J. Halverson, 10525 W. Greenfield, Milwaukee, Wis. 53214

Filed Oct. 23, 1978, Ser. No. 953,539
Int. Cl.[2] A46B 7/02
U.S. Cl. 15—185 **4 Claims**



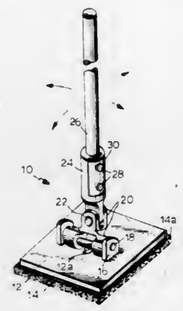
1. A cleaning device comprising:
a main body member having an interior pocket including an end wall, said main body member also having an open portion permitting access into said interior pocket;
a first shaft adjacently located to said end wall and a second shaft in said interior pocket and spaced from said first shaft;
a plurality of brushes, each of said brushes including an abrasive bristle end, an end portion oppositely spaced from said abrasive bristle end, each of said end portions being individually pivotally attached to said first shaft for permitting independent pivotal movement of said respective brush through said open portion between an inoperative position in which said respective abrasive bristle end is confined within said interior pocket and an operative position in which said respective abrasive bristle end extends outwardly of said main body member, and a stem portion intermediate each of said end portions and said respective abrasive bristle end;
a cover member pivotally mounted on said second shaft for movement between a first position permitting pivotal movement of each of said abrasive bristle ends through said open portion and a second position preventing the pivotal movement; and
wherein said end wall includes a plurality of slotted portions, the number of said slotted portions corresponding with the number of said brushes, each of said slotted portions being aligned with a respective one of said brushes and adapted to receive said respective stem portion when said respective brush is moved between said operative and inoperative positions, each of said slotted portions substantially limiting movement of said respective abrasive bristle end in a direction generally parallel to said first shaft when said respective brush is in said operative position.

4,204,295

GROUT SCRUBBER AND CLEANING TOOL FOR TILE

John D. O'Connor, 1817 Robin Hood, Sarasota, Fla. 33581

Filed Oct. 23, 1978, Ser. No. 953,851
Int. Cl.[2] A49L 13/04; B25G 1/00
U.S. Cl. 15—209 D **1 Claim**



1. A tile scrubbing and cleaning tool, comprising:
a rigid, flat rectangular plate, said plate having an upper surface and a lower surface;
a pair of flanges connected and integrally formed on the top of said plate, said flanges being parallel and having a pair of apertures, one in each flange, axially aligned for receipt of a shaft;
an elongated handle;
a handle socket for receiving one end of said handle, said socket including a movable joint for planar movement in a first plane;
a shaft connected between said flanges through said apertures;
a second joint member connected movably to said shaft for planar movement perpendicular to said first joint member, said second joint member and said shaft being spaced above the mid portion of said flat plate;
a fibrous pad attachable to the bottom surface of said flat plate, said flat plate including a central aperture for receiving a threaded connector; and
a threaded connector for attaching said pad to said plate, said threaded connector including a tapered head portion at one end, said tapered head having a diminishing diameter toward said threaded connector shaft, and a threaded nut attachable to the opposite end of said threaded connector, said spacing between said second joint and said plate upper surface for allowing access for installation or removal of said threaded connector whereby said pad may be easily installed or removed by separation of said threaded connector from said plate.

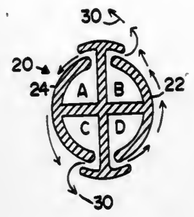
4,204,296

FLUID DYNAMIC FURNACE CLEANING SYSTEM

Richard J. Reilly, 1759 Venus Ave., St. Paul, Minn. 55122

Filed May 25, 1978, Ser. No. 909,382
Int. Cl.[2] F23J 3/02
U.S. Cl. 15—316 R **8 Claims**

1. A fluid dynamic cleaning system for cleaning the inside surface of a furnace comprising in combination:
a cleaning fluid manifold means;
supply means to supply a pressurized cleaning fluid to said manifold means;
a plurality of entrance channels in said furnace, said channels connected to said manifold means so as to receive fluid therefrom; and



fluid attachment surfaces adjacent the exit ends of said channels on the inside of the furnace operable to direct the flow of fluid.

4,204,297

VACUUM CLEANER

Ryuichi Yasunaga, 250-10, Tatebe Sakai-cho, Yohkaichi-shi, Shiga-ken; Shinya Tsutsumi, 1863-10, Wakaba-cho, 5-chome, Ohmi-hachiman-shi, Shiga-ken, and Mototsugu Kuroda, 205, Tsukamoto, Gokasyo-cho, Kanzaki-gun, Shiga-ken, all of Japan

Filed Jan. 10, 1979, Ser. No. 2,351
Claims priority, application Japan, Jan. 19, 1978, 53-005508[U]; Jan. 19, 1978, 53-005510[U]
Int. Cl.[2] A47L 5/36, 9/26
U.S. Cl. 15—323 **7 Claims**

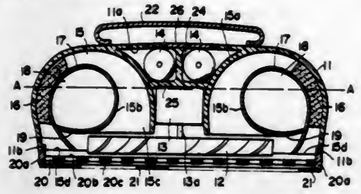
1. A vacuum cleaner comprising a cleaner main body incorporating an electric fan and a dust collector; a nozzle having a rotary brush rotatable by an electric motor and a connecting pipe turnable about a horizontal axis; means for holding the connecting pipe in communication with a suction opening of the main body, the communication means including an extension pipe connected at its one end to the connecting pipe, a flexible hose having a lead wire embedded therein and communicating at its one end with the suction opening, and a bent pipe interconnecting the extension pipe and the flexible hose; a first electrical connector electrically connecting one end of the lead wire to the main body; an electrical cord extending from the nozzle and electrically connected to the other end of the lead wire by a second electrical connector to supply current to the electric motor; a cord cover attached to the bent pipe for rendering the cord coextensive with the bent pipe along the outer surface thereof and covering the second electrical connector; and biasing means mounted on the nozzle for tensioning the cord extending along the outer surface of the extension pipe.

4,204,298

COMPACT VACUUM CLEANER

Hiroyuki Handa, and Tomoko Handa, both c/o Sagami Tsushin Kogyo Kabushiki Kaisha Nai, 4041, 5-chome, Nango Chigasaki-shi, Kanagawa-ken, Japan

Filed Nov. 15, 1978, Ser. No. 960,999
Claims priority, application Japan, Nov. 18, 1977, 52-139159
Int. Cl.² A47L *5/24*
U.S. Cl. 15—344 **17 Claims**



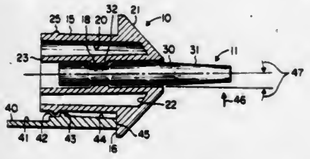
1. A vacuum cleaner comprising:
a hollow body member having a closed upper end and an open lower end adapted to be disposed so as to apply an air draft to a surface to be claimed;
driving means disposed in said body member;
means connecting said driving means with a source of energy to drive said driving means;
fan means disposed in said body member and adapted to be driven by said driving means; and
duct means formed in part by said body member and in part by partitions disposed in said body member and adapted to circulate within said body member an air flow generated by said fan means, said duct means having an outlet end adjacent to a suction side of said fan means and an inlet end confronted by a discharge side of said fan means, a portion of said duct means defining a dust collecting chamber into which dust may pass through openings in the wall of said duct whereby dust may be collected in said chamber and a door through which dust collected in said chamber may be removed.

4,204,299

REPLACEABLE TIP FOR DESOLDERING TOOLS

William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402

Filed Jul. 7, 1978, Ser. No. 922,676
Int. Cl.² A47L *9/02*; B23K *3/00*
U.S. Cl. 15—415 R **8 Claims**



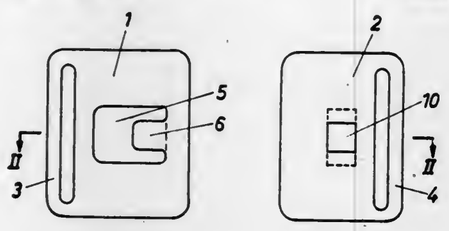
1. A replaceable tip assembly for attachment to the forward end of the barrel of a desoldering tool, said assembly comprising:
an end cap adapted to be removably secured to said forward barrel end of a desoldering tool, said end cap having a frustoconical front portion terminated at its small diameter in a front end planar surface substantially normal to the central axis thereof, said end cap having a rear cylindrical portion extending rearwardly from said front frustoconical portion terminating in a rear end planar surface, said end cap having a central bore coaxial with its central axis;
said end cap being formed to include a rearwardly open, cylindrically annular well extending forwardly coaxially with said axis from said rear end planar surface to a point axially near said front frustoconical portion and being closed at its forward end by said frustoconical portion, said well being radially disposed between the outer surface of said rear cylindrical portion of said end cap and its said central bore, said well thereby defining an outer annular rearwardly extending skirt portion of said end cap and an inner cylindrical annular portion, the two portions of said end cap being interconnected only by a radially intermediate, axially short portion of its said front frustoconical portion; and
a nozzle tip disposed in said end cap, said nozzle tip having a generally cylindrical outer surface continuing forwardly in an outer tip portion of reduced outer diameter, said nozzle tip having a central bore extending therethrough,
one of said central bore of said cap and said outer cylindrical surface of said nozzle tip having an annular, radially extending ridge and the other having an annular recess cooperating with said annular ridge to form a tight connection therebetween, at least a part of said cooperating ridge and recess being disposed axially rearwardly of said front frustoconical portion.

4,204,300

FASTENER FOR GARMENTS

Gerhard Fildan, Kriehubergasse 31, A-1050 Wien, Österreich, Austria

Filed Jul. 27, 1978, Ser. No. 928,450
Claims priority, application Austria, Jul. 28, 1977, 5526/77
Int. Cl.² A44B *17/00*
U.S. Cl. 24—201 HE **9 Claims**



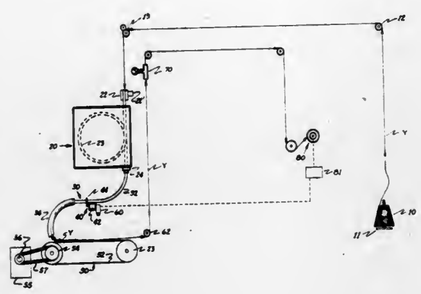
1. A hook fastener for garments comprising:
a first substantially platelike member having an arched bridge protruding from a surface of the member, a first aperture formed in the first member in alignment with the protruding portion of the bridge, and a portion of the first member having a predetermined shape for fixing the first member to a garment, the bridge cooperating with the surface of the first member to define an opening extending in a direction in which tension is applied to the fastener; and
a second substantially platelike member having a portion thereof shaped to define a fixing portion for fixing the second member to a garment, and a second aperture formed in the second member with side walls spaced from the fixing portion, the second aperture having a first portion thereof closest to the fixing portion shaped to provide a sufficiently large opening for insertion of said bridge into said second aperture, a second portion of the second aperture being partially blocked by a lug protruding towards the fixing portion from a portion of a side wall of the aperture, the protruding portion being spaced from adjacent side walls so that the lug is insertable into the opening defined by the bridge.

4,204,301

STRAND HANDLING SYSTEM AND METHOD THEREFOR

Donald C. Corron, Piedmont, and Glen Tallent, Jr., Greenville, both of S.C., assignors to Greentex Incorporated, Greenville, S.C.

Filed Apr. 26, 1978, Ser. No. 900,194
Int. Cl.² D02G *1/20*
U.S. Cl. 28—248 **12 Claims**



1. An improved yarn strand handling apparatus comprising yarn heat treating means; yarn directing means associated with a strand exit side of said yarn heat treating means for receiving a yarn strand therefrom and directing the strand under substantially tensionless condition in a predetermined pattern; yarn conveyor means located beneath said yarn directing means and having a surface for continuously receiving and accumulating the yarn strand in said predetermined pattern under substantially tensionless condition for cooling; guide means located adjacent the discharge end of said yarn conveyor means for removing the yarn strand from the surface of the yarn conveyor means in a direction generally parallel to said yarn conveyor means surface and generally axially with respect to movement of the accumulated yarn thereon to reduce tendency of the strand to tangle during removal from said conveyor surface; yarn detangling means for receiving the yarn strand from said guide means; and yarn take up means downstream of said yarn detangling means for forming the yarn strand into a package.

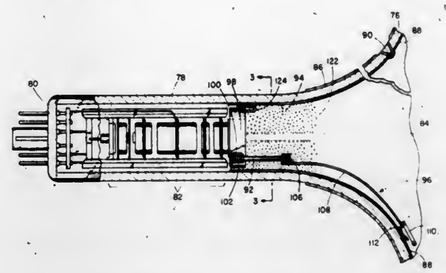
11. An improved process for handling heat treated yarn strands comprising the steps of:
(a) continuously passing a yarn strand from heat treating means under generally tensionless conditions to a yarn directing means;
(b) oscillating said yarn directing means over a continuously moving yarn support surface to deposit the yarn strand under generally tensionless conditions thereon;
(c) accumulating the yarn on the moving surface while permitting the yarn to cool under substantially tensionless conditions;
(d) withdrawing the yarn strand from the accumulated yarn on the surface in a direction substantially parallel to the surface and to the direction of movement of the accumulated yarn thereon to reduce tendency of the strand to tangle during removal from said surface;
(e) subjecting the moving yarn strand in a confined area to an oppositely directed flow of air under pressure to detangle the same; and
(f) taking up the yarn strand on a package at a speed that is controlled by the amount of yarn on said moving surface.

4,204,302

METHOD FOR TERMINATING AN ELECTRICAL RESISTOR FOR A TELEVISION CRT

Valentijn B. Bing, Des Plaines, and Donald A. Neis, Naperville, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Division of Ser. No. 830,270, Sep. 2, 1977. This application Nov. 22, 1978, Ser. No. 962,820
Int. Cl.² H01J *9/24*
U.S. Cl. 29—25.13 **1 Claim**



1. For use in the manufacture of a television CRT electron gun which includes an improved strap-type getter assembly, a method of mounting as part of said getter assembly an elongate cylindrical arc suppression resistor rod of predetermined outside diameter which comprises an insulative cylindrical core having a conductive termination coating on each end, said core being covered by a resistive coating which overlaps a marginal portion of said termination coatings on each end of said rod, said method comprising:
providing an electrically conductive coil spring whose unstressed inside diameter is slightly less than the said outside diameter of said resistor rod;
enlarging the diameter of said spring by imposing a torsional stress thereon;
inserting an end of said resistor rod into the opened spring until said spring is disposed on said termination coating and extending over said overlapped marginal portion thereof;
releasing the spring to permit it to tightly constrict upon said rod and thereby make a sound electrical and mechanical engagement with said rod and said coatings;
similarly applying a second coil to the opposed end of said rod;
welding to one of said springs an electrically conductive getter strap for supporting a getter pan on the distal end of said resistor rod; and
welding to the other of said springs an electrically conductive bracket for supporting said getter assembly on the gun and for serving as an electrical terminal for the getter assembly,
said bracket and said strap mechanically joining a number of turns of the respectively attached spring to prevent said spring from being torsionally stressed open and thereby releasing said rod.

4,204,303

LOCKING MECHANISM FOR MACHINE TOOL HOLDER/ADAPTER

Lane L. P. Eldam, 38 Watergate, South Barrington, Ill. 60010

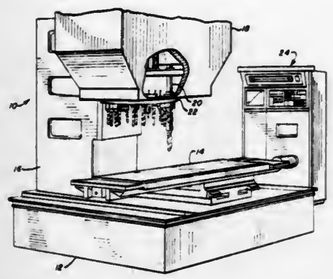
Filed Dec. 5, 1977, Ser. No. 857,386
Int. Cl.² B23B *31/16*; B23Q *3/157*
U.S. Cl. 29—26 A **12 Claims**

1. An automatic machine tool, including:
a rotatable and axially movable drive spindle having an end face and spindle nose means extending from the end thereof:
a tool holder/adapter cooperatively associated with said machine tool for selective connection to said spindle nose

means, said tool holder/adapter including a central recess for receiving said nose means and lock pin means for selectively locking said tool holder/adapter to said spindle nose means; and turret means for cooperation with said tool holder/adapter for storing said tool holder/adapter when not in use, the improvement comprising:

said spindle nose means having a small diameter end spaced from said end face of said drive spindle, said nose section tapering from said small diameter end toward said end face and having means defining a circumferential locking groove in the tapered portion of said nose section;

said tool holder/adapter having:



a tapered central recess,

means defining a plurality of substantially radially disposed lock pin passageways, each of said passageway means extending from said central recess to the periphery of said tool holder/adapter;

a plurality of elongated lock pin means, each positioned for reciprocal movement in one of said passageway means and constructed to selectively and lockingly engage said locking groove; and

biasing means for coaction with each of said pin means and said passageway means for directly applying a biasing force to said pin means so as to urge said pin means outwardly and away from said central recess.

4,204,304

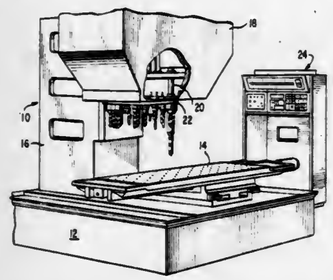
TRAVEL LIMIT STOP PIN

Lane L. P. Eidam, 38 Watergate, South Barrington, Ill. 60010

Filed Mar. 1, 1978, Ser. No. 882,405

Int. Cl.[2] B23B *31/16*; B23Q *3/157*

U.S. Cl. 29—26 A **4 Claims**



1. An axially rotatable tool holder/adapter for use in a machine tool, which is adapted to engage a drive tool spindle in operation and adapted to be stored in a turret associated with a machine tool, wherein the holder/adapter includes:

(a) a body portion having:

(1) means defining a central recess for receiving a drive spindle,

(2) means defining a plurality of substantially radially-disposed, open-ended lock pin passageways, each of which extends between the periphery of the body portion and the central recess means,

(3) means defining a plurality of generally axially arranged travel-limit-stop-pin-receiving bores, each of said bores being at least partially aligned with the central recess means and associated with the inner end of each of said lock pin passageway means,

(b) a plurality of lock pin means, each movable within one of said passageway means so as to extend outwardly from the peripheral end of said passageway means, in a storage position and so as to extend inwardly from the inner end of said passageway means into said central recess in the locked-to-the-spindle position,

(c) retainer means carried by said body portion having peripheral wall means constructed to slidably fit about the periphery of said body portion, said retainer means being biased axially upwardly for movement between a blocking position whereat each lock pin is prevented from moving outwardly from the peripheral end of said passageway means and a retracted position whereat each lock pin can move outwardly thereof; and

(d) a plurality of travel-limit-stop-pin means, each: (i) being positioned in one of said travel-limit-stop-pin bore means; (ii) being biased axially toward said central recess, (iii) being movable between an extended-lock-pin block position and a depressed release position; (iv) having means for blockingly engaging inner end of a locking pin and for preventing camming cooperation between said lock pin means and said stop-pin means, said means being fully aligned with said central recess; and (v) being constructed to be engaged by a descending spindle nose and depressed into said bore means so as to disengage said lock pin and permit inward movement of said lock pin to a spindle locking position, wherein each of said stop pin bore means is fully aligned with said central recess, and said stop-pin means includes shoulder means for cooperation in limiting upward movement of the stop-pin means, and wherein there is further provided flange means within said central recess for cooperation with said stop pin shoulder means for limiting upward movement.

4,204,305

METHOD OF ASSEMBLING A HEAT EXCHANGE APPARATUS

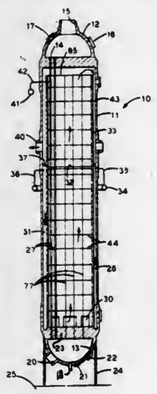
Frank E. Norton, York, Pa., assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 175,600, Aug. 27, 1971, abandoned.

This application Mar. 19, 1975, Ser. No. 559,861

Int. Cl.[2] B23P *15/26*

U.S. Cl. 29—157.4 **4 Claims**



1. A method for assembling an heat exchange apparatus comprising the steps of arranging a bundle of tubes in spaced parallel relation for flow of fluid therethrough in indirect heat transfer relation with a fluid flowing thereover, enclosing the bundle of tubes within a shroud, providing a tube spacing and support plate for the tube bundle in which the plate is connected to the shroud and extends transversely of the tubes, forming spaced circular holes within the support plate through which the tubes extend, and forming at least three bights in the peripheries of each of said holes to produce in each of the respective holes a continuous surface having a plurality of circumferential arcuate segments spaced from its corresponding tube to provide lateral support of the tube and a gap between the tube and at least one of the segments, and other segments intermediate and connected to and spaced outwardly from the arcuate segments to provide spaces for flow of fluid over the tubes and across the plate, the depths of the bights being determined by the required heat exchanger flow area and structural integrity of the support plate, the deepest portion of each of the bights defining a circle having a diameter which is substantially greater than the outside diameter of the heat exchanger tube lodged therein comprising the further step of chamfering said hole from which said bights are formed.

4,204,306

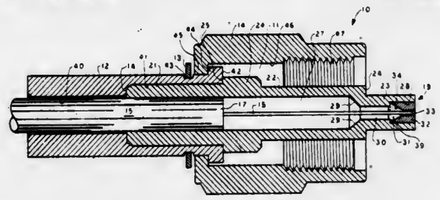
APPARATUS FOR ALIGNING AND TERMINATING AN OPTICAL FIBER WITHIN A FIBER OPTIC CONNECTOR

John A. Makuch, Danbury, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 7, 1977, Ser. No. 849,055

Int. Cl.[2] B25B *27/14*

U.S. Cl. 29—281.5 **14 Claims**



1. An apparatus for locating an optical fiber within an opening in the terminal end of a fiber optic connector along a preselected axis, comprising:

jig means formed from compressible material, said jig means having an indexing portion including a first opening dimensioned for receiving the terminal end of said connector and an aligning portion including a second opening dimensioned for receiving the optical fiber, said second opening being dimensioned smaller than said first opening; and

means for applying a uniform compressive force to said jig means, said force applying means causing said indexing portion of said jig means to grip the terminal end of said connector and causing said aligning portion of said jig means to grip the optical fiber, said aligning portion locating the optical fiber along said preselected axis.

4,204,307

ARROW FLETCHING METHOD

Rodger E. Pfetzing, 1700 Melton, Birmingham, Mich. 48008

Filed Jun. 26, 1978, Ser. No. 919,429

Int. Cl.[2] B23Q *17/00*; B23P *17/00, 11/02*

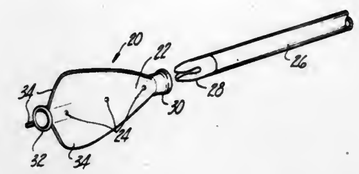
U.S. Cl. 29—407 **3 Claims**

1. A method for fletching arrows comprising the steps of:

molding a unitary fletching device so as to form a hollow cylindrical body with radial vanes and being adapted to fit snugly over the rearward end of an arrow shaft by virtue of said hollow cylindrical body being formed with an internal diameter slightly smaller than the external diameter of said arrow shaft and having forward and rearward ends; and forward and rearward integral concentric annular forms;

gripping the forward annular form and pulling it and the fletching device onto the arrow shaft;

concurrently gripping the rearward annular form and pushing it and the fletching device onto the arrow shaft; and



thereafter removing the forward and rearward annular forms by severing them from the cylindrical body.

4,204,308

SCREW EXTRACTING DEVICE

Douglas S. Marling, 2511 Elizabeth St., Janesville, Wis. 53545

Filed Aug. 1, 1978, Ser. No. 929,899

Int. Cl.[2] B23P *19/02*; B25B *13/50*

U.S. Cl. 29—426.5 **7 Claims**



7. A method of extracting a screw the head of which is substantially flush with or lies below the surface into which the screw extends, utilizing a device comprising an elongate rod threaded along a portion of a length thereof; a handle located at one end of said rod; a plurality of elongate, longitudinally tapered gripping fingers located at the other end of said rod including a plurality of gripping ridges on inwardly facing side surfaces of each of said fingers along the length thereof for gripping the screw to be extracted; and a sleeve member, threaded for movement along said rod, for controlling opening and closing of said gripping fingers in accordance with the longitudinal position of said sleeve member along said rod, said method comprising:

applying an impact force to the said one end of said device so as to drive said elongate, longitudinally tapered gripping fingers into said surface in a direction substantially perpendicular to said surface and to a depth such that ridges on said inwardly facing side surfaces of said fingers, will engage the screw when said fingers are closed;

screwing said sleeve member onto said rod in a direction towards said gripping fingers so as to provide closing of said gripping fingers about the head of the screw; and

rotating said device to cause unscrewing of the screw.

4,204,309

PROCESS OF FABRICATING HOLLOW BEAD RINGS

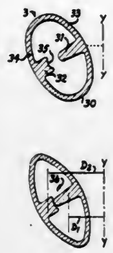
Jean Lefrancois, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed May 9, 1978, Ser. No. 904,294

Claims priority, application France, May 13, 1977, 77 15008

Int. Cl.[2] B23P *17/00*

U.S. Cl. 29—412 **11 Claims**



1. Process of fabricating a hollow bead ring for a bead of a pneumatic tire, said hollow bead ring having a radial cross-section with at least one interior partition which connects together two portions of the outer contour, characterized by the fact that it comprises the following operations:

(a) extruding, by means of an extruder whose orifice is equipped with a single mandrel, a hollow member whose interior partition is connected to a single one of said portions, the other end of the interior partition being free,

(b) deforming, in one or more steps, the radial cross-section of the hollow member until the free end of the interior partition comes into contact with the other portion of the outer contour,

(c) cutting the hollow member into suitable length,

(d) bending the hollow member to the desired diameter, and

(e) connecting the ends of the bent hollow member together by welding; said operations (c), (d) and (e) being performed either before or after said deforming operation (b).

4,204,310

PROCESS FOR PRODUCING A DEVICE FOR COUPLING TWO LIGHT CONDUCTING FIBER CABLES

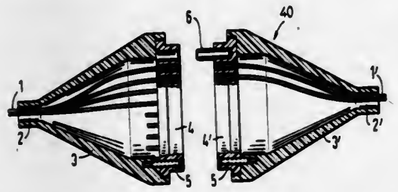
Franz Auracher; Karl-Heinz Zeitler, and Walter Rauscher, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 688,716, May 21, 1976, Pat. No. 4,111,522. This application Feb. 28, 1978, Ser. No. 882,261

Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522740

Int. Cl.[2] B23P *9/00*

U.S. Cl. 29—445 **6 Claims**



1. A method of producing a device for coupling light conducting fiber cables together, said device having a single holder for the fibers of the cables, said method comprising providing a blank for a guide body for the holder, supporting the blank with a surface lying in a flat plane, forming guide channels in the surface of the blank to form a guide body having one surface with channels extending inward therefrom, each channel having an undercut profile with the width adjacent the bottom of each channel being greater than the width at the one surface, inserting the light conducting fibers of each cable into their respective channels with the end faces of the fibers of one cable in contact with the end faces of the fiber of the other cable, and applying a cover member on the guide body to form the holder.

5. A method for producing a device for coupling two light conducting fiber cables together, said device having a separate holder for each cable secured in a housing, said method comprising providing a blank for a guide body for each holder, supporting each blank with a surface lying in a flat plane, forming guide channels in the surface of the blank to form a guide body having one surface with channels extending inward therefrom by forming each guide channel with an undercut profile with the width of the channel at the bottom of each channel being greater than the width of the channel at said one surface, subsequently inserting light conducting fibers in the channels of each of the guide bodies with the end faces of the fibers adjacent one end surface of the guide body, applying a cover member on each guide body to secure the fibers in said channels to form each holder, grinding and polishing the end surface of each holder and the end faces of the fibers so that the end faces of the light conducting fibers lie in the plane of the end surface, and securing the holders in a housing with the fibers of one cable being centered relative to the fibers of the other cable.

6. A method according to claim 5, which includes forming a chamfered portion on the guide body and cover adjacent each end of each channel.

4,204,311

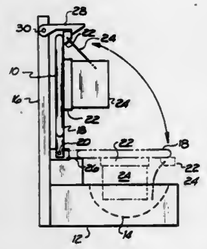
METHOD AND DEVICE FOR INSERTING A RIGID LINER IN A HELMET SHELL

Elvert H. Land, Jr., 16205 E. Pawnee, Wichita, Kans. 67230, and Joseph E. Land, 2303 White Oak, Wichita, Kans. 67207

Filed Nov. 13, 1978, Ser. No. 960,222

Int. Cl.[2] B23P *11/02*

U.S. Cl. 29—451 **6 Claims**



1. A device for inserting a rigid liner in a helmet shell comprising:

a base having a bowl-shaped recess that supports the helmet shell in an inverted position;

an upright rising from and fixed to the base;

a frame movably mounted on the upright so that it can be moved toward or away from the base and extending, when in its lower position, along each side of and just above the helmet shell when the shell is seated in the recess in the base;

a pair of slip sheets of smooth, flexible material so located and of a size to cover the interior side walls of the helmet shell for easing the insertion of the rigid liner; and

means for fastening the slip sheets to the frame so that they are held to the frame during the insertion of the liner and also during withdrawal of the slip sheets from between the liner and the shell after the assembly has been made.

6. A method of inserting a rigid liner in a helmet shell comprising:

placing the inverted helmet shell in a bowl-shaped recess;

lowering a frame toward the helmet shell to the frame's lower position just above and adjacent to the front and sides of the helmet shell;

fastening smooth, flexible slip sheets to hang from the underside of the frame and extend downward to shroud the interior walls of the helmet shell;

inserting the rigid liner by shoving it down into the helmet shell eased by the slip sheets;

adjusting the rigid liner to its proper position in the helmet shell;

raising the frame to its upper position where the assembled helmet is clear of the recess;

latching the frame in the upper position; and

pulling the assembled helmet from the frame leaving the slip sheets fastened to the frame where they are ready for reuse without repeating the fastening step.

4,204,312

METHOD AND APPARATUS FOR JOINING A TUBULAR ELEMENT TO A SUPPORT

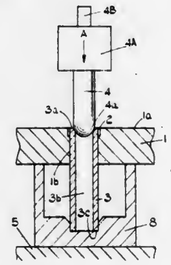
Philip G. Tooker, Snitterfield Nr. Stratford-upon-Avon, England, assignor to Serck Industries Limited, England

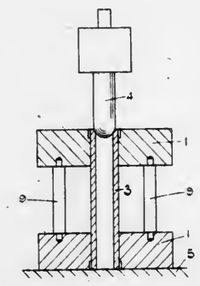
Filed Jan. 31, 1978, Ser. No. 873,887

Claims priority, application United Kingdom, Feb. 11, 1977, 5868/77

Int. Cl.[2] B21D *39/00*; B23P *11/00, 11/02*

U.S. Cl. 29—523 **12 Claims**





1. A method of securing a tubular element into an aperture in a member, the dimensions of the aperture being sufficient to allow the tubular element to be freely inserted therein, comprising the steps of freely inserting the tubular element into said member aperture with the end of the element being substantially flush with the surface of the member, bringing an ultrasonic vibratory tool, of maximum transverse dimension slightly greater than the internal maximum transverse dimension of the bore of the element, into axial alignment with the bore, no part of the tool having larger cross-sectional dimensions than the cross-sectional dimensions of said aperture, bringing the tool into contact with the element whilst the tool is not vibrating ultrasonically, supporting the element axially and applying axial force to the tool whilst vibrating it ultrasonically so as to move it into the bore and expand the element outwardly against the wall of said aperture without substantially moving the element axially, the axial force applied to the tool being insufficient in magnitude to substantially deform the element were the tool not vibrated ultrasonically, and withdrawing the tool from the element while continuing to vibrate it ultrasonically.

10. Apparatus for securing a tubular element into an aperture in a member, the dimensions of the aperture being sufficient to allow the element to be freely inserted therein, comprising means for rigidly holding the member in a desired position, means for supporting a tubular element with an end portion thereof within an aperture of the member and with the end of the element substantially flush with the surface of the member, a tool of maximum external dimension greater than the maximum internal dimension of the element, no part of the tool having larger cross-sectional dimensions than the cross-sectional dimensions of the aperture, means for vibrating the tool ultrasonically after the tool has been brought into contact with the element, means for applying a force to the tool in a direction longitudinally of the element without substantially moving the element axially, the force applied to the tool being insufficient in magnitude to substantially deform the element were the tool not vibrated ultrasonically, abutment means for engagement by the element to provide a reaction to said force during application of the tool to the element to expand the latter, and means for discontinuing ultrasonic vibration of the tool after the element has been expanded and the tool has been withdrawn therefrom.

4,204,313

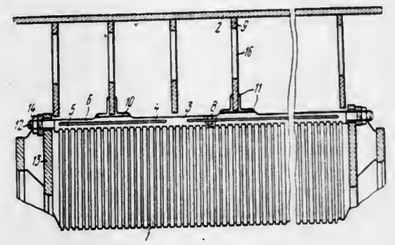
METHOD OF ASSEMBLING STATOR CORE OF ELECTRIC MACHINE INSIDE THE HOUSING THEREOF

Garri M. Khutoretsky, Altaiskaya ulitsa, 20, kv. 5; Vladimir M. Fridman, Grazhdansky prospekt, 13, korpus 1, kv. 170; Galina A. Zagorodnaya, Altaiskaya ulitsa, 20, kv. 5; Alexandr I. Vorontsov, Pushkin, ulitsa Khazova, 43, kv. 94; Anatoly D. Ignatiev, ulitsa Basseinaya, 85, kv. 162, and Vasily L. Sudarikov, ulitsa Bela Kuna, 13, kv. 32, all of Leningrad, U.S.S.R.

Filed Apr. 30, 1979, Ser. No. 34,385

Int. Cl.[2] H02K *15/14*

U.S. Cl. 29—596 **2 Claims**



1. A method of assembling a stator core, having stator core segments, of an electric machine, supported in a housing by means of resilient coupling ribs having resilient portions and core supporting portions, comprising the following steps:

urging said resilient portions of said resilient coupling ribs towards said core supporting portions up to a state of elastic deformation by means of detachable clamping members;

securing said coupling ribs to said housing with said resilient portions;

assembling stator core segments on said core supporting portions of said resilient coupling ribs;

compressing said core segments;

securing said core segments to said resilient coupling ribs, said core segments being under compression; and

removing said detachable clamping members from said resilient coupling ribs;

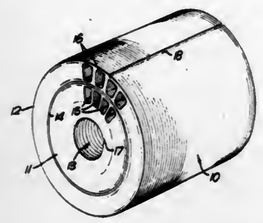
whereby a tight fit of the core on said resilient coupling ribs during operation of the electric machine is retained.

4,204,314

METHOD OF MAKING CAST WINDINGS FOR ELECTRIC MOTORS

John Workman, Greyabbey, Northern Ireland, assignor to S.B.W. Engineers Limited, Belfast, Northern Ireland

Filed Nov. 14, 1977, Ser. No. 851,268
Int. Cl.² H02K *15/02*
U.S. Cl. 29—597 **7 Claims**



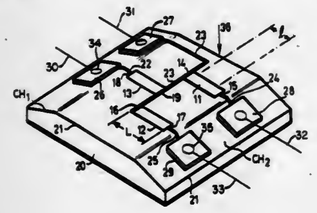
1. A method of manufacturing an electromagnetic device having a core made of laminated material with a double-layer winding therein, wherein the core is composed of first and second sets of apertured laminations of which one set accommodates the conductors of one layer of said winding and the other set accommodates the conductors of the other layer of said winding, the conductors of said one layer being interconnected with the conductors of said other layer by end windings located at the end faces of said core, wherein said method includes the steps of displacing adjacent laminations in each lamination set from mutual alignment to permit conductor ends which are to be interconnected to adjoin one another, locating said conductors in the slots formed by said lamination apertures, and casting the end windings in situ.

4,204,315

METHOD OF PRODUCING A MAGNETIC TRANSDUCER DEVICE

Jean-Pierre Lazzari, Montfort-l'Amaury, and Michel Helie, Marcq, both of France, assignors to Compagnie Internationale Pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Division of Ser. No. 899,383, Apr. 24, 1978. This application Jan. 10, 1979, Ser. No. 2,465
Claims priority, application France, Apr. 29, 1977, 77 13026
Int. Cl.² G11B *5/42*
U.S. Cl. 29—603 **4 Claims**



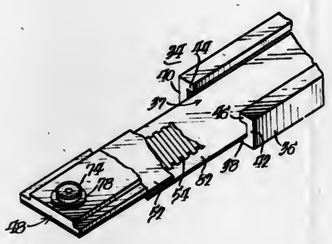
1. A method of producing a magnetic transducer comprising:
- depositing a first layer of electrically insulating material on one surface of an electrically insulating substrate;
- depositing magnetoresistive detecting and compensating elements on the layer of electrically insulating material;
- beveling opposite surface portions of the surface of the substrate on which the layer and elements are deposited, selectively depositing a layer of conductive material to form connections between the magnetoresistive detecting and compensating elements, and such that said connections terminate on the bevels to form large contact areas;
- attaching flexible wires to the contact areas and depositing a second protective layer of electrically insulating material on the substrate, the magnetoresistive compensating and detecting elements, and their connections.

4,204,316

METHOD OF MANUFACTURE OF A HEATER BAND

Matt N. Hummel, Glenview, Ill., assignor to Acra Electric Corporation, Schiller Park, Ill.

Filed Aug. 3, 1978, Ser. No. 930,684
Int. Cl.² H01C *3/18*
U.S. Cl. 29—61 N **12 Claims**



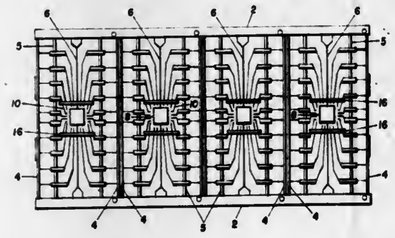
1. A method of making a heater band comprising the steps of:
- forming an extruded channel member having a relatively thick cross-section throughout and a T-shaped slot therein defined by inwardly directed flanges;
- forming a heater plate assembly adapted to be received within the slot, said plate assembly formed by securing an electric heating element to a metal plate;
- combining said heater plate assembly with said slot of said channel member so that said heating element is retained within said slot; and
- compressing said heater plate assembly and said channel member to provide intimate contact between said heater plate assembly and said channel to thereby form the heater band.

4,204,317

METHOD OF MAKING A LEAD FRAME

Clarence W. Winn, San Jose, Calif., assignor to The Arnold Engineering Company, Marengo, Ill.

Filed Nov. 18, 1977, Ser. No. 852,765
Int. Cl.² H01R *43/00*
U.S. Cl. 29—827 **7 Claims**



1. The method of making a lead frame comprising the sequential steps of:
- providing a metal strip;
- providing from said strip a lead frame blank having a die attach pad and a plurality of leads attached to said pad in spaced apart relationship and extending therefrom to other parts of said blank;

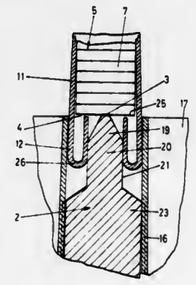
- plating said lead frame blank;
- applying retainer means to said leads adjacent said pad in spaced, noncontiguous relation to the latter for holding the leads in position when they are separated from said attach pad; and
- subsequently separating said leads from said attach pad.

4,204,318

APPARATUS FOR RETRACTING THE STATOR COIL OF AN ELECTRIC MOTOR

Manfred Kirbis, Harrislee; Peter Schilde, Flensburg, and Gert Englmaier, Harrislee, all of Fed. Rep. of Germany, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jul. 12, 1978, Ser. No. 923,821
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1977, 2732477
Int. Cl.² H02K *15/06, 15/10*
U.S. Cl. 29—734 **2 Claims**



1. Apparatus for installing stator coils in an electric motor of the type in which the coil grooves are each lined with groove insulation which projects beyond the end face of the stator in the form of a turned over collar, comprising a base member, a plurality of circumferentially arranged coil strand guide members extending upwardly from said base member for extending through a stator bore for radial abutting engagement with surface portions of said bore between said grooves, a head member in guiding engagement with said guide members for passing through a stator bore to push coil strands into stator coil grooves, a plurality of circumferentially arranged guide rods for pushing cover strips into stator coil grooves, said guide rods extending upwardly from said base member and being radially outward from and circumferentially aligned with said coil strand guide members, said guide rods having portions for axial abutting engagement with surface portions of said stator between said grooves, said guide rod end portions being generally tapered to splay apart adjacent turned over groove insulation collars which extend beyond the end face of the stator.

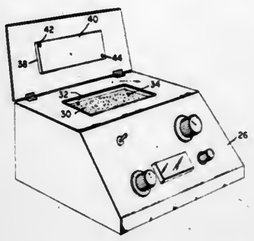
4,204,319

TERMINAL PIN INSERTION DEVICE

Jack Bishop, 4729 Sara Dr., Torrance, Calif. 90503

Continuation-in-part of Ser. No. 794,012, May 5, 1977, abandoned. This application May 30, 1978, Ser. No. 910,276
Int. Cl.² H05K *3/30*
U.S. Cl. 29—739 **13 Claims**

1. A system for inserting terminal pins in selected locations in a circuit board comprising:
- a movable pin assembly plate having a plurality of predetermined pin locators,
- each of said pin locators having a central opening for accepting a terminal pin and having a depth to support said pin in a vertical position,
- a fixed plate located above said movable pin assembly plate having a plurality of openings cooperating with each of said pin locators whereby movement of said pin assembly plate inserts each of said pin locators through each of said openings in said fixed plate,
- said fixed plate having guard portions for holding a plurality of loose terminal pins on the uppermost portion of the fixed plate,
- a vibrating device connected to said fixed plate for selectively vibrating said fixed plate whereby a loose terminal pin falls through each of said openings in the fixed plate



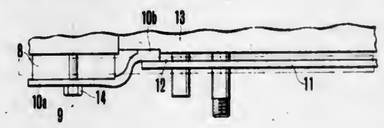
and into the pin locators cooperating with each opening, and
- a movable backup plate for holding a circuit board facing said fixed plate and in a unique relationship with respect to said pin assembly plate whereby moving said backup plate and said pin assembly plate towards each other causes terminal pins in each pin locator to be inserted in the terminal board.

4,204,320

SPROCKET SHAFT STAY

Youichi Hayashimoto, Hiroshima, Japan, assignor to Shindaiwa Kogyo Co., Ltd, Hiroshima, Japan

Filed Dec. 18, 1978, Ser. No. 970,873
Claims priority, application Japan, Aug. 18, 1978, 53/114035[U]; Sep. 28, 1978, 53/119728[U]
Int. Cl.² B27B *17/02*
U.S. Cl. 30—386 **3 Claims**



1. A sprocket shaft stay comprising a sprocket holder secured to a sprocket by bolting and a leg piece extending from said sprocket holder and fixed in position between the chain saw cover and saw chain guide.

4,204,321

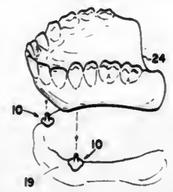
DENTAL POST

Edward S. Scott, 1818 S. Cincinnati, Tulsa, Okla. 74119

Filed Mar. 24, 1978, Ser. No. 889,723
Int. Cl.² A61C *13/00*
U.S. Cl. 433—177 **8 Claims**

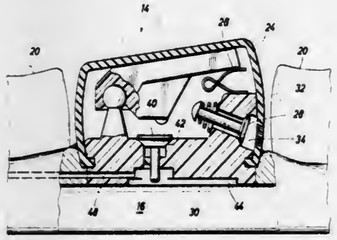
1. A dental post for removably securing a denture to the mandible, the denture apparatus having therein a recess defined in part by an elastomeric member having an opening therethrough, the dental post comprising
- a body portion having a first stem for permanent attachment to the mandible; and
- a second stem portion extending from said body portion in the plane of and exterior of the gingival or gum of the mouth, the second stem portion having an enlarged outer head member dimensioned to be received through a denture apparatus elastomeric member by compression of the elastomeric member whereby the elastomeric member

applies retentive force to the head member, the head member having a groove in the exterior surface providing



a fluid passageway when the head member passes through the opening in the elastomeric member.

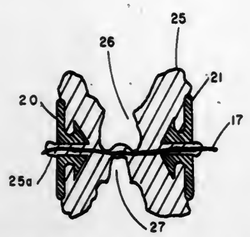
4,204,322
DENTURE HOLD APPARATUS
John N. Johnson, P.O. Box 614, Orange, Tex. 77630, and Charles J. Lindenberger, 508 S. Gardenia Dr., Melbourne, Fla. 32901
Filed Mar. 3, 1978, Ser. No. 882,989
Int. Cl.² A61C *13/24*
U.S. Cl. 433—185 **9 Claims**



1. A pneumatic holding apparatus for use in a denture which comprises a pneumatic tooth pump installed in the denture plate which pneumatic tooth pump is operated by repeated chewing action and wherein said pneumatic tooth pump includes a plastic shell which is sealed into the denture to define an internal closed chamber, an outlet valve from said chamber opening to the exterior to define a path for exhausting air from the closed chamber through said valve, an inlet valve into said chamber, said inlet valve repeatedly permitting air to be drawn into said chamber from an indention formed by a peripherally surrounding flange which flange contacts the gum thereby enclosing said indentation so that air pulled from the indention adjacent the gum of the user forms a partial vacuum holding the denture plate more firmly to the gum of the user as the user chews and the chewing motion repeatedly collapses said plastic shell to repeatedly expel air through the outlet valve.

4,204,323
DENTAL IMPRESSION TRAY
Hans D. Neubert, Anaheim; Larry R. Dailey, Fountain Valley, and Richard S. Robinson, Anaheim, all of Calif., assignors to NDR Associates, Anaheim Hills, Calif.
Filed Sep. 19, 1977, Ser. No. 834,568
Int. Cl.² A61C *9/00*
U.S. Cl. 433—38 **9 Claims**

1. An integral dental impression tray formed from a plastic injection molding process comprising:
a. spaced-apart buccal and lingual retaining walls defining opposed wall portions;
b. a plurality of recesses disposed on the opposed wall portions;
c. a spacing member for connecting the buccal and lingual walls, the tray defining a central longitudinal plane of symmetry through the spacing member and centrally through both walls, and the recesses defining central longitudinal axes disposed about orthogonally to the symmetry plane and outwardly therefrom; and,
d. central slits disposed medially along the buccal and lingual walls, the plane of symmetry passing through each slit, to secure a flexible sheet support for obtaining a dental impression thereon;



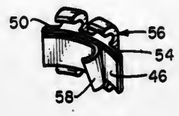
the recesses being adapted to engage with beads of the dental impression material, thereby locking the flexible support and the tray together while a dental impression is being made, and to permit stripping of the flexible support from the tray.

4,204,324
GUM MASK
Karl Köstner, In der Römerstadt 89, 6000 Frankfurt, Fed. Rep. of Germany, and Aldo Lufi, Kaspar - Wüststr. 26, CH 8052 Zürich, Switzerland
Filed Oct. 4, 1977, Ser. No. 839,204
Claims priority, application Switzerland, Oct. 4, 1976, 012511/76
Int. Cl.² A61C *13/00*
U.S. Cl. 433—299 **17 Claims**



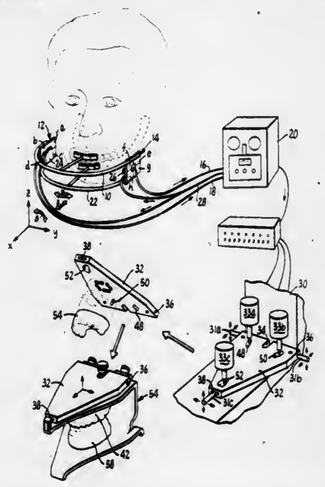
1. A gum mask for covering the necks of teeth exposed by gum atrophy, characterized by an oval, elongated and slightly arched shape adapted to the original form of the atrophied gums and stretching to the crowns of the teeth, said mask made from an inert elastomeric material having a front side having a surface structure and color that simulates the natural gums and a reverse side adapted to be mounted on said teeth, one longitudinal edge of said mask having an indentation (3) in a region adapted to contact the frenulum, the opposite longitudinal edge of said mask having several indentations (3), the number of which corresponds to the number of tooth necks to be covered, said reverse side of said mask which is adapted to contact the gums having ridges (4) along said opposite longitudinal edge between the indentations, said ridges being adapted to closely embrace the exposed necks (2) and roots of the teeth.

4,204,325
ORTHODONTIC BRACKET BONDING SYSTEM
David H. Kaeible, Thousand Oaks, Calif., assignor to Arroyo Research and Consulting Company, La Canada, Calif.
Filed May 12, 1978, Ser. No. 905,198
Int. Cl.² A61C *7/00*
U.S. Cl. 433—9 **11 Claims**



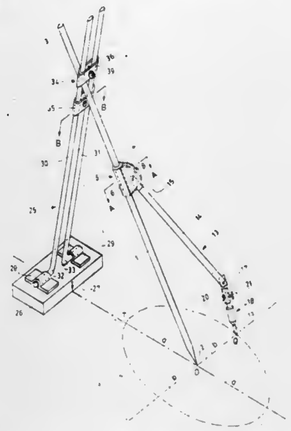
1. A method of adhering orthodontic brackets to the surface of tooth enamel comprising the steps of:
removing a protective cover sheet from the surface of a patch of dry, solid, resilient, continuous film of organic resin adhesive secured to the rear surface of the bracket;
activating the exposed surface of the dry adhesive film by applying a liquid activating reagent to the surface to produce a temporary state of high tack capable of aggressive bonding to the tooth enamel without affecting the rear surface of the film;
applying the activated surface of the adhesive film to the surface of the tooth enamel and forming an interfacial bond between the surfaces.

4,204,326
DEVICE FOR RECORDING AND REPRODUCING MANDIBULAR MOTION
John Dimeff, 5346 Greenside Dr., San Jose, Calif. 95127
Filed Dec. 4, 1978, Ser. No. 965,749
Int. Cl.² A61C *11/00, 9/00*
U.S. Cl. 433—50 **9 Claims**



8. Dental apparatus for mechanically recording the mandibular and occlusal signatures of a patient, comprising
transducer means connected between the patient's mandible and the cranial structure for producing separate electrical signals representative of relative motion at selected locations between the mandible and the cranium along and about three orthogonal axes; the transducer means being initially aligned with the hinge axis of the patient's mandible,
a machinable plate for mounting a maxillary cast of teeth,
servo-controlled cutting tool means for cutting pathways in the plate, the servo-controlled cutting tool being connected to the transducer means and controlled by the electrical signals produced thereby so as to cut pathways in the plate having configurations which are representative of the relative motion at selected locations between the patient's mandible and the cranium.

4,204,327
ELLIPSE COMPASS
Naguib F. Danial, 2503 W. Springfield Ave., Apt. E-3, Champaign, Ill. 61820
Filed Jan. 24, 1979, Ser. No. 6,182
Int. Cl.² B43L *11/04*
U.S. Cl. 33—30 F **1 Claim**



1. A compass for mechanically drawing an ellipse of predetermined major and minor axes comprising:
(a) a guide rod having a lower end defining a point for location at the intersection of the major and minor axes of an ellipse to be drawn,
(b) a tracing bar having a pointed marking element located at the lower end thereof,
(c) connection means for pivotally attaching the upper end of said tracing bar adjacent said guide rod intermediate the ends of said guide rod, said tracing bar connection means being adapted to allow said tracing bar to be pivoted away from said guide rod to releaseably position said point of said marking element at a fixed distance from said point of said guide rod, measured in the drawing plane along the minor axis of the ellipse to be drawn, equal to the semi-minor axis of said ellipse, and said tracing bar connection means being adapted to allow said pivoted upper end of said tracing bar to rotate at a fixed distance about and slide parallel to the axis of said guide rod, and
(d) means for supporting the upper end of said guide rod to releaseably fix the axis of said guide rod, in the plane intersecting the major axis of said ellipse and perpendicular to the drawing plane, at an angle to the drawing plane such that said point of said marking element may be positioned, in the drawing plane, at a distance from said point of said guide rod equal to the semi-major axis of said ellipse by rotation of said tracing bar about said guide rod, said support means for said upper end of said guide rod comprising a pair of parallel rod elements, apaced apart to receive therebetween said upper end of said guide rod, said rod elements being mounted, for parallel rotational movement, about bends in the feet thereof which feet are positioned within brackets fixed on a base support, said rod pair having positioned thereon a pair of band elements, laterally spaced apart to receive therebetween said upper end of said guide rod said pair of band elements

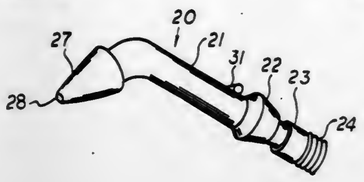
being mounted around and adapted for slideable engagement along said rod pair, each of said band elements having a locking means to allow said band elements to be releaseably fixed in position along said rod pair to adjust said guide rod at the desired angle to the drawing plane.

4,204,328

VARIABLE DIAMETER ASPIRATING TIP

Barry S. Kutner, 8 Crossland Rd., Norwalk, Conn. 06851

Filed Nov. 14, 1977, Ser. No. 851,109
Int. Cl.[2] A61C *17/04*
U.S. Cl. 433—29 16 Claims



1. A variable diameter aspirator tip adapted to be connected to the end of a suction hose connected to a source of negative pressure comprising,

a conduit having an inlet end and an outlet end,

said outlet end being adapted to connected to a suction hose,

a flexible nozzle tip connected to said inlet end of said conduit,

said nozzle tip having orifice opening capable of expanding between a minimum and maximum diameter,

a sliding means slidably disposed with said nozzle tip for expanding said orifice opening between said minimum and maximum diameter,

and an actuator connected to said sliding means for shifting said sliding means relative to said nozzle for expanding said orifice opening accordingly,

wherein said sliding means comprises a ring slidably disposed within said nozzle, said ring having a diameter substantially equal to the maximum diameter orifice opening:

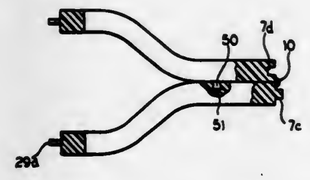
and said actuator being connected to said ring for slidably displacing said ring relative to said nozzle whereby the displacement of said ring relative to said flexible nozzle causes said orifice to expand between a minimum and maximum diameter.

4,204,329

RUBBER DAM HOLDER FOR USE DURING ENDODONTIC THERAPY

Henry Kahn, 1724 Grand Bahama West, Palm Springs, Calif. 92262, assignor to Henry Kahn, Palm Springs, Calif.

Filed Oct. 16, 1978, Ser. No. 951,346
Int. Cl.[2] A61C *5/12*
U.S. Cl. 433—136 8 Claims



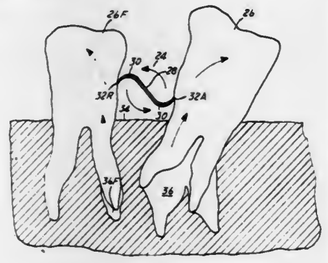
1. A frame for supporting an elastomeric web exterior of the oral cavity of a patient during endodontic therapy, said frame comprising two counter-facing L-shaped parts hinged together to define a U-shaped frame, the hinge being positioned in the center of the base of said U-shaped frame, the pivotal axis of said hinge being essentially perpendicular to the planes of the occlusal surfaces of the patient's teeth, the base of the U-shape frame having a convex configuration to place each of the upright members of said frame substantially parallel to the respective cheeks of the patient, a plurality of hook-like elements on the frame to be engaged by the web, the said two parts of the base of said U-shape frame carrying respective male and female detent elements adapted to engage each other when said frame is folded about said hinge axis.

4,204,330

METHOD AND APPARATUS FOR EXTRACTING TEETH

James P. Ford, Jr., 101 Canary La., Grand Junction, Colo. 81501

Filed Apr. 27, 1978, Ser. No. 900,750
Int. Cl.[2] A61C *3/10, 3/14;* B25B *15/00*
U.S. Cl. 433—148 6 Claims



1. In a dental elevator, the improved bit which comprises an elongate rigid member terminating in a blade of a thickness sized for insertion into the gap between a pair of teeth in side-by-side relation, said blade having a width in excess of the width of said gap and a generally S-shaped or reverse S-shaped cross section defined by a medial portion bordered on both sides by oppositely-curved marginal portions terminating in knife edges, one of said edges upon being placed against the adjacent tooth of a side-by-side pair thereof at a point above the gumline cooperating therewith to define a fulcrum about which the other of said edges can be swung into prying contact with the other tooth of said pair upon rotation of said bit in a direction to lift the latter from its socket.

4,204,331

KEYWAY GAUGE

Stanley A. Wertepny, 715 Elizabeth Ln., and Alexander W. Wertepny, 2063 Craig Dr., both of Des Plaines, Ill. 60018

Filed May 1, 1978, Ser. No. 901,320
Int. Cl.[2] G01B *3/22*
U.S. Cl. 33—172 R 11 Claims

1. A measuring and gauging instrument comprising:

a base member carrying a column;

an anvil member;

a carrier mounted to said column for movement to an infinite number of positions along the column and having means for fixing said carrier in a selected one of said positions;

means for releasably mounting said anvil member to said carrier so that said anvil member extends outwardly therefrom;

said carrier has a socket formed therein adapted to receive an end of said anvil member;

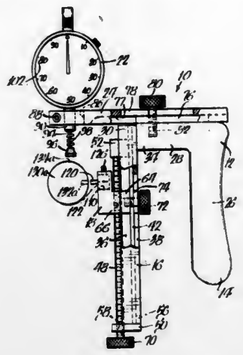
said socket has a square cross-sectional configuration and has sides angularly oriented 45 degrees from the axis of the column;

support means carried by said base member;

means for mounting said support means along an axis transverse to the axis of the column;

indicator means carried by said support means and having a probe extending toward said anvil member; and

a dial connected with said probe for providing visual identification of the amount of movement of said probe, whereby a workpiece positioned on said anvil member is engaged by said probe for measuring a selected dimension of the workpiece.

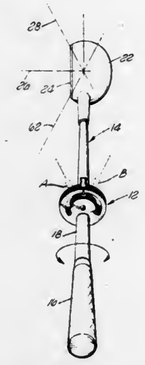


4,204,332

GOLF AID

Lewis L. Gray, 27255 Joppe Ave., Hemet, Calif. 92343

Filed Jul. 31, 1978, Ser. No. 929,818
Int. Cl.[2] A63B *69/36, 53/00*
U.S. Cl. 33—174 F 2 Claims



1. A golf aid formed of a disc mounted on a golf club shaft in a plane perpendicular to said shaft for correcting the drive angle of a golf ball comprising;

means for securing said golf aid to the shaft of said golf club;

said disc including a generally planar indicator means having a scale thereon; said golf aid being mounted on said golf club shaft intermediate the club handle and the club driving head, and in a plane generally perpendicular to the axis of said shaft, said shaft extending through a portion of said planar indicator means;

pointer means movable in said plane and positioned adjacent to the scale for providing an indication of the amount of drive angle to be corrected; and

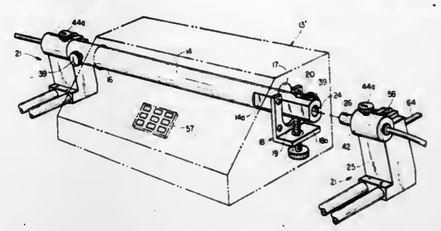
means for manually moving the pointer means.

4,204,333

SYSTEM AND METHOD FOR CALIBRATING WHEEL ALIGNMENT SYSTEM SENSORS

Victor B. van Blerk, San Jose, Calif., assignor to Nortron Corporation, Sunnyvale, Calif.

Filed Sep. 15, 1978, Ser. No. 942,874
Int. Cl.[2] G01B *7/315, 19/295, 11/275*
U.S. Cl. 33—288 6 Claims



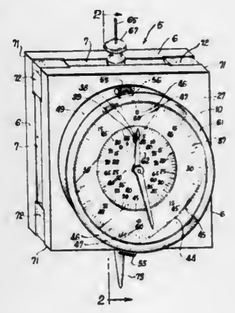
1. In a system for calibrating a wheel alignment system of a type having a plurality of sensors for detecting a plurality of types of input information to be used for computing adjustments to be made to a vehicle for aligning the wheels thereof comprising an elongate rigid bar, means for readily releasably coupling first and second sensor support assemblies to pivot co-axially of opposite ends of said bar, means for moving an end of said bar between raised and lowered positions relative to the other end of said bar to dispose the axis of said bar in a horizontal plane, means responsive to the movements of said bar for indicating when said bar has been moved into said horizontal plane, means carrying said support assemblies to pivot about the axis of said bar to dispose said support assemblies in a horizontal plane parallel to the first named plane, means for locking said assemblies in the last named horizontal plane, means for indicating the disposition of said support assemblies in said last named horizontal plane, means for providing a predetermined information reference representing a predetermined position of said sensors and means for detecting the difference between the information detected by said sensors when in said horizontal plane and a predetermined reference representing a predetermined position of said sensor to provide a correction factor to be associated with said sensors when used to align the wheels of a vehicle.

4,204,334

PRECISION GRAVITY RESPONSIVE ANGLE INDICATOR

Luis B. Dela Cruz, 5325 Bonita Dr., San Diego, Calif. 92114

Filed Oct. 6, 1978, Ser. No. 949,125
Int. Cl.[2] G01C *9/12*
U.S. Cl. 33—391 7 Claims



1. An angle indicator comprising:

(a) a hollow rectangular frame defining planar orthogonal

outer walls, an interior cavity, and a frontal circular opening providing access to said cavity;

(b) an annular frame rotatably mounted to said rectangular frame over said frontal opening and mounting an annular scale display;

(c) a first shaft rotatably mounted in said rectangular frame coaxial with the rotational axis of said annular frame and having a first needle registering with said scale display;

(d) drive gear having a pendular weight mounted thereon rotatably mounted in said rectangular frame and including a gear train to drive said shaft from said drive gear in response to movement of said pendular weight; and

(e) said rectangular frame having a front portion in which said frontal opening is defined, and said front portion defines an annular slot entered from the front thereof which is continuous around said opening, and said annular frame has an annular flange received within said slot and having retainer means holding said flange therein and permitting rotation of said annular frame in said slot.

4,204,335

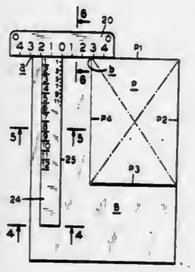
INSTRUMENT FOR POSITIONING PICTURES ON A MOUNTING BOARD

Morris G. Grossman, Wyckoff; Edward D. Levy, Franklin Lakes, and Edward H. Meisner, Wyckoff, all of N.J., assignors to Falcon Safety Products, Inc., Mountainside, N.J.

Continuation of Ser. No. 814,544, Jul. 11, 1977, abandoned. This application Jun. 28, 1979, Ser. No. 52,737

Int. Cl.² G01B *3/10*

U.S. Cl. 33—476 **7 Claims**



1. An instrument for positioning a picture on a mounting board or support by taking readings from said instrument and physically sliding said picture along said instrument, said instrument comprising head and leg parts joined together in substantially T-shape, said leg part having a straight edge extending perpendicularly from a point on a straight edge of the head part, two like scales having similar divisional markings extending along said head part reading in opposite directions from said point, two scales each having divisional markings extending along said leg part from its intersection with said head part, the spacing of the markings of the second leg-scale being proportionally closer to each other than the spacing of the markings of the first leg-scale, the proportion being determined by one-half the ratio other than unity of the desired width of the upper border to the desired width of the lower border, above and below a picture mounted on the support, said first leg-scale providing for a reading to be taken of the location of the upper edge of the picture when the lower edge of the picture is aligned with the lower edge of the support, said second leg-scale providing for location of said upper edge of the picture when said upper edge is positioned at the marking of said second leg-scale equivalent to said taken reading.

4,204,336

MICROWAVE FREEZE DRYING METHOD AND APPARATUS

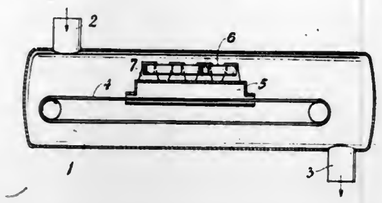
Toai Le Viet, Corseaux, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,660

Claims priority, application Switzerland, Apr. 27, 1977, 5206/77

Int. Cl.² F26B *5/06*

U.S. Cl. 34—5 **3 Claims**



1. In the freeze-drying of a product which employs apparatus including a source of microwave energy and a support disposed below said source and upon which said product is received, the steps of providing said support as a two-layer component, absorbing microwave energy and conducting electricity in the upper one of said layers, and transmitting energy through the lower one of said layers.

4,204,337

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING THE DRYING PROFILE IN A CONTINUOUS-OPERATION MULTI-ZONE DRIER

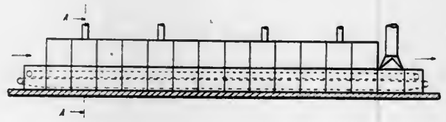
Friedrich Roos, Hauneck, and Friedrich Bahner, Rotenburg, both of Fed. Rep. of Germany, assignors to Babcock-BSH Aktiengesellschaft vormals Büttner-Schilde-Haas AG, Krefeld, Fed. Rep. of Germany

Filed May 15, 1978, Ser. No. 906,847

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721965

Int. Cl.² F26B *3/04*

U.S. Cl. 34—31 **11 Claims**



1. An improved method for monitoring and controlling the drying-action profile of a continuous-operation multi-zone drier comprised of successive drying zones through which are transported plyboards or analogous goods of varying initial moisture content and presenting to the drier a varying degree of surface-area loading,

the continuous-operation multi-zone drier being of the type in which drying gas is circulated in each drying zone in the direction transverse to the transport direction of the goods,

the drying action being adjustable by adjusting the value of the drying-gas temperature in the drying zones and by adjusting the transport speed of goods transported through the multi-zone drier,

the rate of heat consumption in the initial zones of the drier varying mainly as a function of variations in the degree of surface-area loading presented to the drier by the goods and only secondarily as a function of variations in the initial moisture content of the goods,

the rate of heat consumption in the subsequent zones of the drier varying as a function of both variations in the degree of surface-area loading presented to the drier by the goods and also as a function of variations in the initial moisture content of the goods,

the improved method comprising automatically adjusting the drying action so as to maintain a predetermined moisture content of the goods emerging from the multi-zone drier despite variations in the degree of surface-area loading presented to the drier by the goods and despite variations in the initial moisture content of the goods, this comprising

measuring the rate of heat consumption in at least one of the initial zones of the multi-zone drier to develop a first signal mainly dependent upon the degree of surface-area loading presented to the drier by the goods;

measuring the rate of heat consumption in at least one of the subsequent zones of the multi-zone drier to develop a second signal dependent upon both the degree of surface-area loading presented by the goods and the initial moisture content of the goods; and

developing from the first and second signals in combination control signals used to adjust the drying action of the multi-zone drier.

4,204,338

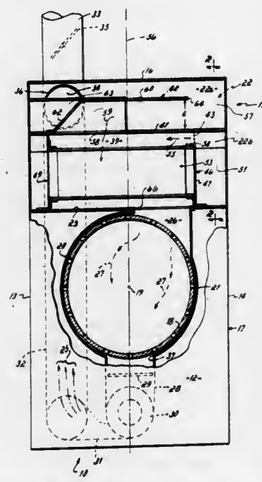
LAUNDRY DRYER

Norman J. Bullock, Prospect, Ky., assignor to The W. M. Cissell Manufacturing Company, Louisville, Ky.

Filed Oct. 2, 1978, Ser. No. 947,943

Int. Cl.² F26B *11/04*

U.S. Cl. 34—35 **8 Claims**



1. A method of heating recirculated exhaust air and fresh make-up air in a laundry dryer, said method comprising the steps of

dividing an attic chamber of said laundry dryer into upper and lower subchambers separated by an intermediate floor, the upper subchamber defining a preheat chamber for recirculating exhaust air,

positioning a heater housing within the lower subchamber, the heater housing extending between the base floor and the intermediate floor, at least a portion of the heater housing's side walls being spaced inwardly from the attic chamber's side walls to define a preheat chamber for the fresh make-up air, the heater housing including heat source means to heat fresh make-up air and recirculated exhaust air together and simultaneously to an elevated temperature level,

recirculating exhaust air into the upper subchamber, and directing make-up air into the lower subchamber, for preheating the recirculated exhaust air and the fresh make-up air to above the temperature at which each entered the respective subchambers,

directing the make-up air into the heater housing in generally horizontal flow path fashion from the lower subchamber, and directing the recirculated exhaust air into the heater housing in generally vertically downward flow path fashion from the upper subchamber, the generally vertical recirculated exhaust air flow and generally horizontal make-up air flow being simultaneously heated and admixed, together and intimately, within the heater housing, and

directing the intimately admixed and heated recirculated exhaust air and make-up air generally vertically downward into the dryer's drum from the heater housing.

4,204,339

TUMBLER WASHING AND DRYING MACHINE

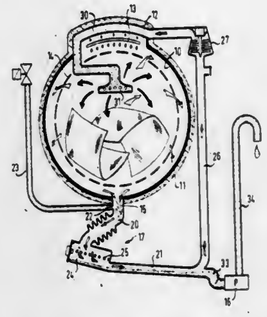
Franz Muller, Troisdorf, Fed. Rep. of Germany, assignor to August Lepper, Maschinen-U. Apparatebau GmbH, Bad Honnef, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,041

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806873

Int. Cl.² F26B *21/08*

U.S. Cl. 34—75 **8 Claims**

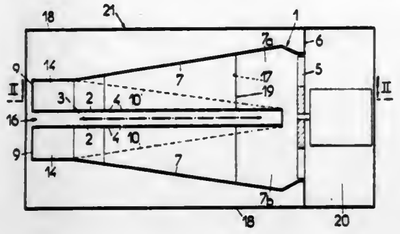


1. A drum-type tumbler drying machine comprising a casing having an upper and lower part, a tumbler drum rotatably mounted within said casing, a radiant heater mounted in the upper part of said casing, said heater including a reflector which serves to effect direct radiation of said tumbler drum, a recirculated air duct which connects with a drain opening at the lower part of the casing and includes an impeller, said air duct extending over the reflector and opening into a nozzle positioned in the charging opening of said drum so that said nozzle supplies recirculated air into the interior of the drum, said air duct further including a condenser supplied with cooling water, said recirculated air duct being connected to said drain opening by way of said condenser, said condenser comprising turbulation means for creating an area of turbulent air flow, a tranquillizing duct located downstream from said turbulation means, spray means positioned upstream from said turbulation means for supplying cooling water, said tranquillizing duct extending at a slight downward inclination with respect to said turbulation means, said tranquillizing duct further including a drainage sump located at a lower level than said tranquillizing duct, a waste water pump and a recirculating air duct for carrying recirculating air to said impeller, said recirculating air duct being connected to said tranquillizing duct at or adjacent the lower end thereof and in advance of the drainage sump.

4,204,340
INSTALLATION FOR TREATING A PRODUCT IN A GASEOUS MEDIUM

Guy Doucin, Thann, and Paul Marchal, Garches, both of France, assignors to Air Industrie, Courbevoie, France

Filed May 4, 1978, Ser. No. 902,959
Claims priority, application France, May 18, 1977, 77 15381
Int. Cl.[2] F26B 13/02
U.S. Cl. 34—225 13 Claims

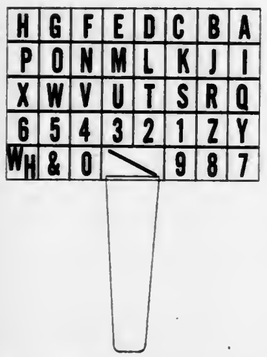


1. An installation for treating a moving strip product in a gaseous medium, particularly for heating and/or drying of said strip, comprising at least one blowing box provided with a perforated blowing wall in front of which the strip moves, said perforated blowing wall comprising, along the moving direction of the strip, a first lateral portion, a central portion and a second lateral portion, said blowing box being supplied with a treatment gas by at least one fan disposed on one side of said blowing box, said fan feeding a central duct supplying the central portion of the perforated blowing wall, said central duct extending perpendicularly to the moving direction of the strip, the end of said central duct opposite to the fan being connected by means of two 180° knee pipes to two blind lateral ducts supplying the two lateral portions of the perforated blowing wall.

4,204,341
TRANSPARENT COMMUNICATION CHART

Paul Nowak, 75 Carol St., Ramsey, N.J. 07446

Filed Jan. 5, 1979, Ser. No. 958,838
Int. Cl.[2] G09B 21/00
U.S. Cl. 35—1 1 Claim

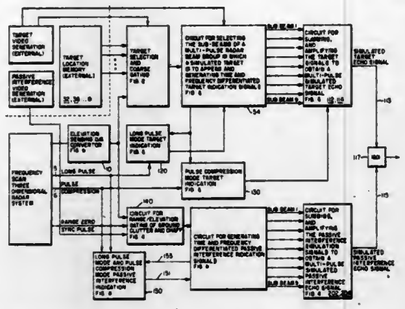


1. A hand held transparent card imprinted with letters and numbers on a grid comprising:
a transparent plastic rectangular card,
a handle attached to the said card,
a five by eight grid of squares imprinted on the card,
the numerals, the alphabet, a slash mark and several abbreviated symbols being sequentially imprinted in the center of the said squares.

4,204,342
ELEVATION SIMULATION FOR FREQUENCY SCAN THREE DIMENSIONAL RADAR

Wayne S. Linfield, Sparks, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 2, 1979, Ser. No. 40
Int. Cl.[2] G01S 7/40
U.S. Cl. 35—10.4 14 Claims

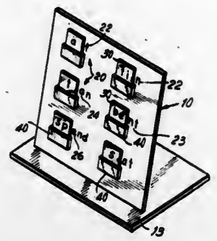


1. A system for simulating a predetermined environment in the elevation dimension for a frequency scan (inertialess) 3D radar system; the frequency scan 3D radar system scans in the elevation dimension by means of a series of directable, radar pencil-beams of progressively variable elevation, each of the beams commencing with a different initial frequency which is progressively altered to produce a group of discrete sub beams of progressively variable elevation covering a corresponding sector of the vertical plane with at least some angular overlap of the sub beams within the multi-beam group; said elevation simulation system comprising:
a. elevation sensing means coupled to receive a radar elevation code signal from the 3D radar system for generating a corresponding radar elevation voltage (signal) representing the instantaneous elevation angle of the transmitted radar beam;
b. simulated video generating means incorporating a predetermined simulated target environment with each simulated target being assigned azimuth and elevation coordinates, being designated in the elevation dimension by a target elevation voltage signal; in a given azimuth plane, (said simulated video generating means) providing a target elevation voltage (signal) when said target elevation voltage signal and said radar elevation voltage (signal) compare within limits preset to represent radar beam width; said target elevation voltage signal being synchronized with the radar beam transmissions from the 3D radar system;
c. beam selection means having at least one (target indication) channel for each of the elevation differentiated, angularly overlapping sub beams of a respective radar beam for comparing the radar elevation voltage signal with a respective target elevation voltage signal to obtain an indication of target elevation position within the sector defined by the corresponding radar beam and providing a simulated target indication pulse for each corresponding one of the group of sub beams in which said respective simulated target is to appear in accordance with the degree of sub beam angular overlap;
d. target/sub beam differentiating means responsive to the simulated target indication pulses (signals) to provide a corresponding number of beam differentiated target signals progressively time and frequency differentiated to correlate with the respective transmission frequencies and times of the corresponding sub beams; and
e. target simulation interface means for transmitting to said 3D radar system the beam differentiated target signals such that a simulated target is indicated.

4,204,343
READING SKILLS DEVELOPMENT KIT

Cecilia H. Brooks, 215 W. 88th St., New York, N.Y. 10024

Filed Sep. 25, 1975, Ser. No. 616,594
Int. Cl.[2] G09B 1/06
U.S. Cl. 35—73 5 Claims

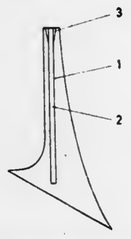


1. A reading skills development kit comprising:
(a) a background;
(b) at least one permanent first phoneme set fixedly disposed on said background, being at least one phoneme and forming a portion of a word;
(c) a different series of elements providing interchangeable second phoneme sets associated with each of said at least one first phoneme sets, each second phoneme set being at least one phoneme and forming an intelligible word with said at least one first phoneme set;
(d) means on said background for selectively exposing said second phoneme sets, one at a time, adjacent their associated at least one first phoneme set to create different intelligible words that include said at least one first phoneme set;
(e) said at least one first phoneme set having the same sound in each of said words so formed; and
(f) coding means associated with said first and second phoneme sets to identify that series of interchangeable second phoneme sets singularly associated with said at least one permanent first phoneme set to indicate erroneous association of a particular interchangeable second phoneme set with a particular at least one permanent first phoneme set.

4,204,344
SHOE HEELS

John V. Cornwell, Leicester, England, assignor to Cornwell Components Limited, Leicester, England

Filed Apr. 27, 1978, Ser. No. 900,749
Claims priority, application United Kingdom, Feb. 2, 1978, 4255/78
Int. Cl.[2] A43B 21/00; A43D 33/00
U.S. Cl. 36—34 A 8 Claims

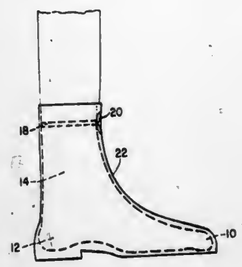


1. A heel for a shoe comprising a moulding of plastics material, a steel reinforcement member integrally moulded longitudinally therein, an aperture for a pin of a top piece formed in the member, and a cavity surrounding the top or shoe remote end of the reinforcement member to allow for the expansion of the reinforcement by the pin of a top piece.

4,204,345
SOCK

Virginia R. Bradley, 3444 Huntington Terrace, Crete, Ill. 60417

Continuation-in-part of Ser. No. 726,680, Sep. 27, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,286
Int. Cl.[2] A43B 3/26, 3/10
U.S. Cl. 36—97 7 Claims



1. A tubular sock for use in combination with a boot, comprising a unitary liquid impermeable sock member having a tubular seamless configuration and a closed end, one open end, said open end having a rim portion, the rim portion including means for securing said sock about the leg of a user, means to adjust the length of said sock by disposing said closed end in a foreshortened condition wherein said closed end is disposed overlapping a portion of said sock member adjacent said closed end when said closed end is in said foreshortened condition, said means for for adjusting the length including a first pad and a second pad, said first pad fixedly secured to the exterior surface of said sock adjacent at a region thereof disposed adjacent the toes of the user and opposite the sole thereof when the user's foot is engaged within said sock, said second pad being fixedly secured to said exterior surface of said sock adjacent the end opposite said open end, means to removably secure said first pad to said second pad, whereby said closed end of said sock member is disposed in a folded up configuration when said first pad is engaged to said second pad thereby disposing said sock member in said foreshortened condition, wherein said sock may be alternately disposed in contact with an inside surface and an outside surface of said boot.

4,204,346
TRAINING SHOE FOR SOCCER

Albert L. Fugere, 4901-17th Ave., S., Seattle, Wash. 98108

Filed Jan. 23, 1978, Ser. No. 871,177
Int. Cl.[2] A43B 5/00, 23/00
U.S. Cl. 36—114 2 Claims



1. A soccer training shoe, comprising:
a shoe suitable for use in playing soccer, wherein a first area located in the toe region of the shoe and a second area, which is separate from said first area, located in the instep sidewall region of the shoe, are visually distinctive from, and contrast with, the remainder of the shoe by color,

wherein said first area is centered approximately about the longitudinal centerline of the shoe and has a top edge which is located approximately at the base of the eyelet strip of the shoe and a bottom edge which is located at the sole of the shoe and two lateral edges which extend between said top and bottom edges, said top edge being approximately 2 inches long and said bottom edge being approximately 5 inches long, and wherein said second area is centered approximately in the instep region of the shoe and extends from approximately the top of the shoe to the sole thereof and is approximately 2½ inches wide.

4,204,347

DEVICE FOR CUTTING LOOSE HARD GROUND MATERIAL

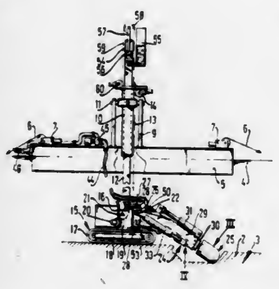
Tjako A. Wolters, Zeist, Netherlands, assignor to Ballast-Nedam Groep N.V., Amsterdamse Ballast Bagger en Grond (Amsterdam Ballast/Dredging) B.V. and Banegbo B.V., Amstelveen, Netherlands

Filed Mar. 8, 1978, Ser. No. 884,708

Claims priority, application Netherlands, Mar. 8, 1977, 7702503

Int. Cl.² E02F *3/90*

U.S. Cl. 37—67 **15 Claims**



1. A device for fragmenting hard ground located below water, comprising in combination:

a buoyant body and at least one work support means for supporting part of the weight of said body by bearing against hard ground beneath said body, said work support means comprising an upright work pile and a ground-engaging support at the lower end of such pile;

a carrier and tie means connecting said carrier at one end to said work support means for allowing the opposite end of the carrier to sweep an arcuate path centered on a vertical axis at least closely adjacent said work pile;

a cutter head rotatably carried by said carrier and projecting beyond said opposite end thereof and driving means for rotating said cutter head, said cutter head including at least one uninterrupted foundation and a plurality of rigid cutting members connected to and projecting from said foundation;

said tie means comprising clamping means releasably engaging said support means for anchoring said carrier thereto, a stool rotatably carried by said clamping means about said vertical axis, and arm means joining said one end of the carrier to said stool for rotational movement therewith and for movement about a horizontal axis;

lateral driving means connecting said clamping means to said carrier for swinging the latter about said vertical axis, said lateral driving means comprising at least one linear hydro-motor;

vertical driving means connecting said clamping means to said carrier for swinging the latter about said horizontal axis, said vertical driving means comprising at least one linear hydro-motor; and

which means on said body for raising and lowering said carrier and said tie means bodily as a unit.

4,204,348

RIPPER ATTACHMENT FOR EARTH-WORKING EQUIPMENT

Phillip E. C. Lydie, 2288 Foothill Dr., Vista, Calif. 92083

Filed Oct. 10, 1978, Ser. No. 949,869

Int. Cl.² E02F *3/76*

U.S. Cl. 37—117.5 **7 Claims**



1. A ripper tool for use with earth-working equipment, said tool comprising:

first and second downwardly extending teeth attached to said shank in an approximately inverted "Y" shaped relationship;

said first and second teeth having chisel tips with edges approximately perpendicular to the planes of said teeth and adapted to lie approximately parallel to the ground when in use;

each tooth lying at an equal angle to said shank;

the angle between said teeth being from about 30° to 62°;

whereby said earth-working equipment may be operated to bring said teeth into forceful contact with the ground at an angle between teeth and ground of from about 20° to 90° so that said tool may rock slightly about the shank permitting each tooth to alternately and cyclically dig deeper into the ground.

4,204,349

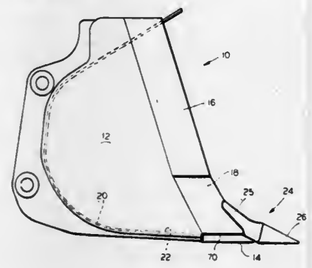
CORNER TOOTH CONSTRUCTION

Thomas J. Tallis, Dowagiac, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 22, 1978, Ser. No. 972,551

Int. Cl.² E02F *9/28*

U.S. Cl. 37—141 RS **5 Claims**



1. A loader bucket having a bottom wall, a cutting edge member along the front of the bottom wall, the cutting edge member having a forwardly and downwardly extending bevel surface, a side wall, a side cutting edge member along the front of the side wall, a vertically disposed corner member coplanar with the side wall and the side cutting edge member and of greater thickness than both, all of the foregoing welded into a unitary structure, and a downwardly and forwardly extending corner tooth shank forming an integral part of the loader bucket, the said tooth shank abutting on the bevel surface of the cutting edge member and also abutting the forward edge of the corner member, said tooth shank having an enlarged portion thicker than the corner member near the front extremity of the cutting edge member, said tooth shank having a tapered portion extending upwardly and rearwardly from said enlarged portion whereby both the inner and outer surfaces of the tooth shank blend smoothly with the contiguous inner and outer surfaces of the corner member, and the said tooth shank welded to the corner member along both said inner and outer contiguous surfaces.

4,204,350

MOUNTING FOR PHOTOGRAPHS OR THE LIKE

Abner Brenner, 7204 Pomander La., Chevy Chase, Md. 20015

Filed Mar. 30, 1976, Ser. No. 671,767

Int. Cl.² G09F *1/12*

U.S. Cl. 40—155 **4 Claims**



1. A mounting for photographs, posters, prints and textiles comprising:

two transparent plastic sheets in face-to-face relation between which said photograph, poster, print, textile or other item to be mounted is received;

means for clamping said sheets together under pressure, said clamping means consisting of four channel pieces each consisting of a web from which two legs extend at right angles to define a rectangular channel disposed so as to engage the periphery of both of said plastic sheets each of said channel pieces extending along the entire length of the sides of said sheets so as to extend around the entire perimeter of said sheets; and each of said channel pieces having mitered ends, to abut the channel pieces at each of its ends, and each of said channel pieces having at least two threaded apertures in one of said legs; and

forcing screws received in said threaded apertures in said channel pieces and adapted to apply pressure to said sheets, when screwed into said aperture, said sheets each being of sufficient thickness and rigidity to transmit compressive force to the item to be mounted and thus hold it in whatever position it has been placed between said transparent plastic sheets, and said channel being of such a width that when said sheets are pressed together by said forcing screws, a clearance is formed between one of said legs and the sheet nearest to said leg.

4,204,351

ROTARY CARD INDEX SYSTEM

Graham S. W. Hawkins, Coulsdon, England, assignor to Business Efficiency Aids, Inc., Skokie, Ill.

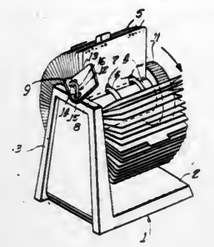
Filed Aug. 11, 1977, Ser. No. 823,835

Claims priority, application United Kingdom, Aug. 18, 1976, 34369/76

Int. Cl.² G09F *11/04*

U.S. Cl. 40—372 **13 Claims**

1. A rotary card index system comprising rotatable drum means for carrying a plurality of radially extending cards and for causing said cards to rotate therewith in either a clockwise or counterclockwise direction, support means for said drum means, a member movable along a plane generally parallel to the axis of rotation of said drum means to and from an operable position between adjacent cards on said drum means for maintaining a space between said adjacent cards and a retracted position and means mounting said member on said support means for bodily movement about compound axes between said operable and retracted positions responsive to the rotation



of said cards in either said clockwise or counterclockwise directions.

4,204,352

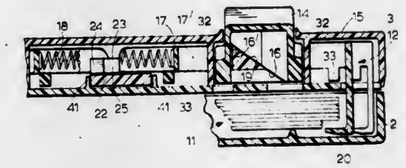
INDEX-SELECTOR DEVICES

Malcolm Laughton, Birmingham, and Sidney H. Robinson, Redditch, both of England, assignors to Laughton & Sons Limited, Birmingham, England

Filed Mar. 15, 1978, Ser. No. 886,683

Int. Cl.² B42F *17/20*

U.S. Cl. 40—389 **13 Claims**



1. An index selector device of the kind comprising a base and a lid, a hinge connecting the lid to the base, a stack of index cards which are separably mounted between the base and the lid, the cards being hinged at their edges adjacent to the lid hinge, a lid-releasing device normally holding the lid closed against the base, manualy operable selector means which when actuated operates the lid-releasing device to release the lid and raises all the cards in the stack above the one required for use wherein the selector means comprises a plurality of push buttons and a plurality of card-engaging devices mounted in the lid, the push buttons being distributed over an upper surface of the lid, each push button being associated with a respective one of the card-engaging devices and with a lid-releasing device, the arrangement being such that on depression of a selected push button the associated card-engaging device moves to engage a card and the lid-releasing device releases the lid so that all the cards in the stack above the one required are raised with the lid, the index selector device further comprising means for retaining each card-engaging device in its card-engaging position while the lid is open and means for disengaging said retaining means on closing the lid.

4,204,353

FIREARM CARTRIDGE RECEIVER

Raymond O. Isola, 1071 Killmaster Dr., Oscoda, Mich. 48750

Filed Apr. 10, 1978, Ser. No. 895,097

Int. Cl.² F41C *27/00*

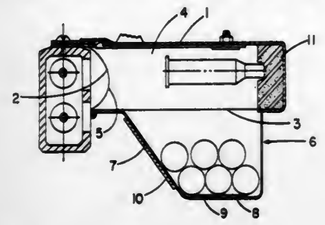
U.S. Cl. 42—1 T **2 Claims**

1. In an improved firearm cartridge retriever for retrieving cartridges and cases ejected from a firearm comprising a rigid housing adapted to be mounted on a firearm and having an opening in register with a cartridge ejection port of said firearm, a mounting device for mounting the cartridge retriever, a

locking device for maintaining the retriever on the firearm, and a pocket for holding ejected cartridges, said pocket being completely foldable into the housing, the improvements which comprise:

an energy absorbing pad of resilient material mounted inside the housing above said pocket and opposite said opening,

a cartridge alignment panel mounted on a portion of the pocket opposite and below the energy absorbing pad and



holding that portion of the pocket rigidly in a downward direction sloping away from said opening when the pocket is in its unfolded condition, whereby cartridges or cases bouncing from said pad are forced into alignment by the sloping pocket portion, and

a rigid bottom panel mounted on the bottom portion of said pocket to additionally assist in alignment of cartridges or cases in said pocket.

4,204,354

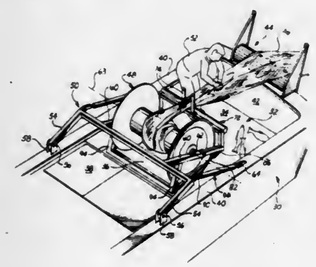
ARTICULATED FISHING DRUM

Michael J. Kane, 3602 Vining, Bellingham, Wash. 98225

Filed Mar. 5, 1979, Ser. No. 17,437

Int. Cl.² A01K 73/00

U.S. Cl. 43—4.5 **28 Claims**



1. A method of reeling in a fishing net onto a fishing vessel from a deployed position in a body of water, said method being particularly adapted to permit the reeling in of said fishing net during conditions of low yield catches or high yield catches with a minimum of time and physical effort, said method comprising the steps of:

a. providing a fishing vessel having longitudinal and transverse axes and having a cockpit area defined by a floor portion, side walls and an end wall of said vessel, said end wall being provided with a rotating power roll member aligned along the transverse axis of said vessel, said cockpit area having a forward portion and a stern portion;

b. providing a drum member having a first lower operating position at a level of said side walls of said vessel, and a second upper operating position raised above said first lower operating position providing passage thereunder for crewmen on said fishing vessel, said drum member having an axis of rotation generally aligned along said transverse axis of said vessel, said drum member having hydraulic power means to effect rotation of said drum member about said axis of rotation;

c. operating said drum member in said first lower operating position during periods of low yield catches such that said net is removed from its deployed position and reeled directly onto said drum member, with the aid of said power roll member affixed to said end walls, said fish contained therein being removed as said net is reeled onto said drum member; and

d. moving said drum member to its second upper operating position during periods of high yield catches, such that said net is removed from its deployed position and placed in said stern cockpit area of said vessel with the aid of said power roll member, and the net is thereafter reeled onto said drum member in its second upper operating position and the fish are removed therefrom as said net is reeled onto said drum member,

whereby, when said drum member is moved to its second upper operative position, said stern cockpit area of said vessel is appreciably enlarged, so that during periods of large fish catches said drum member may be removed out of said cockpit area to its second upper operative position to enable said net with fish therein to be adequately contained in said stern cockpit area.

4,204,355

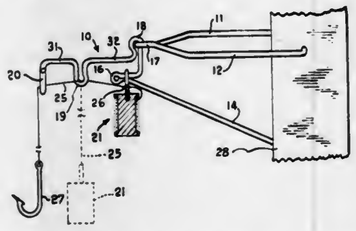
AUTOMATIC FISH CATCHER

William C. Almond, 28 Valley Dr., Little Rock, Ariz. 72209

Filed Jan. 11, 1979, Ser. No. 2,505

Int. Cl.² A01K 69/00

U.S. Cl. 43—15 **8 Claims**



1. A weight-actuated fish catcher having tripodal mounting for removable outstanding attachment to an upstanding support;

said tripodal mounting means including a downwardly sloping compression leg;

said leg extending outwardly beyond said mounting means to define a fishing line guide having therealong a plurality of downwardly extending partially open eye portions;

a weight-receiving protuberance integral with said compression leg;

a weight resting on said protuberance and slidably removable therefrom;

a length of fishing line attached at one end to said weight and passing longitudinally through said eye portions; and

a fishhook at the other end of said fishing line.

4,204,356

UNDERWATER FISHING LURE RECIPROCATING DEVICE

LaVerne Smith, 7551 Thornapple River Dr., Caledonia, Mich. 49316

Filed Mar. 21, 1978, Ser. No. 888,643

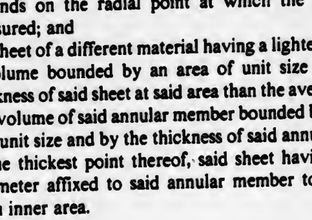
Int. Cl.² A01K 97/00

U.S. Cl. 43—26.1 **16 Claims**

1. An underwater fishing lure reciprocating device for downrigger trolling apparatus wherein a fishing line and attached lure are releasably clipped to a weighted cable and lowered from a boat by a reel a predetermined depth into the water for trolling, said reciprocating device being non-floating and being adapted to be lowered to said predetermined depth on the cable, the reciprocating device comprising:

a mounting member attached to the cable;

a reciprocating member movably mounted on the mounting member, the reciprocating member including line engaging means for engaging the fishing line, the reciprocating member being movable with respect to the mounting member such that the line engaging means is caused to reciprocate forward and backward with respect to the mounting member generally in the direction of movement



of the reciprocating device as the reciprocating device is towed through the water, said reciprocation of the line engaging means imparting said forward and backward reciprocating movement to the fishing line and lure as the reciprocating device is towed through the water; and

underwater drive means for causing the reciprocating member to reciprocate underwater.

4,204,357

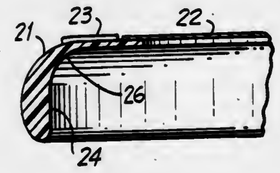
FLYING DISC

Richard H. Harrington, 313 N. Seventh St., Ann Arbor, Mich. 48103

Filed Jun. 21, 1977, Ser. No. 808,593

Int. Cl.² A63H 27/00

U.S. Cl. 46—74 D **42 Claims**



1. A flying disc comprising:

an annular member defining an open inner area and comprising an air-foil shaped cross-section defined by different curvature on opposite surfaces and having a thickness that depends on the radial point at which the thickness is measured; and

a thin sheet of a different material having a lighter weight for a volume bounded by an area of unit size and by the thickness of said sheet at said area than the average weight of a volume of said annular member bounded by an area of said unit size and by the thickness of said annular member at the thickest point thereof, said sheet having an outer perimeter affixed to said annular member to cover said open inner area.

4,204,358

ALUMINUM MODEL AIRPLANE KIT

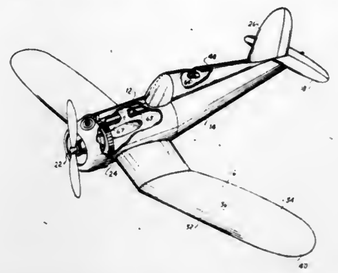
Donald L. Briggs, 1703 Hauser Blvd., Helena, Mont. 59601

Filed Mar. 13, 1978, Ser. No. 886,123

Int. Cl.² A63H 27/02

U.S. Cl. 46—76 R **6 Claims**

1. A model airplane having parts thereof such as the fuselage and wing formed of resilient, pre-stressed, sheet metal; wherein the improvement comprises: reinforcement for the wing in the



form of a channel formed from the sheet metal of the wing located inside the wing.

4,204,359

FLYING TOY

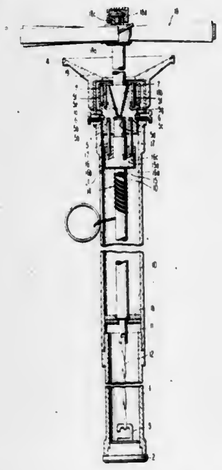
Mateo O. Plo, Bailen St., no. 12, Madrid, Spain

Filed Jul. 27, 1978, Ser. No. 928,524

Claims priority, application Spain, Aug. 9, 1977, 461.493

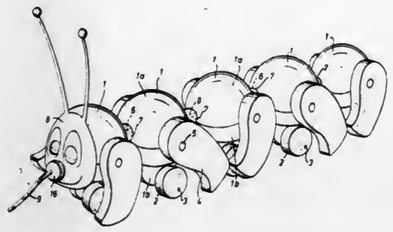
Int. Cl.² A63H 27/00

U.S. Cl. 46—83 **4 Claims**



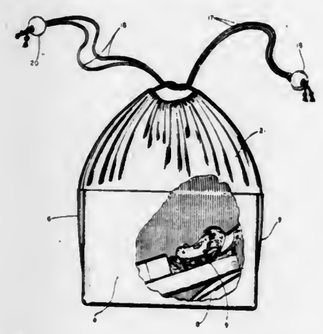
1. A flying toy, characterized in that it comprises a tubular body provided with a flared piece at the top, said tubular body carrying in the interior one shaft, around which appropriate means is wound for causing it to rotate from outside said tubular element, and a sleeve to the base of which is connected the upper end of said shaft in such a way that the rotary motion of the shaft can be transmitted to the sleeve, said sleeve having mounted two swinging pieces specially counterweighted and positioned in such a way that, when the sleeve rotates, said swinging pieces rock because of centrifugal force and, by means of the hooks with which they are provided, they transmit the same rotary motion to a flying element that is coupled to the top of the sleeve, the action of said hooks on the flying element being stopped and said flying element being shot off or launched when the rotary motion of the shaft and the sleeve is interrupted, after the traction means wound around the shaft has been completely unwound.

4,204,360
SEGMENTAL WALKING TOY
Simon W. Bentall, West Croydon, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed May 18, 1978, Ser. No. 907,302
Claims priority, application United Kingdom, May 18, 1977, 20938/77
Int. Cl.[2] A63H *5/00, 13/02*
U.S. Cl. 46—98 7 Claims



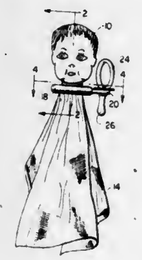
1. A toy comprising a number of interconnected units with each unit having a pair of ground bearing wheels carried by a stub axle, the units being interconnected in a manner permitting relative movement, characterised by a unit comprising upper and lower shells which are interconnected, the lower shell carrying an axle with the ground bearing wheels at each side, the two shells when connected including a post, a rod pivoted to the post and projecting through a slot in the unit, the projecting part of the rod attached to the post of another unit and forming a connecting means, said wheels mounted on the axle in an offset manner causing the unit to perform a side-to-side rocking motion when pulled along, the upper shell including stub axles on opposite sides thereof, leg members depending from said axles and freely pivoted thereon whereby as the unit performs a side-to-side rocking motion the legs brush the ground surface and are carried back at one position of rotation of respective wheels and swing freely forward at the other position of the wheels.

4,204,361
BASSINETTE TOY
Bertha E. Chaput, 190 London Ave., Las Vegas, Nev. 89109
Filed Jul. 3, 1978, Ser. No. 921,999
Int. Cl.[2] A63H *13/00*
U.S. Cl. 46—116 5 Claims



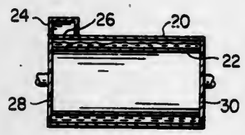
1. A bassinette toy comprises in combination a container having a bottom and side walls and an open top, a flexible decorative apron extending from the walls near the top and surrounding the container, said apron having a hemmed portion, drawstrings threaded through the hemmed portion of the apron, the apron having a normal downwardly extending position surrounding the walls of the container, and an inverted position useful for carrying the toy with the apron extending upwardly above the top of the container, the drawstrings being drawn and forming a handle for carrying, and a doll adapted to fit in reclining position within the container.

4,204,362
BABY'S COMPANION AND SECURITY BLANKET
Herve L. Fournier, 95 Curtis Ave., South Attleboro, Mass. 02703
Filed Aug. 24, 1978, Ser. No. 936,634
Int. Cl.[2] A63H *3/36, 3/46*
U.S. Cl. 46—116 5 Claims



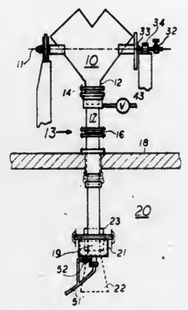
1. A baby's security blanket and companion comprising a rectangular baby blanket, a hollow toy figure head of a soft pliable material having a neck, said neck having an opening into said head, and means for mounting said head on said blanket, said means comprising a sponge having a diameter greater than the diameter of said neck opening, whereby said sponge, surrounded by a part of said blanket, can be pushed through said opening into said head to mount said head on said blanket.

4,204,363
LIQUID CONTAINING AMUSEMENT DEVICE
Philip H. Knott, One San Antonio Pl., San Francisco, Calif. 94133
Filed Jun. 8, 1978, Ser. No. 913,887
Int. Cl.[2] A63H *11/10, 33/00*
U.S. Cl. 46—202 13 Claims



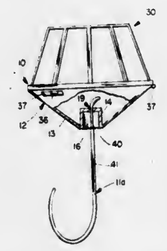
1. A toy tank truck comprising:
a support frame,
a generally cylindrical tank rotatably mounted on said support frame, said tank including an outer cylinder wall and an inner cylinder wall spaced from said outer wall to define a chamber having a limited volume of space, a liquid reservoir on said outer wall rotatably positionable above said chamber in a fill position and below said chamber in a drain position, and an opening in said outer wall for communicating a liquid between said chamber and said reservoir as said tank is rotated.

4,204,364
METHOD AND APPARATUS FOR STERILE CULTIVATION OF CELLS ON SOLID SUBSTRATES
Stephen B. Maul, Worthington; Paul A. Lemke, Cabot; Walter L. Gerner, Sarver, and John B. Yoder, Butler, all of Pa., assignors to Butler County Mushroom Farm, Inc., Worthington, Pa.
Filed Aug. 18, 1978, Ser. No. 934,683
Int. Cl.[2] A01G *1/04*
U.S. Cl. 47—1.1 7 Claims



1. A method for cultivation of cells on a solid substrate in a blender capable of being heated and pressurized, said method comprising:
a. bulk blending and sterilizing in said blender a mixture of moist nutrient particles for a time and at a temperature sufficient to sterilize all of said mixture to form a uniform sterile solid substrate;
b. cooling the sterilized substrate;
c. while in said blender, inoculating the bulk sterilized substrate with inoculum;
d. bulk blending the inoculum and sterilized substrate in said blender to prepare an inoculated mixture; and
e. discharging said inoculated mixture from said blender into at least one sterile container for incubation steps c, d, and e being carried out under sterile conditions.

4,204,365
BOUQUET HOLDER
Heikki S. Hirvi, Skarholmen, Sweden, assignor to Leonard Schoenherr, Ludington, Mich.
Filed Jun. 14, 1978, Ser. No. 915,513
Int. Cl.[2] A01G *5/04*
U.S. Cl. 47—41 R 1 Claim

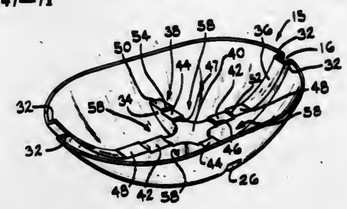


1. A holder for a bouquet of flowers, said holder having a cup-shaped head for receiving a shaped block of moisture-retaining foam and a handle, said holder characterized in that said head has a boss extending into said head, said boss having walls defining an axially elongated, slit-like channel extending therethrough; said handle being an elongated member of ribbon-like cross section and of a material capable of withstanding being gripped in the hand without crushing and be readily bendable and having no memory whereby, when bent to a particular shape, it will retain that shape without spring-back; one end of said handle extending through said boss in tight frictional engagement with the walls of said channel throughout the length of said channel to provide a rigid connection between the handle and head; said one end of said handle projecting into said head beyond the end of said boss and being twisted about its greater axis to lock said handle positively against detachment from said head.

4,204,366
METHOD OF NON-AGRICULTURAL PRODUCTION OF COTYLEDONS
Jules Janick, and Valerie C. Pence, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.
Filed Oct. 13, 1978, Ser. No. 951,267
Int. Cl.[2] A01G *1/00*
U.S. Cl. 47—58 8 Claims

1. A non-agricultural method for production of cotyledons comprising the steps of:
(A) Proliferation of immature cotyledonary zygotic cocoa embryos in a basal media in the presence of a growth enhancer whereby asexual embryos are initiated upon said zygotic embryos; and
(B) Growing said embryos in vitro in a basal medium; and
(C) Harvesting the cotyledons so produced.

4,204,367
PLANT POT HOLDER OR RESERVOIR
Richard E. Cone, Kent, Ohio, assignor to Questor Corporation, Toledo, Ohio
Filed May 10, 1978, Ser. No. 904,466
Int. Cl.[2] A01G *9/00*
U.S. Cl. 47—71 17 Claims

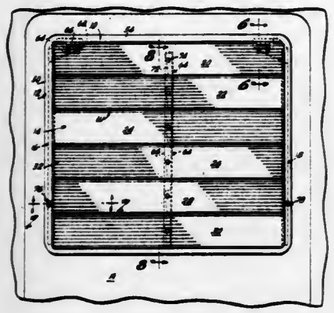


1. A plant pot support container comprising a thin-walled member of elongated hollow concave configuration, said member having an imperforate-walled longitudinally-extending recess means adapted to accommodate a support body, said member having spaced interior planar surface areas adapted for supporting a plant pot.

4,204,368
LOUVERED WINDOW SHADE DEVICE
Robert E. Lockshin, 2025 NE. 154 St., North Miami Beach, Fla. 33162
Continuation of Ser. No. 775,518, Mar. 8, 1977, Pat. No. 4,121,380, which is a continuation of Ser. No. 659,599, Feb. 20, 1976, abandoned. This application Jul. 26, 1978, Ser. No. 928,287
The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.
Int. Cl.[2] E05C *7/02*
U.S. Cl. 49—67 7 Claims

1. A louvered window shade device for mounting relative to an automobile window having a peripheral trim strip, comprising a main body assembly including a plurality of louvers interconnected side by side to form a unitary assembly, mounting means for peripheral regions of the main body assembly and including hinge-support plate means for insertion between

the trim strip and corresponding peripheral regions of the window and latch-support plate means for insertion between the trim strip and corresponding peripheral regions of the window remote from the first-mentioned peripheral regions, hinge means for interconnecting peripheral regions of the main body assembly and the hinge-support plate means to permit the main body assembly to be pivoted on the hinge-support plate means between open and closed positions relative to the window, and latch means having cooperating engageable means on the main body assembly and on the latch-support plate means that are engaged when the main body assembly is closed



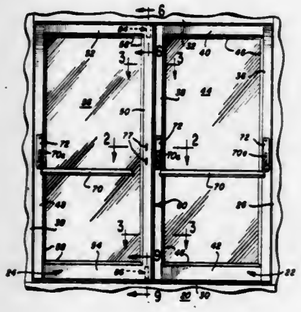
relative to the window, the latch-support plate means and the engageable means thereon being movable along the window independently of the engageable means on the main body assembly so that the latch-support plate means may be inserted between the trim strip and the window independently of the main body assembly and then the engageable means on the latch-support plate means may be engaged with the cooperating engageable means on the main body assembly, the latch means and the hinge means securing the main body assembly to the mounting means so that the louvered window shade device is held in place on the window.

4,204,369

ENTRANCE DOOR SYSTEM WITH AUTOMATIC ASTRAGAL AND PANIC DEVICE

S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Aug. 31, 1978, Ser. No. 938,641
Int. Cl.² E06B 7/20
U.S. Cl. 49—319 **25 Claims**



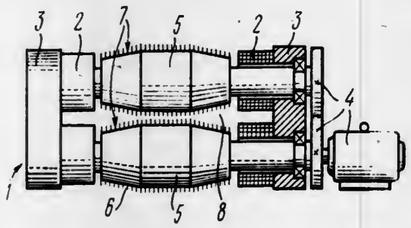
1. In combination:
a door having an elongated edge and mounted in a door frame;
latch means on said door adapted to normally latch said door with said door frame and releasable to an unlatched condition;
an elongated astragal mounted in parallel along said door edge for movement inwardly and outwardly relative to said edge between retracted and extended positions;
manual actuator means on said door for moving said astragal between said retracted and extended position; and
means interconnecting said astragal with said latch means for unlatching the same when said astragal is moved toward said retracted position by said actuator means.

4,204,370

APPARATUS FOR WORKING SHEET MATERIALS WITH FERROMAGNETIC POWDER

Boris N. Shikhirev, Novoalexeevskaya ulitsa, 1, kv. 146; Evgeny A. Matrosov, 2 Filevskaya ulitsa, 10/13, korpus 1, kv. 64, and Ilya A. Deresh, Krasnokholmskaya naberezhnaya, 1/15, kv. 343, all of Moscow, U.S.S.R.

Filed May 30, 1978, Ser. No. 910,738
Int. Cl.² B24B 7/12
U.S. Cl. 51—80 A **10 Claims**



1. In an apparatus for working sheet materials with ferromagnetic powder, comprising a magnetic system adapted to retain the ferromagnetic powder, including two rolls of a magnetically permeable material, mounted with a gap left therebetween for the passage of the material to be worked and rotatable in opposite directions, and means for inducing a magnetic flux with a magnetic circuit provided at least at the side of the first ends of the rolls, so that the magnetic lines of the magnetic flux pass axially of the rolls and cross the gap therebetween, one of the two rolls acting as one of the pole pieces of the system, and the other roll acting as the other pole piece of the same system, whereby the ferromagnetic powder can be pulled in operation in the form of a layer through the gap between the rolls, the improvement which comprises tapering portions at the extremities of the magnetically permeable rolls, in an area of the relatively high density of the magnetic flux for levelling out the distribution of the grains of the ferromagnetic powder in the layer formed in the gap between the rolls throughout the length of the gap.

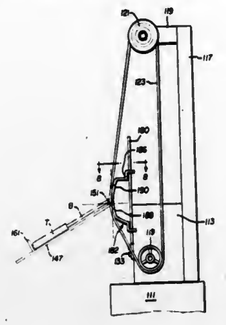
4,204,371

TOOL SHARPENING FIXTURE FOR A GRINDING TOOL

Norman H. Horwitz, 6608 Cottonwood Knoll, West Bloomfield, Mich. 48033

Continuation-in-part of Ser. No. 806,821, Jun. 15, 1977, Pat. No. 4,091,574. This application May 30, 1978, Ser. No. 910,934
The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.
Int. Cl.² B24B 3/60, 21/10
U.S. Cl. 51—141 **7 Claims**

1. A tool sharpening fixture for a grinding tool having at least a pair of spaced pulleys, a continuous flexible abrasive belt mounted around said pulleys with one of said pulleys being power driven, the fixture comprising a generally upright platen member retained adjacent one run of said continuous belt and a U-shaped platen releasably retained on said upright member having a laterally extending C-shaped bite portion supportably and guidably bearing against the interior surface of said belt, said U-shaped platen having a pair of opposed spaced legs, each having an elongated slot receiving said upright member, at least one of said legs including means releasably retaining said platen on said upright member, an elongated support arm pivotally supported on said grinding tool, angularly and adjustably mounted on said grinding tool, and support means slidably mounted on said arm for retaining a tool having a blade in bearing contact with said belt.

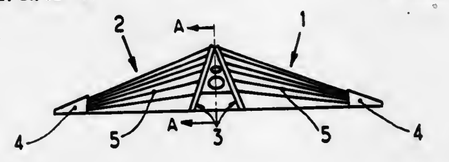


4,204,372

RETRACTABLE ROOF

Berdje Agopyan, 49 Avenue Carnot, Massy, France (91300)

Filed Jul. 5, 1978, Ser. No. 922,236
Int. Cl.² E04B 1/342
U.S. Cl. 52—64 **6 Claims**



1. A building structure having a roof which can be retracted, the structure comprising a self-supporting frame structure having at least one circular, arc-shaped beam fixed at its respective ends with its mid-point uppermost, and at least one fixed support beam shorter than said arc-shaped beam positioned at a point in a substantially vertical plane passing through said mid-point and at substantially equal distances from said ends, each of said beams having respective means thereon to support mobile roofing members; a plurality of said mobile roofing members extending between said beams, said mobile roofing members being retractable over a respective adjacent lower said roofing member in a fan-like manner to completely open the roof; and storage means for receiving and holding said roofing members when completely retracted, said members when completely retracted being out of sight from inside the building structure.

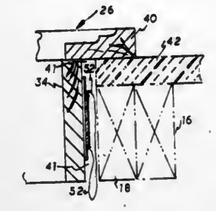
4,204,373

COMPRESSED EXPANDABLE INSULATION TAPE AND METHOD

James D. Davidson, 67 Grantour Ct., Pontiac, Mich. 48055

Filed Sep. 8, 1978, Ser. No. 940,720
Int. Cl.² E04B 1/74; E06B 1/04
U.S. Cl. 52—204 **15 Claims**

1. An energy conserving structural element, comprising an outer frame adapted to be inserted into an opening therefor with sufficient clearance to leave a relatively narrow air gap around said frame, said element having a strip of compressed expandable thermal insulation attached substantially around the outer periphery of said frame, said insulation strip having enveloping means to maintain the same in a compressed condition, said enveloping compressing means being easily tearable so as to be capable of being rendered inoperative so as to allow said strip to expand to substantially fill said air gap.

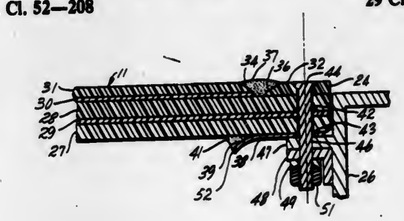


4,204,374

EDGE DESIGN FOR IMPACT RESISTANT WINDSHIELD

Jan B. Olson, Northridge, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.

Filed Nov. 10, 1977, Ser. No. 850,298
Int. Cl.² E04C 1/00
U.S. Cl. 52—208 **29 Claims**



1. An impact resistant window comprising:
a plurality of transparent synthetic plastic sheets bonded together by at least one flexible interlayer, the innermost sheet being formed of polycarbonate;
a metal bearing strip adhesively bonded on the inner face of the innermost polycarbonate sheet along at least part of an edge of the window, the inboard edge of the bearing strip curling gradually away from the inner face of the innermost sheet presenting a convex side of the bearing strip towards the innermost sheet;
a flexible adhesive between the bearing strip and the innermost sheet including a generally wedge-shaped portion between the convex side of the inboard edge of the bearing strip and the adjacent face of the innermost sheet; and
means for connecting the edge of the window and bearing strip to a frame or the like.

4,204,375

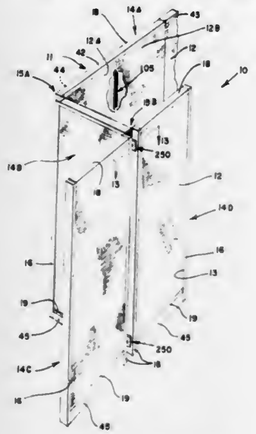
FRAME CONSTRUCTION FOR A DIVIDER WALL

Wayne W. Good, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.

Division of Ser. No. 728,383, Sep. 30, 1976, Pat. No. 4,100,709.
This application Dec. 23, 1977, Ser. No. 863,848
Int. Cl.² E04H 1/00; E04B 1/00
U.S. Cl. 52—239 **5 Claims**

1. At least two frames for a free-standing, vertical divider wall, each frame comprising a plurality of structural components having a generally C-shaped cross-section with a planar web having longitudinal edges, generally parallel sidewalls extending from the longitudinal edges of the web and terminating in opposed, coplanar, inwardly extending flanges, a medial cavity extending longitudinally of each said structural component and opening between said opposed flanges; at least two of said structural components in each frame being horizontally spaced and disposed as vertical support members; at least two of said structural components in each frame being horizontally

disposed and vertically spaced as top and lower members; means in each frame to conjoin said top and lower members to said vertical support members in order to delineate a quadrilateral panel receiving locus; said structural components being arranged such that the opposed flanges are disposed facing the quadrilateral receiving locus to define the outer perimeter of said receiving locus, and said webs define the outer perimeter of each frame; wall panel means being removably received in said quadrilateral receiving locus; the outer dimensions of said wall panel means being substantially equal to the corresponding dimensions of said quadrilateral receiving locus and said wall panel means comprising two, opposed planar faces, a pair of vertical side edge surfaces, a top edge surface and a bottom edge surface; said vertical side edge surfaces, top edge surface and bottom edge surface being in abutting relationship with said opposed flanges to permit said wall panel means remov-



ably to be received within said quadrilateral receiving locus; one vertical support member in a first frame being located adjacent a run of said top and lower members and between successive vertical members in the second frame; at least one lock slide; said lock slide having a base plate selectively positionable along at least one of said horizontally disposed members of said second frame and received between said horizontally disposed structural component and said wall panel to engage said opposed flanges on said horizontally disposed structural member; means extending within said medial cavity to secure said base plate to said horizontally disposed structural component at the selected location; said lock slide also having a coupling plate; means to secure said coupling plate to the web of said vertical support member in said first frame located laterally adjacent the horizontal in said second frame to which the base plate of said lock slide is secured.

4,204,376

MOLDINGS FOR ARTICLES

Scott A. Calvert, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 14, 1978, Ser. No. 924,605
Int. Cl.² E04F *19/02*
U.S. Cl. 52—309.1 **7 Claims**

1. A finishing strip adapted to engage a wall and an article having a flange adapted to be secured to the wall comprising:

a first rigid section having a channeled portion adapted to engage said flange such that at least part of the channeled portion is positioned between the wall and the flange;

a second rigid section having at least one projection adapted to limit the relative spacing between said first section and second section, said second section having an extended portion having a tab adapted to engage an ear projecting from said first section to fixedly position said first section with respect to said second section;

a first flexible section joined to said first rigid section and said second rigid section adapted to permit relative movement between said first and second sections; and



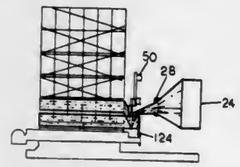
a second flexible section projecting from said second rigid section a predetermined distance sufficient to contact the wall when said finishing strip is in the closed position.

4,204,377

PROCESS AND APPARATUS FOR WRAPPING NETTING MATERIAL AROUND A LOAD

William G. Lancaster, and Patrick R. Lancaster, both of Louisville, Ky., assignors to Lantech, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 709,957, Jul. 30, 1976, which is a continuation of Ser. No. 478,523, Jun. 12, 1974, abandoned. This application Jun. 1, 1978, Ser. No. 911,652
Int. Cl.² B65B *11/04*
U.S. Cl. 53—399 **14 Claims**



1. A process of making a spiral wrapped unitary package from a load comprising a plurality of units comprising:

a. placing a leading edge of a roll of stretchable material from a dispensing means adjacent a load;

b. holding said leading edge of said roll of stretchable material in a fixed position adjacent said load;

c. applying tension to the roll of stretchable material so that the material is stretched as it is removed from said roll and wrapped around said load as the load is rotated;

d. moving the dispensing means in a directon parallel to the center axis of the load away from one end of the load to form a plurality of overlapping wraps on the surface of the load;

e. moving the dispensing means in an opposite direction from its first direction away from the other end of the load to form a plurality of overlapping wraps on the wrapped surface of the load;

f. applying a force on the material web to reduce its width to a width less than 50% of its original web width;

g. wrapping said reduced width material web around a part of said load and a structure positioned adjacent to but spaced away from said load which separates said reduced width web from said load a predetermined distance sufficient to allow substantially unrestricted entry of a tucking mechanism;

h. continuing the wrap of said reduced width material around said load and holding a portion of said reduced width material in a fixed position in a tucking mechanism;

i. carrying said held portion of material into a space formed between the load surface and the material web wrapped around said structure; and

j. severing the material web from said dispensing means and releasing the reduced width web removed from said load

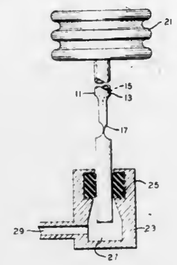
surface so that it is pulled inward by the material trying to reach its normal memory state thereby holding the severed edge in a fixed position under its wrapping surface.

4,204,378

METHOD OF CLOSING A CAPILLARY TUBE

Paige W. Thompson, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 24, 1978, Ser. No. 899,596
Int. Cl.² B65B *31/06*
U.S. Cl. 53—403 **36 Claims**



1. A method of closing a metallic capillary tube comprising the steps of:

(a) moving a pair of dies with respect to each other along first and second generally orthogonal paths to align the dies with the tube disposed therebetween; and

(b) actuating the dies with respect to each other along at least another generally orthogonal path to squeeze the tube at a selected region thereof and close the tube at least generally adjacent the selected region thereof.

10. A method of closing an end portion of a metallic capillary tube comprising the steps of:

(a) connecting the tube in an arc welding circuit as one electrode thereof with a supply of molten metal being connected in the arc welding circuit as an opposite electrode thereof;

(b) moving the tube with respect to the molten metal supply and disposing the end portion of the tube in a welding position at least adjacent the surface of the molten metal supply;

(c) creating an arc between the end portion of the tube and the molten solder supply when the end portion of the tube is in its welding position and fusing the metal of the tube adjacent the end portion to effect a sealing closure thereof.

4,204,379

CLOSED CIRCUIT SHRINK TUNNEL

Giorgio Mugnai, and Paolo E. Vietto, both of Milan, Italy, assignors to W. R. Grace & Co., Duncan, S.C.

Filed Sep. 5, 1978, Ser. No. 939,748
Int. Cl.² B65B *31/02, 53/06*
U.S. Cl. 53—512 **9 Claims**

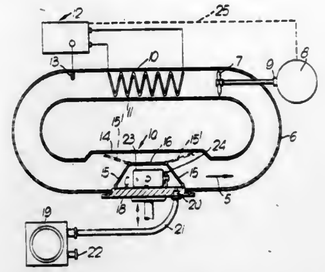
1. A shrink tunnel for use in shrink packaging articles, comprising:

means defining a work section with an inlet end and an outlet end;

means defining a return section communicating with said inlet end and said outlet end;

velocity boosting means located within said means for defining said return section for boosting the velocity of air traveling through said return section;

heating means for heating said air located within said means defining said return section; and



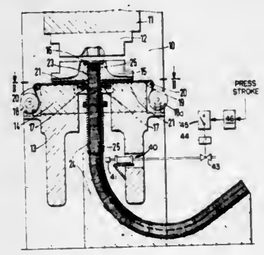
control means responsive to air temperature for controling said velocity boosting means.

4,204,380

DEVICE FOR CONVEYING, STACKING, AND PACKING ALIGNED LAMINATIONS OF ELECTRICAL MACHINES

Ewald Bergmann, Rechberghausen, and Alfred Kottmann, Donzdorf, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Goeppingen, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 877,806
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706274
Int. Cl.² B32B *31/10, 31/18*
U.S. Cl. 53—520 **9 Claims**



1. A device for feeding, stacking, and packaging aligned laminations of electrical machines punched by a press from a strip of material fed stepwise and carried away by guide elements, said guide elements guiding the laminations initially vertically and then along a curve away from the vicinity of the press, whereby the guide elements are formed by at least one stacking shaft located downstream of a die of a cutting tool and guideways associated with said stacking shaft, comprising automatically operating connecting devices disposed along the guideways by means of which connecting devices the aligned laminations, traveling along in a continuous stream, can be connected continuously with one another, characterized by the fact that the connecting devices are made of elements of a unit, by the fact that connecting material is continuously guided over the elements of the unit from appropriately disposed dispensers to the line of punched laminations to be connected together, by the fact that the elements of the unit are made of elastic material, are mounted along the path of the guide elements, extend into the path of the laminations carried by the guide elements, and are mounted for displacement outwardly with respect to said path under the influence of laminations fed along said path for adapting the elements of the unit to outside contours of the laminations to be connected, characterized by the fact that the connecting material consists of non-adhesive strips, and said connecting devices conform to the peripheral shape of the laminations and are operable to

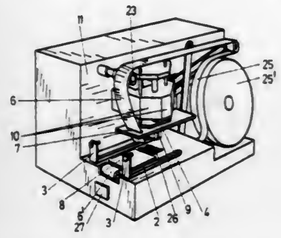
insert said strips in a self-holding manner into grooves in said laminations.

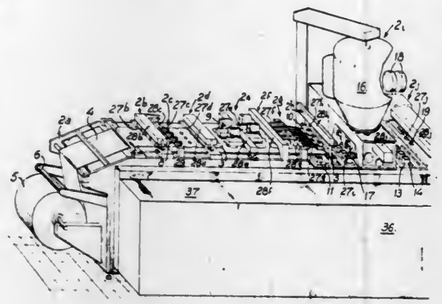
4,204,381

BANDING MACHINE, IN PARTICULAR FOR BANDING BUNDLES OF BANK NOTES

Karl E. Timmerbeil, Ennepetal, Fed. Rep. of Germany, assignor to Weka-Handelsgesellschaft m.b.H., Austria

Filed Aug. 31, 1978, Ser. No. 938,338
Claims priority, application Austria, Sep. 12, 1977, 6517/77
Int. Cl.² B65B *11/52, 13/18*
U.S. Cl. 53—528 **8 Claims**





1. An apparatus for banding a stack of bank notes comprising a stationary carrier member having a feeding station and a banding station, means for conveying said stack lying parallel to said carrier member along a conveying path from said feeding station to said banding station, a pressing member overlying said path having ends in the direction of said conveying path operatively connected to said conveying means and including means for moving said pressing members downward to said carrier member for compressing said stack in said banding station, a first and second supply of banding material, a sealing and cutting device having one pair of successively arranged upper sealing jaws overlying the conveying path and located intermediate said ends of said pressing member, one pair of successively arranged lower sealing jaws underlying the conveying path and means for cutting said banding material being arranged between said successively arranged sealing jaws means for moving said upper and said lower pair of sealing jaws in respect to each other, at least one of said pairs of jaws being movable in respect to said pressing member, said pressing member having means for guiding said first supply of banding material through said members intermediate said ends above the conveying path of said stack to said sealing and cutting device, said second supply of banding material being fed to said sealing and cutting device below said conveying path of said stack, said conveying means having stops arranged on both sides of said carrier member for engaging the trailing edge of said stack, said stop means being movable from said feeding station to a position adjacent said sealing and cutting device.

4,204,382

APPARATUS FOR PACKAGING PASTY MATERIAL

Marcel A. R. Guyonnet, 25, rue Anatole France, Chaville (Hauts-de-Sein), France

Continuation of Ser. No. 376,680, Jul. 5, 1973, abandoned, which is a continuation of Ser. No. 94318, Dec. 2, 1970, abandoned. This application Oct. 4, 1978, Ser. No. 948,573
Claims priority, application France, Dec. 4, 1969, 69 41904
Int. Cl.² B65B *43/08, 47/00*
U.S. Cl. 53—563 **12 Claims**

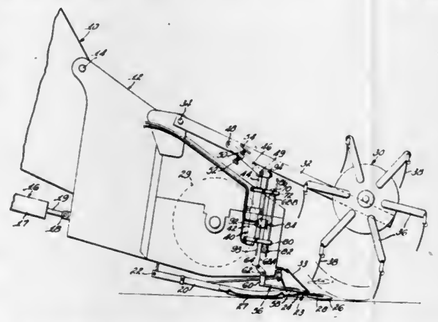
1. A machine for packaging pasty materials such as cheese in individual packages comprising an elongated continuous conveyor system, means for feeding a substantially endless thin flexible film to an end of said conveyor system, a plurality of work stations spaced successively along said conveyor system, each of said work stations having a plurality of identical tools for performing a single operation on said film, the tools of each station being longitudinally aligned with those of the other stations to provide a plurality of parallel processing lines, said work stations being divided into at least two groups arranged along said conveyor system, the first group functioning to successively cut the leading end of said film and shape said film into individual flexible shells arranged in successive ranks with respect to said conveyor system and a second group functioning to simultaneously fill said flexible shells in each successive rank and to close said filled flexible shells to form the packages, said conveyor system including conveyor means associated with said second group for carrying said flexible shells between the successive work stations comprising a plurality of spaced transverse transfer bars, each having receiving supports for each shell in each rank, said supports being aligned in rank and means for synchronously indexing said conveyor through said successive work stations and operating each of said tools simultaneously at each of said work stations on completion of each index, said conveyor system including a common driving means connected to the ends of said bars and actuating means which reciprocably indexes said transfer bars with respect to each of the work stations along said conveyor means.

4,204,383

AUTOMATIC HEIGHT CONTROL FOR GATHERING REEL FOR AGRICULTURAL COMBINE

James W. Milliken, Jr., Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 29, 1978, Ser. No. 920,193
Int. Cl.² A01D *67/00*
U.S. Cl. 56—10.2 **15 Claims**



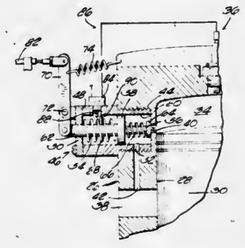
1. In an agricultural combine of the type having a header positioned at the forward end of the combine which is adapted to receive a cut crop for threshing, a floating cutter assembly pivotally mounted at the forward end of said header and adapted to floatingly move vertically relative to said header in accordance with variations in the contour of the terrain passed over by said cutter assembly and in order to pass over obstacles in the path of said cutter assembly, and a gathering reel carried by said header and positioned forwardly of said cutter assembly relative to the forward direction of movement of said combine and having an optimum vertical position relative to said cutter assembly, the improvement which comprises means for vertically moving said gathering reel relative to said header in closely tracking relation with the vertical movement of said cutter assembly whereby to avoid interference between said cutter assembly and said gathering reel during vertical movement of said cutter assembly, comprising sensing means for sensing the vertical position of said cutter assembly relative to said header, motor means operatively connected to said gathering reel for changing the vertical position of said gathering reel relative to said header, and control means responsive to said sensing means for controlling said motor means to change the vertical position of said gathering reel relative to said header in closely tracking relation with changes in the vertical position of said cutter assembly, said control means including mechanical follow-up means for stopping operation of said motor means when said gathering reel has been restored to said optimum vertical position relative to said cutter assembly.

4,204,384

LAWN MOWER INCLUDING MEANS FOR STOPPING ENGINE

Theodore J. Holtermann, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 705,140, Jul. 14, 1976, abandoned. This application Aug. 21, 1978, Ser. No. 935,615
Int. Cl.² A01D *75/20*
U.S. Cl. 56—10.5 **13 Claims**



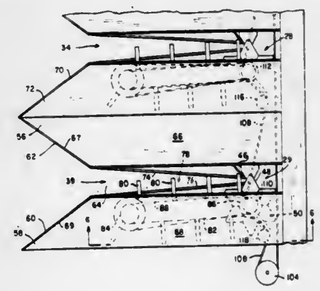
1. A lawn mower comprising a frame, a rotatable cutter blade supported on said frame, an internal combustion engine supported on said frame and including an engine block having a cylinder and a piston mounted inside said cylinder for reciprocative compression and expansion strokes and cooperating with said cylinder to form a combustion chamber, means for stopping said engine including an outlet port in said engine block opening into said combustion chamber, a discharge port communicable with said outlet port, valve means including an internal flow passage interposed said outlet and discharge ports and a valve control element operable in said flow passage between a first position for permitting communication between said outlet and discharge ports and a second position for blocking communication between said outlet and discharge ports, said valve means also including a valve assembly, operable in response to the pressure in said combustion chamber when said valve control element is in the first position, to selectively permit and block communication between said outlet and discharge ports whereby said valve assembly is moved to an open position to permit gases to vent from said combustion chamber through said discharge port during the compression stroke of said piston and said valve assembly is moved to a closed position to prevent gases from entering said combustion through said discharge port during the expansion stroke of said piston, means for biasing said valve control element toward the first position, and control means operatively connected to said biasing means and said valve control element and movable between an operating position where the biasing force of said biasing means is overcome and said valve control element is moved to the second position and a non-operating position where said biasing means moves said valve control element to the first position.

4,204,385

SEED HARVESTING APPARATUS

Clyde L. Taylor, 4146 W. Mineral King, Visalia, Calif. 93277

Continuation-in-part of Ser. No. 776,872, Mar. 11, 1977, abandoned, which is a continuation of Ser. No. 596,718, Jul. 17, 1975, abandoned. This application Jun. 30, 1978, Ser. No. 920,779
Int. Cl.² A01D *45/30*
U.S. Cl. 56—14.3 **12 Claims**



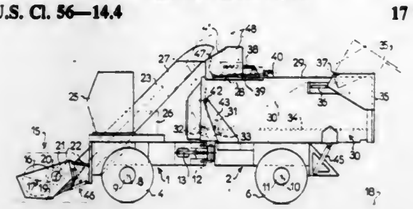
1. In an apparatus for harvesting sesame stalks standing in rows in a field and having pods thereon carrying sesame seeds therein, said pods being of a type which have a tendency to shatter and release their seeds when they are moved or jarred, a vehicle adapted to be moved through the field, stalk severing apparatus carried by the vehicle, said stalk severing apparatus including first and second stalk guiding assemblies defining a generally V-shaped opening for receiving and guiding stalks as the vehicle is advanced in the field, an upwardly facing seed receiving pan which is open throughout its entire length carried by each of said stalk guiding assemblies for receiving and collecting seeds which accidentally fall from the pods during the time the stalks are moving in the generally V-shaped opening between the guiding assemblies, said pan for each stalk guiding assembly extending up to the forwardmost extremity of the stalk guiding assembly, rotary-type cutoff means operating at a high rate of speed disposed in the vicinity of the rear of said generally V-shaped opening for severing said stalks as they travel in the generally V-shaped opening with a minimum of vibration to thereby minimize the scattering of seeds from the pods as the stalks are severed, conveyor-type means carried by the vehicle for collecting severed stalks and the seeds collected in said seed receiving pans and seed separating means carried by the vehicle for receiving the stalks and seeds from the conveyor-type means, at least one of stalk guiding assemblies including a plurality of fingers extending into said generally V-shaped opening and in the vicinity of the rotary cutoff means extending substantially traversely across said V-shaped opening and means for moving said fingers in said opening at a speed which is approximately equal to the speed of movement of the vehicle in the field for maintaining the stalks in generally upright positions without jolting of the stalks as they are advanced through the V-shaped opening, said fingers being adapted to engage said stalks in the V-shaped opening prior to, during and after the time they are cut off by the rotary cut off means.

4,204,386

MACHINE FOR CUTTING AND GATHERING VEGETABLES

Mario Spinoglio, Peronne, France, assignor to Societe Anonyme dite: Ets Bonduelle a Renescure, France

Filed Aug. 3, 1978, Ser. No. 930,712
Claims priority, application France, Apr. 24, 1978, 78 13263
Int. Cl.[2] A01D *90/00*
U.S. Cl. 56—14.4 **17 Claims**



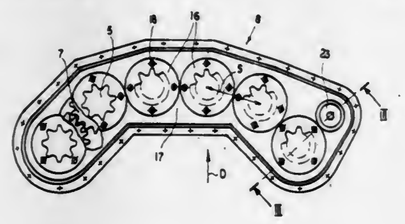
1. A machine for cutting and gathering vegetables, comprising:
- a chassis consisting of wheeled front and rear sub-chassis hinged together about a vertical axis;
- means for varying the relative direction of said two sub-chassis about said axis;
- means of cutting and gathering carried by said front sub-chassis;
- storage bucket arranged on said rear sub-chassis; and
- a transporter device extending from said means of cutting and gathering to said bucket;
- said bucket having an opening in its upper part and located approximately above said axis, and said transporter device ascending from said cutting and gathering means towards said bucket, the upper end of said transporter device being situated approximately above said axis and said opening.

4,204,387

GEAR DRIVE FOR MULTIPLE ROW HARVESTER

Theodor Eistert, Neustadt; Gerhard Schmidt, Kirschau; Christian Noack, Guttau; Manfred Teichmann, Bischofswerda; Bernd Zumpe, Rathmannsdorf; Manfred Eidam, Wilthen; Hans-Peter Spaida, Neustadt; Stefan Rauschenbach, Grosspostwitz; Karlheinz Paulisch, Kirschau, and Siegfried Scholz, Wilthen, all of German Democratic Rep., assignors to Veb Kombinat Fortschritt Landmaschinen Neustadt In Sachsen, Neustadt in Sachsen, German Democratic Rep.

Filed Jun. 6, 1978, Ser. No. 913,234
Claims priority, application German Democratic Rep., Jun. 6, 1977, 1199317
Int. Cl.[2] A01D *45/00*
U.S. Cl. 56—98 **15 Claims**



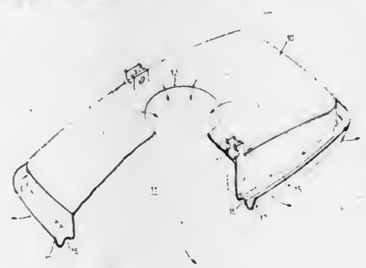
1. A row-crop harvester comprising:
- a frame adapted to travel along the ground in a predetermined travel direction and forming a plurality of forwardly opening throats;
- a nonstraight row of drive sprockets each at one end of a respective one of said throats, said row including at least one inner sprocket flanked by at least two outer sprockets with said inner sprocket spaced in said direction from said outer sprockets;
- respective conveyor chains spanned over said drive sprockets and having respective stretches in the respective throats;
- respective drive shafts on said drive sprockets;
- respective drive gears on said drive shafts and together forming a nonstraight drive train with each drive gear meshing with at least one other gear, all of said gears lying generally in a common drive plane; and
- means for rotating one of said drive shafts and thereby rotating all of said drive gears with each drive gear rotating in a direction opposite that of any of said drive gears in mesh with itself.

4,204,388

AIR CUSHION MOWERS

Frank Dawson, Littleover, England, assignor to Qualcast (Lawn Mowers) Limited, Sunnyhill, England

Filed Jul. 31, 1978, Ser. No. 929,663
Int. Cl.[2] A01D *35/20, 53/00*
U.S. Cl. 56—320.1 **6 Claims**



1. A lawnmower comprising:
- a generally dome-shaped plenum chamber for supporting a motor or engine,
- a cutter and an air-impeller mounted for rotation within the said chamber,
- an air intake positioned centrally in the roof of said chamber above said impeller such that, in use, the impeller produces a cushion of air in the chamber bounded by a vortiginous air curtain,
- a peripheral flange extending outwardly from the bottom edge of said chamber in a direction substantially parallel to the ground,
- and means associated with said flange for partially trapping the turbulent air escaping from the said chamber beneath said flange whereby the rate of air loss from the said cushion is substantially reduced.

4,204,389

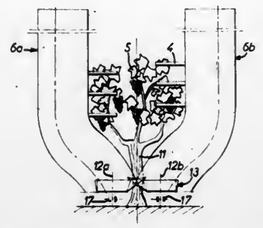
MACHINE FOR HARVESTING IN-LINE CROPS

Gilbert Delfosse, Avrille, France, assignor to Braud, Société Anonyme, Angers, France

Filed Aug. 2, 1978, Ser. No. 930,402
Claims priority, application France, Aug. 12, 1977, 77 24847
Int. Cl.[2] A01D *46/00*
U.S. Cl. 56—330 **5 Claims**

1. A machine for harvesting in-line crops, comprising a frame movable in relation to the ground along rows of plants, means for separating the crop from the plants, and at least two conveyors for transferring the crop inside the machine which form a pair of closed loops disposed side by side, each conveyor comprising a substantially horizontal bottom run, a substantially upright rear run and a substantially upright front run, and a top run, said bottom runs of the two conveyors being disposed adjacent to each other and guided on either side of a row of plants in order to clamp said plants of said row at

the lower portion of the stems thereof, to gather the detached crop so that the latter falls directly upon said bottom runs, and to transfer said crop to the rear of the machine, the upright runs of each conveyor departing laterally and outwardly of the machine in relation to the vertical plane passing through the



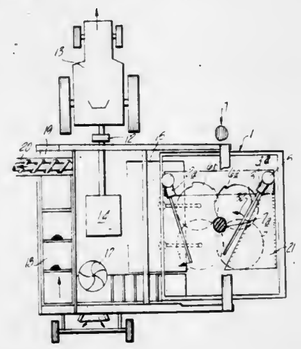
longitudinal axis of the corresponding bottom run only in the lower portions of said upright runs and being substantially vertical in their upper portions to form non-planar loops, the linear velocity of said bottom runs in relation to said frame being opposed and substantially equal to the linear velocity of travel of the machine along said row of plants.

4,204,390

HARVESTING MACHINE

Alain Bruel, Domain du Petit Chaumont, Aigues Mortes (Gard), France

Continuation of Ser. No. 740,503, Nov. 10, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,441
Claims priority, application France, Nov. 10, 1975, 75 35103
Int. Cl.[2] A01G *19/00*
U.S. Cl. 56—330 **14 Claims**



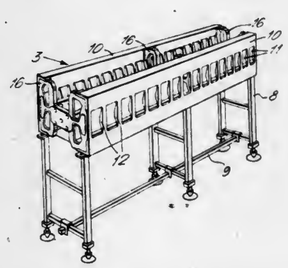
1. A mobile crop harvesting machine having drive means and comprising:
- a driven mobile chassis;
- a frame structure mounted on said chassis, said frame structure having one end portion defining a tunnel member in the shape of a downwardly open "U" and an opposite end portion defining a housing;
- at least one oscillating arm member connected to said drive means and mounted to said tunnel member, said at least one oscillating arm member further comprising:
  - at least two substantially vertical thresher members mounted to said oscillating arm member;
  - a plurality of beaters mounted to said substantially vertical thresher members for movement therewith;
  - a first means for recovering a crop, said recovery means having one end attached to said tunnel member and an opposite end attached to one of said beater members;
  - a second means for recovering said crop mounted on the lower end of said housing and in spaced relationship to said first recovery means, said second recovery means communicating with said first recovery means, said second recovery means further comprising:
  - a means for processing said crop mounted on and within said housing, said processing means communicating with said second recovery means, said processing means further having means for selectively separating the harvested crop according to the aging of said crop.

4,204,391

OPEN END SPINNING MACHINE FRAME CONSTRUCTION

James W. B. Clayton, Accrington, and Douglas O. Clough, Rossendale, both of England, assignors to Platt Saco Lowell Limited, Helmshore, England

Filed May 31, 1978, Ser. No. 911,657
Claims priority, application United Kingdom, Jun. 2, 1977, 23332/77
Int. Cl.[2] D01H *1/16, 1/12*
U.S. Cl. 57—1 R **7 Claims**



1. In a frame construction for an open-end spinning machine for supporting a plurality of spinning units and their drive and servicing components along each of the two longitudinal sides of said machine, the improvement comprising
- first and second spinning unit supporting members, each comprising a vertically disposed substantially planar elongate plate formed with a plurality of apertures spaced therealong for receiving and supporting therein a like plurality of spinning units, wherein each plate has an inwardly projecting flange at the upper extremity thereof, said plate being defined between said flange extremity and a lower extremity parallel thereto, and
- a plurality of cross members, each extending transversely between and rigidly interconnected to said supporting members in such manner as to be wholely contained between said upper and lower extremities, and being formed with and defining a recess therethrough suitable for receiving and supporting a suction duct extending parallel to said supporting members.

4,204,392

METHOD AND DEVICE FOR THE PRODUCTION OF A WRAPPED YARN

Erich Bock, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,338
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804542
Int. Cl.[2] D02G *3/36;* D01H *7/86*
U.S. Cl. 57—18 **6 Claims**

1. A method of producing a wrapped yarn of the type having a bundle of textile fibers essentially without twist wrapped spirally by a binding-thread, wherein the delivered bundle of textile fibers is false-twisted before the wrapping and is introduced together with the binding-thread into the hollow spindle of a wrapper member having a binding-thread bobbin, and the

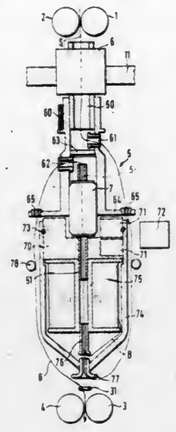
wrapped yarn is subsequently drawn out of the wrapper member, said method comprising:

introducing the yarn in the false-twisted state into the hollow spindle of said wrapper member;

leading said yarn sideways out of said hollow spindle and in a first direction past the binding-thread bobbin;

deflecting said yarn into said hollow spindle again;

passing said yarn and said binding-thread through the hollow spindle in a direction counter to said first direction of pass of said yarn;



providing a wrapper member causing said binding-thread to be wrapped around said yarn;

leading said wrapped yarn sideways out of said hollow spindle and drawing said wrapped yarn from said hollow spindle in said first direction so that the binding-thread at each revolution of the wrapper member is wrapped twice around said yarn.

4,204,393

DUST REMOVING MECHANISM IN OPEN-END SPINNING FRAME

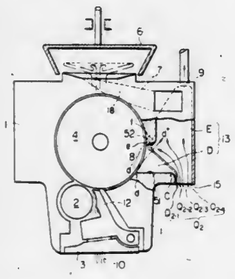
Tsutomu Miyazaki; Masao Shiraki, both of Kariya, and Kinpei Mitsuya, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakucho, Aichi, Japan

Filed Dec. 20, 1978, Ser. No. 971,499

Claims priority, application Japan, Dec. 27, 1977, 52-159734; Mar. 9, 1978, 53-027080

Int. Cl.[2] D01H *11/00*

U.S. Cl. 57—301 **13 Claims**



1. In an open-end spinning unit provided with an opening roller and a casing partly surrounding said opening roller, a dust removing opening formed on said casing and a dust removing zone communicated with said dust removing opening, a dust removing mechanism applied for said spinning unit, comprising a pair of upstream and downstream walls located at the respective positions extended from the upstream and downstream terminals of said dust removing opening, respectively, in connection with the rotational direction of said opening roller, so that a dust-separation zone is formed in said dust-removing zone by said upstream and downstream walls, a dust-discharging zone communicated with said dust-separation zone, an outer air intake opening formed at an external position of an outer end of said upstream wall, a dust-discharging suction opening formed at a position downstream of said intake opening with respect to the rotation direction of said opening roller, a first imaginary plane passing said outer end of said upstream wall and an inner end of said downstream wall being set so that said first imaginary plane intersects substantially perpendicularly an imaginary plane which is tangential to the peripheral surface of said opening roller at a position facing an inner end of said upstream wall, a second imaginary plane including said outer end of said upstream wall and an outer end of said downstream wall being set so that second imaginary plane gradually becomes separated from said dust-discharging zone.

4,204,394

DEVICE RELATING TO APPARATUS FOR TEXTURING TEXTILE YARNS

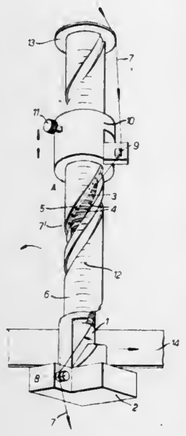
Walter Lüthi, Ebnat-Kappel, Switzerland, assignor to Heberelein Maschinenfabrik AG, Wattwil, Switzerland

Filed Jan. 11, 1979, Ser. No. 3,772

Claims priority, application Switzerland, Jan. 12, 1978, 306/78; Jan. 25, 1978, 782/78

Int. Cl.[2] D01H *7/92, 13/04;* D02G *1/04*

U.S. Cl. 57—334 **7 Claims**



1. Apparatus for friction texturing textile yarns of thermoplastic material using the false-twist principle, comprising a base, a cylinder rotatable about its longitudinal axis on said base, spaced friction surfaces on the outer surface of said cylinder and at right angles to the axis of said cylinder, grooves between said surfaces, an outer cover surrounding said cylinder, a plurality of yarn guides projecting inwardly into said cylinder and engaging said grooves, the points of engagement of the yarn guides with said grooves being on a helical path around said cylinder, a yarn guide on said base, and a plate on the upper end of said cylider, said plate having a projecting edge for guiding the yarn.

4,204,395

CALENDAR MECHANISM OF A PORTABLE TIMEPIECE

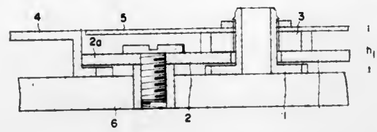
Masataka Ikenishi; Joichi Miyazaki; Shozo Kushida, and Hiromasa Nakanishi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed May 16, 1978, Ser. No. 906,561

Claims priority, application Japan, May 20, 1977, 52/58382

Int. Cl.[2] G04B *19/24, 33/00*

U.S. Cl. 368—35 **8 Claims**



1. A calendar mechanism for a portable timepiece, comprising: a cannon wheel having a gear wheel portion and a cylindrical portion extending from said gear wheel portion axially thereof; a day star wheel mounted for rotation on the cylindrical portion of said cannon wheel and positioned coaxial with and adjacent the gear wheel portion of said cannon wheel, and said day star wheel having an outer diameter less than an outer diameter of said gear wheel portion of said cannon wheel, wherein an outer peripheral portion of the gear wheel portion of said cannon wheel extends beyond said day star wheel; and a positioning plate comprised of a plate-like member positioned to partially overlie the outer peripheral portion of the gear wheel portion of said cannon wheel and adjacent said outer peripheral portion for preventing said cannon wheel from traveling axially toward said day star wheel, and the portion of said positioning plate overlying said outer peripheral portion of said cannon wheel having a periphery which clears said day star wheel with no part of said positioning plate interposed between said day star wheel and the gear wheel portion of said cannon wheel.

4,204,396

WATCH

Jean-Luc Breguet, La Chaux-de-Fonds, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Feb. 6, 1978, Ser. No. 875,562

Claims priority, application Switzerland, Feb. 16, 1977, 1888/77

Int. Cl.[2] G04B *37/04;* G04C *3/00*

U.S. Cl. 368—287 **12 Claims**



1. A watch comprising:

a molded watch casing,

a watch movement having a molded baseplate,

shock absorbing means including elastically deformable means for permanently mounting said baseplate in said watch casing, said deformable means including a first portion molded into said casing, a second portion molded into said baseplate and a shock absorbing connecting portion extending between said first and second portions free of said casing and baseplate, said elastically deformable means are a plurality of arms laterally spaced around said baseplate between said baseplate and casing, with each arm including said first portion, said second portion and said connecting portion, and

said arms are metallic tongues each having a bifurcated portion on one end thereof with at least a part of one bifurcation molded in one of said baseplate and said casing.

4,204,397

ELECTRONIC TIMEPIECE

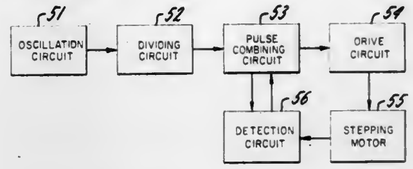
Kazuhiro Asano; Makoto Ueda; Akira Torisawa; Masaharu Shida; Katsuhiko Satoh, and Masaaki Mandai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Apr. 20, 1978, Ser. No. 898,399

Claims priority, application Japan, Apr. 23, 1977, 52-47089

Int. Cl.[2] G04C *3/00*

U.S. Cl. 368—202 **4 Claims**



1. An electronic timepiece comprising: a stepping motor having a coil and a rotor; means for generating a normal drive pulse sufficient to drive the motor under normal loading but insufficient to drive the same under worst case loading, a drive correction pulse sufficient to drive the motor under worst case loading and two out-of-phase detection pulses; a drive circuit receptive of the normal drive pulse and the drive correction pulse for driving the stepping motor; and a detection circuit for detecting the rotary position of the motor rotor comprising a detection element, and a voltage comparison circuit for comparing the voltage drop across said detection element during the first detection pulse when current flows in one direction of the motor coil with the voltage drop across said detection element during the second detection pulse when current flows in the opposite direction of the motor coil whereby if the rotor is rotating, the current will flow in the opposite direction in the coil and the voltage drop is lower than that during the first detection pulse and if the rotor is not rotating, the voltage drop is greater.

4,204,398

METHOD AND MEANS FOR AUTOMATICALLY SETTING TIMEPIECES IN A TIME ZONE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Sep. 16, 1977, Ser. No. 833,714

Int. Cl.[2] G04C *9/02, 11/02*

U.S. Cl. 36 58—47 **25 Claims**

1. A time keeping system comprising in combination:

a master signal generator operable for intermittently generating signals representative of time in a given time zone,

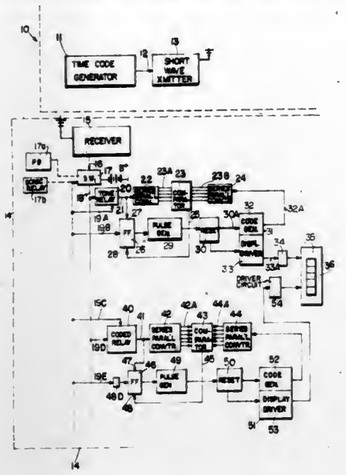
means for effecting the wireless transmission of said time signals throughout a given spatial region;

at least one electronic timepiece containing electronic circuit means for generating signals at a first rate representative of time and display means for displaying the time represented by the signal generated,

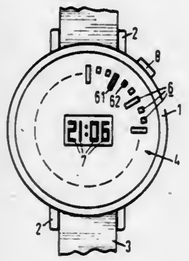
signal receiving means for receiving the signals generated by said master signal generating means,

said electronic circuit means including further circuit means connected to receive the signals from said signal receiving means and operable to alter the signal output rate of the electronic circuit means of said timepiece in accordance with variations between the values of the signals generated by the timepiece and those received from said master

signal generating means whereby the signals fed to said display means for displaying the time will be representative of the time as defined by the signals generated by said master signal generating means.

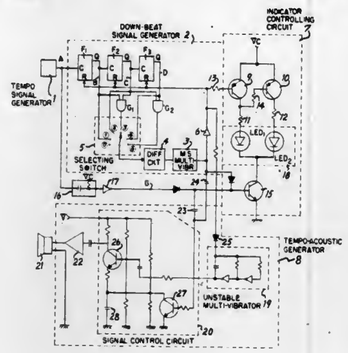


4,204,399
WRISTWATCH
Hinrich Heynisch, Graefelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jul. 31, 1978, Ser. No. 929,496
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2735021
Int. Cl.² G04B *19/06, 19/30*
U.S. Cl. 368—240 **7 Claims**



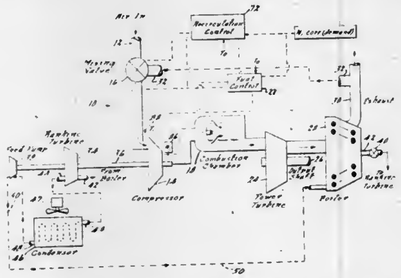
1. A method of displaying time of day on a display face of an electronic watch, comprising the steps of:
(a) providing an hour analog display formed of a first group of 12 luminescent elements arranged as a wreath corresponding to each full hour and a second group of luminescent elements of dimensions differing from the first group, elements of the second group being symmetrically arranged around the wreath and between adjacent full hour elements so as to represent fractions of full hours;
(b) providing a minute digital display formed of luminescent elements within the hour analog display wreath;
(c) displaying hours and fractions of hours in analog manner and not in digital manner on the face of the watch by chronologically activating only one of the first group luminescent elements corresponding to a full hour and also simultaneously activating in sequence all luminescent elements of the second group consecutively following the illuminated full hour element; and
(d) displaying minutes in digital manner and not in analog manner on the face of the watch by activating the minute digital display.

4,204,400
ELECTRONIC METRONOME
Fumio Morohoshi, and Yoshio Hasegawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan
Filed Oct. 28, 1977, Ser. No. 846,396
Claims priority, application Japan, Oct. 28, 1976, 51-129673
Int. Cl.² G04F *5/02*; G10B *15/00*; G08B *3/00*
U.S. Cl. 84—484 **9 Claims**



1. An electronic metronome including: a tempo signal generator for generating a predetermined frequency tempo signal; means including a monostable multivibrator for developing an up beat signal and a down-beat pulse signal having a predetermined pulse length greater than the pulse length of the up beat signal from the tempo signal; and sound generating means responsive to a tempo-acoustic signal for generating sounds in response thereto, said sound generating means comprising a tempo-acoustic control circuit responsive to the down-beat signal and up beat signal for controlling the generated sounds according to the down-beat and up beat signals to distinguish the down-beat from the up beat by duration.

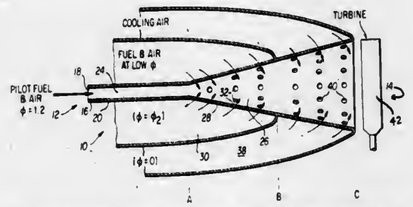
4,204,401
TURBINE ENGINE WITH EXHAUST GAS RECIRCULATION
Ernest R. Earnest, Hobe Sound, Fla., assignor to The Hydragon Corporation, Lake Park, Fla.
Continuation-in-part of Ser. No. 706,811, Jul. 19, 1976, abandoned. This application Jul. 21, 1977, Ser. No. 817,848
Int. Cl.² F02C *1/06*
U.S. Cl. 60—39.03 **18 Claims**



1. An integrated Brayton cycle-Rankine cycle engine comprising a Rankine turbine and a rotary compressor driven thereby, a Brayton turbine and an intercycle heat exchanger heated by the exhaust of the Brayton turbine and delivering heat to the Rankine fluid for powering the Rankine turbine, a

burner and air supply assembly for delivering to the Brayton turbine air from the compressor together with products of combustion from the burner, means for throttling the amount of air entering the compressor, and means for recirculating a portion of the exhaust gases from the Brayton turbine into the compressor.

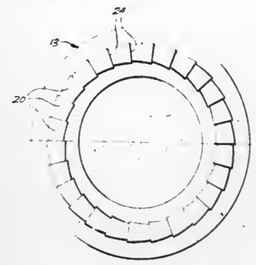
4,204,402
REDUCTION OF NITRIC OXIDE EMISSIONS FROM A COMBUSTOR
Roger A. Craig, Saratoga, Calif., and Huw O. Pritchard, Bolton, Canada, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation of Ser. No. 684,045, May 7, 1976, abandoned. This application Sep. 8, 1977, Ser. No. 831,632
Int. Cl.² F02C *7/22*
U.S. Cl. 60—39.06 **4 Claims**



1. A method for reducing oxides of nitrogen emissions in a turbojet combustor, comprising:
(a) dividing fuel to be burned into a large and a small portion;
(b) burning said small portion of fuel in a pilot combustion zone in a turbojet combustor with a sufficient quantity of air to provide stable combustion;
(c) introducing the combustion products from said pilot combustion zone to a main combustion zone is said turbojet combustor;
(d) adding adiabatically said large portion of fuel pre-mixed with a sufficient quantity of air to provide of fuel-lean combustion mixture, said addition being done at an overall rate which is progressively larger in the downstream direction of the combustor; and
(e) burning said fuel-lean mixture in said main combustion zone at an adiabatic flame temperature at or below 2200° K, using said pilot zone combustion products as (a) an ignition source for the fuel-lean mixture in contract with said products, with the combustion products of said first quantity of fuel-lean mixture serving in turn to ignite the next larger quantity of fuel-lean mixture, downstream and so on until the last added fuel-lean mixture has been consumed.

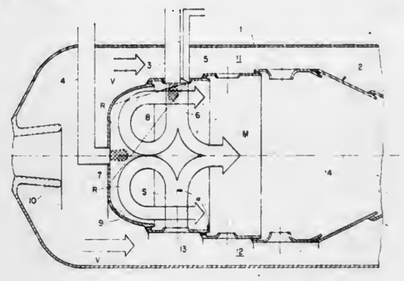
4,204,403
COMBUSTION SYSTEMS
David M. Howe, Bristol, England, assignor to Rolls-Royce Limited, London, England
Filed May 15, 1978, Ser. No. 906,216
Claims priority, application United Kingdom, May 21, 1977, 21505/77
Int. Cl.² F02C *7/22*
U.S. Cl. 60—743 **3 Claims**

1. A combustion system comprising a combustion chamber having an array of air inlet apertures distributed symmetrically about an axis, an annular array of baffles any two of which form between them a passage, each of said passages registering with an aperture, the baffles overlapping one another in the circumferential direction about said axis so that any one baffle has at one side a surface lying at the inside of a said passage and has at the other side a surface open to the interior of said chamber whereby, in operation, fluid emerging from said passages sweeps over said open surfaces, means to supply air to said apertures and thus to said passages, means for adding fuel



to the air flow through every other one of said passages so that baffle is swept at one side by air and at the other side by air/fuel mixture.

4,204,404
COMBUSTION CHAMBER FOR GAS TURBINE ENGINES, PARTICULARLY AN IGNITION DEVICE FOR SUCH A COMBUSTION CHAMBER
Adolf Fehler, Pfaffing; Günter Kirschey, Munich; Günter Kappler, Freising, and Gerhard Kirchdorffer, Weissach-Flacht, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union München GmbH, Fed. Rep. of Germany
Filed May 8, 1978, Ser. No. 903,766
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722449
Int. Cl.² F02G *3/00*
U.S. Cl. 60—740 **5 Claims**

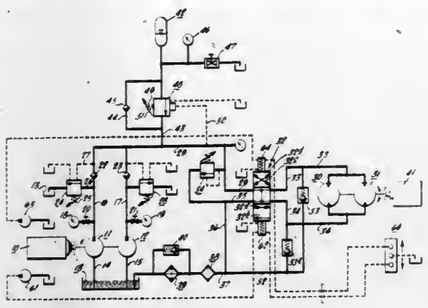


1. In a combustion chamber for gas turbine engines, particularly for aircraft turbojet engines, comprising an outer casing; at least one flame tube inserted in said casing; and at least one ignition means for the produced, respectively, introduced fuel-air mixture; the improvement comprising: said ignition means including first and second high-capacity ignition plugs arranged in series in an essentially axial plane within said flame tube, said high-capacity ignitor plugs and their ignition spark zones being arranged at right angles to each other within the portion of the flame tube containing the combustion zone, and an ignition fuel nozzle forming a fuel injection spray cone which will simultaneously encompass the ingition spark zones of both said high-capacity ignition plugs.

4,204,405
REGENERATIVE DRIVE SYSTEM
Dean V. Basham, Selmer, Tenn., assignor to Tyrone Hydraulics, Inc., Corinth, Miss.
Filed May 9, 1978, Ser. No. 904,260
Int. Cl.² F15B *1/02*
U.S. Cl. 60—371 **9 Claims**

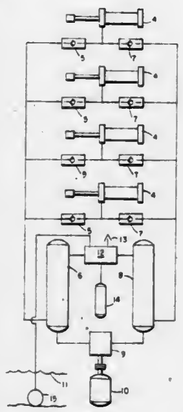
1. A hydraulic drive system for a reciprocating carriage

comprising fixed displacement pump means, reversible hydraulic motor means having first and second fluid passages, a fluid supply conduit means for delivery of fluid under pressure from the pump means to the motor mean, control valve means movable to a first position for connecting the conduit means to the first of said passages and for connecting the second passage to a reservoir of fluid, said control valve means being movable to a second position for connecting the conduit means to the second passage and for connecting the first passage to the reservoir, a drive connection between the motor means and the carriage, a hydraulic accumulator connected to said conduit



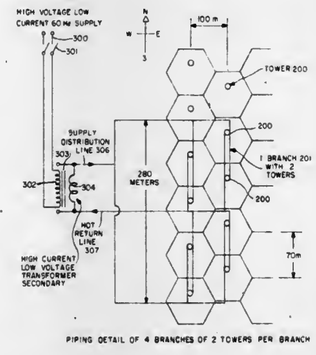
means, accumulator valve means for discharge of fluid under pressure from the accumulator to the conduit means in response to load pressures in said conduit means in excess of a predetermined value, and means for recharge of said accumulator, means including said drive connection, whereby the inertial forces on the carriage drive said motor means as a pump to deliver operating fluid under pressure to said accumulator for use during other portions of an operating cycle, said accumulator recharge means being operative following movement of the control valve means from one of said positions to the other position after said carriage has attained a desired carriage velocity.

4,204,406
WAVE ENERGY MODULE 2
Harold H. Hopfe, 65 Pioneer Dr., Longmeadow, Mass. 01106
Continuation-in-part of Ser. No. 935,586, Aug. 21, 1978, abandoned. This application Jan. 15, 1979, Ser. No. 3,744
Int. Cl.² F03B *13/12*; E02B *9/08*; F15B *1/02*
U.S. Cl. 60—398 **18 Claims**



1. A device for efficiently extracting hydrodynamic energy from ocean waves, comprising a floating platform structure, an anchoring means which is connected to piston shafts of an array of hydraulic cylinders having pistons therein within the platform structure which act through a network of check valves as piston pumps for transferring hydraulic fluid from an air cushioned low pressure reservoir to an air cushioned high pressure reservoir, a sea condition monitor and intelligent controller which regulates the air cushion pressure in the reservoir tanks so that optimum energy conversion efficiency is achieved for any given sea condition, and a hydraulic motor or turbine mechanically coupled to an electric generator and hydraulically connected between the two reservoir tanks which produces electricity as fluid is allowed to flow through the motor or turbine from the high pressure reservoir to the low pressure reservoir.

4,204,407
HEATED PIPING SYSTEM FOR FUSIBLE SALT HEAT EXCHANGE FLUID IN A SOLAR POWER PLANT
Otto J. M. Smith, 612 Euclid Ave., Berkeley, Calif. 94708
Filed Jun. 16, 1978, Ser. No. 916,462
Int. Cl.² F03G *7/02*
U.S. Cl. 60—641 **2 Claims**

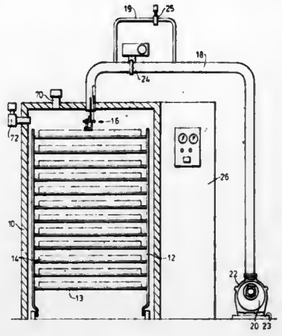


PIPING DETAIL OF 4 BRANCHES OF 2 TOWERS PER BRANCH

1. In a solar electric power plant having a plurality of solar heat receptors using as a heat exchange fluid a material which is a solid at normal ambient temperatures the invention comprising: a piping system interconnecting said heat receptors having discrete supply and return lines for carrying said material and which are electrically insulated from one another said piping being electrically conductive having a relatively low resistance; and a power source for impressing a low voltage across said supply and return lines for causing the resistance of said piping to provide an ambient temperature above the melting point of said material.

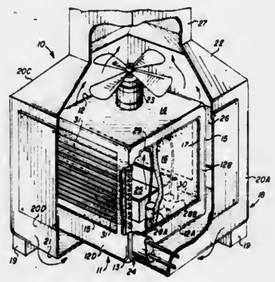
4,204,408
VACUUM COOLING
Peter Dawson, Burnley, England, assignor to Tweedy of Burnley Limited, Burnley, England
Filed Jun. 19, 1978, Ser. No. 916,787
Claims priority, application United Kingdom, May 12, 1978, 19104/78
Int. Cl.² A01K *43/00*; F26B *21/06*; F25B *19/00*
U.S. Cl. 62—62 **17 Claims**

1. A method of cooling a moisture-containing foodstuff article comprising placing the article in a chamber and evacuating said chamber to reduce the pressure of the atmosphere in said chamber so that moisture is given off by the article, and



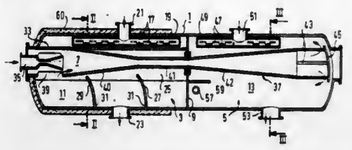
controlling the evacuation of said chamber in response to dimensional change of the article during cooling.

4,204,409
AIR CONDITIONING APPARATUS AND SYSTEM
Kauko K. Satama, 245 N. 87th St., Mesa, Ariz. 85207
Filed Jul. 26, 1978, Ser. No. 928,296
Int. Cl.² F25D *23/00*; F25B *27/02*; F28D *5/00*
U.S. Cl. 62—271 **5 Claims**



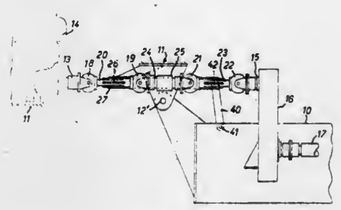
1. An apparatus for air conditioning the interior of a building comprising:
- a refrigeration appartus comprising a first coil for the movement of a refrigerant therethrough and a fan motor for directing a stream of atmospheric air over said first coil for cooling the refrigerant,
- a pair of spaced axially arranged chambers,
- means for providing an air inlet port in the surface of one of said chambers and an air outlet port in the surface of the other of said chambers,
- the inner chamber of said pair of chambers being provided with at least one opening covered by a fibrous material,
- means for selectively wetting said fibrous material with water,
- a second coil connected to said first coil and juxtapositioned to and downstream of said fibrous material for conducting the refrigerant from said first coil therethrough in a closed circuit configuration,
- air movement means connected to said apparatus for directing said air passing over said first coil into one of said chambers, through said fibrous material and over said second coil out said outlet port,
- said air being cooled by water evaporation when passing through said fibrous material, and
- means for directing said air cooled by water evaporation between the interior and exterior walls of a building to reduce the temperature of these walls.

4,204,410
STEAM JET REFRIGERATION PLANT
Adolf Kunz, Ettlingen, Fed. Rep. of Germany, assignor to Wiegand Karlsruhe GmbH, Ettlingen, Fed. Rep. of Germany
Filed Dec. 18, 1978, Ser. No. 970,369
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757748
Int. Cl.² F25B *1/06*
U.S. Cl. 62—500 **10 Claims**



1. In a steam jet cooling apparatus for cooling liquids, including: and expansion chamber into which is fed the liquid to be cooled and out of which is drawn the liquid that has been cooled; at least one steam jet compressor the suction side of which is connected to said expansion chamber; a condensation chamber which is connected to the pressure side of said steam jet compressor; which steam jet compressor, expansion chamber and condensation chamber are arranged in a common, horizontally extending vessel, which vessel is divided by a partition into said expansion chamber and said condensation chamber, the steam jet compressor penetrating and extending through said partition; the improvement which comprises in combination a manifold within said vessel for the inlet of the liquid to be cooled, positioned above said steam jet compressor and extending generally parallel to the longitudinal axis of the vessel; and, a divider plate disposed between the manifold and the steam jet compressor to shield the steam jet compressor against the liquid to be cooled flowing out of the manifold.

4,204,411
HOMOKINETIC TRANSMISSION
René H. Jeanson, Auzay, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Jun. 15, 1978, Ser. No. 915,885
Claims priority, application France, Jun. 23, 1977, 77 19278
Int. Cl.² F16C *1/02*; B60D *1/00*
U.S. Cl. 64—2 P **8 Claims**



1. A substantially homokinetic transmission for location between a first shaft carried by a first support whose position is fixed, and a second shaft having a variable inclination in relation to the first and which is carried by a second support whose position is variable, one of these shafts being the driving shaft and the other the driven shaft, the transmission comprising a first pair of universal joints associated with the first shaft, which universal joints are connected by a rotationally fixed connection of variable length, a second pair of universal joints associated with the second shaft, which universal joints are connected by a second rotationally fixed connection of variable length, and an intermediate shaft of fixed length interposed between the two pairs of universal joints, the said intermediate shaft being carried by a third support which is

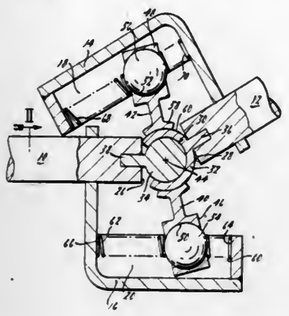
mounted for pivoting about an axis carried by the first support, and control means for controlling the position of the intermediate shaft at any given time in relation to the position of said second shaft of variable inclination.

4,204,412

CONSTANT VELOCITY UNIVERSAL JOINT

Donald L. Carriere, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 16, 1978, Ser. No. 961,170
Int. Cl.² F16D *3/30*
U.S. Cl. 64—17 R **4 Claims**



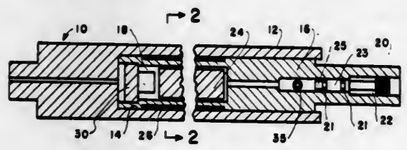
1. A constant velocity universal joint for transferring rotary motion from a driving shaft to a driven shaft wherein one shaft is adapted to be displaced angularly with respect to the other, a driving yoke carried by one end of said driving shaft, a driven yoke carried by one end of said driven shaft, an internal cam guide slot formed in each yoke, an intermediate driving member located between said one end of said driving shaft and said one end of said driven shaft, at least one circular bearing element carried by said intermediate driving member, said intermediate driving member being positioned such that its principal plane passes through the point of intersection of the axis of said shaft, said rotary bearing elements being received in said guide slots, the latter extending in the direction of the axes of their respective shafts, a universal spherical bearing means connecting together said one end of said driving shaft with said one end of said driven shaft for universal articulation and for journalling said intermediate driving member for universal movement about the point of intersection of the axes of said shafts, and means for positioning said intermediate driving member toward a central position whereby the line connecting the geometric center of said bearing element and said point of intersection bisects the included angle between said shafts.

4,204,413

TORQUE LIMITING DRIVE SHAFT ASSEMBLY

Paul W. Miller, Warren, Ohio, assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Nov. 8, 1977, Ser. No. 849,191
Int. Cl.² F16D *7/00*
U.S. Cl. 64—30 E **5 Claims**



1. A torque transmitting and regulating drive shaft assembly employable in a mechanical direct driving system wherein the assembly is connected to a rotatable driving means and a rotatable driven means and wherein the assembly in operation is subjected to detrimental mechanical accumulated strain, such as torque wind up, said drive shaft assembly comprising:

an outer torque transmitting member being connected to either said driving means or said driven means,

an inner torque transmitting member having a portion that is received in the outer member in a manner to drive or be driven by said outer member, said inner member being connected to either one or the other of said driving means or said driven means that said outer member is not connected to,

an opening in said inner member extending at least into the axial central portion of said shaft assembly, and constructed to receive pressure medium in a manner to pressurize and seal said pressurized medium,

a given portion of said inner member being constructed so that it is controllably expandable by said pressurized medium, and

contacting frictional surfaces arranged on said inner and outer members in said given portion of said shaft assembly in a manner to transmit rotatable working torque between said members and wherein the thermal coefficient of expansion of said inner member and the thermal expansion of said pressure medium is always less than the thermal coefficient of expansion of said outer member,

said outer member having strength and impact characteristics substantially equal to said inner member and constructed and arranged to be unrestrained as far as its ability to radially outwardly expand and during operation said inner and outer members are continuously subjected to the stresses of said expansion, said working torque, and torque windup, and while so subjected, to control the heat generated thereby,

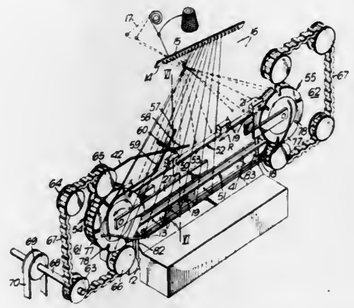
whereby said inner and outer members are self-compensating in the manner to obtain a pressure equilibrium condition with respect to said members to maintain a predetermined torque value for said driving assembly, and when said torque value is exceeded to permit relative movement between said members while transmitting the required torque.

4,204,414

CLAMPING MEANS FOR MATERIAL IN THREAD, RIBBON OR STRIP FORM

Antonius Vinnemann; Heinrich Elsässer, both of Stuttgart; Manfred Walter, Grötzingen, and Willi Gaiser, Gäufelden, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,415
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2748841
Int. Cl.² D04B *35/00*
U.S. Cl. 66—145 R **18 Claims**



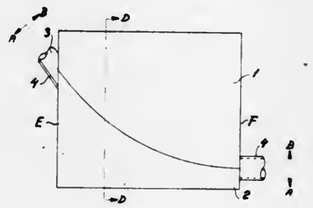
1. Clamping means having a clamping position and an open position for clamping and releasing material in thread, ribbon or strip form as fed to a textile machine of the group including knitting and weaving machines, characterized by an element bent U-wise and resiliently in a first plane and having two arms (2,3) of substantially equal length, the end (4) of the first arm (2) being bent back U-wise in a second plane in such a manner that the gap (7) between the two limbs (5,6) obtained by this bending is smaller than the cross section of the portion of the free end (8) of the second arm (3) which cooperates therewith, and the ends (4,8) of the two arms (2,3) being offset from one another parallel to the second plane such that the free end (8) of the second arm (3) engages both limbs (5,6) in the area of the gap (7) in the clamping position, and said element having means for mounting it on an associated part of the textile machine.

4,204,415

PROCESS AND APPARATUS FOR CONTINUOUSLY TRANSFORMING A STRIP TO AN ELONGATED PIPE

Poul E. Braad, Birkerod; Knud B. Jensen, Skodsborg; Hans Rosendal, Glostrup, and Flemming Sevaldsen, Copenhagen, all of Denmark, assignors to Aktieselskabet Nordiske Kabel-og Traadfabriker, Copenhagen, Denmark

Filed May 11, 1978, Ser. No. 905,070
Claims priority, application Denmark, May 13, 1977, 2103/77
Int. Cl.² B21D *5/10, 51/00*
U.S. Cl. 72—52 **8 Claims**



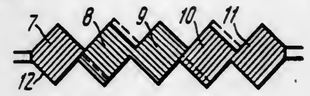
1. In a process for continuously transforming a flat metal strip into an elongated pipe, by feeding the strip along a curved forming path between opposed portions of a forming tool and causing the strip to enter the forming tool at one end in a substantially flat condition throughout its width and progressively turning up longitudinal edge portions of the strip into cross-sectionally arcuate portions leaving between them a substantially cross-sectionally rectilinear section the width of which decreases during the travel of the strip through the forming tool, the improvement which comprises effecting said progressive turning up of said edge portions by using forming tool having at least one pair of opposed portions with guide faces defining the curved forming path, said guide faces having a radius of curvature R(z) in the longitudinal direction and having arcuate end portions in the transverse direction, said end portions having a radius of curvature r_o and being interconnected by a rectilinear portion of a width 2x(z), where z is distance of travel through the tool, for controlling said radius of curvature R(z) in sole dependence on r_o and the differential quotient x'(z), as the strip is fed along said curved forming path to substantially completely eliminate relative differences in travel distance between arbitrary areas in a transverse cross-section of the strip forming the pipe without plastic deformation of said strip in the longitudinal direction.

4,204,416

METHOD OF ROLLING SECTION BILLETS

Julian M. Chumanov, ulitsa Rozy Ljuxemburg, 65, kv. 33; Vyacheslav F. Gubaidulin, ulitsa Schorsa, 23, kv. 16; Grigory M. Shulgin, ulitsa Izjumovskaya, 5, kv. 232, all of Donetsk; Viktor I. Pogorzhelsky, Mironovskaya ulitsa, 26, kv. 57; Vasily P. Morozov, ulitsa Leninskaya, 42, kv. 64, both of Moscow; Pavel A. Levichev, ulitsa Orbyty, 152; Jury P. Lyashenko, Universitetskaya ulitsa, 58, kv. 53, both of Donetsk; Anatoly G. Shalimov, Semenovskaya naberezhnaya, 3/1, korpus 6, kv. 218; Dmitry P. Evteev, ulitsa Chelyabinskaya, 10/2, kv. 137, both of Moscow; Sergei P. Efimenko, bulvar Pushkina, 25, kv. 34, Donetsk; Stanislav N. Ignatiev, ulitsa Saratovskaya, 24, Donetsk; Vladimir P. Slednev, ulitsa Artema, 147 V, kv. 35, Donetsk; Eduard V. Ovsy, bulvar Shevchenko, 19, kv. 32, Donetsk; Vladimir S. Solod, bulvar Franko, 46, kv. 69, Donetsk, and Valery V. Moiseenkov, ulitsa Postysheva, 135, kv. 24, Donetsk, all of U.S.S.R.

Filed Dec. 20, 1977, Ser. No. 862,642
Int. Cl.² B21B *1/02*
U.S. Cl. 72—204 **6 Claims**



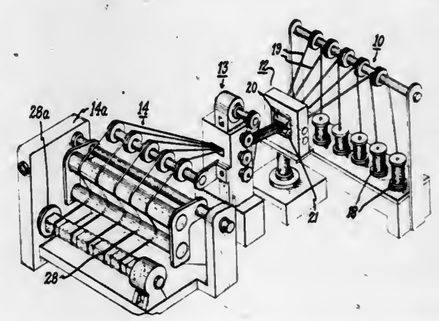
1. A method of rolling section billets having opposing sides from a slab using milling rolls with multipass grooves and having roll axes transverse to the billets comprising: successively forming a plurality of adjacent billets transversely interconnected by bridges in a number of grooves defined by a plurality of transversely juxtaposed passes; and separating said billets from one another by effecting a relative displacement by an amount at least equal to the bridge thickness between said adjacent billets by acting with a groove of a milling roll on one of the sides of said adjacent billets at an angle to the roll axis other than 90° after the thickness of said bridge becomes equal to 0.01–0.3 of the height of said groove and said adjoining portions of said adjacent billets constituting extensions of one another and being in a straight line and defining the bridges, serve as pilot surfaces for the relative displacement along shearing planes, and the separation of said billets being accomplished by shearing forces transmitted through one side of a billet with the side of another adjacent billet acting as a guide support; and whereby burrs are substantially eliminated.

4,204,417

APPARATUS AND METHOD FOR WINDING ELECTRICAL COILS

Charles F. McVoy, Jr., Danville, Ill., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,167
Int. Cl.² B21F *3/04*
U.S. Cl. 72—206 **17 Claims**



1. Apparatus for winding a plurality of coils of rectangular

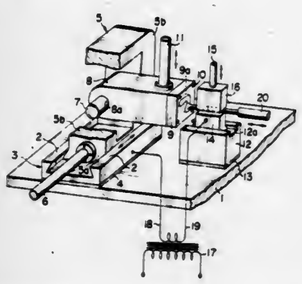
wire from round wire comprising, in combination, supply means for supplying a plurality of round wire strands, first flattening means for receiving said plurality of round wire strands and flattening two opposite sides thereof, second flattening means for receiving the thus-flattened wire strands in side-by-side arrangement and flattening four sides thereof to form the same into rectangular wire strands, and coil winding means for receiving said rectangular wire strands and simultaneously winding the same into a plurality of coils.

4,204,418

MACHINE AND METHOD FOR ELECTRIC FORGING OF THE END OF A METALLIC STICK IN A PLANE GENERALLY PERPENDICULAR TO THE STICK

Toraji Mochizuki, Tokyo, Japan, assignor to Nippon Dentan Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1978, Ser. No. 942,777
Int. Cl.² B21J *9/08*
U.S. Cl. 72—352 **3 Claims**



1. A method for making a head on the end of a metallic stick by electric forging, said head being of a shape generally extending in a plane perpendicular to the stick, comprising:

pushing a metallic stick in its axial direction into a mold groove formed in a mold while the stick is softened by heat generated by its internal resistance by leading a current between the stick and the mold;

and moving the mold along two axes in the plane substantially perpendicular to the stick, thereby distributing the softened metal about in the mold groove, while the stick is not substantially moved except in its axial direction.

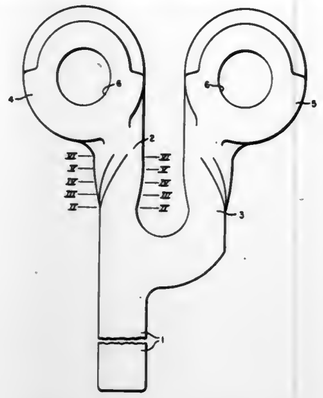
4,204,419

BRAKE-ROD JAW WITH TWISTED FORKS

Roland E. Cale, Cortland, Ohio, assignor to Schaefer Equipment Incorporated, Warren, Ohio

Filed Dec. 20, 1978, Ser. No. 971,199
Int. Cl.² B21K *1/74*
U.S. Cl. 72—356 **1 Claim**

1. The method of making a railway car brake-rod jaw having a pair of parallel forks with substantially flat sides all substantially parallel to one another, comprising forging metal stock into a blank consisting of a rod-like shank joined at one end to the inner ends of a pair of substantially parallel forks having enlarged flattened outer ends disposed in a common plane and provided with pin-receiving openings therethrough having substantially parallel axes, the forging operation providing each fork with a pair of opposite sides that are substantially flat transversely with their inner ends adjacent said shank disposed in planes substantially perpendicular to said common plane and having their remaining areas extending from their inner ends helically 90° around the fork toward said flattened outer end to provide the fork with the appearance of a 90° twist, and then twisting the forks 90° on their axes in directions that will substantially eliminate said twisted appearance and will turn said enlarged ends into spaced parallel planes with their pin-receiving openings in axial alignment and with all of said flat sides straight and substantially parallel to one another.

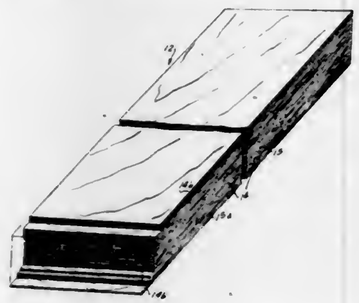


4,204,420

LAMINATED BOARD AND HAMMER COMBINATION FOR A DROP HAMMER FORGE

Thomas E. Rogers; Richard J. Rogers; Peter T. Rogers, and James G. Rogers, all of Marion, Wis., assignors to Marion Plywood Corporation, Marion, Wis.

Filed Oct. 27, 1977, Ser. No. 846,163
Int. Cl.² B21J *7/36*
U.S. Cl. 72—439 **12 Claims**



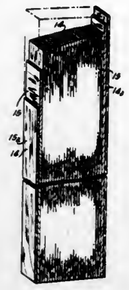
1. In a drop forge hammer board press having lift roller means and a hammer, a laminated veneer hammerboard attachable at one end to the hammer and, engageable at an opposite end with the lift roller means, the improvement comprising the hammer board being comprised of a series of plies of hard, high density wood of the order of a peeled hard maple veneer with the grain of at least most of said veneer plies running along its length, each of said plies of the hammer board having a thickness in the range of 1/32" to 3/16", and glue deposited between the plies securing the plies together and providing a relatively large number of hard glue surfaces enhancing the wearability of of the board, vertical edges of each ply being disposed at opposite ends of the hammer board rather than along the width thereof thus enabling the roller means to engage opposite surfaces of the outermost ply on each side of the hammer board rather than directly against the vertical edges of each ply.

4,204,421

LAMINATED BOARD AND HAMMER COMBINATION FOR A DROP HAMMER FORGE

Thomas E. Rogers; Richard J. Rogers; Peter T. Rogers, and James G. Rogers, all of Marion, Wis., assignors to Marion Plywood Corporation, Marion, Wis.

Filed Oct. 27, 1977, Ser. No. 846,164
Int. Cl.² B21J *7/36*
U.S. Cl. 72—439 **16 Claims**



1. In a drop forge hammerboard press having lift roller means and a hammer, a hammerboard attached at one end to the ram and engageable at an opposite end with the lift roller means, the improvement comprising the hammerboard being comprised of a series of plies of hard, high density wood at least of the order of hard maple veneer with the grain of at least most of said veneer plies running along its length, each of said plies of the hammerboard having a thickness in the range of 1/32" to 3/16", and glue deposited between the plies securing the plies together and providing a relatively large number of hard glue surfaces enhancing the wearability of the board, said plies having opposite vertical edges extending vertically and disposed along the width of the hammerboard as opposed to being located at opposite ends so that the rollers on a hammerboard press can engage said opposite vertical edges of each of said plies.

15. A laminated veneer hammerboard for a drop forge press comprised of a series of plies of hard, high density wood of the order of a peeled hard maple veneer with the grain of at least most of said veneer plies running along its length, each of said plies of the hammerboard having a thickness in the range of 1/32" to 3/16", and glue deposited between the plies securing the plies together and providing a relatively large number of hard glue surfaces enhancing the wearability of the board, said plies having opposite vertical edges extending vertically and disposed along the width of the hammerboard as opposed to being located at opposite ends so that rollers on a hammerboard press can engage said opposite vertical edges of each of said plies, said board having 42 glue lines having an aggregate of 420 thousandths-of-an-inch of glue line on which the rollers can run when engaged against opposite vertical edges of each ply disposed along the width of the board.

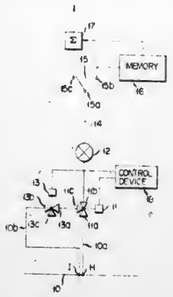
4,204,422

PRESSURE MEASURING DEVICE

Yuichiro Inoue, Mitaka, and Masamichi Sakaki, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 10, 1979, Ser. No. 37,954
Claims priority, application Japan, May 19, 1978, 53-58867
Int. Cl.² G01L *27/00*
U.S. Cl. 73—4 R **5 Claims**

1. In a pressure measuring device comprising a main solenoid valve having a first valve opening connected to a branch pipe diverging from a pipe through which a fluid to be measured flows and further having second and third valve openings, and a pressure transducer connected to the second valve opening of said main solenoid valve, whereby the pressure of the fluid inside said pipe is measured, the improvement which comprises an auxiliary solenoid valve having a first valve opening connected to the third valve opening of said main solenoid valve and a second valve opening to which a reference pressure is applied, a control circuit to produce a solenoid valve driving signal for connecting in inspection the second and third valve openings of said main solenoid valve and the first and second valve openings of said auxiliary solenoid valve, and connecting in measurement the first and second valve openings of said main solenoid valve and disconnecting the first and second valve openings of said auxiliary solenoid valve, and a means for correcting an output signal from said pressure transducer corresponding to the measured fluid pressure in accordance with an output signal from said pressure transducer corresponding to the reference pressure at inspection.

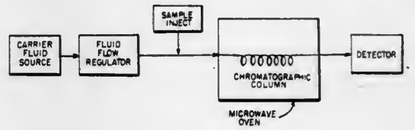


4,204,423

CHROMATOGRAPH

John H. Jordan, Beaumont, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,882
Int. Cl.² G01N *31/08*
U.S. Cl. 73—23.1 **6 Claims**



1. A chromatograph apparatus which comprises a column of a material selected from the group consisting of glass, plastic and ceramic which material does not reflect microwave radiation, said column being located within an area defined by side walls, a top wall, a bottom and a door, all of which are made of materials which reflect microwaves, microwave means for heating said column, a carrier fluid, means for establishing a flow of said carrier fluid through said column, means for introducing a sample of a material to be analyzed into said flow of carrier fluid prior to the entry of the fluid into said column and means for detecting the presence of separated components of the sample material as they are eluted from the column.

4,204,424

CHROMATOGRAPHIC ANALYZER DETECTOR GAIN ADJUSTMENT

Starnes E. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 8, 1979, Ser. No. 1,980
Int. Cl.² G01N *31/08*
U.S. Cl. 73—23.1 **10 Claims**

1. Apparatus comprising:

a chromatographic analyzer detector means capable of mea-

suring a property of a fluid which is characteristic of the fluid, said chromatographic analyzer detector means having a reference side and a sample side;

means for passing a stream of fluid through the reference side of said chromatographic analyzer detector means, said reference side of said chromatographic analyzer detector means providing a first output signal representative of said property of the stream of fluid flowing through the reference side of said chromatographic analyzer detector means;

first amplifier means;

means for providing said first output signal as an input to said first amplifier means, said first amplifier means providing an amplified first output signal as an output;

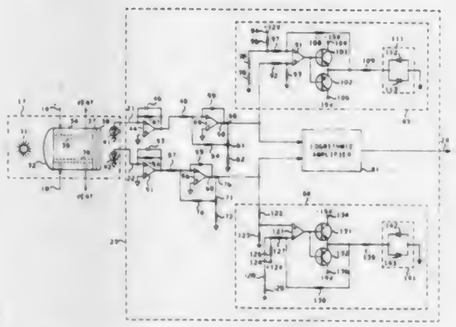
means for passing a stream of fluid through the sample side of said chromatographic analyzer detector means, said sample side of said chromatographic analyzer detector means providing a second output signal representative of said property of the stream of fluid flowing through the sample side of said chromatographic analyzer detector means;

second amplifier means;

means for providing said second output signal as an input to said second amplifier means, said second amplifier means providing an amplified second output signal as an output;

means for establishing a reference signal;

means for comparing said amplified first output signal and said reference signal when a first stream of fluid is flowing



through said reference side of said chromatographic analyzer detector means and for establishing a third signal responsive to the difference between said amplified first output signal and said reference signal;

a first light-emitting diode means;

means for supplying said third signal to said first light-emitting diode means, said first light-emitting diode means emitting a first color when said amplified first output signal is greater than said reference signal, said first light-emitting diode means emitting a second color when said amplified first output signal is less than said reference signal, said first light-emitting diode means emitting substantially no light when said amplified first output signal is substantially equal to said reference signal;

means for adjusting the gain of said first amplifying means until substantially no light is emitted from said first light-emitting diode means;

means for comparing said amplified second output signal and said reference signal when said first stream of fluid is flowing through said sample side of said chromatographic analyzer detector means and for establishing a fourth signal responsive to the difference between said amplified second output signal and said reference signal;

a second light-emitting diode means;

means for supplying said fourth signal to said second light-emitting diode means, said second light-emitting diode means emitting a first color when said amplified second output signal is greater than said reference signal, said second light-emitting diode means emitting a second color when said amplified second output signal is less than said reference signal, said second light-emitting diode means emitting substantially no light when said amplified second output signal is substantially equal to said reference signal; and

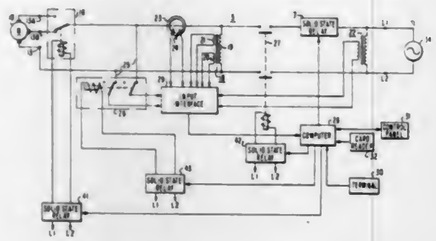
means for adjusting the gain of said second amplifying means until substantially no light is emitted from said second light-emitting diode means.

4,204,425

METHOD OF TESTING INDUCTION MOTORS

George T. Mallick, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1978, Ser. No. 920,320
Int. Cl.[2] G01L 3/22
U.S. Cl. 73—116 19 Claims



1. A method of testing an induction motor which comprises providing an alternating current power supply of the voltage and frequency on which the motor is intended to operate, applying said power supply to the motor is an unloaded condition at a known speed of rotation of the motor, interrupting the power supply after a first predetermined time period before the motor has reached running speed, immediately measuring the instantaneous speed of rotation of the motor, and determining the motor torque using the change in speed.

4,204,426

MEASURING CASING COUPLER APPARATUS

Franklin D. Patton, West Vancouver, and James D. McFarlane, Vancouver, both of Canada, assignors to Westbay Instruments Ltd., West Vancouver, Canada

Filed Nov. 13, 1978, Ser. No. 959,842
Int. Cl.[2] E21B 49/00
U.S. Cl. 73—151 14 Claims



1. Measuring casing apparatus through which can be moved instruments for taking measurements and/or samples from the surrounding environment at one or more predetermined levels, said instruments having laterally extending depressible stop arms, said apparatus comprising

a plurality of axially aligned measuring casings,

at least one coupler tube having opposite open ends registering with and connected to ends of adjacent measuring casings, said coupler tube being located at a predetermined level when said casing apparatus is in operation, the interior of the coupler tube forming a common passageway with the interiors of said casings through which instruments can be moved to take measurements or samples, and

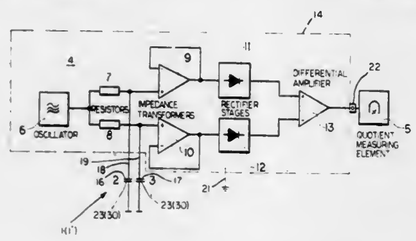
stop means on the coupler tube at a side of said passageway and so positioned as to be engaged by an extended stop arm of an instrument moving through the passageway to stop said instrument in a desired position for taking measurements and/or samples, said stop means allowing unimpeded movement of the instrument through the passageway when the stop arm of the instrument is depressed.

4,204,427

DEVICE FOR THE CAPACITIVE LEVEL HEIGHT MEASUREMENT OF LIQUIDS OR SOLIDS

Diethard Gothe, North Eltham; Jeffrey J. Nuske, Diamond Creek, and Jürgen Friedrich, Ringwood, all of Australia, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,531
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1978, 2824144
Int. Cl.[2] G01F 23/26; G01R 27/26
U.S. Cl. 73—304 C 10 Claims



1. A device located in motor vehicle tanks for the level measurement of liquid in a motor vehicle tank, comprising

a capacitive measuring sensor disposed in said tank immersed at least partially in the liquid comprising

an elongated insulating material plate with at least one electrode thereon, said insulating material plate having longitudinal edges,

a U-profile shaped carrier electrode made of a sheet metal strip, longitudinal ends of said U-profile shaped carrier electrode forming legs thereof fastened to said insulating material plate in the vicinity of said edges,

said at least one electrode on said elongated insulating material plate is arranged longitudinally parallel to said carrier electrode,

at least one conducting layer in the vicinity of said edges being on said insulating material plate,

said at least said one conducting layer facing toward said carrier electrode and being electrically connected with at least one of the legs of said U-shaped carrier electrode by the fastening of said carrier electrode to said insulating material plate in the vicinity of said edges,

a circuit chip module including evaluating circuit components having an oscillator, said module being mechanically connected to said insulating material plate of said measuring sensor,

an indicator instrument being electrically connected to said evaluating circuit components,

said evaluating circuit components being electrically connected to said at least one conducting layer of said insulating material plate and to said at least one electrode.

4,204,428

THERMAL DETECTION SYSTEM FOR FAILURE IN ELECTRICAL APPARATUS AND THERMAL DETECTING PAINT COMPOSITIONS

Jimmy L. Webb, Ballston Lake, and Woodfin V. Ligon, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 806,600, Jun. 15, 1977, and Ser. No. 807,067, Jun. 16, 1977. This application Feb. 9, 1978, Ser. No. 876,520
Int. Cl.[2] C09K 3/00; G08B 21/00; G01K 13/00, 1/00, 3/04, 3/08
U.S. Cl. 73—339 R 15 Claims

1. In a method for locating failure in electrical apparatus to prevent thermal damage in such electrical apparatus based on the use of a monitor suitable for detecting smoke particles arising from the thermal breakdown of an organic resin, a collecting means for accumulating said smoke particles, and an analytical means to determine the location of electrical failure based on an analysis of the smoke particulate, whereby uncertainty of the location of the electrical failure results due to the difficulty of clearly distinguishing the particulate arising from normal background electrical apparatus operation, from particulate arising from the site of electrical failure, the improvement which comprises,

(1) coating the electrical apparatus in at least two principal locations with thermal particulating organic paint compositions comprising a thermal particulating organic resin having a smoking temperature below 250° C. and a member of a set of identifying chemical tags resulting respectively in the deposition of a chemical tag for each preselected surface of the electrical apparatus,

(2) and when smoking occurs as a result of electrical breakdown, collecting organic resin particulate obtained from the collecting means and analyzing it as a solvent extract in a gas chromatograph equipped with an electron capture detector or a micro coulometric detector whereby a member of the total set of chemical tags utilized in the electric apparatus can be identified to establish the location of the organic resin particulate generated in the electrical apparatus, and the difficulty in establishing the respective chemical tags from background organic resin particulate is overcome, where each chemical tag is used in the paint composition at from about 0.01 percent to 0.5 percent by weight of the paint composition and characterized by having a volatility range equivalent to a C(24–45) aliphatic paraffin and selected from the class consisting of

(A) chemical tags selected from halogenated aromatic organic compounds and polyfluorinated aliphatic organic compounds capable of resisting decomposition at temperatures at least 100° C. higher than the smoking temperature of the thermal particulating organic resin and

(B) chemical tags in the form of halogenated aromatic amic acids which are convertible to halogenated aromatic organic compounds of (A) at smoking temperatures.

4,204,429

THERMOMETER USING A THERMO-SENSITIVE ELEMENT

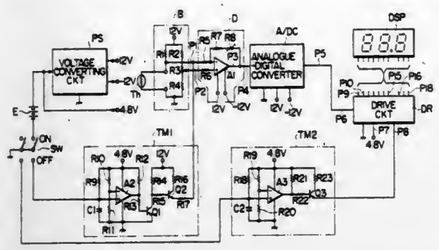
Takaichi Shimazaki, Moroyama, and Katsuaki Hazome, Oume, both of Japan, assignors to Hitachi Iruma Electronic Company Ltd., Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,119
Claims priority, application Japan, Oct. 26, 1977, 52-127550
Int. Cl.[2] G01K 7/22
U.S. Cl. 73—362 AR 10 Claims

1. A thermometer using a thermo-sensitive element comprising:

a thermo-sensitive element operable to provide an electric output signal in response to the temperature thereof, said thermo-sensitive element having at least two terminals for providing the electric output signal therebetween in response to the change in the temperature thereof;

preheating means for raising the temperature of said thermo-sensitive element to a predetermined temperature in relation to the temperature of an object to be measured by



self-heating under energization of said thermo-sensitive element through said two terminals of the thermo-sensitive element; and

temperature measuring means for measuring the electric output signal of said thermo-sensitive element in response to said temperature of the object while the energization of said thermo-sensitive element from said preheating means is stopped.

4,204,430

AUTOMATIC LIQUID FLOW SAMPLING APPARATUS

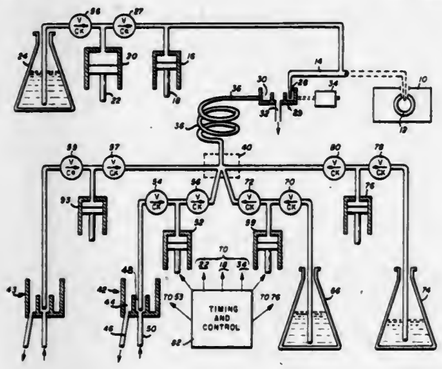
Rolf Tamm, Salem; Toma Tomoff, and Bernhard Huber, both of Uberlingen, all of Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,586

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704239

Int. Cl.[2] G01N *1/14*

U.S. Cl. 73—423 A **10 Claims**



1. Apparatus for the continuous and automatic sampling and conveying of fluids to an analytical instrument, said apparatus including:

a movable vessel having therein a flushing cup and a sample fluid cup;

an intake and dispensing tube having an apertured tip movable between a first position in said flushing cup and a second position in the sample input port of the analytical instrument;

first means for moving said vessel whereby the positions of said sample fluid cup and said flushing cup are exchanged;

second means for moving said intake and dispensing tube tip between said first and second positions;

a first pump coupled to said intake and dispensing tube for drawing and discharging a fluid through said tube;

a second pump coupled to said intake and dispensing tube and to a source of flushing fluid for discharging said flushing fluid through said tube;

a third pump coupled to a fluid sampling fixture and to a conduit entering the bottom of said sample fluid cup of said movable vessel for admitting a sample of fluid to said sample fluid cup; and

timing and control means coupled to said first means, said second means, said first pump, said second pump and said third pump for sequentially pumping fluid into said sample fluid cup, drawing a sample into said intake and dispensing tube, moving said tube from its first position to its second position, aspirating said tube, moving said movable vessel, returning said tube tip to said flushing vessel, pumping flushing fluid through said tube, lifting said tube, moving said vessel, and lowering said tube tip into said sample fluid cup,

a fourth pump coupled to said sample fluid cup and to a source of a calibration fluid, said timing and control means controlling the operation of said fourth pump to introduce said calibration fluid into said sample fluid cup at predetermined intervals for calibration of said analytical instrument,

a fifth pump coupled to said sample fluid cup and to a source of a sample fluid dilutant, said timing and control means controlling the operation of said fifth pump to introduce said dilutant in a predetermined quantities simultaneously with samples of fluid to be analyzed,

said sample fluid cup constituting an overflow cup which, when flooded, drains into a drain cavity through said movable vessel,

said sample fluid fixture comprising a vessel having a tubular bore having a concentric inlet duct for admitting a sample liquid into said bore, said vessel having an overflow cup concentric with said bore and separated therefrom by a wall, said wall having a duct interconnecting said bore and said overflow cup, said bore having a larger diameter than the bore of said inlet duct, said overflow cup having an outlet drain.

4,204,431

DEVICE FOR TEMPERATURE MEASUREMENT AND SAMPLING OF A STEEL

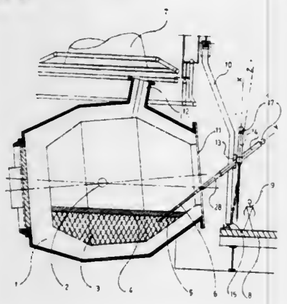
Herbert Schulz, Rosenheim, France, assignor to Creusot-Loire Enterprises, Courbevoie la Defense, France

Filed Dec. 13, 1978, Ser. No. 969,056

Claims priority, application France, Dec. 29, 1977, 77 39548

Int. Cl.[2] G01N *1/12*

U.S. Cl. 73—423 R **15 Claims**



1. A device for temperature measurement and sampling of a molten steel bath in a converter having a working platform adjacent thereto, the measurement and sampling being effected

when said converter is in a position inclined towards said platform, said device comprising:

support means suspended above said working platform in spaced relation therewith;

a carriage;

means mounting said carriage on said support means for movement horizontally relative thereto;

drive means for moving said carriage on said support means;

a telescopic jack comprising a plurality of telescopic elements;

means mounting said jack on said carriage for pivotal movement relative thereto in a vertical plane;

drive means for pivoting said jack on said carriage;

a measurement rod mounted on the end one of said telescopic elements in alignment therewith;

a probe means for temperature measurement and for sampling mountable at the end of said measurement rod;

remote control means for actuating said jack, and for actuating said drive means of said jack and of said carriage; and

at least one protective sliding door extending above said platform and facing said converter, said telescopic jack having a vertical rest position above said platform and adjacent said door on the side thereof remote from said converter.

4,204,432

ACOUSTIC INSULATION MEASUREMENT APPARATUS

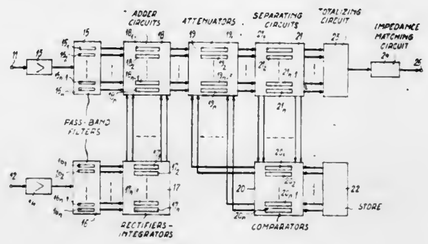
Jean Pujolle, Paris, and Patrice Bourcet, Franconville-la-Garenne, both of France, assignors to Telediffusion de France, Paris, France

Filed Feb. 21, 1979, Ser. No. 13,444

Claims priority, application France, Feb. 24, 1978, 78 05372

Int. Cl.[2] G01N *29/00*

U.S. Cl. 73—599 **3 Claims**



1. A device enabling the direct measurement of the overall insulation level of an acoustic insulation medium with respect to a reference excitation noise signal when said medium is subject to an actual excitation noise signal deviating from the reference excitation noise signal, the said device comprising:

first input means receiving a first alternating electrical signal representing the noise signal actually transmitted through said medium;

second input means receiving a second alternating electrical signal representing the actual excitation noise signal;

a read only memory storing spectral components of the reference excitation noise signal in given spectral bands;

means for decomposing the first and the second alternating signals into alternating spectral components in the same spectral bands;

means for rectifying the spectral components of the second signal in order to obtain rectified spectral components;

means for adding said rectified spectral components of the second signal and said alternating spectral components of the first signal relating to the same spectral bands in pairs so that composite signals are obtained;

means for selectively attenuating said composite signals;

means for separating in the attenuated composite signals the attenuated alternating spectral components and the attenuated rectified spectral components;

means for comparing the attenuated rectified spectral components to the spectral components of the reference excitation noise signal relating to the same spectral bands and for deriving therefrom error signals respectively corresponding to said spectral bands; and

means for controlling said attenuating means by said spectral band error signals.

4,204,433

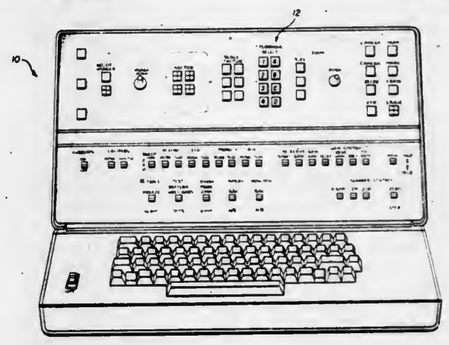
COMPUTERIZED ULTRASONIC SCANNER WITH TECHNIQUE-SELECT

Robert W. Cribbs, Placerville, and John E. Mahony, Sacramento, both of Calif., assignors to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Nov. 7, 1977, Ser. No. 848,988

Int. Cl.[2] G01N *29/00*

U.S. Cl. 73—620 **6 Claims**



1. In an ultrasonic diagnostic system of the type including ultrasonic pulse generating means for applying a series of pulses to the surface of a body for propagation therethrough,

detecting means for detecting pulse reflections and responsive to the emergence of reflected pulses from the body for producing a respective incoming signal indicative of a discontinuity in the propagation path, and

video display means for producing a visual representation of the media defining the propagation path, the improvement comprising:

operator-actuable means for producing a control signal related to a selected one of a plurality of signal processing techniques which condition the incoming signal for video displaying;

memory means for storing information related to the signal processing techniques;

memory access means responsive to the unique control signal for obtaining the stored information related to the selected technique;

circuit means for quantizing the amplitude of the incoming signal in accordance with the information accessed by the access means and for producing a first signal indicative thereof;

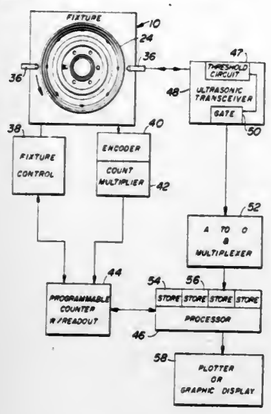
means receiving the first signal and responsive to the access means in accordance with the accessed information for selectively producing as a processed video signal either the first signal or a signal representing the subtracting of time-delayed portion of the first signal level from the instantaneaous level of the data signal to produce.

4,204,434

ULTRASONIC TESTING OF WELDS IN WHEELS

Jay F. Whitsel, Southampton, Pa., assignor to The Budd Company, Troy, Mich.

Filed Dec. 18, 1978, Ser. No. 970,156
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—622 **11 Claims**



1. A method of checking the diameters of spot welds in a wheel comprising the steps of:
(a) placing the wheel in an oriented position on a fixture;
(b) rotating said fixture with said wheels,
(c) connecting a counter responsive to the rotation of said wheel to produce output electrical pulse signals representative of the positions of said wheel during rotation,
(d) transmitting and receiving ultrasonic signals to and from said wheel as it is rotated,
(e) producing a gate signal when the received ultrasonic signals are at threshold levels indicative of the presence an acceptable weld area in said wheel,
(f) storing the counts from said counter at the start and end of said received ultrasonic signals indicative of the presence of said acceptable areas and,
(g) utilizing the stored counts from said counter to provide indications of the diameters of said spot welds.

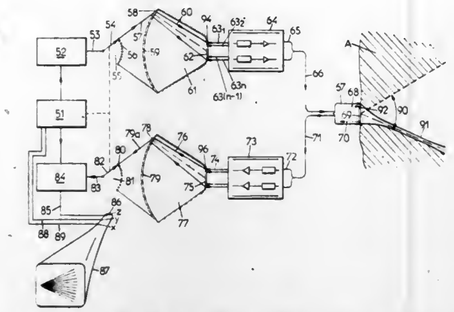
4,204,435

DEVICES USING ULTRASOUNDS FOR FORMING IMAGES, IN PARTICULAR FOR THE INTERNAL EXAMINATION OF THE HUMAN BODY

Edouard Bridoux, Maing; Christian Bruneel, Marly; Francis Haine, and Guy Thomin, both of Valenciennes, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Sein, France

Filed Apr. 27, 1978, Ser. No. 900,665
Claims priority, application France, Apr. 29, 1977, 77 12994; Apr. 17, 1978, 78 11274
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—626 **4 Claims**

1. A device for forming images through ultrasonic echography comprising in known manner one or two series of individual transducers transmitting, in response to triggering electric signals, ultrasonic signals towards an object to be examined and/or transforming receiving ultrasonic signals into electric signals, means for applying triggering electric signals to the single series of transducers or to the series providing transmission of ultrasonic signals, and means for forming an image from the electric signals supplied by the single series of transducers or the series of transducers receiving the ultrasonic signals, wherein the single series or each series of transducers is arranged along a curved band in such manner as to direct the ultrasonic rays, for the transmission as well as for the reception, through a reduced area surrounding the center of curvature of the curved band or of each curved bad, and at least one electronic lens formed by a first array of ultrasonic transducers arranged in the vicinity of the center of curvature of the



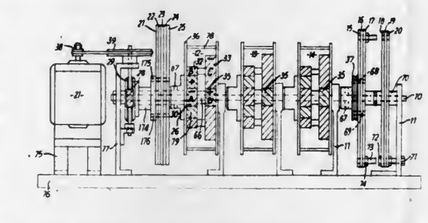
curved band or of each curved band, by differential delay electronic means and by a second ultrasonic transducers array.

4,204,436

IMPROVEMENTS IN OR RELATING TO EPICYCLIC GEAR MECHANISM

Harry Heaton, 318 Gerald Rd., Pendleton, Salford M6 6AZ, England

Filed Jun. 27, 1977, Ser. No. 810,383
Int. Cl.[2] F16H *57/10*
U.S. Cl. 74—767 **13 Claims**



1. An epicyclic gear mechanism having a single fixed shaft; a series of compound gear trains surrounding the single fixed shaft, the shaft being common to the series of compound gear trains, each compound gear train including a rotatable cage, at least two planet gears of compound form on the cage and rotatable relative to the cage, a stationary gear operably associated with one gear of the compound planet gear, and an output gear operably associated with the other gear of the compound planet gear, said output gear being rotatable on the fixed shaft relative to the cage and connected to a gear or an input means of a successive compound gear train, each successive gear train in the series providing a stepwise increase in output speed; and a final output means for defining a gear operably associated with one gear of the last compound planet gear of the last compound gear train of the series, said final output gear being rotatable around said fixed shaft and being attachable to an output device.

4,204,437

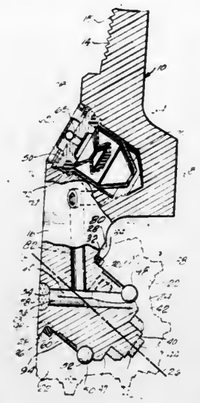
FRICTION BEARING ROCK BIT AND SEGMENT, AND METHOD FOR MAKING THEM

Salvador Espana, Costa Mesa, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 3, 1978, Ser. No. 893,196
Int. Cl.[2] B21K *5/02*; C21D *1/78*
U.S. Cl. 76—108 A **28 Claims**

1. In a method for forming a drill bit segment of the friction bearing type for use in a rotary rock bit, the segment having a journal for mounting a rotary cutter, the journal having areas

requiring hardening, and machined areas other than the journal, an improvement in the carbon enrichment and heat treating of the segment comprising the steps of:
(a) completing the machining of the segment;
(b) carbon enriching the entire segment surface at an elevated temperature in a carbon enriched atmosphere to



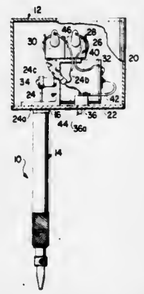
develop a case on the segment, the elevated temperature being sufficient to effect hardening of the case upon quenching the segment; and
(c) quenching the segment directly from the elevated temperature to develop the desired hardnesses in the case and the core.

4,204,438

TATTOOING DEVICE

Christopher Binaris, 157 Brightwood Ave., Westfield, N.J. 07090; Patricia S. Volz, 74 Hoyt St., Darien, Conn. 06820, and Joseph Ohidy, 828 4th Ave., Westfield, N.J. 07090

Filed Jun. 2, 1978, Ser. No. 911,938
Int. Cl.[2] B43K *5/00*
U.S. Cl. 81—9.22 **8 Claims**



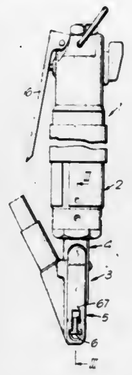
1. A tattooing device for performing a tattoo, comprising:
a motor housing and a needle housing secured to said motor housing,
said motor housing having mounted therein a motor and an eccentric drive structure driven by said motor,
a needle shaft and tattooing needle mounted for reciprocation in said needle housing and driven to reciprocate by said eccentric drive structure,
said needle housing having an opening at the lower end thereof through which said tattooing needle reciprocates, and
a bushing formed of noise reducing material mounted in the bottom section of said needle housing and having an internal opening through which said tattooing needle extends, the internal diameter of said bushing opening being less than the internal diameter of said needle housing opening so that said bushing operates to constrain transverse movement of said reciprocating needle and thereby reduces noise, ink splatter, and the tearing of skin and improves the line clarity of the tattoo produced.

4,204,439

HEAD FOR A POWER OPERATED SCREWDRIVER

Hiroo Kondo, Maizuru, Japan, assignor to Nitto Seiko Co., Ltd., Kyoto, Japan

Filed Dec. 20, 1978, Ser. No. 971,417
Claims priority, application Japan, Dec. 28, 1977, 52-178492
Int. Cl.[2] B25B *23/02*
U.S. Cl. 81—57.37 **13 Claims**



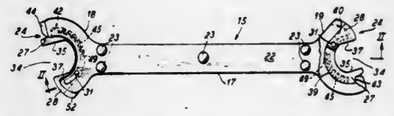
1. A screwdriver having a head at an end thereof, the head comprising:
a body;
a bit passageway formed in said body;
a screw passageway intersecting with said bit passageway in an inclined manner;
a pair of screw holding jaws pivotally mounted across an end of said body;
spring means for biasing said holding jaws towards one another for holding screws admitted from said screw passageway in a driving position;
stop jaw mounting openings provided at an end of each of said holding jaws penetrating from the inside to the back side thereof;
stop jaws freely pivoted in each of said mounting holes in the same plane as the pivoting plane of the holding jaws; and
spring means for biasing said stop jaw towards one another.

4,204,440

OPEN END ONE WAY TORQUE WRENCH

Cosimo Del Prete, and Michael V. Ferraro, both of 1048 W. Oakdale, Chicago, Ill. 60657

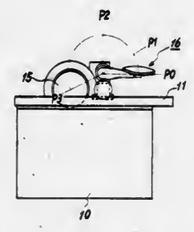
Filed Jul. 24, 1978, Ser. No. 927,282
Int. Cl.[2] B25B *13/28*
U.S. Cl. 81—111 **11 Claims**



1. An open end one way torque wrench having a handle body and a wrench head recess at least on one end of said body and receptive of a multifaced element to be torqued, and comprising:
a substantially semicircular track defined in said recess;
a jaw assembly having a pair of jaw members within said

recess and adapted to grip opposite parallel faces of the multifaced element to which torque is adapted to be applied;
means connecting said jaw members in end-to-end articulated relation to one another;
means for operatively retaining said jaw members in said recess and permitting oscillation of said jaw members with respect to said track;
and means for maintaining said jaw members in a rigid position, element face gripping relation when the wrench is swung in one rotary direction, and permitting oscillation movement away from said rigid position and into a separating release relation of said jaw members from the gripped faces of the element for shifting of the jaw members into engagement with other faces of the element upon swinging of the wrench in the opposite rotary direction.

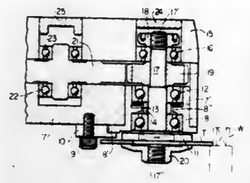
4,204,441
WORKPIECE LOADING APPARATUS
Makoto Kikuchi, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Sep. 29, 1978, Ser. No. 947,045
Claims priority, application Japan, Oct. 8, 1977, 52-121069
Int. Cl.² B23B *13/00*
U.S. Cl. 82—2.5 **6 Claims**



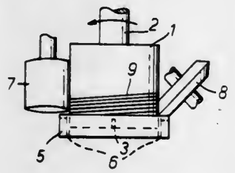
1. An apparatus for loading a disk-like workpiece into a chuck mounted on a spindle head and rotated about a horizontal axis comprising:
a housing;
a swing arm supported by said housing to be rotatable about an axis which is substantially parallel to the rotational axis of said chuck;
drive means for swinging said swing arm between a workpiece pick-up position and a workpiece delivery position;
workpiece support means supported on said swing arm to be rotatable about an axis which is perpendicular to the axis of swinging movement of said swing arm for supporting a disk-like workpiece thereon, and being held within a substantially horizontal plane when said swing arm is at its pick-up position; and
rotary means operated by said drive means for rotating said workpiece support means a predetermined angle during a part of the swinging movement of said swing arm so as to align the workpiece held on said support means with said chuck when said swing arm is swung into its delivery position.

4,204,442
CUTTER HOLDING DEVICE IN A POLYGON CUTTING APPARATUS
Takayuki Nomura, Tanazawa 437, Okutamamachi, Nishitamagun, Tokyo, Japan
Filed Sep. 11, 1978, Ser. No. 941,188
Int. Cl.² B23B *3/28*
U.S. Cl. 82—18 **2 Claims**

1. A cutter holding device in a polygon cutting apparatus, which is embodied into a spindle movable type automatic lathe, the cutter holding device being characterized in that a shaft with a rotary cutter held thereon is rotatably supported on two angular contact ball bearings mounted on a sleeve removably secured to a first housing and further supported on a third bearing mounted on a second housing, said two angular contact ball bearings being applied with a prepressure or preload by a belleville spring, and a driving gear is fastened to said shaft by a fastening force of a nut meshed with a threaded portion formed on one end of said shaft.



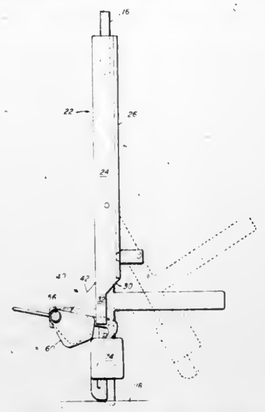
4,204,443
CUTTING METHOD AND APPARATUS
Albert McLuskie, 6 Newland Ave., Harrogate, North Yorkshire, England
Filed Feb. 23, 1978, Ser. No. 880,369
Claims priority, application United Kingdom, Mar. 4, 1977, 9191/77; Mar. 4, 1977, 9199/77
Int. Cl.² D06H *7/00*
U.S. Cl. 83—37 **17 Claims**



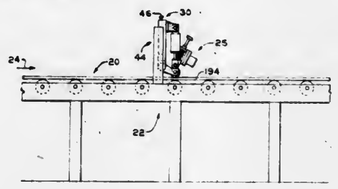
1. A method of cutting continuous lengths of material into shorter lengths comprising winding the material in turns about a cylindrical surface of a drum and while substantially preventing the turns from overriding one another positively forwarding the wound material in an axial direction along the drum to impinge against cutting blades projecting radially therefrom and spaced around the drum periphery, said blades having radially extending cutting edges.

4,204,444
BAND SAW GUARD DEVICE
John M. Kohr, 598 Western Ave., Magnolia, Mass. 01930
Filed Feb. 1, 1979, Ser. No. 8,380
Int. Cl.² B26D *7/22*
U.S. Cl. 83—56 **8 Claims**

1. In a machine having a band saw rotating adjacent to a movable table, the table adapted to carry blocks to be cut by the band saw the machine including a protective guard about the band saw, the band saw normally being exposed in a cutting zone, the zone comprising at least the distance from the movable table carrying the block to a location above the block being cut the improvement which comprises:
a device secured to the machine and adjacent the band saw, the device disposed in the cutting zone and adapted to shield the blade from contact except when a block to be cut is moved therethrough, the device comprising;
a fixed member secured to the machine adjacent the band saw, said fixed member having an upper end and a lower end, a counterbalanced locking assembly rotatably pinned to the lower end of the fixed member the locking assembly having a lower camming surface adapted to engage the block being cut;
a movable member secured to the fixed member and adapted for rotatable movement from a closed position adjacent the band saw to an open position, said movable member having an upper end and a lower end, means at the lower end of the movable member to engage the locking assembly of the fixed member, and means to maintain the movable member biased to a locked position whereby when the block engages the cammed surface the locking assembly disengages from the movable member and the movement of the block rotates the movable member from its closed position to an open position.

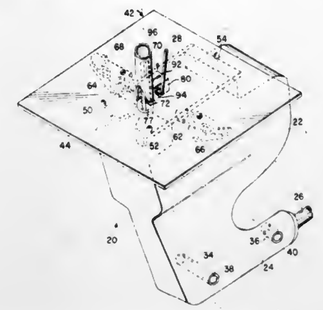


4,204,445
SCORING DEVICE HAVING A REFERENCING CARRIAGE
John A. Goldinger, Boiling Springs, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 801,712, May 31, 1977, Pat. No. 4,137,803.
This application Sep. 26, 1978, Ser. No. 945,934
Int. Cl.² B26D *3/08*
U.S. Cl. 83—880 **6 Claims**



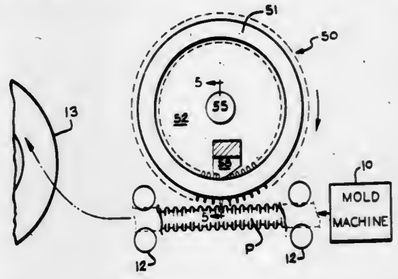
1. A method of scoring a sheet of refractory material, comprising the steps of:
advancing the sheet along a predetermined path under force adjusting means and scoring means;
biasing the force adjusting means under a first predetermined force in a predetermined direction to bias the scoring means against the sheet under a second predetermined force to score the sheet; while
pivoting the force adjusting means and scoring means about a common axis as the sheet moves thereunder to maintain a substantially constant biasing force on the scoring means as the sheet displaces or permits displacement of the scoring means and load adjusting means toward and away from the predetermined path.

4,204,446
WORK TABLE AND HOLD-DOWN ASSEMBLY FOR POWER HAND SAW
E. Stanley Knochel, 4202 Glenmore Ave., Baltimore, Md. 21206
Filed Nov. 6, 1978, Ser. No. 958,201
Int. Cl.² B27B *19/00*
U.S. Cl. 83—146 **8 Claims**



1. In combination with a power hand saw having a housing, a reciprocating saw blade mounted in the housing and a base supported by the housing, a work table and hold-down assembly for adapting the saw for bench use, said assembly including
(a) a work table having an opening therein through which said saw blade passes,
(b) a first means for securing said work table to the hand saw base,
(c) a work hold-down member, and
(d) a second means engaged with said work hold-down member and said work table for holding the former in spaced relation to the latter,
(e) said second means being swivelly mounted on said work table in surrounding relation to the saw blade, whereby said second means and said hold-down member engaged therewith may be swivelled around the saw blade to move the same out of the path of the work during the sawing operation.

4,204,447
APPARATUS FOR PERFORATING CORRUGATED PLASTIC PIPE
David W. Slaughterbeck, Rte. #7, Findlay, Ohio 45840
Filed Dec. 16, 1977, Ser. No. 861,424
Int. Cl.² B26F *1/08, 3/08*
U.S. Cl. 83—171 **13 Claims**



1. An apparatus for perforating the wall of an elongated tubular drain pipe of thermoplastic material having a predetermined melting temperature, said apparatus comprising, in combination, a plurality of spaced apart elongated punches having punching ends, means mounting each of said punches to reciprocate along an axis between a retracted position and an extended position, means for heating said punching ends to a

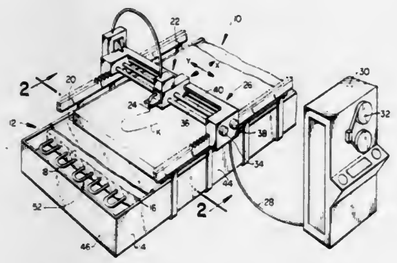
temperature substantially equal to but slightly below the predetermined melting temperature of such thermoplastic material, means for axially moving said drain pipe from a remote position to a punching position opposite the punching ends of said punches, and means for reciprocally moving said punches from said retracted position to said extended position, said reciprocal movement being along the axis of each of said punches with that axis being coincident with radial reference axes extending substantially perpendicular to the axis of said drain pipe when said pipe is in said punching position, whereby said reciprocal movement of said punches causes said heated punch to slightly soften and then punch through the wall of said drain pipe when moved from said retracted position to said extended position.

4,204,448

FLUID JET CUTTING APPARATUS HAVING SELF-HEALING BED

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Nov. 13, 1978, Ser. No. 960,116
Int. Cl.² B26F 3/00; D06H 7/00
U.S. Cl. 83—177 **14 Claims**



1. Fluid jet cutting apparatus comprising a material supporting bed including a tank having an open top, a substance contained in said tank and having an exposed upper surface, said subtance having a liquid state and a solid state, said upper surface in its solid state constituting a material supporting surface, and means contained within said tank for altering the physical state of said substance and maintaining in said solid state at least the portion of said substance defining said upper surface, a jet cutting tool having a nozzle for discharging a jet of cutting fluid, means supporting said cutting tool with said nozzle disposed above said upper surface to discharge said cutting fluid toward said upper surface, and means for moving said supporting means relative to said upper surface.

4,204,449

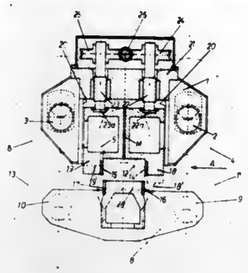
FLYING CROPPING SHEARS FOR HOT STRIP

Emil F. Kersting, Ratingen, and Rolf Schulte, Düsseldorf, both of Fed. Rep. of Germany, assignors to SACK GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 11, 1977, Ser. No. 840,968
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2645398
Int. Cl.² B26D 1/56
U.S. Cl. 83—328 **6 Claims**

1. In a parallel crank flying cropping shear for hot strip including upper and lower parallel connecting members, each of said connecting members including means synchronizing one connecting member with the other connecting member for synchronous counter-rotation of the connecting members, said parallel crank cropping shear further including the improvement comprising:

two pairs of cutters, one of each pair being mounted on the upper connecting member and the other of each pair being mounted on the lower connecting member, said synchronizing means including means for maintaining parallelism of said upper and lower cutters in a pair; and



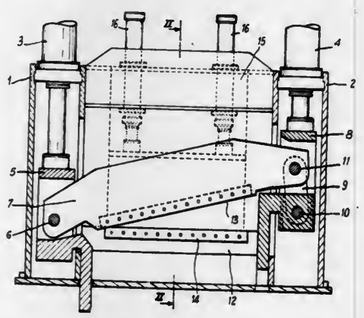
means for selectively bringing one of said pairs of cutters into a cutting position and for bringing the other of said pairs of cutters out of the cutting position.

4,204,450

SHEAR FOR LARGE-SIZED SCRAP

Emile Le Gueleunec, Pont-Scorff, France, assignor to Machines et Applications, France

Filed Jun. 21, 1978, Ser. No. 918,294
Claims priority, application France, Sep. 9, 1977, 77 27319
Int. Cl.² B26D 5/12
U.S. Cl. 83—461 **1 Claim**



1. A shear for cutting large-size plates and sheets of non-homogeneous scrap-irons comprising:

(a) a frame supporting a lower fixed blade,

(b) an upper movable blade adapted to engage said fixed blade.

(c) a carrier for said movable blade,

(d) a pair of vertical hydraulic-actuated cylinders, each having its movable portion guided for reciprocal vertical strokes,

(e) a transverse pivot pin connecting the movable portion of one vertical hydraulic-actuated cylinder of said pair to one lateral end of the carrier of the movable blade,

(f) a link having its lower end pivotally connected to the movable portion of the other vertical hydraulic-actuated cylinder of said pair and having its upper end pivotally connected to the other lateral end of said carrier of the upper movable blade, so that said link applies a traction force on the carrier of said movable blade when a lowering force is applied to the movable portion of the vertical hydraulic-actuated cylinder connected thereto,

(g) and upper presser cylinders adapted to hold the piece to be cut in position on said fixed blade.

4,204,451

CUTTING BLOCK EMPLOYING CUTTABLE RODS

Leonard K. Reichert, 16 Euston St., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 861,631, Dec. 19, 1977, Pat. No. 4,143,753. This application Feb. 24, 1978, Ser. No. 881,049
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.² B26D 7/20
U.S. Cl. 83—658 **13 Claims**



1. A cutting block comprising a plurality of planar members, each member having a thickness between planes small compared to its length,

said planar members being assembled to form an integral laminated structure,

said laminated structure having substantially planar, broad opposing surfaces, and

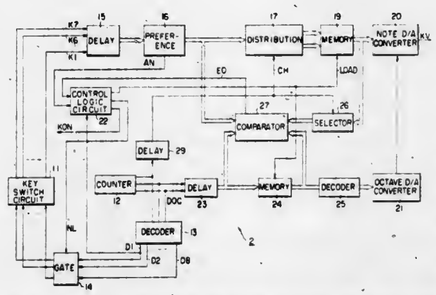
at least one nonmetallic rod member extending within said laminated structure, each rod member passing through at least two of said members, and each of said rod member being comprised of a material having a resistance to cutting below a predetermined die damage level.

4,204,452

SINGLE KEY PREFERENTIAL SELECTION DEVICE IN ELECTRONIC MUSICAL INSTRUMENT

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jun. 2, 1978, Ser. No. 911,710
Claims priority, application Japan, Jun. 8, 1977, 52-67593
Int. Cl.² G10H 1/00, 5/00
U.S. Cl. 84—1.01 **3 Claims**



1. A single key preferential selection device in an electronic musical instrument comprising:

(a) a key switch circuit having input terminals, output terminals and a number of key switches connected between said input terminals and said output terminals in a matrix fashion, the input terminals defining a plurality of key switch groups, and the output terminals for delivering key detection signals in parallel via closed ones of said key switches;

(b) a scanning signal generating circuit for sequentially and repetitively applying scanning signals to said plurality of input terminals in a predetermined order, the repetition taking place at a period of scanning sequence, whereby said key detection signals are delivered when the scanning signal is being applied to the output terminal to which any closed key switches are connected;

(c) a preference circuit for selectively delivering out a single key detection signal of the highest priority from among key detection signals according to a predetermined priority order upon receipt of said key detection signals;

(d) a control circuit which, when said key detection signal is delivered from said preference circuit first time in each said period, inhibits the application of said scanning signals during a period from the delivery of said key detection signal to the end of each said period of scanning sequence; and

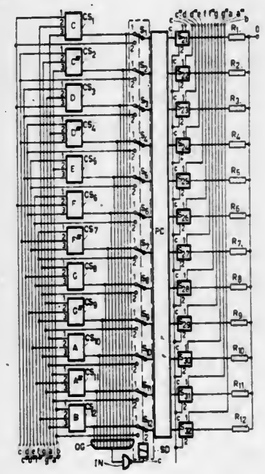
(e) circuit means connected to said scanning signal generating circuit and to said control circuit for producing a group indication signal indicating the group at which said single key detection signal is delivered.

4,204,453

DEVICE FOR AUTOMATIC TONAL ACCOMPANIMENT IN ELECTRONIC MUSICAL INSTRUMENTS

Ulrich Gross, Geldrop, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 862,006
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659291
Int. Cl.² G10H 1/02
U.S. Cl. 84—1.24 **8 Claims**



1. A device for automatic tonal accompaniment in electronic musical instruments equipped with a rhythm unit, the fundamental, the quint or another tone related to specific chords being held and/or the chord itself becoming available in a predetermined sequence in the selected rhythm, said device comprising chord sensor means responsive to at least one tonal key for producing at its output a first control signal in the presence of a chord, and switching means independent of the rhythm unit coupled to the associated chord sensor means for producing a second control signal identifying individual tones in the absence of a chord.

4,204,454

INSTRUCTIONAL APPARATUS FOR STRINGED INSTRUMENT

Clare F. Severn, 11400 Liberty St., Clio, Mich. 48420

Filed Sep. 20, 1978, Ser. No. 943,785
Int. Cl.² G09B 15/06; G10D 3/00
U.S. Cl. 84—315 **6 Claims**

1. An apparatus to aid the beginning student in learning the correct finger positions required for producing basic chords on the neck of a stringed instrument comprising:

a flat platform having a plurality of throughbores aligned in rows so that each throughbore in a row registers with a string across the neck of the instrument when the platform

is placed over the neck, each row being aligned along the neck to register with predetermined nodal points along the strings of the instrument;

means for mounting said platform to said instrument in position spaced above said neck,

a plurality of plungers, each adapted to be received through one of said throughbores so that depression of said



plunger engages and depresses the string registering with that one of said throughbores into contact with the neck;

a card having a face surface and a plurality of slots therethrough which are adapted to register with said rows of throughbores;

means for clamping said card to said platform; and

instrucion indicia provided on said face surface of said card to indicate desired depressions of said plungers.

4,204,455

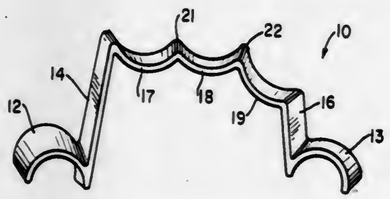
PLAYING AID FOR KEYBOARD INSTRUMENTS

William O. Harrington, 15 Walnut La., Manhasset, N.Y. 11030

Filed Oct. 27, 1978, Ser. No. 955,310

Int. Cl.² G09B 15/06

U.S. Cl. 84—468 **6 Claims**



1. A playing aid to be mounted on the hand for positioning the thumb and fingers to a predetermined posture for playing selected pitch intervals on a keyboard instrument, the playing aid comprising:

a pair of grips to engage the thumb and fourth finger, respectively, and being rigidly spaced apart so as to posture the thumb and fourth finger for depression thereby of keys on the keyboard corresponding to a selected interval of musical pitches, each of said grips having a portion overlying the upper surface of its corresponding thumb and finger and being interconnected by a raised bridging portion defining a surface between the thumb and fourth finger for engaging the undersurface of each of the remaining fingers of the hand to elevate said remaining fingers above the plane of said grips to posture them away from the keyboard.

4,204,456

PNEUMATIC EJECTOR FOR BOMB

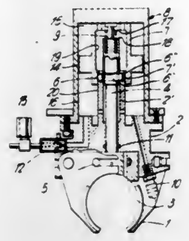
Frederick D. Ward, St-Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Oct. 2, 1978, Ser. No. 947,525

Claims priority, application Canada, Nov. 16, 1977, 290983

Int. Cl.² B64D 1/04; F41F 5/02

U.S. Cl. 89—1.5 G **7 Claims**



1. A mechanism for use in an ejector system comprising:

(a) a housing;

(b) piston means mounted for longitudinal movement in said housing and dividing the same into two chambers having a gas leakage space therebetween:

(c) means to inject a pressurized gas into said chambers;

(d) means to exhaust said gas from one of said chambers at a rate in excess of the rate of gas leakage between said chambers, to thereby effect longitudinal movement of said piston means through said one chamber;

(e) actuator means in said housing for movement between a first position within said housing and a second position extending therefrom in response to an operative pressure applied thereto by said piston means during said longitudinal movement thereof; and,

(f) lock means to releasably secure said actuator means in said first position in association with said piston means which is adjacent one end of said housing.

4,204,457

DEVICE FOR CONTROLLING HYDRAULIC MOTORS

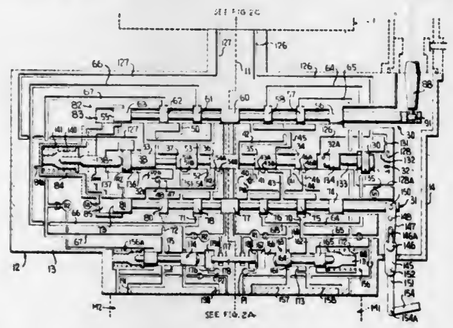
Luc P. Cyrot, Mission Viejo, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 755,935, Dec. 30, 1976, Pat. No. 4,138,088.

This application Jul. 10, 1978, Ser. No. 922,914

Int. Cl.² F15B 13/043, 20/00

U.S. Cl. 91—31 **13 Claims**



1. A device for controlling flow of fluid to and from a fluid motor, said device having a first conduit for supplying fluid under pressure, first and second master valves each positionable for directing fluid to and from said motor, a hydraulically operated command shaft connected to said first master valve

for positioning the same, mechanical means for positioning said second valve, a transfer valve movable between a first position in which it connects said first conduit with said first master valve and a second position in which it connects said first conduit to the second master valve, said transfer valve having a first fluid pressure responsive surface exposed to fluid in a second conduit for moving said transfer valve to said first position, said transfer valve having an intermediate position between said first and second positions, means for providing restricted flow of fluid through said transfer valve in said intermediate position, and means for moving said transfer valve to said second position when there is no fluid under pressure in said second conduit.

4,204,458

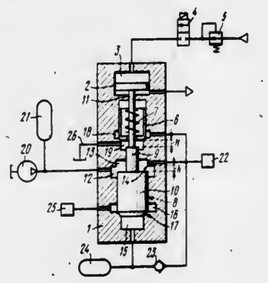
PULSATOR FOR HYDRAULIC SYSTEMS CONTROLLING ACTUATING MECHANISMS

Ivan V. Kononov, ulitsa Torpedo, 40, kv. 4; Mikhail P. Makushin, ulitsa Volgo-Donskaya, 16, kv. 41; Ivan E. Maslennikov, ulitsa Lizjukova, 43, kv. 57; Vladimir N. Platonov, ulitsa Lizjukova, 43, kv. 112, and Igor I. Silantiev, ulitsa Voroshilova, 44, kv. 98, all of Voronezh, U.S.S.R.

Filed Oct. 25, 1978, Ser. No. 954,572

Int. Cl.² F15B 21/12

U.S. Cl. 91—429 **1 Claim**



1. A pulsator for hydraulic systems controlling actuating mechanisms, connected via a non-return valve to an actuating mechanism, communicating with a pneumatic control system, with a high-pressure main, with a valve controlling resetting of a pusher, comprising a housing provided with cylindrical borings, the cylindrical borings of said housing accommodating coaxially disposed therein: a pusher made in the form of a piston with a rod; a delivery valve mounted with a clearance in respect to said rod of said pusher; a pneumatic piston; a cavity connected to a pneumatic control system; said pneumatic piston displacing in said cavity; an upper cavity of the pusher piston, disposed above said piston of said pusher and communicating with the high-pressure main; a lower cavity of the pusher piston, disposed under said piston of said pusher and communicating via a non-return valve with said actuating mechanism; a stem mechanically connected by its opposite ends respectively to said pneumatic piston and to the butt end of said rod of said pusher; said stem passing through a port made in said delivery valve; an auxiliary cavity connected to said actuating mechanism, being an extension of said upper cavity and defined by a leading edge serving for separating said cavities when it touches said piston of said pusher at the moment of its upwardly movement for opening said delivery valve; an annular cavity disposed coaxially above said lower cavity, separated from said lower cavity of said piston by a leading edge interacting with said pusher piston, and connected to the valve controlling resetting of said pusher.

4,204,459

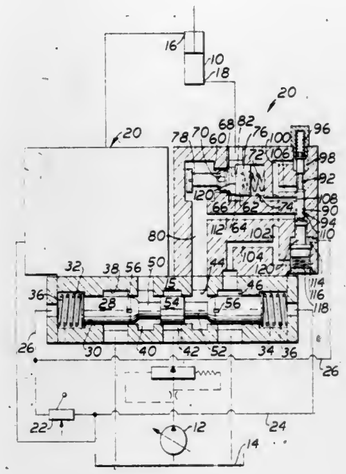
COMBINATION CHECK AND FLOW CONTROL VALVE FOR HYDRAULIC SYSTEMS

Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1978, Ser. No. 897,895

Int. Cl.² F15B 11/08, 13/042

U.S. Cl. 91—445 **8 Claims**



1. A hydraulic system comprising:

a hydraulic pump;

a hydraulic motor having at least one port;

a hydraulic reservoir;

a main spool valve interposed between said motor and said pump and reservoir and having a spool shiftable between positions (a) connecting said pump to said port, (b) connecting said reservoir to said port, and (c) blocking fluid flow to or from said port;

a single, combination check and flow control valve interposed between said main spool valve and said port and having a valve seat, a valve member seatable thereagainst, a spring biasing said valve member towards said seat, a pressure responsive surface adapted to act in contact with said spring, said pressure responsive surface being open to the pressure in said motor, and flow metering means for metering fluid flow through said combination valve when said valve member is close to said seat, said valve member being movable between (a) a position closed against said seat, (b) a variety of positions close to said seat for metering fluid flow, and (c) a position remote from said seat for allowing relatively free fluid flow;

sensing means for sensing a pressure differential across said main spool valve, said sensing means being acted upon by pressure between said main spool valve and said combination check and flow control valve and by pressure in a line leading to reservoir; and

means responsive to said sensing means for relieving the pressure at said pressure responsive surface.

4,204,460

ARRANGEMENT FOR INFLUENCING THE OPERATING QUANTITY OF A SERVO-MOTOR

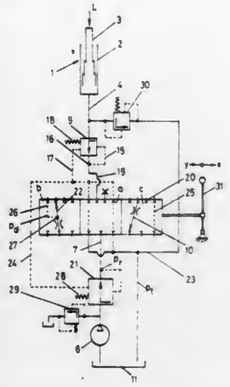
Hans S. Andersen, Augustenborg, and Preben Christiansen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 758,613, Jan. 12, 1977, abandoned. This application Mar. 3, 1978, Ser. No. 883,287

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1976, 2601999

Int. Cl.² F15B 11/08, 13/042

U.S. Cl. 91—447 1 Claim



1. A servomotor assembly comprising, a servomotor having a single inlet and outlet port and being loadable by an external force, pump means and tank means, reducing valve means connected to said servomotor port, said reducing valve means having pressure responsive setting means and desired valve spring means biasing said reducing valve means in an opening direction, said reducing valve means having first and second pressure chambers with pressure therein respectively opposing and assisting said spring means relative to said setting means, a pressure regulating valve connected to said pump means and having second desired valve spring means biasing said pressure regulating valve in a closing direction, said pressure regulating valve having first and second pressure responsive portions with pressures acting thereon respectively opposing and assisting said second desired valve spring means, switching valve means between said reducing valve means on the one hand and said pressure regulating valve and said tank on the other hand, said switching valve means having first and second throttles, said switching valve means being operable to retract said load by placing said first throttle in series with said reducing valve means and connecting said reducing valve second chamber to said tank, said switching valve means being alternately operable to advance said load by placing said second throttle in series with said reducing valve means and said pressure regulating valve and connecting said second chambers of both said reducing valve means and said pressure regulating valve to the output of said second throttle valve, said reducing valve first chamber being connected to a circuit point between said reducing valve means and said switching valve means for both operable states of said switching valve means.

4,204,461

HYDRAULIC CONTROL SYSTEM FOR ELECTRIC CIRCUIT-BREAKERS

Claude A. Gratzmuller, 97 Avenue Victor Hugo, 75016 Paris, France

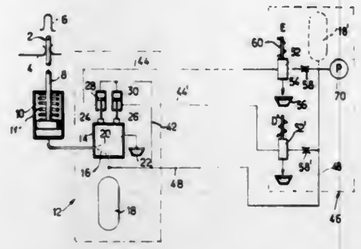
Filed Jan. 2, 1979, Ser. No. 632

Claims priority, application France, Jan. 4, 1978, 78 00106

Int. Cl.² F15B 13/043, 1/02

U.S. Cl. 91—454 12 Claims

1. A hydraulic control system for a ciruit-breaker or circuit-breaker module which can be remotely actuated from a control cubicle, said system being of the known type comprising a pressure source, a low-pressure container, a device for continuously restoring the circuit-breaker to the open position by elastic action, a hydraulic jack for closing the circuit-breaker in opposition to said elastic means and maintaining the breaker in the closed position when supplied under pressure, a control unit in the immediate proximity of said jack and comprising on the one hand at least one valve for supplying and draining the jack and on the other hand two pilot valves designated as a closure valve and a trip valve and each having a rest position and an active position in which said valves are transiently actuated, said supply and drain valves being switched by said two pilot valves respectively to the supply positions and to the



drain position, wherein each pilot valve aforesaid is controlled by a hydraulic device having on the one hand a first input connected to said pressure source and on the other hand a second input connected to a control line for bringing said pilot valve to the active position when the pressure within the control line is lower than the pressure of the source, wherein each control line aforesaid terminates in the control cubicle and is fitted within said control cubicle with a transiently operable drain electrovalve constituting respectively the closure control element and the trip control element of the circuit-breaker and wherein a continuous communication provided with flow-limiting devices is established between said pressure source and each control line aforesaid.

4,204,462

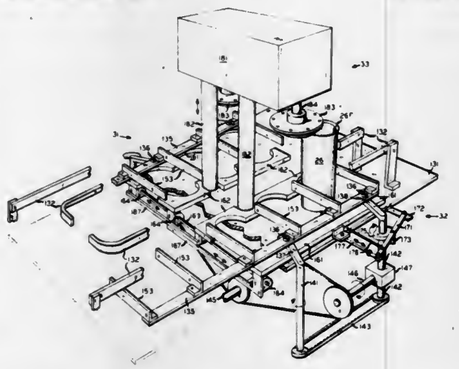
CONTAINER HANDLING AND FINISHING APPARATUS

Frank P. Richards, Prairie Village, Kans., and Raymond C. Taylor, Grandview, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 630,555, Nov. 10, 1975, Pat. No. 4,072,226. This application Nov. 21, 1977, Ser. No. 853,651

Int. Cl.² B31B 1/74

U.S. Cl. 93—36.5 R 16 Claims



1. Container finishing apparatus comprising:

at least one receiving station for receiving a supply of open-topped containers;

conveyor means associated with each said receiving station for incrementally advancing each container received at said associated receiving station in a generally straight path along a container line to at least one subsequent container finishing station;

container finishing means located at at least one of said subsequent container finishing stations for performing a finishing operation on a container located at said one of said subsequent container finishing stations so as to provide a finished container;

gripping means operatively related to each said conveyor means for grasping a container at said one of said subsequent container finishing stations and substantially eliminating movement of said thus grasped container at said one of said subsequent container finishing stations, each said gripping means comprising:

two generally parallel gripping members located respectively at each side of said respective container line, each said gripping member being adapted to mate with the other said gripping member on the opposite side of said respective container line to define jaw means for grasping a container at said one of said subsequent container finishing stations and substantially eliminating movement of said thus grasped container at said one of said subsequent container finishing stations;

first means operatively related to each said gripping member located at a first side of each container line for moving each gripping member operatively related thereto between a first withdrawn position whereby containers can be moved by said conveyor means operatively related thereto along the generally straight path of the container line adjacent thereto and a second gripping position whereby said jaw means grasps a container; and

second means operatively related to each said gripping member located at a second side of each container line for moving each gripping member operatively related thereto between a first withdrawn position whereby containers can be moved by said conveyor means operatively related thereto along the generally straight path of the container line adjacent thereto and a second gripping position whereby said jaw means grasps a container; and

discharge station means associated with each of said conveyor means for receiving finished containers from said conveyor means and appropriately disposing of said containers thus received.

4,204,463

STACK DESIGN

Jack Carty, 2 Model Ct., Rocky Point, N.Y. 11778

Filed Jul. 18, 1978, Ser. No. 925,835

Int. Cl.² F23L 17/02

U.S. Cl. 98—58 5 Claims

1. A chimney stack conveying hot gases comprising the following:

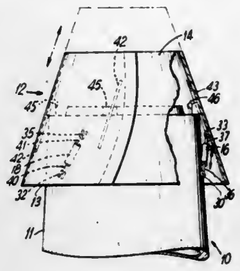
(a) An outer conical structural column member having a base portion and an upper portion wherein means are provided for introducing into said conical structural column member emitted gases that are to be conveyed into the atmosphere by said chimney stack;

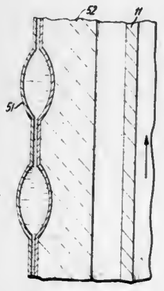
(b) A multi-leaf truncated cone member affixed to the upper portion of said outer conical structural column member wherein said multi-leaf truncated cone member having its configuration selectively altered so as to cause the opening at the top of said multi-leaf truncated cone member to adjust in size, wherein said multi-leaf truncated cone member comprises:

(i) A plurality of leaf members, curved and positioned in an overlapping configuration with each other so as to define a truncated cone, said leaf members having the edges of their respective overlapping surfaces slide across one another such that the truncated cone defined by said configuration being selectively altered as to its overall dimensions such that the diameter of the top opening of said truncated cone configuration can be selectively modified;

(ii) Means for selectively moving in unison each of said leaf members such that the respective overlapping surfaces of said leaf members slide across one another so as to selectively modify the multi-leaf truncated cone configuration;

(iii) Structural means for affixing said multi-leaf truncated cone member to the top of said outer conical structural





column member so as to permit the selective movement of each of said leaf members;

(c) Damping means structurally affixed at the base portion of said outer conical structural column member so as to provide a means for absorbing energy from the said outer conical structural column member; and

(d) Means for extracting thermal energy from the hot gaseous medium passing through the interior of said outer conical structural column member for utilization as a source of energy exterior to said chimney stack.

4,204,464

CONTINUOUS DESORPTION APPARATUS FOR AROMA FLAVOR CONCENTRATE

Rudolf G. K. Strobel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 846,000, Oct. 27, 1977, abandoned. This application Mar. 9, 1979, Ser. No. 18,975

Int. Cl.² A47J 31/30, 31/42

U.S. Cl. 99—286 5 Claims

1. In a desorption apparatus for separating flavor and aroma products from an aroma- and flavor-bearing substrate, wherein the improvement comprises:

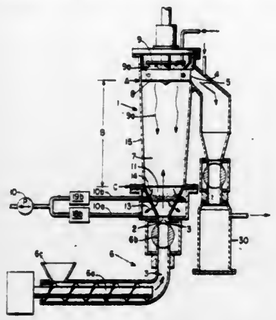
(a) an upright desorption column having a bottom inlet port for continuously receiving chilled fresh substrate and a top outlet port for discharging desorbed substrate;

(b) a feeding means connected to said bottom inlet port for force-feeding said fresh substrate at a predetermined rate upwardly through said upright desorption column via said ports and thereby forming a continuously flowing columnar bed of said substrate, and a means for discharging said

desorbed substrate at a predetermined rate through said top outlet port;

(c) wet steam means for applying a predetermined quanitity of wet steam, from the top of said column, downwardly and counter-currently to and through said flowing bed, making contact with said substrate and thereby de-aromatizing and desorbing flavors from said substrate;

(d) a vacuum means for holding said desorption column under vacuum, said vacuum means being in communication with said column above said bottom inlet port, said vacuum means creating a traverse force in said upwardly flowing columnar bed an thereby drawing down the wet



steam and further vaporizing said wet steam in said column, wherein a substantially stationary desorption zone is formed in said flowing columnar bed above said bottom inlet port by:

(1) precipitation of the wet steam as it passes into a cooling temperature gradient created and maintained by said fresh chilled substrate; and

(2) compaction of the substrate bed by said traverse force and said feeding means;

(e) cold trap means, in communication with said desorption zone and said vacuum means for separating and collecting:

(1) a vaporous aroma flavor bearing fraction, and

(2) a liquid soluble-solids fraction.

4,204,465

STEAM AND HOT LIQUID DISPENSING DEVICE

Helmut Knecht, Clark, N.J., assignor to Adams Industries, Inc., Union, N.J.

Filed Nov. 17, 1978, Ser. No. 961,612

Int. Cl.² A47J *31/54*

U.S. Cl. 99—293 **16 Claims**

1. A steam and hot water dispensing device comprising;

a sealable container for holding liquid and steam under pressure;

heating means to heat said sealable container;

a common tube for liquid and steam disposed at least partially within said sealable container;

liquid inlet means communicating with said common tube,

liquid outlet means communicating with said common tube and extending from said sealable container to carry liquid discharged from said sealable container;

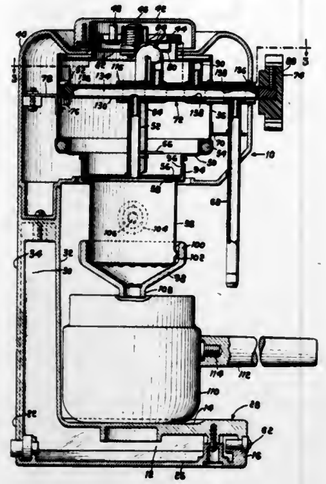
steam inlet means communicating with said common tube;

steam outlet means communicating with said common tube and extending from said sealable container to carry steam discharged from said sealable container;

a transfer tube disposed at least partially within said common tube;

passage means in said transfer tube to selectively and alternatively communicate said common tube steam inlet means with said steam outlet means and said liquid inlet means and said liquid outlet means; and

positioning means to selectively position said transfer tube so that said transfer tube passage means will selectively communicate said liquid inlet means with said liquid outlet



means and said steam inlet means with said steam outlet means.

4,204,466

PLANT FOR THE AUTOMATIC PRODUCTION OF ARABIC FLAT BREAD

Walter Schnee, Villingen, Fed. Rep. of Germany, assignor to Fr. Winkler KG, Villingen, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,296

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752464

Int. Cl.² A21B *7/00*

U.S. Cl. 99—443 C **21 Claims**



1. A plant for the automatic production of Arabic flat bread, comprising a dough portioning machine, a kneading arrangement for forming ball-like dough pieces, a prefermentation housing, at least a rolling device for making substantially flat dough pieces, a final fermentation housing comprising carriers for supporting said dough pieces, and a baking oven, characterized in that the carriers are fermentation trays having an even surface and a continuous border, said fermentation trays being filled to the brim with bran and being suspended to freely swing in two directions from endless conveyor means that move through said fermentation housing in a serpentine path, and further comprising transfer belt means and guide means,

said transfer belt means comprising a substantially tongue-shaped tip for reaching under the dough pieces lying on said bran in said fermentation trays, said fermentation trays being tilted toward said tongue-shaped tip at least in part by said guide means.

4,204,467

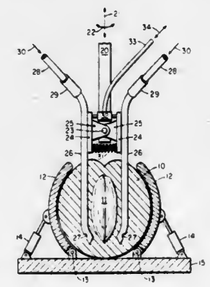
DE-STONING AND SIMULTANEOUSLY FILLING A DRUPE

Lester G. Peters, Box 407, Newburyport, Mass. 01950

Filed Aug. 4, 1978, Ser. No. 931,136

Int. Cl.² A23N *4/12*; A47J *25/00*

U.S. Cl. 99—494 **2 Claims**



1. A device adapted to remove the stone of a drupe while simultaneously injecting a filling into the stone cavity, comprising:

(a) a claw member comprising a shaft and at least three prongs pivotedly mounted to an end of said shaft, said prongs having an open position and a closed position;

(b) said prongs being shaped for the penetration of said drupe and being positioned in the open position to fit about the stone of said drupe and in the closed position to grip said stone for extraction;

(c) at least one of said prongs having a passageway permitting the passage of a flowable filling therethrough, one end of said passageway opening near the end of said one prong that enters into said cavity to the bottom portion thereof when said prongs are in a position to effect extraction of said stone, and the other end of said passageway being adapted to receive a pressurized supply of said flowable filling;

(d) means for positioning said drupe adjacent said claw member with said stone oriented for gripping by said prongs;

(e) means for effecting a linear reciprocating motion of said claw member to and from said drupe with entry of said prongs into said drupe about the stone thereof on the stroke to said drupe and extraction of said stone on the stroke from said drupe;

(f) means for effecting pivotal movement of said prongs from said open to said closed position during extraction of said stone and back to said open position when said prongs are removed from said drupe;

(g) means for injecting a pre-determined amount of said filling through said one prong during the extraction of said stone.

4,204,468

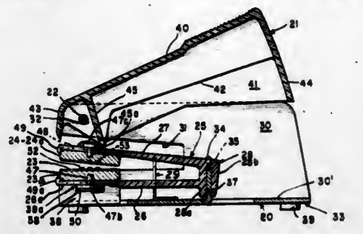
EMBOSSING PRESS

Paul H. Harrison, Santa Barbara, Calif., assignor to M & R Seal Press Co., Inc., Roselle, N.J.

Continuation of Ser. No. 747,056, Dec. 3, 1976, abandoned, which is a continuation of Ser. No. 524,324, Nov. 15, 1974, abandoned. This application Jul. 20, 1978, Ser. No. 926,340

Int. Cl.² A44B *5/00*

U.S. Cl. 101—3 SP **23 Claims**



1. An embossing press for use on embossable sheet material and having an embossing or forward end, comprising

(a) a unitary base frame having as integral parts thereof (i) a floor having integral front and rear portions, said front portion including

(b) means for supporting a die-holder thereon at said embossing end and, (ii) upwardly extending from said floor at a position rearward of said embossing end and thence forwardly to a position over said embossing end a lever-supporting portion, provided with means for pivotally supporting thereon the anchoring end of an operating lever;

(c) an operating lever having an anchoring end and being pivotally supported at said end,

(d) a lower die-holder having a support back supported thereon and in stationary position on said die-holder supporting means therefor,

(e) a spring arm having a free end near said forward end and a fixed end, said spring arm

(i) serving to support at its free end an upper die-holder also having a support back and spaced above said lower die-holder and in a position to enable said upper die-holder to be moved with that free end toward and away from said lower die-holder, whereby by such movement of the upper die-holder toward said lower die-holder their respective opposed faces are brought into mating registry during embossing operation, and

(ii) having anchoring means as an unitarily integral part thereof at the fixed end;

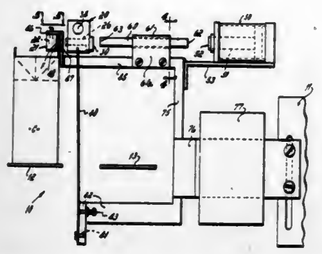
(f) said frame floor having as a unitarily integral part thereof and extending directly upwardly therefrom a spring arm-anchoring means holding part, to which holding part there is fixedly yet removably anchored said spring arm-anchoring means;

(g) said spring-arm anchoring means being so designed as to friction-fittingly fixedly yet removably anchor the spring arm to said anchoring means holding part; and

(h) said operating lever having a pressure-transmitting member depending therefrom at said embossing end and rearward of said pivotal support means, said member being so positioned to be brought into pressure-transmitting contact with the top surface of said upper die-holder, whereby manual downward force applied to the top surface of said operating lever at a locus behind said member will cause said lever to pivot on said pivotal support means impelling said upper die-holder to move downwardly toward said lower die-holder thereby effecting mating engagement between their opposed faces for embossing sheet material placed between said faces; said spring arm being flat and bifurcated at its free end and thus being provided with adjacent spaced apart spring fingers bounding an open-ended longitudinal slot as means for supporting said upper die-holder, said upper die-holder having on its top securing means enabling the die-holder

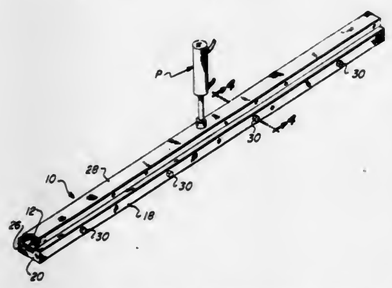
to be fixedly but removably engaged by the bifurcated end of the spring arm.

4,204,469
CARTON BRANDER
John A. Johnson, Rte. 1, Box 614-C, New Richmond, Ohio 45157
Filed Jun. 26, 1978, Ser. No. 918,926
Int. Cl.[2] B44B *7/00*; B65B *61/26*
U.S. Cl. 101—9 28 Claims



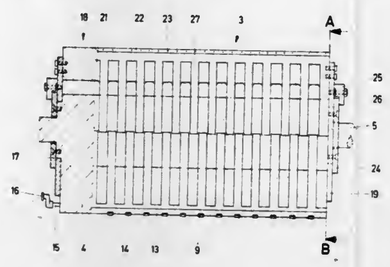
1. In brander apparatus comprising a heated dater block means and anvil means, one of which is movably mounted with respect to the other, actuating means for moving one of said dater block means and said anvil means toward the other to brand a carton flap therebetween, said actuating means comprising:
a cylinder having a selectively extensible piston,
a slidably mounted rod extending between said cylinder and one of said dater block means and said anvil means,
said piston and said rod having respective axes in operative alignment with each other,
said rod having a forward end and a rearward end, said forward end located proximate to but spaced from one of said dater block means and said anvil means, and said rearward end disposed proximate but spaced from said piston,
said piston, when extended, engaging said rod at said rearward end, and
said rod at said forward end engaging one of said dater block means and said anvil means for moving it toward the other when said piston is extended and for engaging it with a carton flap.

4,204,470
INDICIA FORMING MULTIPLE DIE
James W. Craighead, 501 Dexter St., Denver, Colo. 80220
Filed Aug. 31, 1978, Ser. No. 938,392
Int. Cl.[2] B44B *5/02*
U.S. Cl. 101—28 10 Claims



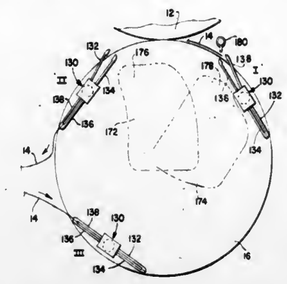
1. A device for receiving a pressurizing tool and forming decorative indicia on malleable material, which is positioned between said device and the pressurizing tool, said device comprising;
a first die having transverse openings and a surface with a first preselected pattern for forming a portion of the decorative indicia on the malleable material;
a recess within a portion of said surface for receiving a second die;
a second die receivable within said recess of said first die and having a surface with a second preselected pattern completely contained within said recess, wherein said second pattern lies in substantially the same plane as said first pattern to simultaneously deform the malleable material and form decorative indicia thereon upon application of the pressurized tool;
a slot formed in said first die only, said slot being generally perpendicular to said transverse openings while being vertically adjacent said recess to provide resilience to said first die and facilitate the insertion and releasing of said second die within said recess; and
fastening means positioned in said transverse openings and said slot to hold said second die in said first die and position said second preselected pattern adjacent said first preselected pattern to minimize decorative flaws in the deformed material.

4,204,471
PRINTING MACHINE TRANSFER DRUM ADJUSTABLE TO VARIABLE SHEET LENGTHS
Willi Becker, Bammental, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany
Filed Jul. 18, 1977, Ser. No. 816,687
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632243
Int. Cl.[2] B41F *1/30*
U.S. Cl. 101—410 9 Claims



1. Printing machine sheet transfer drum adjustable to variable sheet lengths, the transfer drum being formed with transverse drum channels and having sheet carriers forming respective meshing comb-like structures adjustable relative to one another, and devices for gripping the leading and trailing edges of a sheet, the gripping devices being disposed in the drum channels and secured to the sheet carriers, the gripping devices having at least one continuous sheet-supporting rail extending from side to side of the sheet transfer drum, comprising a rigid main drum body formed of one piece with one of the comb-like structures and having at most two separable parts including the device for gripping the leading edge of the sheet, and a hollow, substantially cylindrical body partly surrounding said main drum body in circumferential direction thereof and being supported at most at two bearing locations on said main drum body, said hollow, substantially cylindrical body having a one-piece member formed with a surface for supporting a sheet over substantially the entire width thereof, the device for gripping the trailing edge of the sheet being disposed on said hollow body and forming therewith a rotatable sheet carrier unit.

4,204,472
DUPLEXING COPYING SYSTEM
Lawrence A. Borneman, Lombard, Ill., assignor to A. B. Dick Company, Chicago, Ill.
Continuation-in-part of Ser. No. 826,847, Aug. 22, 1977. This application Aug. 7, 1978, Ser. No. 931,522
Int. Cl.[2] B41F *7/06, 21/04, 21/08*
U.S. Cl. 101—426 19 Claims



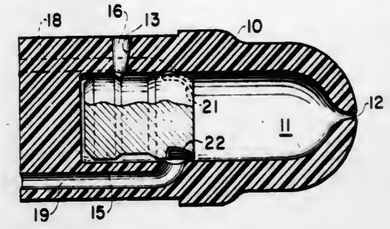
1. In a duplicating system wherein images are transferred from image carrying surfaces to copy sheets supported on a carrier, drive means for the carrier, means for feeding the copy sheets to the carrier, gripper means associated with the carrier for gripping the sheets to hold the sheets on the carrier, said gripper means comprising first and second grippers located in spaced relationship on the carrier for holding sheets on the carrier, said first gripper including means for holding the leading edge of each sheet fed to the carrier, and said second gripper including means for holding the trailing edge of each sheet fed to the carrier, the improvement wherein said second gripper comprises two separate sheet holding means independently operable relative to each other, a support mounting the respective holding means of the second gripper in oppositely directed positions, means operating one holding means of the second gripper for gripping the trailing edge of a sheet held by said first gripper, means connected to said support for inverting said second gripper after gripping of the trailing edge by said one holding means of the second gripper, and means operating the other holding means of the second gripper for gripping the trailing edge of the next sheet fed to the carrier.

4,204,473
GAS GENERATING CHARGE FOR OPEN CHAMBER GAS POWERED TOOL
David Dardick, 211 E. 70th St., New York, N.Y. 10021
Continuation-in-part of Ser. No. 738,953, Nov. 4, 1976, which is a continuation-in-part of Ser. No. 570,909, Apr. 23, 1975, Pat. No. 4,026,212, which is a continuation of Ser. No. 359,754, May 14, 1973, abandoned. This application May 17, 1978, Ser. No. 906,784
Int. Cl.[2] F42B *3/04*
U.S. Cl. 102—39 11 Claims



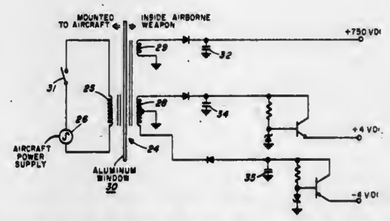
1. An open chamber gas generating charge for an open chamber gas powered tool, comprising:
a plastic jacket of noncircular cross section containing an opening for propellant extending longitudinally throughout and through the ends of the jacket,
a nitrocellulose propellant disposed within said opening, said nitrocellulose being characterized as being substantially in its naturally occuring form, substantially free of mixture with material other than that normally combined with nitrocellulose in nature, and in noncompressed expanded form within said jacket, said nitrocellulose comprised of fibres of wood pulp or cotton linters of random lengths in the range of 0.004 to 0.05 inches and at nitration level in the range of 10 to 15%.

4,204,474
CALORIC INCAPACITATING LOW-LETHALITY PROJECTILE
William R. Mizelle, 1330 New Hampshire Ave., NW., Washington, D.C. 20036
Continuation-in-part of Ser. No. 767,457, Feb. 10, 1977, Pat. No. 4,091,736. This application May 30, 1978, Ser. No. 910,440
Int. Cl.[2] F42B *11/36*
U.S. Cl. 102—92.7 9 Claims



1. A low-lethality projectile whereby a human or animal target within a selected range is incapacitated, notwithstanding the projectile's having a weight and mass light enough to make it unlikely to inflict a serious penetrating or blunt-trauma wound, having in a chamber of suitable form within the projectile means for admitting and trapping a portion of the hot powdergas of cartridge firing; and means for impinging said contained hot powdergas upon the intended target.

4,204,475
ARMING-SAFING SYSTEM FOR AIRBORNE WEAPONS
Ronald J. Fowler, Columbus, Ohio, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 29, 1969, Ser. No. 823,243
Int. Cl.[2] F42C *15/12, 15/40, 13/04, 11/04*
U.S. Cl. 102—262 6 Claims



1. A system for arming an airborne weapon in time delayed relation with respect to the release of the weapon from an aircraft in flight, the aircraft being provided with a mechanically modulated source of gamma radiation for irradiating a predetermined volume of space below the aircraft, comprising:
means for detecting gamma radiation;
means for comparing the magnitude of the detected radiation with a predetermined value and for generating a pulse each time the radiation exceeds that value;
a low pass filter for receiving the pulses generated by said comparing means; and
means operable to initiate the arming sequence for said weapon when the frequency of the filter output equals the frequency at which the radiation source is modulated.

4,204,476

MOBILE DEVICE FOR RENEWAL OF RAILWAY TRACKS

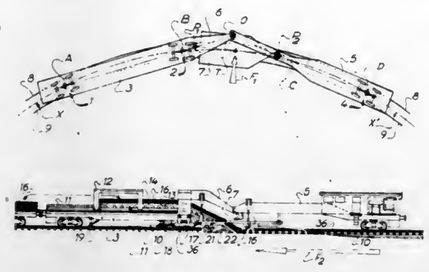
Ivo Cicin-Sain, Bussigny-pres-Lausanne, Switzerland, assignor to Matisa Materiel Industriel S.A., Lausanne, Switzerland

Filed Apr. 12, 1978, Ser. No. 896,015

Claims priority, application Switzerland, Apr. 22, 1977, 4997/77

Int. Cl.² E01B *29/05*

U.S. Cl. 104—2 **9 Claims**



1. A mobile device for the renewal of railway tracks comprising a work tool carrying chassis adapted to ensure at least the replacement of old ties by new ones, and at least two wagons, joined together and mounted on rolling supports, at least one of which wagons is adapted for transport and the handling of material necessary for the said replacement, and one of the two wagons rolls and advances on new reconstituted track, in which the work tool carrying chassis is interposed between the rolling supports of the wagons in the work zone, and is suspended from at least one connecting member of the said two wagons, and the geometrical disposition of the supports and of the joint of the two wagons is such that the longitudinal axis of the tool carrying chassis in the plane of the railway track is automatically tangential with the longitudinal axis of the track, one of the two wagons comprising two spaced apart rolling supports and an overhanging extension over the work zone in the form of a bracket terminating in the joint, and the other wagon is directly connected at one end to the said joint and comprises a single rolling support spaced from the said joint, and the work tool carrying chassis is suspended and joined at one end to the overhanging bracket of the wagon having two spaced apart rolling supports and at the other end to the wagon having the single rolling support, between the joint and the said single rolling support of the wagon.

4,204,477

CARRIAGE GUIDANCE SYSTEM

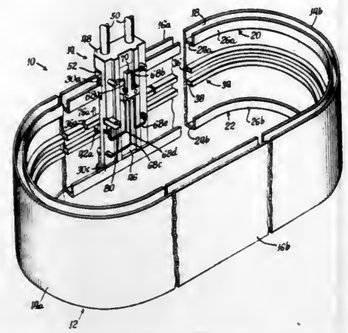
John H. Holstein, 5304 N. Colonial - No. 102, Fresno, Calif. 93704, assignor to John H. Holstein, Fresno, Calif.

Filed Aug. 28, 1978, Ser. No. 937,195

Int. Cl.² E01B *25/22*

U.S. Cl. 104—106 **13 Claims**

1. A carriage guidance system comprising, in combination, track means defining an endless guide path having upper and lower parallel track-ways and an intermediate track-way parallel to said upper and lower track-ways, and carriage means including a carriage plate, three guide rollers mounted on said carriage plate for rotation about subtantially vertical axes, two of said guide rollers having parallel spaced axes and having guiding cooperation with one of said upper and lower track-ways, and the other of said three guide rollers having guiding cooperation with the other of said upper and lower track-ways, at least two support rollers mounted on said carriage plate for rotation about laterally spaced parallel horizontal axes, said support rollers being adapted for cooperation with said intermediate track-way so as to be movable therealong while vertically supporting said carriage plate, said intermediate track-way being defined by upper and lower plates normally disposed to maintain said support rollers in captured



relation therebetween and having portions movable relative to each other so as to permit vertical movement of said carriage plate relative to said track means to facilitate removal of said carriage plate from said track means.

4,204,478

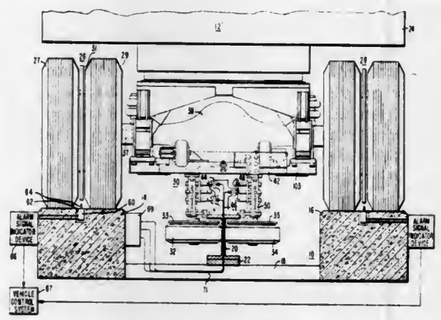
TRANSPORTATION VEHICLE FLAT TIRE SAFETY APPARATUS

William E. Schmitz, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 18, 1978, Ser. No. 897,326

Int. Cl.² B61B *15/00*

U.S. Cl. 104—247 **5 Claims**



1. In protection apparatus for a mass transit vehicle having support wheels operative with a roadway including spaced track surfaces and a vehicle restraining guide beam located between said track surfaces, said vehicle including at least one set of support wheels for traveling along one of said track surfaces and having guide wheels operative with said guide beam, the combination of:

vehicle support means positioned between said one set of support wheels to travel along a movement path determined by said guide wheels, said vehicle support means normally being spaced a predetermined distance above the track surface along which said one set of support wheels travels,

wheel condition sensing means coupled with said one track surface and positioned to extend above said one track surface in alignment with the movement path of the vehicle support means for determining the condition of said support wheels by sensing the vertical position of the vehicle support means traveling along said roadway track surface, and

signal providing means coupled with said sensing means and responsive to the vertical position of said vehicle support means to provide an alarm signal when the vehicle support means moves in position below said predetermined distance to come in contact with said wheel condition sensing means.

4,204,479

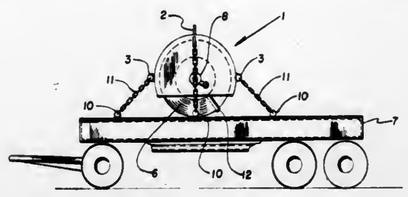
COIL CONTAINMENT COVER

Gilbert L. Rosa, 399 Prospect Cir., Lower Burrell, Pa. 15068

Filed Mar. 30, 1978, Ser. No. 891,555

Int. Cl.² B60P *7/02, 7/12*; B61D *45/00*

U.S. Cl. 206—397 **6 Claims**



1. A removable cover containment means adapted to be supported by a coil of sheet steel, the coil having a central opening therethrough, said cover and containment means comprising:

(a) a rigid cover member adapted in size and shape to fit over and to substantially enclose said coil when said coil is positioned on its peripheral surface;

(b) means extending lengthwise through the center of the coil and rigidly connecting opposed end members of the coil mounted cover by which the cover is restrained against removal in a radial direction from the supporting coil.

4,204,480

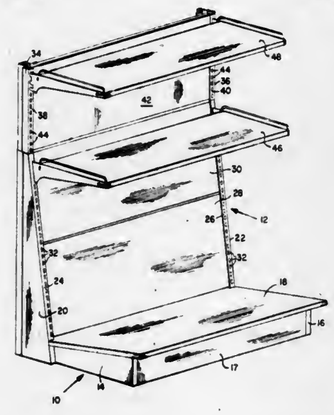
SHELVING SYSTEM

James L. Hanna, Athens, Ga., assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 600,412, Jul. 30, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,669

Int. Cl.³ A47B *57/16*

U.S. Cl. 108—108 **9 Claims**



1. A system of shelving wherein identical shelves may be mounted interchangeably on supporting members having surfaces disposed at different angles relative to the horizontal, said system comprising:

a first support having a planar front surface disposed at a first angle with respect to the horizontal, and having a series of uniformly spaced slots extending in the vertical direction on said surface,

a second support having a planar front surface disposed at a second angle with respect to the horizontal, said second angle being different from said first angle, and having a second series of uniformly spaced slots extending in the vertical direction on said surface, and

first and second substantially identical shelves, each having an article-supporting surface and at least two tabs one located above the other and both adapted to extend into slots in said supports, the uppermost of said tabs having means for engaging the rear surfaces of said supports, means defining a first surface adapted to engage the planar front surface of one of the supports, and means, on the other of said tabs, defining a second surface adapted to engage the planar front surface of the other of said supports, and

said first shelf being supported on said first support with its said uppermost tab extending into a slot of said first support and with its said first surface engaged with the planar front surface of said first support,

said second shelf being supported on said second support with its uppermost tab extending into a slot of said second support and with its said second surface engaged with the planar front surface of said second support, and

said first and second surfaces on each shelf being so related to each other and to the front surfaces of said first and second supports that, with said shelves so mounted respectively on said first and second supports, the article-supporting surface of the first shelf is substantially parallel to that of the second shelf.

4,204,481

ANTI-WEAR ADDITIVES IN DIESEL FUELS

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 2, 1979, Ser. No. 8,474

Int. Cl.² C10L *1/18, 1/22*

U.S. Cl. 123—1 A **42 Claims**

1. As a new composition of matter, an anti-wear compression ignition fuel for use in diesel engines comprising (1) a monohydroxy alkanol having from 1 to 5 carbon atoms, and (2) a wear inhibiting amount of an additive selected from the group consisting of fatty acid amides of diethanolamine, fatty acid esters of diethanolamine and mixtures thereof.

4,204,482

COMPARATOR CIRCUIT ADAPTED FOR USE IN A SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO OF AN INTERNAL COMBUSTION ENGINE

Toshiro Harada, Okazaki; Tadayuki Kubo, Toyota; Kazusato Kasuya, Kariya, and Yukihiro Watanabe, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

Filed Apr. 21, 1978, Ser. No. 898,987

Claims priority, application Japan, Feb. 9, 1978, 53-12940

Int. Cl.² F02M *51/00, 7/12*

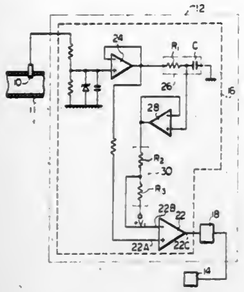
U.S. Cl. 123—32 EE **3 Claims**

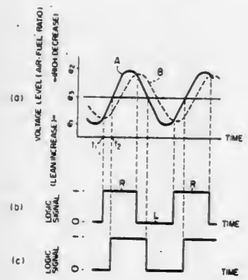
1. A method of producing, in an internal combustion engine provided with an exhaust line, logic signals "0" and "1", one of which indicates a small air-fuel ratio of the exhaust gas and the other indicates a large air-fuel ratio of the exhaust gas, said logic signals being utilized for operating an air-fuel ratio control system of the engine, said method comprising the steps of:

generating, by utilizing an air-fuel ratio sensor attached to the exhaust line, a first analogous electrical signal, the voltage level of which is periodically changed in accordance with the air-fuel ratio of the exhaust gas;

generating, by utilizing a phase control unit receiving the first analogous signal, a second analogous electrical signal, the second analogous signal having a delayed phase when compared with the phase of the first analogous signal;

comparing the voltage level of the first analogous signal with that of the second analogous electrical signal for generating one of the logic signals when the voltage level of the first analogous signal is higher than that of the second analogous signal and for generating the other logic





signal when the voltage level of the first analogous signal is lower than that of the second analogous signal; and

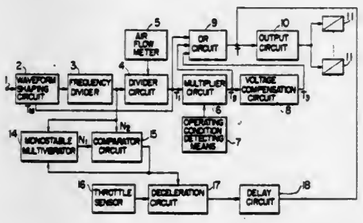
introducing the logic signals into the air-fuel ratio control system, one of the logic signals being adapted for increasing the air-fuel ratio, the other logic signal being adapted for decreasing the air-fuel ratio.

4,204,483

FUEL CUT-OFF APPARATUS FOR ELECTRONICALLY-CONTROLLED FUEL INJECTION SYSTEMS

Susumu Harada, Oobu; Toshio Kondo, Anjo, and Tomomi Eino, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 10, 1978, Ser. No. 923,306
Claims priority, application Japan, Jul. 15, 1977, 52-85465
Int. Cl.² F02B *3/00*
U.S. Cl. 123—32 EL **3 Claims**



1. In an electronically-controlled fuel injection system for a combustion engine, said fuel injection system having first means responsive to the operating condition of said combustion engine and effective to produce electric condition signals indicative of said operating conditions, second means responsive to said electric condition signals and effective to produce an electric pulse signal having a time interval dependent on said operating conditions, and third means responsive to said electric pulse signal and effective to supply said combustion engine with pressurized fuel during said time interval, a fuel cut-off apparatus comprising:

deceleration detecting means responsive to the deceleration of said combustion engine for producing an electric deceleration signal indicative of said deceleration;

delay means responsive to said electric deceleration signal for producing an electric delay signal delayed in time relative to said electric deceleration signal, the interval of delay being sufficient to allow said second means to produce said electric pulse at least once; and

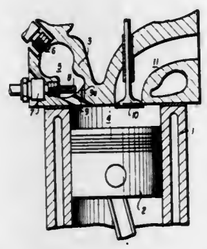
preventing means responsive to said electric delay signal for preventing the fuel supply operation of said third means in synchronized relation with said electric delay signal.

4,204,484

AUXILIARY COMBUSTION CHAMBER OF INTERNAL COMBUSTION ENGINE

Nobuhiro Miura, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 695,111, Jun. 11, 1976, abandoned.
This application Sep. 29, 1978, Ser. No. 947,096
Claims priority, application Japan, Jun. 24, 1975, 50-76439; Mar. 3, 1976, 51-22213
Int. Cl.² F02B *19/10*
U.S. Cl. 123—32 SP **14 Claims**



1. An internal combustion engine comprising:

a cylinder;

a piston reciprocably disposed in said cylinder;

a cylinder head covering said cylinder;

a main combustion chamber defined by said cylinder, said piston, and said cylinder head;

means defining an auxiliary combustion chamber;

a passage directly intercommunicating said main combustion chamber and said auxiliary combustion chamber;

said means comprising a projection, intermediate the end thereof, projecting inwardly, extending continuously around substantially the entire periphery thereof dividing said auxiliary combustion chamber into a first sub-chamber adjacent one end thereof and a second sub-chamber adjacent the other end thereof, and defining a recess in said first sub-chamber beneath said projection;

a spark plug having electrodes positioned in said recess;

a fuel injection nozzle situated in said second subchamber so that fuel injected therefrom is directed in a direction directly toward said recess; and

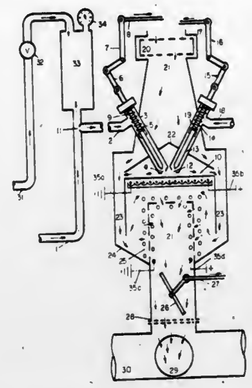
said passage opens into a portion of said first subchamber spaced from said recess.

4,204,485

FUEL VAPORIZING DEVICES FOR INTERNAL COMBUSTION ENGINES

John Perepolkin, Box 3126, Castlegar, British Columbia, Canada (V1N 3H4)

Filed Jul. 20, 1976, Ser. No. 706,955
Int. Cl.² F02B *43/00, 43/08*
U.S. Cl. 123—34 A **9 Claims**



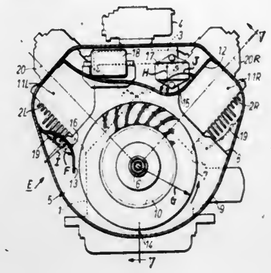
1. A fuel vaporizing device for converting liquid fuel from its liquid state into an atomized consistency of gaseous fuel vapor, said gaseous fuel vapor being for use in an internal combustion engine having an intake manifold, comprising: a heated liquid fuel vaporizing metal plate; a liquid fuel delivery control spray valve, said spray valve having spraying means incorporated therein in its lower extremity by a conventional needle valve, said needle valve having a spring loaded endwise slideable needle, said needle having its lower end tapered, said taper providing means to normally open or close a taper shaped aperture, said aperture being the discharge outlet of the said needle valve, the upper end of said needle having connectable means whereby linkages may be attached providing means for control of operation of said needle valve, said spraying means of said spray valve being positioned in optimally close proximity to the upper surface of said heated fuel vaporizing metal plate providing a diffused liquid fuel spray to issue therefrom under pressure, said liquid fuel spray being directed to impinge upon said upper surface of said heated fuel vaporizing metal plate thereby instantaneously converting said liquid fuel spray into gaseous fuel vapor, said pressure being provided by functioning action of conventionally equipped automotive fuel pump; a water delivery control spray valve, said water spray valve having spraying means incorporated therein in its lower extremity in similar fashion as is the physical design and structure of the liquid fuel delivery control spray valve described above, the only difference between the said water delivery control spray valve and the said liquid fuel delivery control spray valve being in the type of liquid each spray valve is intended to deliver in spray form to the designated destination said destination being the upper surface of said heated liquid fuel vaporizing metal plate, said water delivery control spray valve functioning to deliver water under pressure in said diffused spray form said spray directed to impinge upon said upper surface of said heated fuel vaporizing metal plate thereby instantaneously converting said diffused water spray into steam, said pressure being provided by the function of a suitable auxilliary water pump, an intake air deflector situated immediately above said fuel vaporizing metal plate in the pathway of intake air; and a heated 'fuel vapor/steam/air' mixture atomizing screen, said screen being situated in down stream sequence below the said heated fuel vaporizing metal plate.

4,204,486

COOLING SYSTEM FOR V-SHAPED, FORCED AIR-COOLED ENGINE

Itsusuke Nakagawa, and Tokuichi Aoyama, both of Sakaishi, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Apr. 5, 1978, Ser. No. 893,691
Claims priority, application Japan, Jun. 30, 1977, 52/87426[U]
Int. Cl.² F02F *1/34*
U.S. Cl. 123—41.6 **5 Claims**



1. A cooling system for a V-shaped, forced air-cooled engine, said engine including a crankcase, and first and second cylinders mounted in V form on top of the opposite sides of said crankcase, said cooling system including:

a radial flow cooling fan mounted on the front of said crankcase, and driven by said engine to rotate in a direction from said second cylinder toward said first cylinder;

a fan housing covering said fan and at least the front portions of said cylinders, said housing including first and second cooling air passageways arranged to pass cooling air from said fan to said first and second cylinders, respectively;

means within said housing defining a first threshold wall area at the downstream side of the first passageway, and a second threshold wall area at the downstream side of said second passageway;

said first passageway having a first threshold point disposed on said first threshold wall area generally in line with the downstream side of said first cylinder, said second passageway having a second threshold point disposed on said second threshold wall area generally in line with the downstream side of said second cylinder but slightly biased towards said fan, a third threshold point being disposed under said fan, the angle measured between a first line extending from said first threshold point and the center of said fan and a second line extending from the center of said fan to said second threshold point being substantially the same as the angle measured between said second line and a third line extending from said center of said fan to said third threshold point; and

said first and said second threshold wall areas, in the regions of the threshold points, being rounded, slow curves, being generally obtuse and being free of any protuberances, projections, nubs or sharply bending turns.

4,204,487

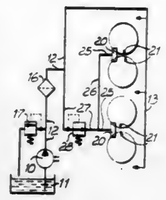
INTERNAL COMBUSTION ENGINES

Maurice Jones, Huddersfield, England, assignor to David Brown Tractors Limited, England

Filed Apr. 20, 1978, Ser. No. 898,236
Claims priority, application United Kingdom, Apr. 28, 1977, 17743/77
Int. Cl.² F01P *3/06*
U.S. Cl. 123—41.35 **4 Claims**

1. An internal combustion engine, of the type having at least one cylinder in which there is reciprocable a piston, comprising a lubrication system including a pump drawing oil from a sump and delivering it under pressure through a first feed line to the engine's bearings, maximum pressure relief valve means

connecting the first feed line directly to the sump, a second feed line connecting the first feed line at a point downstream of the maximum pressure relief valve means to at least one oil jet directed into the or each cylinder for cooling the piston therein, all of the oil flowing through the second feed line



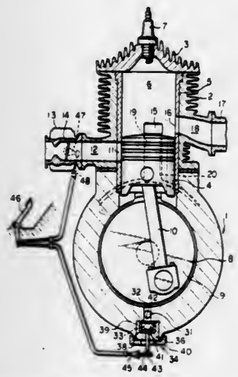
returning to the sump by way of the oil jet or jets, and low pressure relief valve means in the second feed line for closing said line to prevent the flow of oil to the oil jet or jets when the pressure acting on the low pressure relief valve means is less than a determined value.

4,204,488

2-CYCLE ENGINE OF AN ACTIVE THERMOATMOSPHERE COMBUSTION TYPE

Sigeru Onishi, Kanazawa, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan, a part interest

Filed Dec. 18, 1978, Ser. No. 970,173
Claims priority, application Japan, Dec. 21, 1977, 52/152947
Int. Cl.² F02B *33/04*
U.S. Cl. 123—73 A **23 Claims**



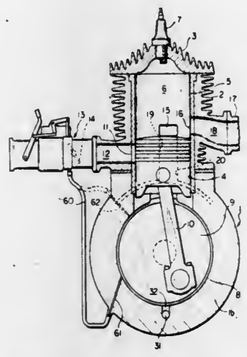
1. A 2-cycle engine comprising:
an engine body having therein a cylinder bore and a crank room which has a bottom wall;
an piston reciprocally movable in said cylinder bore, said piston and said cylinder bore defining a combustion chamber;
an intake passage having mixture forming means therein for introducing a fresh combustible mixture into said crank room;
an exhaust passage having an exhaust port opening into said combustion chamber for discharging exhaust gas into the atmosphere;
first transfer passage means having an inlet opening which opens into said crank room;
second transfer passage means communicating said first transfer passage means with an inlet port opening into said combustion chamber, said second transfer passage means having a cross-sectional area which is larger that of said first transfer passage means;
bypass passage means communicating said second transfer passage means with said crank room;
normally closed valve means arranged in said bypass passage means and actuated in response to changes in the level of the load of the engine for opening said valve means when the load of the engine is increased beyond a predetermined level, and;
ignition means arranged in said combustion chamber.

4,204,489

2-CYCLE ENGINE OF AN ACTIVE THERMOATMOSPHERE COMBUSTION TYPE

Sigeru Onishi, Kanazawa, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 18, 1978, Ser. No. 970,174
Claims priority, application Japan, Dec. 21, 1977, 52/152948
Int. Cl.² F02B *33/04*
U.S. Cl. 123—73 A **16 Claims**



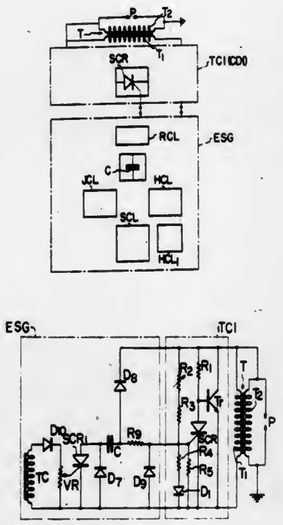
1. A 2-cycle engine comprising:
an engine body having therein a cylinder bore and a crank room which has a bottom wall;
a piston reciprocally movable in said cylinder bore, said piston and said cylinder bore defining a combustion chamber;
an intake passage having mixture forming means therein for introducing a fresh combustible mixture into said crank room;
choke means having a choke valve arranged in said intake passage for feeding a rich mixture into said crank room when the engine is started;
a transfer passage communicating said crank room with an inlet port opening into said combustion chamber;
restricting means arranged in said transfer passage at a position near said crank room for throttling the mixture stream flowing in said transfer passage;
an exhaust passage having an exhaust port opening into said combustion chamber for discharging exhaust gas to the atmosphere, and;
fuel feed means operatively connected to said choke mechanism and actuated in response to the operation of said choke mechanism for feeding fuel into said crank room when the engine is started.

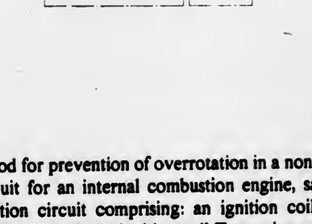
4,204,490

OVER-ROTATION PREVENTION METHOD AND CIRCUIT IN THE NON-CONTACT TYPE IGNITION CIRCUIT FOR THE INTERNAL COMBUSTION ENGINE

Yoshinori Ohki, and Komiya Hirokichi, both of Tokyo, Japan, assignors to Iida Denki Kogyo K.K., Tokyo, Japan

Division of Ser. No. 748,462, Dec. 8, 1976, Pat. No. 4,144,859.
This application May 17, 1978, Ser. No. 907,059
Claims priority, application Japan, Dec. 15, 1975, 50-149297; Dec. 15, 1975, 50-149298; Feb. 9, 1976, 51-13028; Mar. 4, 1976, 51-23592; Apr. 8, 1976, 51-39754; Apr. 16, 1976, 51-43181
Int. Cl.² F02P *1/00*
U.S. Cl. 123—102 **7 Claims**





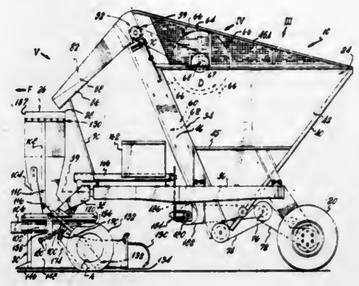
1. A method for prevention of overrotation in a non-contact ignition circuit for an internal combustion engine, said non-contact ignition circuit comprising: an ignition coil T; the primary winding T1 of said ignition coil T carrying a primary current, said primary current controlled in its flow by the conduction or non-conduction of a thyristor SCR; onset of conduction of said thyristor causing a high voltage in the secondary winding T2 of said coil T; and, a capacitor C connected to the gate of said thyristor SCR, including the steps of:
(a) inducing a forward voltage and current flow in said primary winding T1;
(b) applying said forward voltage to said gate of said thyristor SCR whereby said thyristor SCR conducts to produce said high voltage in said secondary T2 when said gate voltage reaches the trigger voltage of said thyristor SCR;
(c) inducing an inverse voltage in said primary winding T, following said forward voltage,
(d) charging said capacitor C with said inverse voltage;
(e) discharging said capacitor C via said connection to said thyristor gate when said engine rotation rate exceeds a preselected value, whereby said thyristor SCR is non-conductive and said high voltage is not produced in said secondary winding T2 when said capacitor C discharges.

4,204,491

MOBILE PLANTING APPARATUS

Donald J. Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Mar. 29, 1978, Ser. No. 891,420
Claims priority, application United Kingdom, Apr. 7, 1977, 14700/77; Jul. 12, 1977, 29146/77
Int. Cl.² A01C *7/00, 5/06*
U.S. Cl. 111—3 **5 Claims**



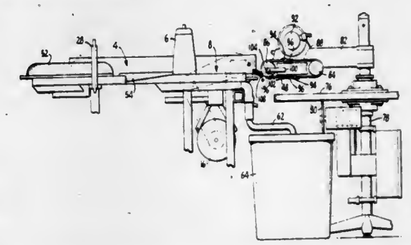
1. A mobile planting apparatus characterized by a frame including a rear main frame section, a front frame section and pivot means connecting the front frame section to the rear main frame section including a vertical pivot means and a horizontal fore and aft pivot means; ground engaging wheels attached to the rear main frame section; hitch means attached to the front frame section; a furrow opener attached to the front frame section; a billet supply hopper mounted on the rear main frame section with a billet elevator conveyor forming at least a portion of one wall of the billet supply hopper; and a billet delivery and alignment chute means including a primary billet delivery and alignment chute with an upper end mounted on the upper end of the billet elevator conveyor, a generally flat downwardly and forwardly inclined floor with decreasing width from the upper end, side flanges inclined upwardly and outwardly from each side of at least a portion of the downwardly inclined floor and a lower exit end of the primary billet delivery and alignment chute positioned adjacent a vertical axis formed by the vertical pivot means, and a downwardly and rearwardly inclined secondary billet delivery and alignment chute mounted on the front frame section with an upper end adjacent the lower exit end of the primary billet delivery and alignment chute and a lower end adjacent the furrow opener.

4,204,492

APPARATUS FOR HEMMING FABRIC PIECES

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed Jul. 17, 1978, Ser. No. 925,403
Int. Cl.² D05B *33/00, 81/00*
U.S. Cl. 112—121.29 **4 Claims**



1. Apparatus for providing individual hemmed pieces of

fabric, comprising in combination means for hemming each said fabric piece, said hemming means comprising

means for folding an edge of each said fabric piece whereby a hem is formed for stitching,

a sewing machine for stitching said hem with said stitching forming a stitching chain between successive said fabric pieces, said sewing machine including both a stitching mecahnism and means positioned along a predetermined stitching path for feeding each said fabric piece step-wise along said stitching path through said stitching mechanism, and

means spaced from said stitching path for grippingly engaging a portion of said fabric piece spaced from said hem and moving said fabric piece continuously and smoothly along a path extending generally parallel to said stitching path from a point ahead of said stitching mechanism to a point beyond said stitching mechanism;

a thread cutter positioned along said stitching path at a point subsequent to said stitching mechanism for mechanically severing a stitch chain trailing from said fabric workpiece in which the hem has been stitched; and

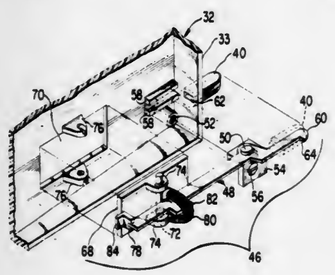
means for removing each said hemmed fabric piece from said stitching path after said stitch chain has been severed, said removing means including transporting means for releasably gripping and transporting a fabric piece from said stitching path to a receiving position where said fabric piece is released, and sensor means for sensing the presence of a fabric piece in position for removal and then activating the gripping and transporting means.

4,204,493

SEWING MACHINE BED EXTENSION LATCH

John Blackwood, Union, and Ronald Iannarone, Hillside, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Aug. 3, 1978, Ser. No. 930,775
Int. Cl.² D05B 75/00
U.S. Cl. 112—260 **3 Claims**



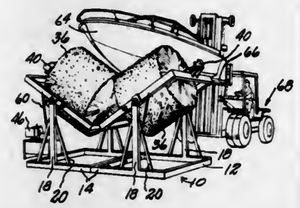
1. A sewing machine bed extension latch for a convertible bed sewing machine having a base, a sidewall carried by said base, a freely supported cylinder bed having a work supporting surface including a stitch forming area extending from said base for accepting tubular work pieces to be sewn thereon, and a work feeding mechanism for transporting work pieces in a direction transversely across said cylinder bed, a removable bed extension surrounding said cylinder bed, said bed extension having a work supporting surface forming an extension of the work supporting surface of said cylinder bed and a sidewall in abutting relation to said base sidewall when said bed extension occupies a position surrounding said cylinder bed, a bed extension latch fastening said bed extension to said sewing machine base and comprising a first latch element carried on said bed extension and a second latch element carried on said base, said first latch element being shiftably interengageable with said second latch element when said base and said bed extension sidewalls occupy an abutting relation, wherein said first latch element carried on said bed extension comprises a lever pivotally supported on said bed extension, arcuately rotatable operator influenced means carried on said work supporting surface of said bed extension and away from said stitch forming area in the direction of work feeding for disengaging said first pivotally supported latch element form said second latch element carried on said base, and spring means fastened to said first latch element for urging said first shiftably supported latch element into a position for interengagement with the other of said latch elements carried on said base when said bed extension sidewall is in an abutting relation with said base sidewall.

4,204,494

BOAT WASHING APPARATUS

Glenn D. Bridwell, Portage; James Maule, Michigan City; Alois Schrombeck, Lowell, and Willis Wognum, Crown Point, all of Ind., assignors to WSBM Company, Inc., Portage, Ind.

Filed Oct. 3, 1977, Ser. No. 838,674
Int. Cl.² B63B 59/00
U.S. Cl. 114—222 **4 Claims**



1. A boat washing apparatus comprising a rigid frame,

a pair of juxtaposed brush carriers pivoted to said frame on spaced substantially parallel axis, and normally substantially horizontally positioned, a cylindrical brush journaled in each carrier on an axis substantially perpendicular to the pivot axis of said carrier, and normally substantially horizontally positioned and substantially axially aligned with the brush journaled in the other carrier, means for limiting pivoting of said carriers, and means for rotating each brush, said carrier pivot limiting means being adjustable.

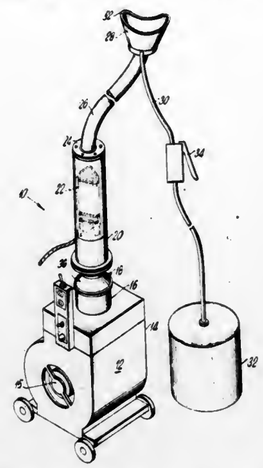
4,204,495

APPARATUS FOR APPLYING A LIQUID TO A SURFACE

Jay S. Wyner, Sands Point, N.Y., assignor to Therma-Plex, Long Island City, N.Y.

Filed Oct. 25, 1978, Ser. No. 954,357
Int. Cl.² B05C 5/00
U.S. Cl. 118—300 **9 Claims**

1. Apparatus for applying a liquid to a surface, comprising a tank for supplying said liquid, an air blower for supplying a stream of air, a nozzle adaptable for being placed against said surface, hose means interconnecting said nozzle to said blower and said tank for aspirating said liquid from said tank during the operation of said blower, a rotary fan mounted on said air blower, an apertured plate positioned adjacent said fan, said fan and plate being positioned in the path of said air stream, whereby a pulsating liquid-air mixture is applied to said surface



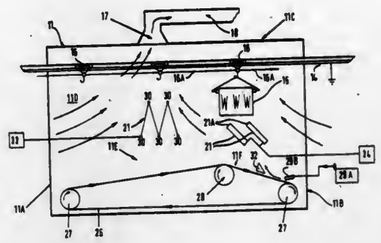
for impregnation thereof by said liquid during the operation of said blower.

4,204,497

ELECTROSTATIC COATING APPARATUS HAVING CONVEYOR BELT, FLUIDIZING AND ELECTROSTATIC MEANS FOR RECIRCULATION OF COATING PARTICLES

Robert C. Lever, London, England, assignor to Volstatic Holding Limited, United Kingdom

Filed Sep. 5, 1978, Ser. No. 939,368
Claims priority, application United Kingdom, Sep. 14, 1977, 38356/77
Int. Cl.² B05B 5/02
U.S. Cl. 118—634 **8 Claims**



1. In an installation, for electrostatically depositing solid particles of dielectric coating material on an article, in which:

a booth provides a roof portion, a floor portion and two opposite side wall portions respectively extending between opposite sides of the roof portion and opposite sides of the floor portion to define a passageway having open inlet and outlet ends;

air flow inducing means are provided for inducing an inward flow of air along the passageway from the inlet and outlet ends of the passageway to a pressure sink disposed between said inlet and outlet ends;

conveyor means are provided for transporting articles to be coated along a path through the passageway, from the inlet end to the outlet end;

a powder spray gun, disposed between said outlet end and said pressure sink is provided with dispensing means for directing a cloud of particles of coating material into the path of the articles passing through the passageway, and first electrostatic means for ensuring that the majority of coating particles issuing from the powder spray gun and the articles have different electrostatic potentials, to promote the deposition of the particles on the articles;

the improvement comprising:

an endless conveyor belt of dielectric material which is mounted between the opposite side wall portions of the booth, has an upper reach, with an outlet end portion, extending throughout the length of the passageway so as to provide the floor portion of the booth, and is drivable so that the upper reach moves from said inlet end of the passageway to said outlet end;

at least one nozzle disposed at or adjacent said outlet end of the passageway and means for directing a stream of gaseous medium through each said nozzle onto the outlet end portion of the upper reach, in a direction having a component extending towards said inlet end of the passageway from said outlet end so as to cooperate with the endless conveyor belt to form fluidising means for redirecting particles of coating material which fall towards the floor portion of the booth back into the path of the articles passing through the passageway; and

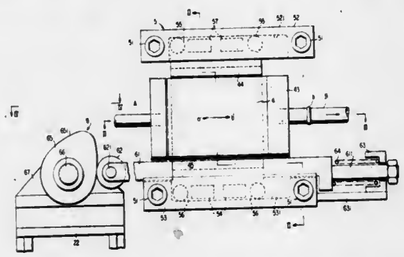
second electrostatic means for charging particles which are re-circulated by the fluidising means so that these particles have a different electrostatic potential to the articles.

4,204,496

STEEL-PIPE COATING APPARATUS

Yoshio Ikegami, Miki; Tadashi Kohge, Kobe; Masakatsu Kawahara, Amagasaki, and Hirofumi Kimura, Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Aug. 5, 1977, Ser. No. 822,321
Claims priority, application Japan, Nov. 8, 1976, 51-134315; Nov. 8, 1976, 51-134316; May 4, 1977, 52-51378
Int. Cl.² B05C 5/02
U.S. Cl. 118—405 **10 Claims**



1. A steel-pipe coating apparatus for continuously extruding resin for coating said steel pipe therewith including a fixed frame and a cross head die movably mounted with respect to said frame having a resin inlet, an axially extending steel pipe guide passage, and a resin extruding outlet which is open at an exit of said steel pipe guide passage in the form of a tubular clearance surrounding the surface of said steel pipe, which comprises:

an extruder secured to said frame;

a resin extruding outlet in said extruder being communicated through a resin guide member with said resin inlet in said cross head die, thereby introducing a coating resin from said extruder to said cross head die; and

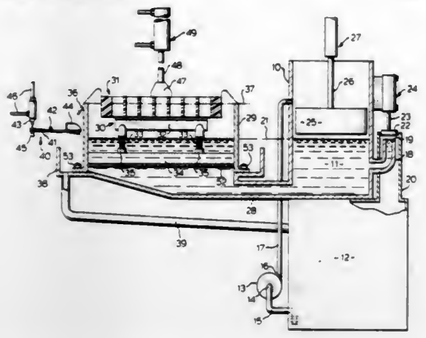
reciprocating drive means for supporting and reciprocably moving said cross head die relative to said extruder within a given stroke in said axial direction of steel-pipe guide passage.

4,204,498

APPARATUS FOR APPLYING COATING LIQUID TO ARTICLES

Emil Ivancic, 26 Frolick Crescent, Scarborough, Ontario, Canada (M1G 3E7)

Filed May 31, 1978, Ser. No. 911,132
Int. Cl.² B05C *11/00, 11/10*
U.S. Cl. 118—693 **12 Claims**



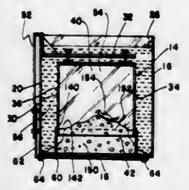
1. Apparatus for applying a coating liquid, the apparatus comprising a container for coating liquid in which articles to be coated by the liquid are mountable, a storage tank for the liquid, a pump having an inlet in communication with the storage tank and an outlet in communication with the container for continuously supplying the liquid from the storage tank to the container while the apparatus is in operation, an overflow means provided by the container and by which the liquid may return from the container to the storage tank for maintaining the liquid in the container at a predetermined level, a valve associated with the overflow means and having a normally open condition in which the valve permits return of the liquid by way of the overflow means from the container to the storage tank, and a closed condition in which the valve prevents return of the liquid by way of the overflow means from the container to the storage tank, and a displacement member mounted for movement within the container to displace the liquid therein above said predetermined level when the valve is in the closed condition thereof.

4,204,499

NEWT SANCTUARY

Rodolfo M. Leyva, 1318 W. 11th, Odessa, Tex. 79761, and James E. Allison, Jr., 3687 W. 13th - Apt. 6G, Wichita, Kans. 67203

Filed Oct. 10, 1978, Ser. No. 950,232
Int. Cl.² A01K *64/00*
U.S. Cl. 119—5 **16 Claims**



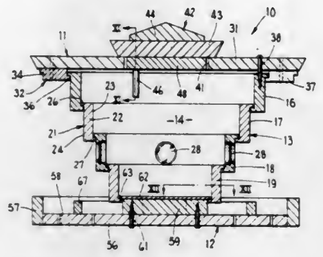
1. An aquarium accessory comprising a housing that includes a transparent top wall from which peripherally depends a transparent side wall having a lower edge that is in its entirety spaced below the top wall, said housing having an open bottom and being adapted to be received within and submerged below water in an aquarium, said walls being of a material impervious to air, means including a forced air pump for introducing atmospheric air into the housing whereby air can be entrapped in the housing above water in which the latter may be submerged, mounting means for mounting the housing within an aquarium in such a manner as to oppose buoyance forces of the latter, and passageway means disposed in a horizontal plane and disposed about the periphery of the side wall adjacent the lower edge of the side wall for allowing air to pass from the interior to the exterior of the housing.

4,204,500

BIRD FEEDER CONSTRUCTION

Walter H. Podjan, 1500 Rocky Gap, Benton Harbor, Mich. 49022

Filed Jun. 12, 1978, Ser. No. 914,343
Int. Cl.² A01K *39/01*
U.S. Cl. 119—52 R **4 Claims**



1. A bird feeder having vertically spaced top and base structures joined together by a tubular sidewall structure which defines therein a feed storage compartment, comprising the improvement wherein said sidewall structure includes a plurality of concentric and coaxially aligned rings which telescopically fit one within another when said sidewall structure is in a collapsed position whereby the top and base structures are positioned vertically closely adjacent one another, said rings having cooperating stops which limit the axial expansion of said sidewall structure so that said rings define an axially elongated tubular structure which provides a desired maximum vertical spacing between said top and base structures, said plurality of rings including an upper ring, a lower ring and at least one intermediate ring, each said ring having a pair of said stops defined by a radially outwardly projecting upper flange and a radially inwardly projecting lower flange which is spaced vertically downwardly a substantial distance from said upper flange, said intermediate ring being positionable within said upper ring and movable axially downwardly so as to project downwardly therefrom whereby the upper flange on said intermediate ring bears on the lower flange of said upper ring, and said lower ring being positionable within said intermediate ring and movable so as to project axially downwardly therefrom so that the upper flange on said lower ring bears on the lower flange of said intermediate ring, said top structure including top plate means having guide means associated with the bottom side thereof, said guide means defining sidewardly opening side rail means for slidably supporting thereon the top flange of said upper ring, whereby said upper ring can be sidewardly slidably displaced relative to said top structure so as to be separated therefrom.

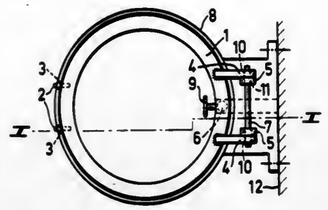
4,204,501

ANTI-LICK RING FOR AUTOMATIC DRINKING TROUGHS FOR ANIMALS

Rune Karlsson, and Berit Karlsson, both of Blacksta P1 5133, Nyköping, Sweden (S-611 00)

Filed Jul. 19, 1978, Ser. No. 925,977
Claims priority, application Sweden, Jul. 29, 1977, 7708717
Int. Cl.² A01K *7/00*
U.S. Cl. 119—72 **8 Claims**

1. An anti-lick ring for an animal drinking trough comprised of a ring having upper and lower surfaces and an outside diameter slightly smaller than the inside diameter of said drinking trough; attachment pins attached to said ring so as to mate with associated apertures in said trough; said pins being on different diameters of said ring and easily releasable attachment means diametrically opposite said pins preventing longitudinal movement of said pins.

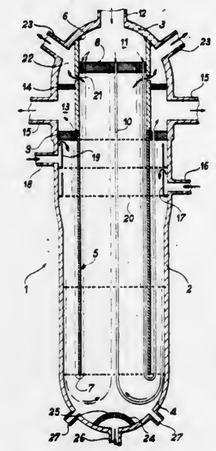


4,204,502

ONCE-THROUGH FORCED-CIRCULATION STEAM GENERATOR

Jean Forestier, Montrouge; Bernard Leblanc, Paris; Marcel Monteil, Broca, and Pierre Monteil, Esvres, all of France, assignors to Commissariat a L'Energie Atomique, Paris, France

Filed May 2, 1978, Ser. No. 902,251
Claims priority, application France, May 16, 1977, 77 14888
Int. Cl.² F22B *1/06*
U.S. Cl. 122—32 **7 Claims**



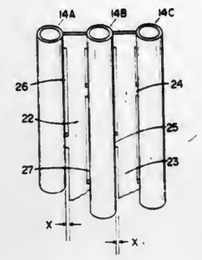
1. A once through forced circulation steam generator for heat exchange between a primary fluid and a secondary fluid, comprising an outer shell constituted by a lateral wall having a generally cylindrical shape and a vertical axis, a bottom dished end and a top dished end closing said outer shell, an inner skirt which is coaxial with said outer shell and delimits an annular space with said lateral wall, the lower end of said skirt being such as to have a free edge located at a distance from said bottom dished end, a central tube plate extending horizontally in the vicinity of said top dished end, a peripheral tube plate which is parallel to the central tube plate and placed within said annular space beneath said central tube plate, a bundle of tubes each having the shape of a J, an inlet header delimited on the one hand by said central tube plate and by said top dished end and on the other hand by a toric outlet header said outlet header being partly delimited by said peripheral tube plate and said lateral cylindrical wall, said outlet header being located above said annular space, at least one inlet nozzle opening into said annular space beneath said peripheral tube plate, and a lateral chamber placed within said shell between said inlet and outlet headers, said tubes being provided for the circulation of said primary fluid between said inlet and outlet headers, said nozzles serving to feed said secondary fluid in liquid form, said lateral chamber serving for collecting the said secondary fluid steam produced in contact with said tubes.

4,204,503

FLUID DYNAMIC SOOT BLOWER SYSTEM

Richard J. Reilly, 1759 Venus Ave., St. Paul, Minn. 55122, and John K. Moorhead, 6701 W. Trail, Edina, Minn. 55435

Filed May 30, 1978, Ser. No. 910,205
Int. Cl.² F22B *37/52*
U.S. Cl. 122—392 **4 Claims**



1. A fluid dynamic cleaning system for cleaning the heat transfer tubes on the inside surface of furnace walls comprising in combination:

interior furnace walls comprising a plurality of generally parallel heat transfer tubes and spacers between said tubes connecting the tubes together;

a cleaning fluid manifold on the furnace extending over the outside surface of said interior furnace walls;

supply means to supply a pressurized cleaning fluid to said manifold;

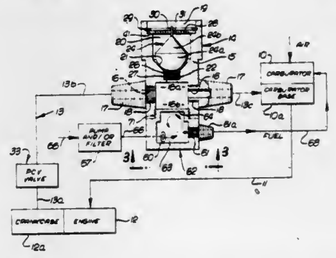
a plurality of entrance openings in the edges of said spacers in positions along the surfaces of the heat transfer tubes, said openings connected to said manifold so as to receive fluid therefrom and direct said fluid generally orthogonally to the length of the tubes and tangentially to the surface of the tubes, said heat transfer tubes having curved fluid attachment surfaces thereon operable to retain the flow of fluid thereacross.

4,204,504

FUEL HEATING, AIR METERING VALVE UNIT FOR ENGINE AIR INLET SYSTEM

John W. Dabrio, 10343 Slater, Apt. 202, Fountain Valley, Calif. 92708

Filed May 15, 1978, Ser. No. 906,114
Int. Cl.² F02M *31/00*
U.S. Cl. 123—119 B **9 Claims**



1. In a system to supply liquid fuel, crankcase gas, and air to

the fuel/air intake of an internal combustion engine, wherein the improvement combination comprises

(a) an air metering valve unit having first inlet and outlet means for a stream of hot crankcase gas,

(b) said unit having a valve controlled side entrance for air to be metered to said crankcase gas stream,

(c) said unit having second inlet and outlet means for a stream of fluid fuel,

(d) and said unit including a chamber located in heat transfer relation with said crankcase gas, said chamber connected in series with said second inlet and outlet means to receive said fuel for heat transfer thereto from said crankcase gas, said unit including a partition separating the fuel stream in said chamber from the hot crankcase gas stream in said unit, said side entrance located in such air directing alignment with said partition as to cause the entering air flow to deflect the hot gas stream toward the partition to enhance said heat transfer.

4,204,505

BASIC AIR-FUEL RATIO ADJUSTMENT METHOD AND APPARATUS

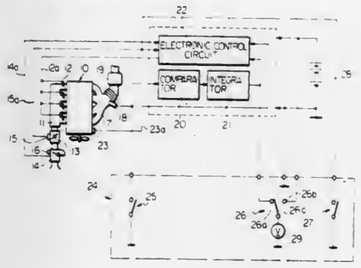
Mitsuo Kawai, Okazaki, and Hironobu Ono, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 31, 1978, Ser. No. 929,718

Claims priority, application Japan, Nov. 14, 1977, 52-135619

Int. Cl.² F02B *3/00*

U.S. Cl. 123—119 EC **10 Claims**



1. A basic air-fuel ratio adjustment method for an internal combustion engine having means for detecting the air-fuel ratio of an air-fuel mixture supplied to said engine, means for generating an air-fuel ratio compensation signal having a level which increases or decreases in accordance with the detected ratio, means for holding the level of said compensation signal at a level which is determined in accordance with a power supply voltage, during a specific operating condition where the air-fuel ratio feedback control operation is stopped, means for supplying said engine with an air-fuel mixture of a ratio corrected in accordance with the level of said air-fuel compensation signal, so that the air-fuel ratio of the supplied air-fuel mixture becomes equal to a desired value, and means for presetting a basic air-fuel ratio which is equal to a ratio of the air-fuel mixture supplied to the engine when the air-fuel ratio feedback control operation is stopped, said method comprising the steps of:

measuring a signal level corresponding to the level of said air-fuel ratio compensation signal when the air-fuel ratio feedback control operation is stopped;

then, measuring the average level of said air-fuel ratio compensation signal when the feedback control operation is being carried out; and

adjusting said presetting means so that the difference between said measured level when the feed back control operation is stopped and said measured average level when the feedback control operation is carried out becomes equal to a predetermined value.

4,204,506

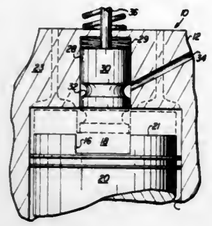
FUEL DELIVERY SYSTEM

William M. Bowling, 5321 E. Calle Del Medio, Phoenix, Ariz. 85018

Filed Feb. 25, 1977, Ser. No. 771,962

Int. Cl.² F02M *59/02*

U.S. Cl. 123—137 **4 Claims**



1. A fuel delivery system for a combustion engine having an engine block defining a cylinder bore, a piston reciprocal in the bore and defining with the bore a combustion area, intake and exhaust valves for controlling the admission of air to and exhaust combustion gases from a combustion area, said fuel delivery system comprising:

(a) a fuel chamber in the engine block independent of said intake and exhaust valves, said fuel chamber being in open communication with said combustion area;

(b) a fuel conduit communicating with said fuel chamber;

(c) valving means within said fuel chamber, said fuel chamber and valving means defining a fuel port therebetween;

(d) means for actuating said valving means from a first position communicating said fuel conduit and said fuel port and in which said first position said fuel port is isolated from said combustion area to a second position placing said fuel port directly in said combustion area and isolating said fuel conduit from said fuel port; and

(e) dampening means associated with said valving means for permitting limited movement of said valving means to dampen ignition shock.

4,204,507

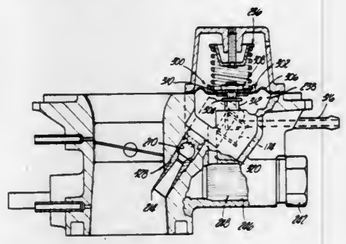
FUEL ELECTRIC FUEL INJECTION VALVE

Gary L. Casey, Troy, and Granville Hurlong, Jr., Détroit, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 17, 1977, Ser. No. 778,638

Int. Cl.² F02B *33/00*; B05B *1/30*

U.S. Cl. 123—139 AW **5 Claims**



1. A fuel control system for use with an internal combustion engine having a source of fuel supply, throttle body means mounted on the engine having throat means for delivering fuel to the engine and means for delivering fuel from the supply to the throttle body, said control system comprising fuel bowl means formed as part of the throttle body means having a cavity formed therein and an inlet connecting said cavity to the pump means for receiving pressurized fuel from said pump means, said fuel bowl means having an outlet formed therein communicating said cavity with the throat means, and injector means disposed contiguous with said outlet and positioned in said fuel bowl means for directly controlling the flow of fuel in pulses from said cavity to the throat means, said injector having means formed therein forming a valve seat open to said fuel bowl, said injector means being supported in said outlet by said valve seat forming means being slip-fitting into said outlet and being retained in said outlet by said pressurized fuel.

4,204,508

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

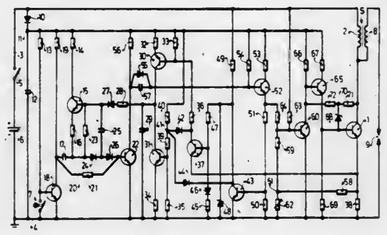
Werner Jundt, Ludwigsburg; Bernd Bodig, Leinfelden; Herman Roozenbeek, Schwieberdingen, and Peter Werner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 12, 1978, Ser. No. 868,869

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701967

Int. Cl.² F02P *3/00*

U.S. Cl. 123—148 E **18 Claims**



1. In an ignition system of an internal combustion engine having

an ignition coil having a primary winding (2), controllable switch means having a conductive and a non-conductive state connected in series with said primary winding, a source of d-c voltage (6, 5) connected across the so-formed series circuit, and ignition signal furnishing means (7) for furnishing an ignition signal switching said controllable switch means to said non-conductive state at the desired ignition time, apparatus for decreasing the time said controllable switch means is in said non-conductive state and increasing the time said controllable switch means is in said conductive state between successive ignition times, comprising, in accordance with the invention,

a control capacitor (17);

first circuit means (14, 15, 16, 18) connected to said control capacitor and said ignition signal furnishing means, for changing the charge on said control capacitor in a first direction upon receipt of said ignition signal;

integrator means (29) for furnishing an integrator signal varying as a function of changes in speed of said internal combustion engine;

second circuit means (27, 28) for connecting said integrator means to said first circuit means in such a manner that the rate of change of charge on said control capacitor varies as a function of said integrator signal; and

additional circuit means connected between said control capacitor and said controllable switch means, for switching said controllable switch means to said conductive state when the charge on said control capacitor is a predetermined charge.

4,204,509

CURRENT INTERRUPTION TYPE IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

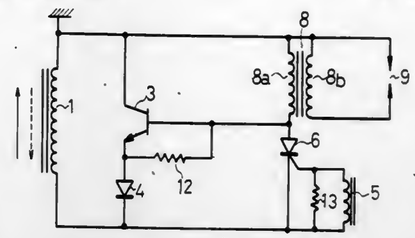
Hirotoshi Nanjo, Susono, and Takeshi Watanabe, Fuji both of Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Jul. 3, 1978, Ser. No. 921,714

Claims priority, application Japan, Jul. 6, 1977, 52-80591

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 E **4 Claims**



1. A current interruption type ignition system for an internal combustion engine comprising an ignition coil including a primary coil portion and a secondary coil portion; an exciter incuding an AC voltage in synchronism with rotaton of said engine to be supplied to said primary coil portion of said ignition coil; a first semiconductor switch provided in parallel to said primary coil portion to conduct a current from said exciter through said first semiconductor switch; a second semiconductor switch provided on a controlled terminal of said first semiconductor switch so that said second semiconductor switch, upon conduction thereof, causes said first semiconductor switch to be turned off so as to abruptly conduct a primary current from said exciter into said primary coil portion of said ignition coil; and a signal source generating an ignition signal at the ignition position of said engine, characterized in that said second semiconductor switch is provided in series to said primary coil portion of said ignition coil while said first semiconductor switch has the controlled terminal connected through said primary coil portion of said ignition coil to said exciter whereby said first semiconductor switch is turned on by a signal applied by said exciter through said primary coil portion of said ignition coil.

4,204,510

RPM GOVERNOR FOR FUEL INJECTED INTERNAL COMBUSTION ENGINES

Ernst Ritter; Reinhard Schwartz; Rolf Müuller, all of Stuttgart; Waldemar Sturm, Renningen, and Werner Faupel, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 2, 1977, Ser. No. 830,285

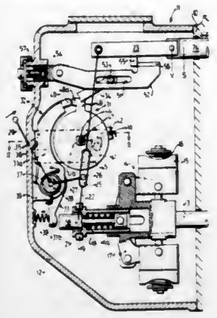
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639961

Int. Cl.² F02N *17/00*

U.S. Cl. 123—179 L **8 Claims**

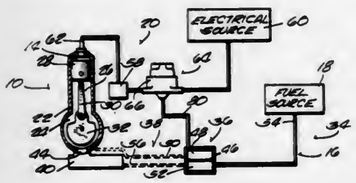
1. An rpm governor for fuel injected internal combustion engines such as diesel engines including a fuel injection pump having a fuel supply adjusting member comprising, a housing, an automatically adjustable, rem-dependent regulating member, an intermediate lever for connecting said regulating member with the fuel supply adjusting member of the fuel injection pump, a counter stop connected to said fuel supply adjusting member, a stop member movable into a position for engagement with said counter stop to limit the maximum fuel supply quantity in the normal operational range of said regulating member, an rpm-controlled starting device including a control lever mounted in said housing and coupled with said stop member said regulating member being arranged to engage said control lever when the governor is not operating or when the engine is operating at an rpm below the minimum idling rpm, said stop member being pivotally articulated on said housing

and coupled to said control lever, a return spring for yieldingly holding said control lever in its normal position when it is non-engaged by said regulating member, said starting device including a thermostat which is connected with said control lever whereby at least a part of said control lever engages said stop member which is held in a position for limiting the travel of said counter stop when the engine is above a predetermined



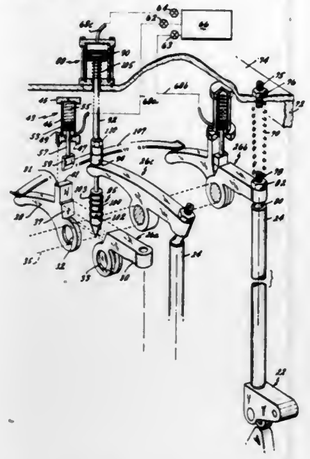
operating temperature, means for holding said stop member in said counter stop travel limiting position including when said control lever is engaged by said regulating member, said thermostat being arranged to allow movement of said stop member into a position out of engagement with said counter sotp for permitting said control lever to be acted upon by said regulating member to provide an increased starting fuel quantity when the engine is cold.

4,204,511
COMBINATION IGNITION SWITCH AND FUEL PRIMING SYSTEM
Richard L. Morris, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Jan. 19, 1979, Ser. No. 4,653
Int. Cl.[2] F02M *1/16*; F02N *17/00*
U.S. Cl. 123—187.5 R **19 Claims**



1. An engine comprising a combustion chamber, fuel delivery means communicating with said combustion chamber and adapted for connection to a fuel source, said fuel delivery means being operative for pumping fuel into said combustion chamber, means for igniting fuel in said combustion chamber, switch means operatively connected with said fuel ignition means and operatively movable between an off position for preventing operation of said fuel ignition means and an on position for permitting operation of said fuel ignition means, and means operatively connected with said fuel delivery means and said switch means for operating said fuel delivery means to pump fuel into said combustion chamber simultaneously with movement of said switch means between said off position and said on position.

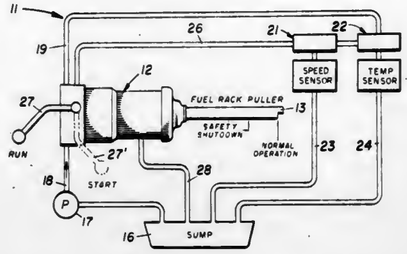
4,204,512
CYLINDER DEACTIVATOR SYSTEM
Horace T. Brock, Jr., Box 238, Ehrenberg, Ariz. 85334
Filed Mar. 27, 1978, Ser. No. 890,692
Int. Cl.[2] F02D *13/06*
U.S. Cl. 123—198 F **9 Claims**



1. A cylinder deactivator system for an internal combustion engine comprising:
an engine block and head,
a plurality of engine cylinders in said block;
intake and exhaust valves for each engine cylinder spring loaded to their closed positions,
a cam operated valve train operating each said valve, said valve train comprising a rocker lever assembly and a rocker lever shaft, said rocker lever assembly having a bore passing substantially horizontally through its midsection that allows the rocker lever assembly to be rockingly connected to said rocker lever shaft passing therethrough, one end of said rocker lever assembly receiving the top of a push rod,
said rocker lever assembly comprising a first member and a second member that are joined at the midsection of the rocker lever assembly with each member having aligned horizontal bores at their ends adjacent the midsection through which passes said rocker lever shaft,
a fluid pressure means for deactivating the rocker lever assembly normal downward operational force exerted against the coiled spring assembly that functions to keep the valve closed.

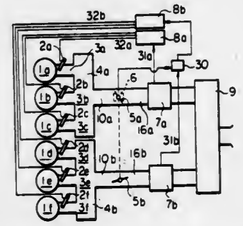
4,204,513
HYDRAULIC SAFETY MECHANISM
Robert A. Bilbrey, Orinda; William O. Munroe, Rodeo, and David G. Powell, Monrovia, all of Calif., assignors to California Controls Company, Berkeley, Calif.
Filed Nov. 15, 1978, Ser. No. 960,953
Int. Cl.[2] F02B *77/00*
U.S. Cl. 123—198 DB **32 Claims**

1. A hydraulic safety mechanism for a system wherein a control element of the system is to be moved from a normal operating position in response to a decrease of pressure in a hydraulic portion of the system, comprising a housing forming a cylinder having one end in communication with the hydraulic portion of the system said housing also forming a fluid drain, a piston being reciprocably arranged in said cylinder and operatively connected with the control element of the system, said piston being movable between a first position adjacent said one end of the cylinder and a second position spaced apart therefrom, said piston and cylinder including means for hydraulically blocking said cylinder from said fluid drain when said piston is in its second position and for opening said cylinder into communication with said fluid drain as said piston is moved from its second position toward its first position, means resiliently urging said piston toward its first position, hydraulic pressure in said one end of said cylinder hydraulically latching said piston in its second position in order to maintain the con-



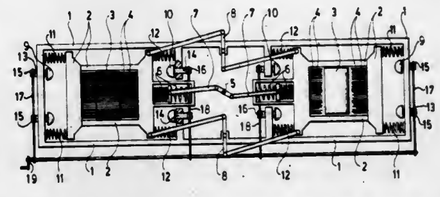
trol element of the system in its normal operating position, said piston being responsive to a decrease of pressure in the cylinder for communicating the cylinder with the drain in order to hydraulically unlatch the piston and allow it to rapidly move toward its first position whereupon the control element is shifted from its normal operating position.

4,204,514
SPLIT OPERATION TYPE MULTI-CYLINDER INTERNAL COMBUSTION ENGINE
Yasuhiko Ishida, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Nov. 30, 1978, Ser. No. 964,823
Claims priority, application Japan, Dec. 19, 1977, 52-151634
Int. Cl.[2] F02D *17/00*
U.S. Cl. 123—198 F **16 Claims**



1. An internal combustion engine having a plurality of cylinders which are divided into a first cylinder group and a second cylinder group, said first cylinder group having a first intake passage, said second cylinder group having a second intake passage, said engine comprising:
a first air control means arranged in said first intake passage for controlling an amount of intake air fed into said first cylinder group;
a first fuel supplying means for supplying said first cylinder group with an amount of fuel in accordance with the amount of intake air passing through said first intake passage;
a second air control means for controlling an amount of intake air fed into said second cylinder group, said second air control means allowing an inflow of air into said second cylinder group when the level of a load of said engine is lower than a predetermined level;
a second fuel supply means for supplying said second cylinder group with an amount of fuel in accordance with the amount of intake air passing through said second intake passage, said fuel supply operation being carried out, when the level of the load of said engine is higher than said predetermined level, said second fuel supply means stopping said fuel supplying operation into said second cylinder group when the level of the load of said engine is lower than said predetermined level, and;
an actuating means for increasing an amount of intake air passing through said first air control means in accordance with an increase in the level of the load of said engine, and for increasing an amount of intake air passing through said second air control means in accordance with an increase in the level of the load of said engine when the level of the load of said engine exceeds said predetermined level, said increasing speed of the amount of intake air passing through said second air control means being controlled higher than said increasing speed of the amount of intake air passing through said first air control means.

4,204,515
APPARATUS FOR MACHINING WORKPIECES BY ABRASION
Dieter Seifert, Markt1; Dieter Regler, Burghausen; Volker Ofenmacher, Burghausen; Alfred Moritz, Burghausen; August Freudlsperger, Neuötting, and Walter Berger, Simbach, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany
Filed Aug. 17, 1978, Ser. No. 934,770
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739257
Int. Cl.[2] B28D *1/06*
U.S. Cl. 125—16 R **4 Claims**



1. An apparatus for machining workpieces by abrasion by means of a multiple tool which oscillates across the workpiece, comprising:
a machine housing having at least a frame which has a pair of opposite sides defining at least one compartment;
tool carriage means disposed for movement within said compartment, said carriage means having a multitude of parallel, spaced-apart blades disposed across the workpiece;
at least one opposite pair of buffers for contact with said carriage means during movement, said buffers comprising a plurality of resilient storage springs having a progressive characteristic curve, said springs being mounted on threaded shafts coupled through the opposite sides of said frame, a gear mounted on each spring shaft, a chain coupled to each of said gears, and a common chain drive coupled to each chain for simultaneously adjusting all of said buffers, so as to control the oscillation of said carriage means; and
drive means coupled to said carriage means for oscillating said carriage means between said buffers, wherein said drive means includes intermediary resilient coupling means for coupling said drive means to the tool carriage.

4,204,516
BACK-PACKING STOVE FOR A SIERRA-TYPE CUP
Gene B. Figura, 1502 Linden Dr., Ames, Iowa 50010
Filed Jan. 30, 1978, Ser. No. 873,257
Int. Cl.[2] F24C *1/16*
U.S. Cl. 126—9 R **6 Claims**

1. A collapsible back-pack cook stove for supporting a

burner and at least one food container to be heated by the burner, comprising,

a container comprising a back portion, two opposite side portions, a top portion, and a bottom portion; said side portions being of substantially equal size;

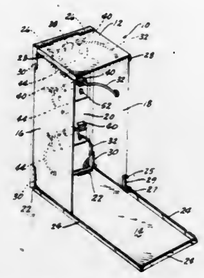
said back and bottom portions being of substantially equal size;

first means pivotally connecting said side portions to the sides of said back portion;

second means pivotally connecting one end of said bottom portion to the bottom of said back portion;

third means pivotally connecting said top portion to the top edge of said back portion;

said bottom portion adapted to lie flat for supporting a burner thereon with said back portion extended upwardly therefrom;



at least one spaced bracket pivotally secured to said back portion at a position vertically spaced from said bottom portion;

and means for selectively holding said bracket in a horizontal position with respect to said back portion thereby to support a food container above said bottom surface so that the food container may be heated by a burner on the bottom surface;

said side portions being pivotable toward said back portion, said top portion being pivotable toward said back portion and said bottom portion being pivotable toward said back portion to meet said back portion and enclose said side portions and said top portion therebetween, thereby to from a generally flat parcel.

4,204,517

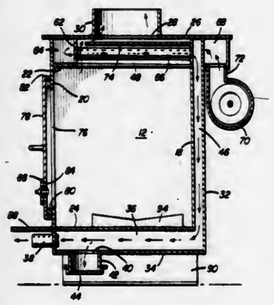
FIREPLACE FURNACE

Joseph N. Rumsey, Rte. 3, Box 327, Wilmington, N.C. 28401

Filed Mar. 30, 1978, Ser. No. 891,729

Int. Cl.² F24C *1/14*

U.S. Cl. 126—63 **14 Claims**



1. A heater, said heater defining a firebox including fuel entrance means for allowing introduction of fuel into the firebox, said firebox being defined by front, rear and opposite sides interconnected by a bottom side at their lower ends and by a top side at their upper ends, an outer rear wall extending between the rear marginal portions of said opposite sides rearwardly of said rear side and a bottom wall extending between the lower marginal portions of said opposite sides and between the lower marginal portion of said rear wall and the lower marginal portion of said front side below said bottom side defining a front to rear extending flow passage between said bottom side and bottom wall and downwardly extending flow passage between said rear side and rear wall, the interior of said firebox including hollow upper opposite side rear to front extending side manifolds and an upper front transverse manifold extending between and communicated with the forward ends of said side manifolds, said top side having a flue outlet therein, and a plurality of front to rear extending tubular heating air flow tubes extending between and communicating with said front transverse manifold at their front ends and the upper portion of said downwardly extending flow passage at their rear ends, and means operative to pump air under pressure into the rear ends of said side manifolds, the front to rear extending passage including opening means at its forward end opening through the lower marginal portion of said front side.

4,204,518

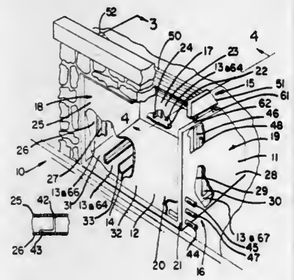
WOOD BURNING HEATING UNIT

James H. Smith, R.D. 1, Box 789, Mohnton, Pa. 19540, assignor to James Howard Smith, Mohnton, Pa.

Filed Jan. 26, 1977, Ser. No. 762,800

Int. Cl.² F24B *9/04*

U.S. Cl. 126—132 **1 Claim**



1. A wood burning heating unit comprising

(a) walls defining a combustion chamber and having wall cavities therein for heating a liquid,

(b) a floor beneath said combustion chamber and having a floor cavity therein for heating a liquid,

(c) baffle means separating a portion of said floor cavity into separate floor passageways, said floor passageways having a direction from the front of said floor adjacent the fireplace opening towards said rear wall,

(d) baffle means separating a portion of said wall cavities into separate substantially vertical wall passageways, and

(e) a heat absorption unit formed of spaced tubes positioned above the combustion chamber, said tubes connected in groups by cavities in header units at each end to provide a continuous path from a top portion of said wall to an exit from said heating unit

whereby said liquid flow path to progressively heat said liquid includes

(i) inlet flow generally into the front of said floor cavity,

(ii) then flow from the front of said floor cavity rearward through said floor passageways,

(iii) then flow vertically up the walls through said wall passageways,

(iv) then flow around the periphery of the top of said wall cavities into said heat absorption unit inlet,

(v) then flow through said path formed by said groups of tubes and header units cavities thereby multiply reversing the flow direction across said heat absorption unit, and

(vi) then flow from said heat absorption unit generally into an outlet standpipe to exit said heating unit.

4,204,519

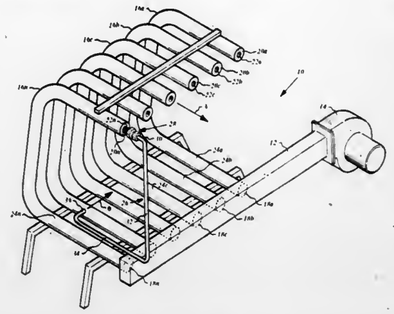
FORCED HOT AIR FIREPLACE ATTACHMENT

Mark W. Towery, 5750 Sheridan Dr., Williamsville, N.Y. 14221

Filed Jul. 24, 1978, Ser. No. 905,479

Int. Cl.² F23H *13/00*

U.S. Cl. 126—164 **1 Claim**



1. In a forced hot air heat exchanger for woodburning fireplaces having a blower connected to a header and a plurality of heat exchange tubes each having one end in communication with the header and the other end of each having an opening facing away from the fireplace and toward a space to be heated for directing air thereto; the improvement, comprising;

conduit means in communication with at least one of the openings for directing air therefrom into the fireplace, said conduit means comprising;

an upper horizontal section having removable coupling means connecting to at least one of the openings,

a vertical section connected to said upper horizontal section substantially in the plane thereof;

a lower horizontal section connected to said vertical section, and an outlet horizontal section connected to said lower horizontal section generally perpendicular thereto and substantially out of the plane thereof for discharging air into the fireplace in a direction that is generally perpendicular to the facing direction of the openings.

4,204,520

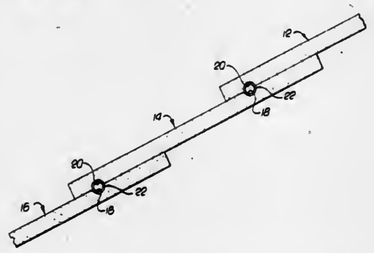
ROOF COMPRISING ROOFING TILES WITH SOLAR WATER HEATING SYSTEM THEREIN

David Rosenberg, 865 Comstock Ave., Los Angeles, Calif. 90024

Filed Mar. 2, 1978, Ser. No. 882,784

Int. Cl.² F24J *3/02*

U.S. Cl. 126—432 **9 Claims**



1. A flat roofing tile having upper and lower ends and flat upper and lower surfaces for positioning between corresponding overlying and underlying flat tiles in engagement with the flat lower and upper surfaces thereof, respectively, a transverse groove of substantially semicircular cross section in its upper surface adjacent and spaced from its upper end, and a transverse groove of substantially semicircular cross section in its lower surface adjacent and spaced from its lower end, with said grooves mating with corresponding grooves in said corresponding overlying and underlying tiles whereby the tiles when placed in an over and underlying relationship said mating grooves encircle a fluid conducting heat transfer tube.

5. In a roof having a solar water heating system therein, the combination of:

(a) a plurality of generally rectangular roofing tiles having flat overlapping upper and lower surfaces provided with registering transverse grooves of substantially semicircular cross section in said flat overlapping surfaces, with grooves of overlapping tiles facing each other defining substantially circular passages; and

(b) thermally conductive tubes in said registering grooves said tubes conducting a heat transfer fluid.

4,204,521

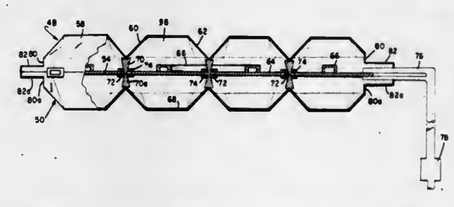
SOLAR ENERGY TRACKING COLLECTOR

John P. Mattson, Duxbury, Mass., assignor to Solarspan, Inc., Duxbury, Mass.

Continuation-in-part of Ser. No. 649,032, Jan. 14, 1976, Pat. No. 4,077,393. This application Jun. 12, 1978, Ser. No. 914,388

Int. Cl.² F24J *3/02*

U.S. Cl. 126—446 **6 Claims**



1. A solar energy collector comprising: a cover member having a multiplicity of raised surfaces transmissive to solar energy having certain surfaces forming a plurality of tiers of surfaces each arranged with respect to angle and direction to collect solar radiation by direct and reflected transmission as the angle of maximum insolation varies and having a plurality of support members, a base member having a plurality of support members in register with said cover support members for holding said cover member and base member in spaced relationship, a solar energy receiving means disposed between said cover and base members, high temperature resistant thermally insulating means disposed between said support members and said solar energy receiving means, a fluid flow heat exchanger in thermal contact with said solar energy receiving means for conveying collected energy away from said solar energy receiving means.

4,204,522

SOLAR HEATERS

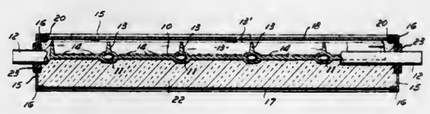
William J. Wilson, 136 Cockburn St., Masterton, New Zealand

Filed Aug. 25, 1977, Ser. No. 827,544

Claims priority, application New Zealand, Aug. 25, 1976, 181854

Int. Cl.² F24J *3/02*

U.S. Cl. 126—447 **17 Claims**



1. A heat exchanger for a solar heater comprising:

at least two pipes embedded within a one piece panel and upstanding walls of truncated triangular-shaped cross section extending from the surface of the panel, which

said panel surface in use as the heat exchanger in a solar heater is the surface adapted to absorb solar radiation, said upstanding walls being integral with the panel and so positioned that a grid-like pattern of intersecting walls at right angle to one another is formed over the absorbing surface of the panel, the said walls which extend across the panel in one direction, except for those at the edge of the panel, being located above a said pipes and at least one of the upstanding walls which are at right angles to the walls extending in said one direction being of a height above the said absorbing surface greater than the remaining walls.

4,204,523

MOUNT FOR SOLAR COLLECTORS

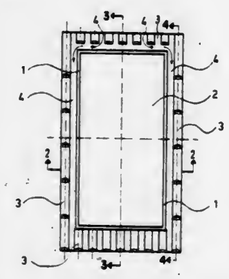
Eva Rothe, Bamberg, Fed. Rep. of Germany, assignor to E. Cacarda GmbH, Bamberg, Fed. Rep. of Germany

Filed Sep. 12, 1977, Ser. No. 832,763

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 2641073

Int. Cl.² F24J *3/02*

U.S. Cl. 126—450 **10 Claims**



1. A support for mounting solar energy collectors upon the roof rafters or laths of a roof of a building, said support being matingly receivable in an opening in the roof covering material, comprising:

a shell having a generally flat, rectangular base and an upstanding edge secured to, and extending about the entire periphery of said base; and

a frame secured to, and extending about, the entire periphery of said shell, generally normally to said upstanding edge and spaced below the uppermost portion of said edge, said frame being configured and dimensioned to correspond to the outer surface shape of the roof covering material and to permit mating receipt thereof in said opening of said roof covering material.

4,204,524

METHOD AND APPARATUS FOR CONTROLLING CARDIAC ASSIST DEVICE

Peter J. Martin, 52A Pomfret Rd., Narragansett, R.I. 02882, and Dov Jaron, 66 White Horn Dr., Kingston, R.I. 02881

Filed Nov. 7, 1977, Ser. No. 849,133

Int. Cl.² A61H *31/00*

U.S. Cl. 128—1 D **13 Claims**

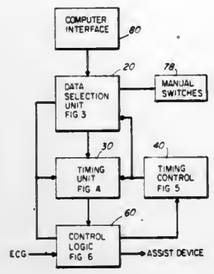
1. An apparatus to control a cardiac assist device which apparatus is responsive to an ECG signal and is adapted to activate and deactivate the assist device which comprises:

(a) means to detect at least a portion of an ECG signal;

(b) means to determine the time from the detected portion of the ECG signal to mid pump systole (TMPS) and the duration of the pump systole (DUR);

(c) means to store the TMPS and the DUR, and to generate values based on the TMPS plus or minus one-half DUR, the means to store in communication with the means to determine; and,

(d) a control module in communication with the means to detect and the means to store, the control module adapted to output signals to the assist device which signals control the time of activation and deactivation of the assist device, the signals output based on TMPS plus one-half DUR and



TMPS less one-half DUR; the control module outputting these signals synchronous with the cardiac cycle as represented by the detected ECG signal.

4,204,525

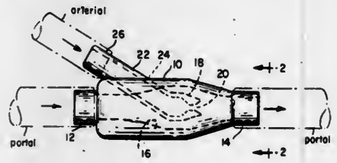
METHOD AND DEVICE FOR SUPPLYING VENOUS PRESSURE IN A PORTAL VEIN

Edward A. Olson, 107 Plymouth Mobile Estates, Plymouth, Mass. 02360

Filed Jul. 14, 1978, Ser. No. 924,615

Int. Cl.² A61B *19/00*

U.S. Cl. 128—1 R **5 Claims**



1. The method of supplying venous blood to the liver at a pressure in excess of the back pressure tending to prevent delivery thereof by the portal vein thereto comprising introducing arterial blood to the flow path of the venous blood in the portal vein adjacent to the liver.

4,204,526

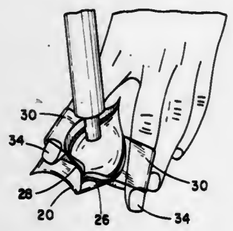
ARTERIAL GRAFT AND PACKAGE

Peter B. Samuels, 14708 Sutton St., Sherman Oaks, Calif. 91403, and Ernest Wood, 2465 Ivanhoe Dr., Los Angeles, Calif. 90039

Filed Aug. 31, 1978, Ser. No. 938,446

Int. Cl.² A61B *19/00*

U.S. Cl. 128—1 R **5 Claims**



1. An arterial graft forming package comprising an elongate graft forming porous base member and an elongate bag containing the graft forming base member therein, said bag being formed of a fluid impervious, flexible plastic which is inert to blood and sealed all around except for an access opening at one

end, sealing means adjacent the open end capable of relative lateral movement between closed sealing connection and open position, finger loops secured to the opposite outer walls of the bag adjacent the open end to enable the insertion of fingers of one hand for finger engagement to apply force in the direction away from each other for disengagement of the sealing connection and for holding the end of the bag in open position with one hand, leaving the other hand free.

4,204,527

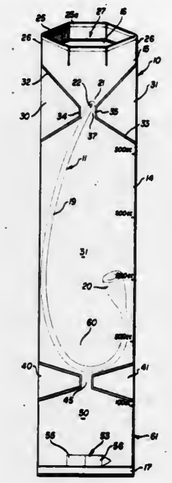
DISPOSABLE URETHRAL CATHETER ASSEMBLY

Yeongchi Wu, Darien, and Christopher A. Nowacki, Des Plaines, both of Ill., assignors to Rehabilitation Institute of Chicago, Chicago, Ill.

Filed Sep. 12, 1977, Ser. No. 831,701

Int. Cl.² A61M *3/00*

U.S. Cl. 128—762 **23 Claims**



1. A fluid collector comprising a urethra catheter for delivering a quantity of liquid from a human body, and a flexible bag containing the catheter prior to catheter use, the bag including first barrier means defining at least a first chamber capable of containing a predetermined volume of liquid and a second chamber capable of containing the liquid delivered from the body in excess of the liquid deposited in the first chamber, the collector further including a cannula plug member for fully sealing the first chamber from the second chamber after the first chamber has been filled.

4,204,528

METHOD AND APPARATUS FOR FIBER-OPTIC INTRAVASCULAR ENDOSCOPY

Zafer A. Termanini, Brooklyn, N.Y., assignor to Zafmedico Corp., Brooklyn, N.Y.

Filed Mar. 10, 1977, Ser. No. 776,302

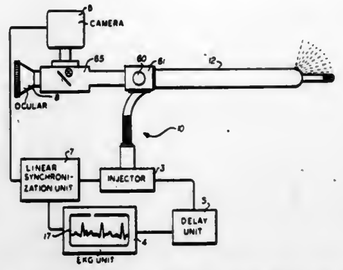
Int. Cl.² A61B *1/06*

U.S. Cl. 128—6 **22 Claims**

1. In an improved fiber-optic catheter for use in cardiovascular endoscopy of the type including a flexible sheath having a distal end and a proximal end, at least one afferent fiber-optic bundle disposed in said sheath for transmitting light from the proximal end of said catheter to the distal end thereof, and at least one efferent fiber-optic bundle disposed in said sheath for returning light from said distal end to said proximal end, the improvement comprising:

said catheter sheath having a longitudinally extending lumen therein and a rounded distal end face;

a tubular member having a distal portion, said distal portion having at least one aperture therein, said tubular member being mounted in said lumen for longitudinal sliding movement between a retracted position in which at least a major portion of said distal portion is received within said lumen and a position in which the free end of the distal portion of said tubular member is extended axially outward from the distal end face of said sheath, the free end of said distal portion being rounded, said rounded sheath



end face and said rounded distal portion free end being shaped such that when said tubular member is in said retracted position said sheath and said distal portion free end define a uniformly curved surface; and

means for restricting the proximal axial movement of said tubular member to said retracted position.

4,204,529

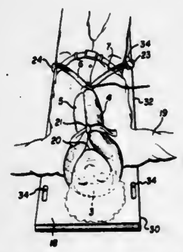
CERVICAL COLLAR APPARATUS

William Cochrane, 64 Meadowbrook Cir., Cumming, Iowa 50061

Filed Jan. 3, 1978, Ser. No. 866,805

Int. Cl.² A61H *1/02*

U.S. Cl. 128—75 **8 Claims**



1. A cervical collar apparatus comprising:

means adapted to underlie at least the head and trunk of the body of a patient for rigidly supporting a patient;

said support means comprising a head supporting portion and a trunk supporting portion;

an elongated, elastically deformable core;

said core having a mid-portion comprising means for contiguously encircling a patient's neck while leaving the front portion of the neck uncovered when said cervical collar is in place;

said core having a pair of end portions each integral with said mid-portion and extending forwardly from said mid-portion at the front of a patient's neck when said cervical collar is in place;

an elongated, flexible cover around said core;

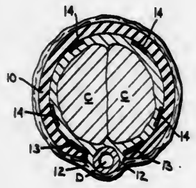
said cover having a pair of end parts each extending longitudinally beyond a respective end portion of the core;

said trunk supporting portion of said support means having means for connecting each of said end parts thereto;

said end parts comprising first tie means for releasably securing each of said end parts to said connecting means and for securing the trunk portion to said support means and for longitudinally lengthening said end portions of said collar

when said collar is in place to provide mild cervical traction;
means for preventing the longitudinal movement of said cover relative to said core;
second tie means secured to said cover at a location on said core where one of the end portions is integral with the mid-portion of the core; and,
said second tie means comprising means for tieing together said end portions at a location where said end portions join said mid-portion, said location being spaced from the front of the neck, to permit ready access thereto, when said collar is in place.

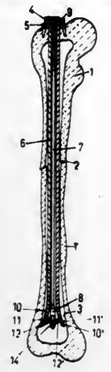
4,204,530
SLEEVE IMPLANT
Roy P. Finney, Tampa, Fla., assignor to Medical Engineering Corp., Racine, Wis.
Filed Mar. 29, 1979, Ser. No. 25,016
Int. Cl.[2] A61F *5/00*
U.S. Cl. 128—79 **10 Claims**



1. An implantable sleeve for increasing the diameter of a penis includes:
(a) a soft, flexible sheet which can be formed into the shape of an elongated partial cylinder having a crescent-like cross section, said sheet having side edges which are tapered;
(b) suturing strips attached to the wall of the sleeve that forms the inner wall of the cylinder, said suturing strips being located adjacent the tapered side edges of the sheet; and
(c) porous patches located on the same wall of the sheet as the strips, said patches being located on the area of the wall intermediate the side edges.

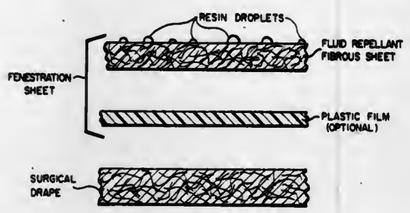
4,204,531
INTRAMEDULLARY NAIL WITH EXPANDING MECHANISM
Yacov Aginsky, 18 Rachel St., Haifa, Israel
Filed Dec. 19, 1978, Ser. No. 970,830
Claims priority, application Israel, Dec. 28, 1977, 53703
Int. Cl.[2] A61B *17/18*; A61F *5/04*
U.S. Cl. 128—92 BC **11 Claims**

1. An expanding mechanism of an intramedullary nail, the latter containing a tubular outer sheath and a rod-shaped element movable in said sheath in longitudinal direction, the expanding mechanism having a front portion to be driven head first into the cavity of a fractured bone and a rear portion forming a continuation of the said outer sheath and said rod-shaped element, the mechanism comprising an expansible element in the shape of at least two longitudinal spreadable branches formed out of the front end of said tubular sheath and at least two longitudinal links, each link being pivotally connected at its rear end to one of said branches at a point close to the front end of said branch, and being pivotally connected at



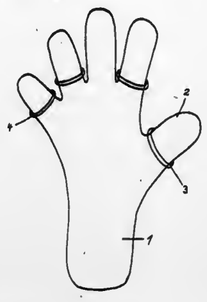
its front end to an expander head pivoted at the front of said rod-shaped element.

4,204,532
NON-SKID FENESTRATION MATERIAL
Herbert C. Lind, Longmeadow, Mass.; Peter J. Rumore, Warehouse Point, and Tadeusz S. Wysocki, Enfield, both of Conn., assignors to The Dexter Corporation, Windsor Locks, Conn.
Filed Oct. 11, 1977, Ser. No. 841,029
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—132 D **9 Claims**



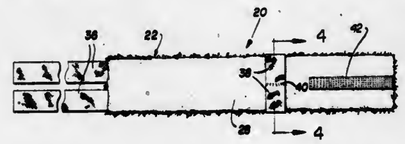
1. A non-skid fenestration sheet material for attachment to a disposable surgical drape having a fenestration comprising a flexible, light weight, fluid repellent, fibrous web having an inner planar surface for overlying the surgical drape in confronting relationship thereto and for being firmly secured to the surgical drape and an exposed abrasion-resistant non-skid outer surface comprised essentially of a random array of discrete resin droplet particles forming a discontinuous layer covering more than 2% and less than 10% of the total planar surface area of said exposed outer surface, said particles having exposed surfaces characteristic of droplets and an average particle size of less than 1000 microns, said resin particles being of intermediate film stiffness and effective to frictionally resist sliding movement of instruments and the like resting thereon even when said outer surface is inclined at an angle greater than 40° to a horizontal plane.

4,204,533
SURGICAL PLATE FOR HOLDING THE HAND AND THE FINGERS DURING HAND AND FINGER OPERATIONS
George Forster, Schlossmuhlendamm 8-10, 2100 Hamburg 90, and Herbert Von Wettstein, Hammer Str. 38b, 2000 Hamburg 70, both of Fed. Rep. of Germany
Continuation of Ser. No. 777,702, Mar. 15, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 935,645
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1976, 7610104[U]
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—133 **1 Claim**



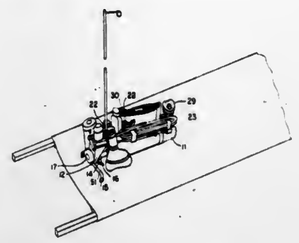
1. A surgical element comprising:
means for fixedly holding the position of a hand and fingers of a patient during an operation and yet permitting easy accessibility to the hand and fingers by the surgeon including;
a plate in the shape of a hand and provided with spread-apart fingers, said plate being made of material means which is particularly resistant to iodine and chromium halogens and also can bear high thermal and mechanical loads to permit sterilization thereof; and
elastic, removable rings positionable over all but one of the fingers of the patient and over the corresponding ones of said fingers of the plate.

4,204,534
LIMB AND/OR BODY RESTRAINT
Dennis J. Leary, 3104 Bagley Ave., Los Angeles, Calif. 90034
Filed Dec. 18, 1978, Ser. No. 970,203
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—134 **6 Claims**



1. A limb and/or body restraint device comprising:
an elongated band defining a main body member, said body member including a first inner surface of soft pliable material arranged for direct contact with the skin surface of a patient, and a second outer surface of soft pliable material attached to one side of said first inner sheet;
securing means attached to said inner and outer surfaces to secure said band in a wrapped mode;
attaching means secured to one end of said band to attach said band to a fixed structure so as to restrain movement of said patient, wherein said attaching means comprises a pair of elongated strap members extending longitudinally outward from one end of said band; and
a keeper means attached to said band and disposed transversely across said outer surface to keep said attaching means in a fixed relationship to said band when in a wrapped mode,
wherein said keeper means comprises a strap-keeper member attached at its opposite end to said band wherein two loop members are defined by affixing the central portion of said keeper member to said outer surface.

4,204,535
LIGHTWEIGHT RESUSCITATOR ASSEMBLY
Charles Pohlmann, 621 N. Lima, Burbank, Calif. 91505
Filed Dec. 12, 1977, Ser. No. 859,277
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—202.13 **6 Claims**



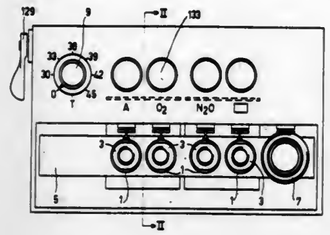
1. A resuscitator assembly comprising:
an oxygen cylinder of a first or second size;
a frame member fastenable to said cylinder, said member extending along a substantial portion of the length of said cylinder;
fastening means securing said frame to said cylinder;
a regulator mounted on said frame and coupled to said oxygen cylinder for accepting high pressure oxygen from said cylinder and for providing a regulated supply of pressure oxygen;
a high pressure gauge mounted on and communicating with the high pressure side of said regulator to show the cylinder internal pressure;
a respirator and flow control valve therefor;
hose means coupling said flow control valve to the low pressure side of said regulator;
a venturi chamber including a partial vacuum outlet connected to said regulator and driven by the regulated oxygen supply for producing a partial vacuum;
aspirator means coupled to the partial vacuum outlet of said venturi chamber;
means storing on said frame said respirator and demand valves, aspirator means and interconnecting hoses therefor; and
further comprising an elongated handle attached to and extending along said frame, said handle being long enough to extend over the two center of gravity produced by either size of oxygen cylinder to provide a convenient carrying point for the resuscitator assembly when equipped with either size cylinder.

4,204,536
RESPIRATOR
Scato Albarda, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 1, 1978, Ser. No. 911,212
Claims priority, application Netherlands, Jun. 30, 1977, 7707259
Int. Cl.[2] B61D *27/00*
U.S. Cl. 128—204.22 **3 Claims**

1. A respirator for administering a gas mixture of predetermined composition to a patient at a predetermined flow rate, comprising at least one controller for controlling a gas flow which is controlled by an electric control member and which

comprises a gas passage provided with a displaceable closing member, wherein:

the controller (1) comprises a valve having a closing member including a ball (13) which closes the gas passage (11) in one position and which is displaceable, by a pin (15) which is displaceable in a longitudinal direction by a drive system (29), to gradually open the gas passage (11), a defined relationship existing between gas flow through the valve (1), differential gas pressure across both sides of the gas passage (11), and the position of the ball (13); and further comprising



position sensor means (43) which indicate the position of the ball (13); and

pressure sensor means which measure (19) said differential pressure;

the control member functioning to displace the ball (13), using the drive system (29), on the basis of the differential pressure, the position of the ball (13) and an adjusted desired gas flow, so that the desired gas flow passes through the valve (1) in accordance with said relationship between these quantities.

4,204,537

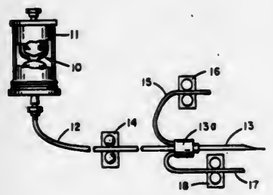
PROCESS FOR PHERESIS PROCEDURE AND DISPOSABLE PLASMA

Allen Latham, Jr., Jamaica Plain, Mass., assignor to Haemonetics Corporation, Braintree, Mass.

Division of Ser. No. 596,148, Jul. 15, 1975, Pat. No. 4,059,108, which is a continuation-in-part of Ser. No. 497,558, Aug. 15, 1974, abandoned. This application Jun. 27, 1977, Ser. No. 810,213

Int. Cl.² A61M 5/00; A61J 1/00

U.S. Cl. 128—214 R **4 Claims**



1. A blood pheresis process, comprising the steps of:

(a) withdrawing whole blood from a donor through phlebotomy needle means connected to said donor and simultaneously admixing anticoagulant therewith;

(b) introducing the resulting anticoagulated whole blood by way of a fluid conduit system into the bottom of a first reservoir while said reservoir is rotating about an axis of rotation;

(c) rotating said first reservoir at centrifuging speed thereby to separate the plasma in said blood from the red cells;

(d) transferring the resulting separated plasma to a second reservoir affixed coaxially to said first reservoir and rotating about said axis of rotation therewith;

(e) stopping said rotating so that the red cells settle to the bottom of the first reservoir;

(f) returning said red cells to said donor through said fluid conduit system, the connection between said donor, said fluid conduit system, and said first reservoir being maintained throughout steps (a)–(f); and

(g) separating said second reservoir from said first reservoir in a manner to aseptically seal said plasma within said second reservoir.

4,204,538

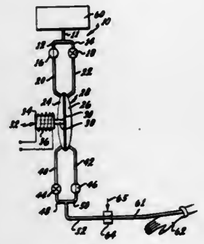
CASSETTE FOR INTRAVENOUS CONTROLLER

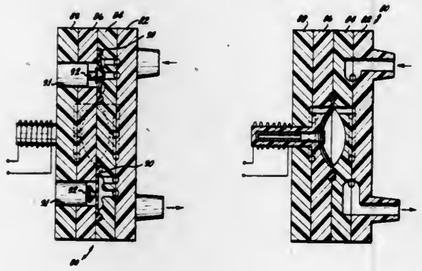
Raymond E. Cannon, San Diego, Calif., assignor to IMED Corporation, San Diego, Calif.

Filed Jun. 7, 1978, Ser. No. 913,282

Int. Cl.² A61M 5/00, 5/21

U.S. Cl. 128—214 R **18 Claims**





1. In combination in a cassette for providing for a controlled introduction of fluid from a source to a patient,

a block,

a chamber disposed in the block,

a flexible diaphragm disposed in the chamber and separating this chamber into first and second compartments each having a variable volume in accordance with the flexing of the diaphragm,

a transducer operatively coupled to the diaphragm for movement with the diaphragm and extending from the diaphragm in sealed relationship with the chamber,

an input line in the block for receiving fluid from the source,

an output line in the block for providing for the introduction of fluid to the patient,

a first pair of lines in the block, one of the lines in the first pair providing a communication between the input line and the first compartment and the other one of the lines in the pair providing a communication between the output line and the second compartment, and

a second pair of lines in the block, one of the lines in the second pair providing a communication between the input line and the second compartment and the other one of the lines in the second pair providing a communication between the output line and the first compartment, and

control means disposed in cooperative relationship with the first and second pair of lines for providing alternately for a blocking of the second pair of lines and an opening of the first pair of lines and for providing at other times for a blocking of the first pair of lines and an opening of the second pair of lines.

4,204,539

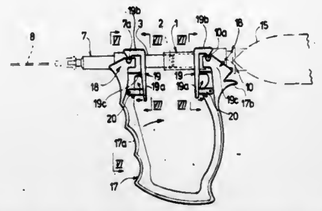
PUMPS AND SYRINGES

Mathews Van Brugge, 105a Stokes Valley Rd., Stokes Valley, Lower Hutt, New Zealand

Filed Apr. 23, 1979, Ser. No. 32,468

Int. Cl.² A61D 7/00

U.S. Cl. 128—223 **17 Claims**



1. A piston action pump/syringe for liquids comprising a cylindrical tubular body reciprocally housing a piston end of a co-axial plunger which extends outwardly from said body, said plunger and piston end having a common bore through which the body contents can be dispensed and the outlet end of said plunger having a one way valving means including a movable sleeve or skirt part located about said outlet end and an outlet thereof so as to permit egress only of said body contents, and the end part of the body remote from the plunger being provided with one way valving means for ingress only of liquid to the body from a supply source, said body valving means including an elongate member loosely housed in an enlarged bore for longitudinal reciprocal movement between a non-sealable small valve opening to the body interior at one end and a valve opening at the opposite end communicating with a liquid supply source and sealable by the respective elongate member end on the body contents' being pressurised by inward movement of the plunger, outward movement of the plunger relative to the body causing suction therewithin to draw the elongate member off the valve opening to the supply source and towards the non-sealable opening and permit liquid from the supply source to by-pass the elongate member into the body.

4,204,540

OSTOMY COMPOSITION

Rudolfo D. Cilento, North Brunswick; Anthony L. La Via; James L. Chen, both of East Brunswick, and John A. Hill, New Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 804,692, Jun. 8, 1977, Pat. No. 4,166,051. This application Apr. 26, 1979, Ser. No. 33,352

Int. Cl.² A61F 5/44

U.S. Cl. 128—283 **20 Claims**

1. The method of protecting the area of skin between the stoma and an attached appliance, faceplate, or skin barrier which comprises shaping and placing around the stoma the shaped mass which comprises a homogeneous mixture of mineral oil and a premix in a ratio of from about 1 to 10 to about 3.5 to 10 on a solids weight basis; wherein said premix comprises a homogeneous mixture of (A) from about 40% to about 60% by weight of a mixture of a pressure sensitive adhesive and an optional elastomer wherein said adhesive is a low molecular weight polyisobutylene and said elastomer if present is a medium molecular weight polyisobutylene or butyl rubber at up to about 30% by weight of said low molecular weight polyisobutylene and (B) from about 40% to about 60% by weight of a second component which is a mixture of one or more hydrocolloid gums, a cohesive strengthening agent, or a mixture of hydrocolloid gums and cohesive strengthening agent wherein said hydrocolloid gums are up to about 40% by weight of guar gum, locust bean gum, or mixtures thereof and from 0% to about 25% by weight of pectin, gum karaya, or mixtures thereof; and wherein said cohesive strengthening agent is finely divided cellulose, finely divided substantially water insoluble crosslinked dextran, finely divided substantially water insoluble sodium carboxymethycellulose, or finely divided substantially water insoluble starch-acrylonitrile graft copolymer.

4,204,541

SURGICAL INSTRUMENT FOR STITCHING UP SOFT TISSUES WITH LENGTHS OF SPIKED SUTURE MATERIAL

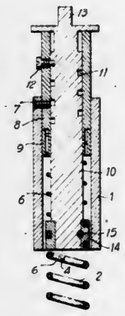
Nikolai N. Kapitanov, ulitsa Levchenko, 3, kv. 9, Moscow, U.S.S.R.

Filed Jan. 3, 1978, Ser. No. 866,564

Claims priority, application U.S.S.R., Jan. 24, 1977, 2447214

Int. Cl.² A61B 17/04

U.S. Cl. 128—334 R **2 Claims**



1. A surgical instrument for suturing soft tissues with lengths of spiked suture material, comprising: a hollow body having an axial bore formed therein; a needle housed within said bore of said body, said needle being movable with respect to said body and having a longitudinal bore formed therethrough adapted to accommodate a length of suture material adapted for introduction along with said needle into the tissue being sutured; a stop fixedly mounted in said bore of said body such that it is stationary with respect thereto, at least a portion of said stop extending within said bore of the needle; said needle and said stop each being shaped as coils having the same mean diameter and lead; said needle being movably mounted in the body such that upon movement of said needle relative to said body to extract the same therefrom, said needle will slide relative to said stop which is fixed with respect to said body whereupon said length of suture material is pushed from within said needle bore by said stop and remain in the tissue being stitched.

4,204,542

MULTISTRAND CARBON COATED SUTURES

Jack C. Bokros, Alpine; Hong S. Shim, and Axel D. Haubold, both of San Diego, all of Calif., assignors to CarboMedics, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 821,602, Aug. 3, 1977, Pat. No. 4,164,045. This application Nov. 22, 1977, Ser. No. 853,848

The portion of the term of this patent subsequent to Aug. 14, 1996, has been disclaimed.

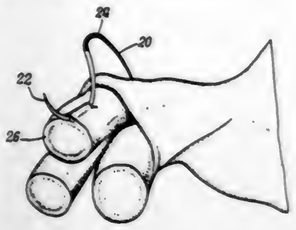
Int. Cl.² A61L 17/00

U.S. Cl. 128—335.5 **5 Claims**

1. A suture assembly for applying a flexible, fatigue resistant and biologically compatible multistrand suture in prolonged or permanent implantation in a living body comprising

a suture needle and connected thereto for surgical suturing procedure,

a fiber substrate array of a plurality of at least about 7 organopolymeric fibers having a tensile modulus of elasticity of about 2×10^6 psi or more, and a fiber diameter of less than about 25 microns, and a dense, adherent, isotropic carbon coating on the fibers having a BAF of about 1.3 or less, a thickness of less than about 7000 Angstroms, and a relatively high tensile fracture strain of at least about 5



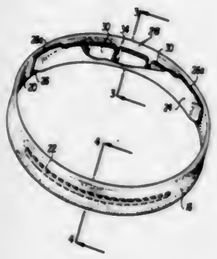
percent, said fibers being individually coated with said carbon coating such that they are free to bend and glide over each other in flexure of the suture, said tensile fracture strain, said tensile modulus of elasticity and said fiber diameter providing the suture with a predetermined high degree of flexibility and strength suitable for implantation by suturing without substantial cracking of said coating along the suture.

4,204,543

COOLANT BAND

Mary M. Henderson, 4401 Tyne Blvd., Nashville, Tenn. 37215

Filed Jan. 6, 1978, Ser. No. 867,582
Int. Cl.² A61F 7/00
U.S. Cl. 128—402 8 Claims



1. A coolant band comprising:

a. an annular strip of textile material having an inwardly presented surface and an outwardly presented surface;

b. coolant means containing a freezable liquid or semi-liquid material;

c. pocket means attached to said inwardly presented surface, said pocket means having enclosed distal ends to insure retention of said coolant means in said pocket and an opening between said ends to enable said coolant means to be inserted and removed from said pocket, and

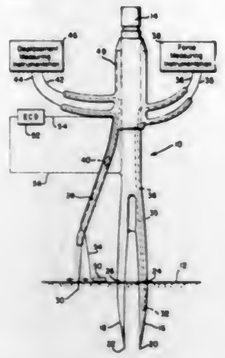
d. means associated with said strip to maintain said inwardly presented surface and said pocket in direct contractive engagement with a part of the anatomy to be cooled.

4,204,544

SIMULTANEOUS MUSCLE FORCE AND DISPLACEMENT TRANSDUCER

Cyril Feldstein, Sierra Madre; Gilbert W. Lewis, Arcadia, and Virgil H. Culler, La Canada, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sep. 30, 1977, Ser. No. 838,308
Int. Cl.² A61B 5/04, 5/10
U.S. Cl. 128—642 8 Claims



1. A transducer for use with instrumentation for simultaneously measuring muscle force and displacement comprising:

an elongated body slotted at its lower end to form an inverted Y-shaped beam having first and second tines, said tines being tapered into sharp points to facilitate insertion of said tines into muscle, said tines having a low degree of elastic compliance;

a first piezoresistive element bonded to one of said first and second tines, said first piezoresistive element sensing force acting on said beam through said tines for measurement of muscle force in a direction in line with said tines;

a third tine connected to said body, said third tine being tapered into a sharp point at its free end, and said third tine having a high degree of elastic compliance for measuring displacements of said muscle relative to said first and second tines, said third tine being connected to said body in a position to allow the point thereof to pierce said muscle when said first and second tines are inserted into said muscle;

a second small piezoresistive element bonded to said third tine, said second piezoresistive element sensing muscle displacement relative to said first and second tines; and

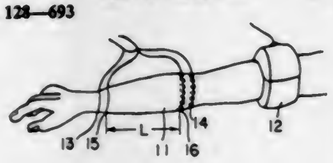
means for connecting said first piezoresistive element and said second piezoresistive element to said instrumentation.

4,204,545

LIMB BLOOD FLOWMETER

Kenichi Yamakoshi, Tokyo, Japan, assignor to Asahi Medical Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1978, Ser. No. 898,561
Claims priority, application Japan, Sep. 7, 1977, 52-107441
Int. Cl.² A61B 5/02
U.S. Cl. 128—693 13 Claims



1. A limb blood flowmeter comprising:

occluding pressure means for applying pressure to a limb to be examined on the side of the heart to occlude only the venous return;

admittance measuring means for measuring the admittance of the limb;

means for holding an initial admittance of the limb at the start of measurement;

a subtractor for deriving an admittance change ΔY from the difference tetween the initial admittance and an admittance measured subsequently and operative to produce an electrical signal corresponding to ΔY;

means for setting the value of the blood resistivity ρ of the limb and operative to produce a corresponding electrical signal;

means for setting the value of the length L of the region of the limb to be examined and operative to produce a corresponding electrical signal;

means for setting the value of the tissue volume V_O of the region to be examined and operative to produce a corresponding electrical signal;

a calculator responsive to said electrical signals for calculating $\rho L^2 \Delta Y / V_O$ based on the output ΔY from the subtractor and the blood resistivity ρ, the length L and the volume V_O set in the setting means; and

a controller for controlling the occluding pressure means and the holding of the initial admittance of the limb.

4,204,546

ELECTROENCEPHALOGRAPH

Leland B. Smith, Englewood, Colo., and Phillip J. Loeb, Skokie, Ill., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 9, 1978, Ser. No. 914,061
Int. Cl.² A61B 5/04
U.S. Cl. 128—731 10 Claims

1. In an EEG system, a plurality of patient electrodes, a differential amplifier having first and second inputs, keyboard means including a plurality of electrode select keys, one for each of said patient electrodes and an averaging key, means controlled by said electrode select keys for developing a first series of digital control signals during successive time periods which recur in repetitive time position frames, first switching means controlled by said first digital control signals for connecting any one of said electrodes to said first input and simultaneously connecting any one of said electrodes to said second input, means controlled by said averaging key for developing a second series of digital control signals corresponding to a predetermined group of said patient electrodes, second switch means controlled by said second digital control signals for connecting all of the electrodes in said predetermined group to a common averaging circuit, and means responsive to depression of one of said electrode select keys after said averaging key has been depressed for deleting the corresponding patient electrode from said predetermined group.

4,204,547

METHOD AND APPARATUS FOR NONINVASIVE MONITORING OF INTRACRANIAL PRESSURE

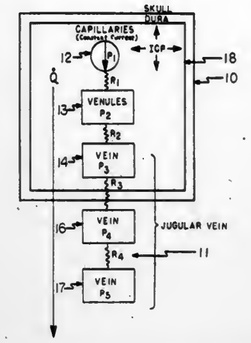
John A. Allocca, 2439 Young Ave., Bronx, N.Y. 10469

Filed Nov. 13, 1978, Ser. No. 959,458
Int. Cl.² A61B 5/05
U.S. Cl. 128—748 21 Claims

1. A method for obtaining from mammals a representation of the pressure of cerebrospinal fluid within the cranium, comprising the steps of:

occluding the jugular vein at a selected location outside the cranium to interrupt the flow of blood therethrough; and

determining a value corresponding to the rate of change of blood pressure within the jugular vein upstream of said



location over a predetermined period of time following occlusion thereof.

4,204,548

SOUND FOR INSERTION IN THE BODY FOR THE DETERMINATION OF THE INTERNAL MEASUREMENTS OF HOLLOW ORGANS

Karl H. Kurz, Rheinbabenstrasse 5, Ecke Weissenbrugstrasse, 4000 Dusseldorf, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,972
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756427; Dec. 17, 1977, 7738597[U]
Int. Cl.² A61B 5/10
U.S. Cl. 128—778 9 Claims



1. A sound for the determination of the internal measurements of hollow organs and hollow parts of the body such as in humans, said sound comprising a longitudinal sound member having a head portion at one end thereof and a foot portion at the opposite end thereof, two rod shaped spring elements of generally uniform thickness disposed at said head portion, said spring elements being attached to said sound member at one end of said spring elements with the other end of said spring elements being unattached, a thread connected between said spring elements, tensioning means acting against said thread to resist said unattached ends of said spring elements spreading apart and to permit said unattached ends to spread apart in one plane upon release of tension therefrom, said sound member guiding said thread to the base of said spring elements, indicating means associated with said thread for indicating the actual distance between said unattached ends of said spring elements

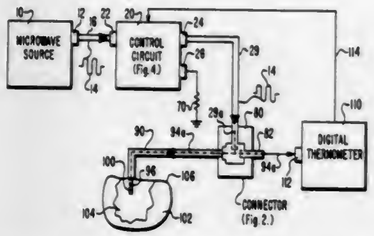
in accordance with the relative shift between said sound member and said thread, said sound member and said spring elements being slidably mounted in a jacket, and said jacket being of sufficient length that when said sound member is telescoped therein to its fully retracted position said sound member and said spring elements are completely within said jacket and thereby conform to the shape of said jacket without being exposed therefrom.

4,204,549

COAXIAL APPLICATOR FOR MICROWAVE HYPERTHERMIA

Robert W. Paglione, Robbinsville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,856
Int. Cl.² G01K 7/02; A61N 5/02
U.S. Cl. 128—784 **9 Claims**



1. Apparatus for hyperthermia treatment by irradiation of tissue with microwave energy comprising:
a. source means for providing microwave signals;
b. radiator means including a hollow radiating probe responsive to said microwave signals for irradiating said tissue with microwave energy;
c. coaxial means for coupling said microwave signals to said radiator means,
said coaxial means including a coaxial cable having a hollow center conductor and dielectic material between said center conductor and an outer cylindrical conductor, said coaxial center conductor being connected to said hollow radiating probe;
d. thermocouple means including a thermocouple positioned within said hollow radiating probe and further including a pair of wires coupled to said thermocouple and extending through said hollow probe and said hollow conductor of said coaxial cable for providing electrical signals indicative of the temperature of said irradiated tissue; and
e. control means responsive to said electrical signals for coupling said microwave signals to said radiator means when the temperature of said irradiated tissue is less than a predetermined temperature.

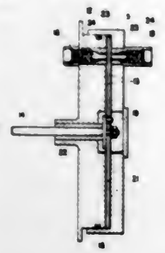
4,204,550

APPARATUS FOR FRACTIONATION OF A STANDARD PUFF OF SMOKE FROM A SMOKING MACHINE

Richard H. Newman, Richmond; William L. Jones, Jr., Mechanicsville, and Robert W. Jenkins, Jr., Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 7, 1979, Ser. No. 17,989
Int. Cl.² A24F 13/00
U.S. Cl. 131—171 R **5 Claims**

1. For use with an automatic smoking machine for testsmoking cigarettes or the like, a filter holder and support comprising:
(a) a male filter holder portion having a flat circular surface,
(b) a female filter holder portion having a flat circular surface and a peripheral wall capable of fitting removably over said male portion,
(c) a rotatable shaft and hub fitted by means of a bushing in a central opening in one of said holder portions,
(d) a tubular suction port attached to one of said filter holder portions at an opening distinct from said central opening and positioned in its flat surface at a distance from the circular center,



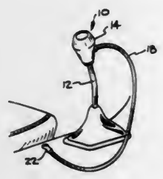
(e) a tubular cigaret mouthpiece attached to the other of said filter holder portions at an opening distinct from said central opening and at a distance from the circular center equal to that of the suction port, and
(f) two filter support pads of flat circular configuration, each having at least one arcuate opening at a distance from the center equal to that of the suction port, and being removably attached to said rotatable shaft and hub.

4,204,551

SMOKING PIPE ACCESSORY FOR AUTOMOBILE GEARSHIFT LEVER

Roger A. Robinson, 407 SW. 11th, Portland, Oreg. 97205

Filed Jul. 13, 1978, Ser. No. 924,372
Int. Cl.² A24F 3/00
U.S. Cl. 131—178 **10 Claims**



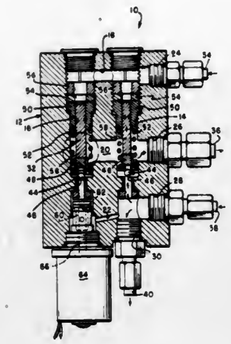
1. A pipe for smoking tobacco and the like, comprising:
(a) a main body member having a cavity and a lower cavity therein defined;
(b) attachment means for attaching said main body to an automobile, said attachment means comprising a tubular metal socket arranged to fit tightly within said lower cavity and having a closed upper end, tubular plastic adaptor means for fitting within said socket for engaging a threaded portion of an automobile gearshift control lever, and set screw means located in said socket for securing said adaptor means therein for resisting rotation of said socket about said gearshift control lever;
(c) removable cartridge means located within said cavity for containing tobacco, said cartridge means having an outlet orifice for allowing smoke to pass from the interior of said cartridge means into said cavity;
(d) cover means associated with said main body for concealing said cartridge when it is located within said cavity; and
(e) smoke tube means for transmitting smoke away from said cavity.

4,204,552

DUAL SPEED FLUID CONTROL APPARATUS

John P. Bott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1978, Ser. No. 954,263
Int. Cl.² G05D 16/00
U.S. Cl. 137—81 A **13 Claims**



1. A dual speed fluid control apparatus comprising:
a valve body;
a high pressure passageway and a low pressure passageway extending vertically through the valve body in a spaced apart relationship;
a top portion of the passageways being interconnected by a top plenum, a middle portion of the passageways being interconnected by a middle plenum, and a bottom portion of the passageways being interconnected by a bottom plenum;
the valve body having: an ambient pressure inlet into the top plenum, a fluid bypass outlet into the middle plenum, and a pressurized fluid inlet and fluid outlet into the bottom plenum;
valve means located within each passageway and responsive to pressure in the bottom plenum for bypassing fluid from the bottom plenum to the middle plenum;
spring biased means responsive to the ambient pressure in the top plenum and located in each passageway for pushing each bypass valve means toward the closed position against the pressure in the bottom plenum;
the spring bias on the push means in the high pressure passageway being greater than the spring bias on the push means in the low pressure passageway; and
control valve means for selectively opening and closing the bottom portion of the low pressure passageway to the bottom plenum,
whereby the fluid control apparatus supplies high pressure fluid when the control valve means is closed and the fluid control apparatus supplies low pressure fluid when the control valve means is open, both flow rates being varied by the magnitude of ambient pressure in the top plenum.

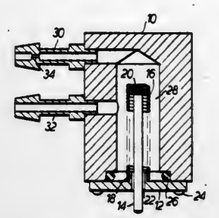
4,204,553

VALVES

Terence J. Hayward, Thirsk, and Alan H. T. Berrecloth, Yarm, both of England, assignors to HNL Instruments & Controls Limited, Cleveland, England

Filed Jun. 14, 1978, Ser. No. 915,571
Claims priority, application United Kingdom, Jun. 16, 1977, 25256/77
Int. Cl.² G05D 16/00
U.S. Cl. 137—82 **10 Claims**

1. A valve comprising:
an inflow chamber;
a pressure supply connection;
a restrictor leading from the said pressure supply connection to the said inflow chamber;
an outflow chamber in communication with the atmosphere;
a helical spring mounted within the said inflow chamber, with the space within the said spring forming at least part of the said outflow chamber of the valve, and one end of the said spring being closed;
a pressure signal output connection which leads out of the inflow chamber; and
operating means adapted to move said closed end of said spring to move the said spring between a closed condition



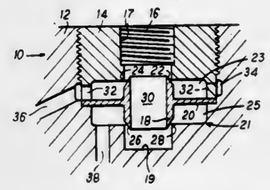
in which adjacent coils of the said spring are in contact, and an opened condition in which at least some adjacent coils of the said spring are separated, allowing communication between the inflow chamber and the said outflow chamber, and said spring being so arranged in said inflow chamber that any excess of pressure in the said inflow chamber over that in the said outflow chamber tends to move the spring to its closed condition, whereby any movement of the said spring between its said closed and opened positions is assisted by a positive feedback pressure force.

4,204,554

FLUID CONTROL MEANS

Alistair G. Taig, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 6, 1978, Ser. No. 883,549
Claims priority, application United Kingdom, Mar. 8, 1977, 09624/77
Int. Cl.² G05D 11/03
U.S. Cl. 137—101 **3 Claims**



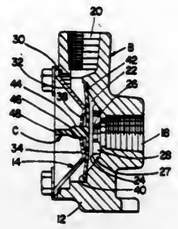
1. A fluid flow divider comprising a generally symmetrical valve member having two seats and being resiliently mounted for movement between outflow passages with which said seats respectively cooperate, a fluid input port connected to the input sides of both valve seats, the resilient mounting means presenting on one side and the other side thereof appreciable respective areas to fluid pressure in the outflow passages downstream of said seats, said valve member being disposed in a body having a bore therein, the inner extremity of which provides one outflow passage and a plug for said bore being arranged to retain means for the resilient mounting of the valve member and provide the other outflow passage.

4,204,555

EXHAUST VALVE ASSEMBLY

Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 12, 1978, Ser. No. 914,899
Int. Cl.² F16K *11/00*
U.S. Cl. 137—102 **5 Claims**



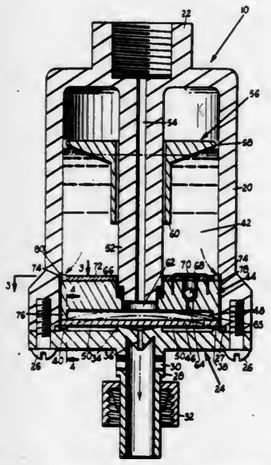
1. An exhaust valve assembly comprising: a housing including a body having a cavity, supply and delivery ports in said body extending substantially perpendicular to one another in communication with said cavity, said housing including a cover secured to said body over said cavity opposite said supply port, a hole in said cover in axial alignment with said supply port, a plurality of openings through said cover outwardly of said hole and defining an exhaust port for said valve, a flexible diaphragm positioned in said cavity between said cover and supply port and having a central integral stem extending through said hole in firm engagement therewith for inhibiting movement of said diaphragm toward and away from said exhaust port and thereby inhibiting horning of said diaphragm, said diaphragm being operative in response to air pressure at said supply port to close said exhaust port and provide communication between said supply and delivery ports, and said diaphragm being responsive to air pressure at said delivery port in the absence of air pressure at said supply port to close said supply port and provide communication between said delivery and exhaust ports.

4,204,556

SELF-CONTAINED, AUTOMATIC PRIMER VALVE FOR SEWER LINE DRAIN TRAPS

Richard N. Sullivan, Portland, Oreg., assignor to Precision Plumbing Products, Inc., Portland, Oreg.

Filed Nov. 29, 1978, Ser. No. 964,630
Int. Cl.² F16K *9/00*; F16L *43/00*
U.S. Cl. 137—206 **8 Claims**



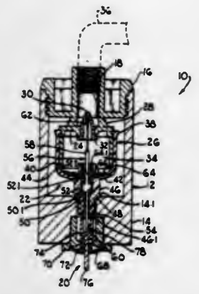
1. A sewer drain trap primer valve comprising:
(a) an upright case having at its upper end a water inlet communicating with the house water line and at its lower end a water outlet communicating with the trap,
(b) a ported partition dividing the case interior into an upper, valve-actuating, trapped air chamber and a lower chamber,
(c) a diaphragm dividing the lower chamber into an upper, water-supplying chamber and a lower, water-dispensing chamber,
(d) a valve seat on the water outlet arranged in valve-forming relation to the diaphragm,
(e) a check valve in the partition port arranged to check the flow of water from the valve-actuating chamber to the water supply chamber,
(f) a conduit interconnecting the water inlet and the water-supplying chamber, and
(g) a passageway for water between the valve-actuating chamber and the water-dispensing chamber.

4,204,557

FLUID FLOW CONTROL VALVE

Edgar P. Scragg, 60 Mulder St., Florida Park Extn. 3, Transvaal, South Africa

Filed Mar. 6, 1978, Ser. No. 883,977
Claims priority, application United Kingdom, Mar. 11, 1977, 10368/77
Int. Cl.² E16K *21/06*
U.S. Cl. 137—244 **11 Claims**



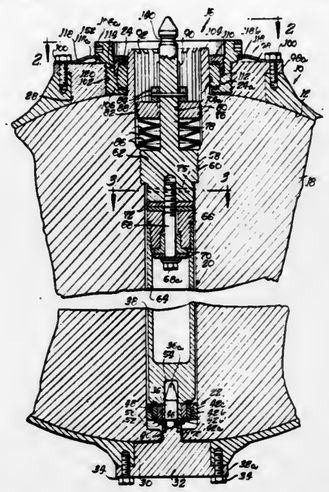
1. A fluid flow control valve comprising a casing, an inlet to the casing, an outlet from the casing, a chamber having a movable wall part and a fixed wall part, a restricted inlet to the chamber through one of said wall parts, said restricted inlet communicating with the inlet to the casing, an elongate cleaning element for clearing dirt and scale from said restricted inlet, an outlet from said chamber, a valve element normally closing said outlet from said chamber, actuating means for displacing both said cleaning element and said valve element whereby said cleaning element moves in said restricted inlet to the chamber and said outlet from the chamber is opened to permit liquid to flow from said chamber and allow said movable wall part to move in the direction which reduces the volume of said chamber, and a valve seat and co-operating valve surface for controlling flow from said inlet of the casing to said outlet of the casing, said seat and surface being arranged to separate upon said movable wall part moving in said direction, wherein the cleaning element is longer than the restricted inlet and is movable between a first position in which it does not extend through the restricted inlet and a second position in which it extends completely through the restricted inlet, and wherein the cleaning element is a rod-like element of self-supporting flexible synthetic plastics material and has a limited inherent rigidity enabling it to force dirt and scale from the restricted inlet.

4,204,558

VALVE ASSEMBLY HAVING REMOTELY REPLACEABLE BEARINGS

Evan R. Johnson, San Diego, and David E. Tanner, Poway, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 16, 1978, Ser. No. 869,702
Int. Cl.² F16K *43/00*
U.S. Cl. 137—315 **17 Claims**



1. A valve assembly adapted to be remotely disassembled for servicing of bearings, comprising, in combination, a fluid flow duct defining a flow passage and having an opening intersecting said flow passage, a valve disc disposed within said flow passage and having a diametral bore therethrough defining an axis of rotation, a spindle releasably mounted in said bore and having a first end portion adapted to be rotatably supported, means operatively associated with said flow duct and said first end portion of said spindle for supporting said spindle for rotation about its longitudinal axis, first bearing means carried on said first end portion of said spindle and cooperative with said valve disc, second bearing means, means releasably mounting said second bearing means on said flow duct for cooperative supporting relation with said valve disc, said first and second bearing means supporting said valve disc for rotation about its axis of rotation relative to said flow duct, said spindle having a second end portion accessible through said opening, and means releasably interconnecting said spindle to said valve disc so as to facilitate withdrawal of said spindle and said first bearing means from said valve disc and through said opening without removing said valve disc for servicing said first bearing means, said means releasably mounting said second bearing means being adapted for remote manipulation to facilitate removal of said second bearing means from said flow duct and valve disc for servicing of said second bearing means.

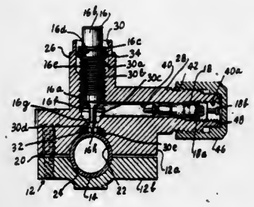
4,204,559

LINE TAP VALVE

Stuart J. Wagner, 19930 NE. 22nd Ct., North Miami Beach, Fla. 33180

Filed Apr. 17, 1978, Ser. No. 897,041
Int. Cl.² F16K *43/00*
U.S. Cl. 137—318 **5 Claims**

1. A line tap valve for tapping refrigerant lines of refrigeration and air conditioning systems, said line tap valve comprising:
(a) a valve housing adapted to be clamped about a refrigeration line,
(b) said valve housing including a first valve body which extends radially of such refrigeration line,
(c) said valve housing including a second valve body which extends radially of the first valve body,
(d) communicating bores formed in said first and second valve bodies,
(e) a line piercing valve mounted in the bore formed in the first valve body for piercing engagement with the refrigeration line, to form a pierced hole therein,
(f) said line piercing valve being adapted to open the pierced hole when backed away therefrom, thereby opening the pierced refrigeration line to said communicating bores, and being adapted to close said pierced hole when reinserted therein, thereby resealing said pierced refrigeration line,
(g) a service valve mounted in the bore formed in the second valve body for engagement with a service hose having valve actuating means,
(h) said line piercing valve and said service valve being independently operable,
(i) said line piercing valve having a valve stem with external screw threads formed thereon,
(j) a valve head formed at the upper end of said valve stem, said valve head having a tool engageable configuration,



(k) a piercing needle provided at the lower end of said valve stem,
(l) the bore in the first valve body having internal screw threads formed therein for engagement with the external screw threads of the valve stem,
(m) whereby the piercing needle is caused to advance or retract relative to the refrigeration line when the line piercing valve is rotated by means of a tool engaging the valve head,
(n) said service valve being removably secured to the second valve body,
(o) said service valve further being provided with external screw threads, and the bore in the second valve body being provided with complementary internal screw threads, whereby the service valve is adapted to be threaded into and out of said threaded bore in the second valve body, and
(p) whereby said service valve may be removed from said second valve body when said line piercing valve is closed, said service valve, when in place, providing flow out of said second valve body thereby enabling said piercing valve to be retracted from said line to avoid flow obstruction therein.

4,204,560

RELIEF VALVE FOR FLUID SYSTEMS

Harald S. Eriksen, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

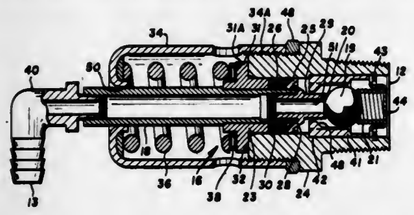
Filed Feb. 16, 1979, Ser. No. 12,645
Int. Cl.² F16K *31/363*
U.S. Cl. 137—508 **4 Claims**

1. Pressure relief valve means for fluid systems and comprising, in combination, a valve housing enclosing a chamber with axially spaced inlet and outlet ports at spaced apart locations within said housing, annular stop means formed within said housing and being disposed between said inlet port and said outlet port, a plunger assembly disposed within said housing

and being adapted for reciprocatory axial motion in first and second directions between normal and bypass operational modes respectively, and a ball-check member received within said plunger assembly and having spring means normally biasing said ball-check into contact with a seat formed in said plunger and disposed between said inlet and said outlet; said pressure relief valve means being characterized in that:

(a) said plunger assembly comprising a generally cylindrical plunger body slidably received within said housing and having seal means disposed about the periphery thereof isolating said inlet and outlet ports from atmosphere, and having conduit means coupling said ball-check seat to said outlet, and said plunger body mounted for reciprocatory motion within said housing and having radially extending shoulder means for engaging said annular stop means for limiting said reciprocatory motion in a first axial direction and positioning said plunger assembly within said housing in a first axial disposition;

(b) first resilient means normally biasing said plunger body toward said first disposition and toward said inlet to normally retain said plunger body with said shoulder means and said annular stop means substantially in engagement;



(c) said inlet port communicating with said ball-check seat, said ball-check member normally isolating the bore of said conduit means from said inlet port when said ball-check member is disposed in said seat; and

(d) ball-check member caging means comprising a spider with a plurality of accurately spaced retaining legs extending radially inward from said housing and forming a stop for said ball-check for limiting movement from said inlet toward said outlet, and for lifting of said ball-check member from contact with said ball-check seat for flow of fluid from said inlet toward said outlet and past said ball-check seat upon predetermined travel of said plunger assembly axially away from said first disposition in said second direction in response to increases in inlet pressure, with said spring means maintaining a biasing force against said ball-check during the travel and positioning of said plunger assembly from said first disposition along said second direction to a second disposition.

4,204,561

FUEL PRESSURE REGULATOR ASSEMBLY

George C. Ludwig, Owosso, Mich., assignor to Tom McGuane Industries, Inc., Madison Heights, Mich.

Continuation-in-part of Ser. No. 831,591, Sep. 8, 1977, abandoned. This application Feb. 24, 1978, Ser. No. 880,782

Int. Cl.[2] F16K *31/12*

U.S. Cl. 137—510 **12 Claims**

1. A fuel pressure regulator assembly comprising,

a housing,

a diaphragm separating said housing into a first and second chamber,

said housing having a radial inlet extending to said first chamber,

a connector mounted in said housing and extending axially into said first chamber,

said connector having an axial outlet,

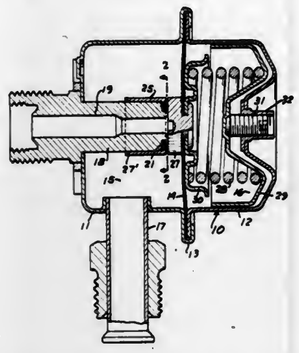
a sealing ring of resilient material,

interengaging means between said sealing ring and said connector for mounting said sealing ring on said connector such that a portion of said sealing ring projects axially beyond said connector,

said interengaging means comprising an annular groove adjacent the inner end of said connector, said sealing ring comprising a ring in said groove and having an axially extending annular convex arcuate surface,

said groove facing radially outwardly, said sealing ring comprising an O-ring positioned in said groove, and a retainer on said end of said connector restricting the radial outward movement of said O-ring,

said annular groove includes a first surface extending radially, a second surface forming an acute angle with said first surface and extending radially and axially outwardly toward the end of the connector and a curved portion connecting said first and second surfaces of said groove, said curved portion having a lesser radius than the cross sectional diameter of the O-ring,



said retainer frictionally engaging the periphery of said connector,

said diaphragm having a valve member adapted to engage said sealing ring,

and spring means in said second chamber urging said valve member against said sealing ring.

4,204,562

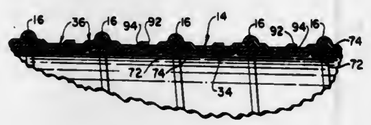
TWO-PLY DUCT CORE

Walter F. Kelly, c/o The Wiremold Company, Woodlawn St., West Hartford, Conn. 06110

Filed Apr. 27, 1978, Ser. No. 900,764

Int. Cl.[2] F16L *11/08, 11/16*

U.S. Cl. 138—132 **6 Claims**



1. Collapsible tubing comprising a first strip of synthetic plastic thin film helically wound into continuous wraps with adjacent edges of adjacent wraps of the first strip secured in edge lapping relation, a helically wound resilient reinforcing element overlying lapping edges of the first strip, and a second strip of synthetic plastic thin film helically wound and tightly secured about the first strip and the reinforcing element, the second strip being wound into continuous wraps with adjacent edges of adjacent wraps of the second strip secured in edge lapping relation, the second strip having lapping edges disposed between adjacent convolutions of the reinforcing element in longitudinally offset relation to the lapping edges of the first strip with the reinforcing element encased between the first and second strips with the second strip serving as an outer covering.

4,204,563

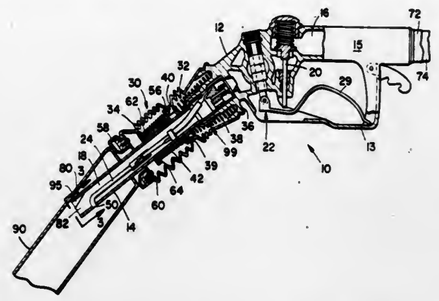
DISCHARGE SPOUT TIP FOR A LIQUID FUEL-DISPENSING NOZZLE

Walter R. Pyle, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 2, 1978, Ser. No. 948,187

Int. Cl.[2] B67C *3/28*; B65B *3/04*

U.S. Cl. 141—206 **35 Claims**



20. In a vapor-recovery dispensing nozzle having a main body portion, a discharge spout projecting from the main body portion for insertion into a fill pipe of a fuel tank, a fuel flow passage extending through the main body portion and said discharge spout, a tip of said discharge spout having an outlet end proportioned for ease of insertion into the fill pipe, vapor-recovery passage means formed in the main body portion, a vent tube extending through said fuel flow passage to form a primary vent passage having an opening in said discharge spout near the outlet end of said tip, and a release mechanism for automatically preventing the flow of fuel into the fuel tank when the level of fuel in the fuel tank being filled thereby rises above a level sufficient to block the primary vent passage opening, the improvement comprising:

a wedge-shaped projection locatable on the upper surface of said tip inwardly of and adjacent to the outlet end thereof so that one surface of said wedge-shaped projection slopes downwardly from the upper surface of said tip towards the outlet end thereof to form a fuel-deflecting surface for deflecting the flow of fuel through the outlet end of said tip away from the upper surface of the fill pipe, said wedge-shaped projection having an arcuate-shaped larger end for facing towards the outlet end of said tip so that said wedge-shaped projection tapers from wide to narrow in the direction away from the outlet end of said tip, the outer curved portion of said larger end contiguously engaging the inner surface of said tip at the outlet end thereof, and the outlet end of said tip angling inwardly from said wedge-shaped projection to a point outwardly of the vent passage opening in order to provide a generally uniform cross-sectional area for said flow passage extending through said discharge spout.

4,204,564

GASOLINE SPILL PREVENTING APPARATUS

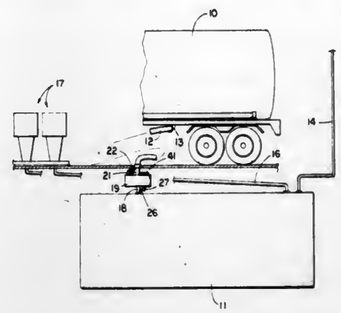
Lawrence H. Balfour, 252 S. Grant Ave., Indianapolis, Ind. 46201

Filed Jun. 5, 1978, Ser. No. 912,528

Int. Cl.[2] B65B *3/04*

U.S. Cl. 141—311 A **7 Claims**

2. An anti-spill apparatus for gasoline storage tanks of the type which are filled from the flexible hose of a gasoline transport vehicle, said apparatus comprising an intake pipe adapted to replace the conventional fill pipe on the storage tank, a dump tank adjacent said intake pipe, a first conduit providing communication between the dump tank and the fill pipe and an on-off valve controlling flow through the first conduit, a second conduit connecting a drain aperture in the dump tank to said intake pipe, a check valve interposed in said second conduit permitting flow only from said dump tank to said intake pipe, whereby during filling of the storage tank and with said on-off valve closed the dump tank remains empty but accomodates the gasoline trapped in the hose of the transport vehicle when said on-off valve is opened.



4,204,565

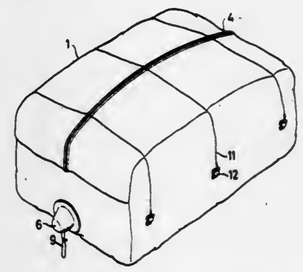
BAG SILO

Ryotaro Nohmura, 19-19, Nishi 3-chome, Senriyama, Suita-shi, Osaka-fu, Japan

Filed Jan. 12, 1979, Ser. No. 3,467

Int. Cl.[2] B65D *81/26*

U.S. Cl. 150—7 **3 Claims**



1. A bag silo for preparing silage from green material, said bag silo comprising:

a bag body, said bag body being comprised of flexible, waterproof material;

an opposed pair of cover flaps extending upwardly from said bag body so as to wholly cover the top opening of the bag when they are closed, said cover flaps being comprised of flexible waterproof material;

fastener means for joining together the edges of said cover flaps, said means forming a weatherproof seal between said edges;

packing means provided on the inside of said cover flaps for making said weatherproof seal substantially airtight;

a juice absorber means disposed at the bottom of said bag and containing a water absorbing material for absorbing the juice from said green material; and

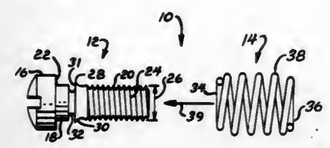
a drainage means disposed at the bottom of said bag, said drainage means being in connection with said juice absorber means.

4,204,566

SCREW AND CAPTIVE COMPRESSION SPRING FASTENER ASSEMBLY

Hall Kirrish, and Jon R. McCauley, both of Rockford, Ill., assignors to Textron Inc., Providence, R.I.

Filed Feb. 10, 1978, Ser. No. 876,550
Int. Cl.[2] F16B 39/24
U.S. Cl. 151—38 2 Claims



1. A fastener assembly, comprising in combination; a screw fastener member and generally helical elongate compression spring member made up of at least three full helical loops, and captively mounted on said fastener member, said spring including oppositely disposed end portions and an intermediate portion extending a substantial distance along the length of said screw fastener member, said screw fastener member including an elongate shank having a driver head formed on one end thereof and including drive tool engagement means, a threaded shank portion including a thread formed therein and having a major thread diameter of a first dimension, and an unthreaded shank portion intermediate said driver head and said threaded shank portion, protrusion means formed on said unthreaded shank portion for maintaining said compression spring member in captive relation on said screw member, said protrusion means including, an annular sloped wall surface facing generally away from said driver head with a major portion of said sloped wall surface having a maximum dimension greater than said major thread diameter, and an abrupt radially disposed wall surface spaced from and facing toward said driver head, said protrusion means wall surface merging to define a crest having an effective diameter larger than said major thread diameter, and said elongate compression spring member having a pair of opposite end portions each provided by a resilient, expandable loop defining an inner diameter significantly less than the effective diameter of said protrusion means, with the loops of said spring member defining said end portions and said intermediate portion having inner diameters greater than said major diameter of the threaded shank portion, such that said spring member can be disposed over said threaded shank with either of said end portions engaged with the sloped wall surface of said protrusion means causing the respective loop to expand, such that either of said end portions can be engaged over said protrusion means with a snap-fit type of action, and disposed intermediate said driver head and said protrusion means, with said abrupt wall surface of said protrusion means maintaining said spring member in captive relation on said fastener member.

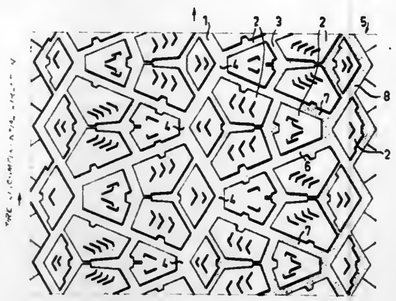
4,204,567

TREAD STRUCTURE FOR PNEUMATIC VEHICLE TIRES

Günter Johannes, and Hans-Dieter Pfeiffer, both of Garbsen, Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 5, 1978, Ser. No. 912,374
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 7717524[U]
Int. Cl.[2] B60C 11/04
U.S. Cl. 152—209 D 7 Claims

1. A vehicle tire tread structure for pneumatic tires having a tread and shoulder regions adjacent to said tread, said tread structure comprising in combination a plurality of elevations, a centrally arranged first groove having apexes being provided in said tread and following a zigzag course in the circumferential direction of said tire, said elevations being provided on both sides of said zigzag first groove and following one another in the circumferential direction of said tire, groove means being provided in said tread for separating said elevations from one another, said groove means including second



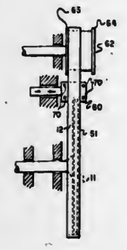
grooves which start from both sides of said zigzag first groove and extend laterally straight outwardly respectively towards said tire shoulder regions, each two succeeding straight second grooves being slanted differently in opposite directions with regard to the transverse direction of said tire.

4,204,568

METHOD OF PROLONGING THE LIFE OF A ROTARY CASTING MACHINE BAND

Yves B. Bonnamour, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Division of Ser. No. 741,829, Nov. 15, 1976, Pat. No. 4,082,136.
This application Feb. 6, 1978, Ser. No. 875,361
Int. Cl.[2] B22D 11/06
U.S. Cl. 164—87 3 Claims



1. A method of prolonging the operative life of an imperforate endless metallic band of the type used to close a peripheral groove in a rotating casting wheel of a casting machine adapted to the continuous casting of molten metal, comprising the steps of:

providing an imperforate endless band having a lateral width substantially greater than twice the lateral width of the peripheral groove of the casting wheel; and

contacting the peripheral groove with a first lateral surface area of said band; then

contacting said groove with a substantially different second lateral surface area of said band by laterally shifting sand band and casting wheel relatively of each other by an amount equal to at least the lateral width of said groove,

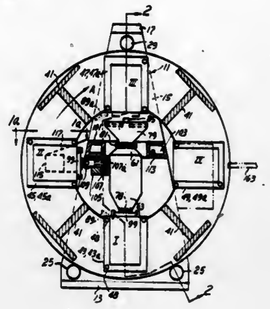
whereby thermal cracks in said first lateral surface area of said band, caused by prolonged contact of said band with molten metal in said groove, are avoided and subsequent thermal cracks are distributed over a substantial portion of the second lateral surface area of said band.

4,204,569

MULTI-CORE BOX APPARATUS FOR THE MANUFACTURE OF HOLLOW MINERAL PRODUCTS, PARTICULARLY FOUNDRY CORES

Anatol Michelson, 3235 Pine Valley Dr., Sarasota, Fla. 33579

Filed Dec. 28, 1978, Ser. No. 974,102
Int. Cl.[2] B22C 11/06, 15/24
U.S. Cl. 164—166 19 Claims



1. Apparatus for producing hollow mineral products from a mixture of sand and a binder hardenable when contacted by a catalytic gaseous fluid comprising:

a. a support frame;

b. a housing supported by said frame and rotatable in a vertical plane;

c. means for rotating said housing;

d. a plurality of product forming units mounted to said housing and rotatable therewith;

e. a sand blower mounted centrally of said housing in such a way that said product forming units rotate around said sand blower, said sand blower including a perforated blow plate;

f. means for reciprocating said sand blower relative to a product forming unit therebeneath, thereby bringing said blow plate into engagement with said product forming unit and over an aperture therein;

g. a hopper for receiving and holding a quantity of said mixture of sand and binder disposed above said sand blower whereby said mixture gravitates from said hopper into said sand blower; and

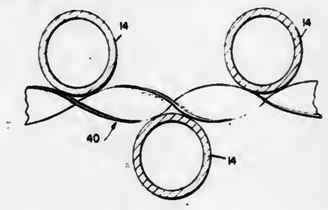
h. means for urging said mixture through said blow plate into said product forming unit beneath said sand blower.

4,204,570

HELICAL SPACER FOR HEAT EXCHANGER TUBE BUNDLE

Frantisek L. Eisinger, Demarest, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Feb. 23, 1978, Ser. No. 880,399
Int. Cl.[2] F28F 9/00
U.S. Cl. 165—69 14 Claims



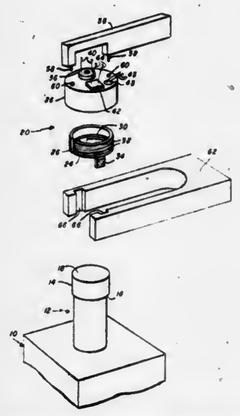
1. A tube spacer for use in a tube bundle including a plurality of spaced apart rows of parallel tube sections comprising an elongated member having a contour defining a helix, said member being adapted to extend at an angle to the longitudinal axes of said tube sections through spaces defined between adjacent tube sections of said rows and to contact the outside surfaces of some of said tube sections, said helix having a pitch proportional to the distance between longitudinal axes of adjacent tube sections contacted by said spacer, said proportion being a function of said angle at which said spacer extends relative to said longitudinal axes of said tube sections, said spacer being adapted to be removed from said tube bundle in the direction in which said spacer extends into said tube bundle.

4,204,571

REFRIGERATOR TESTING ASSEMBLY

Thurber I. Hoyt, Esmond, R.I., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Oct. 16, 1978, Ser. No. 951,806
Int. Cl.[2] F25B 27/00; H01L 23/34; H01R 33/00
U.S. Cl. 165—80 A 10 Claims



1. A refrigerator testing assembly for holding a test transducer in tight thermal contact with a terminal end of a cold tip of a refrigerator the testing assembly comprising:

an externally threaded sleeve for surrounding said cold tip, said sleeve and cold tip having complementary means for holding said sleeve against axial, translational movement toward the terminal end of said cold tip while permitting relative rotary movement; and

an internally threaded transducer supporting cap having an internal axially-facing surface for contacting said cold tip, the cap having material of high thermal conductivity between said internal surface and a test transducer mounted to the cap;

whereby said transducer supporting cap may be moved into tight contact with said cold tip to make thermal contact between said transducer and said cold tip with rotation of said threaded sleeve within said transducer supporting cap.

4,204,572

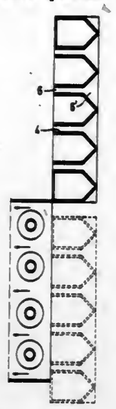
DEVICES FOR CLEANING HEATING BATTERIES

Axel T. Wikström, Falkenberg, Sweden, assignor to AB Scandinavian Energy Saving Co., Halmstad, Sweden

Filed Dec. 21, 1977, Ser. No. 862,844
Claims priority, application Sweden, Feb. 4, 1977, 7701244
Int. Cl.[2] F28G 1/16
U.S. Cl. 165—95 4 Claims

1. In a device for cleaning a heating battery comprising a multitude of spaced tubes assembled in generally parallel relationship and conducting therethrough a heating fluid for the exchange of heat with a gaseous flow in a transverse direction to said tubes and through the interspaces between adjacent tubes, the provision of flow accelerating channel means having

a relatively larger inlet area and a passage area decreasing to a minimum downstream of said inlet area, said channel means capable of being selectively brought into a position of registering with said tube interspaces upstream of said heating battery



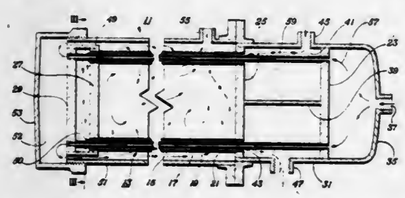
and close thereto, and away from such position, respectively, said minimum passage area being smaller than said interspaces so as to increase the velocity of any given gaseous flow between said tubes.

4,204,573

HEAT EXCHANGER WITH CONCENTRIC FLOW TUBES

David W. Clark, Fort Worth, Tex., assignor to PVI Industries, Inc., Fort Worth, Tex.

Filed May 9, 1977, Ser. No. 795,204
Int. Cl.[2] F28D 7/12
U.S. Cl. 165—142 6 Claims



1. An apparatus for exchanging heat between two fluids comprising:

at least one inner tube spaced concentrically in an outer tube, defining an inner passage and an annular passage;

first manifold means located at the first end of the apparatus for directing all of the incoming first fluid to the inlet of the inner passage; the first manifold means comprising a first partition at the first end of the apparatus having an aperture for sealingly receiving the inlet of the inner tube; and a first housing having a closed end and sealingly secured to the first partition, with an inlet on its closed end for receiving first fluid and directing all of it to the inlet of the inner tube;

second manifold means located at the first end of the apparatus for directing all of the incoming second fluid to the inlet of the annular passage; the second manifold means comprising a second partition spaced from the first partition and having an aperture for sealingly receiving the inlet of the outer tube; and a second housing sealingly enclosing the space between the first and second partitions and having an inlet for receiving second fluid and directing it to the inlet of the outer tube;

third manifold means at the second end of the apparatus for directing discharged second fluid out of the apparatus, including a discharge conduit extending from the second end of the apparatus back to the first end of the apparatus; the third manifold means comprising a third partition at the second end of the apparatus, having an aperture for sealingly receiving the outlet of the inner tube; a fourth partition spaced from the third partition and having an aperture for sealingly receiving the outlet of the outer tube and an aperture for sealingly receiving the inlet of the discharge conduit, the discharge conduit extending through the second partition and discharging second fluid exterior of the housing; and a third housing sealingly enclosing the space between the third and fourth partitions to direct second fluid from the outlet of the outer tube to the inlet of the discharge tube; and

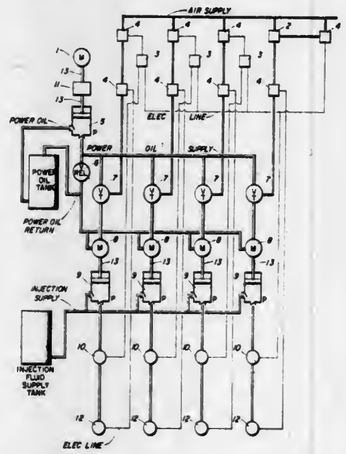
a jacket having a closed end enclosing substantially the length of the outer tube and having an outlet spaced close to the inlet of the annular passage, but separated from it, so as to cause the discharged first fluid to flow over the outer tube, exchanging heat through the walls of the inner and outer tubes.

4,204,574

LOW SHEAR POLYMER INJECTION METHOD WITH RATIO CONTROL BETWEEN WELLS

John L. Stalder, New Orleans, La., assignor to Conoco, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 835,609, Sep. 22, 1977, abandoned. This application Mar. 21, 1978, Ser. No. 888,728
Int. Cl.[2] E21B 43/22
U.S. Cl. 166—305 R 6 Claims



1. In the injection of shear degradable aqueous polymer solutions in a polymer thickened flood wherein a series of pumps are used in a multi-branch system, a method of reducing shear degradation while maintaining pressure and rate control within any branch of said multi-branch system comprising utilizing hydraulic drivers for the pumps and controlling said drivers

(a) by a pressure sensing loop such that a selected preset pressure will not be exceeded by any branch of the injection system, and

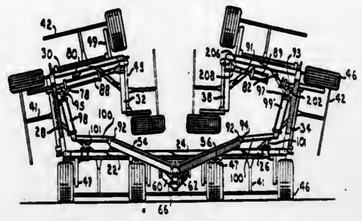
(b) by a rate proportioning control loop whereby the injection rates in the various branches of the multi-branch system will be maintained in a given proportion to one another regardless of rate changes in a designated master branch or in the total injection stream.

4,204,575

METHOD OF FOLDING A PLURALITY OF WING SECTIONS OF AN ARTICULATED IMPLEMENT

Raymond W. Richardson; Robert E. Burda, and John C. Crumrine, all of Cawker City, Kans., assignors to Richardson Manufacturing Company, Inc., Cawker City, Kans.

Division of Ser. No. 717,501, Aug. 24, 1976, Pat. No. 4,133,341. This application Oct. 27, 1978, Ser. No. 955,334
Int. Cl.[2] A01B 73/00
U.S. Cl. 172—1 4 Claims



1. A method of folding a plurality of wing frame sections of an articulated implement, said method comprising the steps of:

swinging the outermost section to a folded position;

supporting said outermost section in said position in fixed relationship to the adjoining inboard section;

swinging said outermost and adjoining sections in unison to a folded position of said adjoining section;

automatically interlocking said outermost and adjoining sections as the same are swung in unison to said folded position of the adjoining section; and

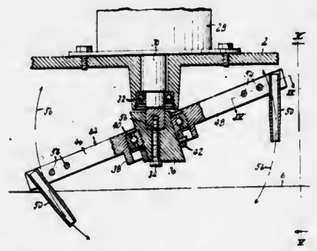
continuing to swing said outermost and adjoining sections, support the same on each succeeding inboard section, and automatically interlock each succeeding adjacent pair of sections until said wing frame sections are fully folded.

4,204,576

SOIL AERATING DEVICE

David L. Mullet, Hesston; Raymond J. Rilling, Moundridge, and Elmer D. Voth, Newton, all of Kans., assignors to Excel Industries Inc., Hesston, Kans.

Filed Sep. 20, 1978, Ser. No. 945,699
Int. Cl.[2] A01B 45/02
U.S. Cl. 172—22 10 Claims



1. A soil aerating device comprising:

a. a frame,

b. means supporting said frame for movement over the ground at a generally constant elevation above ground level,

c. a vertical drive shaft carried rotatably by said frame,

d. power means operable to rotate said drive shaft,

e. an arm freely rotatable about an inclined axis transverse thereto and lying in a vertical plane,

f. a depending tine affixed to each end of said arm, and

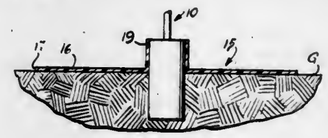
g. a drive member interposed between and interconnecting said drive shaft and said arm, said drive member being powered by said drive shaft and operable to impart to said arm a compound movement including a first oscillatory component about a horizontal axis transverse to the midpoint of said arm, whereby each end of said arm oscillates vertically to equal distances above and below horizontal, the tine at each end of said arm being operable to punch a hole in the soil beneath said arm as that end of the arm moves downwardly from horizontal to the lower limit of its vertical oscillation, and a second oscillatory component about the longitudinal axis of said arm, whereby said tines are oscillated between limits disposed equally at opposite sides of the vertical plane of said arm, said first and second oscillatory movements being so synchronized that said tines are disposed in vertical planes when said arm is disposed at the upper and lower limits of its vertical oscillation, and that the tine at each end of said arm is tilted forwardly of the vertical plane of said arm, having reference to the direction of rotation of said drive shaft, as that end of the arm moves from its upper limit of vertical oscillation to horizontal, is tilted again to a vertical plane as that end of the arm moves downwardly from horizontal to the lower limit of its vertical oscillation, is tilted rearwardly of the vertical plane of said arm as that end of the arm returns from the lower limit of its vertical oscillation to horizontal, and returns to a vertical plane as that end of the arm moves from horizontal to the upper limit of its vertical oscillation.

4,204,577

GOLF HOLE CUTTER GUIDE

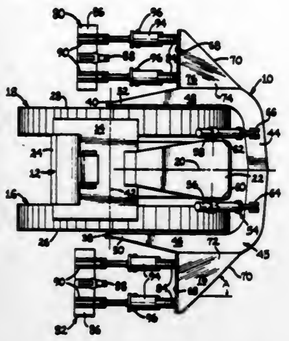
L. Dalton Bittle, 3208 Jamestown Rd., Hattiesburg, Miss. 39401

Filed Aug. 10, 1978, Ser. No. 932,600
Int. Cl.[2] A63B 57/00
U.S. Cl. 172—25 1 Claim



1. Apparatus for positioning a golf cup on a golf green comprising a guide member and a cutter tool, said guide member including a flat generally circular base having an upper surface of a size to support a person thereon, a guide sleeve having a first end integrally connected to said base and extending axially upwardly so that a second end is located at a predetermined height, said guide sleeve having an inner peripheral diameter which is substantially similar to the outer diameter of the golf cup, said cutter tool including an elongated tubular member having first and second ends and an outer diameter which is substantially the same as the diameter of the golf cup, the length of said tubular member being greater than the combined length of said guide sleeve and the golf cup, said tubular member being substantially hollow and unobstructed from said first end to said second end, an elongated rod connected to said second end of said tubular member and extending axially away from the same, a handle fixed to the end of said rod remote from said tubular member, said tubular member being slidably received by said guide sleeve, and said first end of said tubular member caused to penetrate a golf green until said second end of said tubular member is substantially level with said second end of said guide sleeve, whereby a plug of earth may be removed from the green leaving an opening of a size to receive a golf cup and said circular base prevents the formation of a ridge around the opening when the plug is removed.

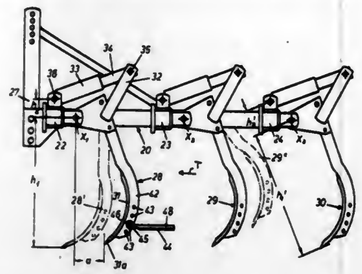
4,204,578
GROUND-ENGAGING IMPLEMENT ASSEMBLY
Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 26, 1978, Ser. No. 909,753
Int. Cl.[2] A01B *13/08, 63/102*
U.S. Cl. 172—307 3 Claims



1. A ground-engaging implement assembly (10), for installation on a vehicle (12) having first and second ends (22,24), first and second sides (26,28), and a longitudinal axis (20), comprising:
- a pair of transversely aligned pivot joints (38,40) connected to the sides (26,28) of the vehicle (12);
- a U-shaped frame (43) having a bight portion (44) and a pair of spaced leg portions (46,48) individually having a distal end (50,52), said bight portion (44) extending around one of said vehicle ends (22,24) and said leg portions (46,48) extending along said sides (26,28) and being connected individually to said pivot joints (38,40) at the distal ends (50,52), each of said leg portions (46,48) having a wing portion (72,74) defining an upright, substantially transversely oriented mounting face (68) located longitudinally between said pivot joints (38,40) and said bight portion (44); and
- two mechanisms (80,82), each mechanism (80,82) having a material penetrating element (88) and jack means (96) for selectively and hydraulically raising and lowering said element (88), and each mechanism (80,82) being connected to a respective one of said mounting faces (68) at the opposite sides (26,28) of the vehicle (12).

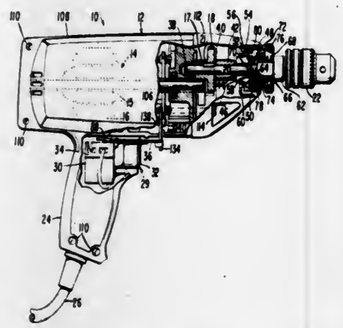
4,204,579
CULTIVATOR WITH PIVOTAL TINES
Willy Rau, Weilheim, and Christian Taus, Kirchheim, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Rau oHG, Weilheim, Fed. Rep. of Germany
Filed Aug. 25, 1977, Ser. No. 827,708
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 2638438; Jul. 8, 1977, 2730858
Int. Cl.[2] A01B *61/04*
U.S. Cl. 172—657 28 Claims

1. An agricultural ground-working apparatus comprising:
- a frame displaceable along the ground in a predetermined normal direction of travel;
- a plurality of ground-penetrating tools spaced horizontally apart on said frame;
- separate mounting means between said frame and each of said tools forming for each of said tools a separate pivot on said frame for pivoting of each tool on said support forwardly and backwardly relative to said direction of travel from a respective normal central position, the separate pivot for each tool being a pivot about which only that one of said plurality of ground-penetrating tools pivots; and
- equalizing means including only a plurality of hydraulic cylinder-piston units each operatively connected to a respective one of said tools and fluid-filled conduit means interconnecting said units for pivoting one of said tools forwardly about the separate pivot thereof relative to said



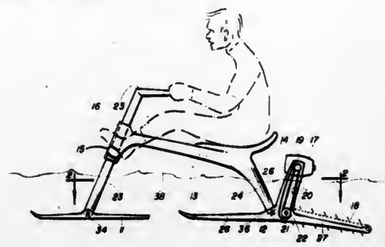
frame from the respective central position on displacement of another of said tools backwardly relative to said frame about the separate pivot thereof from the respective central position.

4,204,580
FORWARD BIASED SWITCH FOR A REVERSIBLE HAMMER DRILL
David J. Nalley, Liberty, S.C., assignor to The Singer Company, Stamford, Conn.
Filed Aug. 3, 1978, Ser. No. 930,777
Int. Cl.[2] E02D *7/02*; B23B *45/00*
U.S. Cl. 173—48 4 Claims



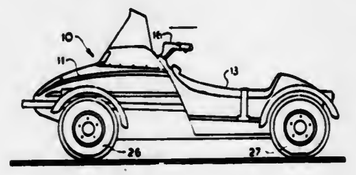
1. A forward biased switch assembly for a reversible hammer drill comprising:
- a. a housing,
- b. a motor journaled in the housing,
- c. a hammer drill mechanism selectively operable as a drill or as a hammer drill,
- d. a trigger switch in circuit with the motor to turn the motor on and off,
- e. a reversing switch in circuit with the motor and having an actuating button selectively to place switch into the operative positions of forward or reverse,
- f. a lever pivotally connected to the reversing switch to shift the actuating button between the forward position and the reverse position,
- g. a biasing means including a spring connected in the housing to bias the lever and cause it to urge the actuating button continuously in the forward position whereby the operator is free to manually shift the lever to place the actuating button in the reverse position.

4,204,581
SNOWFOIL SKI-BOB
Royce H. Husted, Wheaton, Ill., assignor to Saroy Engineering, Wheaton, Ill.
Filed Jan. 26, 1978, Ser. No. 872,688
Int. Cl.[2] B62B *13/14*; B62M *27/02*
U.S. Cl. 180—190 3 Claims



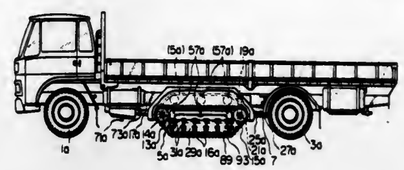
1. In a power driven snowfoil ski-bob for moving in soft snow, comprising in combination:
- a front steerable ski and a rear propulsion unit, each having a limited frontal area and a substantial under surface area,
- a frame adapted to support a rider,
- a motor for propelling said propulsion unit,
- struts for connecting said front ski and said propulsion unit to said motor to other parts of said ski-bob,
- the improvement wherein said motor is carried elevated above the propulsion unit and the snow on a strut having a substantially narrower frontal area than said motor so that the drag imposed by the snow on said ski-bob is minimized.

4,204,582
WHEEL CONVERSION KIT FOR SNOW VEHICLE
Gerrit J. van Soest, 555 Yorston St., Williams Lake, British Columbia, Canada (V2G 1H3)
Filed Mar. 31, 1978, Ser. No. 892,336
Claims priority, application United Kingdom, Apr. 5, 1977, 14280/77
Int. Cl.[2] B62M *27/02*
U.S. Cl. 180—183 15 Claims



1. A conversion kit for converting a snow vehicle into a wheeled vehicle, the kit having a front axle assembly for mounting a pair of steerable front wheels and a rear axle assembly for mounting a pair of rear wheels, the kit also having front axle mounting means including at least one axle bracket characterized by:
- (a) a pair of members spaced apart sufficiently to straddle the front axle assembly and adapted for securing rigidly the front axle assembly to the axle bracket,
- (b) securing shaft means extending from the axle bracket and adapted to pass directly through ski pivot openings in a transverse beam adjacent the front of the snow vehicle, and releasable securing means to secure the securing shaft means rigidly to the transverse beam.

4,204,583
WHEELED VEHICLE WITH ROTATABLE ENDLESS TRACK
Hirozumi Toyoura, No. 3285, Izumi, Komae-shi, Tokyo, and Masaharu Saito, No. 42, Myojindai, Hodogaya-ku, Yokohama-shi, Kanagawa-ken, both of Japan
Filed Aug. 8, 1977, Ser. No. 823,044
Claims priority, application Japan, Aug. 8, 1976, 51-094240
Int. Cl.[2] B62D *55/04*
U.S. Cl. 180—9.28 4 Claims

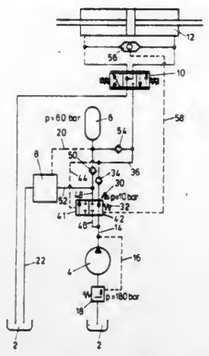


1. A wheeled vehicle having a source of driving power, a chassis extending longitudinally in said vehicle, a propeller shaft connected to the source of driving power, rear wheels drivably connected to the source of driving power through the propeller shaft, and an auxilliary drive means comprising:
- a pair of rotatable endless track means disposed between a pair of front and rear wheels;
- means for selectively raising and lowering said pair of endless track means with respect to the road surface; and
- means for drivably connecting said endless track means with said source of driving power when said endless track means is lowered and brought into contact with the road surface, said connecting means comprising first and second rotatable shafts for driving said pair of endless track means, said first and second shafts extending parallel to the axis of said propeller shaft, first pulley means fixedly mounted on said propeller shaft and rotatable therewith, second and third pulley means fixedly mounted on said first and second rotatable shafts, respectively, first endless belt means stretched between said first pulley means and said second pulley means, second endless belt means stretched between said first pulley means and said third pulley means and first actuating means for moving said second pulley means closer to and away from the axis of said propeller shaft, and second actuating means for moving said third pulley means closer to and away from the axis of said propeller shaft, said first and second actuating means being independently operable from one another to move said second and third pulley means relative to the axis of said propeller shaft independently of one another.

4,204,584
FLUID SUPPLY SYSTEM FOR AUXILIARY POWER STEERING HAVING PRESSURE STORAGE MEANS
Winfried de Maight, Mutlange, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany
Filed Sep. 13, 1978, Ser. No. 941,751
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742688
Int. Cl.[2] B62D *5/06*
U.S. Cl. 180—133 6 Claims

1. An auxiliary power steering system for a vehicle having a reservoir (2) for operating fluid, a pressure storage device (6) pressurized by a high pressure pump (4), a steering control valve (10), and a servomotor (12) connected between said control valve and the reservoir for operation under a maximum operating pressure, the improvement comprising means (8) connected to the reservoir for limiting pressurization of the pressure storage device to a storage pressure less than said maximum operating pressure, a valve assembly (30) alternatively connecting the high pressure pump to the storage reservoir and the steering control valve, having opposed actuating

surfaces (41 and 42), conduit means (36-44) connected between the valve assembly and the steering control valve for supply of fluid under operating pressure exerting a force on one of the actuating surfaces (41) of the valve assembly, and means (58) connecting the servomotor to the other of the actuating surfaces (42) for supply of fluid under the operating pressure in the servomotor exerting an actuating force displacing the



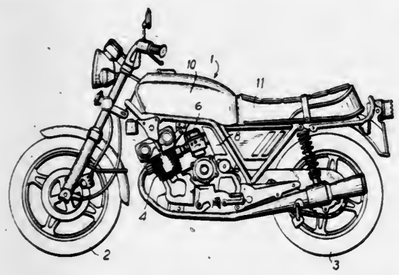
valve assembly from a pump pressure position to a storage pressure position connecting the high pressure pump to the pressure storage device as long as the operating pressure in the servomotor is less than the storage pressure, said valve assembly being connected to the steering control valve whenever the operating pressure in the servomotor is greater than the storage pressure.

4,204,585

CARBURETOR SYSTEM FOR A MULTI-CYLINDER ENGINE OF A MOTORCYCLE

Masaharu Tsubol, Tokorozawa, and Urataro Asaka, Kamifukuoka, both of Japan, assignors to Honda Giken Kogyokabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1978, Ser. No. 954,295
Claims priority, application Japan, Oct. 25, 1977, 52-127206
Int. Cl.² B60K *5/00*
U.S. Cl. 180—219 **11 Claims**



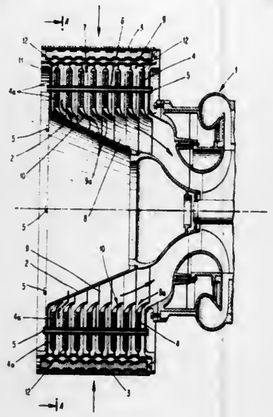
1. In a motorcycle having a frame with front and rear wheels, a multicylinder engine mounted on the frame between the wheels, a plurality of carburetors equal in number to the number of cylinders of the engine and respectively operatively connected thereto, the cylinders of the engine extending laterally in an arrangement of at least two cylinders on each side of a longitudinal axis through the frame, the carburetors being disposed rearwardly of the cylinders, and an air cleaner disposed rearwardly of the carburetors, the improvement wherein said carburetors are arranged in two banks on opposite sides of the longitudinal axis within the confines of the lateral extent of the engine, the carburetors in each bank extending along respective lines which are inclined inwardly toward the front to form an inverse V-shaped arrangement, and means connecting the air cleaner to the respective carburetors.

4,204,586

SILENCER ON THE INTAKE SIDE OF A COMPRESSOR WITH ASSEMBLY OF AXIALLY SPACED ANNULAR SOUND-DAMPING ELEMENTS

August Hani, Turgi; Hansulrich Horler, Zurich, and Hans Ursprung, Turgi, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Continuation of Ser. No. 725,121, Sep. 20, 1976, abandoned. This application Oct. 13, 1978, Ser. No. 951,049
Claims priority, application Switzerland, Dec. 11, 1975, 16088/75
Int. Cl.² F02M *35/00*
U.S. Cl. 181—229 **11 Claims**



1. In a silencer construction for connection to the intake side of a compressor which comprises an assembly of axially spaced annular sound damping elements forming air flow passages therebetween, said damping elements being located in a housing part of the silencer which is connected to a convergent intake manifold serving as the main flow path for the ingested air which flows inward through the spaces between the damping elements, the improvement wherein an inner circumference of each of said damping elements merges into an air guiding element having a curvilinear configuration which functions to deflect the partial air flows leaving said air passages between said damping elements in the direction of the main air flow established by said convergent manifold, and wherein the sum of the leaving cross-sections of all of said partial air flow passages is approximately equal to the average flow cross-section of said manifold.

4,204,587

LADDER CONSTRUCTIONS

Clayton E. Larson, Brooklyn, N.Y., assignor to White Metal Rolling and Stamping Corp., Brooklyn, N.Y.

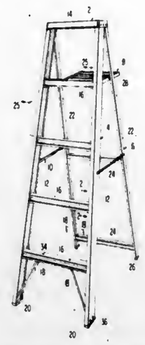
Filed Oct. 13, 1978, Ser. No. 951,068
Int. Cl.² E06C *7/08, 7/50*
U.S. Cl. 182—228 **10 Claims**

1. In a ladder having at least one section formed of a pair of spaced apart, metal side rails and a plurality of spaced apart, metal steps extending between said side rails, the improvements comprising:

said side rails are channel members defined by a web portion and a pair of lateral flanges,

said steps are channel members defined by a central web and a pair of depending flanges, each said depending flange having an integral offset tip portion and an integral offset portion intermediate said depending flange and said central web, said offset portions extending outwardly from said depending flanges and parallel thereto,

said web portion of said side rail channel consisting of a flat base, a pair of integral L-shaped flanges at each end of said lateral flanges forming inside U-shaped cavities at each side of said channel, the width of said cavities being approximately equal to the width of said offset portions of said steps,



said web portion of said side rails and said depending flanges of said cross members being slotted to enable the ends of said cross members to be interlocked with said side rails, and

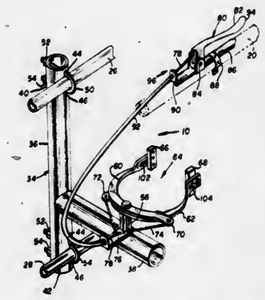
portions of said L-shaped flanges being crimped against tip flanges of said steps to rigidly fix said steps in said side rails.

4,204,588

WHEELCHAIR BRAKING APPARATUS

Henry E. Kawecki, Tabernacle-Medford Lakes Rd., Vincentown, N.J. 08088

Filed Oct. 16, 1978, Ser. No. 951,774
Int. Cl.² B60T *1/00*
U.S. Cl. 188—2 F **5 Claims**



1. In a wheelchair, having a pair of armrests, a pair of large primary wheels, a seat, a backrest, a frame, a hand-operated lever brake affixed to said frame for locking said primary wheels, the improvement of auxiliary braking means comprising:

(a) bracket means affixed to said frame proximate each primary wheel;

(b) braking means disposed on each said bracket means, said braking means being disposed proximate each said primary wheel and adapted to come into contact therewith when activated; and

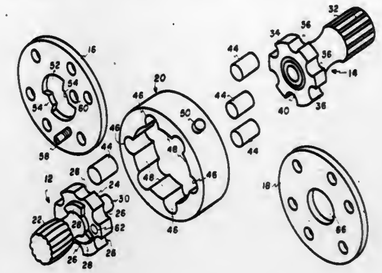
(c) activating means disposed on each said wheelchair armrests proximate said backrest for easy access by the elbows of a person sitting in said seat, each said activating means being operatively coupled to said braking means for activation thereof, causing said braking means to increase its contact with each said primary wheel in response to the pressure exerted on said activating means.

4,204,589

SHAFT DECOUPLING DEVICE

W. Aleck Loker, Leonardtown; Jon L. Bortzfield, Great Mills; Steven D. Chard; John W. Hall, both of Lusby, and John T. Meredith, Lexington Park, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1978, Ser. No. 931,348
Int. Cl.² F16D *3/34*
U.S. Cl. 192—27 **12 Claims**



1. A rotary shaft decoupling device comprising:

a driving component having a plurality of equally spaced, axially extending peripheral first grooves;

a driven component disposed in axial alignment with said driving component and having a like plurality of equally spaced, axially extending peripheral second grooves;

a like plurality of rollers disposed in said grooves in spanning relation between said driving and driven components so as to key said components together for common rotation;

retaining means encircling said rollers and components and operative in a first relative rotative position between said grooves and said retaining means to hold said rollers in said grooves;

said retaining means being operative in a second relative rotative position between said grooves and said retaining means to release said rollers from said grooves;

first indexing means for yieldably connecting said retaining means to said driving component for rotation therewith in said first relative rotative position;

yieldable stop means for arresting rotation of said retaining means and causing said first indexing means to yield to continued rotation of said driving and driven components, whereby said grooves are advanced in rotation relative to said retaining means into said second position;

second indexing means, responsive to obtaining of said second relative rotative position, for causing said stop means to yield and said retaining means to again rotate with said driving component; and

said rollers being characterized as being formed of a synthetic plastic materials.

4,204,590

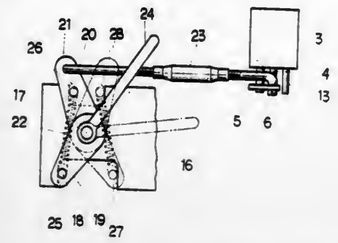
CONTROL MEANS FOR HYDRAULIC CLUTCHES

Shinta Tanaka, Matsuyma, Japan, assignor to Iseki Agricultural Machinery Mfg. Co., Ltd., Matsuyama, Japan

Filed Jun. 2, 1978, Ser. No. 912,000
Claims priority, application Japan, Jan. 9, 1978, 53-000900[U]
Int. Cl.² F16D *19/00*
U.S. Cl. 192—99 R **6 Claims**

1. For use with a hydraulic clutch, and a valve means operatively connected to said hydraulic clutch for controlling the flow of fluid pressure to said clutch for effecting the operation of said clutch between an operative engaged position and an

inoperative disengaged position wherein said valve means is remotely disposed from said clutch the improvement of control means for uniformally activating said clutch in a positive manner so as to prohibit any delay in the transition interval of shifting said clutch between an operative and inoperative position comprising a shift lever and a control lever, pivot means for pivotally mounting said shift lever relative to said control lever, whereby said pivot means defines a fulcrum about which



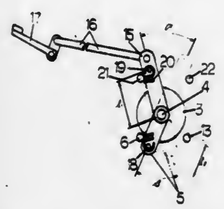
said levers are relatively pivoted; an actuating means connected to one of said levers to pivot therewith about said pivot means, and a spring means interconnected between said levers whereby said spring is disposed to one side of said pivot means in the engaged position of said clutch and to the other side of said pivot means in the disengaged position of said clutch and means interconnecting said valve means to said shift lever whereby the actuation of said valve means is rendered immediately responsive.

4,204,591

CONTROL MEANS FOR HYDRAULIC CLUTCHES

Mitsuhiro Tani, and Hideo Watanabe, both of Matsuyama, Japan, assignors to Iseki Agricultural Machinery Mfg. Co., Ltd., Matsuyama, Japan

Filed Jun. 2, 1978, Ser. No. 912,066
Claims priority, application Japan, Jun. 9, 1977, 52-75351[U]
Int. Cl.² F16D *19/00*
U.S. Cl. 192—99 R 6 Claims



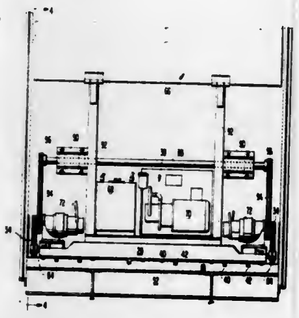
1. For use in combination with a hydraulic clutch and a valve means operatively connected to said clutch to control the flow of fluid pressure to said clutch for effecting the operation of said clutch between an operative engaged position and an inoperative disengaged position, the improvement of a control means for positively actuating said clutch between operative and inoperative positions in a manner which prohibits clutch slippage and with a minimum of delay in the transition interval of shifting of said clutch between operative and inoperative position, said control means including a valve lever connected to said valve means, a shift lever; means pivotally connecting to said shift lever to said valve lever whereby said shift lever pivots relative to said valve lever; a spring means interconnecting to and between the opposed ends of said respective shift lever and valve lever; a control handle, and linkage means interconnected between said control handle and said shift lever whereby said shift lever is rendered responsive to the actuation of said control lever, and said valve lever being activated only when said shift lever pivots relative to the valve lever an amount sufficient to move said spring means through the axis of said pivot means.

4,204,592

LOADING AND UNLOADING APPARATUS FOR VEHICLES

David W. Lutz, and David E. Lutz, both of P.O. Box 39, Carlisle, Pa. 17013

Continuation of Ser. No. 679,600, Apr. 23, 1976, Pat. No. 4,082,196. This application Apr. 3, 1978, Ser. No. 897,961
The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.
Int. Cl.² B65G *19/20*
U.S. Cl. 198—750 14 Claims



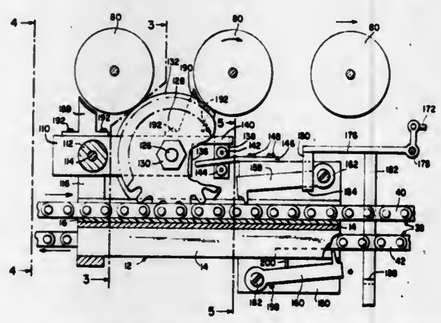
1. A conveyor mounted on a floor, said floor having a top surface, a plurality of substantially endless load supporting flexible strands mounted in a framework on said floor, each of said endless strands having a load supporting run and a return run, a beam connected to said strands, means for moving said beam over said floor, said means for moving said beam comprises a pair of chain strips mounted on said floor and parallel to said endless strands, said chain strips having ends which are fixed to said floor, drive means for driving interengagement with each of said chain strips, said beam being operably connected to said chain strips whereby said beam and said strands are caused to move longitudinally of said floor upon actuation of said drive means.

4,204,593

ARTICLE ACCUMULATION CONVEYOR

John M. Leach, Box 341, Port Jefferson, N.Y. 11777

Filed Apr. 5, 1978, Ser. No. 893,671
Int. Cl.² B65G *13/06*
U.S. Cl. 198—781 8 Claims



1. A conveyor for articles comprising a frame, rotatable article supporting and moving elements mounted on said frame, a powered driving element carried by said frame and continuously movable in a given path always free of contact

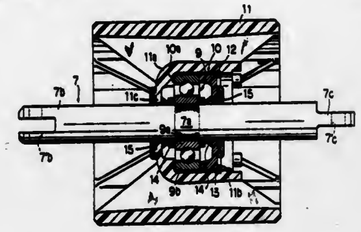
both with said rotatable article supporting and moving elements and the articles being conveyed and having a forward or top run and a return run, a circular shaped movement transmission member, means for mounting said member for rotation thereof by direct contact thereof with said powered driving element and also providing for bodily movement of said particular member so as to contact and transmit rotary movement to at least one of said article supporting and moving elements without breaking contact with said powered driving element, suport means mounted for movement in two directions parallel to the path of movement of said powered driving element and connected with said transmission member to bodily move said transmission member into and out of contact with said at least one of said rotatable article supporting and moving elements, an element mounted on said support means so that a part of it can be projected into contact with one run of said powered driving element to move said support means in a direction to bodily move said transmission member in one direction, a second element mounted on said support means so that a part of it can be projected into contact with the other run of said powered driving element to move said support means in a direction to bodily move said transmission member in the opposite direction, and control means operated by movement of the conveyed articles and connected to each of said last named elements so as to project one of them into contact with one run of said powered driving element when an article is in one position on said rotatable article supporting and moving elements and project the other of said two last named elements into contact with said powered driving element when said article is in another position on said rotatable article supporting and moving elements.

4,204,594

ROLLER OF A SYNTHETIC RESIN USED FOR A BELT-CONVEYOR

Hirokazu Banno, 8, Katasaka, Arao-cho, Toukai-shi, Aichi-ken, Japan

Filed Mar. 10, 1978, Ser. No. 885,253
Claims priority, application Japan, Nov. 26, 1977, 52-158437
Int. Cl.² B65G *15/08, 39/10*
U.S. Cl. 198—827 5 Claims



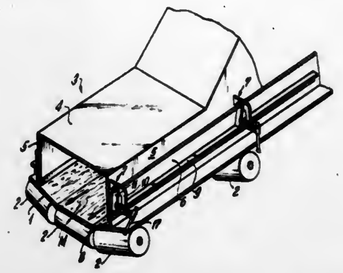
1. A roller made of a synthetic resin for use in rotatably carrying a belt of a conveyor, comprising:
- a short shaft having on either end portion thereof a coupling portion which permits a rotative movement only in one plane;
- a rotary bearing, the inner race of which is force-fitted onto the axially substantially middle portion of said shaft;
- a metallic housing of thin walled cylindrical shape with a flange portion on one end thereof, force-fitted onto the outer race of said rotary bearing;
- a roller body made of a synthetic resin which is concentrically formed with said housing by insert forming injection molding, said housing being the insert, said roller body having an internal boss portion with a circular groove on the internal surface thereof; and
- a snap ring fitted into the groove in said boss portion of said roller body, said snap ring cooperating with said flange portion of said housing to secure the position of said rotary being therebetween.

4,204,595

ADJUSTABLE CONVEYOR BELT SKIRTBOARD

Clinton E. Marrs, Carlsbad, N. Mex., assignor to Amax Inc., Greenwich, Conn.

Filed Nov. 16, 1978, Ser. No. 961,180
Int. Cl.² B65G *21/20*
U.S. Cl. 198—836 2 Claims



1. In a conveyor belt mechanism for the transport of material comprising a conveyor belt, a cover housing above said belt and between the side edges thereof and having bottom edges above said belt which define spaces through which material may pass, and removable, resilient skirtboards which form a barrier against the passage of material off the side edges of said belt through said spaces, the improvement comprising a clamping bar extending along a skirtboard above the bottom edge of said housing, and a plurality of spaced apart clamping means, each of said clamping means being adapted to releasably clamp said skirtboard between said clamping bar and said housing,

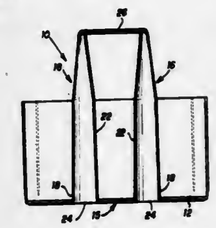
said clamping means comprising a first member attached to the outside of said housing, extending away and downwardly from the point of attachment to said housing and terminating in a threaded hole, a second member which is secured at its lower end to said clamping bar and which is pivotally attached at its upper end to said first member so as to hang below said first member and pivot in a plane which transversely intersects said cover housing, the axis of said threaded hole lying in said plane, and a third member threadedly engaging said hole and movable therethrough into and out of abutting engagement against said second member, at a point below the point at which said second member is attached to said first member, such that such second member pivots and causes said clamping bar to hold said skirtboard against said cover housing.

4,204,596

BOTTLE CARRIER

Frank E. Davis, Arlington, Tex., assignor to Robert E. Smith, Denton, Tex.

Filed Oct. 16, 1978, Ser. No. 951,514
Int. Cl.² B65D *01/36, 75/00*
U.S. Cl. 206—203 26 Claims



1. A carrier for a plurality of bottles and the like, comprising:
(a) a generally planar base having a longitudinal slot therein, and the base being adapted to receive and support a plurality of bottles, and the base being sufficiently small so that

the carrier may be substituted for equivalent cardboard bottle carriers;

(b) a pair of hollow pillars extending upwardly from the base, with one pillar being adjacent each end of the slot, and the pillars being slightly tapered from their bottoms to their tops, and said pillars each having a relatively long vertical opening on that side which faces the other pillar, with said vertical openings being contiguous with the slot in the base; and

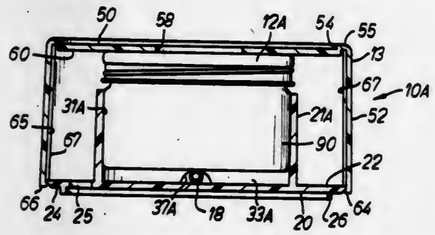
(c) a handle extending between the tops of the two pillars, with the length of the handle being slightly less than the length of the slot, and the width of the handle being slightly less than the width of the slot, whereby the handle of an empty carrier may be received through the slot of another carrier for fostering the stacking of said carriers with a minimal amount of consumed space.

4,204,597

CONTAINER AND SOLDERING KIT

Jerome A. Fischer, Franklin, Wis., assignor to Lucas-Milhaupt, Inc., Cudahy, Wis.

Filed May 16, 1979, Ser. No. 39,663
Int. Cl.[2] A45C 11/00; B65D 51/24, 85/04
U.S. Cl. 206—216 **19 Claims**



1. In a container:

a base member including a base plate and a projection extending from one side of said base plate, said projection including a recess therein accessible through an opening in the end of said projection;

means removably supported on said projection and serving to close said opening at the end of said projection;

an outer cover releasably connectable to said base plate and surrounding said projection and said means, said outer cover bearing against said means and having an opening therethrough in registry with said means;

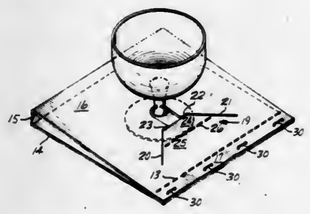
and releasably engageable locking means on said outer cover and said base plate for securing said outer cover to said base member.

4,204,598

VASE HOLDER

Michael G. Adams, Westland, Mich., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 31, 1979, Ser. No. 44,275
Int. Cl.[2] B65D 85/44; A47G 7/00, 23/02
U.S. Cl. 206—426 **7 Claims**



1. A folder blank comprising:

a bottom panel,

an end panel and

an upper panel,

an elongated slot located centrally of said upper panel,

the long dimension of said slot being in the lengthwise direction of said blank,

the edge of said slot adjacent the free end of said upper panel being formed by the smaller parallel side of a trapezoidal flap, said flap being formed in said upper panel and being defined by side slits in said upper panel, said slits being angled outwardly towards the outer edge of said upper panel, said trapezoidal flap having a scoreline extending between said side slits to divide said flap into upper and lower trapezoidal sections and for reversely folding of the flap back for insertion of said article into said slot and permitting said flap to return to its normal position for blocking said slot.

4,204,599

EDUCATIONAL KIT FOR SOLIDIFICATION OF A CHEMICAL COMPOUND TO PRODUCE CRYSTAL GROWTH

Burton D. Dunn, Phoenix, Ariz., assignor to Lava Gardens, Inc., Phoenix, Ariz.

Filed Oct. 16, 1978, Ser. No. 951,574
Int. Cl.[2] B44D 5/00; G09B 19/00
U.S. Cl. 206—575 **7 Claims**



1. An educational kit for generating crystal growth comprising:

a display board having at least one display face,

a hollow irregularly shaped three-dimensional support,

said support having a flange extending laterally from the perimeter of its hollow configuration,

adhesive means for detachable adhering said support to said display face, and

a plurality of items stored in the hollow configuration of said support,

said items comprising a plurality of small porous rocks, at least one package of crystalizable chemical solution and a magnifying glass,

whereby when the items are removed from under said support, the rocks placed on the top of said support when it rests with its flange on a flat horizontal surface, and the chemical solution poured on top of said rocks, crystal formations will occur the detail of which may be observed through the magnifying glass.

4,204,600

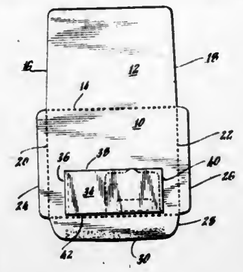
DUAL POCKET ENVELOPE

Sheldon S. Pritchard, Houston, Tex., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 885,603, Mar. 3, 1978, abandoned. This application Dec. 20, 1978, Ser. No. 971,411
Int. Cl.[2] B65D 27/36
U.S. Cl. 206—610 **2 Claims**

1. A dual pocket easy-opening envelope made from a suitable sheet material comprising a first panel, a second panel hingedly connected to said first panel and substantially coextensive therewith, first and second side flaps hingedly connected to said first panel, said side flaps being folded over and secured to the surface of said second panel to define a first envelope pocket, a separate panel secured at its edges to an inner surface of said first panel to define a second envelope pocket encompassed by the first and second panels, said first

panel further including a cover flap connected to the edge of said first panel opposite the edge to which said second panel is connected, said cover flap being adapted to be secured against said second panel to seal both the first envelope pocket and the second envelope pocket, said separate panel being secured to said first panel on three sides while remaining open at the edge which is adjacent the cover flap on said first panel, a removable access panel defined by a generally rectangular pattern of



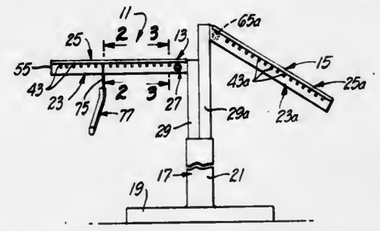
perforations in said first panel, said access panel overlying at least thirty percent of the second envelope pocket, said access panel extending the full height of the second envelope pocket to facilitate removal of the contents thereof, and wherein one edge of said access panel coincides with the edge of said first panel at which said cover flap is connected, said access panel further including a pull-tab at one edge thereof, which pull-tab is formed by a semicircular excursion from one line of perforations into said first panel, the excursion being a continuous cut.

4,204,601

SECURITY DISPLAY RACK

Robert E. Thomas, 2034 N. Olive, Santa Ana, Calif. 92706

Filed May 19, 1978, Ser. No. 907,770
Int. Cl.[2] E05B 73/00
U.S. Cl. 211—4 **10 Claims**



1. A security display rack for articles, said rack comprising:

an elongated support member having an elongated surface and a plurality of grooves extending through the support member and opening at said elongated surface, each of said grooves being adapted to have at least a portion of one of the articles inserted therein with the grooves spacing the articles along the support member;

an elongated locking member adapted to at least partially cover the open ends of said grooves to impede removal of the articles from the grooves;

means for mounting the locking member for movement to open and at least partially close the open ends of the grooves, said locking member having a closed position in which it lies along the elongated surface of the support member to at least partially close the open ends of all of the grooves sufficiently to impede removal of the articles from the grooves;

locking means for locking the locking member in said closed position;

means coupled to the support member for elevating the support member above a support surface; and

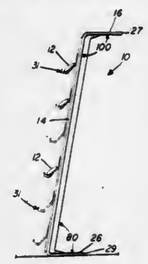
said mounting means including at least one flange on one of said members and at least one recess on the other of said members, said one flange being received in said one recess to permit the locking member to be slid over the open ends of the grooves to open and at least partially close the open ends of the grooves.

4,204,602

EYEGLASS CASE DISPLAY UNIT

Richard S. Dunchock, Farmington Hills, Mich., assignor to Optarac Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 655,747, Feb. 6, 1976, Pat. No. 4,084,700. This application Apr. 3, 1978, Ser. No. 893,316
The portion of the term of this patent subsequent to Dec. 9, 1992, has been disclaimed.
Int. Cl.[2] A47R 7/02
U.S. Cl. 211—13 **3 Claims**



1. A display rack for article of manufacture and the like, said display rack comprising:

a body panel having a plurality of laterally spaced apertures disposed in a vertical arrangement on the outside face of said body panel;

a plurality of article holder members, each of said members having a bottom wall and integrally disposed upright front and rear walls, the front wall being of sufficient size to retain an article on said base surface, the rearward wall extending upwardly and being provided with a pair of laterally spaced tab members adapted to be releasably secured to said body panel by means of engagement with said laterally spaced apertures;

means associated with said body panel for maintaining said body panel in an upright position;

a top flange extending behind said body panel for mounting said body panel to a vertical wall;

a base flange for supporting said body panel in an upright position; and

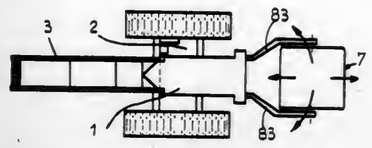
wherein said top flange and said base flange are integral rearward projections of said body panel, said base flange being disposed in a plane which is inclined with respect to the plane within said body panel is disposed, the perpendicular distance from the face of said body panel to the outer edge of said top flange being equal to the perpendicular distance from said body panel face to the outer edge of said base flange, whereby said body panel is disposed in a vertical plane when said top flange is attached to a vertical wall and said top flange and base portion outer edges abut against said vertical wall.

4,204,603

HIGH-CAPACITY CRANE WITH COUNTER-WEIGHT DEVICE

Jean Ducreuzet, Saint-Etienne, France, assignor to Creusot-Loire, Paris, France

Filed Apr. 27, 1978, Ser. No. 901,010
Claims priority, application France, Apr. 29, 1977, 77 12937
Int. Cl.² B66C 23/76
U.S. Cl. 212—49 2 Claims



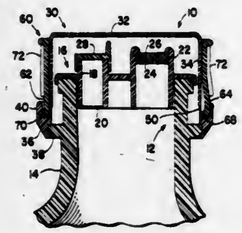
1. A high-capacity crane comprising:
a carrier frame in contact with the ground; a structure which revolves on said frame about a vertical axis; a jib for raising a load and a counter-jib which respectively are articulated on said structure; a counterweight suspended from said counter-jib; said counterweight having a mass providing a greater couple then the maximum couple applied to said counter-jib by the hoisted load; air cushion means located beneath said counter-weight; means for regulating the pressure of air supplied to said air cushion means as a function of the couple applied to said counter-jib by the hoisted load; and a connecting frame articulated to said counter-weight and to said revolving structure

4,204,604

CONTAINER WITH CLOSURE AND CLOSURE REMOVAL MEANS

Marius J. Morin, Westlake Village; Colin J. Nichols, Burlingame, and Myron R. Prouty, Oakland, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Apr. 30, 1979, Ser. No. 34,827
Int. Cl.² B65D 41/32
U.S. Cl. 215—257 9 Claims



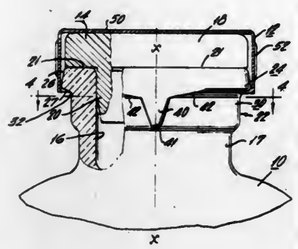
9. A container with a dispensing outlet, an outer closure having a top wall and a side wall surrounding the outlet and with its base hermetically sealed to an annular abutment about the outlet, and a cutting ring disposed about the outer closure and adapted for severing a portion of the outer closure wherein the improvement comprises:
the cutting ring having at least one deflectable tab at its periphery which extends in a direction generally parallel to the axis of the ring and with a sharpened projection on the inner surface of the tab,
the outer closure having an upstanding brim at the base outboard of the side wall providing a groove, the brim having at least one nesting means for accommodating an outer end portion of the tab, whereby the cutting ring may be positioned about the outer closure so as to position the outer end portion of the tab in the nesting means but upon rotation of the cutting ring the tab is forced away from the nesting means and moves inwardly by pressure exerted on it from contact with the inner surface of the brim, thereby forcing the sharpened projection to penetrate and sever the side wall of the outer closure.

4,204,605

CONTAINER-CLOSURE ASSEMBLY

Jacob Ravn, Phoenixville, and William A. Conard, Norristown, both of Pa., assignors to The West Company, Phoenixville, Pa.

Filed Sep. 8, 1978, Ser. No. 940,607
Int. Cl.² B65D 41/62
U.S. Cl. 215—295 16 Claims



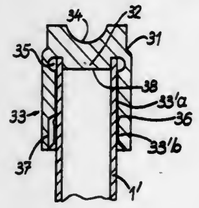
10. A container having a discharge opening, a flange of a predetermined horizontal cross-section projecting radially outwardly from said discharge opening having a side face diverging downwardly from the axial end face of the opening, a shaping surface below said flange of generally elliptical cross-section different than said flange, at least one cam member having a cam surface extending axially downwardly from said flange formed as a continuation of said side face thereof, and which projects radially outward greater than the maximum radial projection of the side face of said flange.

4,204,606

TUBE AND STOPPER COMBINATION WITH VENTING STRUCTURE

Antoine Micheli, Geneva, Switzerland, assignor to DEMATEX Development & Investment Establishment, Vaduz, Switzerland

Continuation-in-part of Ser. No. 668,795, Mar. 19, 1976, Pat. No. 4,066,067. This application Nov. 1, 1977, Ser. No. 847,606
Claims priority, application Switzerland, Mar. 21, 1975, 3634/75
Int. Cl.² A61B 10/00; B65D 41/20, 51/16
U.S. Cl. 215—307 20 Claims



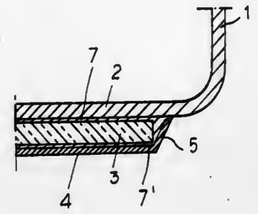
1. In combination, a vial-type tube and stopper, the tube comprising a neck having an open end, and the stopper comprising a hollow generally cylindrical body of deformable material having a head including a sealing membrane for fitting over and closing the open end of the tube and an integral skirt extending from the head for sealably fitting over the neck of the tube, and means defining in the stopper at least one axially-directed groove extending from the edge of the skirt at least partly along the inner surface of said skirt, said stopper being outwardly movable on the tube from a sealing position in which part of the inner wall of the skirt sealably fits around the outer wall of the tube neck to a venting position in which said axially-directed groove communicates the interior of the tube with the exterior.

4,204,607

COOKING UTENSIL

Tarcisio Zani, Lumezzane Pieve, Via IV Novembre 3, Brescia, Italy

Filed Nov. 2, 1978, Ser. No. 956,844
Int. Cl.² B65D 7/22; A47J 27/022; B65D 7/44
U.S. Cl. 220—68 6 Claims



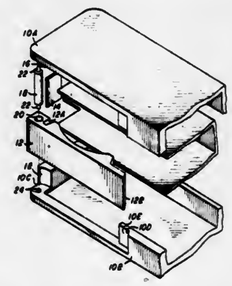
1. Stainless steel cooking utensil comprising a base surface, a protective member having a surface opposed to said base surface and a disc-like insert positioned between said base surface and said insert and attached thereto, said insert being enclosed fully between said base surface of said utensil and said opposing surface of said protective member, said protective member having a peripheral rim running adjacent the periphery of said insert so as to define therewith a spacing, a brazing material being provided between the surfaces to be attached, said brazing material extending within and fully occupying said spacing between said peripheral rim of said protective member and said base surface of said utensil whereby said insert is fully enclosed by said protective member and said protective member is fully attached to both said insert and said bottom surface.

4,204,608

ACCESS PANEL WITH NON-DESTRUCTIVE RELEASE

Donald F. Gatto, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1979, Ser. No. 26,620
Int. Cl.² B65D 43/24
U.S. Cl. 220—335 6 Claims



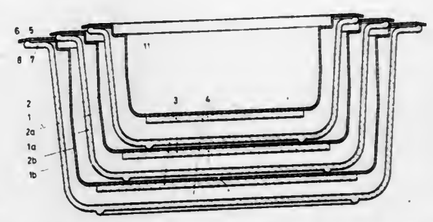
1. A housing having a cavity therein and having an opening in at least one wall of said cavity and comprising in combination:
a door panel dimensioned to cooperate with the opening in the cavity wall to enclose said cavity and including hinge means having protruding retractable portions;
the housing including, adjacent one edge of said cavity wall opening, pivot socket means for retaining said protruding hinge portions, and camming surfaces adjacent the socket means for cooperating with the hinge means to retract said protruding hinge portions when the door panel is pivoted beyond a predetermined position whereby the door panel is released from the housing wall.

4,204,609

COOKING, SERVING AND WARM-KEEPING ARRANGEMENT

Jacques Kuhn, Rikon, Switzerland, assignor to Heinrich Kuhn Metallwarenfabrik Aktiengesellschaft, Rikon, Switzerland

Filed Jan. 16, 1978, Ser. No. 869,492
Claims priority, application Switzerland, Jan. 26, 1977, 955/77
Int. Cl.² B65D 21/02; A47J 36/06, 39/02
U.S. Cl. 220—408 12 Claims



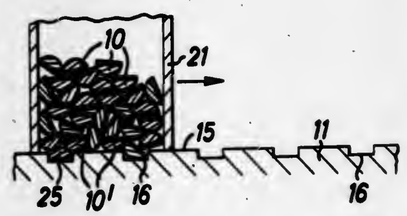
1. Cooking, serving and warm-keeping arrangement which includes at least one unit consisting of a serving vessel and a cooking vessel adapted to be nested therein,
the cooking vessel being adapted to be closed by a heat insulating lid,
the serving vessel having a generally horizontally outward extending encircling rim provided with an upward extending encircling bulge at a substantial distance out along its width and substantially at the outward edge of said rim,
the cooking vessel also having a generally horizontally outward extending encircling rim wide enough to extend beyond said bulge, the top of said upward extending encircling bulge forming substantially a line contact with and the only support for the cooking vessel which is so shaped and dimensioned as to otherwise be freely suspended within the serving vessel,
whereby a heat insulating space is provided interiorly of said bulge between the nested cooking and serving vessels including between their generally horizontal rims.

4,204,610

METHOD OF FILLING BLIND HOLES IN A STENCIL

Robert J. Schlaepfer, Niederteufen Ar, Switzerland, assignor to Jacob Schlaepfer & Co. AG, St. Gallen, Switzerland

Filed Sep. 12, 1977, Ser. No. 832,702
Claims priority, application United Kingdom, Sep. 15, 1976, 38252/76
Int. Cl.² B65G 59/06
U.S. Cl. 221—1 5 Claims



1. A method of filling blind holes in the upper surface of a stencil with decorative articles to define a particular pattern comprising the steps of, firmly supporting said stencil with said blind holes therein opening in said upper surface, positioning a

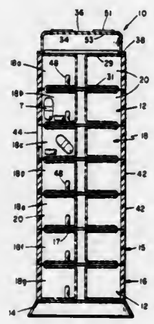
container filled with a stack of discrete decorative articles each of which includes a base portion having at least one planar surface area and an upper portion in an asymmetric configuration with respect to a horizontal plane extending between said base portion and said upper portion to thereby apply localized pressure to said decorative articles in said container, moving said container to move said stack of articles relative to said stencil upper surface for locating a decorative article in each of said holes in a fixed orientation with the upper portion of said article extending above said stencil upper surface and the base portion of said article located within said blind hole whereby lateral translational movement of said decorative articles and the associated pressure assists each article in said hole to adapt said fixed orientation.

4,204,611

APPARATUS FOR CHRONOLOGICALLY DISPENSING TABLETS

Joel S. Graves, 14376 Eddy Lake Rd., Fenton, Mich. 48430

Filed Apr. 20, 1978, Ser. No. 898,307
Int. Cl.[2] B65D *83/04*
U.S. Cl. 221—5 14 Claims



1. Apparatus for use in chronologically dispensing tablets comprising:

a cylindrical tablet magazine, having a longitudinal axis, including a plurality of axially disposed, groups of annularly arranged, radially outwardly opening, tablet receiving pockets;

said pockets in each group being axially aligned with the pockets in the adjacent groups to form axially aligned pocket rows;

a plurality of axially abutting, annular closure rings mounted on the radially outer surface of said magazine in transverse alignment with said groups of pockets for retaining tablets in said pockets, each of said rings including a radial opening therethrough for radially registering with selected ones of said pockets;

a first plurality of axially disposed time related indicia, disposed on one of said transverse plurality of rings and said magazine, generally in alignment with said groups of pockets; and

a second plurality of annularly arranged time related indicia receiving means disposed on said magazine axially adjacent the ends of said pocket rows;

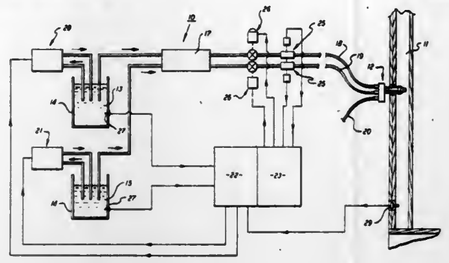
said rings being individually incrementally rotatable about said axis such that a selected one of said openings can be moved into radial registry with a selected one of said pockets to allow any tablets in said selected pocket to be radially dispensed.

4,204,612

SYSTEM FOR APPLYING FOAM INSULATION

Joseph F. Schrader, New Hartford, and Phillip C. Szeliga, Sauquoit, both of N.Y., assignors to Foam Controls Inc., New Hartford, N.Y.

Filed May 11, 1978, Ser. No. 904,877
Int. Cl.[2] B29C *11/00*
U.S. Cl. 222—40 9 Claims



1. The method of controlling the application of a foam insulation wherein a resin and a foaming agent are pumped through separate lines into a mixing chamber and the mixture injected into a receiving area, the method including the steps of

automatically adjusting the rate of flow passing through each line to compensate for changes in said flow whereby the resin and foaming agent are continually moved into the mixing chamber in the same proportions,

maintaining the temperature of the resin and foaming agent at a constant level,

monitoring the air temperature in the receiving area, and

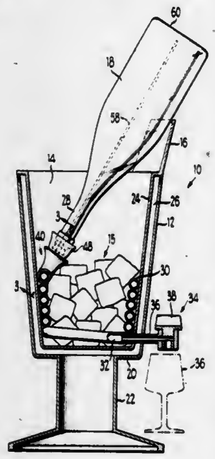
automatically changing the temperature of the resin and foaming agent in the event the air temperature moves outside of a desired range.

4,204,613

LIQUID COOLING AND DISPENSING DEVICE

Rouben T. Terzian; Douglas P. Montague, both of Chicago, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Mar. 13, 1978, Ser. No. 885,852
Int. Cl.[2] B67D *5/62*
U.S. Cl. 222—146 C 20 Claims



1. A fluid cooling and dispensing device, comprising:

an insulated container defining a cooling chamber for containing a suitable cooling media such as ice;

heat transfer means defined in said container for circulating fluid through said cooling media, said heat transfer means including a fluid inlet and a fluid dispenser;

a selectively operable valve having a first end adapted to be coupled to said fluid inlet and a second end adapted to be coupled to a container of fluid, said valve including air vent means communicating with the atmosphere and the interior of said container of fluid; and

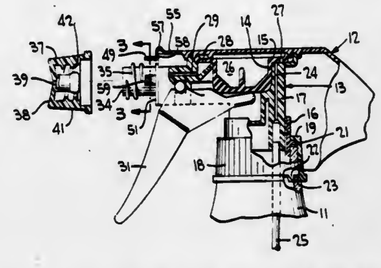
shutoff means including a movable valve element and a post in said fluid inlet engageable therewith for moving said valve element to an open position upon coupling said first end to said fluid inlet thereby allowing fluid flow through said valve and said circulating means.

4,204,614

FLUID DISPENSER HAVING A SPRING BIASED LOCKING MECHANISM FOR A SAFETY NOZZLE CAP

Randy F. Reeve, Walnut, Calif., assignor to Diamond International Corporation, New York, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,616
Int. Cl.[2] B67D *5/32*
U.S. Cl. 222—153 4 Claims



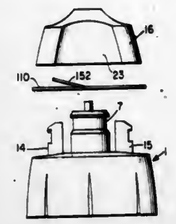
1. A fluid dispenser of the type including a fluid actuator having a nozzle end and containing fluid passages defining a discharge path for fluid from a supply container to a discharge orifice, a needle valve lying adjacent said outlet passage and having a free end, a nipple surrounding said needle valve and extending outwardly of said nozzle end, a nozzle cap having an annular skirt in threaded engagement with said nipple for movement toward and away from said valve end upon cap rotation, said cap having an end wall containing said orifice, said cap being movable into an off position upon rotation thereof in one direction causing said end wall thereof to move toward said valve until said valve end seats against said orifice thereby positively shutting-off discharge therethrough, and said cap being movable into a completely open position upon rotation in a direction opposite said one direction causing said end wall to move away from said valve, the improvement wherein one of said cap and said actuator has a ramp member thereon projecting inwardly toward said valve, the other of said cap and said actuator having a spring-biased tab extending parallel to said valve, said ramp member having an inwardly directed radial surface defining a shoulder and having a surface sloping from said shoulder and defining a ramp, said tab deflecting inwardly toward said valve upon engagement with said ramp during the rotation of said cap toward said off position, whereafter said tab snaps into engagement with said shoulder during further rotation of said cap into said off position to thereby lock said cap in said off position, engagement between said tab and said shoulder preventing rotation of said cap which would cause said valve end to unseat from said orifice, said tab being manually deflectable inwardly toward said valve for disengaging said tab from said shoulder to facilitate rotation of said cap causing said end wall thereof to move away from said valve, and a stop element extending radially outwardly of said nipple, said shoulder engaging said stop element upon movement of said cap into said open position to thereby prevent said cap from moving beyond said open position away from said valve.

4,204,615

FITMENT FOR RENDERING A CONTAINER CHILD-RESISTANT

Robert F. McCarthy, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 3, 1979, Ser. No. 54,513
Int. Cl.[2] B67D *5/32, 5/00*
U.S. Cl. 222—153 3 Claims



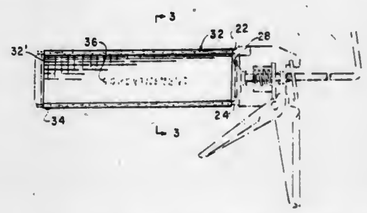
1. In combination with a twist-open closure comprising a shell member with an outwardly projecting spout having a tip member rotatably mounted theron, said sprout having a dispensing passageway extending therethrough, and wherein limited rotation of said tip member relative to said shell member moves the tip member from a position in which said dispensing passageway is closed to one in which said dispensing passageway is open, such tip member being provided with a pair of opposed finger grip depressions to enable gripping for manual rotation thereof between such open and closed positions, a latching member comprising a disc-like body portion adapted to be disposed between the tip and shell members, said disc-like body portion being provided with means to prevent rotation of said latching member relative to said shell member, at least one aperture enabling telescoping of said spout therethrough and a latching lug connected to said body portion, said lug being angulated upwardly out of the plane of said disc and being resiliently deformable towards the plane of said disc whereby when disposed between such tip and shell members said lug will enter a finger grip depression and signal closure when the tip member is rotated into the closed position, the edge of said lug engaging the side of the depression to thereby prevent inadvertent rotation of said tip member into an open position, manual depression of said lug into the plane of the disc moving said latching lug out of the finger grip depression being required to enable rotation of the tip member to the open position.

4,204,616

ADJUSTABLE SAFETY GUIDE FOR SKELETON TYPE CAULKING GUN

Peter J. Y. Chang, 7700 Tremayne Pl., McLean, Va. 22102

Filed Apr. 4, 1979, Ser. No. 27,000
Int. Cl.[2] G01F *1/00*
U.S. Cl. 222—391 6 Claims



1. In a caulking gun of the type having a thrust ring for retaining the nozzle end of a cartridge, a thrust mechanism for ejecting caulking from the cartridge, and, connecting the thrust ring and thrust mechanism, an open frame comprising an upper arm and a lower arm having spacing from the upper arm for receiving a cartridge therebetween from either the left side

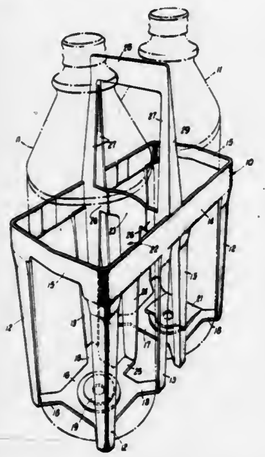
or the right side of the caulking gun, the improvement comprising: a flexible guide for a cartridge, the flexible guide extending between the upper arm and the lower arm, and means securing the flexible guide respectively at the upper arm and the lower arm with sufficient slack in said flexible guide for forming a half-sleeve around a said received cartridge, the securing means permitting the slack in said flexible guide to be pushed toward either said left side or said right side of the caulking gun for receiving and guiding a cartridge inserted between the upper and lower arms from either said left side or right side of the caulking gun.

4,204,617

TWO BOTTLE CARRIER

Kashichi Hirota, Hachioji, Japan, assignor to Kyowa Electric & Chemical Co., Ltd., Hachioji, Japan

Filed Mar. 17, 1978, Ser. No. 887,776
Int. Cl.² B65D *71/00*
U.S. Cl. 224—45 A **11 Claims**



1. A carrier for a pair of container units comprising a continuous marginal frame of roughly rectangular configuration and being elongated, opposing pairs of legs depending from said frame near the opposite ends and longitudinal center thereof and forming rectangular arrays of legs with the arrays separated somewhat near the longitudinal center of said frame, bottom webs joined with the lower ends of the legs in said rectangular arrays of legs and forming with the arrays of legs and with said marginal frame a pair of discrete container unit cells, a substantially T-shaped divider separating said cells substantially at the longitudinal center of said frame and including a transverse upper bar joined with opposite sides of said frame and a generally vertical leg substantially at the transverse center of said frame joined at its lower end to one of said bottom webs, and an over-top handle for said carrier extending parallel to said transverse upper bar at the longitudinal center of said frame and having side arm portions joined to said frame and said T-shaped divider.

4,204,618

DISPENSER FOR ROLL OF TICKET TAPES AND THE LIKE

Steven P. Reed, Felton, and Jordan A. Kinkead, Atherton, both of Calif., assignors to Sven Tveter, Saratoga, Calif.

Filed Jul. 7, 1978, Ser. No. 922,563
Int. Cl.² B26F *3/02*
U.S. Cl. 225—106 **13 Claims**

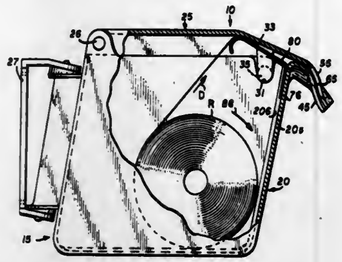
1. A dispenser for tearing strips from a roll of flexible strip with slits at predetermined locations therealong comprising:

(a) a container for housing a roll of strip, and container being formed with an exit opening through which the free end of the roll of strip advances from the container;

(b) means in said container engaging strip of said roll of strip for applying a force to retard the the egress of the strip from said container;

(c) transversely spaced curved twisted tracks projecting from said container over which the free end of the roll of strip advances; and

(d) transversely spaced curved twisted guides projecting from said container in overlying relation to said tracks respectively to form transversely spaced curved twisted



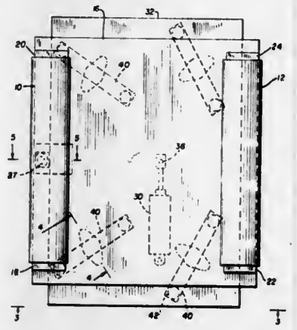
passages therebetween through which the free end of said roll of strip advances, said curved twisted tracks and said curved twisted guides being arranged to open a slit of said roll of strip while said slit is advancing through said passages by bowing the free end of the strip advancing therebetween at the slit, whereby the free end of the roll of strip is torn from the roll of strip at the opened slit through the application of force applied to the free end thereof, the application of the retading force applied by said means and the frangibility of the free end of the roll of strip at the opened slit.

4,204,619

PIVOTED WEB GUIDE FOR TRAVELLING STRIP

Lawrence R. Damour, 16 Chesler Sq., Succasunna, N.J. 07876

Filed May 4, 1978, Ser. No. 902,844
Int. Cl.² B65H *25/26*
U.S. Cl. 226—21 **9 Claims**



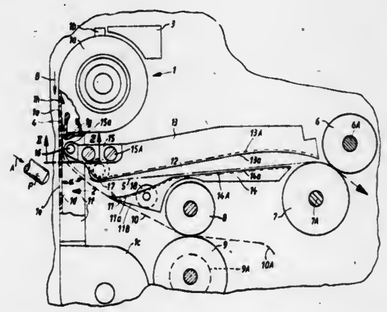
1. Apparatus for laterally guiding a travelling web of material which includes: (a) a support frame adapted for securing in a desired attitude to a machine or base; (b) a movable frame pivotally attached to the support frame and carried in a spaced relationship to the support frame, said frame movable in and to a determined limited extent; (c) a pivot post disposed at one end of the support frame and movable frame, this pivot post secured to one of the frames and carrying an antifriction pivot unit which engages and is secured in the other frame so that the movable frame is easily moved around the axis of this pivot unit with relation to the fixed frame; (d) a plurality of stanchions carried by and secured to one of the frames, each stanchion having mounted therein and thereon opposed ball transfer devices, these opposed ball transfers being adjusted so as to provide a determined spacing therebetween and at an established distance from the attaching surface of the stanchion; (e) a plurality of flat bar members each having parallel faces, each bar secured to that frame not carrying the stanchions, each bar so secured as to present the parallel faces of the bar in a plane normal to the axis of the pivot, each of said bars so positioned that the parallel faces when brought between the ball transfers are engaged on both faces by the ball portions of the opposed ball transfers during the limited movement of the movable frame; (f) a pair of free turning rollers carried in parallel relationship on said movable frame, and (g) mechanically responsive means for moving and controlling the angular position of said pivoted frame, said means responsive to an edge positioning sensing of the travelling web.

4,204,620

APPARATUS FOR REMOVING EXPOSED FILMS AND BACKING STRIPS FROM CASSETTES

Reinhart Würfel, Münich, Fed. Rep. of Germany, assignor to AGFA-Gavaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 24, 1978, Ser. No. 954,092
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748551
Int. Cl.² G03B *1/56*; B65H *17/42*
U.S. Cl. 226—91 **17 Claims**



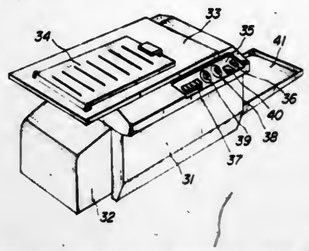
1. Apparatus for removing films and backing strips from containers of the type wherein a section of the container has registering first and second openings, wherein the leader of the backing strip is located between said openings and wherein said section confines a length of the backing strip to movement in a predetermined direction during intervals between successive exposures of film, comprising a pusher movable forwardly and backwards; locating means arranged to support a container in such position that the openings of said section are in register with said pusher whereby the latter passes, during forward movement thereof, first through one and thereupon through the other of said openings and expels the leader of the backing strip through said other opening; advancing means located behind said other opening and arranged to engage the expelled leader of the backing strip and to advance the thus engaged backing strip lengthwise along a predetermined path to thereby draw the film from the container through the intermediary of said backing strip, said path making with said direction an angle of between 30 and 60 degrees; means defining a film channel having an inlet adjacent said other opening; and means for deflecting the film into said channel in response to advancement of the backing strip along said path.

4,204,621

ROLL SHEET FEEDING DEVICE

Hiroshi Tsuda, Mitaka, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 916,043
Claims priority, application Japan, Jun. 17, 1977, 52-71150
Int. Cl.² B65H *17/26*; G03B *29/00*
U.S. Cl. 226—137 **4 Claims**



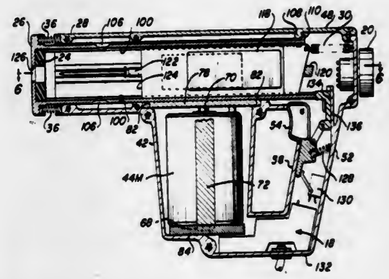
1. A roll sheet feeding device comprising: a sheet feed roller for feeding a roll sheet; and a stopping means for stopping said sheet feed roller at least one predetermined position, said means being provided in a midway of a passage through which a driving force is to be transmitted to said sheet feed roller; a diameter and an amount of rotation of said sheet feed roller is so determined that said sheet is fed for a predetermined length until said roller is stopped at a predetermined position after said sheet feed roller starts rotating from a predetermined position; said stopping means being said stopping means being placed into operation before said sheet feed roller completes said amount of rotation, and said stopping means halts rotation of said sheet feed roller at a time when said sheet feed roller completes said amount of rotation; and cutting means operatively engaged with said stopping means when said stopping means halts rotation of said sheet feed roller, whereby said sheet is cut by said cutting means into a predetermined length.

4,204,622

ELECTRIC IMPACT TOOL

James E. Smith, 217 Meadowlook Way, and James D. Cunningham, 2100 Topaz, both of Boulder, Colo. 80302

Division of Ser. No. 580,246, May 23, 1975, Pat. No. 4,042,036.
This application Apr. 8, 1977, Ser. No. 785,784
Int. Cl.² B25C *1/06*
U.S. Cl. 227—7 **16 Claims**



1. A fastener driving impact tool comprising in combination:
a housing defining a drive path;
ram means movable along said drive path in a drive stroke;
a pair of counterrotating flywheels supported by said housing; and,
means for transferring energy from said flywheels to said ram means to propel said ram means in a drive stroke.

4. A fastener driving method comprising the steps of:
supplying fasteners in sequence to the path of a fastener driving ram;

counterrotating a pair of flywheels to produce opposed precession forces; and

transferring energy from at least one of said flywheels to said fastener driving ram by a generally lateral relative movement and rotation of said flywheel to drive said fasteners in sequence.

4,204,623

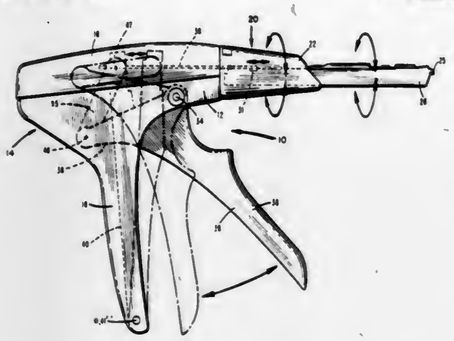
MANUALLY POWERED SURGICAL STAPLING INSTRUMENT

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Jul. 17, 1978, Ser. No. 925,170

Int. Cl.² B25C 5/10

U.S. Cl. 227—19 **52 Claims**



1. A manually powered surgical stapling instrument for applying sterilized staples to the disunited skin or fascia of a patient for effecting a joining of the skin or fascia, the instrument adapted to associate with a staple-carrying cartridge having anvil means at one end thereof and adapted to house a plurality of staples therein, a pusher element slidably mounted therein for advancing said staples in said cartridge, for ejecting said staples from said cartridge and for forming said staples around said anvil means, said surgical stapling instrument comprising:

a main body portion;

means for mounting said staple-carrying cartridge on said main body portion;

a thrust bar adapted to be operatively associated with said pusher element and slidably mounted in said main body portion for reciprocative movement in a forward direction and a return direction between an initial position and a final position, said initial position being the position of said thrust bar before a staple has been advanced, said final position being the position of said thrust bar after a staple has been formed;

a pawl;

pawl-deflecting means for deflecting said pawl during movement of said thrust bar;

pawl-mounting means including a pawl-contacting member for contacting a peripheral portion of said pawl, said pawl-mounting means for mounting said pawl on said thrust bar to permit deflection of said pawl by said pawl-deflecting means and movement of said thrust bar in said forward direction and said return direction between said initial and final positions, and for wedging said pawl between said pawl-deflecting means and said pawl-contacting member to prevent said thrust bar from returning to said initial position until said thrust bar has reached said final position during said forward movement of said thrust bar and to prevent said thrust bar from advancing to said final position until said thrust bar has returned to said initial position during said return movement of said thrust bar;

handle means for receiving a manually applied force; and

linkage means for transmitting said manually applied force to said thrust bar to advance said thrust bar and thereby advance, eject and form said staples.

4,204,624

NAILING MACHINE FOR USE IN THE MANUFACTURE OF WOODEN PALLETS

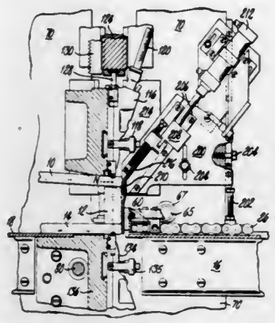
Christopher J. Gunn, Kettering, and Joseph Barker, Glenfield, both of England, assignors to Whitfield Wylie Limited, Kettering, England

Filed Sep. 28, 1978, Ser. No. 946,549

Claims priority, application United Kingdom, Oct. 1, 1977, 40880/77

Int. Cl.² B27F 7/00

U.S. Cl. 227—45 **10 Claims**



1. A nailing machine for use in the manufacture of wooden pallets comprising a conveyor operable to convey pallet components located thereon to a nailing station of the machine, the conveyor comprising locating means arranged to locate stringers of a pallet so that they extend transversely of the path of movement of the conveyor and arranged to locate bottom deck boards of a pallet so that they extend longitudinally of the path of movement of the conveyor beneath the stringers located by the locating means, feeding means in which deck boards of a pallet can be located so that they extend longitudinally of the path of movement of the conveyor, the feeding means being operable to feed deck boards of a pallet into position above a leading stringer which has been conveyed to the nailing station, and nailing means comprising a first nailing mechanism operable to nail the deck boards fed by the feeding means to a stringer from above the stringer and a second nailing mechanism operable to nail the bottom deck boards located by the locating means to a stringer from below the stringer, operation of the conveyor to move the leading stringer away from the nailing station being effective to withdraw the deck boards from the feeding means so that they are located on the following stringers for nailing thereto.

4,204,625

TACK STRIP NAILER

Travis A. Glenn, c/o C. Cantrell, 3215 Ave. G, Dickinson, Tex. 77539

Continuation of Ser. No. 750,263, Dec. 23, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 916,664

Int. Cl.² B25C 1/02

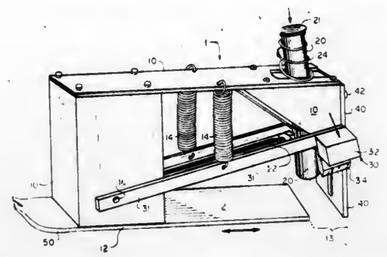
U.S. Cl. 227—76 **14 Claims**

1. An apparatus for installing a tack strip, comprising:

a. a rigid frame for positioning the apparatus with respect to the tack strip to be installed;

b. hammer means for driving nails through the tack strip, said hammer means movable attached to said frame for impacting movement in a vertical direction, and located above the position of the tack strip to be installed;

c. cutting means movably mounted on said frame for severing the tack strip, said cutting means comprising at least one elongated arm movably attached at one of its end portions to said frame, said arm being provided with a force receptive impact head, said impact head providing a



surface for receiving an applied force capable of severing the tack strip, and said impact head having a cutting blade attached thereto.

4,204,626

WIRE STAPLING APPARATUS

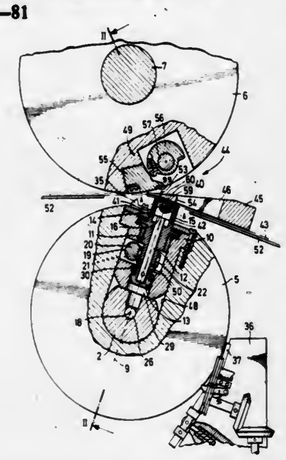
Willi A. P. Kutzner, and Georg Schneider, both of Würzburg, Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,448

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755209

Int. Cl.² B25C 5/04

U.S. Cl. 227—81 **16 Claims**



1. A wire stapling apparatus comprising a rotatable staple closing cylinder and a rotatable wire stapling cylinder coacting with the staple closing cylinder, the wire stapling cylinder having external stapling wire infeed, and means for cutting the wire and forming the cut wire into staples, for individually stapling separated multi-sheet copies, in which a staple conveyor and staple driving punch is disposed on the wire stapling cylinder, the staple conveyor and staple driving punch being capable of being rotated for 90° around a straight radial line extending outwardly from the center of rotation of the wire stapling cylinder, the staple conveyor and staple driving punch being rotatable about the radial line from a first position wherein the staple is formed to a second position wherein the staple is inserted.

4,204,627

STAPLE CLOSING MECHANISM

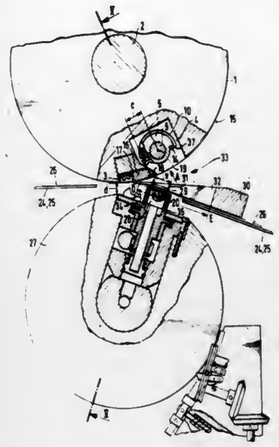
Willi A. P. Kutzner, and Georg Schneider, both of Wurzburg, Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,449

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755210

Int. Cl.² B25C 5/04

U.S. Cl. 227—81 **14 Claims**



1. A staple closing mechanism for use in a longitudinal stapling apparatus for stapling products which are conveyed at a uniform speed, in which a rigid staple shank bending insert and a rotatable staple shank bending device are positioned on a continuously rotatable staple shank closing cylinder, and in which the rigid staple shank bending insert is disposed to act upon a first staple shank, and the rotatable staple shank bending device is disposed to act upon a second shaft of a staple to be closed to close said staple.

4,204,628

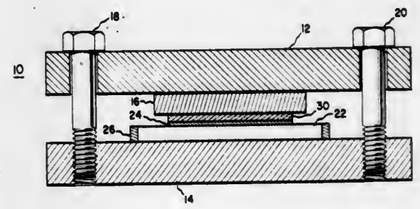
METHOD FOR THERMO-COMPRESSION DIFFUSION BONDING

Douglas E. Houston, Ballston Lake, and James A. Loughran, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,346

Int. Cl.² B23K 19/00

U.S. Cl. 228—106 **6 Claims**



1. A method for thermo-compression diffusion bonding a first compliant metallic sheet including first and second opposed surfaces to one of first and second relatively flat opposed surfaces of a structured copper member which may have irregularities in the surface thereof, said structured copper member including a bundle of substantially parallel, closely packed strands of copper of substantially equal length, one common end of said strands forming said first relatively flat surface, the

remaining common end of said strands forming said second relatively flat surface, said method comprising:

positioning the second surface of said first metallic sheet in substantial abutment with the first surface of said structured copper member;

positioning a first layer of compactible material above and in contact with the first surface of said first metallic sheet;

positioning in a high pressure, differential thermal expansion type diffusion bonding press the assembly of said structured copper member, said first metallic sheet and said first layer of compactible material thus formed in preparation for squeezing said assembly together at high pressure;

surrounding said assembly with an inert atmosphere; and

heating said press and said assembly at a temperature within the range of 300° C. to 400° C. so as to cause said press to squeeze said assembly together at high pressure resulting in the thermo-compression diffusion bonding of said first metallic sheet to said structured copper member.

4,204,629

BRUSH SEAL AND A METHOD OF MANUFACTURE

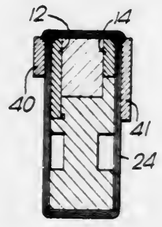
Stuart A. Bridges, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Jul. 7, 1978, Ser. No. 922,522

Claims priority, application United Kingdom, Jul. 20, 1977, 30391/77

Int. Cl.² B23K *31/02*; F16J *15/48*

U.S. Cl. 228—160 **7 Claims**



1. A method of manufacture of a brush comprises the steps of:

mounting a first side-plate of rigid material on a mandrel;

winding at least one continuous filament of bristle material onto the side-plate in such a manner that the material lies across an exposed face of the side-plate;

positioning a further side-plate of rigid material to overlie the bristle material on the face of the first side-plate thus sandwiching the bristle material between the two side-plates, leaving some bristle material projecting from one edge of the side-plate pair;

integrally joining the bristle material to the side-plate pair between which it is trapped at the other edge thereof; and

cutting the bristle material and removing the side-plates from the mandrel.

4,204,630

PACKETS FOR CIGARETTES, CIGARILLOS OR THE LIKE

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Pfuhl, Verden, Fed. Rep. of Germany

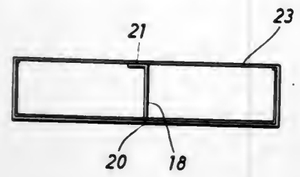
Filed Jun. 1, 1976, Ser. No. 691,810

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1975, 2525959

Int. Cl.² B65D *5/48*

U.S. Cl. 229—15 **2 Claims**

1. In a hard box packet for cigarettes, cigarillos, or the like, made from a blank of relatively rigid material, said packet having a folding lid, an insert attached to the blank, and an inner partition formed by said insert to subdivide the pack into two component spaces, said insert having a collar portion adapted to engage said folding lid, the improvements comprising: the partition being attached to the insert on one of its sides and having an edge flap opposite the side of attachment, said subdivision being formed by punching said partition from said



insert and folding it into a position transverse of said insert, said edge flap abutting a wall of said packet opposite said insert and being attached to said opposite packet wall by gluing, welding or the like.

4,204,631

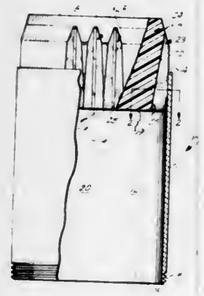
NOZZLE FOR CANOPY-STYLE WATER FOUNTAINS

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corporation, Burbank, Calif.

Filed Apr. 9, 1979, Ser. No. 28,220

Int. Cl.² B05B *17/08*

U.S. Cl. 239—17 **4 Claims**



1. An ornamental fountain nozzle comprising an elongate body defining therein a chamber having a lower water inlet opening thereto and an upper water outlet opening therefrom, a plug fixedly disposed across the chamber at the outlet opening with a portion of the length of the plug disposed within a portion of the chamber adjacent the water outlet opening, the plug having peripheral walls outside the body defining an extension of said portion of the chamber, and a plurality of grooves formed at intervals in the circumference of the plug with a substantial portion of their length disposed within the body, the grooves having lower ends communicating with the chamber and upper ends communicating with the exterior of the nozzle only through said plug peripheral walls above the water outlet opening from the body, each groove having a base element therealong most remote from the adjacent peripheral walls of the plug, the base element being inclined outwardly from the length of the plug proceeding upwardly along the length of the groove, each groove having side wall surfaces between the groove base element and the adjacent plug peripheral walls which converge toward each other proceeding upwardly along the length of the groove, the plug between the grooves being engaged in surface-to-surface contact with the chamber walls adjacent the body water outlet opening so that the only outlet of water from the chamber between the plug and the body is via the grooves.

4,204,632

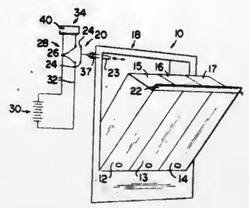
MAIL DEPOSITORY INDICATING ASSEMBLY

Hulet H. Cook, 1541 Leisure Dr., Apt. F-21, Bradenton, Fla. 33507

Filed Dec. 15, 1978, Ser. No. 969,973

Int. Cl.² B65D *91/00*

U.S. Cl. 232—34 **5 Claims**



1. An indicating assembly of the type primarily designed for indication of opening of a container assembly, such as a mail depository at a location remote therefrom, said indicating assembly comprising: switch means positioned in engaging relation to a predetermined portion of the container assembly and movable between an open and closed position defining a circuit breaking and circuit making position respectively, a power source electrically connected to said switch means and indication means electrically interconnected to said power source and positioned at a predetermined location remote from the container assembly; circuit means at least partially defined by said power source, said switch means and said indication means being electrically interconnected by conductor means, said switch means connected in said circuit in current interruptive relation between said power source and said indication means and disposed to at least reduce current flow to said indication means upon predetermined displacement of the container assembly, said indication means comprising at least one base element and electromagnetic means, said conductor means disposed to electrically interconnect said power source to said electro magnetic means, said one base element formed from a magnetically attracted material; said electro magnetic means removably attached to said base element during current flow thereto from said power source due to electro magnetic attraction, said indication means disposed at said remote location and oriented to allow separation of said electro magnetic means from said one base element because of the force exerted thereon by gravity upon said switch means moving to an open, circuit breaking position and cessation of current flow from said power source to said electro magnetic means.

4,204,633

LOGIC CHIP TEST SYSTEM WITH PATH ORIENTED DECISION MAKING TEST PATTERN GENERATOR

Prabhakar Goel, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,431

Int. Cl.² G06F *11/04*

U.S. Cl. 371—27 **9 Claims**

1. A method of testing logic network devices each having primary inputs and outputs and comprising the steps of:

selecting a set of possible device faults to be tested,

selecting one fault of said set for testing to determine if said fault exists at the corresponding node of the device network,

generating a signal test pattern of binary values to be applied at the primary inputs of each logic device to determine the existence of said one fault, and including the steps of:

assigning a binary value to an unassigned primary input,

determining the binary value implications of said assigned value to other nodes of the network,

determining whether the binary values assigned to the primary inputs constitute a test for said one fault by providing a determinative value at a primary output in that a binary value will occur at said primary output if said one fault is present and the opposite binary value will occur at said primary output if said one fault is not present,

in response to a determination that said assigned binary values do not constitute said test, determining whether said assigned binary values imply a variable value at said fault node,

in response to a determination that said variable value is implied, repeating the above sequence of steps commencing with said assigning step,

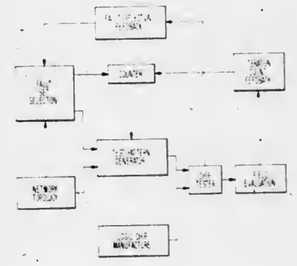
in response to a determination that said variable value is not implied, determining whether said assigned values imply the existence of a network block having a variable value at its output and a determinative value at its input,

in response to a determination that said existence of said block is implied, repeating the above sequence of steps commencing with said assigning step,

in response to a determination that said existence of said block is not implied, determining if all assigned primary inputs have been assigned both 0 and 1 binary values,

in response to a determination that all primary inputs have not been assigned both 0 and 1 binary values, determining whether the last-assigned primary input has been assigned both 0 and 1 binary values,

in response to a determination that the last-assigned primary input has not been assigned both 0 and 1 binary values, complementing the binary value of the last-assigned primary input and repeating the above sequence of steps commencing with the step of determining the binary value implications, and



in response to a determination that the last-assigned primary input has been assigned both 0 and 1 binary values, setting the last-assigned primary input to an unassigned variable binary value and repeating the above sequence of steps commencing with the step of determining whether all primary inputs have been assigned both 0 and 1 binary values, and

successively selecting the other faults of said set and repeating for each fault the above sequence of steps commencing with the step of assigning a binary value to an unassigned primary input, thereby generating a signal test pattern for each of the other faults of said selected set,

applying said signal test patterns to the primary inputs of each of a plurality of said logic devices,

measuring the respective output signals at said primary outputs of each of said logic devices in response to said signal test patterns so as to determine the existence and frequency of occurrence of each of said faults,

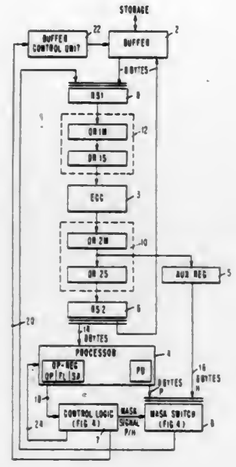
eliminating from the set of faults to be tested those faults having a frequency of occurrence below a predetermined limit, and

repeating on additional logic devices the above sequence of steps with the set of faults diminished by said fault eliminating step.

4,204,634
STORING PARTIAL WORDS IN MEMORY

Horst E. Barsuhn, Holzgerlingen; Ulrich Olderdissen, Herrenberg, and Werner Schmidt, Holzgerlingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 5, 1978, Ser. No. 939,314
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811318
Int. Cl.[2] G06F *11/12*
U.S. Cl. 371—38 4 Claims



1. In the transferring of a partial data block along a data path from a processor to a memory which is protected by the error correcting code unit which is located in the data path and which requires that full data words of a fixed number of bytes be stored in the memory along with error correction check bits generated by the error correcting code unit, the improvement which comprises:

control means for determining if either or both the first and last word of said partial data block are partial words having less than said fixed number of bytes and for generating mark bits identifying bytes missing from said partial words,

prefetch means responsive to the determination of said control means for fetching any stored word said memory that corresponds to any one of said partial words and passing said stored data word thru said error correcting code unit in said data path prior to the beginning of said transferring of the partial data block along said data path to said memory;

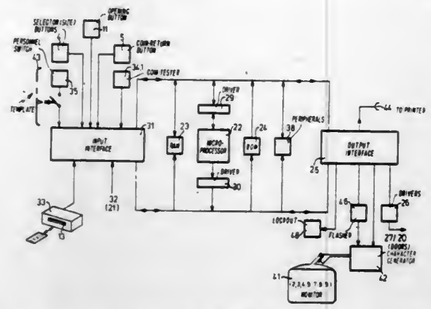
register means coupled to said data path for temporarily storing any stored data word fetched by the prefetched means and passed through said error correctoing code unit; and

mask means coupled to said processor, and said register and responsive to said mark bits for combining any said partial word from said processor with its corresponding stored word in said register means to replace bytes missing in said partial word and thereby generate a full data word with said fixed number of bytes for transferring along said data path to said memory through said error correcting code unit.

4,204,635
LOCKER INSTALLATION WITH A CENTRAL CONTROL UNIT

Otto Hofmann, Nüremberg, and Georg Nagler, Oberwildenau, both of Fed. Rep. of Germany, assignors to Tele-Alarm, Nachrichtentechnische Geräte GmbH, Herstellungs-und Vertriebsgesellschaft & Co. KG, Schwaig-Behringersdorf, Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,686
Int. Cl.[2] G06K *5/00, 15/00*
U.S. Cl. 235—382 7 Claims



1. In a locker installation having a plurality of lockers, a central control unit with a memory and a circuit connected thereto for manual interrogation and display of the occupancy status, and upon manual interrogation of the control unit, for temporarily effective and individual control of respective locker lock opening devices for the respective lockers, the improvement wherein a selector button, a payment due display, a payment comparator, a test data generator, a locker number display, a key card dispenser equipped with a magnetic strip recorded for the locker number and variable test data, as well as a temporarily effective locker door unlocking device, are coupled to circuit means for controlling occupation and access to said lockers, said circuit means being provided with a computer and control system (microprocessor **22**) with memories; a key card reader with test data coincidence control circuitry is provided for reopening of individual doors of said lockers, said reader being connected to an occupied-time-determining circuit, the amount due display, the payment comparator, the locker number display and the temporarily effective locker locking and opening device.

4,204,636
INTERFACE BETWEEN DATA READING WAND AND CASH REGISTER DISPLAY

Richard W. Hayman, Potomac, Md., assignor to Stanley Hayman and Company, Washington, D.C.

Filed Oct. 13, 1978, Ser. No. 950,967
Int. Cl.[2] G06K *15/00, 9/00, 7/10*
U.S. Cl. 235—383 6 Claims

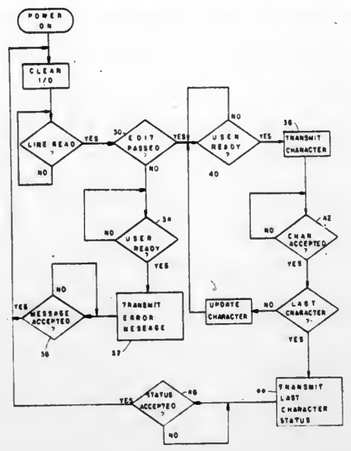
1. In combination with data reading means having encoded data output, display means, processing means, manual input means providing switch closure information, and means directing said switch closure information to said processing means for converting said switch closure information to a format suitable for display on said display means,

an interface apparatus comprising:

(a) means for converting said encoded data output to data simulating said switch closure information, and

(b) means connecting said data simulating said switch closure information to said directing means,

wherein said processing means and said display means cooperate upon receiving information for display from either said manual input means or from said data reading means,

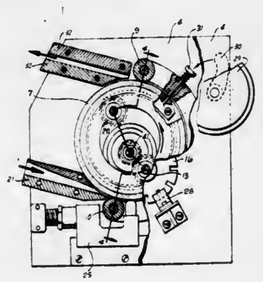


independently of the source of said information for display.

4,204,637
TICKET AND READING DEVICE

Alan M. Gray, 32 Johnston Crescent La., Cove, N.S.W., Australia

Filed Mar. 23, 1978, Ser. No. 889,595
Claims priority, application Australia, Apr. 1, 1977, PC9635
Int. Cl.[2] G06K *5/00, 7/14, 19/06*
U.S. Cl. 235—431 4 Claims



1. A ticket reading device for reading indicia on a ticket, said device comprising:

means defining a loading station for sensing the presence of a ticket when presented for reading and accepting the ticket;

a cylindrical drum having means on its outer surface to engage the ticket;

means responsive to sensing of a ticket at said loading station for rotating said drum to rotate the ticket on the surface of said drum about the axis of said drum;

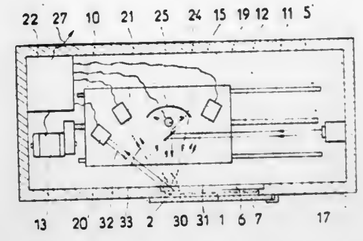
means defining a reading station including first and second indicia sensors, said first indicia sensor positioned for reading a row of indicia along one longitudinal marginal edge of a first face of the ticket as the ticket is rotated on the surface of said drum and said second indicia sensor positioned for simultaneous reading of a row of indicia along the opposite longitudinal marginal edge of the first face of the ticket, said first and second indicia sensors progressively translating the indicia into electrical signals representative thereof; and

means defining a cancellation station having at least one punch to remove part of the indicia on a ticket after the reading thereof at said reading station for identifiably marking the ticket upon successfully traversing said reading station.

4,204,638
PROCESS OF CODING A CARD WITH A DIFFRACTION GRATING HAVING LINES WITH IRREGULAR SPACING

Jean-Pierre Laude, St. Cyr, France, assignor to Instruments S.A., Paris, France

Filed Feb. 13, 1979, Ser. No. 11,881
Claims priority, application France, Mar. 2, 1978, 78 05976
Int. Cl.[2] G06K *7/12, 19/06*
U.S. Cl. 235—454 6 Claims

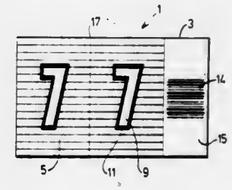


1. In a process for coding a set of access cards adapted to control an apparatus for opening, locking or releasing a processing device and for the ultimate determination of the validity of a card when it is presented in the apparatus, the coding being effected by the formation on the cards of at least one diffraction grating whose recognition is effected by projection of a luminous beam on the grating and analysis of the diffracted beams, the improvement comprising altering the regularity of the grating by producing at least one deviation in the spacing of the lines of the grating which varies periodically with a determined period and maximum amplitude, and detecting the presence of a supplementry satellite diffraction beam produced by the irregularity of the grating when illuminated by said luminous beam to establish the validity of the grating.

4,204,639
CODED LABEL

Donald T. Barber, and Thomas C. Scrymgeour, both of Willowdale, Canada, assignors to Datafile Limited, Willowdale, Canada

Filed Mar. 9, 1977, Ser. No. 775,687
Int. Cl.[2] G06K *7/10, 19/06;* G09F *3/16;* B41F *13/54*
U.S. Cl. 235—462 4 Claims



1. A file at least partially coded by means of a plurality of colour coded labels wrapped around a side edge of a file panel and affixed to both sides of a file panel, each of said labels having a colour field, two spaced-apart indicium located in and visually recognizable in said colour field, said label being folded about fold line extending along the portion of said colour field located between said spaced-apart indicium, machine readable bar code off to one side of said colour field and oriented to be machine read in a direction parallel to said fold line, said bar code for each label including start-stop codes to

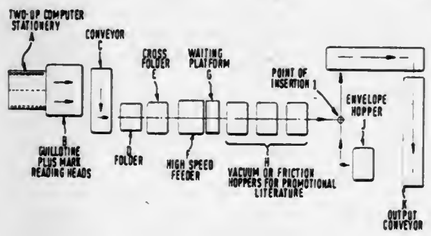
permit individual reading of each label, said indicium being of sufficient size to facilitate visual recognition, said bar code corresponding to the singular designation of such colour and indicium, each of said labels being identifiable by colour, by its bar code and by its indicium; the colour, bar code and indicium of each label having its singular designation contributing in part to the code of said file, the orientation and relative positions of the indicium and bar code on each label being the same as that on an adjacent label, each of said labels being folded about said panel side edge along said label fold line with the portion of the colour field between said indicium presented along and adjacent such side edge and with said bar code located on the back of said panel, all of which are in generally linear path by virtue of positioning each label fold line along such side edge to permit reading of all bar codes on said labels on file folder panel back in a linear pass by a scanning device.

4,204,640

DOCUMENT HANDLING APPARATUS

Paul Fuller, Romford, England, assignor to Vickers Limited, London, England

Filed Dec. 31, 1978, Ser. No. 969,089
Claims priority, application United Kingdom, Dec. 16, 1977, 52554/77
Int. Cl.² G06K *13/02, 19/06*
U.S. Cl. 235—476 **9 Claims**



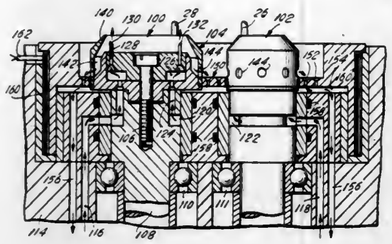
1. Document handling apparatus including document feed means arranged to feed a predetermined document along a predetermined feeding direction through the apparatus, a document constituting said predetermined document bearing selectively provided serial code markings located one after another in said direction, a feeding head located to read said code markings in sequence while said feed means cause said document to traverse said feeding head, at least two document-handling stations distributed in succession beyond said reading head in said feeding direction, means at each said station having idle and operative conditions and when in said operative condition selectively subjecting said document to a predetermined handling operation at that station, synchronisation pulse generation means operable to generate synchronisation pulses for establishing reference timings for the reading of said code markings in dependence upon movement of said document in said feeding direction, and code responsive control circuitry connected between said reading head and said document handling stations and operable in response to the serial pattern of said code markings as read by said reading head at said reference timings for selecting one of said idle and operative conditions at each said station thereby selectively subjecting said document to a predetermined handling operation at that station.

4,204,641

DISPENSING NOZZLE FOR SEALING PLASTICS

John W. Rouse, Fairlawn, and Archibald H. Payne, Scotch Plains, both of N.J., assignors to American Can Company, Greenwich, Conn.

Filed Feb. 15, 1978, Ser. No. 878,016
Int. Cl.² B05B *1/28, 3/02*
U.S. Cl. 239—121 **3 Claims**



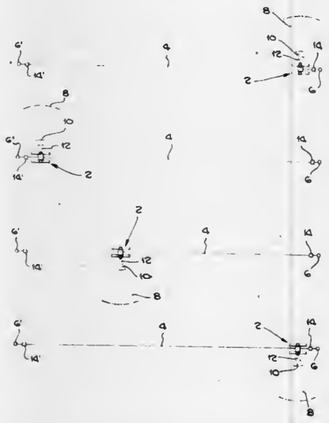
1. A nozzle assembly incorporated in can end making apparatus for dispensing sealant plastics to the underside of can ends comprising in combination:
(a) a housing;
(b) a rotatable shaft, received within said housing, having a substantially vertical spin axis, and including an annular plenum chamber for receiving said sealant plastics;
(c) a nozzle head attached to the top end of said shaft to rotate with said shaft within said housing, said nozzle head including orifice means comprising a ring of upstanding substantially vertical, thin walled tubes said ring being substantially centered on the axis of said shaft, with the upper end of each of said tubes being sharply beveled to exposed the the tubing bore thereby forming a radially outwardly disposed tip to facilitate the dislodging of said sealant plastics extruded therefrom;
(d) first conduit means for delivering said sealant plastics into said plenum chamber on said shaft; and
(e) second conduit means for delivering said sealant plastics from said plenum chamber to said orifice means.

4,204,642

TRAVELING SPRINKLER SYSTEM AND METHOD

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Filed Oct. 13, 1977, Ser. No. 827,787
Int. Cl.² B05B *3/18*
U.S. Cl. 239—191 **40 Claims**



1. A system for irrigating an agricultural field, comprising:

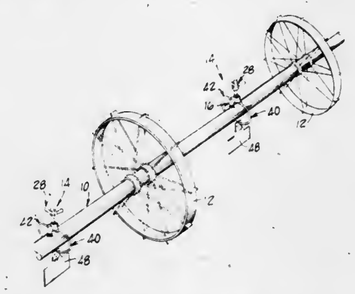
a pair of stop means positioned on opposite sides of the field and defining therebetween an area to be irrigated,
an intermittent sprinkler means, including means for accumulating a volume of water, and means for intermittently discharging an accumulated volume of water in a long distance irrigating spray,
a mobile base for said sprinkler means,
means for supplying the sprinkler means with water,
water powered means for propelling said base across the field between said pair of stops,
means for diverting water from said sprinkler means to power said propelling means, and
means carried by said sprinkler means and engageable with said stops to reverse the direction of sprinkler travel when the sprinkler means approaches a stop,
said intermittent sprinkler means operating with a relatively greater volumetric rate of water flow than said water powered propelling means.

4,204,643

SPRINKLER LEVELER AND WIND COMPENSATING DEVICE

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed Jul. 12, 1978, Ser. No. 923,715
Int. Cl.² B05B *3/02, 12/12*
U.S. Cl. 239—212 **8 Claims**



4. An irrigation apparatus comprising:
a main pipe, a branch pipe secured to the main pipe, water conducting means pivotally connected to the branch pipe, a sprinkler head secured to the water conducting means, a body member, and connector means for interconnecting the water conducting means and body member, wherein the sprinkler head and body member are positioned so that the main pipe lies generally therebetween with the sprinkler head in an erect position, and wherein said connector means is spaced from said main pipe so that said body member, said connector means, and said water conducting means can pivot on said branch pipe relative to said main pipe.

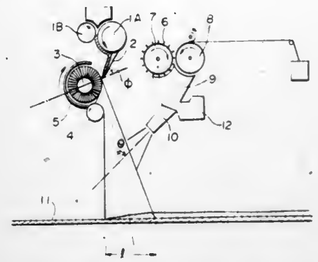
4,204,644

SPRAYING APPARATUS FOR PREPARING GLASS FIBER REINFORCED CEMENTITIOUS PRODUCT

Mikio Kozuka, Yokohama, Japan, assignor to Asahi Glass Company, Limited, Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 844,918
Claims priority, application Japan, Nov. 18, 1976, 51-137794
Int. Cl.² B05B *7/24*
U.S. Cl. 239—220 **12 Claims**

1. A spraying apparatus for preparing a glass fiber reinforced cementitious product comprising:
a roll type cementitious mortar spray means adapted to discharge a transverse sheet of cementitious material; and
a chopped strand spray means adapted to discharge a transverse sheet of chopped strands, including a passage member through which chopped strands fall in a first direction and a second passage forming an angle of 20° to 70° with said first passage, having an elongated outlet of substantially the same width as said roll type spray means which sprays a glass fiber chopped strand along a first axis by air flow into a cementitious mortar flow sprayed along a second axis by the roll type spray means such that a cross angle formed between said first axis and said second axis is



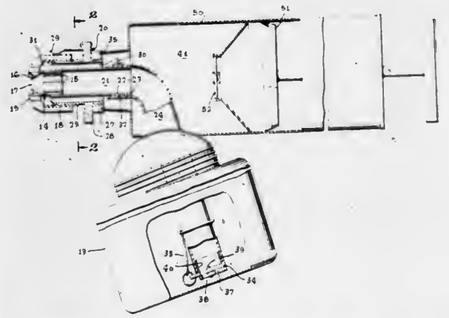
30° to 80° wherein the chopped strand spray means comprises a roll type chopped strand cutter and a first air nozzle disposed within said second passage so as to spray the cut chopped strand, the width of the cutter being substantially the same as the width of the sprayed chopped strand.

4,204,645

GENERAL PURPOSE COMPRESSION-TYPE SPRAYER

Leo A. Hopp, Canoga Park, Calif., assignor to Column Corporation, Van Nuys, Calif.

Filed May 17, 1978, Ser. No. 906,467
Int. Cl.² B05B *7/30*
U.S. Cl. 239—341 **8 Claims**



1. Apparatus for spraying material delivered to a nozzle assembly from a supply tank through a supply passage under impulsion of compressed gas from a source thereof applied to the surface of said material in said tank wherein compressed gas from said source is also mixed with said material, comprising:
a cylinder having at least one aperture therethrough interposed between said gas source and said supply passage just upstream of the final aperture of said nozzle assembly, said cylinder having its outer surface in communication with said gas source and its inner surface in communication with said supply passage and being slidable axially in contact with the end of said supply passage;
positioning means including an adjustment nut connected to said cylinder and to said supply passage, at least one of said connections being by means of threads, associated with said nozzle assembly for moving said cylinder axially of the end of said supply passage and thereby controlling the portion of the aperture in the cylinder which is avail-

able for gas flow therethrough and thus variably restricting the flow of compressed gas into said material; and

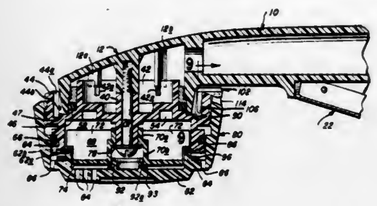
adjustable means interposed between said supply tank and the inlet end of the supply passage for variably restricting the flow of material into said passage.

4,204,646

HAND-HELD PULSATING SHOWER

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Jan. 22, 1979, Ser. No. 5,161
Int. Cl.² B05B *1/08*
U.S. Cl. 239—443 **17 Claims**



1. In a shower head that includes therein a rotor which aids in providing a pulsed discharge of water jets, the improvement comprising, in combination:

upstream housing means including an upstream transverse wall and downstream extending, axially elongated, inner and outer concentric cylindrical walls that partially define an annular rotor chamber for a rotor, jet forming and directing means in the upstream transverse wall directing jets downstream thereof into the rotor chamber at a rotor driving attitude;

a rotor in said rotor chamber;

a cup-shaped downstream housing member including a downstream transverse wall with two concentric sets of jet-discharging apertures therethrough; means securing the downstream housing member to the upstream housing means in a manner for selectively moving said downstream transverse wall axially toward or away from said upstream transverse wall respectively between a first position at which pulsed jet-discharge is effected and a second position at which a continuous spray is discharged; and

means for selectively discharging either a pulsed jet-discharge through only one of the sets of jet-discharging apertures, or a spray through both sets of jet-discharging apertures.

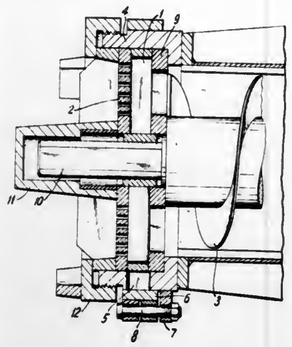
4,204,647

MINCING MACHINE

Stig K. Jensen, Norreas 65, 4200 Slagelse, Denmark

Filed Jun. 16, 1978, Ser. No. 916,405
Claims priority, application Denmark, Jun. 17, 1977, 268577/77
Int. Cl.² B02C *18/30*
U.S. Cl. 241—82.6 **4 Claims**

1. A meat grinding machine comprising a cylindrical housing defining a path for meat to be ground, means for advancing the meat along said path, an apertured plate extending across the path and a rotary cutting element disposed in said path adjacent to and upstream of said plate, said housing, in the region of said cutting element having recess means communicating with said path which constitutes a series of aligned co-acting recesses spaced from each other and extending around the periphery of said housing to enable the displacement of meat particles deposited in said recesses with bone fragments included in said meat.

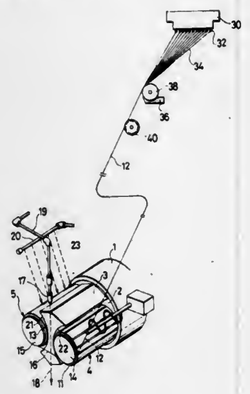


4,204,648

STRAND CUTTING DEVICE FOR CONTINUOUS GLASS FIBER WINDING APPARATUS

Hisao Minezaki; Akio Haneda; Asanori Masaki; Takeo Hanzawa, and Yukio Uchiike, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Continuation-in-part of Ser. No. 835,277, Sep. 21, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 2,000
Claims priority, application Japan, Sep. 28, 1976, 51/116157
Int. Cl.² B65H *54/02, 67/04*
U.S. Cl. 242—18 A **5 Claims**



1. A continuous glass fiber strand winding system comprising; a turntable, a pair of rotatably driven spools mounted on the turntable at winding and standby positions, means for continuously supplying a coated, wet glass fiber strand to the spool at the winding position for winding thereon, means for rotating the turntable when the spool at the winding position becomes fully loaded to thereby index the loaded spool to the standby position and an empty spool to the winding position and simultaneously form a wet bridge strand between the loaded and empty spools, and means for severing the bridge strand while in a wet state to enable continued winding on the empty spool, said means for severing comprising:

(a) a nozzle disposed adjacent the bridge strand and oriented such that a water discharge stream supplied therefrom laterally strikes the wet bridge strand in a substantially perpendicular direction,

(b) means for supplying pressurized water to the nozzle to sever the wet bridge strand, and

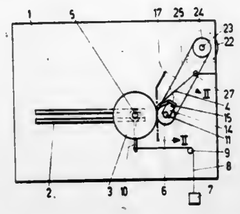
(c) means to synchronize the supply of water to said nozzle with the rotation of the turntable.

4,204,649

SPOOLING MACHINE

Aleidus G. Bosman, 17, Van Bergenlaan, Wassenaar, Netherlands

Filed Aug. 14, 1978, Ser. No. 933,505
Claims priority, application Belgium, Aug. 19, 1977, 180307
Int. Cl.² B65H *54/30, 54/48*
U.S. Cl. 242—43 R **5 Claims**



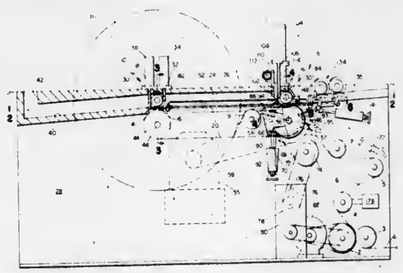
1. In a spooling machine for winding thread-like material, particularly yarns, on a material bearing core which comprises a frame, a bearing axis mounted thereon for the core on which the material has to be spooled, a driving roller mounted on said frame for driving the material-bearing core, means to drive the driving roller, means for effecting the engagement between the material-bearing core and said driving roller to cause driving of the material-bearing core, and a displacement device to reciprocate the material to be spooled during the spooling thereof along the lengthwise axis of the bearing axis, said displacement device comprising a pattern roller which is formed by the above mentioned driving roller, said pattern roller being provided with an endless groove that runs alternately as a screw-thread over said roller with reversing points adjacent each end of said roller, a guide member for the thread-like material, said guide member having a thread guiding portion and a driven part a portion of which enters the groove in the driving pattern roller along which the guide-member is reciprocable, wherein the improvement comprises a second separate groove through which the thread-like material passes, said second groove being positioned at least adjacent the reversing points of said endless groove.

4,204,650

APPARATUS FOR REPLACING ROTATING MANDRELS ON WHICH A WEB IS WOUND

William R. Mengel, Easthampton, Mass., assignor to Magnat Corp., Easthampton, Mass.

Filed Jan. 23, 1978, Ser. No. 871,592
Int. Cl.² B65H *19/26, 19/28, 19/30*
U.S. Cl. 242—56 R **41 Claims**



29. Apparatus for replacing a rotating mandrel on which a web is wound, wherein said mandrels have first portions adapted for rolling and second portions adapted for engaging a drive, said apparatus comprising

track means adapted to support said first portions of said mandrels and defining a substantially rectilinear transfer path for said mandrels,

transfer means for causing transfer of said mandrels along said path by rolling of said first portions thereof on said track means; and

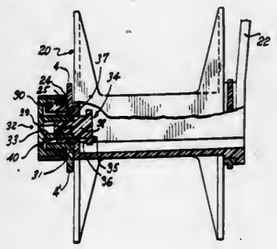
drive means for rotating said mandrels, said drive means being adapted to have operative engagement with said second portions of said mandrels while said mandrels are rolling in said track means along said path.

4,204,651

REEL ASSEMBLY

Joseph G. Haverland, 516 Tallow Ct., Chula Vista, Calif. 92011

Filed Jan. 17, 1979, Ser. No. 4,142
Claims priority, application Taiwan, Apr. 4, 1978, 6721096
Int. Cl.² B65H *75/40*
U.S. Cl. 242—96 **3 Claims**



1. A reel assembly for storage of lines and the like comprising in combination:

a line storage spool assembly having at each end four flanges formed integrally thereon to retain the line on the spool, one end of said spool having a crank with a handle formed thereon, the opposite end of said spool having an axial, outwardly-directed, hollow extension which has a cylindrical outer bearing surface;

a pair of oppositely disposed body members which are secured together to form the body portion of said assembly, each of said body members having semi-circular recesses on body sides which form bearing surfaces for said spool to be rotatably mounted, each of the body members further having on one and the same side a hollow, semi-circular, thread-bearing frame extension extending outwardly and receiving said spool axial extension when said body members are assembled about said spool; and

frictional brake means operatively mounted on said frame extension and having at least one surface which cooperates with the inner vertical surface of said spool assembly when said brake means is turned on its mounting on said nipple to wedge said spool assembly into frictional engagement with said body portion to control the rotation of said spool assembly.

4,204,652

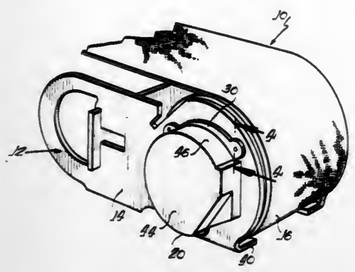
RETRACTOR WITH A COVER ATTACHED TO A SLIDE PLATE

Raymond S. Cislak, Chicago Heights, Ill., and Louis Romanzi, Jr., Milford, Mich., assignors to Gateway Industries, Inc., Chicago, Ill.

Division of Ser. No. 749,176, Dec. 9, 1976, Pat. No. 4,126,923. This application Jul. 24, 1978, Ser. No. 927,380
Int. Cl.² A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107.4 R **2 Claims**

1. In a seat belt retractor, the combination comprising a metallic retractor frame having a pair of side plates, a belt reel mounted between said side plates for rotation about an axis,

means on the outside of one of said side plates cooperating with said reel, a plastic cover covering said means, openings in said one side frame, a flange means on said cover abutting said one side frame around said openings in said side frame, a pair of split flexible legs integral with said flange means and inserted through one of said openings, enlarged gripping ends in the distal ends of said split legs to engage the interior side of said



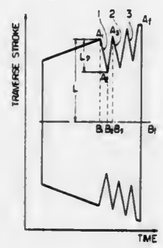
side plate, a notch formed between said legs, a plastic plug having a length equal to the thickness of the flange means inserted tightly wedged between said split legs and located in said notch and in the opening of said side frame to hold said enlarged gripping ends against said side frame, and aligned punch openings in said flange means where the plastic material was punched from said flange means to form said plugs.

4,204,653

NON-UNIFORMLY WOUND YARN PACKAGE

Kenkichi Nose, and Toshibumi Mikumo, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 25, 1979, Ser. No. 33,134
Claims priority, application Japan, May 9, 1978, 53/54040
Int. Cl.[2] B65H *55/04*
U.S. Cl. 242—178 **15 Claims**



1. A yarn package comprising a yarn wound on a bobbin with a traverse stroke back and forth along the axis of the bobbin, the largest traverse stroke being the final traverse stroke in forming the package, wherein during the winding operation thereof, at least for one time the traverse stroke is decreased to a second traverse stroke by a certain amount from a first traverse stroke, which is just before the commencement of the decrease of the traverse stroke, and then, the traverse stroke is increased to a third traverse stroke larger than said first traverse stroke.

12. A process for winding a yarn package on a bobbin, comprising the steps of:

providing relative rotational motion between the yarn and the bobbin about the bobbin longitudinal axis;

causing the yarn to be fed to the bobbin along a path generally transverse to said longitudinal axis;

reciprocating said path with a series of successive traverse strokes between the ends of said bobbin to wind said yarn on said bobbin,

a first of said traverse strokes having a given amplitude,

a second of said traverse strokes following said first traverse stroke having an amplitude less than said given amplitude, and

a third of said traverse strokes following said second traverse stroke having an amplitude greater than said given amplitude,

whereby said yarn package is provided with a variation in effective winding height which minimizes irregularities in the yarn due to compression and relaxation stresses.

4,204,654

TAPE GUIDE ASSEMBLIES FOR VIDEO CASSETTES

Charles D. Gebeke, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 6, 1977, Ser. No. 830,812
Int. Cl.[2] G11B *23/04*; B65H *23/26*
U.S. Cl. 242—199 **2 Claims**



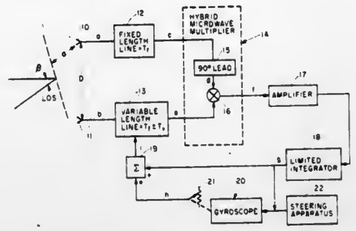
1. In a video tape cassette comprising a housing; a predetermined length of magnetic recording tape; first and second reels rotatably mounted in said housing, each of said reels comprising a hub and only one flange fixed at one end of the hub, each end portion of the tape being attached to and wound about a different one of the hubs and each of said reel flanges having a sufficient diameter to cover the entire side surface of the tape when almost all of the tape is wound around that hub, said reels being mounted in said housing in axially parallel spaced positions with said flanges overlapping and on opposite edge surfaces of the tape between said reels; and means mounted on said housing for defining a tape path between said reels comprising at least one tape guide assembly adjacent each of said reels, one of said tape guide assemblies including two axially parallel, closely spaced arcuate side guide portions guiding the side surfaces of said tape therebetween and being integrally formed with a radially extending plate joining the ends of said side guide portions adjacent the flange of the adjacent reel of a stiff, smooth, low-friction polymeric material, one of said side guide portions having a central opening and the other having a projection at its end opposite said plate; an elongate, hard, smooth metal edge guide washer at the ends of said side guide portions opposite the flange of the adjacent reel, said edge guide washer having one opening aligned with said central opening and another opening adapted to receive said projection; and two screws attaching said tape guide assembly to said housing, said screws having helically threaded portions in said central opening and engaging opposite ends of said side guide portion, the threads of said screws being inclined away from the leading ends of the screws to afford pressing said screws into said side guide portion and subsequent threaded engagement therewith.

4,204,655

BROADBAND INTERFEROMETER AND DIRECTION FINDING MISSILE GUIDANCE SYSTEM

Joseph F. Gulick, Clarksville; James S. Miller, and Alan J. Pue, both of Columbia, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1978, Ser. No. 964,767
Int. Cl.[2] H04B *7/00*
U.S. Cl. 244—3.19 **7 Claims**



1. A wide bandwidth interferometer comprising in combination a pair of spaced antennas;

means for delaying the signals detected by one of said antennas by a fixed amount and the corresponding signals detected by the other of said antennas by a variable amount;

means for shifting the phase of the signals delayed by said fixed amount by a positive 90° and for multiplying the phase shifted signals and the signals delayed by said variable amount;

means for integrating the product signal; and

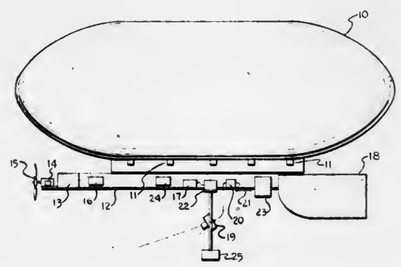
means for adjusting the orientation of said antennas and said variable amount in accordance with the signal developed by said integrating means so as to align an axis that is perpendicular to the line connecting said antennas with the incoming direction of the signals detected by said antennas.

4,204,656

AIRSHIP CONTROL SYSTEM

DeWitt C. Seward, III, Box 434, Bethel, Conn. 06801

Continuation-in-part of Ser. No. 765,093, Feb. 2, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,266
Int. Cl.[2] B64B *1/02, 1/24*
U.S. Cl. 244—30 **3 Claims**



1. A freeflying miniblimp comprising a frame, a balloon containing lighter-than-air gas and a control system for said miniblimp, said control system consisting of:

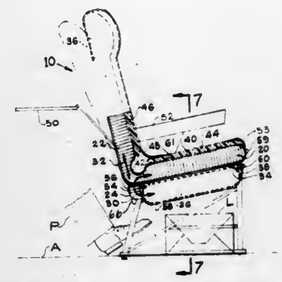
a single drive motor, a propeller attached to said drive motor and rotated by said drive motor, a bracket to which is mounted said drive motor, an ascent/descent motor, first means for attaching said ascent/descent motor to said bracket to tilt said drive motor upward or downward, a left/right motor, second means for attaching said left/-right motor to turn said drive motor left or right, a single fixed vertical stabilizer secured to said miniblimp and having an absence of moving parts, an energy source and control means for said motors functionally connected to said motors.

4,204,657

LIFE AND WEIGHT SAVING AIRCRAFT SEAT STRUCTURE

Edward F. Graham, 349 Rosebank Ave., Baltimore, Md. 21212

Filed Jun. 30, 1978, Ser. No. 920,955
Int. Cl.[2] B64D *11/06, 25/04*
U.S. Cl. 244—122 R **18 Claims**



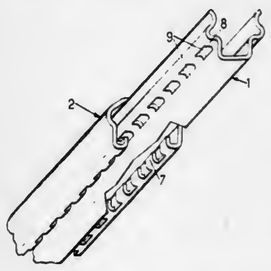
1. In an aircraft seat having a frame including leg structure supporting seat structure and seatback structure, the improvement comprising: a pressure-change compensating seating system comprising: a first pneumatic structure of flexible material including a seat cushion and a seatback cushion, a second pneumatic structure of flexible material comprising an overflow envelope, a first pneumatic connection between the seat cushion and the seatback cushion, a second pneumatic connection between the first pneumatic structure and the overflow envelope; the first pneumatic structure flexible material being substantially inelastic and the overflow envelope flexible material being substantially elastic, the overflow envelope having means providing an initial elastic inflation pressure threshold followed by progressively increasing resistance to inflation, and said providing means comprising the overflow envelope having wall thickness varying between a minimum thickness at a first location and a maximum thickness at a second location.

4,204,658

SEAT-SUPPORTING SLIDES

Bernard Courtois, Etampes, France, assignor to Societe Industrielle Bertrand Faure, Etampes, France

Filed Jan. 16, 1979, Ser. No. 3,895
Claims priority, application France, Jan. 18, 1978, 78 01370
Int. Cl.[2] F16C *29/02*
U.S. Cl. 248—430 **18 Claims**



1. A seat slide comprising a lower channel section intended to be fixed to the floor of a vehicle, an upper channel section intended to be fixed to the sitting portion of the seat, intermedi-

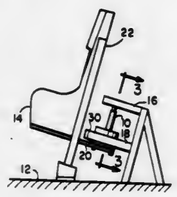
ate members such as balls placed between these two channel sections, and a locking mechanism actuatable by the person sitting in the seat and comprising a toothed belt mounted on the upper channel section and adapted to coact with a series of equidistant catches of the lower channel section, characterized in that it comprises, on the one hand, on one of the two channel sections, a series of equidistant teeth of identical widths whose free end is orientated vertically or at least in a direction very little inclined from the vertical and, on the other hand, on the other channel section, a series of closed apertures adapted to receive the above teeth and which, for the locked positions of the upper channel section, are disposed vertically opposite said teeth in a direction such that any vertical movement upwards of the upper channel section tends to make the teeth go into the apertures, the series of teeth or apertures with which the toothed bolt of the locking mechanism cooperates being that one, of the two series of teeth and apertures considered, which is on the lower channel section or else a series of catches associated with the teeth or apertures of this latter series, the bolt in question being mounted so as to ensure automatically the above mentioned vertical registering between teeth and apertures during each locking.

4,204,659

ENERGY ABSORBER

Norman S. Phillips, and William B. Walcott, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1978, Ser. No. 899,956
Int. Cl.[2] B60R *21/10*
U.S. Cl. 248—562 **19 Claims**



1. Apparatus for absorption of forces from a support structure imposed upon a mass movable with respect thereto, comprising:

lost motion means adapted to be connected between the mass and the support structure for introducing lost motion between the support structure and the mass for a preset limited relative displacement of the mass with respect to the support structure; and

constant level means connected to said lost motion means and adapted to be connected between the mass and the support structure upon accomplishment of the lost motion, for maintaining the forces received by the mass at a predetermined constant level after completion of the lost motion.

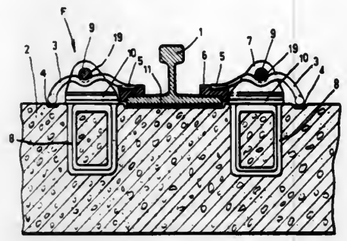
4,204,660

PROCESS OF RAILROAD TIE CONCRETE CASTING

Jean-Louis J. Feuillade, Cagnes-sur-Mer, France, assignor to Societe B.M. Costamagna, Cagnes-sur-Mer, France

Filed Aug. 23, 1978, Ser. No. 935,994
Claims priority, application France, Aug. 26, 1977, 77 26046
Int. Cl.[2] B22D *19/08*
U.S. Cl. 249—86 **9 Claims**

1. Mold apparatus for manufacturing concrete ties of the type which include one or more fastening means having a shoe which is located at the top of the tie and a projecting tab portion, said apparatus comprising: a mold for the tie, a plate for attachment to said mold, said plate formed with an opening to accept the shoe of a corresponding fastening means, movable jaw means on the underside of said plate for engaging a predetermined part of the projecting tab portion of the fastening means to align the same with respect to the mold, and stop



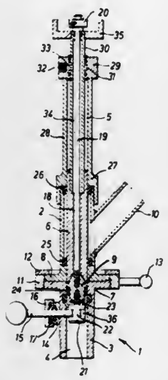
means on said plate which cooperate with said jaw means to align the shoe of a said fastening means with respect to the mold.

4,204,661

WASTELESS CONNECTING VALVES

Thore Stromberg, P.O. Box 295, S60104 Norrkoping, Sweden

Filed May 3, 1978, Ser. No. 902,303
Int. Cl.[2] F16K *35/02*
U.S. Cl. 251—95 **2 Claims**



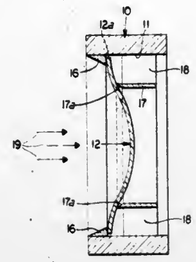
1. A wasteless connecting valve, first and second housing parts, including a pair of flanges sealing means for holding said flanges together in sealing engagment, a socket provided on said first housing part, a piston, at least one connection socket, a locking device, a plug having a recess and a surface of rotation concentric about a central axis thereof, and an axial drawing device, said socket is internally and externally cylindrical and internally smooth, said second housing part has formed therein a cylindrical and internally smooth duct coaxial with said socket when said first and second housing parts are connected together, said duct having substantially the same internal diameter as said socket, and said piston is sealingly and slidably mounted in said duct, said second housing part being provided with said at least one connection socket directed to the side and opening into said duct, said locking device being disposed in said first housing part so as to engage in a locking position said recess in said plug, said plug being slidably and sealingly mounted in a throughbore of said first housing part and, said piston including a bottom surface which abuts a corresponding surface of said plug, said bottom surface and said corresponding surface being substantially coplanar with the interfaces of said flanges disposed so as to be pressed by said axial drawing device with said surface of rotation against said corresponding surface of rotation on said piston to effect a seal therebetween.

4,204,662

VALVE FOR CONTROLLING THE FLOW OF FLUIDS IN CONDUITS AND THE LIKE

Anthony C. Reynolds, 821 Overbey Dr., Mobile, Ala. 36608

Filed Mar. 23, 1979, Ser. No. 23,036
Int. Cl.[2] F16K *1/00*
U.S. Cl. 251—334 **3 Claims**



1. In a valve having a body and a passageway therethrough for flow of fluid to be controlled,

(a) a closure in the form of a plate-like member,

(b) seals for the periphery of the closure carried by the valve body and located upstream from the closure member, and

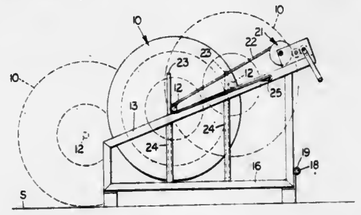
(c) means associated with the valve body located in position for a portion of the closure intermediate its center and periphery to contact the same, whereby when under pressure downstream deflection of the central portion of the closure results in upstream deflection of the peripheral portion of the closure, causing the peripheral portion to come into sealing contact with said seals.

4,204,663

APPARATUS FOR LIFTING A REEL

William E. Baughn, Bessemer, Ala., assignors to Milton J. Baughn, Bessemer; Kenneth R. Williams, Alabaster; M. K. Khristan McAlister, Mountain Brook, all of Ala.

Filed Apr. 2, 1979, Ser. No. 26,081
Int. Cl.[2] E02C *3/00*
U.S. Cl. 254—88 **5 Claims**



1. In apparatus for lifting a reel from a supporting surface with said reel having centrally disposed axle members projecting laterally from opposite sides thereof,

(a) upwardly inclined guide rails supported in spaced parallel relation to each other with the upper surfaces of lower portions thereof in position to engage the under surface of said axle members while said reel is supported by said supporting surface,

(b) a flexible member operatively connected to each said axle member and extending toward the upper portion of the guide rail adjacent thereto,

(c) drive means operatively connected to the flexible members and adapted to pull said flexible members and the axle members connected thereto toward said upper portions of said guide rails so that said axle members are moved upwardly along and are supported by said guide rails as the reel is lifted above said supporting surface, and

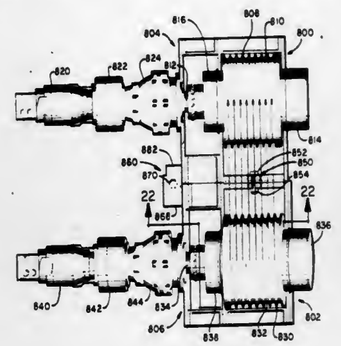
(d) movable stop members adapted to project above said guide rails in position to engage said axle members and limit downward movement thereof along said guide rails to thereby hold said axle members at at least one selected position along said guide rails.

4,204,664

WINCH MECHANISM FOR CRANE

John F. Bryan, Jr., Dallas, Tex., assignor to Pyramid Manufacturing Company, Houston, Tex.

Continuation-in-part of Ser. No. 721,775, Sep. 9, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,605
Int. Cl.[2] B66D *1/76*
U.S. Cl. 254—175.7 **6 Claims**



1. In a crane having a boom with a first end adapted for securing a load thereto and a second end pivotally attached to a base for supporting the boom therefrom, a winch mechanism comprising:

a first drum having multiple grooves therein,

a second drum having multiple grooves therein,

a first frame for rotatably supporting said first drum for rotation about the axis thereof,

a second frame for rotatably supporting said second drum for rotation about the axis thereof,

means for pivotally attaching the first frame to the second frame for canting the first drum relative to the second drum with the axes of rotation of the first and second drums being maintained in parallel planes,

adjustment structure attached between the first and second frames for adjusting the cant of the first drum relative to the second drum,

a cable alternately wrapped between the grooves of said first and second drums, one end of said cable extending along the boom to the first end of said boom, and

means for driving at least one of said drums to draw in or let out said cable.

4,204,665

PANEL MOUNTING ASSEMBLY

Edward F. Sherwood, Gettysburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 18, 1978, Ser. No. 952,520
Int. Cl.[2] E04H *17/14*
U.S. Cl. 256—65 **3 Claims**

1. A hung panel assembly, comprising:

a wall having front and back sides,

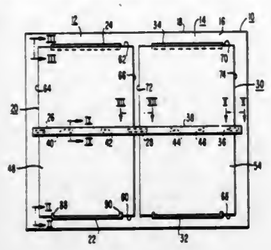
a fixed bottom support member on the front side of said wall,

a downwardly biased, vertically slidable top support member upon said wall having a depending leg portion spaced from the front side of said wall,

a first panel member having first and second major opposed surfaces, and side, top and bottom edges, said top edge having a longitudinal groove therein, at least one of the side edges of the first panel member has a slot therein,

said first panel member being supported between said top and bottom support members, with the depending leg portion of the top support member extending into the groove in the top edge of said panel member,

said first panel member being removable from said bottom and top support members by an upward movement thereof having sufficient force to overcome the downward bias of said support member,



a panel side guide member having an outwardly extending finger, such guide member being rotatably fixed to the wall such that the finger may be rotated into and out of engagement with the slot in the side edge of the panel,

and a handrail fixed to the first panel member at an elevation selected to at least partially conceal the side guide member.

4,204,666

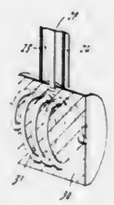
IN SITU FURNACE METAL DESULFURIZATION/NODULARIZATION BY HIGH PURITY MAGNESIUM

Prem P. Mohla, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 856,697, Dec. 2, 1977. This application Sep. 18, 1978, Ser. No. 943,274

Int. Cl.² C21C *1/02*; C22C *33/10*; C21C *7/02*; D02G *3/00*

U.S. Cl. 266—216 **1 Claim**



1. A metal treating element, comprising:

(a) a sodium silicate body;

(b) a non-destructible lance connected to said body for plunging same into a molten pool;

(c) a helical screw shaped insert of magnesium, cast within said body.

4,204,667

SEMI-CIRCULAR STACK SHEET FEEDING APPARATUS

Emil Klenk, Murrhardt, Fed. Rep. of Germany, assignor to Maschinenbau Oppenweiler GmbH, Oppenweiler, Fed. Rep. of Germany

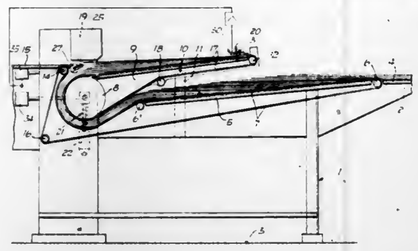
Filed May 23, 1978, Ser. No. 908,834

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724617

Int. Cl.² B65H *1/22*

U.S. Cl. 271—3.1 **10 Claims**

1. In a semi-circular sheet feeding apparatus having a supply platform adapted to be loaded with an imbricated stack of sheets and a removal platform, delivery and diverting means including a diverting drum for transporting the imbricated stack of sheets in a first delivery direction along a lowermost periphery of said drum, about the drum and, in a second delivery direction, onto the removal platform and means for driving said delivery and diverting means, and means arranged downstream of the removal platform for removing the uppermost sheet on the removal platform in a direction opposite the second delivery direction, the improvement comprising stop



means provided on said removal platform for abutment of the leading edges of the sheets transported to the removal platform and stack height detection and drive control means for sensing the number of stacked sheets lying with their leading edges against said stop means and for maintaining said drive means engaged with said delivery and diverting means until a predetermined number of stacked sheets on the removal platform is sensed.

4,204,668

PAPER FEEDING APPARATUS

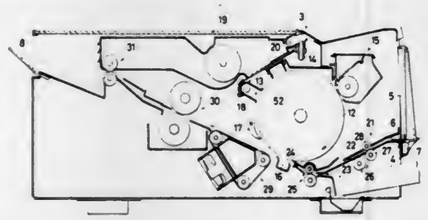
Nobuyuki Yanagawa, Chigasaki, Japan, assignor to Ricoh Company, Ltd., Japan

Filed May 11, 1978, Ser. No. 905,044

Claims priority, application Japan, May 17, 1977, 52-56564; May 17, 1977, 52-56565; May 24, 1977, 52-60303; May 24, 1977, 52-60304

Int. Cl.² B65H *3/06*

U.S. Cl. 271—9 **31 Claims**



1. Paper feeding apparatus for copying machines, comprising a path along which a manually loaded sheet of paper is conveyed, a cassette feed path along which a sheet from a cassette is conveyed, a manual feeder operable to feed a sheet which is placed on the manual feed path in a given direction, a cassette feeder operable to feed sheets contained in a sheet cassette one by one onto the cassette feed path, single feed control means responsive to a single feed signal to operate the manual feeder and the cassette feeder simultaneously, and feed mode switching means operable to selectively establish a manual feed mode and a cassette feed mode.

4,204,669

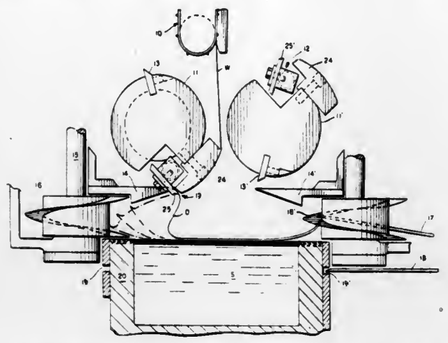
METHOD AND APPARATUS FOR ZIG-ZAG FOLDING

Ernst D. Nystrand, De Pere, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 823,350, Aug. 10, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,494

Int. Cl.² B65H *45/16*

U.S. Cl. 270—73 **5 Claims**



1. In a method for zig-zag folding a web wherein a web is fed between a pair of rotating folding members, each member having at least one tucker and one gripper, said gripper having an anvil and a gripper element, all of said tucker, gripper anvil and gripper element being shaped to define a tip on each, said members being disposed relative to each other to position the tucker of one member in web tucking engagement with the gripper of the other member to cooperate in folding said web, the steps of perforating an elongated web along a plurality of longitudinally spaced apart transversely extending lines, advancing said web at a given speed between said members, moving the tucker of one member between an anvil and gripper element on the other member to fold the web substantially along a perforation line while maintaining each of said gripper anvil tip and gripper element tip a constant distance from the tip of said tucker during entry of said tucker into said gripper, repeating the above step of folding at succeeding perforation lines to form a zig-zag folded stack, said gripper anvil tip rotating at a speed equal to the web given speed, visually ascertaining the presence of lean in said stack, and angularly shifting the tucker of one member relative to the anvil and gripper element of the other to eliminate said lean.

4,204,670

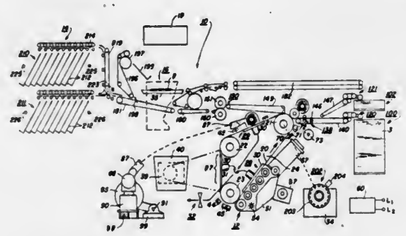
SORTER FOR A REPRODUCTION MACHINE

Robert L. Traister, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1977, Ser. No. 829,022

Int. Cl.² B65H *39/10*

U.S. Cl. 271—287 **7 Claims**



1. In a sorter for receiving copies from a reproduction machine processor, the sorter including a plurality of spaced bins, the improvement comprising:

means for selecting one of the bins;

sorter inlet sensor means for detecting a copy sheet entering the sorter;

a timer, said sorter inlet sensor means initiating actuation of the timer upon detection of a copy sheet entering the sorter;

means for calculating the proper time for the copy to travel from the sorter inlet sensor means to the selected bin;

bin entry sensor means for detecting a copy sheet entering the selected bin;

means for loading the timer with the calculated time, said sorter inlet sensor means causing the timer to activate;

means for reading the timer when a copy sheet has entered a bin as detected by said bin entry sensor means; and

means for declaring a fault if the reading from said timer is not within a predetermined range.

4,204,671

SHEET STACKING MACHINE

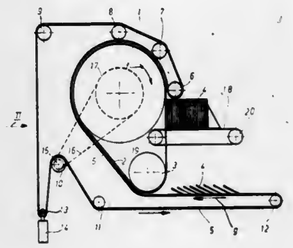
Giorgio Pessina, and Aldo Perobelli, both of Via Arborina 2, Paderno Dugnano, Italy

Filed Jun. 7, 1978, Ser. No. 913,322

Claims priority, application Italy, Nov. 3, 1977, 22637/77[U]

Int. Cl.² B65H *29/68*

U.S. Cl. 271—186 **3 Claims**



1. A machine for stacking sheets, said machine comprising:

(A) means for feeding said sheets,

(B) means for receiving said sheets and disposing said sheets in a stacked arrangement,

(C) a roller proximate to said receiving means,

(D) means for driving said roller,

(E) a first set of spaced belts,

(F) means to guide said first set of belts for movement along a path having a portion partially encircling said roller and a portion extending between said feeding means and said receiving means,

(G) a second set of spaced belts,

(H) means to guide said second set of belts for movement along a path having a portion surrounding said first set of belts at said portion encircling said roller to define with said first set of belts, in operation, a means for transferring said sheets between said feeding means and said receiving means, and a free-wheeling clutch having a driving member and a driven member, said driving member being driven for rotation by said driving means for said roller, and said driven member being in operative engagement with said second set of belts, said clutch being engaged when the peripheral speed around the roller of the second set of belts drops to or below the peripheral speed around the roller of the first set of belts and being free-wheeling when the peripheral speed around the roller of the second set of belts exceeds the peripheral speed of the roller of the first set of belts, whereby the free-wheeling clutch is operative when the sheets have a thickness below a given value and disengages and acts as an overrunning clutch when the sheets have a thickness above said given value.

4,204,672

DEVICE FOR CONVEYING SHEETS WITHIN A SHEET PROCESSING MACHINE

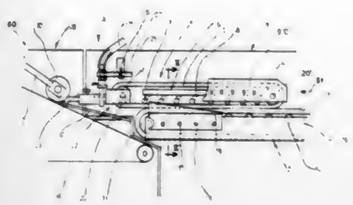
Francis Grivet, Morges, Switzerland, assignor to J. Bobst & Fils, S.A., Lausanne, Switzerland

Filed May 24, 1978, Ser. No. 909,035

Claims priority, application Switzerland, May 26, 1977, 006477/77

Int. Cl.[2] B65H *29/70*

U.S. Cl. 271—188 **5 Claims**



1. In a device for transferring a sheet from one station to a second station, said device including a first station with at least one lower conveyor and at least one upper conveyor arranged to discharge the sheet onto a third conveyor at the second station the improvements comprising means disposed adjacent the lower conveyor for bending a sheet traveling between the upper and lower conveyors transverse to the direction of movement of the sheet, means for guiding the sheet as it is being discharged from the upper and lower conveyors, said means for guiding comprising a dog adjustably engaged within a tube, said tube being mounted on a strap, said strap being pivotably mounted on the axis of one of the pulleys of the upper conveyor so that the dog engages the sheet as it is being discharged onto the third conveyor, and means for ensuring the depositing of the sheet onto the third conveyor as it is discharged from said upper and lower conveyors.

4,204,673

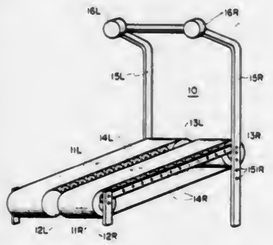
DUAL-TREAD EXERCISER

John Speer, Sr., 1425 Bedford St., Stamford, Conn. 06905

Filed Dec. 14, 1978, Ser. No. 969,438

Int. Cl.[2] A63B *23/06*

U.S. Cl. 272—69 **10 Claims**



1. An exercising machine comprising a first treadmill having a first continuous tread for the left leg of the user; a second treadmill having a second continuous tread for the right leg of the user; means for supporting said first and second treadmills and treads parallel to, and adjacent to, each other for supporting the weight of the user thereon; a first means for independently controlling the motion of said first treadmill tread; a second means for controlling the motion of said second treadmill tread and operable independently of said first means; and arm support means extending above the plane of said treads for grasping by the user.

4,204,674

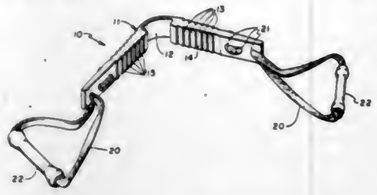
POCKET-SIZE, ADJUSTABLE EXERCISER

Thomas W. Ogland, 2192 Medina Rd., Long Lake, Minn. 55356

Filed May 16, 1978, Ser. No. 906,613

Int. Cl.[2] A63B *21/32*

U.S. Cl. 272—126 **8 Claims**



1. A pocket-size, adjustable exerciser for performing tension exercises, which comprises:

a freestanding, elongated member hinged along a transverse groove in the middle thereof;

rope-like material mounted to each end of the elongated member for gripping the exerciser; and

means for adjusting the length of the rope-like material to the exercise to be performed and to the size of the person using the exerciser.

4,204,675

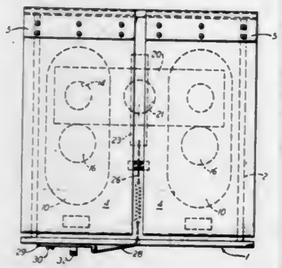
AIR CHAMBER LEG EXERCISING DEVICE

Gerald E. McGinnis, Monroeville, Pa., assignor to Monicor Corp., Monroeville, Pa.

Filed Aug. 2, 1978, Ser. No. 930,314

Int. Cl.[2] A63B *21/00*

U.S. Cl. 272—130 **7 Claims**



1. An exerciser comprising a base having front and rear ends, a pair of laterally spaced foot treadles overlying the base and hinged at their front ends to the front end of the base, the treadles normally being inclined with their rear ends raised above the base, a normally inflated flexible air chamber mounted between each said treadle and the base and attached thereto, the base having a pair of openings therein beneath each of said chambers, said chambers having inlet and outlet openings therein communicating with said base openings, one of the base openings for each chamber being an air inlet and the other base opening being an outlet, an inwardly opening check valve for each inlet, an outwardly opening check valve for each outlet, and means for resisting discharge of air from said chambers as said treadles are depressed alternately to expel air from the chambers.

4,204,676

BACK EXERCISER

Edmond W. Givens, 724 Stella St., Vallejo, Calif. 94590

Filed Dec. 21, 1977, Ser. No. 862,684

Int. Cl.[2] A63B *21/04*

U.S. Cl. 272—136 **9 Claims**

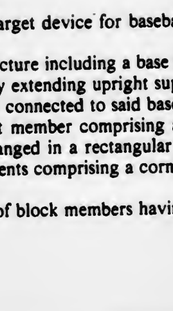
1. An exerciser comprising, a frame having an upper portion for receiving the back of a user and a lower portion for receiving the feet of a user, said upper portion being substantially in a plane that is substantially perpendicular to a plane formed by the lower portion,

a pedal on the lower portion of the frame,

a heel portion on said pedal,

a pivot on the lower portion of the frame connected to said pedal spaced from said heel portion thereby to support said pedal rockably about a fixed axis to a position generally in the plane of said lower portion,

a back rest on the upper portion of said frame above said heel portion spaced from said heel portion and said pivot axis



to correpond to the position of the user's back when standing on said pedal,

handle bars on each side of the frame between said pedal and said back rest within reach of the user standing on said pedal,

and resilient means connected to the heel portion of said pedal so as to urge said heel portion toward said back rest whereby the user by bracing his back against said back rest and pulling with his hands on said handle bars and depressing while pivoting said heel portion of said pedal about said axis with his heels repeatedly exercising his back muscles.

4,204,677

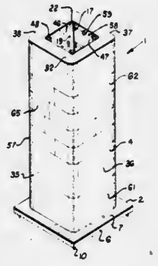
BASEBALL THROWING PRACTICE TARGET

Michael J. Haggarty, 8453 Carter, Overland Park, Kans. 66212

Filed Jan. 12, 1978, Ser. No. 869,017

Int. Cl.[2] A63B *69/40*

U.S. Cl. 273—26 A **4 Claims**



1. A practice target device for baseball and like activities, comprising:

(a) a frame structure including a base member and a generally vertically extending upright support member having its lower end connected to said base member;

(b) said upright member comprising a plurality of upright elements arranged in a rectangular pattern, each of said upright elements comprising a corner of said rectangular pattern; and

(c) a plurality of block members having generally flattened top and bottom surface and outer sides, said sides having various target design patterns applied thereon;

(d) each said block member having an aperture extended therethrough from said top to bottom surfaces and sized to receive said upright member, said block members being selectively rotatable in a horizontal plane and selectively positioned in stacked engagement with said upright member extended through said apertures whereby various target design patterns appear on said target device in desired placement.

4,204,678

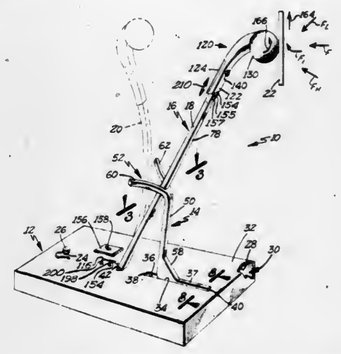
TENNIS PLAYING APPARATUS

Ray P. Weis, 404-14th St. SE., Austin, Minn. 55912

Filed Aug. 15, 1977, Ser. No. 824,446

Int. Cl.[2] A63B *61/00*

U.S. Cl. 273—29 A **10 Claims**



1. A tennis playing apparatus usable by a tennis player with a tennis racket to improve skill in swinging of the racket, comprising:

a base;

a post member carried by and extending upwardly from said base;

a substantially elastic, flexible wand member having upper and lower ends, said lower end being carried by said base and said wand member extending upwardly from said base, and including target means adjacent said upper end, said wand member being flexibly movable between an initial position, wherein said wand member contacts said post member, and a second position wherein said wand member is spaced from said post member in response to striking of said target means by the racket;

said post member further including wand receiving means on said post member to receive said wand member as it returns from said second position to said initial position and said wand receiving means including a V-shaped bifurcated receiver having the arms of said V diverging laterally outwardly from an apex so as to receive said wand member therebetween and guide said wand member along said arms as said wand member returns from second to initial position and direct said wand member to said apex;

said wand member further including a shaft and a cap unit;

said cap unit carrying said target means and positioned adjacent the upper end of said wand member and said cap unit being movably mounted relative to said shaft for sliding movement along said shaft between upper and lower displaced positions spaced vertically from an intermediately positioned rest position; and

said wand member further including biasing means between said cap unit and said shaft to bias said cap unit to said rest position and to urge said cap unit to said rest position from any displaced position so that said cap unit is free to float relative to said shaft between said displaced positions so as

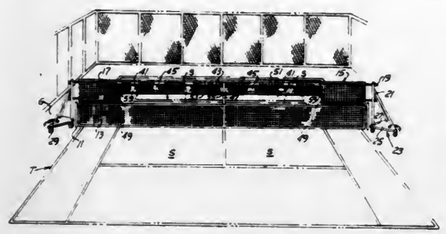
to simulate the feel of a live tennis ball when said target means is struck by the racket.

4,204,679

TENNIS PRACTICE SERVING NET

Harry E. Kreuzman, 5201 Cherokee Dr., Troy, Mich. 48098

Filed Oct. 25, 1978, Ser. No. 954,510
Int. Cl.[2] A63B *61/00*
U.S. Cl. 273—29 A **9 Claims**



1. In a tennis court apparatus upon a ground surface having an upright net spanning its median, there being a pair of laterally related fair service areas delineated in said court adjacent and upon opposite sides of said net;

a pair of spaced apart upright first posts, each post being anchored adjacent and extending above an end of the court net;

an elongated rectangular practice serving net overlying and coplanar with the court net and along its length, in registry therewith, along the length of said court net, and at its ends secured to said posts;

said net inwardly of its ends and below its top being cut away defining an elongated rectangular opening over said court net coextensive with said fair service areas;

an upright divider post upon and intermediate the ends of said practice serving net extending the height thereof, and dividing said rectangular opening into a pair of rectangular openings;

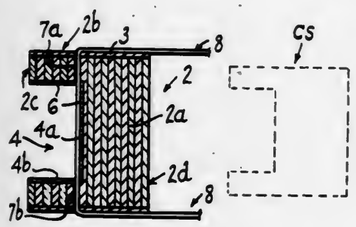
and a pair of curtains of net material coplanar with said serving net at their top edges connected thereto and depending into said pair of openings respectively, with their lower edges adjustably spaced above said court net providing a pair of elongated adjustable height service apertures of receiving a served tennis ball so as to fall within one of said fair service areas.

4,204,680

RACKETS

Robin M. Blackburne, Ardsheal Cottage, Paget 6-20, Bermuda

Filed Apr. 10, 1978, Ser. No. 895,021
Claims priority, application United Kingdom, Apr. 20, 1977, 16502/77
Int. Cl.[2] A63B *51/06*
U.S. Cl. 273—73 D **8 Claims**



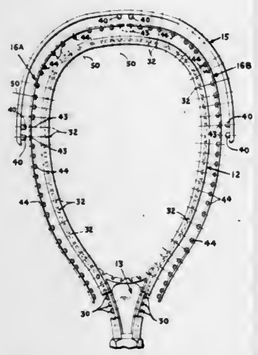
1. A games racket comprising a handle intended to be held in the hand, and carrying a head having a frame defining a central opening, across which extends tensioned stringing carried by the hand, the stringing being composed of two sets of stringing with each set being disposed in a respective one of two spaced generally parallel planes, and being composed of first and second groups of mutually parallel string portions, the string portions of the first group being interwoven with, and generally perpendicular to, the string portions of the second group, the stringing including portions interconnecting the string portions in the two sets, the interconnecting portions passing through apertures distributed around the periphery of the frame, opening at their outer ends into opposite side surfaces of the frame which are spaced apart in a direction generally normal to the planes of the stringing, the cross-sectional profile of the frame resembling an "extended D" having a body portion and extensions projecting generally transversely from the body portion adjacent opposite ends of the upright limb of the "D", said body portion constituting the main structural part of the frame and being effectively devoid of structurally weakening stringing-receiving apertures, and said extensions constituting a pair of flanges extending continuously around the outer periphery of the frame which define opposite side walls of a channel provided in the outer periphery of the frame and extending around the central opening, the stringing-receiving apertures each comprising a pair of aligned aperture portions formed on in each flange remote from the outer peripheral edges thereof and opening at their inner ends into the channel directly adjacent the base thereof, the number and disposition of the stringing-receiving apertures being such that the stringing passes only once through each of at least the majority of the aperture portions, with the interconnecting portions passing through and located in the stringing-receiving apertures and extending across the channel between the inner ends of the aperture portions in the two flanges, and with at least one of the ends of the stringing knotted-off within the channel, the knot anchoring the stringing with respect to one of the flanges adjacent the inner end of an associated aperture portion.

4,204,681

GAME BALL RACKET WHEREIN CERTAIN RACKET COMPONENTS ARE STRUCTURALLY INTEGRATED WITH THE RACKET FRAME BY THE STRING WITH WHICH THE RACKET IS STRUNG

Harleston J. Hall Jr., Princeton; Roger I. Sassin, Morganville, and Drew J. Yuhas, Cranbury, all of N.J., assignors to AMF Incorporated, Plainsboro, N.J.

Filed Jul. 13, 1978, Ser. No. 924,154
Int. Cl.[2] A63B *49/00*
U.S. Cl. 273—73 C **1 Claim**



1. In a game ball racket including a frame having an upper portion having a plurality of holes formed therealong, and further including a handle at the opposite end thereof, and still further including a grommet strip surrounding said upper portion of said frame and wherein said grommet strip is provided with a plurality of grommets extending inwardly therefrom and into predetermined ones of said holes formed in said frame, said grommets and said frame holes for receiving string and said upper portion of said frame having an upper peripheral portion, the improvement comprising:

said grommet strip being provided with a plurality of grommets at predetermined positions therealong and said grommets extending into predetermined ones of said holes formed in said racket frame and said grommet strip being further provided with a plurality of holes at predetermined positions therealong and which holes align with predetermined ones of said holes formed in said racket frame;

a bumper strip for surrounding said upper peripheral portion of said frame and for protecting against injury to one of two players upon one of said two players inadvertently striking the other player with said upper peripheral portion of said racket during the course of play with said racket;

said bumper strip provided with a plurality of grommets at predetermined positions therealong and said grommets extending into said predetermined holes formed in said grommet strip and into predetermined ones of said holes formed in said racket frame;

said bumper strip also being provided with a plurality of holes at predetermined positions therealong and which holes align with predetermined ones of said grommets provided on said grommet strip; and

upon said racket being strung with said string, said string being received within (i) said grommets and said holes formed on said bumper strip and (ii) said grommets and said holes formed on said grommet strip, and upon said string being tightened, said string forcing said bumper strip and said grommet strip into tight engagement with said frame whereby said bumper strip is structurally integrated with said grommet strip and said frame and whereby said bumper strip cannot be removed from said racket without removing said string whereby said racket is rendered inoperable for play.

4,204,682

METHOD AND APPARATUS FOR OUTDOOR TOSSING GAME

Floyd E. Brown, 218 7th St., Wood River, Ill. 62095

Filed Nov. 10, 1977, Ser. No. 850,158
Int. Cl.[2] A63B *65/10, 67/06, 57/00*
U.S. Cl. 273—401 **10 Claims**



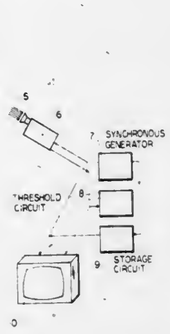
10. A kit for playing a game including a plurality of groups of metal markers, each marker being substantially round with flatted opposing sides, means defining a central hole extending between said flatted opposing sides, means forming a covering over substantially all exposed surfaces of the marker, said covering being made of plastic and protecting the marker from substantial damage during extended use, said marker being sufficiently heavy in relation to its size to substantially minimize the effects of the wind on its flight as it is tossed, a receptacle suitable for being recessed flush into a substantially flat playing surface and receiving said markers as they are thrown, said receptacle having a substantially cylindrical sidewall with an upper and lower edge, said edges being substantially parallel and each edge forming a surface substantially perpendicular to the central axis of the receptacle with a diameter sufficiently larger than the diameter of the marker to permit relatively frequent tossing of the marker into the receptacle from a substantial distance therefrom, said receptacle having a depth sufficient to accept a substantial number of markers positioned therein with their flatted surfaces aligned substantially parallel to the top and bottom edges of the sidewalls, a protective cover for covering the opening of the receptacle after it is recessed into a playing surface to prevent the entry of contamination thereinto and for safety purposes, said protective cover including a cylindrical cap having a top and bottom surface approximately circular with a diameter larger than the diameter of the receptacle and an inner flange being approximately cylindrical in shape with a diameter of less than that of the receptacle, said inner flange being centered on and extending downwardly from the bottom surface of the cylindrical cap, the protective cover thereby fitting on to the upper opening in the receptacle with the bottom surface of the cylindrical cap adjacent to the upper surface of the edge of the receptacle and the inner flange extending downwardly into the hollow area of the receptacle to prevent removal of the protective cover by sliding movement substantially parallel to the top surface thereof.

4,204,683

DEVICE AND METHOD FOR DETECTION OF THE SHOTS ON A TARGET FROM A DISTANCE

Gennaro Filippini, and Alfredo Filippini, both of Via di Jano n. 6, Bologna, Italy

Filed Mar. 31, 1977, Ser. No. 783,331
Claims priority, application Italy, Nov. 18, 1976, 3591 A/76
Int. Cl.[2] F41J *5/04*
U.S. Cl. 273—371 **4 Claims**



1. A system for detecting the shots of a shooter present on a solid, material target having a substantially flat surface from a distance, comprising

a solid stationary target having a substantially flat surface capable of being permanently marked,

a closed video circuit having only one video camera, a memory storage circuit and a television viewing monitor operatively connected together,

said camera being positioned adjacent to the target so as to receive light being influenced by a projectile about to hit the target,

said monitor being positioned adjacent the shooter and operatively connected to said camera so that the shooter can see an indication of the shot on the target via said monitor,

light source means for providing a track of light substantially defining a two dimensional area comprising parallel paths of light rays adjacent to, in parallel to and spaced in front of the target not impinging said flat surface thereof, said light source means comprises a rectangular member formed with a single elongated longitudinal slot, said track of light originating through said longitudinal slot,

said camera having an optical axis being positioned facing said track of light and said flat surface so as to receive light reflected by the projectile while crossing the track of light as the projectile is about to hit the target, said parallel paths of light rays extending non-parallel and substantially perpendicularly to said optical axis of said camera, whereby when the projectile crosses the track of light

before hitting the adjacent target a representation of the target impact site appears on the viewing monitor.

4. A method for detecting the shots of a shooter on a target from a distance, comprising the steps of

providing a planar track of light substantially defining a two dimensional area comprising parallel paths of light rays parallel to, spaced therefrom and adjacent in front of a substantially flat surface of the target without impinging on the target by passing light through a single elongated longitudinal slot in a rectangular member, the track of light originating through the longitudinal slot, and placing a system of Cartesian coordinates over the target by scanning lines, and scanning points within the lines,

disposing a video camera having an optical axis adjacent to and facing the target, said parallel paths of light rays extending non-parallel and substantially perpendicularly to said optical axis of said camera,

reflecting the light into the video camera by shooting at least one projectile toward the target crossing the track of light before hitting the target,

providing a video processing via a closed video circuit having only one video camera, a memory storage circuit and a television viewing monitor operatively connected together,

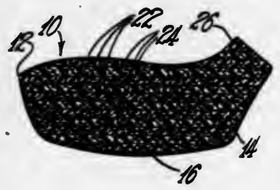
transmitting the reflected light from the camera onto the television monitor positioned adjacent the shooter, whereby when the projectile crosses the track of light before hitting the adjacent target a representation of the target impact site appears on the viewing monitor, so that the shooter can see an indication of the shot on the target.

4,204,684

GOLF CLUB HEAD AND METHOD OF PRODUCING SAME

Robert P. Molitor, South Hadley, Mass., assignor to Questor Corporation, Toledo, Ohio

Filed Oct. 31, 1977, Ser. No. 846,849
Int. Cl.² A63B *53/04*
U.S. Cl. 273—167 R **12 Claims**



1. A golf head comprising a laminated body wherein the laminations are solely of resinous materials, said body comprising a plurality of stacked laminations of resinous materials, the resin of certain of the laminations being unicellular and the resin of the remaining laminations being noncellular, said laminations being bonded together in the body.

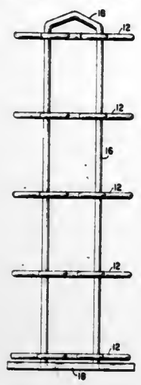
4,204,685

THREE DIMENSIONAL ALIGNMENT GAME

Clyde K. Jones, 211 Glenwood Ct., San Antonio, Tex. 78210

Filed Dec. 14, 1978, Ser. No. 969,321
Int. Cl.² A63F *3/00*
U.S. Cl. 273—241 **1 Claim**

1. An alignment game apparatus comprising an open framework structure including five vertically aligned, horizontally disposed playing surfaces, each surface comprising a wire configured to form a circular array of eight openings, each opening in each surface being of equal size and in vertical alignment with a corresponding opening in the surface immediately thereabove and/or therebelow, and a plurality of pegs in each of two differently colored sets, each peg being sized to be received in and supported by any of said openings, said pegs being alternately placed in said openings by opposing players in an effort to place five pegs of a single said surface, in vertical



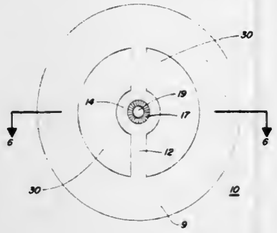
alignment, or in one step offset relation from surface to adjacent surface employing all five surfaces.

4,204,686

PHONOGRAPH RECORD PROTECTIVE CUSHION

Walter E. Church, 1108 Longmont Ave., Boise, Id. 83706

Filed Feb. 6, 1978, Ser. No. 875,247
Int. Cl.² G11B *23/00*
U.S. Cl. 274—1 R **1 Claim**



1. A protective cushion for label bearing phonograph records comprising:

a substantially planar annular ring having at least one rib extending between opposing internal edges of said ring defining a plurality of apertures for substantially unobstructed viewing of the labels, one of said ribs having a spindle receiving opening centrally located therein;

a multiplicity of flexible filamentous projections, horizontally disposed and radially and inwardly projecting from the edges of the spindle receiving opening, said projections defining a second spindle opening; and

cushioning material secured to opposing sides of said ring and said rib.

4,204,687

TONE ARM DRIVE DEVICE

Shizuo Inaba, and Yoshihisa Hirota, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 18, 1978, Ser. No. 943,514
Claims priority, application Japan, Sep. 20, 1977, 52-112940
Int. Cl.² G11B *17/06*
U.S. Cl. 274—15 R **9 Claims**

1. A tone arm drive device comprising;

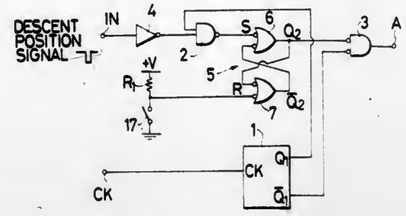
a reversible electric motor;

tone arm drive means responsive to said rotation of said motor to vertically move and horizontally swing a tone arm;

flip-flop means responsive to signals indicative of vertical movement of said tone arm, said vertical movement comprising elevation and descent of said tone arm, and generating an output in response thereto;

first logical gate means for generating an output of a logical product of a signal for descent of said tone arm and the output from said flip-flop means;

means for detecting an upward movement limit point of said tone arm and generating an output in response thereto;



a set-reset flip-flop receiving outputs from the first logical gate means and the detecting means and generating an output signal therefrom, the output from said first logical gate means being a set input and the output from the detecting means being a reset input to said set-reset flip-flop; and

second logical gate means for generating logical product output of the output from said flip-flop means and the output signal from the set-reset type flip-flop and generating an output control signal, said output control signal employed to control vertical movement of said tone arm.

4,204,688

OIL CONTROL RING SPACER-EXPANDER WITH IMPROVED SLIP LATCH

M. Lewis Davis, Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Filed Sep. 8, 1976, Ser. No. 720,274
Int. Cl.² F16J *9/06, 9/12*
U.S. Cl. 277—9 **6 Claims**



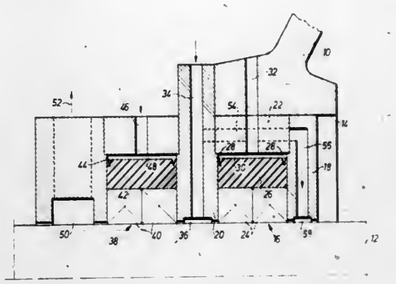
1. In combination with a corrugated circular spacer-expander for use in a piston oil control ring having a free-state radius of curvature and parted expander ends, and including a plurality of alternating concentric circumferentially spaced inner and outer crowns integrally interconnected by a plurality of generally diverging legs and oil drain openings formed one in each of said plurality of legs, and improved slip latch comprising a rod having one end extending through at least one leg opening adjacent one end of said spacer-expander and having a stop formed in said one end between spacer-expander legs and dimensioned in the axial direction to prevent passage of said stop through said leg openings, said stop having a dimension in the radial direction which is less than the corresponding radial dimension of said leg openings, said rod further having a second end extending through a plurality of leg openings in the opposing spacer-expander end, said second end being free to slide through said plurality of leg openings.

4,204,689

SEALING DEVICE FOR SHAFTS

Inge Johansson, Taby, Sweden, assignor to Defibrator Aktiebolag, Stockholm, Sweden

Filed May 1, 1978, Ser. No. 901,769
Claims priority, application Sweden, May 2, 1977, 7705092
Int. Cl.² F16J *15/40*
U.S. Cl. 277—27 **4 Claims**



1. In a sealing device for shafts passing through a wall separating media of different pressures, said sealing device including a packing box adapted to be mounted around a shaft, said packing box being mounted on a wall element, said packing box including a ring shaped chamber in which is disposed at least one layer of sealing material, the inner surface of said layer of sealing material being adjacent to the outer surface of said shaft;

the improvement comprising a cuff or sleeve mounted around the outer surface of said layer of sealing material, said cuff or sleeve being radially flexible and being formed from an elastic material, and first means for applying a pressurized medium to the outer surface of said cuff or sleeve so that the pressure exerted thereon is transmitted radially inwardly through said cuff or sleeve to said layer of sealing material, said transmitted pressure causing said layer of sealing material to be pressed in its entire axial extension against said shaft;

the entire inner surface of said layer of packing material being shaped to conform to the outer surface of said shaft so that said layer of sealing material is maintained in a flush, contiguously abutting relationship with the outer surface of said shaft; and

second means for applying a pressurized medium to the interface between the outer surface of said shaft and the inner surface of said layer of sealing material, said pressure applied by said second means being less than said pressure applied to the outer surface of said cuff or sleeve by said first means.

4,204,690

SEALING RETAINING RING ASSEMBLY

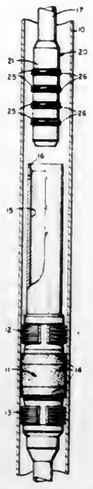
Warren E. Holland, Houston; James D. Burley, Humble, and Henry P. Arendt, Dallas, all of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Feb. 28, 1979, Ser. No. 16,223
Int. Cl.² F16J *15/40, 15/24*
U.S. Cl. 277—27 **6 Claims**

1. An assembly for sealing between two concentric cylindrical members comprising:

an annular groove formed on one of said cylindrical members, said groove containing seal material in contact with the surface of the other cylindrical member opposing said groove and an expansible-contractible split metallic retaining ring extending radially to the surface of said other cylindrical member and having at least a portion of the

surface on one side beveled inwardly to the inner edge of said retaining ring, the surface on the opposite side engaging one of the side walls of said groove, said retaining ring



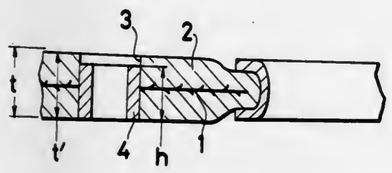
being sized to elastically compress against the wall of said other cylindrical member to leave no gap between the outer edge of said retaining ring and the opposing wall of said other cylindrical member.

4,204,691

BREAK PREVENTING GASKET

Koyu Takase; Shigeo Makino, and Tadashi Naitou, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 17, 1978, Ser. No. 924,955
Int. Cl.[2] F16J *15/12*
U.S. Cl. 277—235 B **6 Claims**



1. A compressible, break-preventing gasket for use with the cylinder head cover of an internal combustion engine, comprising a rigid, metallic spacer member which is fitted into each through bore of said gasket for insertion of a head bolt, said spacer member having a height taken in the thickness direction of said gasket and which height is smaller than the gasket thickness that results when said gasket is compressed by normal fastening of said head bolt.

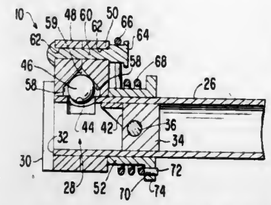
4,204,692

BLADE HOLDER FOR SABER SAW

Simon J. Hoffman, P.O. Box 75821, Los Angeles, Calif. 90075

Filed May 2, 1978, Ser. No. 902,198
Int. Cl.[2] B23B *31/22*
U.S. Cl. 279—81 **1 Claim**

1. A holder for a saber saw blade of the type having a pair of opposed side marginal edges and a notch in one of the side marginal edges near the rear end of the blade comprising: a tubular support having an open end; a blade-mounting member inserted in the open end of the support and having a blade-receiving slot extending thereinto, the inner end of the member presenting a blade-engaging face and the side of the member having a recess communicating with the slot, said support having a hole communicating with the recess; means securing the member to the support; a ball movable partially into the hole, the recess and the slot; means including a pair of adjacent, interconnected cam elements rotatably mounted on the support for caging said ball so that the ball can move partially into and out of the notch of said saber saw blade when the blade is in said slot and as the ball extends at least partially through the hole and the recess, each element having a beveled, inner



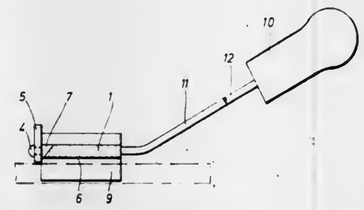
peripheral face, the beveled faces being adjacent to each other to form a cam surface engagable with the ball to force the latter partially into said notch when said elements have been rotated in one direction on said support, said elements being rotatable on said support in the opposite direction to cause the cam surface to be positioned to allow movement of the ball away from the slot and thereby to permit the blade to be inserted into and removed from the slot; and means coupled with the elements for biasing the same in said one direction.

4,204,693

DEVICE FOR WAXING SKIS

Hans Å. Wicksell, Trestegsgatan 63, 603 63, Norrköping; Stig Ståhl, Jägmästargränd 4, 574 00, and Ingemar G. Löfstedt, Sjunnan, 574 00, both of Vetlanda, all of Sweden

Filed Apr. 5, 1978, Ser. No. 893,816
Int. Cl.[2] A63C *11/08*
U.S. Cl. 280—809 T **4 Claims**



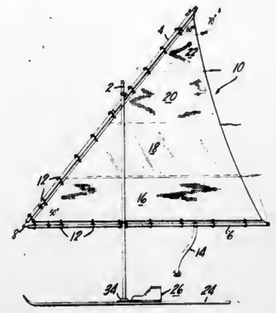
1. A device for waxing skis comprising:
(a) a prismatic base-plate composed of metal and having opposed first and second end edges, opposed first and second side edges, an upper surface, a lower surface, and ribs extending along said side edges and upstanding above said upper surface;
(b) a handle projecting from said base-plate;
(c) an elongate metal end plate which is fitted to one end edge of the base-plate and which has an upper longitudinal edge protruding above said upper surface of the base-plate and a lower longitudinal edge protruding below said lower surface of said base-plate, said end plate together with said ribs and upper surface of the base-plate defining a recess for containing melted wax;
(d) aperture means extending through said base-plate between said upper and lower surfaces thereof adjacent said end plate for passage of said melted wax; and
(e) a guide member disposed along one side edge of the base-plate and protruding downwards below the lower surface thereof.

4,204,694

SAIL APPARATUS FOR A LAND VEHICLE

John L. Freeman, 1 West 67th St., New York, N.Y. 10023

Filed Jun. 22, 1978, Ser. No. 918,082
Int. Cl.[2] A63C *11/00*
U.S. Cl. 280—810 **24 Claims**



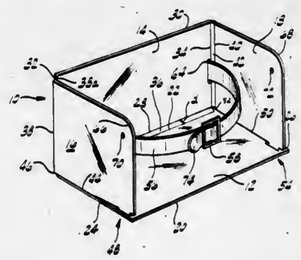
1. Lateen sail apparatus for use in propelling a body member adapted to transport a user in a standing or crouching position over a solid surface, said apparatus comprising:
(a) a triangular-shaped sail;
(b) means including an upper spar and a lower boom for holding said sail in an open, triangular form;
(c) a mast, connectable to said spar and said boom at positions substantially midway between the respective ends thereof, for supporting said holding means in a lateen configuration such that the sail area forward of the mast is a significant proportion of, but does not exceed the said area rearward of the mast; and
(d) means for detachably coupling said mast to the body member in such a manner that said mast may be articulated with respect to the body member throughout all vertical planes about said coupling means.

4,204,695

SHOPPING CART CHILD SEAT

Marilyn F. Salzman, 355 Dungate Dr., Chesterfield, Mo. 63017

Continuation-in-part of Ser. No. 752,065, Dec. 20, 1976, Pat. No. 4,108,489. This application Jul. 24, 1978, Ser. No. 927,219
Int. Cl.[2] A47D *1/10*
U.S. Cl. 280—33.99 B **10 Claims**



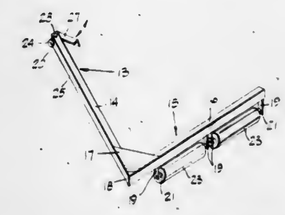
1. In combination, a shopping cart having a child seat structure including a horizontal platform extending along the entire width of said cart between two vertical side walls of said cart; and
a child seat fitted within said child seat structure, said child seat comprising:
a first panel having first and second side edges and first and second end edges;
a second panel having third and fourth side edges and third and fourth end edges;
said first panel having said second side edge thereof coextensive with and hinged to said third side edge of said second panel;
said first, second, third and fourth side edges being shorter than the length of said platform;
first and second restraining flaps, each having a first edge coextensive with and hinged to a respective one of said first and second end edges of said first panel, each of said restraining flaps having a second edge adjoining a respective one of said first edges of said flaps and movable into coextensive relationship with a respective one of said third and fourth end edges of said second panel; and
securing means for releaseably securing each of said second edges of said restraining flaps in said coextensive relationship;
wherein, when said second edges of said restraining flaps are in said coextensive relationship, said restraining flaps are spaced from said side walls of said cart to thereby prevent a child placed within said child seat from falling laterally against said side walls of said cart.

4,204,696

DOLLIE FOR MANIPULATING A PALLETIZED LOAD AND METHOD OF ITS USE

Anthony J. Burger, Jr., Richmond, Va., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Apr. 20, 1978, Ser. No. 897,992
Int. Cl.[2] B62B *11/00*
U.S. Cl. 280—79.1 R **10 Claims**



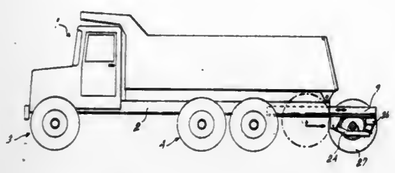
1. Apparatus for supporting a load of material so that it can be readily raised and moved over a generally flat surface, said material being arranged on a pallet, said pallet being supported by a plurality of legs to provide an undersurface spaced a distance from said flat surface, said apparatus comprising an L-shaped right-handed and left-handed dollie, each dollie, comprising:
a lever extending in a longitudinal direction,
support means affixed to one end portion of said lever, said support means extending in a longitudinal direction which is perpendicular to the longitudinal direction of said lever, said lever and said support means lying generally between two parallel planes,
rolling means attached to said support means, said rolling means extending from one longitudinal side of said support means in a direction which is perpendicular to said parallel planes and being mounted to rotate around a fixed axis which is parallel to the longitudinal direction of said support means, the vertical displacement of said rolling means and support means being less than said distance when said lever is in a generally vertical position and when said lever is rotated to a generally horizontal position and said rolling means and support means are disposed under said pallet, the vertical displacement of said rolling means and support means being greater than said distance so that said support means engages said pallet undersurface and said rolling means engages said flat surface whereby the legs of said pallet are lifted off said flat surface and said load is supported and may be transported over said flat surface, and means for retaining said lever in a horizontal position.

4,204,697

VARIABLE WHEELBASE ROAD TRUCK

David Santerre, 13 Brunet St., Pointe-des-Cascades, Canada

Filed Oct. 27, 1978, Ser. No. 955,388
Int. Cl.[2] B62D *33/08*
U.S. Cl. 280—80 B 2 Claims



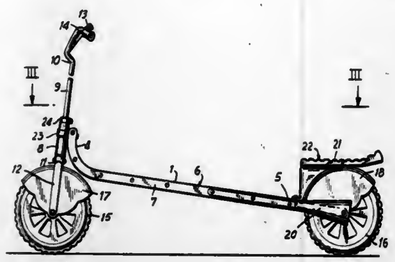
1. A variable wheelbase truck comprising an elongated, rigid chassis including a pair of spaced parallel channel-shaped longitudinal beams, each having a front end and a rear end, cross beams rigidly interconnecting said longitudinal beams, one of said cross beams, being the rearmost cross beams, rigidly interconnecting the rear ends of said longitudinal beams and including a central upwardly convex portion defining a central recess at its underside, elongated slide members secured within and extending longitudinally of said longitudinal beams and terminating at the rear end of the latter, a movable frame including a pair of spaced-apart longitudinal beams slidably fitted within the respective slide members for slidable movement within and longitudinally of said slide members, cross bars rigidly interconnecting said last-named longitudinal beams at longitudinally spaced zones of the latter and including a rearmost cross bar rigidly interconnecting the rear ends of said last-named longitudinal beams, and a second cross bar next to said rearmost cross bar and spaced forwardly thereof along said movable frame, a tongue upstanding from the central portion of said rearmost cross bar and rigid therewith, a double-acting cylinder and piston unit extending longitudinally of said chassis and frame along the center line thereof and with the cylinder of said unit pivotally attached to one of said cross beams and extending across said recess and underneath said rearmost cross beam, and with the rear end of the piston rod of said unit extending above the level of the rearmost cross bar and pivotally attached to said tongue, a bracket rigidly fixed under each longitudinal beams of said movable frame and under said second cross bar, a lever arm extending longitudinally of the truck, pivoted to said bracket at its front end, an adjustable pressure air suspension bag extending between and connected to the rear end of said lever arm and to the underside of the rear ends of the longitudinal beams of said movable frame and underneath said rearmost cross bar, a rear wheel and axle assembly secured at a fixed position to and underneath the longitudinal beams of said chassis and spaced forwardly from the rear ends of said longitudinal beams of said chassis, a supplementary wheel and axle assembly secured to said lever arms intermediate the ends thereof, said movable frame, upon action of said cylinder and piston unit, moving between an extended position in which said brackets and said supplementary wheel and axle assembly are located rearwardly of said rearmost cross beam, and a retracted position in which said rearmost cross bar lies directly underneath said rearmost cross beam and said movable frame, rearmost cross bar, air suspension bags and supplementary wheel and axle assembly do not protrude rearwardly of the rearmost cross beam and of the rear ends of the longitudinal beams of said chassis, the wheels of said rear wheel and axle assembly being disposed sufficiently forwardly of the rearmost cross beam to clear the wheels of the supplementary wheel and axle assembly in the retracted position of said movable frame.

4,204,698

CHILD'S SCOOTER

Nicholas Mihalik, 98-25 65th Rd., Forest Hills, N.Y. 11374

Filed Nov. 17, 1978, Ser. No. 961,713
Int. Cl.[2] B62K *9/00*
U.S. Cl. 280—87.04 R 5 Claims



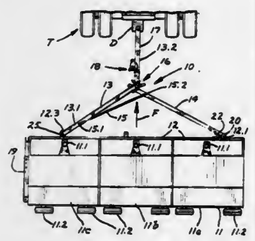
1. A child's scooter, comprising
a carriage having an elongated platform for supporting a foot of a user, said platform being substantially planar with a front and a spaced rear and curving upward in the area of the front thereof to approximately 90° with the remainder of said platform, a cover of high friction material on the platform to prevent slippage of the foot and a frame extending around the front and sides of the platform;
a collar;
a tubular member surrounded by said collar and affixed to the frame via said collar at the front of the platform, said tubular member extending substantially parallel to said front and substantially perpendicular to the remainder of said platform;
a steering shaft rotatably mounted in the tubular member and having spaced opposite top and bottom ends;
a forked part extending substantially colinearly from the bottom end of the steering shaft;
handlebars extending from the top end of said steering shaft;
a front wheel rotatably mounted in the forked part; and
a rear wheel rotatably mounted at the rear of said platform.

4,204,699

HITCH FOR DRAFT IMPLEMENT

Wayne Gustafson, Erskine, Minn., assignor to Erskine Manufacturing Company, Inc., Erskine, Minn.

Filed Nov. 17, 1978, Ser. No. 961,738
Int. Cl.[2] B62D *53/00*
U.S. Cl. 280—415 R 12 Claims



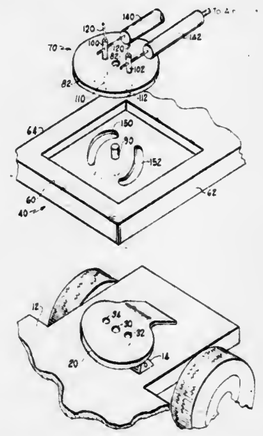
12. A hitch for connecting a tractor with an elongate drawbar to an elongate field implement having an evener at an elongate forward side of the implement and also having a leading end adjacent one end of the evener, comprising
a rigid elongate draft frame having a forward end with means for attachment to the tractor drawbar and also having a rear end with means for pivotal connection to said one end of the implement evener for swinging between a field position wherein the draft frame extends generally forwardly of the implement and a transport position wherein the draft frame extends generally longitudinally of the elongate field implement and evener and from said leading end of the implement,
a brace extending obliquely from the draft frame for connection with the evener of the implement, a first latch means detachably connecting the brace with the draft frame intermediate the front and rear ends thereof,
the attachment means of the draft frame including an elongate rigid connecting link swingable from side to side as the draft frame is moved from field position to transport position,
a second latch means between the connecting link and draft frame and alternately connecting the connecting link in alternate positions after swinging side to side with respect to the draft frame, and
a second brace means interconnecting the draft frame with the leading end of the implement when the draft frame is in transport position.

4,204,700

ANTI-JACKKNIFE APPARATUS

Joseph R. Haines, Sr., Bordentown, N.J., assignor to Haines Towing Inc., Bordentown, N.J.

Filed Nov. 8, 1978, Ser. No. 958,881
Int. Cl.[2] B62D *53/08*
U.S. Cl. 280—432 5 Claims



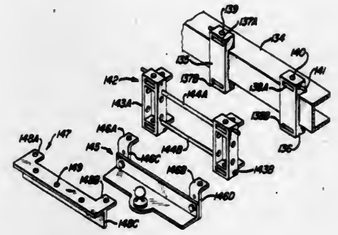
1. Tractor-trailer control apparatus comprising
a tractor and a trailer adapted to be coupled and decoupled, and having a longitudinal axis,
said tractor carrying a generally horizontal fifth wheel having first, second, and third apertures extending vertically therethrough, said apertures being aligned on an axis oriented transverse to the longitudinal axis of said tractor-trailer combination,
said trailer carrying a kingpin for insertion into the second of said apertures which is the central aperture of the three apertures in said fifth wheel whereby said tractor and trailer can be mechanically coupled together,
a pair of penumatic cylinders secured to said trailer and oriented generally parallel to said longitudinal axis, each cylinder having an operating piston, one piston being aligned with said first aperture and one piston being aligned with said third aperture,
coupling means secured to each of said pistons and positioned for removable insertion in said other two apertures in said fifth wheel whereby said pneumatic cylinders can be rigidly connected to or disconnected from said fifth wheel, whereby rotation of said fifth wheel transmits motion through said coupling means and said pistons to said pneumatic cylinders which in turn oppose the rotation of said fifth wheel and of said trailer with respect to said tractor, and
a controllable source of air coupled to said pneumatic cylinders to adjust the degree of resistance of said cylinders to rotation of said fifth wheel and to relative movement between said tractor and trailer.

4,204,701

UNIVERSAL QUICK DETACH ACCESSORY MOUNT FOR VEHICLES OR THE LIKE

Victor C. Oltrogge, 6054 Queen Ct., Arvada, Colo. 80004

Division of Ser. No. 654,364, Feb. 2, 1976, abandoned. This application Aug. 23, 1978, Ser. No. 935,929
Int. Cl.[2] B60D *1/00*
U.S. Cl. 280—491 E 14 Claims



1. In a bumper hitch system for releasably attaching accessories to the bumper of a vehicle, a mounting frame assembly rigidly attached to the bumper and including a plurality of narrow slotted passageways opening thereinto defined by sidewalls of a rectangular cross-section, said mounting frame assembly having bores extending through the longer sidewalls, said mounting frame assembly retaining said passageways in a generally rectangular configuration in which said passageways are located at the four corners of the rectangle, an adapter comprising a plurality of prongs each having a wide, flat rectangular cross-section sized for close fitting insertion within said slotted passageways and a hole in proximity to one end of each prong with said hole extending therethrough across the narrower dimension of the rectangular cross-section for aligning with the sidewall bores, means for attaching an accessory to the other end of said prongs, and releasable attachment means extending through the aligned said hole and said bores of the mounting frame assembly for releasably retaining each said prong against removal from the associated said passageway.

4,204,702

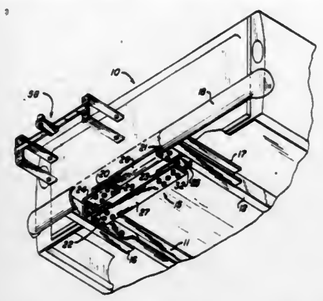
UNIVERSAL QUICK DETACH ACCESSORY MOUNT FOR VEHICLES OR THE LIKE

Victor C. Oltrogge, 6054 Queen Ct., Arvada, Colo. 80004

Continuation of Ser. No. 654,364, Feb. 2, 1976, abandoned. This application Aug. 23, 1978, Ser. No. 935,990
Int. Cl.[2] B60D *1/06*
U.S. Cl. 280—491 E 12 Claims

1. Hitch apparatus adapted for removable mounting an article to be towed to the underframe of a vehicle and the like, comprising:
a male adapter affixed to said article, said male adapter including a plurality of interconnected arms projecting in a common direction in spaced substantially parallel relation to one another and each arm terminating in a solid flat tongue portion at its outer free end, said arms being connected at the other end in rigid relation to one another and at least two of said arms being in substantially vertical orientation to one another;
a pair of rigid brackets mounted to said underframe and projecting outwardly thereform in spaced-apart relation to one another;

female interconnecting means mounted on said rigid brackets for interconnecting said male adapter to said underframe, said female interconnecting means having upper and lower substantially horizontal slotted passageways aligned for simultaneously receiving the tongue portions of said arms in mating relation to one another, each of said slotted passageways having upper and lower walls spaced apart a distance for close-fitting insertion of its respective tongue portion and elongated in the direction of insertion of said tongue portion thereinto, said female interconnecting means having a pair of elongated parallel spaced-apart



wall portions attached to said brackets and each said wall portion defining one of said upper and lower walls of each said slotted passageway; and

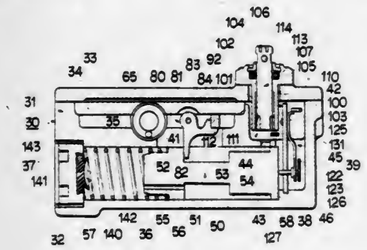
releasable attachment means for positively coupling said arms within said slotted passageways, said releasable attachment means extending through slotted passageways in a direction transversely of the direction of extension of said arms into said slotted passageways and extending through openings in said arms so as to be operative when attached to transfer the load forces between said adapter and said female interconnecting means to said underframe.

4,204,703

DEVICE FOR STARTING AIR BAG DEVICES

Motohiro Okada, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1978, Ser. No. 871,838
Claims priority, application Japan, Jan. 31, 1977, 52/9519
Int. Cl.[2] B60R *21/08*
U.S. Cl. 280—734 **5 Claims**



1. An automobile air bag device starting apparatus, comprising:

a cylinder;

a weight slidably disposed within said cylinder;

a spring provided within said cylinder resiliently pressing said weight rearwardly into an initial normal position under a pre-set spring load;

said weight being provided with a recess in the lengthwise direction thereof on the outer periphery of said weight;

air bag starting means;

a link mechanism adapted to be collapsed to thereby actuate said air bag starting means;

a substantially L-shaped arm pivotably mounted on said cyliner, one end of said arm entering said recess and the other end of said arm being engaged with said link mechanism;

said arm being in contact at said one end thereof with the forward end of said recess of said weight when said weight is resiliently pressed in said normal position;

said weight being adapted to move forwardly from said normal position when a force above said pre-set spring load of said spring acts on said weight at the time of a collision;

said arm being urged to rotate by the rearward end of said weight when said weight is moved forwardly, to therebe collapse said link mechanism to actuate said air bag starting means;

a plug, said plug being adapted to close the front end of said cylinder;

a sucking disc provided at a forward moving limit of said weight at an inner end of said plug, opposite the front end surface of said weight; and

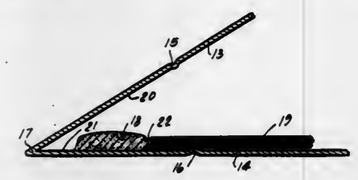
said sucking disc being adapted to apply a sucking force to said weight when said weight reaches the forward moving limit thereof.

4,204,704

HEAT REACTIVATIBLE ADHESIVE BOOK BINDING

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Continuation of Ser. No. 729,814, Oct. 5, 1976, abandoned, which is a division of Ser. No. 604,659, Aug. 14, 1975, Pat. No. 3,995,886. This application Apr. 13, 1978, Ser. No. 896,027
Int. Cl.[2] B42D *1/10*
U.S. Cl. 281—21 R **2 Claims**



1. A book cover for binding a plurality of paper sheets having ends positioned adjacent and parallel to but not in contact with a center fold of the bound book, comprising:

a) a cover having two leaves with substantially equal surface dimensions and joined at a center fold;

b) each leaf having a leaf score spaced from and parallel to the center fold;

c) a strip of hot melt adhesive longitudinally extending parallel with the center fold and deposited on a flat portion of one of said leaves between the center fold and score, the strip being spaced from the center fold and leaf score by first and second uncovered areas respectively;

d) the strip including a paper sheet abutment wall means facing outwardly with respect to the center fold and at a substantial angle with respect to said flat portion, said abutment wall providing an alignment surface and engaging surface for the paper sheets; and

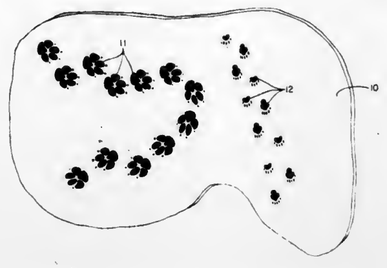
e) only one of said two leaves having the strip deposited thereon.

4,204,705

ANIMAL TRACK TEACHING

William J. J. Gordon, and Anthony N. Poze, both of 121 Brattle St., both of Cambridge, Mass. 02138

Filed Nov. 21, 1977, Ser. No. 853,453
Int. Cl.[2] B42D *15/00*; G09F *7/00*
U.S. Cl. 283—1 R **7 Claims**



1. An animal track teaching unit comprising,

means defining a surface having artificially established full-size reproduction of nonhuman animal tracks of at least two nonhuman animals which reproductions are adapted to be placed in a natural environment selected, oriented and spaced when on said surface to correspond to the tracks made by said at least two nonhuman animals pursuing an interactive activity in said natural environment.

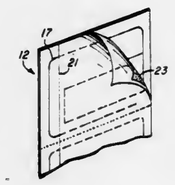
7. A method of representing wildlife activity comprising locating full-size reproductions of nonhuman animal tracks representing in full scale the tracks of at least two nonhuman animals on a surface suitable for outdoor use, and placing said surface in a natural outdoor setting so that said full-size reproductions correspond to the tracks made by said at least two nonhuman animals pursuing an interactive activity in said natural outdoor setting.

4,204,706

METHOD AND MULTI-LAYER LABEL HAVING PRESSURE-SENSITIVE MARK TRANSFER SYSTEM

Julian J. Blum, 7211 N. 3rd St., Phoenix, Ariz. 85020, and Don J. W. Thralls, 336 W. Gardenia, Phoenix, Ariz. 85021

Filed Jul. 3, 1978, Ser. No. 921,726
Int. Cl.[2] A44C *3/00*
U.S. Cl. 283—21 **8 Claims**



1. A multi-layer label system comprising in combination:

(a) a transparent cover sheet having an inside surface and an outside surface, and having a pressure-sensitive adhesive on said inside surface;

(b) a removable separator sheet releasably contacting said pressure-sensitive adhesive on said inside surface of said transparent cover sheet;

(c) a label having an information surface facing said separator sheet and a back surface having a pressure-sensitive adhesive thereon;

(d) a removable back sheet releasably adhering to the pressure-sensitive adhesive on said back surface of said label;

(e) pressure-sensitive marking means disposed on said separator sheet for producing marks on said information surface in response to marking pressure applied to the outside surface of said transparent cover sheet; and

(f) said transparent cover sheet being releasably secured along one edge thereof to said back sheet, said transparent cover sheet being secured to said label along an edge thereof adjacent to said edge of said transparent cover sheet;

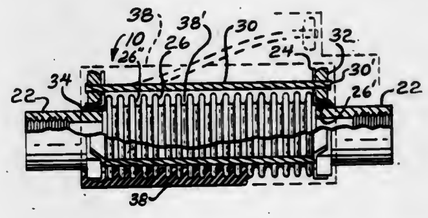
whereby said information surface can be effectively marked without folding back said transparent cover sheet and said pressure-sensitive means from said information surface of said label.

4,204,707

VIBRATION ABSORBING CONNECTOR

Thomas N. Lincicome, Elgin; John M. Spiro, Dundee, and Albert J. Brons, Villa Park, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 8, 1978, Ser. No. 967,813
Int. Cl.[2] F16L *51/02*
U.S. Cl. 285—114 **2 Claims**



1. A connector for isolating high pressure fluid piping systems from vibration comprising a corrugated thin metal bellows member having a central corrugated section of a wall thickness no greater than about 0.006" and of an insufficient thickness if subjected to system maximum design pressures to resist permanent deformation, and integral opposed uncorrugated end portions adapted to be attached to spaced portions of an associated piping system; a pair of end plate members, each of said end plate members having a central aperture therein through which one of said end portions passes and an annular planar surface positioned in a plane perpendicular to the axis of the bellows member, said planar surfaces contacting the axially outermost corrugations in said central corrugated section and being integrally affixed to said uncorrugated end portions; tie means anchored to each of said end plate members at least three circumferentially spaced points for resisting axial separation of said end plate members and axial elongation of said central corrugated section while permitting lateral movement of the spaced portions of the associated piping system relative to each other, integral elastomeric means surrounding said connector and encapsulating said tie means, said elastomeric means including at least a first elastomeric portion of a durometer in the range of about 40–70, Shore A filling the spaces between the outward facing corrugations in the central corrugated section, said elastomeric portion having sufficient rigidity to limit deformation of the corrugations under operating conditions to an amount which will not degrade their ability to continue to absorb vibratory motions.

4,204,708

DOOR LATCH ASSEMBLY

Harold W. Carlson, 15833 W. 11 Mile Rd., Apt. 105, Southfield, Mich. 48073

Filed Nov. 17, 1978, Ser. No. 961,698
Int. Cl.[2] E05C *3/04*
U.S. Cl. 292—292 **4 Claims**

1. A door latch assembly comprising a thin flat latch plate and a latch bar member, said flat latch plate having a plurality of perforations in it adapted to receive fasteners whereby the

plate may be secured to a door jamb in the clearance space between the jamb and the edge of a hinged door, said latch plate having a lip adapted to project into a room where the plate is mounted on the door jamb of a doorway to the room, said lip having a plurality of openings vertically spaced from each other and having inside vertical edges adapted to be located adjacent the inside surface of said door when the door is closed, said latch bar having a plurality of arms projecting



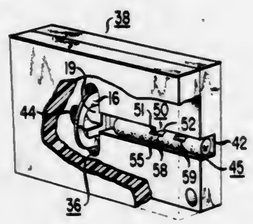
transversely to the length of the bar, said arms being sized to freely project through said latch openings whereby said latch bar is supported on said lip and overlaps said door to act as a stop preventing opening of the door, said latch bar arms having vertical recesses adjacent their inner ends adapted to fit over the bottom edges of said latch openings whereby a vertical component of motion is needed to unseat the latch bar from the latch plate.

4,204,709

SEAL FOR A PUBLIC PAY TELEPHONE STATION COIN BOX

Frank J. Shea, 258 E. Shore Trail, Sparta, N.J. 07871

Filed Mar. 9, 1978, Ser. No. 884,889
Int. Cl.² B65D *33/34*
U.S. Cl. 292—307 R **36 Claims**



1. A seal for a hasp attaching a removable cover to a coin box to enclose the interior thereof and including a staple provided with a closed free end encircling open space interiorly thereof, said box mounted in coin activated vending apparatus for collecting coins deposited into said apparatus and serving thereupon to activate said apparatus into a vending state, comprising:

transparent means embodying an aperture coincident with an area of minimum dimension of said means and disposed to receive said staple end therein for mounting said means on said latter end while at the same time registering said staple end open space with said aperture, said means also embodying a hole coincident with an area of maximum dimension thereof; said areas of minimum and maximum dimensions being mutally perpendicularly disposed for registering said hole with said registered aperture and staple end open space and for extending said hole through said aperture and staple end open space to dispose a closed end of said hole on corresponding one sides of said respective aperture and staple end and an open end of said hole on corresponding opposite sides of said respective aperture and staple end; and

plunger means initially located in a first position in said transparent means hole via said open end therein in which position both said inner and outer ends of said plunger means are located on said opposite sides of said aperture and staple end as visible in said transparent means when said transparent means is mounted on said staple end for indicating a nonlocking state of said latter means;

thereafter said plunger means further located in a second position in said hole via said open end thereof as said hole is registered with said aperture and staple end open space to locate said plunger means inner end as visible in said transparent means on said corresponding one sides of both said aperture and staple end and at the same time to continue the location of said plunger means outer end on said corresponding opposite sides of both said aperture and staple end; said last-mentioned locations of said plunger means inner and outer ends serving to change said plunger means from said first position to said second position in said hole in said transparent means for indicating a locking state of said latter means mounted on said staple end;

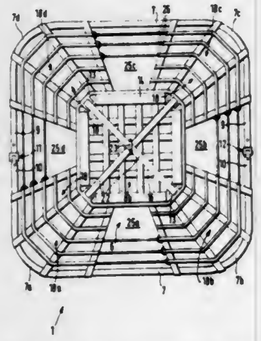
said second position of said plunger means in said hole in said transparent means mounted on said staple end together with said last-mentioned means constituting said seal for said hasp to impede pilfering said coins from said box.

4,204,710

RESCUE NET

Günther Rothaemel, Witten, and Gerd Fengels, Hagen, both of Fed. Rep. of Germany, assignors to Bruggemann & Brand KG, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,240
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1977, 2735656
Int. Cl.² B66C *1/12*
U.S. Cl. 294—77 **17 Claims**



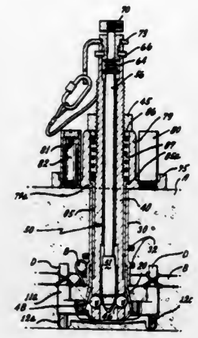
1. A cage-like rescue net attachable to a helicopter and the like comprising: a bottom portion defining a floor for persons or articles to be rescued; and an outer net-like peripheral wall attached to said bottom portion and defining at least one access opening; said bottom portion comprising two halves pivotable one towards the other about a common axis to an open position in which said two halves are pivoted outwardly away from one another to form said floor during use of the rescue net and to a closed position in which said two halves are pivoted inwardly towards one another and upwardly towards said peripheral wall to effectively enclose and stow the remaining portions of the rescue net during non-use of the rescue net.

4,204,711

COUPLING FOR LIFT SYSTEM FOR CONCRETE SLABS

Harry B. Lancelot, III, and Robert M. Macrobbie, both of Fort Worth, Tex., assignors to Brown Company, Pasadena, Calif.

Filed Jul. 20, 1978, Ser. No. 926,286
Int. Cl.² B66C *1/00*
U.S. Cl. 294—89 **23 Claims**



1. A coupling for selectively effecting a releasable connection to a concrete slab having an opening, comprising:

a tubular element in said opening having a frustoconically flared portion facing the interior of the slab, further having a cylindrical neck portion extending from a smallest diameter portion of the flared portion;

a base embedded in the slab, including means for positioning the tubular element, the tubular element being surrounded by concrete in the slab and in engagement with a correspondingly flared portion of the opening in the slab, for retaining the tubular element in the concrete;

a casement of elongated tubular construction having a front end and a rear end, there being a plurality of laterally extending openings in the casement;

a plurality of freely inwardly and partially radially outwardly displaceable balls in the openings;

a plunger with a head and a conical tip in the casement being axially moveable therein, the plunger upon being partially retracted in the casement permitting the balls to retract into the opening, at least sufficiently far enough so that the casement can clear said neck portion, the plunger upon advancing having its tip radially displacing the balls for protraction, the head holding the balls in protracting position; and

releasable means, accessible near the rear end of the casement for retaining the plunger and the head in the advanced position.

4,204,712

VEHICLE DECKING BEARER

Alexander Maricic, Newcastle, Australia, assignor to John Lysaght (Australia) Limited, Sydney, Australia

Filed Aug. 22, 1978, Ser. No. 935,813
Claims priority, application Australia, Aug. 29, 1977, PD1429
Int. Cl.² B62D *33/00*
U.S. Cl. 296—35.1 **7 Claims**

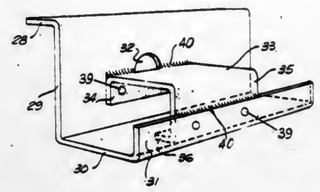
1. A bearer for use in a vehicle of the kind wherein a decking is supported on a pair of said bearers which in turn respectively rest upon and are parallel to a pair of chassis members forming a part of the vehicle structure and extending longitudinally, comprising

a Z-section runner having:

a. An upright web, having selectively longitudinally spaced bolt holes at locations in a neutral axis of said runner,

b. A top horizontal flange extending from the top longitudinal edge of said upright web, for orientation outward of said vehicle,

c. A bottom horizontal flange extending from the bottom longitudinal edge of said upright web for orientation inward of said vehicle,



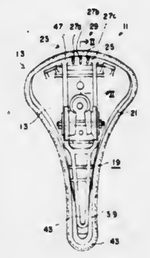
d. A bridge member fixed to the inner side of said upright web and over said bottom horizontal flange having a flat U-bolt bearing surface, the plane of which rectangularly intersects said bolt hole in said upright web.

4,204,713

MEANS FOR ATTACHING A COVER TO A BICYCLE SADDLE

George W. Worley, Bolivar, Tenn., assignor to Troxel Manufacturing Company, Moscow, Tenn.

Filed Jan. 12, 1979, Ser. No. 3,488
Int. Cl.² B62J *1/18*
U.S. Cl. 297—214 **8 Claims**



1. In combination with a plastic bicycle saddle of the type wherein a saddle base having a downwardly extending flange along the entire periphery thereof is provided, and a saddle cover furnished with inwardly directed flap means along the entire periphery thereof for being folded over the flange of said base thus contiguously engaging the flange of said base, the improvement which comprises attachment means for removably attaching said cover to said saddle base, said attachment means comprising prong means fixedly attached to said saddle base being disposed a predetermined spaced distance inwardly of said flange for cooperating therewith in defining a narrow channel into which said flap means is snugly received, said saddle cover being molded from a substance having characteristics wherein said flap means remains somewhat inherently resilient and flexible while the thickness of at least said flap means is sufficient so as to impart a degree of yieldable stiffness thereto, thus contributing significantly to the effectiveness of said attachment means.

4,204,714

PAVEMENT CUTTING MACHINE WITH PAD TO STABILIZE AND BRAKE MACHINE

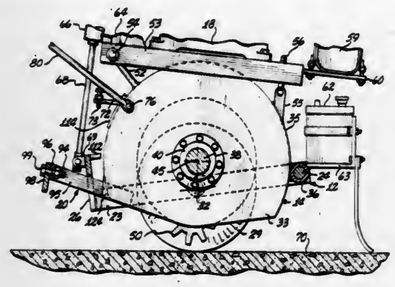
Carl C. Jacobson, Tempe, and Gaius P. Crosby, Mesa, both of Ariz., assignors to Crafco, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 894,923, Apr. 10, 1978, abandoned. This application Mar. 1, 1979, Ser. No. 16,367
Int. Cl.² E01C *23/09*
U.S. Cl. 299—1 **9 Claims**

1. A pavement cutting machine comprising:

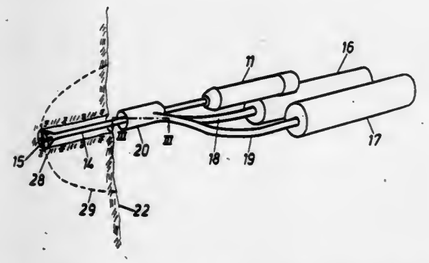
(a) a carriage of open configuration having a pair of spaced side rails, a rear crossrail and a front crossbar;

(b) a pair of axially aligned wheels each attached to a different one of the side rails of said carriage intermediate the front and rear ends thereof;
(c) a downwardly opening shroud having its front end pivotably coupled to the front crossbar of said carriage and disposed to lie in a central location intermediate the side rails thereof;
(d) cutter wheel means rotatably journaled in said shroud so as to lie in a central location intermediate said pair of wheels with its axis of rotation passable through the axis of said pair of wheels when said shroud is pivotably moved;
(e) linear actuator means having one of its ends coupled to said shroud and having its other end coupled to the rear



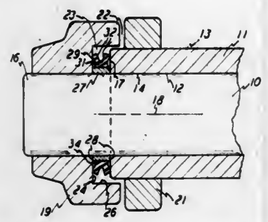
crossrail of said carriage and actuatable for pivotably moving said shroud to lower said cutter wheel means into a pavement cutting position below said carriage;
(f) an engine mounted on top of said shroud for movement therewith;
(g) drive means connected between said engine and said cutter wheel means for rotational driving thereof; and
(h) stabilizing and brake means mounted on said shroud for movement therewith and extending from said shroud, said stabilizing and brake means movable into and out of bearing engagement with the surface of the pavement being cut upon rotation of said carriage about the axis of said pair of wheels.

4,204,715
METHOD AND DEVICE FOR BREAKING A HARD COMPACT MATERIAL
Erik V. Lavon, Saltsjö-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Nov. 17, 1977, Ser. No. 852,576
Claims priority, application Sweden, Nov. 24, 1976, 7613107
The portion of the term of this patent subsequent to Jan. 11, 1995, has been disclaimed.
Int. Cl.² E21C *37/12*
U.S. Cl. 299—16 **70 Claims**



34. A method of breaking hard compact material, such as rock, by means of relatively incompressible fluid, such as water, comprising: drilling a hole in the material to be broken with a drill rod and drill bit, retaining the drill rod and drill bit in the drilled hole, accelerating a longish fluid mass body to a velocity of sufficient magnitude for generating a momentum required for breakage, and directing said longish fluid mass body into said hole around said drill rod to impact a surface in the hole to create pressure for breaking the material.

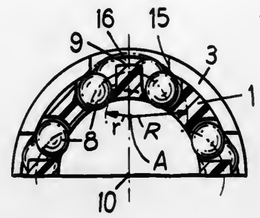
4,204,716
TRACK JOINT WITH A THRUST RING AND A SEAL RING
John M. Baylor, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed May 30, 1978, Ser. No. 910,202
Int. Cl.² B22D *55/00*; F16J *15/38*
U.S. Cl. 305—11 **5 Claims**



1. A track joint with a thrust ring and a seal ring, comprising a track pin, a cylindrical bushing on said pin and terminating in an annular surface disposed on a plane transverse to the extent of and within the length of said pin, a track link on the end of said pin and having an annular surface, said annular surfaces being spaced apart and faced toward each other and extending radially from and beyond said pin on respective planes transverse to the longitudinal axis of said pin, a thrust ring of rigid material fitted on said pin between and in abutting contact with said annular surfaces at the radially inward portions of said annular surfaces for maintaining said bushing and said link spaced apart, and an elastomer seal ring extending around said thrust ring in snug endless circular contact therewith and radially outwardly therefrom and being disposed completely in the space between said annular surfaces, mated projections and notches on said thrust ring and said seal ring at the snug contact therebetween, for securing said seal ring on said thrust ring, said seal ring having an annnular body portion and two radially outwardly extending legs having a radial extent less than that of said annular surfaces to be disposed within the radial limits of said annular surfaces, said legs having circular edges at the axially opposite ends of said seal ring and with said circular edges being in respective compressed contact with said annular surfaces for sealing therewith, said circular edges being spaced radially inwardly from the radial outer limit of said seal ring and being disposed on respective planes beyond the planes of the axial ends of said thrust ring, in the free body condition of said seal ring, for effecting the compressed contact with said annular surfaces.

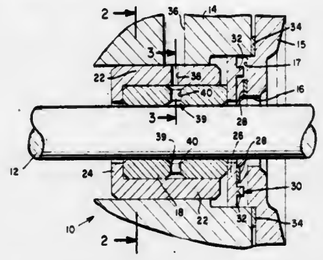
4,204,717
BALL BEARING WITH RADIAL APERTURES IN END RINGS
Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
Filed May 24, 1978, Ser. No. 908,927
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725355
Int. Cl.² F16C *31/06*
U.S. Cl. 308—6 C **7 Claims**

1. In a linear motion ball bearing for movement along a shaft, the bearing including an outer sleeve with races extending axially in the bore, a cylindrical ball guide within the outer sleeve, a plurality of endless raceways at least partially defined by said sleeve and ball guide and substantially filled with balls, each endless raceway including a pair of axial loaded and non-loaded return zones and curved turn-around zones connecting the ends of the axial zones, and end rings secured at the ends of the sleeve and ball guide and overlying the turn-around zones, the improvement in combination therewith, wherein each turn-around zone is defined by a convex surface of the ball guide extending radially outward, and a corresponding



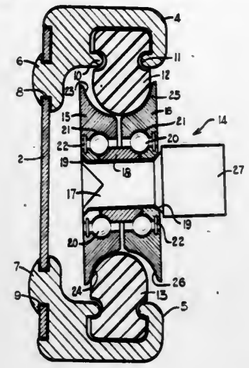
concave surface of said end ring spaced radially outward of said convex surface, said convex and concave surfaces having radii of curvature whose centers lie on a common center-point axis extending parallel to the axis of the bearing, and wherein each of said end rings includes radially extending apertures therethrough, each aperture defined by edges which at least partially overlie one of said turn-around zones and which prevent balls from falling out of said turnaround zones.

4,204,718
BEARING ASSEMBLY
Armand Bosco, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Dec. 11, 1978, Ser. No. 968,646
Int. Cl.² F16C *35/02*
U.S. Cl. 308—15 **18 Claims**



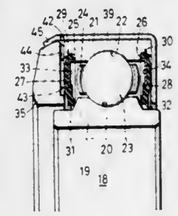
1. A bearing assembly for supporting a relatively high speed rotating shaft with respect to a housing comprising a sleeve bearing rotationally received over the shaft; a bearing carrier mounted within a passage formed in the housing and rotationally receiving said sleeve, said carrier having an inwardly radiating thrust face at one end forming an axial stop for bearing engagement with one end of said bearing; an annular retainer received over the shaft for bearingly engaging the other end of said bearing; a radially inwardly projecting housing shoulder portion adjacent said retainer and axially movable with respect to the housing; spring means interposed between said retainer and said shoulder portion for axially spacing said retainer from said shoulder portion and for biasing said retainer into circumferentially uniform frictional engagement with said bearing to limit axial and rotational freedom of said bearing; and means for closely predetermining the axial position of said shoulder portion with respect to the housing, and thereby also predetermine the axial spacing between said retainer and said shoulder portion.

4,204,719
BEARING AND SUPPORT
Raymond J. Murphy, Rte. 2, Bonne Terre, Mo. 63020
Filed Oct. 17, 1977, Ser. No. 842,532
Int. Cl.² F16C *19/18*; A63B *69/00*
U.S. Cl. 308—188 **5 Claims**



1. A bearing for use in combination with a pair of parallel disposed races with said bearing being located for freely riding between such races, comprising, a pair of parallel disposed races, a pair of rotatable members, said pair of members being rotatable about an axis, a shaft having these members rotatably mounted thereon and providing a common axis about which said members rotate, each member having a concaved outer surface extending around its circumference and with said surfaces being arranged substantially directed towards each other whereby each said surface may ride on a separate race and attain simultaneous and opposite rotation, said bearing being of the counter-rotating type wherein one rotatable member is capable of turning in one direction upon one race with the other rotatable member being capable of simultaneously turning in the opposite direction upon the other and parallel race, bearing means arranged intermediate the rotatable members and their shaft to facilitate turning said members therearound, each rotatable member including formed inner and outer surfaces, the inner surface being contoured to cooperate with a plurality of said bearing means to facilitate the rotation of each member with respect to the shaft, and the outer surface of each rotatable member being contoured in concavity to undertake a bearing relationship during functioning of the invention.

4,204,720
CLUTCH RELEASE BEARING ASSEMBLY
Hisao Otani, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Jul. 24, 1978, Ser. No. 927,534
Claims priority, application Japan, Nov. 2, 1977, 52-147803[U]
Int. Cl.² F16C *19/10*
U.S. Cl. 308—233 **12 Claims**



1. A clutch release bearing assembly containing grease in the interior thereof, said assembly comprising:
an outer race;

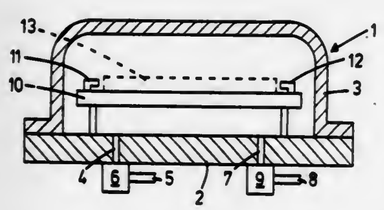
a side plate coaxial with said outer race on one side thereof;
a bearing cover enclosing said outer race and rotatable therewith;
a pair of shielding plates on said outer race to sealingly close the interior of the bearing assembly, one of said shielding plates and said side plate defining an annular space therebetween exterior of said one shielding plate; and
means defining a plurality of substantially radially extending exhaust passages fluidly communicating said annular space with the exterior of said bearing assembly, said passages extending radially outwardly from said annular space whereby muddy water can be discharged from the interior of the bearing assembly through said exhaust passages by centrigual force upon rotation of said outer race.

4,204,721

MANUFACTURE OF GAS FILLED ENVELOPES

Francois Hubert, Walcourt; Michel Laurent, Nivelles, and Lucien Leger, Montigny-le-Tilleul, all of Belgium, assignors to B.F.G. Glassgroup, Paris, France

Filed Oct. 17, 1978, Ser. No. 952,128
Claims priority, application United Kingdom, Oct. 25, 1977, 44348/77
Int. Cl.² H01J *9/26*
U.S. Cl. 316—19 **11 Claims**



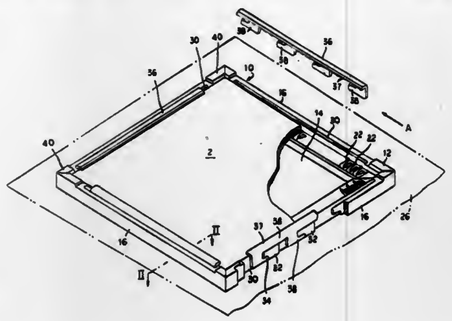
1. In a method of manufacturing an envelope which includes a vitreous wall assembled to at least one other wall-forming component, said method comprising the steps of applying said vitreous wall to said other wall-forming component with interposition of a bonding medium to form at least one continuous peripheral joint between them, thereby forming an assembly; introducing said assembly into a hermetically sealable chamber; withdrawing air from the chamber and establishing non-atmospheric gaseous conditions in said chamber to obtain such conditions within the assembly and then hermetically sealing the assembly within said chamber under said non-atmospheric gaseous conditions to form said joint, the improvement comprising depositing at least upon said vitreous wall before the step of applying the same to the other wall-forming component a metallic coating along the zone where said bonding medium is to bond such component, the improvement further comprising the use of solder as the bonding medium to form the continuous peripheral joint and fusing the solder to form the joint by heat generated within the chamber and in the vicinity of said peripheral joint.

4,204,722

MEANS FOR LOCKING A CIRCUIT BOARD TO A CONNECTOR

Hiroshi Yasui, Musashi Murayama, and Yoshiaki Ichimura, Akishima, both of Japan, assignors to Japan Aviation Electronics Industry, Ltd., Tokyo, Japan

Filed Oct. 31, 1978, Ser. No. 956,026
Claims priority, application Japan, Jun. 20, 1978, 53-73704
Int. Cl.² H01R *13/54*; H05K *1/00*
U.S. Cl. 339—17 CF **3 Claims**



1. In combination, an electrical connector for connecting terminal foil strips arranged adjacent to the peripheral edges of an integrated circuit board with conductor elements of another circuit board and a lock member for coupling said connector to said integrated circuit board;
said connector consisting of a rigid dielectric frame member in one piece construction having an opening at a central portion thereof for mounting said integral circuit board therein; and having a plurality of contact elements arranged adjacent to each of the peripheral edges of same frame member so as to correspond to said foil strips of said integrated circuit board, one end of each of said contact elements being formed as a resilient head portion and other end protruding through said frame member to connect with said conductor elements of the other circuit board;
a slit being provided near the outside of each row of said contact elements arranged in each of the peripheral edges of said frame member, said slit being divided by bridge portions into a plurality of openings; and
said lock member comprising individual sections each being adapted to be inserted into a slit and having a protruded edge portion adapted to engage a peripheral edge of said integrated circuit board and a plurality of hook portions adapted to engage in said plurality of openings, whereby when said integrated circuit board is placed within said frame member of said connector and when said lock member sections are inserted into said slits and slid along said slits with the underside of said protruded edge portions in contact with the upper surface of said integrated circuit board, each of said hook portions is engaged with the bottom of the corresponding bridge portion so that said connector and said integrated circuit board are clamped between said protruded edge portion and said frame member whereby said frame member and said integrated circuit board are coupled without deflection.

4,204,723

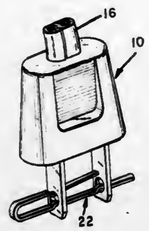
SAFETY PLUG CLIP

Jack W. Bloomingdale, 950 Orchard Ave., Camp Hill, Pa. 17011

Filed Jan. 26, 1979, Ser. No. 6,574
Int. Cl.² H01R *13/44*
U.S. Cl. 339—36 **9 Claims**

1. An improved safety plug clip of the type adapted to be locked on the ends of electrical plug contact blades, the clip

comprising a long leg, a short leg resiliently connected at one end to the long leg so that the legs normally diverge from each other away from the connection, said clip being sufficiently resilient to permit movement of said legs together to a collapsed position for movement in an insertion direction through axially aligned bores formed through the spaced contact blades of the plug to the locked position, a stop surface on the short



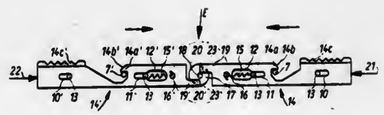
leg located between the ends of the long leg for engagement with an interior surface with one of the blades to prevent movement of the clip in one direction from the locked position, and the clip including a second lock surface facing in a direction opposite to that of said first lock surface and engagable with a different blade side to prevent movement of the clip from the locked position in an opposite direction, said long leg extending through the bores in both plug blades.

4,204,724

FILM CASSETTE WITH ANTI-SHOCK LATCHING MEANS

Walter Bauer, Munich; Kröbel, Taufkirchen, and Färber, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A. G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,454
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818338
Int. Cl.² E05C *1/10, 9/04, 9/14*; G03B *17/26*
U.S. Cl. 354—281 **7 Claims**



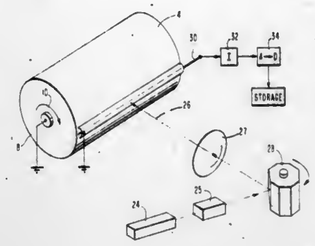
1. A film cassette comprising a base and a cover, two lock and release means selectively movable for locking the cover to the base in a closed position and for releasing the cover from the base in an open position, and linkage means for linking said two means together such that when forces arise on said two means when a jolt is experienced, the forces on said two means act against one another, whereby the chance of said forces leading to movement of said two means is reduced.

4,204,725

APPARATUS FOR DETECTING INFORMATION STORED ON PHOTOCOPYING MEDIA, TRANSMITTING AND STORING THE SAME

Thomas H. DiStefano, Bronxville, and Lawrence Kuhn, Mt. Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,394
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **7 Claims**



1. An improved printer/copier device including
an optical system for projecting an image onto a charged photoconductor surface, means for toning said image, means for transferring said image onto a recording medium, laser beam scanning means for printing information onto said photoconductor surface; the improvement being that said laser beam scanning means also having the capability of point by point discharging the image on said photoconductor surface and a single sensing electrode to detect changes in charge on said photoconductor surface when said surface is being scanned by said laser beam and means for correcting time decay in a waveform provided by said detected change in charge.

4,204,726

Patent Not Issued For This Number

4,204,727

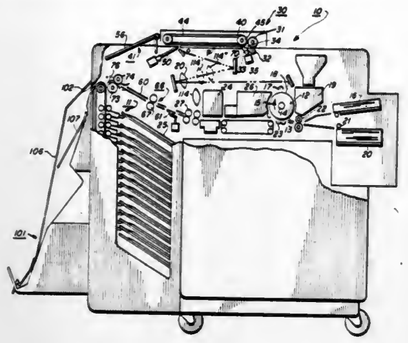
MULTIMODE REPRODUCING APPARATUS

Donald W. Tates, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 3, 1979, Ser. No. 35,372
Int. Cl.² B65H *39/10*; G03G *15/00*
U.S. Cl. 355—3 R **15 Claims**

1. A reproducing apparatus output station comprising sorter means, sheet transport means defining a sheet transport path to transport sheets from said reproducing apparatus to said sorter, a first decision gate means in the path of said sheet transport to selectively direct a sheet from the sheet transport path to a first sheet collecting tray, the improvement wherein said output

station comprises a second sheet collecting tray and a second decision gate means in the path of said sheet transport to selectively direct a sheet from the path of said sheet transport to said second sheet collecting tray.



4,204,728

METHOD AND APPARATUS FOR COLOR CONVERSION

Yoshitomo Goshima, Yokohama; Kazuo Kawakubo, Hino; Katsushi Furuichi; Hisashi Sakamaki, both of Yokohama; Osamu Sawamura, Atsugi; Yutaka Komiya, Tokyo, and Masahiro Tomosada, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,891

Claims priority, application Japan, May 24, 1977, 52-60163; Sep. 9, 1977, 52-108578

Int. Cl.[2] G03G *15/01*

U.S. Cl. 355—4 **48 Claims**

1. A color conversion display apparatus, comprising in combination:

(a) color designation means for converting a particular color in a plurality of original image colors into another particular color;

(b) memory means which store therein combination information related to the operation of color forming means to convert the particular original image color to the other color; and

(c) means for indicating possible conversions of the remaining colors in the image original due to combinations of the color forming means in the color conversion of the particular original image color designated by said designation means.

4,204,729

TRANSMITTING AND COPYING MACHINE

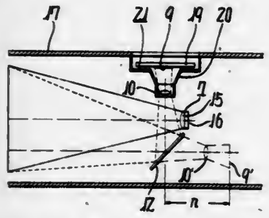
Toshiyuki Inokuchi, Yokohama, Japan, assignor to Ricoh Company, Tokyo, Japan

Filed Feb. 28, 1979, Ser. No. 16,520

Claims priority, application Japan, Mar. 20, 1978, 53-32174

Int. Cl.[2] G03G *15/28*; G03B *27/70*

U.S. Cl. 355—11 **7 Claims**



1. A transmitting and copying machine comprising a light source for illuminating an original held on a table and a first mirror for refracting the light reflected on said original, which are reciprocatably disposed under said table; a second mirror capable of refracting the light from said first mirror and reciprocatable in the same directions as said first mirror at a speed ½ time as that of said first mirror; an optical system on the copying side having an image forming lens for guiding the light reflected on said second mirror to a photosensitive material to form an image thereon; an optical system on the transmitting side having a reading lens for guiding the light reflected on said second mirror to a solid scanning element to form a reduced image thereon; and a fixed mirror for bending the optical axis of said optical system on the transmitting side such that the optical axis passes in front of said image forming lens, the optical axes of said optical systems on the copying and transmitting sides being biased in a main scanning direction, said reading lens and said solid scanning element being disposed on said bent optical axis of said optical system on the transmitting side.

4,204,730

ELECTROPHOTOGRAPHIC APPARATUS

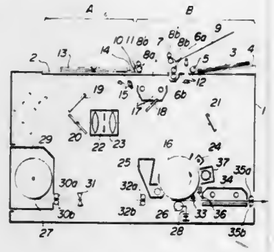
Kiyoshi Miyashita, and Muneo Kasuga, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1978, Ser. No. 962,799

Claims priority, application Japan, Nov. 24, 1977, 52/139814

Int. Cl.[2] G03G *15/00*; G03B *27/48, 27/70*

U.S. Cl. 355—14 R **7 Claims**



1. An electrophotographic apparatus for forming image-like modulating information on a photosensitive member and obtaining a plurality of duplicated copies based on the image-like modulating information formed on the photosensitive member by one exposure and scanning of a document to be copied, said apparatus comprising: a casing having a sheet document copying area and a thick document copying area provided on an upper surface thereof, a first document detecting means for detecting presence of document at the sheet document copying area, means for conveying the sheet document, a second document sensing means for detecting the presence of the document at the thick document copying area, a movable exposing and scanning means for exposing and scanning the document present in these copying areas, a mechanism for controlling formation of image-like modulating information on the photosensitive member by means of a signal generated from at least one of the first and the second document detecting means and a signal for informing completion of copying, exposing and scanning means being fixed by a signal generated when the first document detecting means detects the presence of the document and a signal generated when the copying is completed in order to move the sheet document conveying means thereby to expose and scan the document, the exposing and scanning means being moved by a signal generated when the second document detecting means detects the presence of the document and a signal generated when the copying is completed to expose and scan the document, neither document being exposed and scanned or either one of the documents being exposed and scanned by a signal generated when both the first and the second document detecting means detect the presence

of the documents and a signal generated when copying is completed.

4,204,731

APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING WITH MEANS FOR EFFECTING IMAGE PENETRATION THROUGH THE COPY CARRIERS

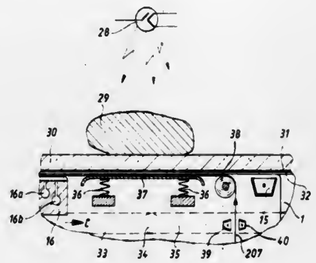
Robert Kohler, Wessling; Jörn Müller, Munich; Dieter Giglberger, Unterhaching, and Freidrich Bestenreiner, Grünwald, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 874,872

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 2704591

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—16 **8 Claims**



1. In an electrophotographic copying apparatus, a combination comprising a charge carrier plate of transparent material having an electrostatically chargeable surface; means for applying to said surface one side of a flexible sheet-material copy carrier; means for forming a latent electrostatic image of an original on said surface upon application of the copy carrier to the surface, so that the latent electrostatic image penetrates the copy carrier; means for developing the latent image on an opposite side of the copy carrier to produce an actual visible image on said opposite side; a carriage movable along said surface and carrying said means for developing; and a corona charging device also carried by said carriage for applying a uniform electrostatic charge to said surface.

4,204,732

FOCUS ADJUSTING MECHANISM FOR VARIABLE MAGNIFICATION DEVICE

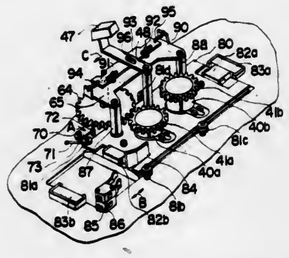
Masahiro Maeda, and Hirohumi Kayahara, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 29, 1979, Ser. No. 43,273

Claims priority, application Japan, Jun. 16, 1978, 53-83002[U]

Int. Cl.[2] G03B *27/52, 13/28, 13/02*

U.S. Cl. 355—55 **10 Claims**



1. A focus adjusting mechanism for use with variable magnification means comprising a support member fixedly supporting a plurality of projecting lenses and movable for selectively bringing one of the projecting lenses to a projecting position, focus adjusting first means shiftable between an operating position and a nonoperating position, second means biasing the focus adjusting first means toward the operating position for rendering a projecting lens adjustable by the focus adjusting first means when the lens is positioned in the projecting position, and third means for shifting the focus adjusting means against the action of the second means to the nonoperating position to permit changing the lenses.

4,204,733

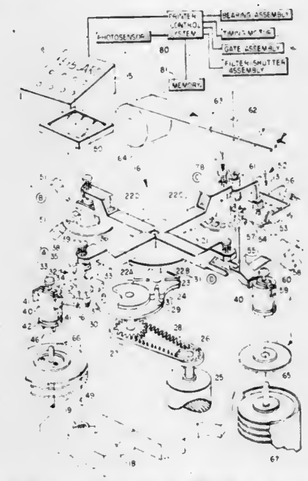
FILM POSITIONING APPARATUS

William Modney, and Norman J. Rosenburgh, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,351

Int. Cl.[2] G03B *27/32, 27/76, 27/64*

U.S. Cl. 355—64 **11 Claims**



1. Apparatus for positioning a generally disk-shaped film unit in a plurality of spaced work positions relative to a plurality of work stations respectively, the film unit having a hub and a plurality of image frames disposed circularly around the hub, said apparatus comprising:

movable means for releasably supporting the film unit;

means for moving said supporting means to locate the supported film unit at each of the positions;

means for releasing the film unit from said supporting means in at least one of said positions; and

means engageable with the hub for moving the released film unit in said one position relative to said supporting means to position selected frames of the released film unit relative a respective one of said work stations.

4,204,734

EXPOSURE CONTROL SYSTEM FOR PHOTOGRAPHIC COPYING MACHINES

Franz Hofstetter, Herbertshausen, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 26, 1978, Ser. No. 872,620

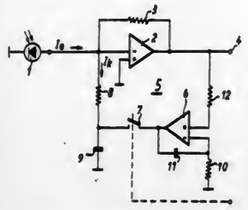
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703415

Int. Cl.[2] G03B *27/78*

U.S. Cl. 355—68 **11 Claims**

1. In a photographic copying machine wherein successive originals are exposed to copying light during imaging onto photosensitive material, exposure control means including at least one detector having an output for transmission of a first

electric signal attributable to the influence of surrounding light while the copying light is turned off and a second signal attributable to the influence of surrounding light and the color composition and/or density of an original while the copying light is on, said detector including a photosensitive portion exposed to surrounding light, facing the original and located outside of the path for propagation of original-modulated



copying light toward the photosensitive material; and a compensating circuit including means for storing said first signal while the copying light is off, and means for subtracting said stored first signal from said second signal during exposure of an original to copying light so that the resulting third signal denotes the color composition and/or density of the original as if said detector were not exposed to surrounding light.

4,204,735

EXPOSURE CARRIAGE FOR A COPYING MACHINE

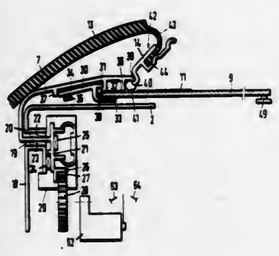
Egon Opravil, Brackel, Fed. Rep. of Germany, assignor to Lumoprint Zindler KG (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,624

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817013

Int. Cl.² G03B *27/62*

U.S. Cl. 355—75 **10 Claims**



1. An exposure carriage for a copying machine with a housing having in its top side an exposure window, the exposure carriage including a carriage rail overlying an upper longitudinal side edge of said copying machine, a glass plate movable along the top side of the copying machine and being connected to said carriage rail, a pressure mat at the upper surface of said glass plate and motive means disposed within said copying machine and operatively connected to said carriage rail for reciprocating said carriage rail, the improvement comprising first clamping connecting means (30, 31, 33, 34, 35) for releasably connecting said carriage rail (7) to said glass plate (9), second connecting means being defined by the connection of said carriage rail (7) to said glass plate and serving to releasably receive a hinge profile, and third releasable connecting means intermediate said hinge profile and said pressure mat whereby said connecting means, parts of said exposure carriage, said carriage rail, said glass plate and said pressure mat are detachably assembled by clamping connections.

4,204,736

METHOD AND DEVICE FOR CONTACT-PRINTING

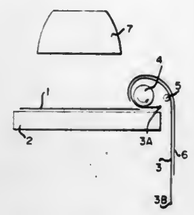
Shinji Hamada, Minami-ashigara; Fumio Hoshino, and Junichi Tabata, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1979, Ser. No. 31,516

Claims priority, application Japan, Apr. 26, 1978, 53-49460; Jul. 11, 1978, 53-84259; Jul. 11, 1978, 53-95317[U]; Jul. 18, 1978, 53-87597; Sep. 6, 1978, 53-123200[U]

Int. Cl.² G03B *27/04*

U.S. Cl. 355—118 **17 Claims**



1. A method of contact-printing the image of a transmission type original on a photosensitive plate material comprising the steps of placing the plate material on a printing stage, superposing the transmission type original on the plate material, sealingly covering the original and the plate material with a transparent sheet, evacuating the space under the transparent sheet to bring the plate material, the original and the transparent sheet into close contact with each other and exposing the plate material, the original and the transparent sheet to light, wherein the improvement comprises fixing said original to said transparent sheet in advance at the position at which the original will be registered with the plate material on the printing stage when the transparent sheet is in its closed position in which the transparent sheet lies over the plate material.

2. A device for contact-printing the image of a transmission type original on a photosensitive plate material, comprising a printing stage having means for positioning said plate material at a predetermined position, a transparent sheet movable between an open position in which it is held away from the printing stage to permit change of the plate material on the printing stage and a closed position in which it sealingly covers the plate material on the printing stage, means for detachably fixing at least a part of said transmission type original to said transparent sheet at a predetermined position at which the original will be registered with the plate material on the printing stage when the transparent sheet is in the closed position, and an evacuating means for evacuating the space under the transparent sheet when the transparent sheet is in the closed position to bring the transparent sheet, the original and the plate material into close contact with each other.

4,204,737

SUBSTRATE STRAIGHTENING ADAPTOR FOR ELECTRICAL CONNECTOR ASSEMBLY

Edward S. Faber, Atkinson, N.H.; John J. Hovan, Groveland, and Walter J. Sinsheimer, North Andover, both of Mass., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 31, 1978, Ser. No. 873,820

Int. Cl.² H01R *13/20*

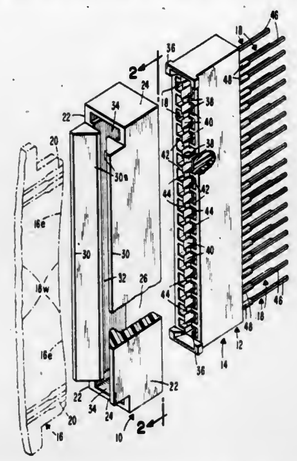
U.S. Cl. 339—65 **2 Claims**

1. A substrate straightening adaptor of molded integral plastic construction which is readily mountable on an electrical connector assembly and which is readily removable from the electrical connector assembly, without the use of an auxiliary connecting mechanism, which comprises:

a pair of opposed side walls and a pair of opposed end walls interconnected to define an elongated essentially rectangular first slot for receiving outer wall portions of a terminal support block in the slot, the opposed side walls being resilient and the spacing between the opposed side walls

intermediate their ends being narrower than the spacing between the side walls at junctions of the side walls with the end walls, so that the side walls produce a friction fit when assembled with the terminal support block on opposite sides of the outer wall portions thereof; and

guide portions projecting inwardly in opposed spaced relationship from respective ones of the opposed side walls to define an elongated essentially rectangular substrate-receiving second slot which is narrower than the first slot,



the guide portions including surfaces which are tapered outwardly in opposite directions from the substrate-receiving slot defined by the guide portions, to facilitate insertion of the substrate into the slot, the guide portions also overlying at least portions of the terminal support block in protective relationship when the adaptor is assembled to the terminal support block, and the guide portions acting to straighten a warped leading edge of the substrate as the substrate leading edge is inserted through the narrower second slot into the terminal support block.

4,204,738

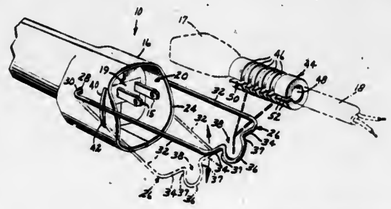
ELECTRICAL CONNECTOR RETAINING DEVICE

Henry B. Tillotson, Minneapolis, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Mar. 31, 1978, Ser. No. 892,262

Int. Cl.² H01R *13/54*

U.S. Cl. 339—75 P **7 Claims**



1. A device for securely retaining electrical connectors in a mated configuration, comprising:

a generally U-shaped bail comprising two generally parallel and dimensionally similar retention arm rods, each having a first end for pivotal mounting to a first electrical connector, and an interconnecting clip rod, having two ends each intersecting a second end of a retention arm rod;

mounting means for pivotally mounting said generally U-shaped bail by said first ends of the retention arm rods to the first connector; and

mating means carried by a second connector, comprising a plurality of connection points spaced axially with respect to an axis defined by the connection of the first and second connectors, each of said connection points functioning as a receptacle for accepting said clip rod.

4,204,739

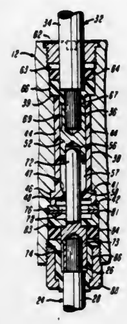
SUBMERSIBLE ELECTRIC MOTOR AND ELECTRICAL CONNECTOR ASSEMBLY

Alden W. Shoenleben, Bradford, Ohio, assignor to Century Electric Motor Co., Gettysburg, Ohio

Filed Nov. 13, 1978, Ser. No. 960,162

Int. Cl.² H01R *13/54*

U.S. Cl. 339—75 R **11 Claims**



1. An improved electrical connector assembly adapted for coupling a submersible electric motorwire to a power supply lead wire having an exposed end portion projecting from surrounding insulation, said connector assembly comprising means defining a bore, an electrically conducting socket member, a tubular electrical insulator sleeve disposed within said bore and receiving said socket member for axial sliding movement, a resilient ring disposed within said bore and having means defining an opening for receiving said insulation on said power supply lead wire, said socket member having means defining an opening for receiving the exposed end portion of said power supply lead wire, means for securing said socket member to the exposed end portion of said lead wire, a prong member disposed within said bore and projecting into said sleeve and into said socket member, means for electrically connecting said prong member to said motor wire, means for compressing said resilient ring in an axial direction to produce a fluid-tight seal between said insulation of said power supply lead wire and said means defining said bore, and said sleeve including means responsive to axial movement of said socket member within said sleeve for urging said socket member radially inwardly against said prong member to produce a positive electric connection between said socket member and said prong member.

4,204,740

CONNECTOR COUPLING RING RETAINER APPARATUS AND ELECTRICAL CONNECTOR ASSEMBLY RETAINING MEANS

Ronald F. Krolak, North Riverside, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 453,674, Mar. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 271,352, Jul. 13, 1972, abandoned. This application Nov. 29, 1976, Ser. No. 745,765

Int. Cl.² H01R *13/54*

U.S. Cl. 339—90 R **20 Claims**

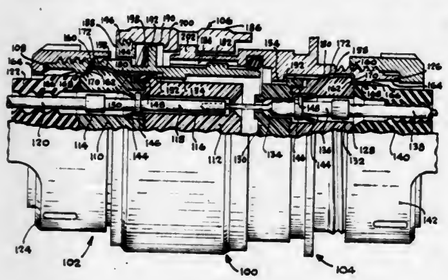
1. An electrical connector assembly for establishing electrical connections between each contact of one plurality of contacts carried by insulating means in a first annular shell and a respective contact of another plurality of contacts carried by insulating means in a second annular shell comprising:

a metal coupling ring encircling said first shell with said ring

having means adjacent one end of said ring for securing said ring to said second shell with each contact of said one plurality of contacts engaged with a respective contact of the other plurality of contacts;

a first plurality of successive annular closed ring teeth integrally formed on the internal surface of said ring adjacent the other end of said ring with each tooth spaced axially of said ring from each other tooth and having an inner radius and an outer radius, each tooth including a camming face extending from the inner radius toward the other end of the ring and to the outer radius at a first predetermined angle of substantially less than 90° to the axis of said ring, each tooth having a stop face extending radially outwardly of the inner radius of the camming face on the respective tooth at another predetermined angle to said axis substantially greater than said first predetermined angle and located axially on the side of the respective tooth adjacent the one end of said ring;

a metal retaining ring having a second plurality of closed ring teeth integrally formed on the outer periphery of said retaining ring with each tooth on said retaining ring spaced from each other tooth on said retaining ring and having an outer radius substantially equal to the outer radius of each tooth on said coupling ring and an inner radius substantially equal to the inner radius of each tooth on said coupling ring, each tooth on said retaining ring having a camming face extending axially toward one end of said retaining ring and from the outer radius to the inner radius at an acute angle to the axis of said retaining ring,



each tooth on said retaining ring having a stop face projecting radially inwardly from the outer radius of the camming face of the respective tooth on said retaining ring to the inner radius at said other greater predetermined angle to the axis of said retaining ring;

the difference between said inner radius and said outer radius dependent on the wall thickness of said retaining ring and said coupling ring for elastically expanding said coupling ring and elastically contracting said retaining ring a distance corresponding to the difference beween said inner radius and said outer radius in response to the engagement of a camming face on one tooth of said retaining ring with a camming face on one tooth of said coupling ring and the application of one axially directed force therebetween to successively move one tooth on each ring in one axial direction relative said coupling ring past a plurality of teeth on the other ring without substantial deformation of the teeth and rings whereby the stop face on each of a plurality of teeth on said retaining ring is each thereafter engaged with a respective stop face on a respective tooth on said coupling ring for preventing movement in another axial direction of the retaining ring relative said coupling ring in response to the application of a force substantially greater than said one force to thereby provide a permanent assembly of said rings; and

stop means for holding said shells and rings against axial movement relative each other with said stop means including biasing means for biasing each stop face on said retaining ring in said other axial direction against an engaged stop face on said coupling ring.

4,204,741

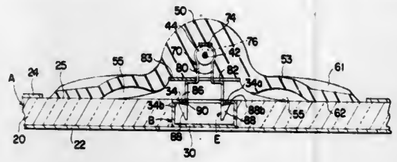
CONNECTOR ASSEMBLY FOR ANODE RING OF CATHODE RAY TUBE

Harold E. Hall, Middlefield, Ohio, assignor to The Stalwart Rubber Company, Bedford, Ohio

Continuation-in-part of Ser. No. 788,835, Apr. 19, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,361

Int. Cl.² H01R *13/02*

U.S. Cl. 339—200 P **14 Claims**



1. In an anode connector for establishing electrical contact between an anode supply conductor having an outer layer of insulation and a standard anode button disposed in the side of a cathode ray tube, said anode button having a generally cup like form comprised of a bottom, an outwardly extending side wall, and an annular flange at the outer circular edge of said side wall, said flange extending radially inwardly and defining an opening to the interior of said button, said flange being generally parallel to said bottom and generally coplanar with the outer surface of said cathode ray tube, and having an outer surface and a parallel underside surface within the interior of said button, the improvement which comprises:

a one piece sheet metal clip having a base and a pair of downwardly extending legs,

said base being in the form of a generally cylindrical return bent portion of an inner diameter to encircle and tightly grip the insulation of said anode conductor about an arc greater than 180°, said return bent portion having an axis parallel to said conductor,

an axially extending lug on one axial edge of said cylindrical return bent portion,

a pointed tang extending perpendicular to and radially inwardly toward the axis of said return bent portion, and

a pair of tabs on the lower end of each downwardly extending leg, said tabs having upper surfaces for engaging said underside surface of said flange and each downwardly extending leg having a pair of downwardly facing flat surfaces located above said tab upper surfaces a distance slightly greater than the thickness of said anode button flange whereby said clip will be locked against tipping movement relative to said anode button.

4,204,742

FIBER-OPTIC CIRCUIT ELEMENT

Mark Johnson, Leonberg-Warmbronn, and Reinhard Ulrich, Leonberg, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e. V., Fed. Rep. of Germany

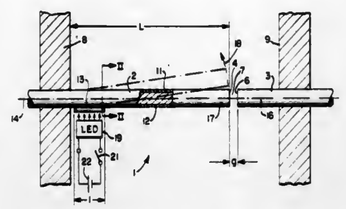
Filed Aug. 18, 1978, Ser. No. 934,984

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737499

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.20 **34 Claims**

1. Fiber-optic circuit element comprising at least one first optical fiber arranged at a predetermined fixed location and a second optical fiber clamped at a position with a free end extending at a distance from said clamped position, said free end being movable in a direction at right angles to the longitudinal axis of the first optical fiber, and said free end being controllably positioned to achieve optical coupling between said first and second optical fibers enabling the passage of light therebetween, and being controllably removable from said coupling position, characterized in that said second movable optical fiber is provided with a heatable expansion layer, between said free end and said clamping position, said expansion layer being constructed to be arranged unilaterally with re-



spect to said longitudinal axis of said second optical fiber, extend in the longitudinal direction of said second fiber, and firmly adhere to said second fiber and said expansion layer having a coefficient of thermal expansion which is different from the coefficient of thermal expansion of said second optical fiber.

4,204,743

CONNECTOR FOR COUPLING OPTICAL FIBRES TO AN EMITTER OR RECEIVER OF LUMINOUS ENERGY

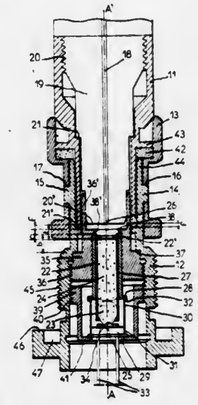
Jean-Francois Etaix, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 806,365, Jun. 14, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,667

Claims priority, application France, Jun. 21, 1976, 76 18791

Int. Cl.² G02B *5/16*

U.S. Cl. 350—96.20 **6 Claims**



1. A device for connecting an optical fiber bundle to a light emitter or receiver comprising: a first connection element and a second connection element which can be coupled with the first connection element and locked thereto;

said first connection element comprising:

a first cylindrical envelope, having coupling and locking means; and

a mechanical part for locking, holding and supporting the optical fiber bundle, said part being integral with the first envelope;

said second connection element comprising:

a second cylindrical envelope, having coupling and locking means arranged to cooperate with the coupling and locking means of the first cylindrical envelope;

an optical assembly which includes an emitter or a receiver and an optical image forming device, said device and said emitter or receiver having axes which are mutually aligned; and

means for guiding and rigidly holding said assembly in said second envelope, said means being arranged to rigidly and accurately position, in the axial as well as in the transverse direction, the optical assembly with respect to the fiber bundle,

whereby when the first and second connection elements are coupled, the end of the fiber bundle is optically coupled to the emitter or receiver.

4,204,744

SWITCH FOR LIGHT CONDUCTING FIBERS

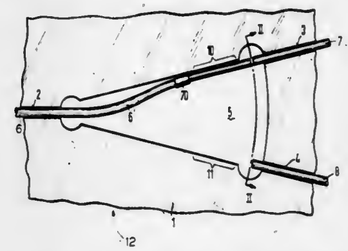
Julius Wittmann, Deisenhofen, Fed. Rep. of Germany, assignor to SiemensAktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 25, 1978, Ser. No. 872,162

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1977, 2704984

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.20 **9 Claims**



1. A switch for optically connecting a first light conducting fiber selectively with at least one second light conducting fiber, said switch comprising a first light conducting fiber having a magnetic sleeve adjacent a free end thereof, at least one second light conducting fiber, a substrate having a first flat surface, a layer disposed on said first flat surface, said layer having a recess with a groove for each of said first and second fibers extending therefrom, each of said second fibers being disposed in their respective groove with the free end extending into said recess and said first fiber being disposed in its groove with its free end having the magnetic sleeve being mobile in said recess and being guided by said first flat surface between a first position forming an optical connection with at least one of said second fibers and a second position out of optical connection from said one second fiber so that an application of an external magnetic field causes said free end of said first fiber to move between said first and second positions.

4,204,745

OPTICAL FIBER

Junichi Sakai, and Tatsuya Kimura, both of Tokorozawa, Japan, assignors to Nippon Telegraph and Telephone Public Corp., Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,548

Claims priority, application Japan, Jun. 10, 1977, 52/68513

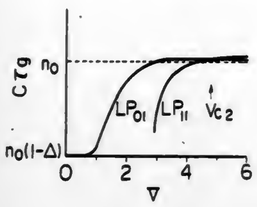
Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.31 **6 Claims**

1. A graded index optical fiber comprising a core and a cladding provided coaxially with said core whose refractive index distribution (n) at the radial length (r) from the core axis is given by

$$n = \begin{cases} n_O(1 - \Delta(r/a)^\alpha), & O \leqq r \leqq a \\ n_O(1 - \Delta) = n_e, & r \geqq a \end{cases}$$

where n_0 is the refractive index at the core center, (a) is the core radius, α is a power exponent, $\Delta=(n_0-n_e)/n_e$, and n_e is



the refractive index of the cladding, said fiber is, characterized in that the value α and the normalized frequency

$$V\left(=\frac{2\pi a n_0}{\lambda}\sqrt{2\Delta}\ ,\ \lambda \text{ is the wavelength}\right)$$

are designed so that the group delay of the fundamental mode is equal to that of the first higher order mode.

4,204,746

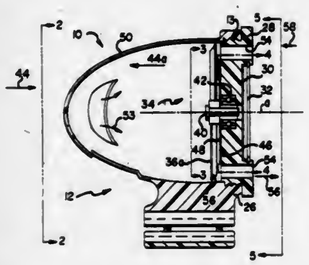
REFLECTIVE SIGNALLING DEVICE

Clyde E. Fisher, P.O. Box 207, Owosso, Mich. 48867

Filed Oct. 7, 1977, Ser. No. 840,135

Int. Cl.² G02B 5/12

U.S. Cl. 350—99 **16 Claims**



1. Nocturnal reflector apparatus for signalling the presence of a forwardly moving bicycle or the like, illuminated by the light beam of an approaching motorist or the like, comprising:

a hollow housing having a rear portion and a forward, hollow, light beam transmitting shield portion; and

air driven, light interrupting means, mounted within said hollow housing in axial alignment with said forward light beam transmitting portion for rotation about an axis relative to said housing, for interrupting at least a portion of said light beam;

at least one of said rear portion and said interrupting means including light reflecting means for forwardly reflecting a portion of said light beam;

said housing including openings therein for rearwardly passing ambient air from said forward portion toward said rear portion to said interrupting means to rotate said interrupting means as said apparatus moves forwardly.

4,204,747

METHOD OF FOCUSSING IN A PHOTOGRAPHIC LENS SYSTEM

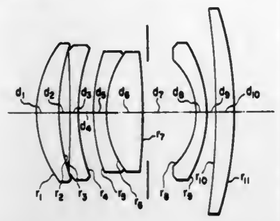
Toshihiro Imai, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,366

Claims priority, application Japan, Nov. 29, 1977, 52-142168

Int. Cl.² G02B 9/60

U.S. Cl. 350—216 **3 Claims**



1. A method of focussing in a photographic lens system by arranging a front convergent lens group and a rear divergent lens group with the said front convergent lens group comprising a first lens component having a positive refracting power, a second lens component having a negative refracting power and a third lens component having a positive refracting power, and by causing the said third lens component to move within the said photographic lens system.

2. A photographic lens system having a front convergent lens group and a rear divergent lens group, the said front convergent lens group comprising a first lens component having a positive refracting power, a second lens component having a negative refracting power and a third lens component having a positive refracting power, the said third lens component being movable in performing the focussing, and the said lens system satisfying the following conditions:

(1) $4<f_{12}/f$

(2) $f_3/f<0.7$

(3) $0.04<d/f$

wherein the reference symbol f_{12} represents the composite focal length of the first and second lens components, the symbol f_3 represents the focal length of the third lens component, the symbol f represents the focal length of the total lens system and the symbol d represents the axial air space between the second and the third lens components.

4,204,748

A FOCAL RELAY LENS SYSTEM FOR AN INVERTED MICROSCOPE

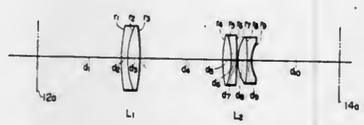
Ken Yonekubo, Hachiouji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Continuation of Ser. No. 856,095, Nov. 30, 1977, abandoned. This application Sep. 14, 1978, Ser. No. 942,393

Claims priority, application Japan, Dec. 10, 1976, 51-148423; Dec. 10, 1976, 51-148424

Int. Cl.² G02B 9/12

U.S. Cl. 350—228 **4 Claims**



1. An afocal relay lens system comprising a first lens group consisting of a positive cemented doublet and a second lens group consisting of a positive cemented doublet and a negative cemented doublet, said afocal relay lens system being arranged for positioning between the contact surface of a revolver and

that of a microscope tube, and said afocal relay lens system satisfying the following conditions:

(1) $1.45<n_2<1.55,\ 55<\nu_2<71$

(2) $1.5<n_6<1.56,\ 55<\nu_6<65$

(3) $0.14f_2<r_9<0.18f_2$

wherein the reference symbols n_2 and n_6 represent the refractive indices of the rear element of the first lens group and the rearmost element of the second lens group, the reference symbols ν_2 and ν_6 designate the Abbe's numbers of the rear element of the first lens group and the rearmost element of the second lens group, the reference symbol r_9 denotes the radius of curvature on the rearmost surface of the second lens group and the reference symbol f_2 represents the total focal length of the second lens group as a whole.

4,204,749

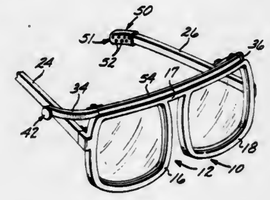
EYEGLASS FRAME WITH TEMPLE ADJUSTING BRACES

John A. Davis, 231 Junipero Ave., Apt. 12, Long Beach, Calif. 90803

Filed Jan. 23, 1979, Ser. No. 5,827

Int. Cl.² G02C 5/14

U.S. Cl. 351—123 **5 Claims**



1. An eyeglass frame having

a frontal lens support with a pair of lens holders joined by a central bridge,

foldable temples extendable rearwardly from both of said lens holders and terminating in tips remote from said lens holders

pads located on said temple tips and having inwardly directed surfaces that enhance friction against the head of a wearer,

temple hinges joining said temples to said lens holders,

bracing fastened to each of said lens holders above the level of said temple hinges and extending at an angle downwardly and rearwardly to pass outboard adjacent to said temples at locations spaced rearwardly from said temple hinges at a separation therefrom of at least one and one half inches when said temples are extended,

foldable brace hinges fastening said braces to said lens holders with means for limiting outward movement of said braces relative to said lens holders, and

adjustable biasing means mounted on each of said braces where they pass adjacent said temples including a threaded bushing mounted in said brace and an outwardly disposed thumbscrew engaged therein to act normal to an adjacent temple to bias said temple inwardly to a selected disposition to an adjustable degree.

4,204,750

METHOD OF CUSTOM FITTING EYEGLASS FRAMES AND ARTICLE FORMED THEREBY

James F. Hilbert, 2646 4th St. North, St. Petersburg, Fla. 33704

Continuation-in-part of Ser. No. 731,028, Oct. 8, 1976, abandoned. This application Dec. 15, 1977, Ser. No. 860,692

Int. Cl.² G02C 5/02; B29C 1/02

U.S. Cl. 351—130 **18 Claims**

1. The method of custom fitting eyeglass frames on the nose of a wearer, which steps are in part performed by an optician or the like and in part performed in an eyeglass frames laboratory, said method comprising:

(1) as steps performed by the optician or the like;

(a) heating a wax wafer to an elevated temperature sufficient to make it malleable under pressure;

(b) positioning the heated wafer on the bridge area of the wearer's nose and applying sufficient pressure to the wafer to cause it to conform to the contour of the bridge portion of the nose;

(c) applying the eyeglass frames against the wearer's nose in a proper viewing position and applying sufficient pressure to the frames to cause the wafer also to conform to the contour of the nose bridge portion of the frames;

(d) removing the resulting wax pattern from both the frames and the wearer's nose and cooling it to fix its shape;

(e) sending wax pattern to an eyeglass frames laboratory;

(2) as steps performed in the eyeglass frames laboratory to produce a nosepiece having a surface configuration corresponding to the nose bridge and frame bridge engaged surface configuration of the wax mold;

(f) trimming the wax pattern to conform the pattern substantially to the outline of the eyeglass frames;

(g) fabricating from molding composition a two-piece mold from dental stone casting material having an internal cavity in the shape of the trimmed wax pattern;

(h) forming a nosepiece by placing a hardenable resin material in the internal cavity of said mold, allowing sufficient time for hardening of the material, separating and removing the hardened resin material from the mold, and grinding and polishing as necessary to form the nosepiece; and

(i) returning the finished nosepiece to the optician;

(3) as steps performed by the optician or the like;

(j) positioning the formed nosepiece on the patient's nose in proper position;

(k) placing the eyeglass frames in correct viewing position against the nosepiece and, with said nosepiece in such position,

(l) permanently attaching the nosepiece to the eyeglass frames.

4,204,751

METHOD AND APPARATUS FOR SYNCHRONIZING THE READING OF AUDIBLE AND VISUAL INFORMATION CARRIED BY DIFFERENT SUPPORTS

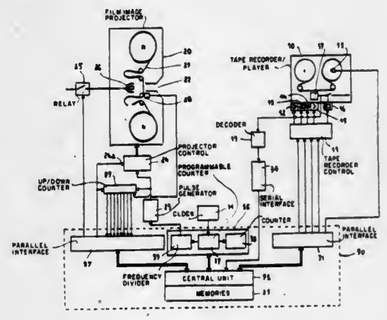
Jacques-Marie N. Game, Ville d'Avray, and Bernard A. Tiesse, Verrieres-le-Buisson, both of France, assignors to Sogitec, Boulogne, France

Filed Jan. 11, 1978, Ser. No. 868,714

Claims priority, application France, Nov. 28, 1977, 77 35788

Int. Cl.² G03B 31/04

U.S. Cl. 352—17 **8 Claims**



1. Apparatus for reproducing an audiovisual program com-

prising an audio sequence and a video sequence respectively carried by different audio and video supports, the audio support carrying a plurality of audio sequences, a plurality of which are acceptable for reproduction with a video sequence and said program not being restricted to the same audio sequence with each video sequence, said apparatus comprising:

(a) first remotely controllable drive means for advancing the audio support in front of a reading head, the audio support comprising an address track with coded words dividing the audio support into consecutive sections each associated with a respective address;

(b) first detecting means responsive to said words for identifying the audio support section running in front of the reading head;

(c) second remotely controllable drive means for advancing image frames of the video support in front of a projection gate, said video support containing address information;

(d) second detecting means responsive to said address information for identifying the image frame of the video support in front of the projection gate;

(e) control data storage means external to said audio and video supports for storing data elements determining a desired audiovisual program to be reproduced, said data elements comprising an address selected from a plurality of addresses on the audio support section which corresponds to the portion of the audio support carrying the audio sequence of said desired program, separate selected identification of the first image frame of the video sequence of said desired program and the running speed of the image frames during reproduction of the video sequence of said desired program, the stored data elements being modifiable to permit selection of different audio support addresses to be included as data elements for a selected identification of an image frame whereby an audio sequence maybe selected from a plurality thereof to be reproduced with a selected video sequence; and

(f) a control unit comprising:

operating means connected to the first and second drive means and receiving signals delivered by said first and second detecting means to operate said first and second drive means so as to advance a selected audio support section corresponding to the selected address and a selected predetermined image frame corresponding to the selected identification in front of the reading head and the projection gate, respectively to simultaneously reproduce the selected audio sequence and the selected video sequence, and

speed adjusting means connected to said second drive means to adjust the running speed of the video support to a predetermined value,

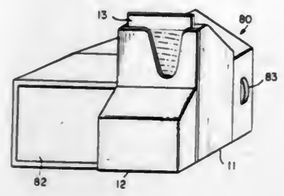
said operating means and said speed adjusting means being connected to and receiving control information from said control data storage means, the control information for the video sequence to be reproduced being independent of the motion of the audio support and said operating means having first means responsive to the audio sequence address in said data elements and to said first detecting means for thereby operating the first drive means and causing reproduction of the audio signals of the audio sequence corresponding to said last-mentioned address and having second means responsive to the image frame identification in said data elements and to said second detecting means for thereby operating the second drive means and causing projection of the image frame or frames corresponding to said last-mentioned identification.

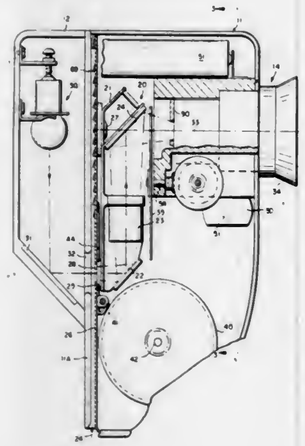
4,204,752

PORTABLE CARD MOTION PICTURE VIEWER

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 11, 1979, Ser. No. 47,057
Int. Cl.² G03B *41/00*
U.S. Cl. 352—82 **8 Claims**





1. Viewer apparatus for use with a film unit having a plurality of images recorded in spaced arcuate rows thereon, said apparatus comprising:

a housing having an opening therein for receiving a film unit at a given film plane;

a gate member located in adjoining relation to said focal plane, said gate member defining an arcuately curved focal location for a single arcuate row of images;

guide surfaces for guiding said film unit, as it is inserted through said opening, to a position wherein the first row of said film unit is located in alignment with said focal location;

means for illuminating each image of the row of images located at said focal location;

means for sequentially directing image forming light rays from each image along a given path for viewing;

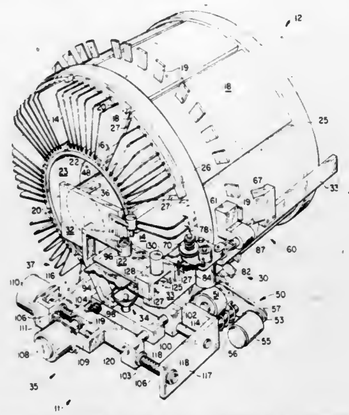
selectively operative means for alternately driving said directing means portion along its arcuate path and for advancing said film unit intermittently one row at a time to sequentially project said images, said advancing means including advancing said film unit back through said opening as said film unit is intermittently advanced row by row.

4,204,753

ROTARY FILM STRIP HOLDING APPARATUS

Bram Kool, Saratoga; Janusz Warszawski, and Jules G. Moritz, both of Los Altos, all of Calif., assignors to Microform Data Systems, Inc., Mountain View, Calif.

Filed Jul. 31, 1978, Ser. No. 929,392
Int. Cl.² G03B *23/08, 23/12*
U.S. Cl. 353—26 R **16 Claims**



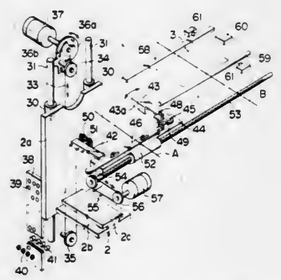
1. Film strip holding apparatus comprising: a cassette having means defining a pair of generally concentric, cylindrical members, the outer periphery of the inner member and the inner periphery of the outer member having a plurality of grooves formed therein, there being a groove on one member radially aligned with a groove on the other member, respectively, aligned pairs of grooves adapted to receive the side edges of respective film strips to permit the film strips to move partially out of and to return to the cassette; means coupled with the cassette for rotating the same about its central axis, the cassette having a side recess for exposing the outer side edge of each film strip when the same is aligned with a predetermined reference point; a rotary drive wheel adjacent to one side of the cassette; means mounting the drive wheel for movement into and out of driving engagement with a side edge of a film strip aligned therewith; a reversible motor coupled with said drive wheel for rotating the same in opposed directions; and means responsive to the rotation of the cassette for selectively positioning a film strip adjacent to the wheel.

4,204,754

FORMAT FILM SELECTING DEVICE

Katsumi Asanuma, Tokyo, and Shigeru Mogi, Yokohama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 23, 1978, Ser. No. 953,359
Claims priority, application Japan, Oct. 25, 1977, 52/127997
Int. Cl.² G03B *23/00, 21/02*
U.S. Cl. 353—116 **5 Claims**



1. A device for selectively bringing a format film to a projection station in an image projection system comprising in combination,

a cassette containing vertically arranged format films, each format film comprising a mount having guiding means and locating means thereon,

a cassette support means for supporting said cassette,

cassette vertically moving means for moving the cassette support means up and down,

a format film gripping means movable between the projection station and a format film in the cassette which is located at the same level as the projection station, said format film gripping means releasing said format film in the cassette and holding the same when the format film gripping means starts to move from the cassette to the projection station,

format film horizontally moving means for moving the format film in the horizontal direction, and guiding means and locating means on said device for respectively cooperating with the guiding means and locating means on the format film,

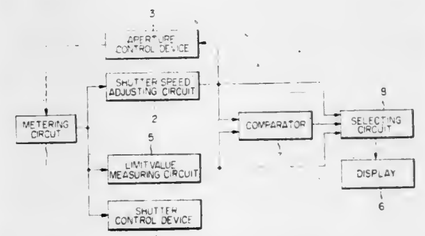
whereby the cassette vertically moving means moves the cassette support means in the vertical direction to select the format film to be brought to the projection station, and the format film horizontally moving means moves the selected format film, guided by said guiding means, to the projection station in which it is accurately positioned by said locating means.

4,204,755

DISPLAY DEVICE IN AN AUTOMATIC EXPOSURE CONTROL CAMERA

Kenji Toyoda, Kawasaki; Yoshitaka Araki, Tokyo, and Sakuji Watanabe, Warabi, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 4, 1978, Ser. No. 966,127
Claims priority, application Japan, Dec. 3, 1977, 52-145513
Int. Cl.² G03B *7/08, 17/18*
U.S. Cl. 354—36 **6 Claims**



1. In an automatic exposure control camera having a circuit for generating a first signal corresponding to a shutter speed determined in accordance with the information on the brightness of an object or determined by manual setting operation, means for setting an aperture diameter in accordance with said first signal and said information on the brightness of the object, an aperture control device for controlling the aperture mechanism of an objective lens mounted on the camera in accordance with the set aperture diameter, and a shutter control device for controlling the shutter speed in accordance with the information on the aperture controlled by said aperture control device and said information on the brightness of the object, the improvement comprising:

means (6) for displaying the shutter speed;

a circuit (5) for generating a second signal corresponding to the shutter speed determined in accordance with a controllable limit value of said aperture diameter and the information on the brightness of the object; and

selecting means (7 and 8) for selecting said first signal when said determined aperture diameter is within said controlla-

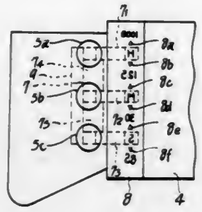
ble limit value and selecting said second signal when said determined aperture diameter exceeds said controllable limit value and for applying said selected signal to said display means.

4,204,756

CAMERA EXPOSURE FACTOR INDICATING DEVICE

Toshio Kobori, Sakai; Masayoshi Sahara, Sennan, and Mitsuru Saito, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 706,215, Jul. 19, 1976, abandoned. This application Dec. 21, 1977, Ser. No. 862,776
Claims priority, application Japan, Jul. 25, 1975, 50-91349
Int. Cl.² G03B *17/20*
U.S. Cl. 354—53 **12 Claims**



1. In a camera having a viewfinder and wherein an exposure factor is automatically controlled in accordance with the brightness of an object to be photographed, an exposure factor indicating device comprising:

first symbols each representative of values of the exposure factor, two of said first symbols respectively representing values critical to high brightness and low brightness and all of said first symbols being arranged in the order of the values of the exposure factor represented thereby;

a plurality of second symbols respectively arranged between said first symbols, said first and second symbols being disposed in said viewfinder to be observed therethrough;

a control circuit for generating an electric signal commensurate with the automatically controlled value of said exposure factor;

a plurality of optical indicating elements each respectively disposed in corresponding relation to one of said second symbols for optically indicating the corresponding second symbol when actuated;

means for selectively actuating one of said optical indicating elements in accordance with said electric signal, said means including an electric circuit which selectively continuously lights one of said optical indicating elements when said signal corresponds to a value of the exposure factor between the critical values and which intermittently lights one of said optical indicating elements disposed respectively in corresponding relation to said second symbols which are in turn adjacent to said first symbols representative of the critical values when said electric signal corresponds to a value of the exposure factor beyond the critical values; and

means for introducing light from the outside of said camera to said first symbols for illumination thereof.

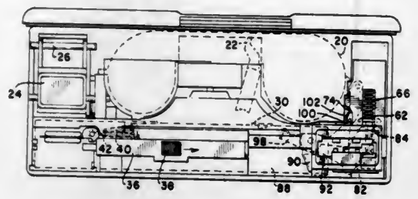
4,204,757

FLASH LAMP OPERATING MECHANISM

George Irwin, and Mark Irwin, both of Highland Park, Ill., assignors to Imperial Camera Corp., Chicago, Ill.

Filed Dec. 14, 1977, Ser. No. 860,609
Int. Cl.² G03B *15/03*
U.S. Cl. 354—135 **5 Claims**

1. In a camera construction having a shutter mechanism, a flash mechanism, and a generator responsive to impact forces for energizing the flash mechanism, the generator including an anvil for application of the impact, impact initiating and applying means, a catch for holding the impact means in a cocked position, and spring means normally urging said pin toward said anvil, the improvement wherein said impact means comprises a reciprocally movable striker pin, a rim portion defined by said striker pin, said catch being movable into engagement with said rim portion to hold the striker pin in a cocked position, said shutter mechanism including reciprocally movable drive means, a cocking lever for said striker pin, said drive means engaging said cocking lever when the shutter mechanism is moved into position prior to a picture taking operation whereby the cocking lever moves the striker pin to a cocked



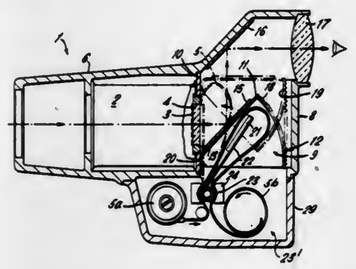
position in response to movement of the drive means by the shutter mechanism, the axis of said striker pin being coincident with the axis of said generator whereby said striker pin is movable in a path coincident with the axis of said generator, the drive means driving the pin in opposition to said spring means, and a catch-release lever, said release lever having one end portion engageable with said catch, a second end portion of the release lever engageable with said drive means, and wherein operation of the shutter mechanism during a picture taking operation causes said drive means to move said release lever against said catch whereby said catch releases said striker pin.

4,204,758

CLOSURE MECHANISM SUCH AS A CAMERA SHUTTER

Keith A. F. Haynes, Watford, England, assignor to John Hadland (Photograph Instrumentation) Ltd., Hertfordshire, England

Filed Nov. 20, 1978, Ser. No. 962,035
Int. Cl.² G03B *19/12, 9/08*
U.S. Cl. 354—152 **18 Claims**



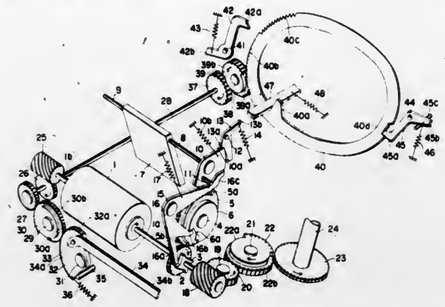
1. A closure mechanism comprising a closure member including an arcuate portion and mounted for movement relative to an aperture, and means for moving said closure member to cause said arcuate portion to roll on a straight support portion of a support member and to thereby cause a part of said closure member to move across the aperture in a substantially straight path to provide selective comunication of the aperture with spaces on opposite sides of said closure member while also providing a permanent barrier preventing communication between said spaces.

4,204,759

CAMERA WITH BUILT-IN MOTOR

Minoru Yamada, Hachioji, and Yasutsugu Nakagawa, Hamura, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 962,913
Claims priority, application Japan, Nov. 25, 1977, 52-142053; Nov. 28, 1977, 52-142519; Dec. 22, 1977, 52-155147
Int. Cl.² G03B *1/18, 99/12*
U.S. Cl. 354—152 **4 Claims**



1. A single lens reflex camera including a camera housing, a movable mirror, a mirror charging mechanism, a diaphragm, a diaphragm charging mechanism, a film winding mechanism, a shutter, and a shutter charging mechanism, characterized by comprising at least one small motor disposed horizontally in parallel to a film surface under the movable mirror and at the bottom portion of the housing adjacent to the film surface, an output shaft of the motor projected from both sides of the motor, the mirror charging mechanism being arranged at one side of the movable mirror and connected substantially to the output shaft at one side of the motor, the diaphragm charging mechanism being arranged at the other side of the movable mirror and connected substantially to the output shaft at the other side of the motor, first intermittent motion control means arranged between the output shaft at said one side of the motor and the mirror charging mechanism, second intermittent motion control means arranged between the output shaft at said other side of the motor and the diaphragm charging mechanism, the film winding mechanism being connected to the output shaft at either side of the motor through a respective intermittent motion control means, said first and second intermittent motion control means being constructed and operated such that power is transmitted from the motor to the mechanism by said first and second motion control means in different timed sequences.

4,204,760

FOCUS ADJUSTING DEVICE FOR SELF-CONTAINED INTERCHANGEABLE LENS CAMERA

Haro Kobayashi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 13, 1978, Ser. No. 968,953
Claims priority, application Japan, Dec. 15, 1977, 52-169323[U]
Int. Cl.² G03B *3/00, 3/02*
U.S. Cl. 354—197 **21 Claims**

1. A self contained multiple interchangeable objective lens camera having a photographic optical axis, comprising:

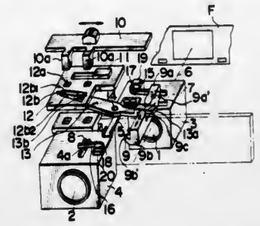
first and second objective lenses movably carried within said camera for interchangeable alignment with said optical axis, each lens being movable between an operative photographic position when its longitudinal axis is substantially aligned with said optical axis of said camera and an inoperative position when its longitudinal axis is displaced from said camera optical axis;

means interconnected between said first and second objective lenses for causing displacement of either one of said objective lenses from said operative position to said inoperative position in response to movement of the other objective lens from said inoperative position to said operative position;

a first driven member associated with said first objective lens and a second driven member associated with said second objective lens for effecting focusing adjustment thereof;

an externally, manually movable distance setting member carried by said camera;

control means mounted in said camera for movement in response to movement of said distance setting member, first and second control portions carried by said control



means, said first and second control portions being selectively engageable with said driven member of one of said first and second objective lenses that is positioned in said operative photographing position for controlling movement of said driven members to effect focusing adjustment of said lenses; and

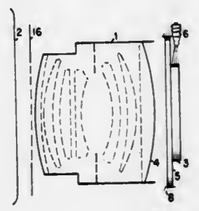
a first and second control surface respectively provided at either one of said first driven member and said first control portion and at either one of second drive member and said second control portion, each control surface lying in a plane parallel to the direction of movement of said driven members when said lenses are displaced between said operative and inoperative positions.

4,204,761

LIGHT ENHANCEMENT CAMERA ATTACHMENT

Joseph B. Walker, 5164 Don Rodolfo Dr., Carlsbad, Calif. 92008

Filed Jan. 15, 1979, Ser. No. 3,556
Int. Cl.² G03B *17/00*
U.S. Cl. 354—202 **10 Claims**



1. An attachment to a camera having a photographic lens, comprising;

(a) a transparent planar disc, smaller in periphery than the periphery of the front lens element of said photographic lens,

(b) means to hold said transparent disc in close proximity to said front lens element while photography is accomplished, and

(c) a visible light source exclusively directed at the periphery of said transparent disc,

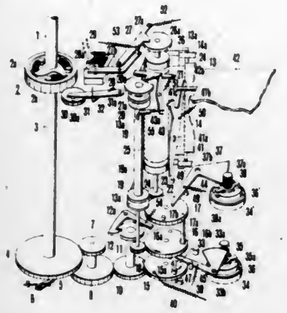
to cause substantially the whole of said periphery of the transparent disc to glow with light.

4,204,762

CENTRIFUGAL BRAKES FOR FOCAL PLANE SHUTTERS

Nobuaki Date; Hiroshi Aizawa, both of Kawasaki; Masanori Uchidoi, Yokohama; Masami Shimizu, Tokyo, and Teiji Hashimoto, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1978, Ser. No. 942,031
Claims priority, application Japan, Sep. 26, 1977, 52-115699
Int. Cl.[2] G03B *9/32*
U.S. Cl. 354—242 **1 Claim**



1. In a camera having a focal plane shutter provided with shutter shafts on which are wound shutter curtains, said shafts rotating in release and winding up operations, and master gears reciprocally rotatable within a limited range in connection with said shutter shafts for shutter cocking and shutter running down purposes, a brake device for the shutter comprising:

a fixed brake drum, said brake drum having a shaft fixed at the center thereof, and a pinion rotatable about said shaft;

a sector gear meshing with said pinion, and a brake lever having an arm engageable with said master gear, said brake lever being arranged to engage said master gear when the shutter nears the terminal end of movement, thereby motion of said master gear is transmitted to said pinion;

an engagement member fixedly mounted to said pinion; and

a plurality of slider pieces movably contained within said brake drum and having sliding surfaces conformed to the internal surface of said brake drum;

said slider pieces being engaged with said pinion by said engagement member upon rotation at a high speed within said brake drum to be pressed with said sliding surfaces against the internal surface of said brake drum by a centrifugal force to produce a friction force which activates the braking action on said shutter shaft.

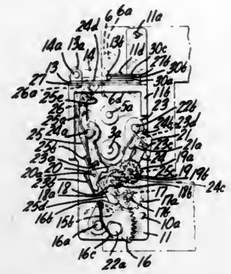
4,204,763

EXPOSURE TIME SETTING DEVICE FOR SHUTTER OF CAMERA

Tadashi Nakagawa; Mitsuo Koyama, and Ichiro Nemoto, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Jul. 12, 1978, Ser. No. 924,088
Claims priority, application Japan, Jul. 15, 1977, 52-95055[U]
Int. Cl.[2] G03B *17/38, 9/64*
U.S. Cl. 354—267 **3 Claims**

2. In a camera having a shutter, an exposure time setting dial disposed on an upper surface of the camera and movable in an operating plane for setting exposure time for the shutter, and an exposure time setting device for effecting the exposure time for the shutter in response to the dial position in the operating plane, the improvement wherein the device comprises: control means movable in a given plane perpendicular to the operating plane for opening and closing the shutter; governor means movable in the given plane for delaying operation of the control means; and an exposure time setting cam movable, in



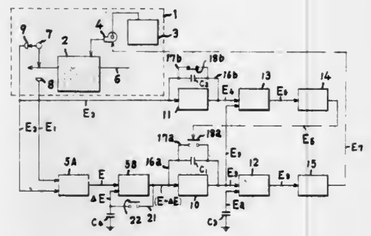
response to movement of the dial, within a plane parallel to the operating plane and perpendicular to said given plane.

4,204,764

NOISE REJECTING COMPENSATION CIRCUIT FOR DEVELOPING APPARATUS

Ryuzo Matsugo, Mitaka, Japan, assignor to Sumiyoshi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1979, Ser. No. 23,180
Claims priority, application Japan, Mar. 28, 1978, 53-35749
Int. Cl.[2] G03D *13/00*
U.S. Cl. 354—298 **4 Claims**



1. A noise rejecting compensation circuit for developing apparatus comprising:

(a) a first photo element **8** to convert a light radiated from a light source **7** after interferring in a developed film into an electrical value **E1** and a second photo element **9** to convert a light radiated directly from said light source **7** into an electrical value **E2**;

(b) a first differential amplifier **5A** to receive said signals **E1**, **E2** from both of said photo elements **8**, **9** and to generate an amplified signal indicating the difference between said signals;

(c) a second amplifier **5B** to receive a signal from said first differential amplifier **5A**;

(d) a first integrator **10** to receive a signal from said second amplifier **5B** and a second integrator **11** to receive a signal **E2** from said second photo element **9**;

(e) a by-pass **16***a* installed in a manner to step over said first integrator and having a condenser **C1**; and a normally opened contact **18***a* installed in a by-pass **17***a* in a manner to step over said condenser **C1**;

(f) a by-pass **16***b* installed in a manner to step over said second integrator and having a condenser **C2**; and a normally closed contact **18***b* installed in a by-pass **17***b* in a manner to step over said condenser **C2**;

(g) a first comparator **12** designed to receive a signal **E3** from said first integrator and a basis signal **E***a* and to generate a signal **E5** for initiating replenishment of developer when said signal **E3** reaches the same level of said basic signal **E***a*;

(h) a replenishment drive circuit **15** designed to be driven by said signal **E5** for initiating replenishment of developer and to actuate a developer replenishment pump **4** and further to break said normally closed contact **18***b* of said second integrator;

(i) a second comparator **13** designed to receive said signal from said first integrator and said signal from said second integrator and to generate a signal **E6** for ceasing replenishment of developer when both of said signals reach the same level;

(j) a mono-multi circuit **14** to be driven by said signal **E6** for ceasing replenishment of developer and to make said normally opened contact **18***a* of said first integrator; and

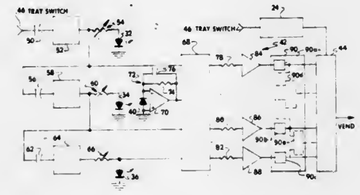
(k) a leak circuit wherein one end of a grounded condenser **C4** is connected to the input side of said second differential amplifier of which the output side is connected to a by-pass **21** having a contact **22** designed to be closed when the light source is turned off.

4,204,765

APPARATUS FOR TESTING COLORED SECURITIES

Gerald Iannadrea, Palnesville; Robert L. Gorgone, Mentor, and Alan J. Kovach, Cleveland, all of Ohio, assignors to Ardac, Inc., Willoughby, Ohio

Filed Dec. 7, 1977, Ser. No. 858,114
Int. Cl.[2] G01K *9/08*
U.S. Cl. 356—71 **8 Claims**



1. In an apparatus for determining the authenticity of a paper, including a tray for receiving and transporting the paper, the improvement, comprising:

a plurality of light source means in juxtaposition to the tray, each emitting light of a different wavelength, for casting light onto the paper;

control means connected to said light source means for energizing each such means for a fixed time period;

light sensor means in juxtaposition to the paper for receiving said light from the paper and producing output signals proportional to the intensity of light of the associated wavelengths received; and

circuit means conncted to said sensor means and receiving said output signals therefrom for determining the authenticity of the paper as a function of said output signals, said circuit means comprising:

a gating circuit interconnected between said light sensor means and said control means, said gating circuit having a plurality of outputs and gating each of said output signals to a particular one of said plurality of outputs under control of said control means;

a plurality of holding circuits connected to respective outputs of said gating circuit and receiving and maintaining the peak value of an associated output signal;

a logic circuit connected to said holding circuits, receiving said peak values and determining therefrom the authenticity of the paper; and

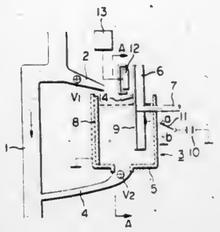
comparator circuits interconnected between pairs of said holding circuits, receiving said peak values therefrom, and comparing said pairs of peak values with each other.

4,204,766

METHOD AND APPARATUS FOR CONTROLLING TONER CONCENTRATION OF A LIQUID DEVELOPER

Yoshiaki Harada, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1977, Ser. No. 808,804
Claims priority, application Japan, Jun. 30, 1976, 51-77176
Int. Cl.[2] G01A *3/46*
U.S. Cl. 356—404 **11 Claims**



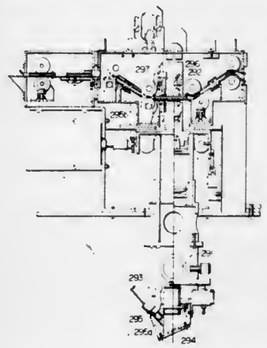
1. A method for controlling toner concentration of a liquid developer, which includes the steps of conducting a part of the liquid developer into a detection cell, establishing an electric field in the detection cell, causing charged toner particles in the liquid developer to deposit upon a detection member under the influence of the electric field, removing the deposited toner particles from the liquid developer, and measuring the concentration of degraded toner particles left in the liquid developer after the deposited toner particles have been removed.

4,204,767

AUTOMATIC CATAPHORESIS APPARATUS

Yutaka Kato, Tama; Hirohiko Tokitoh, Hachioji; Tomohiro Kitahara, Hachioji, and Hiromi Ito, Hachioji, all of Japan, assignors to Olympus Optical Company Ltd., Japan

Filed Sep. 1, 1977, Ser. No. 829,957
Claims priority, application Japan, Sep. 6, 1976, 51-105719
Int. Cl.[2] G01N *21/06*
U.S. Cl. 356—444 **1 Claim**



1. An apparatus for examining and analyzing blood serum samples deposited on a strip of film, wherein said film strip bearing blood serum is cataphoretically processed and is carried into one side of the apparatus, comprising means for feeding said film strip along a predetermined path through a photometry location having a film receiving side and a film exiting side, said photometry location including a light source and a photoelectric transducer for photometry of the density distribution of a fractionated pattern of the blood serum, positioning apparatus disposed on the film receiving side of said photometry location and including a positioning photoelectric transducer for producing a detecting signal in response to said

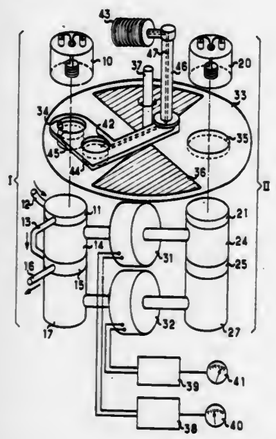
fractionated pattern passing said positioning transducer, means responsive to said detecting signal for stopping the feeding of said film strip at said photometry location where said photometry transducer scans said fractionated pattern to perform a photometry analysis, said positioning apparatus further including a first optical fiber bundle having a first end face positioned to receive light from said light source and a second opposite end face adjacent to said path constructed and arranged so that the width of said first bundle is substantially equal to the width of said film strip, and a second optical fiber bundle for transmitting the light which passes through said film strip to said positioning photoelectric transducer, said second optical fiber bundle having a first end face positioned opposite to the second end face of said first bundle with said film strip moving therebetween and a second end face positioned adjacent to said positioning transducer.

4,204,768

GAS ANALYSERS OF THE SELECTIVE RADIATION ABSORPTION TYPE WITH A CALIBRATION CELL

Van L. N'Guyen, Paris, France, assignor to Sereg, Montrouge, France

Filed Jun. 16, 1978, Ser. No. 916,395
Claims priority, application France, Jun. 21, 1977, 77 18904
Int. Cl.² G01J *1/02*; G01N *21/00*
U.S. Cl. 356—243 **5 Claims**



1. A gas analyser of the selective radiation absorption type, comprising:

at least one source of radiation;

a measurement chamber for receiving a gaseous mixture containing at least one gas whose concentration is to be measured, said measurement chamber being disposed in a measurement path to receive radiation from the source;

means for periodically interrupting the radiation entering said measurement path;

at least one detector sensitive to, and disposed to receive, radiation which has passed through the measurement chamber;

a calibration cell for cooperating with the said path, said cell enclosing a given concentration of the gas whose concentration is to be measured in a sealed enclosure; and

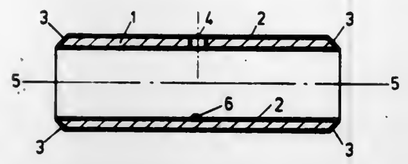
a flexible-wall chamber, forming part of said sealed enclosure, for controlling the pressure in the interior of said enclosure in accordance with the ambient temperature and pressure.

4,204,769

CUVETTE FOR FLAMELESS ATOM ABSORPTION SPECTROSCOPY

Bernhard Lersmacher, Aachen; Hans Lydtin, Stolberg; Karlheinz Schelhas, Aachen, all of Fed. Rep. of Germany, and Wilhelmus F. Knippenberg, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 17, 1978, Ser. No. 870,200
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702189
Int. Cl.² G01N *21/16*
U.S. Cl. 356—244 **8 Claims**



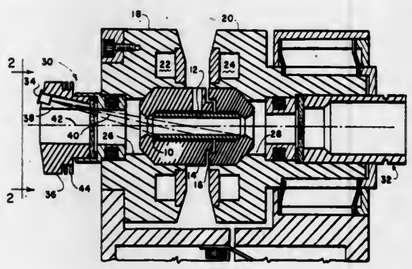
1. A cuvette for flameless atom absorption spectroscopy comprising a cuvette basic body member being formed of a carbonized laminated fabric including cotton fabric and at least one of phenol resin or cresol resin, and a carbon layer formed on said basic body member.

4,204,770

GRAPHITE FURNACE BORE TEMPERATURE MEASUREMENTS IN FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

Toma Tomoff, Überlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,796
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1977, 2718416
Int. Cl.² G01J *3/00*
U.S. Cl. 356—312 **5 Claims**



1. In an absorption spectrophotometer sample furnace having a graphite sample atomizing tube mounted between electrodes supported by cooling structures, said graphite tube, said electrodes and said cooling structures having coaxial longitudinal bores to permit passage of a spectrophotometer measuring beam, a temperature sensing means for measuring the temperature of said graphite tube, said temperature sensing means comprising a pyrometric detector positioned with respect to the logitudinal center line of said coaxial longitudinal bores to sense the internal temperature of the graphite tube through the end of said tube and so that the entire length of the surface of said graphite tube is within the field of view of said detector, said detector being mounted to the exterior end surface of a window holder coaxial with center line of said longitudinal bores, said detector being positioned so that the center line of its field of view is non-symmetrical to and inclined at an angle

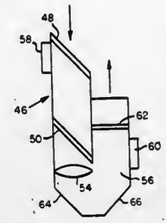
from the center line of said bores and is directed toward the central portion of the interior surface of said graphite tube.

4,204,771

TUNING OF ETALONS

Arthur Shull, 110 Highgate Pl., and George J. Wolga, 324 Snyder Hill Rd., both of Ithaca, N.Y. 14840

Filed May 8, 1978, Ser. No. 903,862
Int. Cl.² G01B *9/02*
U.S. Cl. 356—346 **1 Claim**



1. An improved instrument for spectral analysis having a tunable acoustooptic filter providing a collimated output light beam and an etalon in optical communication with said light beam so that said beam is incident to said etalon, wherein the improvement comprises:

a Bragg cell arranged to deflect said beam, thereby changing the beam's angle of incidence on said etalon; and

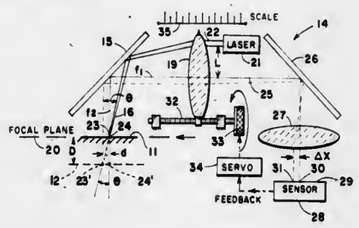
wherein said tunable acoustooptic filter, said Bragg cell, and said etalon are fabricated from the same piece of optically anisotropic medium.

4,204,772

OPTICAL MEASURING SYSTEM

N. Balasubramanian, Cupertino, Calif., assignor to Recognition Systems, Inc., Van Nuys, Calif.

Filed Sep. 25, 1078, Ser. No. 945,628
Int. Cl.² G01C *3/00*
U.S. Cl. 356—376 **6 Claims**



1. An optical method of measuring the distance between first and second surfaces with an optical system including the steps of:

(a) passing a collimated light beam through a first lens having a focal plane coinciding with said first surface in a direction parallel to and displaced from the optical axis of said first lens so that said collimated beam is focused to a first point coinciding with the point of intersection of the optical axis of said first lens in said focal plane;

(b) re-imaging light from said first point passing back along the optical axis and through said first lens with a second lens onto a sensor surface, said collimated light beam, first and second lens and sensor surface constituting part of said optical system;

(c) effecting relative movement between said optical system and said second surface to position said second surface to intercept said collimated beam at a second point, said second point being laterally displaced from the point of intersection of the optical axis with said second surface by an amount directly proportional to the distance of said second surface from the focal plane of said first lens;

(d) re-imaging light from said second point passing back through said first lens with said second lens onto said sensor surface, the image of said second point on said sensor surface being laterally displaced from the position occupied by the image of the first point on said sensor surface; and

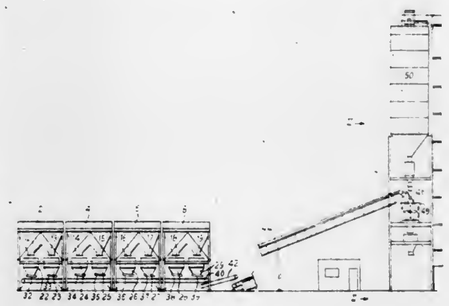
(e) moving said first lens along its optical axis relative to said second surface until the second point image on said sensor surface reaches the position that the first point image on said sensor surface occupied thereby positioning the focal plane of said first lens in a position coplanar with said second surface, the physical distance over which said first lens is moved indicating the distance between said first and second surfaces.

4,204,773

MIXING MEANS

Leonard T. Bates, Maidstone, England, assignor to Winget Limited, Rochester, England

Filed Feb. 21, 1978, Ser. No. 879,886
Claims priority, application United Kingdom, Feb. 18, 1977, 07051/77
Int. Cl.² B28C *7/04*
U.S. Cl. 366—18 **1 Claim**



1. A mixing plant having a series of weigh hoppers each mounted on respective load cell means giving continuous indications of the mass of material within the associated weigh hopper, storage hoppers arranged to deliver material to pairs of weigh hoppers to charge the weigh hoppers alternately, variable speed feeder means associated with each weigh hopper arranged to discharge material from respective alternating, charged, weigh hoppers of each pair to a continuous mixer, individual controller means arranged to vary speeds of the respective variable speed feeder means in accordance with signals generated from effecting comparisons during discharge of the weigh hoppers between indications produced by the load cell means and set point values determined in accordance with a continuously variable desired proportioning of the delivery of materials to the continuous mixer and a desired output rate of the continuous mixer from a range of output rates.

4,204,774

SYNCHRONOUS STIRRER

Norman A. de Bruyne, 3700 Brunswick Pike, Princeton, N.J. 08540

Filed Feb. 26, 1979, Ser. No. 15,366
Int. Cl.² B01F *15/06, 13/02, 13/08*
U.S. Cl. 366—102 **15 Claims**

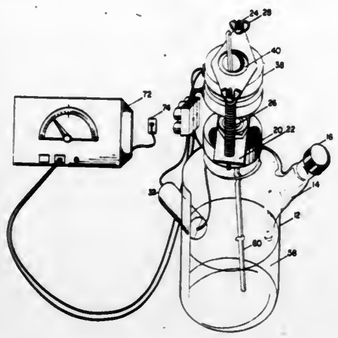
1. A synchronous stirring apparatus for stirring liquid in a container with a stirring element, said apparatus comprising:

cap means for attaching said apparatus to said container;

a flexible sealing means attached to said cap means and to

said stirring element for dependingly supporting said stirring element;

a synchronous motor means attached to said cap means, said synchronous motor means including a stator means for producing a rotating field and a rotor means for rotating in synchronism with said rotating field about a defined axis of rotation;



an eccentric means attached to said rotor means for engaging a section of said stirring element and driving said section in a circular path; and,

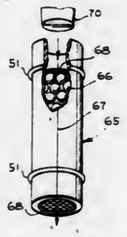
stand-off means for attaching said synchronous motor means to said cap means, said stand-off means including an adjustment means for varying the distance between said synchronous motor means and said cap means.

4,204,775

MIXING DEVICE FOR SIMULTANEOUSLY DISPENSING TWO-PART LIQUID COMPOUNDS FROM PACKAGING KIT

Spencer J. Speer, Ontario, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Filed Aug. 8, 1978, Ser. No. 932,053
Int. Cl.² B01F 5/06
U.S. Cl. 366—336 **3 Claims**



1. A disposable fluid mixing device comprising:

a first and a second structure, said structures being mirror images of each other;

each of said structures being substantially semi-cylindrical in form and forming a chamber with the other upon mating of said first and second structures, the chamber having an inlet end, an outlet end, a plurality of spherical objects, and a pair of wire mesh retainers adjacent the inlet and outlet ends, respectively, for retaining the objects within the chamber while permitting the flow of fluid therethrough;

said chamber in conjunction with the plurality of spherical objects disposed in said chamber forming a tortuous fluid path for the mixing of fluids therein;

a first semi-circular ridge molded on the outside of each of the structures to form a projection extending about the chamber adjacent the inlet end;

a second semi-circular ridge molded on the outside of each of the structures adjacent the outlet end to cooperate with a selected member to be associated with the mixing device; and

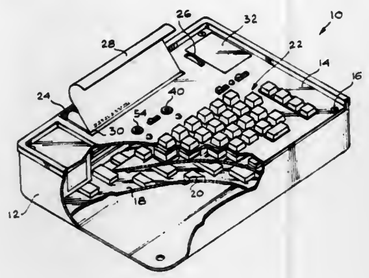
means for securing said structures to each other comprising a retainer ring for mounting adjacent the inlet end over the first ridges.

4,204,776

TELETYPEWRITER

James C. C. Lee, 23, (8B) Nuan An St., Taipei, Taiwan

Filed Aug. 16, 1978, Ser. No. 934,170
Int. Cl.² B41J 3/20, 19/30
U.S. Cl. 400—119 **10 Claims**



1. An improved teletypewriter, including:

a base portion;

power means supported in said base portion for providing electrical power to said teletypewriter for the operation thereof;

a first solenoid supported from said base and having a plunger which is moved upon the application of electrical current from said power means to said first solenoid;

a keyboard supported from said base portion and having individual character keys, each of which has associated therewith an electrical circuit which is coupled to said power means and to said first solenoid and is effective upon the depression of such key to apply electrical current to said first solenoid from said power means;

a lateral track swingably supported from said base portion;

a printing-head assembly movable laterally along and guided by said track and rotatable about an axis substantially parallel to said track;

head translating means coupled between said first solenoid and said printing-head assembly and responsive to motion of said first plunger to translate said head assembly a predetermined distance along said track, said head translating means including a worm, having a helical groove and an axis, coupled to said first solenoid and supported for rotation about the axis of said worm, said axis being substantially parallel to said track;

a platen supported from said base portion parallel to said track and adapted for the passage of paper thereover;

said printing-head assembly including a printing head portion movably positioned adjacent said platen for movement thereacross and rotatable about an axis parallel to said platen, a foot portion slidably engaging said track and guiding the motion of said printing-head portion and a groove-tracking pin in engagement with said groove in said worm;

paper-feeding means including a shaft having rollers on one portion thereof, a paper feed knob carried at one end thereof and rotatable therewith and a yoke rotatably carried by said shaft, said yoke having a ratchet pin affixed to one end thereof coaxially with said shaft, but in a plane normal to said shaft, said feed knob having a ratchet portion in engagement with said ratchet pin, whereby motion of said ratchet pin in one direction rotates said knob and said shaft;

a second plunger having operatively associated therewith a second solenoid and having a yoke receiving portion for engaging said yoke and rotating said yoke upon motion of said second plunger, said yoke being in engagement with said yoke receiving portion;

a swing-lever coupled to said second plunger and said track and responsive to the motion of said second plunger into said second solenoid to swing said track away from said worm and said groove-tracking pin of said printing-head assembly out of said helical groove, whereby said head assembly may be freely slid along said track; and,

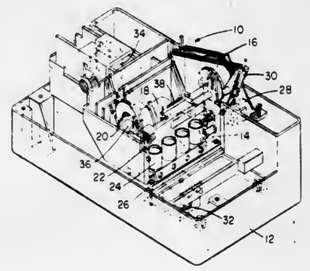
feed-control means coupled to said second solenoid for controlling the activation thereof.

4,204,777

MATRIX PRINTER CONTROL SYSTEM

Tai-Kuang Jen, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 16, 1978, Ser. No. 869,888
Int. Cl.² B41J 3/10
U.S. Cl. 400—124 **16 Claims**



1. A control system for a dot matrix printer having a plurality of aligned printing elements, a

carriage supporting said printing elements in position to print on record material,

means for moving said carriage in reciprocating manner, a

timing member having indicia thereon representative of dot column positions of characters to be printed and indicia for indicating direction of travel of said carriage, a

sensing member for sensing said dot column positions indicia for initiating pulse signals for operation of said printing elements and for sensing said direction of travel indicating indicia,

means for storing print data and control data in random addressable manner and in latching manner, respectively,

character memory means receiving said print data and said control data from said storing means for generating a row of dots in character-by-character sequence,

means for addressing the character memory means for only those positions along a character line corresponding to the positions of the print elements at that time,

means for decoding row and column address for generating a dot row of print data for transmitting decoded data to said character memory means,

means for decoding control data for indicating carriage direction of travel and width of characters to be printed,

means for registering said generated dot row data for each character to be printed according to direction of movement of said carriage in bi-directional printing as sensed by said sensing member, and

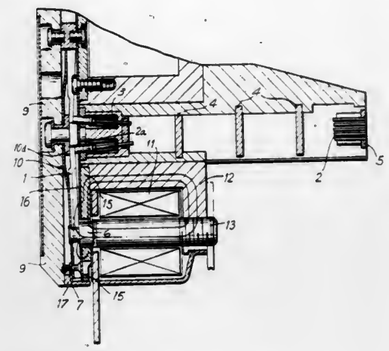
means responsive to the decoded print data from said character memory means for operating said printing elements in accordance with the presence of each dot of a dot row for each respective character as determined by said sensing member.

4,204,778

WIRE TYPE DOT PRINTER HEAD ASSEMBLY

Yoshinori Miyazawa, and Yoshifumi Gomi, both of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki, Nagano, both of, Japan

Filed May 26, 1978, Ser. No. 910,154
Claims priority, application Japan, May 26, 1977, 52-61343
Int. Cl.² B41J 3/12
U.S. Cl. 400—124 **6 Claims**



1. A wire dot type printer comprising:

a printer head having a hollow central core;

a plurality of print wires slideably mounted in said central core;

a plurality of selectively operable solenoid means disposed about the central core;

clapper means operatively coupled between said print wires and said solenoid means for selectively displacing said print wires between a first at rest position and a second printing position;

biasing means for biasing said clapper means towards the at rest position after completion of printing, said clapper means mounted on said biasing means; and

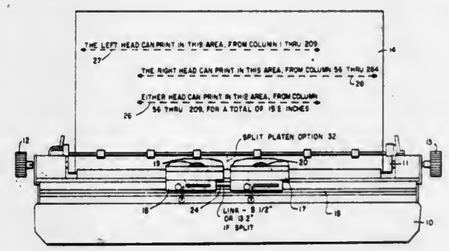
biasing means mounted to said printer head at the axis of the hollow central core, and having a cantilever leaf spring having a central mounting portion and a plurality of radially extending cantilever arms, each arm formed with a leaf spring at the free end thereof with an internal leaf finger extending towards the central axis with said clapper means mounted on said cantilever leaf spring finger.

4,204,779

HIGH CHARACTER CAPACITY IMPACT PRINTER

Sen L. Lee, Hayward; Franklin B. Shah, Fremont, and John W. Jamieson, San Leandro, all of Calif., assignors to Qume Corporation, San Jose, Calif.

Filed Apr. 7, 1978, Ser. No. 894,540
Int. Cl.² B41J 1/30, 3/54
U.S. Cl. 400—144.2 **12 Claims**



1. An impact printer responsive to character commands for printing characters serially on a record medium comprising: a

plurality of print wheels each having a mechanically limited number of characters and each having at least some unique characters relative to the other print wheel or wheels; a plurality of carriages, with said print wheels rotatably mounted thereon respectively, linearly movable along a common predetermined path to place said print wheels in printing positions along said path, and mechanically linked together to maintain a predetermined spacing therebetween throughout said linear movement; logic means responsive to said character commands for coordinating the printing wheels in a common area of said record medium, said logic means generating a carriage move command equal to the spacing between print wheels in response to the character command previous to the present character command occurring on another print wheel to bring the other print wheel to a printing position.

4,204,780

TYPEWRITER WITH IMPROVED CASE SHIFT MEANS

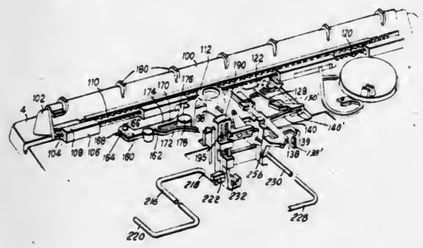
Anthony Elliott, Nottingham, England, assignor to Dobson Park Industries, Limited, Nottingham, England

Filed Sep. 15, 1977, Ser. No. 833,446

Claims priority, application United Kingdom, Sep. 21, 1976, 39140/76

Int. Cl.² B41J *11/16*

U.S. Cl. 400—261 **6 Claims**



1. A typewriter having a body, a typebar assembly and a carriage which is movable vertically relative to the typebar assembly to enable the carriage to take up one of three positions to provide three cases of type, in which the carriage rests on a single shift member slidable vertically in guides formed in the typewriter body, and there is provided biasing means acting between the typewriter body and the shift member and biasing the shift member upwardly with a force sufficient to overcome the weight of the carriage acting on the shift member, stop means preventing upward movement of the shift member by the biasing means beyond an intermediate position, a first shift key linked to the shift member so that actuation of the first shift key lifts the shift member and carriage beyond the intermediate position to an uppermost position, and a second shift key linked to the shift member so that actuation of the second shift key moves the shift member and carriage downwards against the bias of the biasing means to a lowermost position, the lowermost, intermediate and uppermost positions of the carriage corresponding to the said three cases of type.

4,204,781

CLAMPING TOOLHOLDER

Maier Johann, Reutte, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

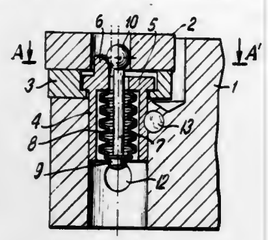
Filed Oct. 11, 1978, Ser. No. 950,376

Claims priority, application Austria, Oct. 12, 1977, 7277/77

Int. Cl.² B26D *1/12*

U.S. Cl. 407—105 **5 Claims**

1. A clamping toolholder comprising (i) a shank with a recess for the support of a base plate and a disposable insert of the pin-type and (ii) clamping means included (iii) a bushing fixed in a shank bore below said recess, and (iv) a clamping element having one part extending into the bushing and another part extending into the insert hole, so that the clamping element is supported within the bushing and movable in the direction of the axis thereof; means biasing said clamping element in the direction away from said recess; said bushing including at its upper end a border with a lap and a central bore and a prolongation beginning at said border and extending upwardly to be in the insert hole, the prolongation of the bushing having a symmetry plane, which concurs substantially with the normal direction or the resultant of normals of one or



two adjoining planes of the lateral recess wall and the insert; said clamping element including a pin pervading the central boring of the border of the bushing, and a head part of toroidal shape, located to be in the insert hold; and the prolongation in its surface area next to the head part having a curved shape to permit the head part to adjoine itself to the prolongation at two points, which include an angle of 120° with the axis of the pin, and at one point on the inner wall of the insert hole.

4,204,782

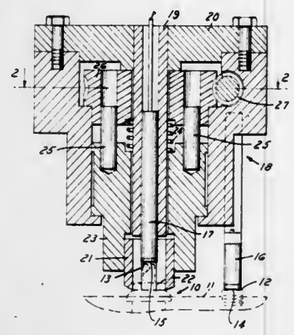
AUTOMATIC SIZING SYSTEM FOR NUMERICALLY CONTROLLED MACHINE

Raymond Spits, Perkstraat 76,B-1960, Sterrebeek, Belgium, and Hans W. Beck, Im Rot 7,D-6920, Sinsheim, Fed. Rep. of Germany

Filed Jun. 9, 1978, Ser. No. 914,665

Int. Cl.² B23B *39/08*

U.S. Cl. 408—3 **10 Claims**



1. An automatic sizing system for a numerically controlled machine having interchangeable tooling adjustable in its operatively installed condition comprising a combination gauging and adjusting station, means at said station for gauging the effective cutting position of an operatively installed cutting tool on either side of a nominal required cutting position when moved to a gauging position by said numerically controlled machine, and means responsive to said gauging means during continuous gauging of said cutting position for effecting any required adjustment of said cutting tool in either direction to reach said nominal position.

4,204,783

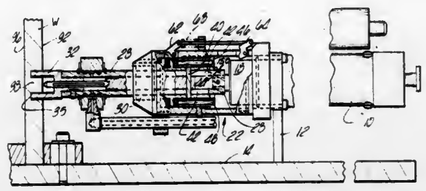
MACHINE FOR CUTTING HOLES WITH ANNULAR CUTTERS

Everett D. Hougen, G-5072 Corunna Rd., Flint, Mich. 48504

Filed Mar. 1, 1979, Ser. No. 16,433

Int. Cl.² B23B *47/00, 51/04*

U.S. Cl. 408—68 **32 Claims**



1. A machine for cutting holes in a workpiece comprising, a base, a motor, means for mounting said motor in a fixed position on said base, an axially shiftable, rotary driven spindle on said motor, an arbor fixedly connected at its rear end to said spindle to rotate and shift axially with the spindle, said arbor having means at its front end for mounting thereon an annular cutter having a coaxial pointed pilot pin shiftable axially therethrough, means on said base for supporting a workpiece thereon in a fixed position spaced axially forwardly beyond the leading end of the cutter when the spindle is in its retracted position, said spindle being adapted to be advanced axially to cause the leading end of the cutter to engage and cut a circular groove in the adjacent face of a workpiece supported on said base, said arbor having a central axial bore therein, a plunger slideable axially in said bore, means for operably connecting the forward end of the plunger to the rear end of the pilot pin, means for applying a predetermined maximum axial force to said plunger of sufficient magnitude to cause the front pointed end of the pilot pin to firmly engage said face of the workpiece in an axially fixed first position with said maximum force at the axial center of the hole to be formed therein, and means for reducing the force applied by the pilot pin to the workpiece to a value very substantially lower than the magnitude of said maximum force whenever the pointed end of the pilot pin has been displaced axially forwardly beyond said fixed position to a predetermined second fixed position only slightly beyond said face of the workpiece, whereby, as soon as the cutter penetrates through the workpiece and the plunger has displaced the pointed end of the pilot pin and the circular slug within the cutter to said second position, the force exerted by the pilot pin on said slug will have been reduced to said very low value.

4,204,784

TOOLS FOR RECONDITIONING A VALVE SEAT IN A TAP

Jean-Pierre Eckendorff, 29, Avenue Aristide Briand, 27007 Evreux, France

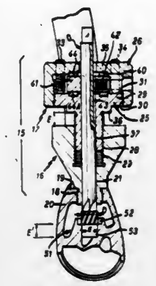
Filed Apr. 20, 1978, Ser. No. 898,454

Claims priority, application France, Apr. 21, 1977, 77 11989; Mar. 6, 1978, 78 06274

Int. Cl.² B23C *3/05*

U.S. Cl. 408—83.5 **20 Claims**

1. A tool assembly for use in repairing a seat of a tap, said tool assembly comprising an adaptor for mounting on a tap body to be repaired, said adaptor having a threaded end portion complementary to that of the tap body to be repaired and a support shoulder for axial bearing against an end face of the tap body, said adaptor having a central bore, a guide member in threaded engagement relative to said adaptor, said guide member having a central bore in alignment with said adaptor central bore, a tool shank having a cutting end and being receivable in said bores and guided radially without play along the axial length of said adaptor, means for securing said guide member at a selected axial position along said tool shank, rotatable mounting means mounting said tool shank relative to said guide member, thrust bearing means cooperating with said rotatable mounting means and said guide means for ensuring axial abutment without play of said tool shank in each of two axial directions of said tool shank relative to said guide member, whereby said guide member is operable to feed said tool shank for working on a tap seat while the cutting end of said tool shank is positively positioned relative to said adaptor at all times.



4,204,785

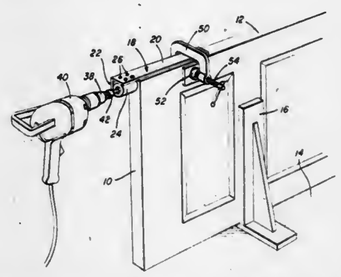
FLUSH DOOR BOLT BORE FORMING JIG

James W. Rowlings, P.O. Box 211, Milton, Mass. 02187

Filed Aug. 22, 1978, Ser. No. 938,302

Int. Cl.² B23B *49/00*

U.S. Cl. 408—109 **3 Claims**



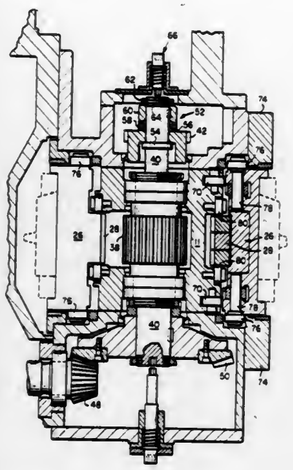
1. A jig for use in drilling a bore along the free swinging edge of a door intermediate the opposite sides thereof, said jig including an elongated right angle member defining substantially right angularly disposed elongated abutment surfaces extending parallelly along a predetermined path disposed in the included angle defined between said surfaces, elongated abutment structure carried by one end of said angle member and defining a journal structure whose center axis coincides with said path, said journal structure being mounted between said surfaces and adapted to journal and slidably receive therethrough the shank end of an elongated wood boring drill member and the other end of said angle iron including clamp means supported therefrom opposing and adjustably shiftable toward and away from one of said surfaces, whereby the door can be clamped between the clamp means and said one of said surfaces.

4,204,786

ENDLESS CHAIN APPARATUS FOR FORMING SPUR AND HELICAL GEARS WITH MEANS FOR CONTROLLING CHAIN

Thomas A. Deprez, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,779
Int. Cl.² B23D *37/18*
U.S. Cl. 409—262 **3 Claims**



1. In apparatus of the type which includes a tool-carrying endless chain assembled from a number of articulated links which each have a gear engaging rack portion depending longitudinally therefrom together with bearing surfaces adjacent to the depending rack portion, the improvement in means for controlling movement of the endless chain as it passes through a work zone in which its tools make contact with a workpiece, characterized by

a housing defining a path of travel for the endless chain, with the path of travel having a straight section in the work zone portion of its travel,

guide rollers carried on opposite sides of each link of said endless chain for guiding the chain in its path of travel about said housing,

a first series of rollers positioned in parallel rows along said straight section of the work zone for supporting said bearing surfaces of the links of said endless chain as the endless chain travels through the work zone,

gib means secured along both sides of said straight section of said housing for engaging said guide rollers as the chain links enter the work zone portion of the chain travel to thereby press the endless chain into firm contact with said first series of rollers as the endless chain moves through the work zone, and

a second series of rollers positioned in parallel rows in the straight section of said housing for contacting and guiding opposite sides of the depending rack portions of said links of the endless chain to prevent unwanted side-to-side deflections of the endless chain as it moves through the work zone.

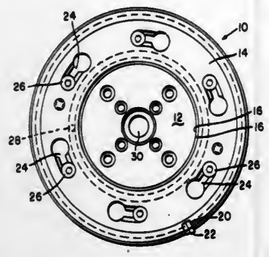
4,204,787

MILLING CUTTER

David M. McCray, Latrobe, Pa., and Gerald D. Murray, Concord, Ohio, assignors to Kennametal Inc., Latrobe, Pa.

Filed Aug. 21, 1978, Ser. No. 935,087
Int. Cl.² B23C *5/26, 5/20*
U.S. Cl. 409—234 **15 Claims**

1. A milling cutter comprising: a rotatable adapter plate having a central protrusion with a taper thereon; a cutter ring having a central opening for receiving said protrusion; recesses on said cutter ring for seating cutting inserts; cooperating surfaces of abutment means on said cutter ring and adapter; clamping means for clamping said ring and said adapter into



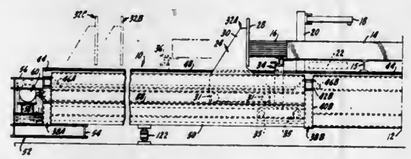
rigid nonrotatable abutment with one another; and in an assembled but unclamped position, one of said abutment surfaces on said ring and said adapter having a concave portion when viewed from the other surface from said one surface.

4,204,788

SQUARING DEVICE FOR STORAGE OF RODS, TUBES, AND LIKE ARTICLES

John P. Massey, 421 Ruby Ave., Clarendon Hills, Ill. 60514

Filed Jul. 31, 1978, Ser. No. 929,579
Int. Cl.² B65B *35/40*
U.S. Cl. 414—21 **5 Claims**



1. In a material handling and storage system for rods, tubing, and like stock articles of predetermined lengths, of the type comprising a rack including a plurality of storage pockets or cubicles, a plurality of open-ended containers for holding stock articles and designed to fit into the rack pockets with clearances between containers, the containers having lengths shorter than the lengths of the stock articles stored therein, and means for depositing and retrieving containers in the pockets, the improvement comprising a squaring device for locating stock articles in centered relation in the containers so that the articles will not interfere with movements of other containers in use of the storage system, the squaring device comprising:

an elongated base;

a pair of squaring heads mounted on the base in facing relation to each other and movable along the base toward each other from initial rest positions;

container support means, comprising a pair of dollies, each mounted on wheels engaged in tracks extending longitudinally of the base, for supporting one of the containers in approximately centered relation to a centerline midway between the rest positions of the squaring heads, with the open ends of the container facing the squaring heads, the dollies being adjustable, longitudinally of the base, to accommodate containers and stock articles of varying lengths;

and motive means, connected to the squaring heads, for driving the squaring heads toward each other simultaneously and at equal speeds to engage the ends of the stock articles and square the stock articles in centered relation in the container;

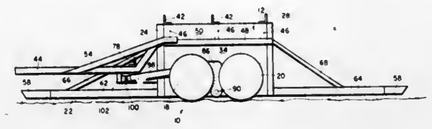
the motive means further including means for driving the squaring heads simultaneously back to their rest positions.

4,204,789

PASS THROUGH HAY BALE RETRIEVER

Frank Parks, Jr., Rte. 1, Box 57, Henryetta, Okla. 74437

Continuation of Ser. No. 736,999, Nov. 29, 1976, abandoned.
This application Mar. 27, 1978, Ser. No. 890,793
Int. Cl.² B60P *1/38*
U.S. Cl. 414—24.5 **2 Claims**



1. A pass through hay bale retriever comprising a relatively short main frame means having a centrally disposed substantially tunnel-shaped unobstructed recess extending longitudinally therethrough, rail means secured to the main frame means and extending longitudinally through and beyond each end of said tunnel-shaped recess through a distance at least equal to the length of one hay bale, wheel means operably secured to the main frame means in the proximity of the tunnel-shaped recess for supporting and transporting of the hay bale retriever across the surface of the ground, means operably connected between the wheel means and the main frame means whereby the rail means and main frame means may be alternately lowered and raised with respect to the surface of the ground through a substantially straight vertical path and including means for maintaining said rail means in a substantially horizontal position during raising and lowering thereof, said real means being disposed adjacent the opposite sides of the hay bale in the lowered position for an initial engagement therebetween, said rail means supporting said hay bale in an elevated position in the raised position for retrieving of the hay bale, and wherein the wheel means includes a first pair of substantially co-planar wheels disposed in relatively close relationship to one another and carried by a common link member which is secured to one side of the main frame means, and a second pair of substantially co-planar wheels disposed in substantially close relationship to one another and carried by a second common link member which is secured to the opposite side of the main frame means, said second pair of wheels being disposed in substantial axial alignment with said first pair of wheels, and wherein the raising and lowering means comprises bell crank means cooperably connected with each pair of wheels and pivotal between a first and second position, hydraulic cylinder means operably connected to one end of said bell crank means for pivoting thereof between said first and second positions, rod means connected between the opposite end of said bell crank means and the main frame means whereby actuation of the hydraulic cylinder for pivoting the bell crank to the first position results in a lowering of the main frame means with respect to the surface of the ground, and actuation of the hydraulic cylinder for pivoting of the bell crank to the second position results in elevating of the main frame means with respect to the surface of the ground.

4,204,790

TRAILER FOR LIFTING AND TRANSPORTING ROUND BALES OF HAY

Bobby G. Baxter, Warrenton, Mo., assignor to The Binkley Company, Warrenton, Mo.

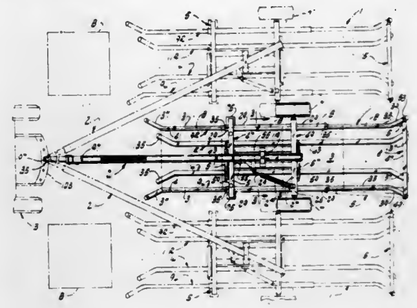
Filed May 26, 1977, Ser. No. 800,698
Int. Cl.² A01D *87/12*; B65G *57/32*
U.S. Cl. 414—24.5 **14 Claims**

1. A trailer adapted to be towed by a towing vehicle for picking up round bales of hay or the like lying on their sides on the ground and transporting the bales, said trailer comprising:

a frame generally of inverted U-shape thereby having a top and sides extending down from the top, the top comprising means which is extensible and retractable for varying the spacing of the sides;

a wheel at each side of the frame at the bottom of the frame, said wheels being on an axis extending transversely of the frame;

rails carried by the sides of the frame extending longitudinally at opposite sides of the frame on the inside of the sides of the frame, the rails extending forward and rearward from the frame and spaced apart transversely of the frame for supporting a series of round bales cradled in the rails in end-to-end relation with the series extending through the frame between the sides of the frame and



under the top of the frame, said rails comprising an upper rail and a lower rail carried by each side of the frame on the inside thereof, the upper rails being closely adjacent the sides of the frame and the lower rails being carried by means extending inward from the sides of the frame so that the lower rails are spaced a distance less than the spacing of the upper rails;

means for hitching the frame to a towing vehicle;

power means for raising and lowering the frame relative to the wheels thereby to raise and lower the rails; and

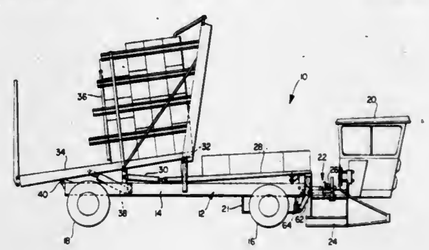
power means for extending and retracting the extensible and retractable top means for varying the spacing of the sides of the frame and the rails carried thereby.

4,204,791

BALE ALIGNMENT DEVICE

Lester C. Barton; Gene R. Butler, and L. Dennis Butler, all of Kingsburg, Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 14, 1978, Ser. No. 933,242
Int. Cl.² B65G *57/32*
U.S. Cl. 414—36 **6 Claims**



1. A bale alignment device for a bale wagon having a table for receiving a plurality of bales thereon in a row prior to transfer to a tier forming means and means for transferring bales from said table to said tier forming means, said bale alignment device, comprising:

means for conveying the bales along said table from a bale receiving end thereof;

means for determining when the first bale received on said

table reaches a predetermined point remote from said bale receiving end; and

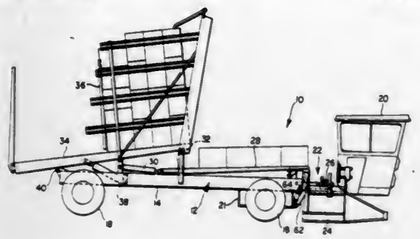
means responsive to the overall length of the row of bales when the first bale reaches said predetermined point for reversing said conveying means to reposition the last bale on said table toward said bale receiving end when a short row is encountered.

4,204,792

BALE ALIGNMENT MECHANISM ACTUATING DEVICE

Edward J. Wynn, Leola, and Cal L. Bryant, Lancaster, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 14, 1978, Ser. No. 933,243
Int. Cl.[2] B65G 57/32
U.S. Cl. 414—36 **11 Claims**



1. An actuating device for the bale alignment mechanism of a bale wagon table, comprising:

a lever positioned at the bale receiving end of the table and having a portion lying in the path of any bales of the table;

said lever having means associated therewith for permitting said lever to be displaced from a rest position when contacted by a bale and for returning said lever to said rest position when the bale is removed;

an electrical sensor having a first position and a second position;

sensor actuating means for placing said sensor in said first position when said lever is displaced from said rest position and for placing said sensor in said second position when said lever is in said rest position, one of said sensor actuating means and said sensor being mounted in a fixed location adjacent said lever and the other of said sensor actuating means and said sensor being attached to said lever; and

electrical means interconnecting said sensor with the table transfer mechanism for permitting operation of the transfer mechanism when said sensor is in said first position and for preventing operation of the transfer mechanism and reversing the table conveyor when said sensor is in said second position.

4,204,793

DEVICE FOR HANDLING CONTAINERS

Pierre H. Lemaire, 5, Ave. des Frenes, Vaux-le-Penil, 77000 Melun, Paris, France

Filed May 15, 1978, Ser. No. 905,746
Claims priority, application France, May 16, 1978, 77 14844
Int. Cl.[2] B60P 1/48
U.S. Cl. 414—421 **11 Claims**

1. A device mounted on a frame supported by cross members mounted on a vehicle, for (i) handling a container from the rear of the vehicle with prehension of the container by the front end thereof, (ii) discharging said container from the vehicle, and (iii) inclining the container mounted on the vehicle in order to discharge the contents thereof, said device comprising:

a horizontal transverse rear shaft located at the rear of the vehicle and supported by the frame;

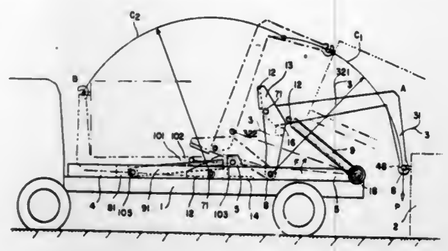
a tipping chassis having a rear end pivotably mounted on said rear shaft;

a horizontal transverse coupling shaft mounted on said tipping chassis forward of and parallel to said rear shaft;

an articulated handling gantry pivotably mounted on said coupling shaft, said gantry comprising pivotably interconnected upper and lower arms forming in one position thereof a rectangular angle bracket,

said upper arm having a free end comprising a prehension member,

said lower arm comprising an upper boom coupled to and



supporting said upper arm, and a lower boom having a first part hinged to and supporting said upper boom, and a second part mounted to said coupling shaft; and

at least one hydraulic handling jack for causing said free end of said upper arm to move bi-directionally between the front and rear ends of the vehicle frame,

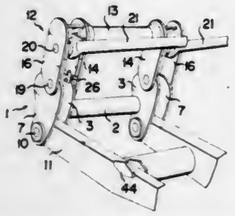
said hydraulic handling jack being pivotably mounted at a front end thereof, to a point located on the upper boom of the gantry lower arm, and at a rear end thereof to said rear shaft.

4,204,794

APPARATUS FOR ATTACHING IMPLEMENT TO EARTH MOVING VEHICLE

Norihiro Aoshiba, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jul. 18, 1977, Ser. No. 816,706
Int. Cl.[2] E02F 3/81
U.S. Cl. 414—723 **6 Claims**



1. An apparatus for attaching an implement to an earth moving vehicle, said implement having a C-shaped hook formed on a rear surface thereof, the apparatus comprising:

a pair of lift arms for lifting the implement;

a pair of tilt rods for effecting tilting motion of the implement;

a pair of lower couplers pivotally connected to said lift arms at one end thereof;

a pair of upper couplers pivotally connected to said tilt rods, said lower and upper couplers being pivotally connected with each other;

an upper connecting beam provided between said pair of upper couplers for connecting said upper couplers;

a lower connecting beam provided between said pair of lower couplers for connecting said lower couplers, said upper and lower connecting beams being adapted to engage with the C-shaped hook formed on the rear surface of the implement; and

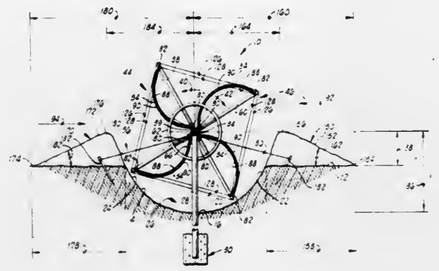
lock means comprising a first means on one of said upper or lower couplers for engaging second means on the corresponding other of said upper or lower couplers, said locking means automatically locking said lower couplers relative to said upper couplers thereby preventing pivotal movement with each other when said upper and lower connecting beams are engaged in said C-shaped hooks while allowing pivotal movement of said lower couplers relative to said upper couplers, when in an unlocked state.

4,204,795

WIND COLLECTING METHOD AND APPARATUS

William J. Forrest, 2808 NW. 56th, Oklahoma City, Okla. 73112

Filed Sep. 21, 1977, Ser. No. 835,184
Int. Cl.[2] F03D 3/06
U.S. Cl. 415—2 **12 Claims**



1. A wind collecting apparatus, comprising:

a shaft;

means for journally supporting the shaft for rotation about an axis of rotation; and

at least one blade, each blade having a first side, a second side, a first end, a second end, a first surface extending generally between the first and second ends and generally between the first and second sides, and a second surface extending generally between the first and second ends and generally between the first and second sides, the first end of the blade being connected to the shaft and the blade extending axially along a portion of the length of the shaft generally between the opposite ends of the shaft, the second surfaces of the blade each extend a distance radially from the shaft and a distance axially along the length of the shaft generally between the opposite ends of the shaft, wind moving generally in one direction impacting against the first surface of the blade tending to move the blade in one direction for rotating the shaft in the first direction and wind moving generally in an opposite direction impacting against the second surface of the blade tending to move the blade in an opposite direction for rotating the shaft in the second direction, each blade comprising:

a base constructed of a flexible material having a first side forming the first side of the blade, a second side forming the second side of the blade, a first end forming the first end of the blade, a second end forming the second end of the blade, a first surface forming the first surface of the blade and a second surface forming the second surface of the blade;

a first mesh screen having a plurality of spaced apart wires extending in one direction and a plurality of spaced apart wires extending in a generally transverse direction, the wires extending in one direction being connected to adjacent portions of the wires extending in the transverse direction to form a meshlike screen, the first mesh screen being disposed on the first surface of the base and extending over a substantial portion of the first surface of the base, the first mesh screen enhancing the structural integrity of the blade; and

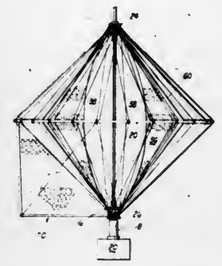
a second mesh screen having a plurality of spaced apart wires extending in a generally transverse direction, the wires extending in the one direction being connected to adjacent portions of the wires extending in the transverse direction to form a mesh like screen, the second mesh being disposed on the second surface of the base and extending over a substantial portion of the second surface of the base, the second mesh screen cooperating with the first mesh screen for enhancing the structural integrity of the blade.

4,204,796

WIND POWERED APPARATUS

Howard Pack, Jr., 817 S. Post Rd., Midwest City, Okla. 73130

Filed Sep. 20, 1978, Ser. No. 943,935
Int. Cl.[2] F03D 3/04
U.S. Cl. 415—2 **17 Claims**



1. A wind powered apparatus comprising:

an external wind shielding shroud including

an upper half of semi-conical configuration and

a lower half of semi-conical configuration abutting said upper half in base-to-base relation;

each of the shroud halves including a plurality of generally triangularly shaped overlapping vanes having air escape spaces provided between the overlapped edges thereof;

a rotor disposed partially within the shroud and including a plurality of circumferentially spaced blades, each oriented in a plane intersecting the planes containing the other rotor vanes in a common line;

means supporting the rotor and shroud for rotation about a common rotational axis coincident with the line of intersection of said planes; and

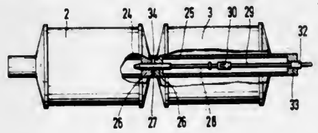
stabilizer means secured to the shroud and projecting from the outer side thereof.

4,204,797

WARP BEAM ELEVATING AND TRANSPORT CARRIAGE FOR TWIN WARP BEAMS

Karl Röhrscheid, Willich, Fed. Rep. of Germany, assignor to System Schultheis GmbH & Co., Fulda, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,332
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722528
Int. Cl.[2] B62B 3/04
U.S. Cl. 414—458 **5 Claims**



1. A warp beam elevating and transport carriage for twin warp beams each having a central tube and ends, the carriage comprising an essentially horizontal rotatable shaft and gripper

arms mounted to the shaft and adapted to be lifted by rotation of the shaft and to engage the ends of the warp beams, which, when engaged, extend coaxially aligned parallel to the shaft at a distance therefrom, the carriage further comprising a connecting plug bridging the gap between the adjacent ends of the central tubes of the twin warp beam and being guided in said adjacent ends and connected to an axially movable element disposed in one of the central tubes and projecting from this central tube at its other end, wherein one of the gripper arms engages the connecting plug of the central tubes in the gap between said adjacent ends thereof, said axially movable element comprises rod means, insertable into one of said central tubes through one of said other ends of said warp beams, for carrying said connecting plug, wherein the rod means comprises two rods separated by a link joint, said rod means further including means for blocking said link joint when the rods are in their straightly aligned position.

4,204,798

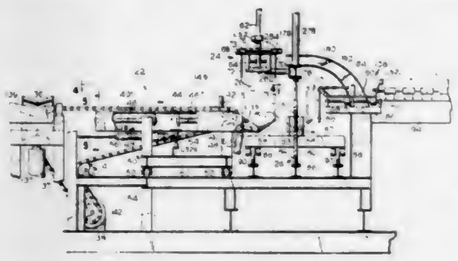
AUTOMATIC SAWMILL

Lyle D. Warren, 500 Birch St., Sweet Home, Oreg. 97386, and Robert W. Brewster, 5924 SE. McNary Rd., Milwaukie, Oreg. 97222

Division of Ser. No. 644,571, Dec. 29, 1975, Pat. No. 4,074,601, which is a division of Ser. No. 434,903, Jan. 21, 1974, Pat. No. 3,960,041, which is a division of Ser. No. 190,589, Oct. 19, 1971, Pat. No. 3,811,487. This application Oct. 31, 1977, Ser. No. 846,893

Int. Cl.[2] B27B *1/00*

U.S. Cl. 414—750 **15 Claims**



12. In a sawmill,
carriage means for receiving a log,
a pair of charger means operative in a direction toward and away from said carriage means for transporting said log to said carriage means,
means for measuring the diameter of said log,
and backstand means operated by said log for detecting the proper position of said log and for interrupting movement of said charger means,
including means for positioning said backstand means in accordance with the diameter of said log.

4,204,799

HORIZONTAL WIND POWERED REACTION TURBINE ELECTRICAL GENERATOR

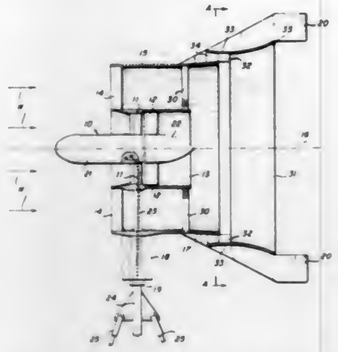
Arie M. de Geus, 6625 - 4th St. South, St. Petersburg, Fla. 33705

Filed Jul. 24, 1978, Ser. No. 927,046

Int. Cl.[2] F03D *1/04*

U.S. Cl. 415—2 **9 Claims**

1. A horizontal wind powered electrical generator comprising, a horizontal reaction turbine comprising overlapping curved stator blades and downwind reversely curved rotor blades disposed within a turbine cowling, an augmentor cowling surrounding said turbine and extending downwind thereof, first stage curved stator blades interconnecting said augmentor cowling with said turbine cowling; said augmentor cowling having a diameter of at least about 2.5 times the diameter of said rotor blades, secondary stator blades spaced downwind from said first stage stator blades and extending inwardly from said augmentor cowling to terminate short of the turbine cowling, said secondary stator blades having a greater angle of departure than said first stage stator blades to increase the rotational velocity of the air passing through the secondary stator blades at the expense of its axial velocity while permitting the air moving inwardly of the secondary stator blades to move with undiminished axial velocity, a venturi-structured diffusor carried by said augmentor cowling in a downwind position to lower the pressure generally and assist the action of the secondary stator blades, and means to pivot the composite structure to keep it facing into the wind.



4,204,800

MULTISTAGE SIDE CHANNEL COMPRESSOR

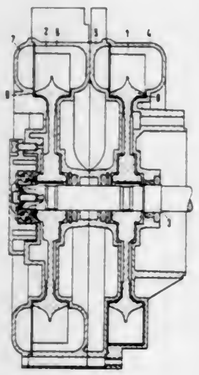
Benedikt Bentele, Bad Neustadt, and Gert Hecht, Bremen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,803

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721233

Int. Cl.[2] F04B *5/00*

U.S. Cl. 415—53 T **3 Claims**



1. In a side channel compressor comprising first and second compressor stages each including first and second housing halves arranged axially in side by side relationship, the second housing half of said first compressor stage and the first housing half of said second compressor being inner adjacently arranged housing halves, each of said inner housing halves having at least one inlet and one outlet opening for forming passages between said compressor stages, the improvement comprising:
said inlet and outlet openings of said inner housing halves being of the same shape and size;
each of said inner housing halves including sealing rims each arranged in surrounding relationship to one of said inlet and outlet openings of that housing half;
said second housing half of said first compressor stage having a further sealing rim arranged in the circumferential direction ahead of the outlet opening of that housing half, the center-to-center distance between said further sealing rim of said second housing half and the sealing rim surrounding the outlet opening of that housing half being equal to the center-to-center distance between the sealing rims surrounding the outlet and inlet openings of that housing half;
and said first housing half of said second compressor stage having a further sealing rim arranged in the circumferential direction behind the inlet opening of that housing half, the center-to-center distance between said further sealing rim of said first housing half and the sealing rim surrounding the inlet opening of that housing half being equal to the center-to-center distance between the sealing rims surrounding the outlet and inlet openings of that housing half.

4,204,801

SEWAGE PUMP ASSEMBLY

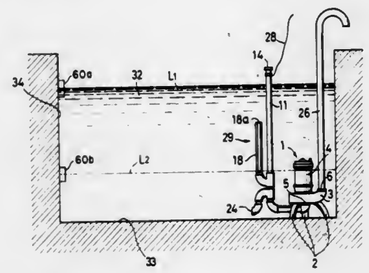
Yohichi Kamo, 3-4-10, Gohongi, Meguro-ku, Tokyo, Japan

Filed Dec. 27, 1977, Ser. No. 864,815

Claims priority, application Japan, Dec. 29, 1976, 51-178155[U]

Int. Cl.[2] F04D *29/70;* **F04B** *49/00*

U.S. Cl. 415—121 G **10 Claims**



1. A sewage pump assembly comprising:
(A) a sewage pump having an inlet port;
(B) a substantially vertical pipe connected to said inlet port of the sewage pump, and extending up to a predetermined level relative to said sewage pump, said vertical pipe having a first inlet opening directed upwardly at its top end, and a second inlet opening extending a predetermined length from said top end along said vertical pipe;
(C) discharge pipe means connected to said sewage pump for discharging pumped sewage;
(D) said second inlet opening having a bottom limit which is higher than the bottom of said sewage pump;
(E) connecting means having an inner diameter between said vertical pipe and said sewage pump for connecting therebetween;
(F) said second inlet opening being a substantially vertical slot in said vertical pipe; and
(G) said pipe second inlet extending upwardly and cooperating with said first inlet to form an uninterrupted common inlet therebetween.

4,204,802

SIDE CHANNEL COMPRESSOR

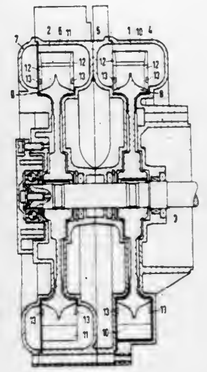
Siegfried Schönwald, and Norbert Schmid, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,557

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738208

Int. Cl.[2] F04D *5/00, 29/18*

U.S. Cl. 415—213 T **2 Claims**



1. In a side channel compressor, having blades arranged on a rotor said blades having a bevel on the back side at their lateral edges, the improvement comprising a slot-like recess at each blade edge in the entrance region of the blades.

4,204,803

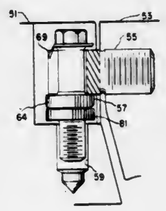
DIAPHRAGM SUPPORT

Donald R. Leger, Westminster; Peter P. Clifford, Leominster, and William N. Matson, Fitchburg, all of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 21, 1978, Ser. No. 926,799

Int. Cl.[2] F01D *25/24*

U.S. Cl. 415—219 R **1 Claim**



1. A support arrangement for supporting an annular diaphragm half into a turbomachine casing comprising:
at least two support lugs threaded into said diaphragm, one from each side of the machine axis centerline; said support lugs extending in a generally radial direction; each support lug having a bifurcated head section extending outwardly from said diaphragm;
at lease two adjusting bolts threaded into said turbomachine casing, one from each side of the machine axis centerline; said adjusting bolts each including an enlarged bearing platform and a cap portion having a reduced section there between, said reduced section for insertion into the bifurcated head section of its respective lug; and
a locking tab connected to each cap portion for engaging said bifurcated head section whereby said adjusting bolt is locked in place.

4,204,804

TURBOSET SUPPORT

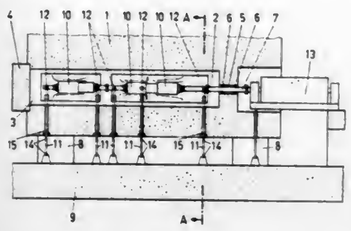
Andrew Woodger, Avondale, New Zealand, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 14, 1978, Ser. No. 877,656

Claims priority, application Switzerland, Mar. 21, 1977, 3483/77

Int. Cl.² F01D *25/28*

U.S. Cl. 415—219 R **8 Claims**



1. A turbine arrangement comprising:
a foundation;
a prestressed pressure vessel supported on the foundation;
a turboset located in the pressure vessel; and
means resting on the foundation and penetrating the pressure vessel in a gas-tight manner for propping the turboset, the propping means being adjustable in height and movable in an axial direction and having locating features for absorbing vertical and tengential motions independently of deformations of the pressure vessel.

4,204,805

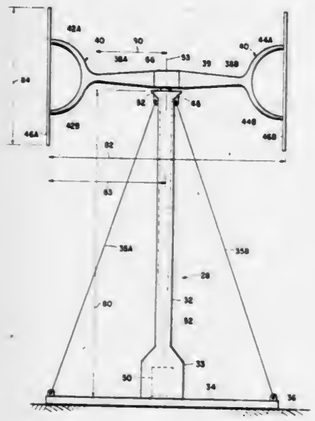
VERTICAL AXIS WIND TURBINE

Victor W. Bolie, 7504 American Heritage Dr., Northwest, Albuquerque, N. Mex. 87109

Filed Mar. 28, 1978, Ser. No. 890,998

Int. Cl.² F03D *7/06*

U.S. Cl. 416—119 **16 Claims**



1. A vertical axis wnd turbine, comprising;
(a) a tower structure of selected height H, supported on a base of diameter D, resting on the earth;
(b) a rotating structure having a central hub rotatable on bearing means at the top of said tower, and torque drive means extending from said hub means, down inside of said tower structure to energy control means on said base;
(c) at least two streamlined radial arms, circumferentially equally spaced, and equal in selected length L, extending in a horizontal plane, and wherein each arm is streamlined with its chord plane being horizontal;
(d) a high speed vertical airfoil of selected vertical extend E, attached to the outer end of each radial arm, each airfoil being identical, the chord plane of each airfoil perpendicular to the axis of the arm to which it is attached; and
(e) the outer end of each arm is attached to a U-shaped connector, the two fingers of the U-shaped connector being in a vertical plane, and attached to said vertical airfoil at points E/4 from each end;
whereby the inertial center, the aerodynamic center, and the support center are all at the center of rotation of said hub.

4,204,806

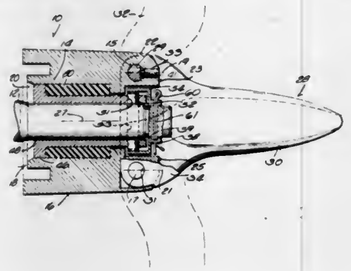
FOLDING PROPELLER

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 9, 1977, Ser. No. 859,052

Int. Cl.² B63H *1/24*

U.S. Cl. 416—134 R **4 Claims**



1. A foldable propeller assembly adapted for connection to a drive shaft comprising a propeller carrier having an open end portion defining an axially extending mounting socket for receiving the drive shaft and a hub end portion spaced from said open end portion and including a pair of longitudinally extending mounting shoulders oppositely spaced from the axis of rotation of said propeller carrier, a pair of propeller blades respectively pivotally mounted on said pair of mounting shoulders of said hub end portion for movement from a folded-together, collapsed position to a radially outwardly extending operative position in response to rotation of said propeller carrier and for movement from the operative position to the collapsed position in response to cessation of rotation of said propeller carrier, drive means for drivingly connecting said propeller carrier with the drive shaft for common rotation therewith, said drive means including a sleeve member having an axially extending bore for rotatably receiving the drive shaft, a drive pin engaged with and extending transversely of said sleeve member and adapted for engagement with the drive shaft to establish driving connection therebetween, and a resilient member interposed said mounting socket and said sleeve member for establishing driving connection between said sleeve member and said propeller carrier and for absorbing torque forces transmitted between said propeller carrier and the drive shaft, and retainer means located radially intermediate said pair of mounting shoulders and engageable with said drive pin for retaining said drive pin in engagement with said sleeve member and for preventing axially outward movement of said propeller assembly relative to the drive shaft.

4,204,807

RADIAL TURBINES

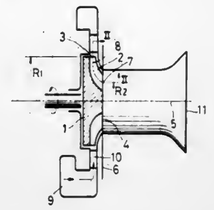
Masaaki Takizawa, Mishima, and Shoji Sasaki, Susono, both of Japan, assignors to Toyota Jidosha Kigyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 16, 1978, Ser. No. 887,356

Claims priority, application Japan, Mar. 23, 1977, 52-32463

Int. Cl.² F01D *1/08, 5/04*

U.S. Cl. 416—188 **4 Claims**



1. A radial turbine having a turbine blade, the angle of rake of which, relative to a turbine exit surface, perpendicular to the axis of the turbine, at a radius R_2 from the axis of the turbine at the exit portion, and β_2 and is obtained by the following formula:

$$\beta_2 = \tan^{-1}(W_{2a}/W_{2u}),$$

wherein

$$W_{2u} = U_2 - C_{2u} \text{ and } W_{2a} = \sqrt{W_2^2 - W_{2u}^2}$$

in which,

W_{2u} and W_{2a} are peripheral and axial components respectively of W_2, which is the velocity of combustion gas relative to the turbine rotor at the circular surface including said radius R_2 at a designated rotor velocity, and,

$$W_2^2 = \psi_2^2 [W_1^2 - U_1^2 + U_2^2 + 2gJC_pT_1(1 - (\frac{P_2}{P_1})^{\frac{\gamma-1}{\gamma}})],$$

in which,

$$\psi_2 = A + B(\frac{R_2}{R_1}) + C(\frac{R_2}{R_1})^2,$$

A, B and C are coefficients,
R_1 = the distance of a turbine entrance portion from the axis of the turbine;
R_2 = the distance between the axis of the turbine and an intersecting point of the turbine exit surface and a cross-section of the turbine blade along a designated line of flow of the combustion gas flowing through a space between two adjacent turbine blades;
W_1 = the relative velocity between the combustion gas and the turbine rotor at the turbine entrance portion and at the designated rotor velocity;
U_1 = the peripheral velocity of the turbine rotor at the turbine entrance portion and at the designated rotor velocity;
U_2 = the peripheral velocity of the turbine rotor at the radius R_2 on the turbine exit surface and at the designated rotor velocity;
g = gravitational acceleration;
J = heat equivalent of work;
C_p = specific heat at constant pressure of the combustion gas;
P_1 = the pressure of the combustion gas at the turbine entrance portion and at the designated rotor velocity;
T_1 = the absolute temperature of the combustion gas at the turbine entrance portion and at the designated rotor velocity;
P_2 = the pressure of the combustion gas at the circular surface including said radius R_2 on the turbine exit surface and at the designated rotor velocity;
γ = the ratio of the specific heat at constant pressure of the combination gas to the specific heat at constant volume of the combustion gas.

4,204,808

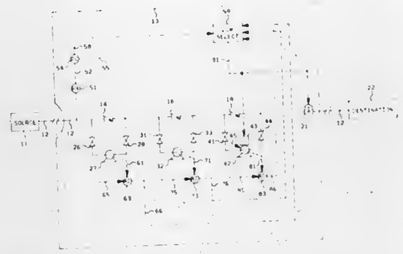
FLOW CONTROL

Herbert E. Reese, and Hadwen A. Clayton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 27, 1978, Ser. No. 900,636

Int. Cl.² F04B *49/00, 49/06*

U.S. Cl. 417—2 **17 Claims**



1. Apparatus comprising:
a primary pumping means having a suction input and a discharge output;
a valve means;
means for connecting said discharge output to said valve means;
means for establishing a first signal which is a function of the pressure at said suction input, said first signal having a first range and a second range, where at least a part of the first range of said first signal is outside the second range of said first signal and at least a part of the second range of said first signal is outside the first range of said first signal;
means for varying the throughput of said primary pumping means in response to the first range of said first signal to maintain the pressure at said suction input within an acceptable range;
means for restricting the discharge through said valve means in response to the second range of said first signal to maintain the pressure at said suction input within an acceptable range, the first range and the second range of said first signal being selected in such a manner that said valve means will be generally fully open when said first signal is in the first range; and
means adapted to supply said first signal to said means for varying and to said means for restricting.

4,204,809

WIDE RANGE CONTROL FOR DELIVERY APPARATUS

Wilbur H. Frazel, Riverside, R.I., assignor to General Signal Corporation, Stamford, Conn.

Filed Dec. 14, 1977, Ser. No. 860,358

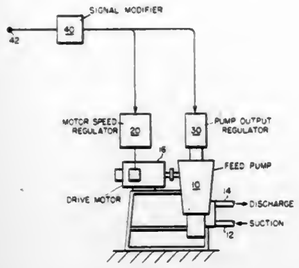
Int. Cl.² F04B *49/06, 49/00*

U.S. Cl. 417—15 **16 Claims**

1. An apparatus for delivering a substance to a desired point at a desired delivery rate comprising:
(a) delivery means, including a drive motor and a motor driven variable displacement pump, having at least two independent controls including a motor speed control and a pump displacement control, and operable for delivering the substance to the desired point at a delivery rate proportional to the product of the independent controls;
(b) regulating means operatively associated with said independent controls and responsive to a control signal for regulat-

ing each independent control in proportion to said control signal;

(c) means for providing an input signal indicative of the desired delivery rate; and



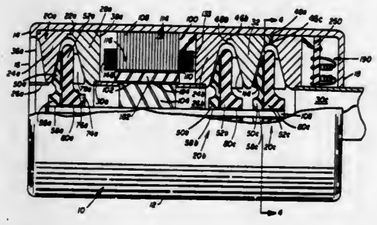
(d) means for modifying said input signal to derive a single, exponential control signal and simultaneously communicating said exponential control signal to said regulating means whereby said delivery means is operated at the desired delivery rate that is linearly proportional to said input signal and a wide range control of said delivery means is affected.

4,204,810

BI-DIRECTIONAL PUMP

John D. Vogel, Parma, Ohio, assignor to Tokheim Corporation, Fort Wayne, Ind.

Filed Nov. 3, 1976, Ser. No. 738,589
Int. Cl.² F04D *1/08*; F01D *9/02*; H02K *3/18, 3/52*
U.S. Cl. 417—244 **45 Claims**



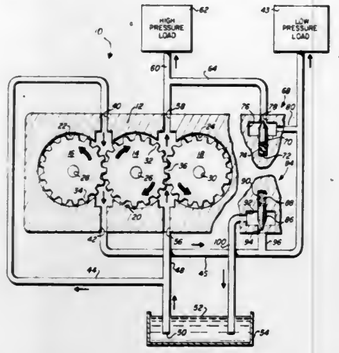
1. A pump comprising a pump housing, said housing having opposite ends, an inlet in one of said housing ends, an outlet in the other of said housing ends, an impeller and a baffle plate within said housing, said impeller being between said inlet and said baffle plate, said baffle plate being between said outlet and said impeller, a shaft extending through said impeller, said shaft having one end thereof journaled in said plate, said impeller being mounted on said shaft for rotation in said housing with said shaft, means for connecting said baffle plate to said housing and spacing said baffle plate from said housing, said connecting and spacing means and baffle plate including means for changing the rotary motion of the fluid leaving said impeller into radially inwardly flow between said baffle plate and said outlet, said impeller being also spaced from said housing, whereby fluid flows into said inlet and engages said impeller adjacent the center thereof and flows radially outwardly of said impeller and over the periphery of and radially inwardly of said baffle plate and into said outlet, said baffle plate having opposite sides, one side thereof facing said impeller, the other side thereof facing said other housing end and said outlet, said changing means including a plurality of vanes extending from adjacent to said shaft radially outwardly therefrom, said vanes being positioned between said baffle plate and said other housing end, said vanes between said baffle plate and said other housing end being integral with said baffle plate, and said connecting and spacing means including slots in said housing and portions of said vanes positioned in said slots.

4,204,811

FLUID PUMPING SYSTEM

William L. Carter, Scottsdale; Jack F. Greathouse, and Philip T. Zellinger, both of Tempe, all of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 19, 1977, Ser. No. 826,090
Int. Cl.² F04B *47/08*
U.S. Cl. 417—288 **19 Claims**



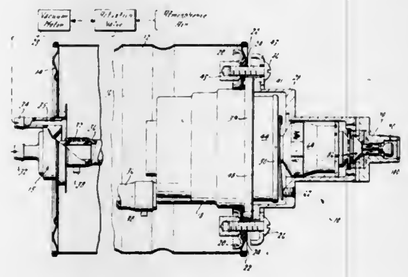
1. A fluid pumping system comprising pumping means for pumping fluid from a fluid supply through a first outlet and a second outlet; a relatively high pressure fluid load coupled to said first outlet; a relatively low pressure fluid load coupled to said second outlet; conduit means for providing a flow path between said first outlet and second outlet; and valve means for controllably opening and closing said conduit means to fluid flow in response to the fluid pressure level in said first outlet to controllably relieve a portion of the fluid flow in said first outlet through said conduit means to supplement the fluid flow in said second outlet and prevent the pressure level in said first outlet from exceeding a predetermined level.

4,204,812

VACUUM SYSTEM

William L. Sheppard, Romulus, Mich., assignor to AVM Corporation, Jamestown, N.Y.

Filed Feb. 22, 1978, Ser. No. 880,285
Int. Cl.² F04B *45/00*; F01L *21/04*
U.S. Cl. 417—395 **23 Claims**



1. A vacuum device, comprising:

a pump housing having a first inlet adapted to be placed in fluid communication with a source of compressed air and a second inlet adapted to be placed in fluid communication with a vacuum actuated load;

a piston in said pump housing arranged to be powered in a power stroke direction by compressed air supplied to said first inlet, said piston defining a pumping chamber in said housing between said piston and said second inlet;

a return spring biasing said piston in the opposite return stroke direction,

said piston and spring being arranged so that said spring biases said piston in a direction to cause it to draw air into said pumping chamber through said second inlet; and

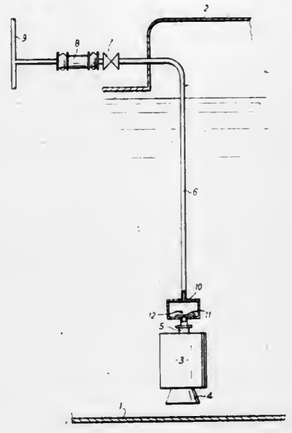
means responsive to the position of said piston to assist said return spring in completing the return stroke of said piston as it approaches the end thereof.

4,204,813

LNG PUMP ANTI-SLAM DEVICE

Edmund G. Tornay, New York, N.Y., assignor to Energy Transportation Group, Incorporated, New York, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,086
Int. Cl.² F04B *21/00, 39/00*
U.S. Cl. 417—435 **4 Claims**



1. In an apparatus for pumping liquefied gas from a container to a receptacle, of the kind including a pump having an inlet and an outlet and with its inlet communicating with the interior of the container, a riser pipe having its lower end communicating with the outlet of the pump, and an openable and closable stop valve interposed between the upper end of the riser pipe and the receptacle, the improvement which comprises flow restrictor means interposed between said lower end of the riser pipe and the outlet of the pump, said flow restrictor means having a first condition of operation in which reverse flow from the riser pipe to the pump is permitted in restricted manner, said flow restrictor means having a second condition of operation in which flow from the pump to the riser pipe is permitted in unrestricted manner.

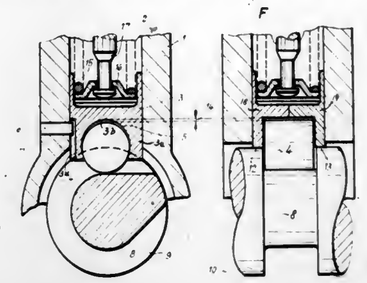
4,204,814

FUEL INJECTION PUMP WITH ROLLER SHAFT FOR INTERNAL COMBUSTION ENGINES

Max Matzen, Leverkusen, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,753
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712450
Int. Cl.² F04B *39/00*; F16H *53/06*
U.S. Cl. 417—437 **5 Claims**

1. A fuel injection pump for internal combustion engines, which includes: a pump housing, having a bore, a pump shaft reciprocably mounted in said bore, a camshaft having two axially spaced shoulders, a cam provided between said shoulders, a roller shaft having one end thereof facing said cam provided with two legs defining a recess with a curved inner surface, and a roller with a cylindrical peripheral surface, said roller being rotatably arranged in said recess and protruding therefrom while being in rolling engagement with said cam, the curvature of said curved surface corresponding to the curvature of said cylindrical peripheral surface of said roller, the arrangement being such that in the lower dead center position of said camshaft that portion of said recess surface which is remote from and opposite the contacting area of said roller with said cam describes with said recess surface a crescent shaped gap adapted to receive lubricant while in said lower dead center position the free ends of said legs rest upon said axially spaced sections thereby relieving said roller from pressure acting upon said roller shaft in the direction toward said cam.

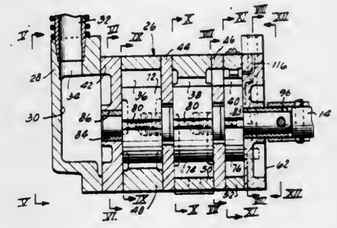


4,204,815

CARTRIDGE ROTARY VANE PUMP

Joseph A. Le Blanc, Glen Ellyn, Ill., assignor to Gast Manufacturing Corporation, Benton Harbor, Mich.

Filed Dec. 6, 1977, Ser. No. 858,017
Int. Cl.² F04C *27/02, 23/00*
U.S. Cl. 418—13 **11 Claims**



2. In a rotary vane pump of the type in which a plurality of serially-connected vane carrying rotors are rotatably mounted in a plurality of fluid-connected pumping chambers and in which there is a pump fluid inlet, a pump fluid outlet and a rotary input to the series of rotors, the improvement wherein:

each of said rotors is directly connected to each adjacent rotor, whereby the conventional rotor shaft is eliminated,

each of said rotors includes at least one axially-threaded portion for threaded engagement with a complementary axially-threaded portion of an adjacent rotor, and

at least one spacer integral with one of said adjacent rotors to provide a predetermined axial spacing of said rotors.

4,204,816

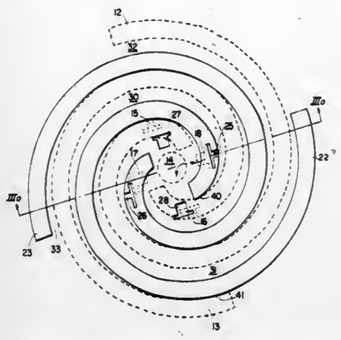
DISCHARGE AND PRESSURE RELIEF PORTS FOR MECHANISMS WITH INVOLUTE SHAPED VANES

Thomas W. Beln, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 8, 1978, Ser. No. 940,528
Int. Cl.² F04C *1/02, 15/02*
U.S. Cl. 418—15 **8 Claims**

1. In a positive displacement fluid pump including oppositely disposed interfitting stationary and orbiting members having

end plates with scroll vanes affixed thereto, wherein said stationary member includes a main discharge port for the pump and said orbiting member is driven to orbit with respect to said stationary member so that adjacent interfitting vanes of said opposing members make moving line contacts therebetween to close off and define a moving, fluid pocket of variable volume moving toward said main discharge port and having a normal discharge port defined by the discharge end portion of the respective orbiting and stationary vanes, the improvement comprising:



pressure relief means for discharging the fluid in said pocket to said main discharge port through a discharge channel as said pocket approaches closure to prevent overpressurization of the fluid in said closed pocket and for terminating the flow of fluid through said discharge channel as said discharge end portion of a selected orbiting vane moves toward said main discharge port and draws apart from the corresponding stationary vane to form said normal discharge port and to open the discharge portion of said pocket into fluid communication with said main discharge port.

4,204,817

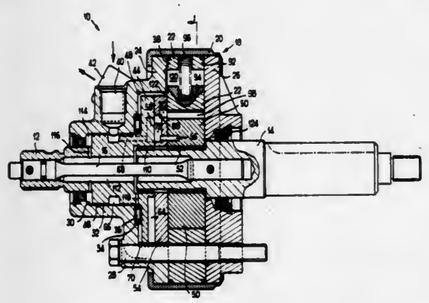
TORQUE-AMPLIFYING HYDRAULIC SERVO-MECHANISM, PARTICULARLY FOR POWER STEERING SYSTEMS IN MOTOR VEHICLES

Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Dec. 26, 1978, Ser. No. 973,496

Int. Cl.² F01C *1/00*

U.S. Cl. 418—248 **6 Claims**



1. A torque-amplifying hydraulic servo-mechanism, particularly for power steering systems in motor vehicles, of the kind including a rotary hydraulic motor and a hydraulic distributor mounted coaxially within a common closed casing, an input shaft connected to a component of the hydraulic distributor, an output shaft connected to the rotary component of the hydraulic motor, and a resilient coupling disposed between the shafts in order to produce a feedback torque on the input shaft so as to indicate the amplified torque delivered to the output shaft, the hydraulic distributor being of the "open centre" kind and controlling the distribution of pressure fluid in the working chambers of the hydraulic motor so as to actuate it in one or the other direction when, and depending on the direction in which, the input shaft is moved through an angle with respect to the output shaft, and the hydraulic motor being of the sliding vane type and comprising two coaxial components namely a stator of cylindrical shape which bears angularly equidistant radially sliding vanes and a rotor whose non-circular shape is designed so as to define with said stator and said vanes a number of variable volume working chambers, characterized in that the shape of the rotor (**50**) of the hydraulic motor comprises at least two angularly equidistant cylindrical surfaces (**90**) in contact with the stator bore and each extending over an arc substantially equal to that between two adjacent vanes, these surfaces being interconnected by portions of contour each having two flat or slightly curved faces (**106, 108**) interconnected by a cylindrical surface portion (**104**) and bounding a corresponding number of separate compartments with the stator bore, and in that the number of vanes (**94**) is four times the number of said surfaces (**90**) and portions of rotor contour so as to subdivide each compartment, depending on the position of the rotor, either into four working chambers (**98, 98, 100, 100**) the first two of which can be supplied with high-pressure fluid and the last two with low-pressure fluid or vice versa by actuating the distributor, or into three working chambers (**98, 102, 100**) the first of which can be supplied with high-pressure fluid and the last with low-pressure fluid or vice versa by operating the distributor, whereas the central chamber (**102**) is at an intermediate pressure.

4,204,818

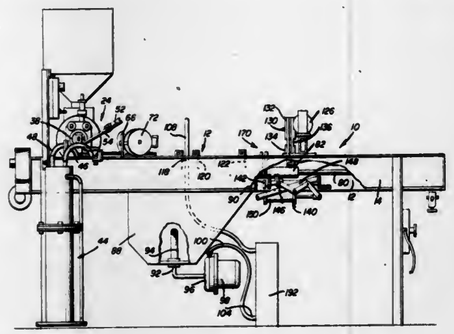
APPARATUS FOR PRODUCING A SPIRALLY WOUND PLASTIC ARTICLE

Donald J. Reum, P.O. Box B, Albany, Minn. 56307

Division of Ser. No. 755,079, Dec. 28, 1976, Pat. No. 4,120,929. This application Sep. 18, 1978, Ser. No. 943,185

Int. Cl.² B29C *17/00*

U.S. Cl. 425—66 **8 Claims**



1. In combination, an assembly for spirally winding a heated thermoplastic strip, a rotary cylindrical member driven at a predetermined speed and partially submerged in a lubricant-coolant bath, means operative to guide a continuous heated strip tangentially toward one end of said cylindrical member, cooled surface guide means adjacent said cylindrical member for selective surface contact cooling of said strip during its movement toward said cylindrical member, stationary continuous multi-convolution spiral guide means defining a stationary spiral guide path between adjacent convolutions of said guide means and concentric about, but spaced from, said cylindrical member and extending from said one end toward the other end of said cylindrical member and with said path including opposite open sides opening radially inwardly toward and radially outwardly away from the outer surface of said cylindrical member, said cylindrical member being adapted to have said strip loosely spiraled thereabout in spaced relation relative thereto between the convolutions of said guide means, and variable speed drive means for frictionally engaging and driving said strip at said other end of said cylindrical member from the latter, whereby the drive of the cooled and coiled strip from said other end of said cylindrical member may be transmitted back along the cooled strip coiled about said cylindrical members and serve, together with the tangential feed of said ribbon toward said one end of said cylindrical member to cause the strip, closely adjacent said cylindrical member, to be curved thereabout at least substantially independent of direct contact with said cylindrical member.

4,204,819

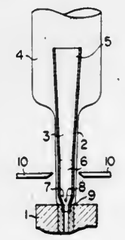
SHAPING APPARATUS FOR TUBULAR FILM

Katsuyoshi Ushioda, Tokyo, and Fumio Imaizumi, Chibaken, both of Japan, assignors to Idemitsu Petrochemical Co. Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 884,079

Int. Cl.² B29D *7/22*

U.S. Cl. 425—72 R **2 Claims**



1. An apparatus for shaping olefinic polymer synthetic resins into a tubular film by melt-extrusion into a funnel-like form according to an air-cooling inflation process, said apparatus comprising:

(i) an extrusion die having a circumferential opening through which the resin melt may be extruded, and

(ii) an elongated film stabilizing means extending coaxially upwardly from and connected with the top of said extrusion die, said elongated film stabilizing means comprising

(a) a first section having a bottom end and a top end, and an intermediate wall portion extending between said bottom and top ends,

(b) a second section having a bottom end and a top end and an intermediate wall portion extending between said bottom and top ends in an upwardly diverging direction, said first and second sections being further characterized by the fact that

(1) said second section is positioned above said first section and is joined thereto,

(2) the angle of divergence of the wall portion of said second section being in the range of about 2° to about 15° with the central axis of said elongated film stabilizing means,

(3) the vertical height of said second section being greater than the vertical height of said first section,

(4) the bottom end of said second section has an outer diameter which is nearly the same as the inside diameter of said circumferential opening in said extrusion die,

(5) said first section having a plurality of laterally extending holes located at spaced apart intervals around its circumference,

(6) said first section having a bottom end diameter that is smaller than the inside diameter of said circumferential opening of said extrusion die,

(7) the top end of said second section being open whereby when a tubular plastic film is extruded upwardly through the circumferential opening of said extrusion die a descending flow of pressurized air is formed that passes downwardly through said open top end of said second section and laterally outwardly through said plurality of holes in said first section, and vertically upwardly between the exterior surfaces of said first and second sections and the interior of the freshly extruded tubular film.

4,204,820

SLAB FORMING CONVEYING LINE

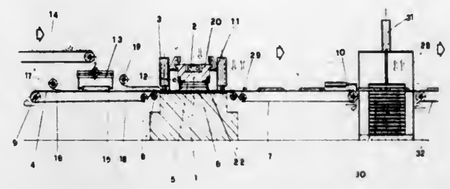
Marcello Toncelli, Via Giovanni XXIII, 2 - Bassano del Grappa (Vicenza), Italy

Filed Jan. 30, 1978, Ser. No. 873,144

Claims priority, application Italy, Apr. 22, 1977, 85564 A/77

Int. Cl.² B28B *3/02*

U.S. Cl. 425—89 **6 Claims**



1. An apparatus for the production of resin bonded grit slabs, which comprises means for mixing grit and resin in a predetermined ratio of grit to resin to form a mix, dispensing means for dispensing the mix, conveying means for the mix, means for stretching a first cardboard sheet on said conveying means, said dispensing means depositing said mix onto said first cardboard sheet, means for superimposing a second cardboard sheet on the mix deposited on said first cardboard sheet, whereby the mix is shaped into a slab, a press for compressing the slab, said conveying means conveying said slab into said press, means for maintaining a vacuum and for vibrating said slab in said press, cutting means for cutting the first and second cardboard sheets, oven means for heating the slab, said conveying means conveying said slab successively from said press to said means for cutting the first and second cardboard sheets, then to said oven means.

4,204,821

PROCESS AND APPARATUS FOR THE EXTRUSION OF COATED SKEIN-SHAPED PROFILES, PREFERABLY OF THERMOPLASTIC SYNTHETIC RESINS

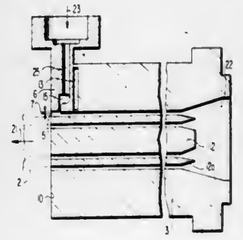
Peter Gauchel, Alzenbach, and Waldemar Wissinger, Siegburg, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 24, 1973, Ser. No. 399,982

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1972, 2246679

Int. Cl.² B29F *3/04*

U.S. Cl. 425—131.1 **12 Claims**



1. An extrusion device for the extrusion of elongated profiled members made of thermoplastic synthetic resins which

are simultaneously provided with at least one thermoplastic coating of a synthetic resin over at least a portion of their circumferences, said device comprising a primary extruder means for extruding a primary thermoplastic material in the form of an elongated profiled member through an orifice of a main die, at least one accessory extruder means having at least one auxiliary die for extruding at least one coating of a secondary thermoplastic material, said accessory extruder means being disposed closely adjacent to the main die of said primary extruder whereby said at least one coating is continuously extruded onto said member while said member is still within the plastic temperature range, said at least one auxiliary die having an adjustable outlet slot and a distribution zone preceding said outlet slot for effecting distribution of the secondary thermoplastic material for forming a coating, and plate means for adjusting the size of said slot whereby the thickness of the coating applied via said outlet slot can be regulated, said plate means comprising a metal plate insertable into said at least one accessory extruder means, said metal plate having a cutout portion that defines a portion of said distribution zone and also defines said outlet slot.

4,204,822

MOULDING MACHINE

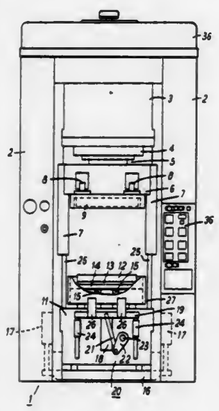
Malcolm Hewitt, Aldridge, England, assignor to British Industrial Plastics Ltd., West Midlands, England

Continuation-in-part of Ser. No. 847,184, Oct. 31, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 952,032

Claims priority, application United Kingdom, Aug. 24, 1977, 35479/77

Int. Cl.² B30B *15/00*

U.S. Cl. 425—210 **13 Claims**



8. In a compression moulding press having fixed and moving platen means for receiving and supporting the halves of a moulding tool therebetween, the improvement comprising a shroud member mounted for sliding movement around and in sealing relation to one of said tool halves towards and into sealing engagement with the other of said tool halves thereby to define with said tool halves when closed together a substantially closed chamber enclosing said moulding tool, together with actuating means operable to slide said shroud, one of said tool halves having a continuous peripheral piston seal disposed thereon to effect said sealing relation and means operable to at least partially evacuate said closed chamber when so defined.

4,204,823

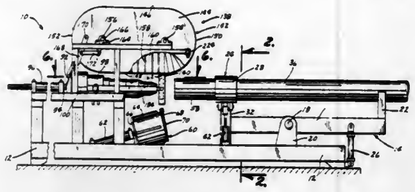
INPLACE GASKET BELLING MACHINE

Fay A. Hayes, 242 NW. 12th Ave., Boca Raton, Fla. 33432, and Leonard L. Hayes, 1906-10th Ave., Lewiston, Id. 83501

Division of Ser. No. 902,443, May 3, 1978. This application Mar. 19, 1979, Ser. No. 21,583

Int. Cl.² B29C *17/00*; B29D *23/00*

U.S. Cl. 425—393 **3 Claims**



1. An inplace gasket belling machine comprising a heating bell,

means for supporting said heating bell on said machine for movement toward and onto one end portion of a pipe for heating the same,

an elongated belling mandrel,

means for supporting said belling mandrel on the machine in spaced-apart relation from said heating bell for longitudinal movement toward and into said one end portion of a pipe for belling the same, and

a tilt clamp fixture on said machine for supporting a pipe for pivotal movement between a heating position wherein said heating bell is received on said one end portion and a belling position wherein said mandrel is received within said one end portion.

4,204,824

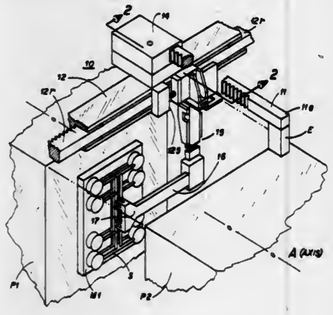
CONTROLLED REMOVAL OF MOLDED PARTS

Joseph R. Paradis, 60 Plymouth Rd., Holden, Mass. 01520

Filed Jul. 24, 1978, Ser. No. 927,146

Int. Cl.² B29F *1/14*; B29C *7/00*

U.S. Cl. 425—436 R **12 Claims**



1. A removal mechanism for use with a molding machine comprising

a removal member;

an actuator for said removal member;

a fixed stop at a prescribed position relative to the molding machine for said removal member;

a slippable clutch;

means operated by the opening and closing of said molding machine for operating said actuator through said slippable clutch to achieve precise positioning of said removal member with respect to the mold of said machine independently of variations in the opening and closing of said machine.

4,204,825

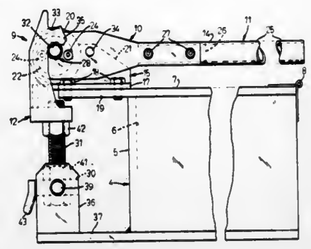
FOAM MOLD CLAMP ASSEMBLY

Robert L. Furnas, Wautoma, Wis., assignor to Milsco Manufacturing Company, Brown Deer, Wis.

Filed May 18, 1979, Ser. No. 40,175

Int. Cl.² B29C *1/00*

U.S. Cl. 425—451.9 **7 Claims**



1. In a mold having an upper mold member that is swingable relative to a lower mold member about a hinge at one side of the mold, manually actuatable mechanism by which the upper mold member can be releasably clamped in a closed position overlying the lower mold member and can be moved out of said closed position against a force that tends to maintain it therein, said mechanism comprising:

A. an elongated handle having at one end portion thereof a pivotal connection with said upper mold member at a location on the upper mold member that is spaced from said hinge, said pivotal connection enabling the opposite end portion of said handle to swing about the axis of said connection so that it can move from a clamping position in which the handle overlies the upper mold member to and beyond an intermediate position in which the handle projects away from the upper mold member;

B. a reaction member secured to the lower mold member and having a portion which is upwardly adjacent to said one end portion of the handle when the upper mold member is in its closed position, said portion of the reaction member having

(1) a downwardly facing camming reaction surface and

(2) an upwardly facing fulcrum reaction surface;

C. a cam element on said one end portion of the handle, said cam element being eccentric to said axis and being cooperable with said camming reaction surface to clamp the upper mold member in its closed position upon swinging of the handle to its clamping position; and

D. abutment means on the handle, between said axis and said opposite end portion of the handle, said abutment means being located to engage said fulcrum reaction surface upon swinging of the handle from its clamping position to its intermediate position, so that the handle is fulcrummed as a lever whereby force that swings it further away from its clamping position is applied to moving the upper mold member out of its closed position.

4,204,826

BLOW MOLDING APPARATUS

Johannes Mehnert, Ernststrasse 11, 5203 St. Augustin-Menden, Fed. Rep. of Germany

Continuation of Ser. No. 761,362, Jan. 21, 1977, abandoned, which is a continuation of Ser. No. 647,964, Jan. 9, 1975, abandoned, which is a division of Ser. No. 498,362, Aug. 19, 1974, Pat. No. 3,947,197. This application Feb. 27, 1978, Ser. No. 881,185

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1973, 2342134

Int. Cl.² B29C *17/07*

U.S. Cl. 425—525 **3 Claims**

1. Apparatus for forming a hollow body of thermoplastic material, which body is symmetrical and has a threaded neck, comprising:

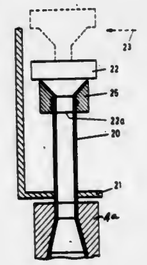
(a) a machine frame,

(b) a blow mandrel having a central longitudinal axis and being mounted on said machine frame for movement along said axis and for movement laterally of said axis between a first position and a second position,

(c) a preforming station mounted on said frame spaced from and in axial alignment with said blow mandrel when it is in said first position, said station including means for applying a preform body of soft thermoplastic material to a blow mandrel within the station,

(d) means for moving said blow mandrel along said axis from said first position into said preforming station for application of a preform body of thermoplastic material and out of said preforming station back to said first position with the preform body attached to said mandrel and extending from said preforming station,

(e) a two-part muzzle tool, the parts of said muzzle tool being individually movable laterally of said axis from a first position in which said parts are spaced and located on opposite sides of said mandrel to a second position in which said parts are united about said mandrel for cooperating with said mandrel to form a head which is effective to form a threaded neck of a preform body of thermoplastic material on said mandrel, the parts of said muzzle tool



being movable with said mandrel along said axis to said first position,

(f) severing means located between said preforming station and said blow mandrel when it is spaced from said preforming station for severing a preform body of thermoplastic material extending from said mandrel to said preforming station,

(g) means for moving said mandrel with the preform body from said first position to said second position,

(h) a molding station comprising a split mold mounted on said frame and spaced from said preforming station for receiving said mandrel with the preform body in said second position, said split mold having interior surfaces which form a cavity, means for moving the portions of said split mold together, said molding station including means for applying compressed air to the blow mandrel for expanding the preform body into conformity with the surfaces forming said cavity, thereby forming a hollow body of thermoplastic material,

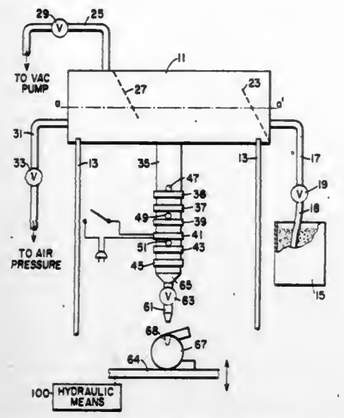
(i) means for removing said blow mandrel axially from said molding station, thereby leaving the body of thermoplastic material in said split mold, and

(j) a compressed air-feeding member, including means for attachment over said split mold, said member serving to supply retaining and cooling air into the interior of a hollow body of thermoplastic material with said split mold.

4,204,827
INJECTION MOLDING MACHINE

Ralph H. Romans, 1621 Roosevelt Rd., Owensboro, Ky. 42301

Filed Mar. 2, 1978, Ser. No. 882,608
Int. Cl.[2] B29F 3/08
U.S. Cl. 425—551 3 Claims



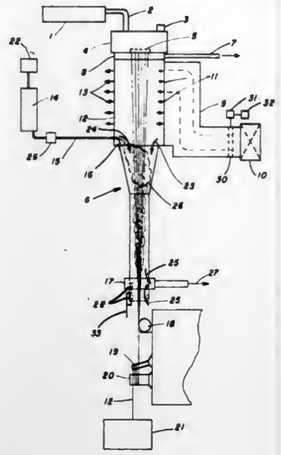
1. An injection molding machine, comprising:
(a) a supply of particulate plastic material,
(b) a tank supported in an elevated position relative said supply,
(c) vacuum means for evacuating said tank and for drawing a predetermined quantity of said material into said tank,
(d) a hollow heating cylinder connected to a nozzle and in communication with said tank, whereby a portion of said material can pass into said cylinder,
(e) air pressure means selectively applicable to said particulate material in said tank to force said particulate material through said heating cylinder to transform said particulate material into a molten viscous mass.
(f) an adjustable platen adapted to support a mold, and
(g) means to move said platen and said mold thereon into close proximity to said nozzle, the nozzle entering an opening in said mold, whereby said viscous mass is propelled by air pressure to fill said mold.

4,204,828
QUENCH SYSTEM FOR SYNTHETIC FIBERS USING FOG AND FLOWING AIR

Frank L. Peckinpaugh, and Raymond J. Biron, both of Colonial Heights, Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 1, 1978, Ser. No. 930,119
Int. Cl.[2] D01D 7/00
U.S. Cl. 425—72 S 3 Claims

1. A quench system for spinning multifilament synthetic fiber using fog and air in a quench stack comprising
a spinnerette for spinning synthetic fiber into a cross-flow quench stack,
a nozzle for airless atomizing of water into fog, said nozzle located about six feet below said spinnerette and emitting said fog into said quench stack,
means for supplying a flow of air to said quench stack,
means to exhaust said air flow from said quench stack,
means to supply water to said nozzle,
means to receive and remove any excess water droplets in said quench stack,
means to control said air flow, and
means to control the pressure of said water supply to nozzle, said spinnerette being located at the entrance of said quench stack, said means for supplying air, means to receive and remove any excess water droplets, means to exhaust air and nozzle all communicating with said quench stack, said means to supply said water communicating with said nozzle, both said means to control operatively connected respectively to said air flow supply means and said water supply means, and said nozzle atomizing and communicating with said quench stack so that no water droplets are formed to directly contact said

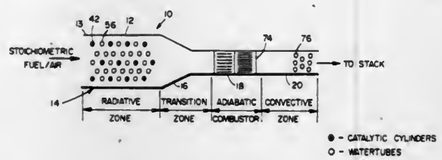


fiber and the quenching of said fiber is due entirely to the effect of said fog in conjunction with said air flow, and one nozzle being provided for each two bundles of multifilament fiber per stack.

4,204,829
CATALYTIC COMBUSTION PROCESS AND SYSTEM

Robert M. Kendall, Sunnyvale; John P. Kesselring, Mountain View, and Wayne V. Krill, Sunnyvale, all of Calif., assignors to Acurex Corporation, Mountain View, Calif.

Filed Apr. 5, 1978, Ser. No. 893,575
Int. Cl.[2] B01J 29/00
U.S. Cl. 431—7 17 Claims



1. A process for combusting fuel and oxidizer reactants, comprising the steps of directing a mixture of the reactants along a zone in which bodies having a surface-active material are disposed, combusting reactants about said bodies, and radiating energy from the bodies to heat sinks which are spaced in an array about each of the bodies within the zone, said energy being radiated to the heat sinks at a rate which prevents the temperature of the material from exceeding a predetermined limit, directing the products from the zone in an exhaust stream along a path through a combustor, and adiabatically combusting exhaust stream reactants in the combustor.

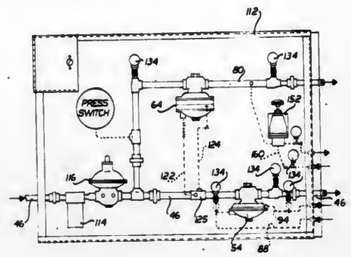
4,204,830
METHOD AND APPARATUS FOR CONTROLLING BURNER-AIR-FUEL RATIO

William M. Jones, Parma, and Mark S. Freas, Cleveland, both of Ohio, assignors to The North American Manufacturing Company, Cleveland, Ohio

Filed Aug. 26, 1977, Ser. No. 827,931
Int. Cl.[2] F23C 5/00
U.S. Cl. 431—8 41 Claims

1. A method of controlling the air-fuel ratio for a burner,

said method comprising the steps of establishing a primary flow of air to the burner, establishing a flow of fuel to the burner, simulating the primary air flow with a secondary air

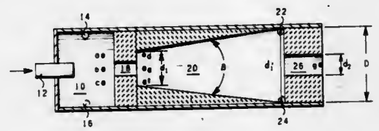


flow, and maintaining a desired air-fuel ratio at the burner by regulating the flow of fuel to the burner as a function of the secondary air flow.

4,204,831
FUEL BURNER USEFUL FOR CARBON BLACK PRODUCTION

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 4, 1978, Ser. No. 893,378
Int. Cl.[2] F23M 3/04; C09C 1/50
U.S. Cl. 431—10 7 Claims



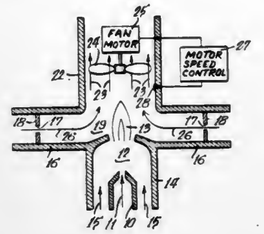
1. A burner apparatus comprising
(a) a cylindrical first section adapted with axial fuel inlet and at least one tangential combustion supporting gas inlet;
(b) a frustoconical second section aligned axially downstream of said first section and having the largest diameter at the downstream end with at least one tangential combustion supporting gas inlet located in the downstream portion, said combustion supporting gas inlet of the same rotational relationship as in the cylindrical section;
(c) means forming an axially aligned restrictive opening between said first and second sections; and
(d) a member blocking the largest diameter portion of said frustroconical second section, said member having a planar surface in juxtaposition with the downstream end of said second section, an axially aligned outlet opening in said member beginning at said planar surface, said outlet of greater diameter than said restrictive opening and of lesser diameter than the upstream end of said second section.

4,204,832
GAS BURNER DEVICE

Robert F. Miller, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Aug. 10, 1978, Ser. No. 932,515
Int. Cl.[2] F23N 3/00
U.S. Cl. 431—20 7 Claims

1. A gas burner device, comprising: a gas supply means; a gas burner receiving gas from said gas supply means; a primary air supply duct means for supplying primary air to said burner; a secondary air supply duct means for supplying secondary air to said burner, said primary air supply and secondary air supply maintaining combustion of said gas to produce a flame; a flue gas vent means leading from said burner and flame for venting flue gases to a place of disposal; a power driven fan means communicating with said flue gas vent means for providing simultaneously a forced flow of flue gases away from said flame and of said primary and secondary air to said flame; a temperature responsive variable speed control for controlling the power supplied to said motor and thereby the speed of said

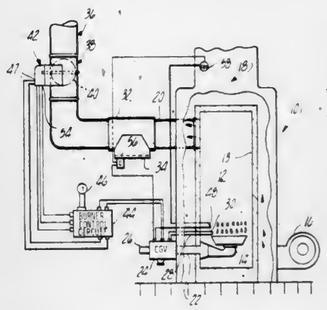


fan; and a flue gas temperature sensor means in said flue gas vent operatively connected to said motor speed control for controlling the speed of the fan and thereby simultaneously the rate of flow of the flue gases and the primary and secondary air by said fan in direct relation to the temperature of said flue gases.

4,204,833
SAFETY CONTROL FOR FURNACE BURNER

Edward R. Kmetz, Grosse Pointe Park, and George E. Joumas, St. Clair Shores, both of Mich., assignors to Scotty Vent Dampers, Hazel Park, Mich.

Filed Feb. 6, 1978, Ser. No. 875,328
Int. Cl.[2] F23N 5/24
U.S. Cl. 431—22 8 Claims



1. In combination, a safety control arrangement and a combustion heating device of the type having a burner ignition safety circuit detecting ignition of the fuels burned within the combustion chamber of the heating device, the combustion heating device further having an exhaust vent means for exhausting the products of combustion of said combustion chamber, said exhaust means including a draft opening having an inlet to induct air into said exhaust means, said safety control arrangement comprising:
a temperature sensor located in said draft opening inlet, comprising a lineal sensor consisting of a sensor tube extending about said inlet to sense spillage of combustion gases therethrough at any point along the periphery of said inlet;
control means responsive to the sensing of an abnormal temperature condition by said temperature sensor in the exhaust vent means causing said burner ignition safety circuit of said heating device to be activated;
whereby said burner ignition safety circuit also acts as a safety shutdown of burner operation in the event an ab-

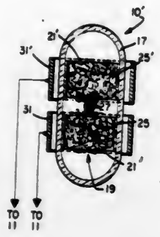
normal temperature condition develops in said exhaust vent means.

4,204,834

LEADLESS ELECTRIC FLASH LAMP

Timothy Fohl, Carlisle, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 30, 1978, Ser. No. 873,258
Int. Cl.² F21K 5/02
U.S. Cl. 431—362 **17 Claims**



1. An electrically-activated flash lamp for use within a reflective assembly having first and second spaced-apart electrically conductive reflector members, said flash lamp comprising:

a hermetically-sealed, light-transmitting envelope including a combustion-supporting atmosphere therein;

a quantity of filamentary combustible material within said envelope;

first and second spaced-apart electrical conductors positioned on the internal surface of said envelope, said first and second electrical conductors adapted for being capacitively coupled to said first and second conductive reflector members, respectively, through the wall of said envelope; and

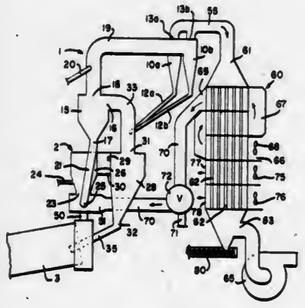
a quantity of primer material within said envelope for igniting said filamentary combustible material, said primer material electrically connected to said first and second internally positioned electrical conductors.

4,204,835

APPARATUS FOR TREATING SOLID PARTICULATE MATERIAL

Edward S. Porter, Walnutport, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed Nov. 16, 1978, Ser. No. 961,316
Int. Cl.² F27B 15/00
U.S. Cl. 432—58 **4 Claims**



1. Apparatus for manufacturing cement clinker comprising:

a preheater having an inlet for raw material, an inlet for hot gas, an outlet for preheated raw material and an outlet for gas;

a calcining furnace having an inlet for preheated raw material flow connected to the outlet for preheated raw material of the preheater, an inlet for combustion air, an inlet for fuel for combustion in the calcining furnace for at least partially calcining the raw material, and an outlet for hot spent combustion air and the at least partially calcined raw material;

separator means having an inlet flow connected to the outlet for spent combustion air and material of the calcining furnace, an outlet for separated hot spent combustion air flow connected to the inlet for hot gas of the preheater and an outlet for separated material;

a clinkering furnace having an inlet for at least partially calcined raw material flow connected to the outlet for separated material of said separator means, an inlet for combustion air, an inlet for fuel for combustion in the clinkering furnace, an outlet for spent combustion air and an outlet for cement clinker;

an indirect heat exchanger;

conduit means flow connecting the outlet for gas of said preheater with said indirect heat exchanger, means for supplying ambient air to the indirect heat exchanger for indirect heat exchange with gas from said preheater to thereby heat the ambient air;

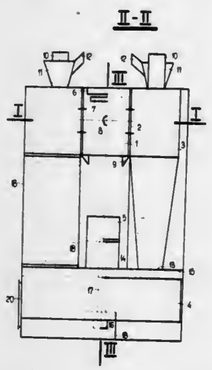
means for supplying the thus heated ambient air to the inlet for combustion gas of the calcining furnace; and conduit means for by-passing heated ambient air to atmosphere and valve means in said means for supplying heated ambient air from the indirect heat exchanger to the inlet for combustion gas of the calcining furnace for controlling the volume of heated ambient air supplied to said calcining furnace.

4,204,836

CYCLONE FURNACE FOR INTENSIVE TREATMENT OR COMBUSTION OF DISPERGATED MINERAL RAW MATERIALS

Edmund Nowak, Kraców; Rudolf Zamojdo, Wroctaw; Andrzej Parda; Wiestaw Kurdowski, both of Kraców, and Stefan Jankowski, Wroctaw, all of Poland, assignors to Instytut Przemyslu Maszyn Wiazacych Materialow Budowlanych, Opole, Poland

Filed Oct. 5, 1978, Ser. No. 948,995
Int. Cl.² F27B 15/00
U.S. Cl. 432—58 **6 Claims**

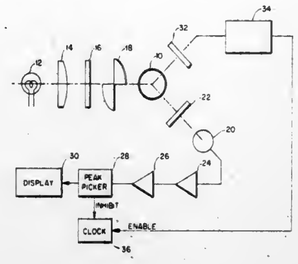


1. A cyclone furnace for intensive treatment or combustion of dispergated mineral raw materials, comprising essentially, in a vertical arrangement, a cyclone reaction chamber; said chamber having means therewith for supplying heat energy into said chamber; discharge means disposed at a lower portion of said chamber for discharge of furnace products, a through precipitation chamber adopted to receive melted non-gaseous portion of treated material, said reaction chamber being provided with separate openings for draining off melt and an outlet for gases, wherein: said furnace being defined by a separate, essentially in horizontal arrangement, cyclone fuel combustion chamber with a two-sided outlet for products, enclosed with a cylindrical side wall to secure an essentially circular form of a cross-section of said chamber, and two non-cylindrical opposite front walls; means for supplying of energy-formation agents on the cylindrical side wall of said chamber by a tangential supplying of fuel and an oxygen carrier, and profiled outlets of combustion products from the cyclone chamber into at least two known and vertically disposed cyclone reaction chambers, said reaction chambers are disposed in opposite non-cylindrical front walls of the cyclone combustion chamber, both said cyclone reaction chambers being connected directly to the front walls of said cyclone combustion chamber and are provided with means for supplying said chambers with dispergated, mineral raw material, disposed axially on an upper cover; and in a narrowing portion from below there being outlets for gaseous and non-gaseous furnace products directly connected to said precipitation chamber, and said chamber connecting at least two reaction chambers whereby from the lowermost portion of its bottom, there being an outlet for the melted non-gaseous portion of the furnace products, and oppositely at the top the outlet of gaseous products there are provided, outlets centrically disposed in relation to the outlets of the process products from the reaction chambers.

4,204,837
METHOD OF RATE IMMUNONEPHELOMETRIC ANALYSIS

James C. Sternberg, Fullerton, and John E. Lillig, Diamond Bar, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 14, 1978, Ser. No. 886,493
Int. Cl.[2] G01N *31/00, 33/16, 21/00*
U.S. Cl. 23—230 B 19 Claims



1. In a method of nephelometric analysis wherein antigen and antibody reaction components are reacting in a first reaction and a rate signal is generated as a time rate of change of a nephelometric signal developed from the first reaction, the peak value of the rate signal providing a measure of a characteristic of one of the reaction components in the first reaction, the improvement comprising the steps of:

establishing a range of peak values for which a measured peak value will provide an ambiguous measure of the characteristic of the one reaction component, a measured peak value within the range of peak values providing an acceptable measure of the characteristic if the first reaction is in antibody excess;

measuring a first peak value of the rate signal while the first reaction is proceeding; and

comparing the measured peak value with the range of peak values to determine the existence of an ambiguity in the measured characteristic indicated by the first peak value whereby subsequent addition of a reaction component to the first reaction may be utilized to establish the antigen or antibody excess condition of the first reaction if the comparing step indicates an ambiguity in the measured characteristic.

4,204,838
METHOD OF ANALYSIS

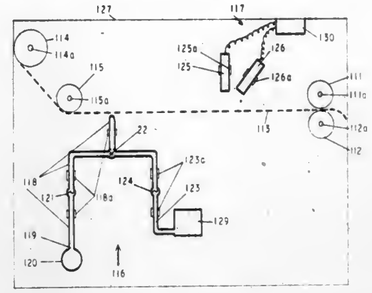
John H. Atherton; Derrick C. Dobson; Ian Hodgkinson, all of Manchester, and John R. P. Clarke, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, Great Britain

Filed Jun. 1, 1978, Ser. No. 911,515
Claims priority, application United Kingdom, Aug. 6, 1977, 23910/77
Int. Cl.[2] G01N *21/22, 31/06, 31/22*
U.S. Cl. 23—230 R 8 Claims

1. A method for the detection of a soluble substance dissolved in a liquid which also contains particular matters suspended therein, comprising the steps of:

adding at least a portion of the liquid to one side of a single continuously moving homogeneous strip of a porous leaf material capable of separating by diffusion the liquid from the particulate matter; and

examining the surface of the tape downstream from the area at which the liquid was applied and in a detection area on the strip into which the liquid has diffused away from the

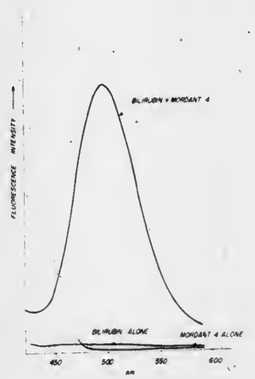


particulate matter, said examining being accomplished utilizing a non-contact detector.

4,204,839
FLUORIMETRIC ANALYSIS METHOD FOR BILIRUBIN

Tai-Wing Wu, Rochester, and Sheryl S. Sullivan, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 9, 1978, Ser. No. 932,158
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B 20 Claims



1. A fluorimetric method for the analysis of bilirubin in an aqueous liquid wherein said liquid and an interactive, polymeric mordant composition for bilirubin are contacted together to mordant bilirubin, said interactive, polymeric mordant composition having binding sites for bilirubin and comprising repeating units having a hydrophobic organic matrix and at least one charge-bearing cationic group, the novel step comprising

subjecting the mordanted bilirubin to activating radiation effective to excite the mordanted bilirubin and produce detectable fluorescence indicative of the presence or concentration of bilirubin in said liquid.

4,204,840

PROCESS FOR REMOVING SULFUR FROM COAL

Jin S. Yoo, South Holland; Emmett H. Burk, Jr., Glenwood, and John A. Karch, Chicago, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 876,784, Feb. 10, 1978, which is a continuation-in-part of Ser. No. 690,477, May 27, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 916,667

Int. Cl.[2] C10L 9/10; C10B 57/00

U.S. Cl. 44—1 SR 18 Claims

10. A process for reducing the sulfur content of coal comprising the steps of:

(1) contacting an aqueous slurry of water, an alkaline earth metal base and pyrite-containing coal particles at elevated temperature with oxygen, said alkaline earth metal base being present in an amount at least equal to the stoichiometric amount of pyrite, and said aqueous slurry being maintained at a pH of from 5.5 to 12.0; and

(2) contacting the slurry of coal particles with hydrocarbon oil to form coal-oil agglomerates; and

(3) recovering coal-oil agglomerates wherein the coal has reduced sulfur content.

4,204,841

DETERGENT GASOLINE COMPOSITION

Joseph B. Biasotti; Peter Dorn, both of Lagrangeville; Sheldon Herbstman, Spring Valley, and Kenneth L. Dille, Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

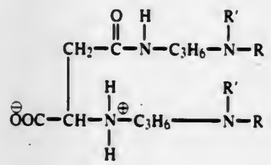
Filed Apr. 19, 1979, Ser. No. 31,556

Int. Cl.[2] C10L 1/22

U.S. Cl. 44—71 7 Claims

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing from about 0.001 to 0.003 weight percent of an additive composition comprising

(A) a component represented by the formula:



in which R is a primary aliphatic hydrocarbon radical having from about 6 to 30 carbon atoms and R′ is a hydrogen or a methyl radical, and

(B) an N-alkyl-alkylene diamine component represented by the formula:

$$R.R'—N—C_3H_6—NH_2$$

in which R is a primary aliphatic hydrocarbon radical having from about 6 to 30 carbon atoms and R′ is hydrogen or a methyl radical, said additive composition consisting of from about 30 to 70 weight percent of said component A and the balance said component B based on diluent free materials.

4,204,842

PROCESS FOR CONVERTING BIODEGRADABLE WASTES INTO INDUSTRIAL GASES

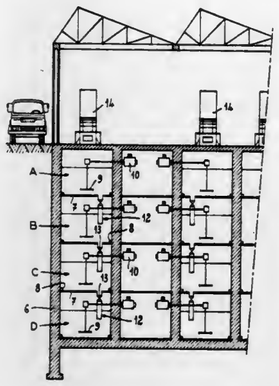
Pierre Morel, 57, avenue Sainte Marie, Saint-Mande, Vel de Marne; Yasmine Ortega, 19 bis, rue Martin Basse, Caluire; Claudette Jullien, and Antonin Jullien, both of 1, rue Henri Gorjus, Lyons 4eme, all of France

Continuation of Ser. No. 783,476, Mar. 31, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 2,451

Claims priority, application France, Apr. 1, 1976, 76 10364; Feb. 17, 1977, 77 05174

Int. Cl.[2] C02C 1/14

U.S. Cl. 48—197 A 11 Claims



1. A process for converting organic wastes into industrial gases, comprising the steps of:

collecting and comminuting biodegradable waste material;

admixing the comminuted waste material in a first cell with a liquid containing methane-producing bacteria to form a fermentable sludge;

oxygenating said sludge in said first cell by injection of air with concurrent agitation;

thereafter establishing an anaerobic atmosphere around said sludge by introducing carbon dioxide into said first cell;

subsequently transferring the sludge from said first cell into a second cell for prefermentation with predominant evolution of carbon dioxide;

thereafter transferring the sludge from said second cell into a final cell for fermentation with predominant evolution of methane; and

extracting at least part of the liquid in the sludge of said final cell for recirculation to said first cell while recovering the methane therefrom.

4,204,843

GASIFICATION PROCESS

Richard C. Neavel, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1977, Ser. No. 861,824

Int. Cl.[2] C10J 3/00

U.S. Cl. 48—210 10 Claims

1. A process for gasifying coal containing less oxygen in an active form than would be required to impart from about 2 to about 10 weight percent calcium ion to produce a fuel gas, which consists essentially of:

(a) contacting and soaking said coal with a solution comprising a Group I-A metal hydroxide at a temperature within the range from about 20° to about 200° F. to increase the concentration of ion-exchange sites within said coal as contrasted with the state of the coal prior to contact with said solution and to incorporate from about 1 weight percent to about 10 weight percent of Group I-A metal cations, then

(b) contacting the coal from step (a) with a Group II-A metal compound at a temperature within the range from about 20° to about 200° F. to exchange and replace a portion of the Group I-A metal cations and to incorporate from about 0.5 to about 6.0 weight percent of one or more Group II-A metal cations, thereby producing a treated coal containing from about 0.5 to about 4.0 weight of a Group I-A metal and from about 0.5 to about 6.0 weight percent of a Group II-A metal and then

(c) gasifying said treated coal at gasification conditions in a gasification zone to produce fuel gas.

4,204,844

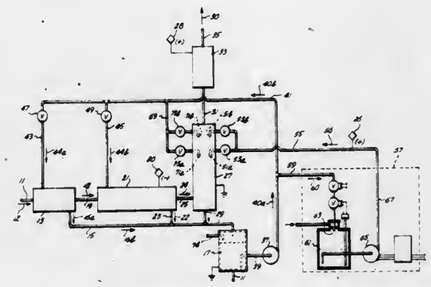
LIQUID TRANSFER SYSTEM FOR CONDUCTIVE LIQUIDS

Michael J. Pilat, 7306 57th Ave. N.E., Seattle, Wash. 98115

Continuation-in-part of Ser. No. 752,988, Dec. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 492,157, Jul. 26, 1974, abandoned. This application Apr. 6, 1978, Ser. No. 894,179

Int. Cl.[2] B03C 3/01, 2/16, 3/84

U.S. Cl. 55—10 17 Claims



1. A method of transferring a conductive liquid at a first electrical potential from a supply to receiving equipment which charges the liquid to a second electrical potential, and electrically isolating the liquid at said second potential from the liquid at said first potential, comprising the steps of:

(a) introducing liquid from said supply into an electrically nonconductive container through a spray means in an interrupted stream;

(b) electrically isolating said container from said first potential;

(c) transferring the liquid from said container to said receiving equipment through a pump;

(d) electrically isolating said pump from said first potential.

11. In an electrostatic gas scrubber having means for imposing an electrostatic charge upon particulate matter contained in a gaseous stream, means for introducing said gaseous stream into a spray chamber, and liquid spray means to disperse droplets of a conductive liquid into said chamber, said liquid having an electrostatic charge imposed thereon whereby said gaseous stream contains charged liquid droplets, the improvement comprising a system for recycling said conductive liquid, said improved recycling system including;

an electrically grounded collecting means for collecting said conductive liquid from said spray chamber;

a sump constructed of nonconductive material and isolated from ground and having an inlet and an outlet therein;

transfer means positioned and arranged with respect to said collecting means and said sump to transfer said liquid from said collecting means to said sump, said transfer means including spray means positioned and arranged with respect to said inlet to inject said liquid from said grounded collecting means into said sump along a nonconductive flow path;

gas flow means for introducing a stream of nonconductive gas into said sump through said inlet to prevent the buildup of conductive liquid on the portions of said sump adjacent said inlet; and,

mechanical pump means isolated from ground for transferring said conductive liquid from said sump to said liquid spray means in said spray chamber, said pump having a suction inlet in fluid communication with said outlet.

4,204,845

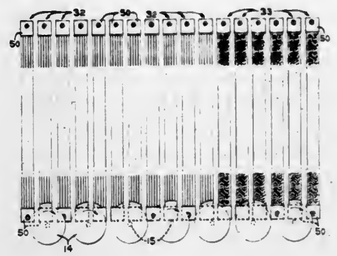
METHOD OF HEAT TREATING MOVING GLASS SHEETS ON MODIFIED GAS BED

George B. Shields, Lower Burrell, and Eugene W. Starr, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 25, 1978, Ser. No. 945,718

Int. Cl.[2] C03B 27/00

U.S. Cl. 65—25 A 5 Claims



1. A method of tempering glass sheets comprising:

heating a glass sheet to a temperature sufficient for tempering;

passing the heated glass sheet through a first cooling zone wherein each of the opposite surfaces of the glass sheet is subject to a plurality of thin, discrete, spaced-apart, parallel, laminar streams of relatively cool tempering medium angularly directed toward the glass surface so as to cool each portion of the glass sheet passing therethrough at a relatively high rate of heat transfer to rapidly harden the surfaces of the glass sheet and thereby substantially reduce subsequent formation of optical distortion in the glass, exposing each portion of the glass sheet to the laminar streams for a sufficiently limited period of time to substantially avoid inducing fluttering of the glass sheet, and withdrawing the glass sheet from the first cooling zone before the desired degree of temper is fixed in the glass;

immediately passing the incompletely tempered glass sheet from the first cooling zone into a second cooling zone wherein each of the opposite major surfaces of the glass sheet is subjected to a plurality of diffuse patterned streams of relatively cool tempering medium which provide a relatively lower heat transfer rate and a relatively flutter-free support for the glass sheet, and maintaining each portion of the glass sheet in the second cooling zone until the desired degree of temper is fixed in the glass.

4,204,846

SELF-CLEANING AIR FILTER

David L. Brenholt, Dundas, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed May 26, 1978, Ser. No. 909,840

Int. Cl.[2] B01D 46/04

U.S. Cl. 55—272 29 Claims

1. Self-cleaning apparatus for removing particulate material from air comprising:

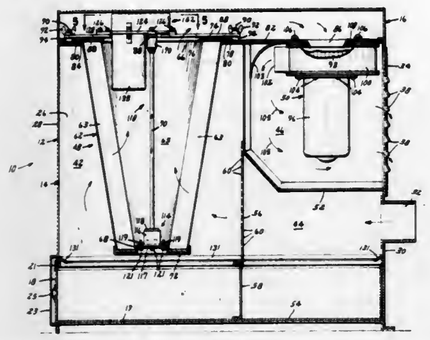
(a) a housing having an air inlet and an air outlet;

(b) filtering means comprising a hollow frusto-conical shaped filter;

(c) said filter having an outer surface, an open interior, opposite open ends with one of said ends having a larger diameter than the other end, and a longitudinal axis extending between the ends;

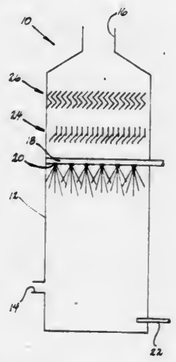
(d) said filter being formed of a pleated pourous media;

(e) means for removably securing the end with the larger diameter within said housing;
(f) a closure plate secured to and sealing the other end;
(g) means defining a first chamber around the outer surface of said filter, said first chamber being in communication with said air inlet whereby air moving from said inlet to said outlet passes through said filter into the interior thereof and deposits particulate material on said outer surface of the filter;
(h) means for removing particulate material collected on the outer surface of said filter by twisting said filter;
(i) means for biasing said filter to a neutral position wherein said filter is in an untwisted condition; and



(j) said removing means including a rotatable rod having a longitudinally extending axis, said rod extending from said plate in a direction generally transverse to a major face of said plate, means for drivingly coupling said rod to said plate, camming means engaging said rod for rotating said rod from said neutral position of said rod in a first rotative direction through an angular displacement less than 90° and for rotating said rod from said neutral position in an opposite rotative direction through an angular displacement less than 90°, said coupling means transferring the rotary motion of said rod to said plate while permitting said rod to move transversely of said major face of the plate, and a drive motor for driving said camming means.

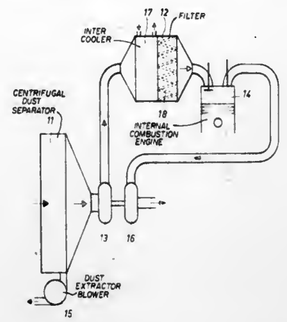
4,204,847
MIST ELIMINATOR DEVICE FOR A WET SCRUBBER APPARATUS
Raymond Ko, Ontario, Canada, assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Jun. 5, 1978, Ser. No. 912,756
Int. Cl.² B01D *47/06, 45/06*
U.S. Cl. 55—257 PV **12 Claims**



1. A mist eliminator device for removing liquid or a liquid slurry from a gas stream passing therethrough, comprising:
a peripheral frame defining an axially extending gas flow aperture therethrough;
a plurality of elongated baffle members disposed in parallel spaced apart relationship transversely across the gas flow aperture of the peripheral frame and defining a plurality of axially extending gas flow passages, each passage having a gas inlet and a gas outlet; and,
each elongated baffle member having an upstream wall section extending from a respective one of said gas inlets and being inclined to the transverse plane of the peripheral frame, a flow straightening downstream wall section continuing from the upstream wall section to a respective one of said gas outlets and being oriented perpendicularly to the transverse plane of the peripheral frame, a first collecting flange on one side thereof extending toward said respective gas inlet from the downstream wall section proximate the junction of the upstream and downstream wall sections, and a second collecting flange on the other side thereof axially intermediate of the downstream wall section and extending obliquely therefrom in a plane generally parallel to the upstream wall section and being spaced from said first collecting flange, thereby accommodating simultaneous mist separation and flow straightening between said first and second collecting flanges to essentially assure axial alignment of the gas stream prior to discharge from the device while minimizing pressure losses incident thereto.
11. A wet scrubber apparatus comprising:
a scrubber housing having a flow-through inlet and a flow-through outlet;
means for adding a liquid spray to a gas stream flow from the flow-through inlet toward the flow-through outlet;
at least one mist eliminator device positioned between the liquid spray means and the flow-through outlet comprising;
a peripheral frame defining an axially extending gas flow aperture therethrough;
a plurality of elongated baffle members disposed in parallel spaced apart relationship transversely across the gas flow aperture of the peripheral frame and defining a plurality of axially extending gas flow passages, each passage having a gas inlet and a gas outlet; and,
each elongated baffle member having an upstream wall section extending from a respective one of said gas inlets and being inclined to the transverse plane of the peripheral frame, a flow straightening downstream wall section continuing from the upstream wall section to a respective one of said gas outlets and being oriented perpendicularly to the transverse plane of the peripheral frame, a first collecting flange on one side thereof extending toward said respective gas inlet from the downstream wall section, and a second collecting flange on the other side thereof axially intermediate of the downstream wall section and extending obliquely therefrom in a plane generally parallel to the upstream wall section; and,
the mist eliminator device being oriented within the scrubber housing with the transverse plane of the peripheral frame disposed perpendicularly to the gas stream flow moving toward the mist eliminator device.

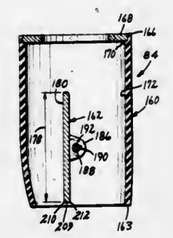
4,204,848
AIR FILTER INSTALLATION
Robert Schulmeister, Friedrichshafen; Franz Edmaier, and Günther Kiefer, both of Markdorf, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany
Filed Aug. 24, 1978, Ser. No. 936,522
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738293
Int. Cl.² B01D *45/18*
U.S. Cl. 55—269 **6 Claims**

1. An air filtering installation for an internal combustion engine having a supercharging compressor and a supercharger inter-cooler means for cooling intake air for the engine, the air filter installation comprising a centrifugal dust separator means and a dry air filter means with an interchangeable filter insert,



characterized in that the centrifugal dust separator means is arranged on a suction side of the supercharging compressor and the dry air filter means is arranged downstream of the supercharger inter-cooler means.

4,204,849
DISCHARGE VALVE ASSEMBLY FOR MULTIPLE-STAGE DUST COLLECTOR
Gordon L. Johnston, Maple Grove, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed Aug. 30, 1978, Ser. No. 938,006
Int. Cl.² B01D *46/48, 50/00*
U.S. Cl. 55—310 **18 Claims**



1. A dust separator and discharge valve assembly comprising:
means for separating dust from dust-laden air, including a dust-laden air inlet and a clean air outlet;
collection means for collecting dust separated by said separating means from said dust-laden air, said collection means being attached to and in communication with said separating means;
said collection means including at least one conduit, said at least one conduit having an open inlet end, an open outlet end, and a rotatable valve member disposed within the at least one conduit between said inlet and outlet ends;
said at least one conduit being formed of an elastic material having a generally circular cross section and an inner diameter in an unstretched condition;
said rotatable valve member having a generally circular cross section and an outer diameter greater than said inner diameter; and
means for rotating said valve member about an axis spaced from a line bisecting said valve member between a closed position wherein said valve member is substantially perpendicular to a longitudinal axis of said at least one conduit and dust can collect within said at least one conduit above said valve member and an open position wherein said valve member is not perpendicular with the longitudinal axis of said at least one conduit and dust is free to fall downwardly past said valve member through said open outlet end.
10. A multiple-stage dust collector comprising:
a housing;
dust separating means supported in said housing, including first, second and third dust separator mechanisms;
said first dust separator mechanism for separating dust from dust-laden air including a first air inlet for receiving dust-laden air from a source, a first air outlet and a first dust outlet for discharging dust separated by said first dust separator mechanism;
said second dust separator mechanism for separating dust from dust-laden air including a second air inlet connected in fluid communication to said first air outlet, a second air outlet and a second dust outlet for discharging dust separated by said second dust separator mechanism;
said third dust separator mechanism for separating dust from dust-laden air being in fluid communication with said second air outlet and including a filtering means and a clean air outlet, said filtering means being disposed between said second air outlet and said clean air outlet for removing dust particles from the air passing therebetween;
a first conduit supported in said housing and in communication with said first dust outlet, said first conduit having a first open inlet end and a first open outlet end, said first conduit being formed of an elastic material having a generally circular cross section and a first inner diameter in an unstretched condition;
a first rotatable valve member disposed in said first conduit at a location between said first open inlet and outlet ends, said first rotatable valve member having a generally circular cross section and a first outer diameter greater than said first inner diameter;
a second conduit supported in said housing and in communication with said second dust outlet, said second conduit having a second open inlet end and a second open outlet end, said second conduit being formed of an elastic material having a generally circular cross section and a second inner diameter in an unstretched condition;
a second rotatable valve member disposed in said second conduit at a location between said second open inlet and outlet ends, said second rotatable valve member having a generally circular cross section and a second outer diameter greater than said second inner diameter;
means for rotating said first and second valve members between closed positions wherein each valve member stretches a respective conduit and forms a seal around a 360 degree circumferential extent to support dust separated by said first and second separator mechanisms and an open position wherein dust can pass each valve member and be discharged through said outlet ends.

4,204,850
CARBON COATING FOR A STARTING MEMBER USED IN PRODUCING OPTICAL WAVEGUIDE
Ellen K. Dominick, Corning, and George W. Scherer, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Aug. 26, 1977, Ser. No. 828,149
Int. Cl.² C03C *25/02*
U.S. Cl. 65—3 A **13 Claims**

1. The method of making a preform for an optical waveguide comprising:
providing a substantially cylindrical starting member;
applying a coating of substantially pure particulate carbon to the outside peripheral surface of said cylindrical starting member to form a carbon layer thereon;
applying particulate material to the carbon layer on said starting member to form an adherent coating of glass;
removing said starting member from said glass to cause separation between said carbon layer and the outside

peripheral surface of said starting member or shearing within the carbon layer to produce a preform, and

heating said preform to a temperature which disintegrates said carbon by oxidation and which consolidates said preform.

4,204,851

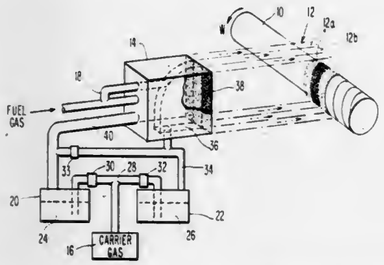
DIRECTING GLASS FORMING CONSTITUENTS AGAINST A LATERAL SURFACE PARALLEL TO THE AXIS OF ROTATION OF A STARTING MEMBER TO FORM A MONOLITHIC BLANK FOR AN OPTICAL WAVEGUIDE

Daniel A. Nolan, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 809,190, Jun. 23, 1977, abandoned. This application Oct. 7, 1977, Ser. No. 840,242

Int. Cl.² C03B *37/00*

U.S. Cl. 65—3 A **13 Claims**



1. The method of preparing a monolithic optical waveguide structure including at least one spiral waveguide core, comprising the steps of:

providing a generally cylindrical starting member having a lateral surface parallel to an axis of rotation and having a length L;

rotating said starting member about said axis at a frequency w;

preparing a first constituent in finely divided form;

preparing a second constituent in finely divided form;

entraining said constituents in first and second streams of a carrier fluid, respectively;

directing said constituents toward the lateral surface of said starting member in the form of first and second glass soots, said soots impinging upon said starting member along a spiral locus to form a non-contiguous spiral of said second soot enveloped by said first soot;

said first and second glass soots, when fused, forming glass having first and second indices of refraction, respectively, whereby said second glass soot is in a spiral about said axis.

4,204,852

METHOD OF AND APPARATUS FOR PRODUCING A GLASS FIBRE BUNDLE FOR USE IN OPTICAL COMMUNICATIONS SYSTEMS

Julian K. Watts, and Colin A. Yarker, both of North Wales, England, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Jul. 12, 1978, Ser. No. 923,871

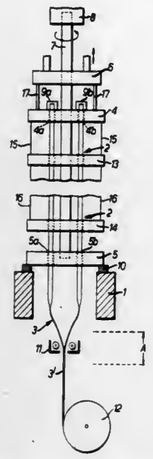
Claims priority, application United Kingdom, Jul. 13, 1977, 29470/77

Int. Cl.² C03B *37/02*

U.S. Cl. 65—4 A **19 Claims**

1. A method of producing a bundle of optical glass fibres for use in optical communications systems, comprising the steps of: heating to their softening temperature a plurality of parallel, spaced-apart glass rods which each have a cladding of a glass of lower refractive index, drawing the clad glass rods into respective separate fibres, forming the drawn fibres into a bundle of separable fibres, effecting relative rotation between the plurality of clad glass rods and the formed fibre bundle to impart twist to the bundle, and retaining said twist in the bundle to avoid the formation of loops in individual fibres during subsequent handling of the bundle.

12. Apparatus for producing a glass fibre bundle for use in optical communications systems by drawing a plurality of clad glass rods into respective fibres and forming the drawn fibres into a fibre bundle, which apparatus comprises a furnace for heating a plurality of clad glass rods to their softening temperature, a retaining member for holding the rods in a predetermined spaced relationship one to the other, a guide member adjacent the furnace for maintaining the rods in said spaced relationship, the retaining member being movable with respect to the guide member and connected to a drive means for passing the rods into the furnace, means for drawing the softened rods into respective fibres and forming the drawn fibres into a fibre bundle, and means for causing relative rotation of the retaining member and the guide member with respect to the means for drawing the fibres, so as to impart a twist to the fibre bundle as the fibres are drawn from the rods and formed into the bundle.



4,204,853

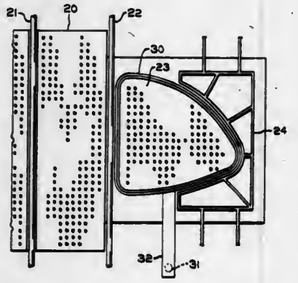
GLASS SHEET ALIGNMENT MEANS AND METHOD OF USING

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 13, 1978, Ser. No. 960,403

Int. Cl.² C03B *23/02*

U.S. Cl. 65—106 **34 Claims**



1. In a method of bending glass sheets of the type wherein each glass sheet is heated to a softened condition and then conveyed into a bending station where it is stopped in a substantially horizontal position and brought into contact with bending means which impart the desired curvature to the glass sheet; the improvement comprising accurately aligning the glass sheet with the bending means by urging the glass sheet in a forward horizontal direction to bring forward portions of the glass sheet having a curved outline into edgewise abutment with at least a portion of an elongated, contoured line of abutment formed by a horizontally extending, rigid frame and conforming to the curved outline of the foward portions of the glass sheet along a sufficient extent of the perimeter of the glass sheet to define a single fixed location and orientation for the glass sheet, and continuing to urge the glass sheet toward said line of abutment after initial contact therebetween by means of a rotating roll contacting a rear edge portion of the glass sheet opposite said forward portions so as to force the forward edge portions of the glass sheet to come into contact with the corresponding portions of said line of abutment and to be guided thereby into the single fixed location and orientation defined by the line of abutment.

8. In an apparatus for horizontally bending glass sheets comprising means for heating glass sheets, a bending station including bending means for engaging a substantially horizontally disposed heat-softened glass sheet and imparting a predetermined curvature thereto, and conveyor means for carrying glass sheets from the heating means into the bending station and supporting the glass sheets in a substantially horizontal position within the bending station; the improvement comprising a horizontally extending, rigidly supported frame over said conveyor means within the bending station, said frame presenting an elongated, curved line of abutment to forward edge portions of a glass sheet entering the bending station, the line of abutment being curved to conform to the outlines of corresponding curved forward edge portions of the glass sheet along a sufficient extent of the perimeter of the glass sheet to define a single fixed location and orientation for the glass sheet, and a driven roll spaced from the line of abutment a distance approximately equal to the length of the glass sheet and mounted at an elevation and orientation so as to contact rear edge portions of the glass sheet opposite said forward edge portions and force the glass sheet into contact with the line of abutment, whereby the glass sheet may be provided with accurate, predetermined alignment within the bending station.

4,204,854

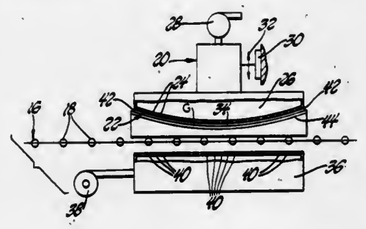
APPARATUS AND METHOD FOR BENDING GLASS SHEETS

Harold A. McMaster, 420 Water St., Woodville, Ohio 43469; John S. Nitschke, 324 E. Second, Perrysburg, Ohio 43551, and Dean M. Nitschke, 512 W. Broadway, Maumee, Ohio 43537

Continuation-in-part of Ser. No. 901,533, May 1, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,230

Int. Cl.² C03B *23/02*

U.S. Cl. 65—106 **24 Claims**



1. Apparatus for use in bending heated sheets of glass transported generally horizontally on rolls of a roller conveyor within a heating chamber, the apparatus comprising: a glass sheet holder located above the rolls of the roller conveyor in spaced relationship thereto such that a sheet of glass can be transported under the holder by the conveyor; actuable means for supplying pressurized gas, said actuable means including outlet openings located below the rolls of the conveyor so as to blow gas upwardly therebetween against the sheet of glass below the holder after movement thereunder with a sufficient pressure such that the sheet of glass is lifted upwardly into engagement with the holder so as to be spaced above the conveyor; and a curved mold movable under the holder to receive the sheet of glass therefrom.

21. A method for bending heated sheets of glass transported horizontally on a conveyor, the method comprising:

conveying a heated sheet of glass below a holder spaced above the conveyor;

blowing gas upwardly from below the conveyor against the sheet of glass such that the glass is engaged with the holder; and

moving a curved mold under the holder so as to receive the sheet of glass.

4,204,855

APPARATUS FOR DEWATERING GRANULATED-SLAG SLURRY

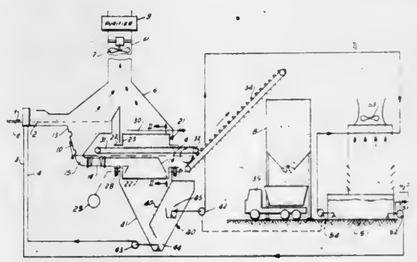
Guido Monteyne, Lembeke, Belgium, assignor to SIDMAR Maritieme Staalnihverheid N.V. Siderurgie Maritime S.A., Ghent, Belgium

Filed Apr. 11, 1979, Ser. No. 29,076

Claims priority, application Luxembourg, Apr. 18, 1978, 79466

Int. Cl.² C03B *5/22*

U.S. Cl. 65—141 **12 Claims**



1. An apparatus for treating a granulated-slag/water slurry, said apparatus comprising:

a hollow drum rotatable about an axis and having a foraminous wall and a plurality of vanes extending radially inwardly from said foraminous wall;

feed means including a conduit for feeding a stream of said slurry into said drum and onto the inner surface of said wall thereof at a predetermined relatively low location;

drive means for rotating said drum about said axis and thereby displacing said slurry upwardly from said low location to a relatively high location at such a rate that most of the water in said slurry runs off through said foraminous wall; and

conveyor means having an upstream end below said high location for catching the granulated slag from which the water has run off and for conducting the granulated slag out of said drum.

4,204,856

EDGE STRETCHING APPARATUS INCLUDING INSULATED SEAL

Jeffrey S. Yigdall, Carlisle, Pa., and James A. Zahler, Burkburnett, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

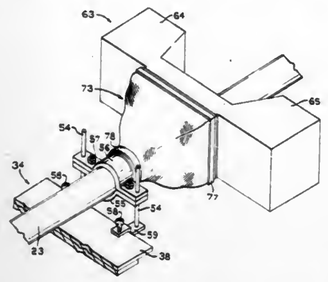
Filed Aug. 14, 1978, Ser. No. 933,238

Int. Cl.² C03B *18/02*

U.S. Cl. 65—157 **16 Claims**

1. Apparatus for sealing between edge control machines and forming chamber sidewalls comprising support means, collar means mounted to said support means and slidably surrounding

the barrel of said edge control machine, means mounted between said edge control machine and said collar for maintaining movement of said collar in a vertical plane relative to said



support means in order that it does not bind during movement of said barrel of said edge control machine, and a flexible sleeve fastened to said collar and to said forming chamber sidewall.

4,204,857

5-XANTHOGENATO-3-TRIHALOMETHYL-1,2,4-THIADIAZOLES AND THEIR USE AS HERBICIDES

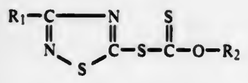
Eugene F. Rothgery, North Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jan. 24, 1979, Ser. No. 6,041

Int. Cl.[2] A02N *9/12*; A01N *21/02*; C07D *285/05*

U.S. Cl. 71—73 **4 Claims**

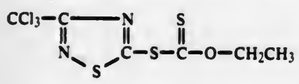
1. A compound of the formula



wherein R_1 is a CCl_3 or CF_3 group and R_2 is a lower alkyl group having 1 to 4 carbon atoms.

3. A method for controlling undesirable plant growth at a locus to be protected comprising applying to a locus a herbicidally effective amount of a compound as claimed in claim 1.

4. The method of claim 3 wherein said compound is



4,204,858

DIPHENYL ETHER CARBAMATES

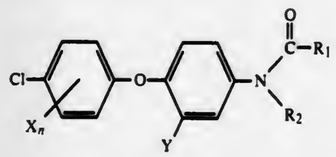
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 695,673, Jun. 14, 1976, abandoned, which is a division of Ser. No. 598,486, Jul. 23, 1975, Pat. No. 3,976,470. This application Oct. 10, 1978, Ser. No. 949,718

Int. Cl.[2] C07C *125/04*; A01N *9/20*

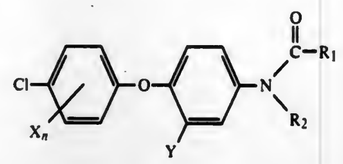
U.S. Cl. 71—111 **33 Claims**

1. A compound having the formula



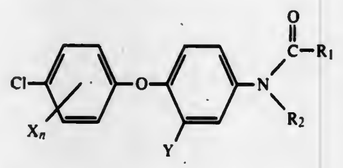
in which X is chloro or methyl; n is 1 or 2; Y is chloro or trifluoromethyl; R_1 is lower alkoxy, and R_2 is hydrogen, lower alkoxy-alkyl or lower alkanoyl.

20. An herbicidal composition of matter comprising (a) an herbicidally effective amount of a compound having the formula



in which X is chloro or methyl; n is 1 or 2; Y is chloro or trifluoromethyl; R_1 is lower alkoxy, R_2 is hydrogen, lower alkoxy-alkyl or lower alkanoyl; and (b) an inert carrier.

21. A method of controlling undesirable vegetation comprising applying to the locus thereof an herbicidally effective amount of a compound having the formula



in which X is chloro or methyl; n is 1 or 2; Y is chloro or trifluoromethyl; R_1 is lower alkoxy, R_2 is hydrogen, lower alkoxy-alkyl or lower alkanoyl.

4,204,859

METHOD OF INCREASING THE YIELD OF HYDROCARBONS FROM PLANTS

Henry Yokoyama; Ernest P. Hayman; Wan-Jean Hsu, and Stephen M. Poling, all of Pasadena, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 31, 1978, Ser. No. 891,955

Int. Cl.[2] A01N *5/00*

U.S. Cl. 71—121 **4 Claims**

1. A process for increasing the accumulation of rubber hydrocarbons in plants that produce the same, which comprises applying to the plant an effective amount of a compound selected from the group consisting of 2-(3,5-isopropylphenoxy)-triethylamine, 2-(4-t-butylphenoxy)-triethylamine, and 2-(2-napthoxy)-triethylamine.

4,204,860

MAGNESIUM PRODUCTION

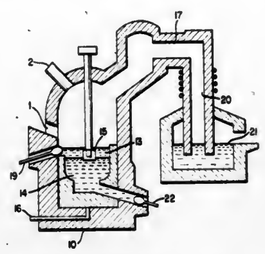
Robert M. Kibby, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 20, 1978, Ser. No. 944,493

Int. Cl.[2] C22B *45/00*

U.S. Cl. 75—10 R **15 Claims**

1. An improved metallothermic process for the manufacture of magnesium wherein an aluminum-silicon alloy reductant and an oxidant comprising an oxide mixture containing MgO and CaO are charged to the reaction zone of a reduction furnace in the presence of a molten calcium-aluminate slag and magnesium vapor is evolved from the reaction zone and recovered in a condensing means, the improvement which comprises charging less than the stoichiometric amount of magnesium oxide in the oxidant required to consume the aluminum component of the aluminum-silicon alloy reductant to form two liquid layers in the reaction zone, a lower layer comprising calcium-magnesium-aluminate slag and an upper layer comprising spent aluminum-silicon alloy reductant, and at least periodically



tapping the spent aluminum-silicon alloy from the reaction zone as a by-product.

4,204,861

METHOD OF PRODUCING BLISTER COPPER

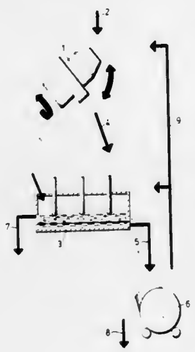
Stig A. Petersson, and Bengt S. Eriksson, both of Skelleftehamn, Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Division of Ser. No. 774,454, Mar. 4, 1977, Pat. No. 4,144,055. This application Nov. 17, 1978, Ser. No. 961,633

Claims priority, application Sweden, Mar. 12, 1976, 7603238

Int. Cl.[2] C22B *15/00*

U.S. Cl. 75—73 **4 Claims**



1. A method of smelting copper raw materials containing more than 0.2% antimony to a matte and a slag and simultaneously removing the antimony from said material, which method comprises the steps of smelting said copper raw materials in an inclined rotary furnace rotating at a rotary speed of from about 10 rpm to about 60 rpm together with an addition of iron-containing slag, said iron containing slag being charged to the furnace in quantities such that the total amount of iron present in the furnace is at least 44 times that of the antimony present in the furnace, under supplying heat from a burner, converting the resultant matte smelt in the furnace, subsequent to separating the matte and the slag, by blowing it with an oxygen containing gas through lances to form white metal and a further slag and tapping-off said further slag containing the antimony removed from the matte.

4,204,862

AUSTENITIC HEAT-RESISTANT STEEL WHICH FORMS Al_2O_3 FILM IN HIGH-TEMPERATURE OXIDIZING ATMOSPHERE

Satoshi Kado; Taketomo Yamazaki, both of Fujisawa; Tetsu Sakamoto, Machida; Mikio Yamanaka, Yamato, and Kotaro Yoshida, Sagamihara, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 737,197, Oct. 29, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,688

Claims priority, application Japan, Oct. 29, 1975, 50-129312

Int. Cl.[2] C22C *38/06*

U.S. Cl. 75—124 **8 Claims**

1. An austenitic heat-resistant steel which is capable of forming a film mainly composed of Al_2O_3 when heated in a high-temperature oxidizing atmosphere, said steel consisting essentially of, on a weight basis, not more than 0.2% of C, not more than 1.0% of Si, not more than 2.0% of Mn, 12 to 37% of Ni, 9 to 25% of Cr, more than 4.5 but not more than 6% of Al, not more than 0.8%, in total, of at least one member selected from the group consisting of Ti, Nb and Zr, and a positive amount of at least one rare earth element in a total amount of not more than 0.08%, the balance of said steel being Fe,

said steel being removed of an internal oxide layer which has been formed just below the steel surface during hot working,

said steel having a δ-ferrite value of from zero to 7.9 calculated on the basis of the formula

$$\delta\text{-ferrite value} = 3.0\{(\%Cr) + 1.5(\%Si) + 2.5(\%Al)\} - 2.8[(\%Ni) + 0.5(\%Mn) + 30\{(\%C) + (\%N) - 12\Sigma \frac{Wi}{Mi}\}] - 19.8$$

where Wi and Mi represent, respectively, the percent by weight and the atomic weight of Ti, Nb and Zr, and when the term

$$\{(\%C) + (\%N) - 12\Sigma \frac{Wi}{Mi}\}$$

is negative, said term is regarded as zero.

4,204,863

SINTERED CONTACT MATERIAL OF SILVER AND EMBEDDED METAL OXIDES

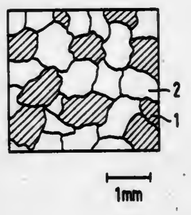
Horst Schreiner, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 9, 1977, Ser. No. 859,242

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1976, 2659012

Int. Cl.[2] C22C *1/04*, *1/10*; B22F *1/00*

U.S. Cl. 75—234 **11 Claims**



1. A sintered contact material of silver and at least two embedded metal oxides made by steps comprising:

(a) preparing a first composite powder of silver and at least one metal oxide;

(b) preparing at least one further composite powder of sil-

ver, and at least one metal oxide using at least one metal oxide different from the metal oxides in the first composite powder;

(c) intimately mixing said first composite powder and said at least one further composite powder together;

(d) pressing the resulting mixture to form a shaped body; and

(e) sintering the shaped body, whereby in the sintered shaped body, at least two of said metal oxides will be distributed in different zones of a mean size between 0.05 and 0.5 mm, and the differrent zones will be uniformly distributed throughout the sintered shaped body.

4,204,864

PARTICULATE SLAGGING COMPOSITION FOR THE CONTINUOUS CASTING OF STEEL

Charles M. Loane, Jr., Bel Air, Md., and Martin L. Hoss, Parma, Ohio, assignors to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 897,717, Apr. 19, 1978, abandoned. This application Feb. 7, 1979, Ser. No. 10,028

Int. Cl.[2] C22B *9/10;* **C21C** *7/00*

U.S. Cl. 75—257 **14 Claims**

1. A particulate slagging composition comprising glass network formers and fluxing agents therefor, said compositions characterized by the absence of lithium, and the flowidity and fusion range upon melting suitable for the continuous casting of a steel, the theoretical net oxide analysis values of said composition being within the following ranges:

Oxide	Weight Percent	
K_2O	0.5–6	with the proviso that the weight ratio of K_2O/Na_2O is between 1:2.5 and 1:20 and the Group 1A metal oxides do not exceed 35%
Na_2O	10–30	
CaO	20–41	with the proviso that the Group 2A metal oxides do not exceed 41%
MgO	0–10	
BaO	0–5	
SrO	0–5	
TiO_2	0–4	
ZrO_2	0–3	
Oxide of a Period IV. metal having atomic No. of 23–28, inclusive	0–6	
F (elemental component of the fluorine-providing materials)	0–16	
SiO_2	25–45	with the proviso that these glass network formers do not exceed 45 percent
B_2O_3	0–10	
Al_2O_3	0–8	

wherein the percentages are selected to total 100%.

4,204,865

DIRECT-IMAGING FLEXIBLE OFFSET PRINTING PLATE AND METHOD OF MANUFACTURE

Manfred R. Kuehnle, Lexington; Ferdinand Martinez, Belmont, and Stanley F. Ignasiak, Holliston, all of Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

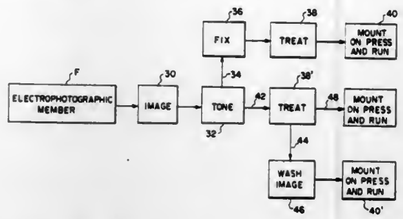
Continuation of Ser. No. 632,590, Nov. 17, 1975, abandoned. This application Jan. 19, 1978, Ser. No. 870,675

Int. Cl.[2] G03G *5/04;* **G03F** *7/02*

U.S. Cl. 430—30 **35 Claims**

1. A method of making a direct-imaged flexible printing plate suitable for use in offset or the like lithographic printing from an electrophotographic member of the type which comprises a thin flexible polymer substrate having a thin, transparent ohmic layer deposited thereon and a high gain, sensitive, photoconductive coating is sputtered, wholly inorganic, uniformly vertically oriented crystalline, flexible, transparent, dense and provides an abrasion-resistant surface, the coating having a dark resistivity of at least 10^{12}, a ratio of light to dark resistivity of at least 10^4 and being electrically anisotropic, which method comprises:

charging the surface of the electrophotographic member in darkness,



immediately thereafter exposing the surface to a radiation projected image to form a latent image of charge on said surface,

toning the surface to develop the latent image with a hydrophobic toner and forming a hydrophilic surface coating on the non-imaged areas of the photoconductive coating by treating the toned coating surface with a material directly forming the hydrophilic surface layer on the non-imaged areas.

4,204,866

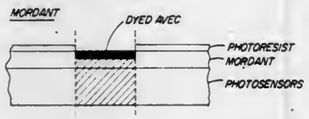
SOLID-STATE COLOR IMAGING DEVICES AND METHOD FOR MAKING THEM

Jerry R. Horak, Rochester; Harold F. Langworthy, Webster; Frederick J. Rauner, and Robert C. Gross, both of Rochester, all of N.Y., assignors to Eastman Kodak Comapny, Rochester, N.Y.

Continuation-in-part of Ser. No. 730,885, Oct. 8, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,841

Int. Cl.[2] G03C *5/00, 1/84*

U.S. Cl. 430—306 **6 Claims**



1. A method for making a color imaging device which comprises means for sensing radiation comprising a planar array of charge-handling semiconductive photosensors having sensing areas that are sensitive to radiant energy, and filter means for controlling access of radiation to said sensing means, said filter means being in micro-registration with said array of photosensors and comprising a plurality of radiation intercepting means defining a planar array of filter elements comprising the steps of: superimposing in micro-registration on the array of photosensors said filter means said filter means being formed by a method comprising the steps of:

A. forming a transparent mordant layer on a substrate;

B. coating a layer of photoresist over the mordant layer;

C. exposing the photoresist to a pattern representing a set of filter elements and developing the photoresist to obtain window areas in the photoresist layer corresponding to said pattern;

D. imbibing a dye into the mordant layer through the window areas to fix the dye in the mordant layer by reason of the lateral restraint to dye migration exhibited by the mordant layer so as to produce filter elements each having

an edge sharpness less than about 20 micron, thus forming dyed filter elements corresponding to said pattern;

E. removing the remaining portions of the photoresist to yield a first set of dyed filter elements in a planar array in the mordant layer; and

F. repeating steps (B) through (E) at least once to form another set of dyed filter elements in the mordant layer in an interlaid pattern with the first set, each repetition of the steps yielding an additional set of dyed filter elements in an interlaid pattern with the prior sets, one set having a common light absorption and transmission characteristic that differs from another set.

4,204,867

PROCESS FOR THE PRODUCTION OF COLOR PHOTOGRAPHIC IMAGES USING NEW WHITE COUPLER SUBSTANCES

Karl Küffner, Unterhaching; Wolfgang Lässig; Ernst Meier, both of Munich; Immo Boie, Cologne; Gertrud Kirchhoff, Leverkusen; Helmut Häseler, Leverkusen, and Herbert Stark, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

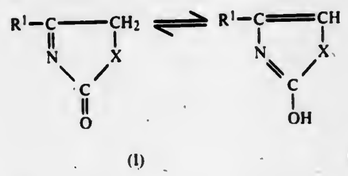
Filed Feb. 10, 1978, Ser. No. 876,701

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2705974

Int. Cl.[2] G03C *7/00*

U.S. Cl. 430—376 **2 Claims**

1. A process for the production of colored images by the chromogenic development of an imagewise exposed color photographic material comprising at least one silver halide emulsion layer with which a non-diffusing color coupler is associated, which process includes the processing steps of color development. bleaching and fixing, wherein the improvement comprises the development step and/or the bleaching step is/are carried out in the presence of a compound capable of reacting with color developer oxidation products with the consumption of four oxidation equivalents to form colorless end products, said compound corresponding to formula I or its tautomeric form Ia:



(I) (Ia)

in which

R^1 represents an alkyl group from 1 to 18 carbon atoms, a phenyl group, a naphthyl group, a photographically inert heterocyclic radical selected from the group consisting of pyridyl, thienyl, thiazolyl, furanyl and indole radicals, attached through a ring carbon atom

X represents —S— or —NR^3—

where R^3 represents hydrogen, an alkyl group from 1 to 18 carbon atoms, a phenyl group, a naphthyl group, a photographically inert heterocyclic radical selected from the group consisting of pyridyl, thinyl, thiazolyl, furanyl and indole radicals, attached through a ring carbon atom or an electron-attaching substituent selected from the group consisting of —CN, alkoxy carbonyl, carbamoyl, sulfamoyl, alkyl sulfonyl and aryl sulfonyl radicals.

4,204,868

SALT COMPOUND COMPRISED OF A FERRICYANIDE ANION AND A PROTONATED NITROGEN-SUBSTITUTED HYDROCARBON COMPOUND CATION, AND A STABLE SOLUTION THEREOF

David R. Boston, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 694,480, Jun. 9, 1976, which is a continuation of Ser. No. 531,712, Dec. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 431,364, Jan. 7, 1974, abandoned. This application Nov. 7, 1977, Ser. No. 848,896

Int. Cl.[2] C07F *15/02*

U.S. Cl. 430—461 **4 Claims**

1. A homogeneously stable acidic aqueous salt solution wherein said salt consists of a ferricyanide anion and an organic cation complexing agent capable of forming a water-insoluble, oleophilic complex with oxidized silver, said cation consisting of a protonated nitrogen-substituted hydrocarbon compound containing a formal imine group therein, wherein said hydrocarbon compound is 2-benzyl-2-imidazoline.

2. A salt compound, the anionic portion of which consists of a ferricyanide anion and the cationic portion of which consists of a protonated nitrogen-substituted hydrocarbon compound containing a formal imine group therein, wherein said hydrocarbon compound is 2-benzyl-2-imidazoline.

3. A homogeneously stable acidic aqueous salt solution wherein said salt consists of a ferricyanide anion and a cationic portion consisting of an alkali metal cation and a protonated nitrogen-substituted hydrocarbon compound containing a formal imine group therein, wherein said hydrocarbon compound is 2-benzyl-2-imidazoline.

4. A salt compound, the anionic portion of which consists of a ferricyanide anion and the cationic portion of which consists of an alkali metal cation and a protonated nitrogen-substituted hydrocarbon compound containing a formal imine group therein, wherein said hydrocarbon compound is 2-benzyl-2-imidazoline.

4,204,869

METHOD FOR FORMING NOBLE METAL SILVER PRECIPITATING NUCLEI

Charles H. Byers, Norfolk; Robert W. Hausslein, Lexington, and Mara O. Nestle, Natick, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 4, 1978, Ser. No. 897,945

Int. Cl.[2] G03C *1/48;* **C03C** *17/06, 21/00;* **C01G** *55/00*

U.S. Cl. 430—564 **18 Claims**

1. A method for forming noble metal silver-precipitating nuclei which comprises the steps of

(a) forming an aqueous solution of a stannous salt;

(b) contacting said solution with an oxidizing agent to partially oxidize said stannous ion to provide a ratio of Sn^{+4} to Sn^{+2} of about 2.5 to 10 to 5.5 to 10; and

(c) adding a noble metal salt or complex.

8. The method of claim 1 which includes the step of coating said nuclei on a support.

4,204,870

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE HETEROCYCLYAZONAPHTHOL DYE-RELEASING COMPOUNDS

Derek D. Chapman, Rochester, and E-ming Wu, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

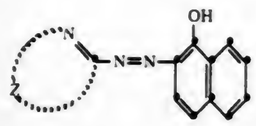
Continuation-in-part of Ser. No. 927,785, Jul. 25, 1978, which is a division of Ser. No. 832,309, Sep. 12, 1977, abandoned. This application Jan. 9, 1979, Ser. No. 2,126

Int. Cl.[2] G03C *1/40;* **C09B** *45/00*

U.S. Cl. 430—213 **4 Claims**

1. A photographic element comprising a support having

thereon a layer comprising a photographic mordant having bound thereto a coordination complex of a polyvalent metal ion and a compound having the following formula:



wherein:

Z represents the atoms necessary to complete a heterocyclic ring, said heterocyclic ring not being substituted with a nitro group, and said heterocyclic ring being selected from the group consisting of pyridine, pyrimidine, quinoline, isoquinoline, pyrazine, pyridazine, thiazole, thiadiazole, triazole, benzothiazole or acinaphthothiazole.

4,204,871

PRINTING INKS CONTAINING NUCLEATED ORGANIC PIGMENTS

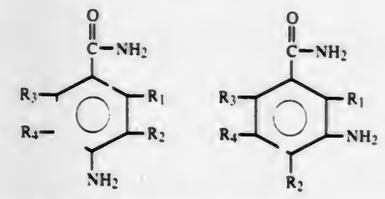
Mark U. Johnson; Jules Rothmayer, and Hugh M. Smith, all of Cincinnati, Ohio, assignors to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 893,454, Apr. 4, 1978, abandoned, which is a division of Ser. No. 805,079, Jun. 9, 1977, abandoned. This application Apr. 4, 1979, Ser. No. 26,586

Int. Cl.² C09D *11/02*

U.S. Cl. 106—20 **17 Claims**

1. A printing ink wherein the pigment is a nucleated azo pigment prepared by reacting in aqueous solution (a) a compound having the formula



wherein R_1, R_2, R_3, and R_4 may be the same or different and each may be H, CH_3, or OCH_3, (b) at least one other primary aryl amine, and (c) at least one coupling agent in the presence of (d) a dispersed inorganic material.

4,204,872

PREPARATION OF HIGH TEMPERATURE SHELL MOLDS

Hossein Hayati; Russell S. Towers, both of Adrian, Mich., and Peter G. Carpenter, deceased, late of Westport, Conn., assignors to Stauffer Chemical Company, Adrian, Mich.

Continuation-in-part of Ser. No. 719,776, Sep. 2, 1976, abandoned, which is a continuation of Ser. No. 489.867. Jul. 18, 1974, abandoned. This application Jul. 14, 1977, Ser. No. 815,635

Int. Cl.² B28B *7/34*

U.S. Cl. 106—38.35 **2 Claims**

1. A process for preparing a shell mold which comprises coating an expendable pattern with a composition containing a binder which is substantially free of water and a refractory material in which the ratio of refractory material to binder is from about 4 to 50 parts of refractory material per part of binder SiO_2, said binder consisting essentially of a prehydrolyzed alkyl orthosilicate in which the alkyl group has from 1 to 4 carbon atoms, an aminoalcohol of the formula

$$HORN(R')_2$$

in which R is a divalent hydrocarbon radical having from 1 to 6 carbon atoms, R' is selected from the group consisting of hydrogen, an alkyl radical and a radical of the formula —ROH in which R is the same as above, in which the mol ratio of aminoalcohol to alkyl orthosilicate is from 1:1 to 10:1 and sufficient organic solvent to provide an SiO_2 content of from 10 to 35 percent by weight based on the weight of the binder, stuccoing the coated pattern, air drying and repeating the above sequence of steps until a coating of desired thickness is achieved.

4,204,873

SINTERED CERAMIC BODY FOR CUTTING TOOLS

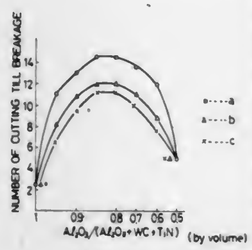
Yoshihiro Yamamoto, Iwakura; Kenji Sakurai, Komaki, and Hiroshi Tanaka, Aichi, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed May 10, 1979, Ser. No. 37,606

Claims priority, application Japan, Jun. 13, 1978, 53-71240

Int. Cl.² B24D *3/04*; C04B *31/16, 35/44, 35/56*

U.S. Cl. 106—43 **9 Claims**



1. A sintered ceramic body for use in cutting tools which has an average crystal grain size of not more than about 2μ and comprises about 60 to 95% by volume of (a) Al_2O_3 and the remainder being composed of (b) WC, provided that it may contain W_2C in which case the intensity ratio $I_{W_2C}(101)/I_{WC}(111)$ in X-ray diffraction using CuKα rays is not more than about 0.5, and (c) TiN, the volume ratio of components (b) to (c) being from about 5:95 to 95:5.

5. A method for producing a sintered ceramic body for use in cutting tools, which comprises adding carbon powder to a starting powder consisting of about 60 to 95% by volume of Al_2O_3 and the remainder WC and TiN, the volume ratio of WC to TiN being about 5:95 to 95:5; and sintering a mixture of these components at a high temperature and a high pressure, said carbon being added in an amount such that the intensity ratio $I_{W_2C}(101)/I_{WC}(111)$ in X-ray diffraction using CuKα rays is not more than about 0.5 and the crystal grain size of the sintered ceramic body does not exceed about 2μ.

4,204,874

LIGHT-TRANSMITTING, POLYCRYSTALLINE ALUMINA BODY AND METHOD FOR PRODUCING THE SAME

Shigetaka Yamada, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,312

Claims priority, application Japan, Dec. 2, 1977, 52-144730

Int. Cl.² C04B *35/10*

U.S. Cl. 106—73.4 **3 Claims**

1. A light-transmitting, polycrystalline alumina body consisting of α-Al_2O_3 containing 0.1 to 1.0 weight percent of strontium oxide.

4,204,875

CEMENTITIOUS COMPOSITIONS

Miklos Szalavitz, Warwick, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jun. 22, 1977, Ser. No. 809,057

Int. Cl.² C04B *7/02*

U.S. Cl. 106—87 **32 Claims**

1. A hydraulic cement composition which on mixing with water forms an alkaline aqueous hydraulic cementitious mixture which has the property of setting into a hard mass the volume of which is at least as great as the original volume of the mixture, comprising in admixture a hydraulic cement mix and an agent which generates oxygen gas under the alkaline conditions of the mixture, where said agent is a monopersulfate salt and is present in an amount which will generate sufficient oxygen gas to prevent shrinkage of the mixture during setting and hardening.

4,204,876

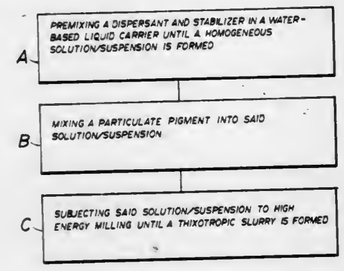
CEMENT COLORING COMPOSITION AND METHOD OF PRODUCING SAME

Alan P. Bowden, Binfield, England, assignor to M. Hamburger & Sons, Inc., King of Prussia, Pa.

Filed Jul. 17, 1978, Ser. No. 925,048

Int. Cl.² C04B *7/10, 31/28*

U.S. Cl. 106—90 **29 Claims**



1. Coloring compositions for concrete or mixes or the like comprising:

(a) about 20–70% by weight of a solid particulate pigment,

(b) about 0.4–15% by weight of a stabilizer,

(c) about 0.1–3% by weight of a dispersant, and

(d) about 12–77% by weight of an aqueous carrier which has been mixed and milled to form a thixotropic slurry.

27. A colored concrete or cementitious mixture comprising,

(a) a thixotropic coloring slurry comprising

(1) about 20–70% by weight of a solid particulate pigment,

(2) about 0.4–15% by weight of a stabilizer,

(3) about 0.1–3% by weight of a dispersant, and

(4) about 12–77% by weight of an aqueous carrier,

said slurry having been mixed and subjected to high-energy milling whereupon it is rendered thixatropic and

(b) a wet cement or concrete mix with which said thixotropic slurry has been mixed.

4,204,877

CEMENT GRINDING AID AND SET RETARDER

Howard H. Moorer, Charleston, and Charles M. Anderegg, Sullivan's Island, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,356

Int. Cl.² C04B *7/35*

U.S. Cl. 106—90 **44 Claims**

1. A hydraulic cement additive composition comprising a polyglycerol, from 10% to 50% by weight of the total additive composition of a water-soluble glycol, from 10% to 40% by weight of the total additive composition of a water-soluble salt of an aliphatic acid having no more than three carbons, from 10% to 50% by weight of a water-soluble hydroxyalkyl amine based on the combined weight of the glycol and the amine, and from 10% to 30% by weight of the total additive composition of a water-soluble salt of a sulfonated lignin.

4,204,878

RAW MIXTURE FOR THE PRODUCTION OF REFRACTORY HIGH-ALUMINA CEMENT

Boris I. Nudelman; Marsel Y. Bikbau; Pavel A. Oborin, all of Tashkent, and Tamara V. Kuznetsova, Moscow, all of U.S.S.R., assignors to Tashkentsky Nauchnoissledovatelsky I Proektny Institut Stroitelnykh Materialov "Nilstromproekt", U.S.S.R.

Continuation of Ser. No. 804,265, Jun. 7, 1977, abandoned. This application Nov. 7, 1978, Ser. No. 958,501

Claims priority, application U.S.S.R., Aug. 20, 1976, 2400198

Int. Cl.² C04B *7/32*

U.S. Cl. 106—104 **9 Claims**

1. A raw mixture for the production of a refractory high-alumina cement consisting of a calcareous component, an aluminous component and a chloride of at least one metal, selected from the group consisting of magnesium, calcium, barium, strontium, sodium, potassium, the components being taken in the following proportions, percent by mass;

aluminuous component (calculated for Al_2O_3): 69 to 73

calcareous component (calculated for CaO): 11 to 23

chlorides of said metals: 20 to 4.

4,204,879

AMINO ACID SALTS OF ANIONIC DYESTUFFS WHICH HAVE HIGH SOLUBILITY IN ORGANIC SOLVENTS

Keith N. Paskins, Twickenham; Duncan C. Redman, Hounslow, and Ian D. Turner, Richmond, all of England, assignors to Williams (Hounslow) Limited, Hounslow, England

Filed Dec. 7, 1977, Ser. No. 858,446

Claims priority, application United Kingdom, Dec. 19, 1976, 51454/76

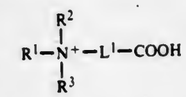
Int. Cl.² C09B *29/38, 45/16, 45/20, 55/00*

U.S. Cl. 106—311 **18 Claims**

1. An amino-acid dyestuff salt of the formula:

$$[Am^+]_{n-q}A^{(-)}{}_n[Cat^+]_q$$

wherein Am^+ is an amino-acid cation of the formula:



in which L^1 is a radical of the formula:

$$-(CR^4R^5)_x-$$

where R^4 and R^5 are the same or different and are selected from the group consisting of hydrogen, linear and branched alkyl, phenyl, and amino and x is an integer from 1 to 10, R^1, R^2, and R^3 are the same or different and are selected from the group consisting of hydrogen, cycloalkyl of 3 to 7 carbon atoms, phenyl, alkylphenyl, phenylalkyl, alkoxyalkyl, alkylaminoalkyl, alkylamidoalkyl and linear or branched chain alkyl wherein alkyl or alkoxy contains 1 to 20 carbon atoms, and the radical of the formula $—L^2—COOH$ where L^2 is selected from the group $—(CR^4R^5)_x—$ wherein R^4, R^5 and x are as defined above provided that R^1, R^2, and R^3 and x are not each simultaneously L^2

A is an anionic dye selected from the group consisting of azine azo and azomethine dyes and azo and azomethine dyes with transition metals,

Cat^+ is a cationic radical selected from cationic dyestuff radicals and a proton,

n is 1, 2, or 3, q is 0, 1, 2, or 3 provided that n-q is other than

0 and where q is greater than 1 the cations comprising the $[cat^+]$ moiety are the same or different.

4,204,880

HIGH SPEED COOLING OF INGOTS

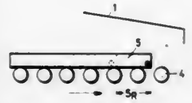
Rudolf Schwitzgöbel, Krefeld, and Karl Monreal, Düsseldorf, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 27, 1978, Ser. No. 872,935

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2704127

Int. Cl.² C21D *1/62*

U.S. Cl. 134—32 **5 Claims**





1. In a method of high speed cooling an ingot on a roller track, there being spray nozzles disposed to spray coolant towards the ingot, the improvement of moving the ingot on and by means of the roller track, alternatingly back and forth while being sprayed with the coolant, whereby during phases of motion in one direction, the ingot traverses a path longer than a path it traverses when moved in the opposite direction, so that the ingot engages rolls of the roller track in different positions on each reversal and the ingot progresses stepwise in the one direction.

4,204,881

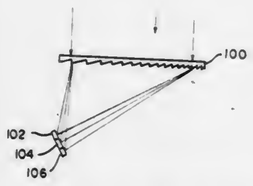
SOLAR POWER SYSTEM

Stephen P. McGrew, 4624 W. 34th St., Spokane, Wash. 99204

Filed Oct. 2, 1978, Ser. No. 947,488

Int. Cl.² H01L *31/04*

U.S. Cl. 136—89 PC **11 Claims**



1. An efficient system for converting solar energy into useful energy, comprising:

spectrally dispersive light concentrating means for redirecting said solar energy toward a spectrally dispersed focus, and light energy converting means positioned in the spectrally dispersed focus for converting the redirected solar energy into useful energy, said light energy converting means including at least one element whose spectral response is substantially matched to the spectral range of said redirected solar energy incident thereupon.

4,204,882

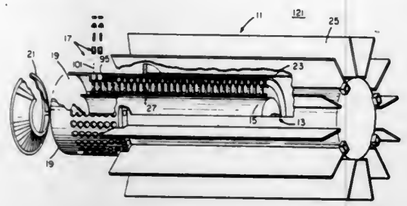
THERMOCOUPLE SPLIT FOLLOWER

Louis J. Howell, deceased, late of Upper Merion Township, Montgomery County, Pa. (by Diane Howell, executrix), assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 3, 1965, Ser. No. 512,824

Int. Cl.² H01L *35/04*

U.S. Cl. 136—202 **5 Claims**



1. A radioisotope heated thermoelectric generator assembly, comprising a plurality of thermocouples having first and second ends, said first ends having a hot frame connected thereto and said second ends having a cold frame connected thereto, said cold frame having two symmetrical split follower halves, and means for urging the outside of said split follower into contact with said cold frame, comprising hemispherical mating surfaces between said followers and said thermocouples, resilient spring means for urging said thermocouples and followers longitudinally oppsitely into contact with each other, and tapered wedge means in said followers that react with said spring means for urging said split follower halves apart.

4,204,883

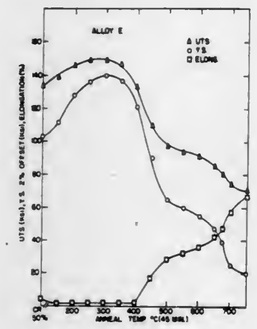
TARNISH RESISTANT COPPER ALLOY

Richard D. Smith, Acton, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Division of Ser. No. 769,723, Feb. 17, 1977, Pat. No. 4,113,475, which is a continuation-in-part of Ser. No. 675,604, Apr. 9, 1976, abandoned. This application Aug. 30, 1978, Ser. No. 938,714

Int. Cl.² C22C *9/01*; C22F *1/08*

U.S. Cl. 148—2 **9 Claims**



1. A process for making a tarnish resistant copper alloy having a film resistance of at least 95 kilohms, said process comprising the steps of:

A. forming a hot liquid solution of metals consisting essentially of the following constituents in the following amounts in percent by weight:

Al 7–8.5
Ni 1.5–2.5
Cu 89–91.5

B. cooling the metal solution to form a solid; and

C. subjecting the solid to a heat treatment to produce a metallic structure comprising an alpha phase matrix made of aluminum in solid solution with copper and containing dispersed NiAl, said structure containing less than 2 volume percent beta and gamma phases.

4,204,884

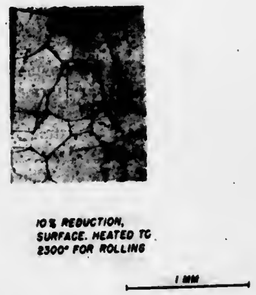
METHOD OF CONDITIONING CAST STEEL FOR HOT WORKING

Erik E. Berg, Stockholm, and Rolf Tingwall, Avesta, both of Sweden, assignors to Ingersoll Steel Company, New Castle, Ind.

Continuation of Ser. No. 932,713, Aug. 11, 1978, abandoned. This application Mar. 15, 1979, Ser. No. 21,270

Int. Cl.² C21D *7/02*

U.S. Cl. 148—2 **9 Claims**



1. A method of conditioning a cast steel body to undergo recrystallization upon heating to reduce the tendency for surface defects and edge-cracking upon hot working, the steel being of a grade which does not exhibit phase transformation when heated for hot working, comprising the step of cold rolling the body to an extent such that the cross-section quotient product after cold rolling is from about 0.99 to about 0.75; such step being performed on the body as the first step in converting it to an intermediate slab, plate, band or billet without prior treatment other than initial removal of scale and surface defects.

4,204,885

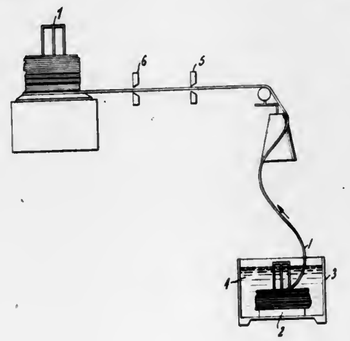
METHOD FOR PROVIDING STRONG WIRE

Jaak S. Van den Sype, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 21, 1979, Ser. No. 22,631

Int. Cl.² C21D *1/62, 9/52*

U.S. Cl. 148—12 B **5 Claims**



1. In a process for improving the strength characteristics of a wire composed of an austenitic metal alloy selected from the group consisting of stainless steel alloys of the AISI 200 and 300 series and non-stainless steel alloys containing iron, manganese, chromium, and carbon, said alloy having an Md temperature of no higher than about 100° C. and an Ms temperature of no higher than about minus 100° C., comprising the following steps:

(a) deforming the wire at a strain of at least about 10 percent and at a temperature in the range of about Md minus 50° C. to about Md plus 50° C., said Md temperature being that of the alloy undergoing deformation, in such a manner that the wire has a martensite phase of no greater than about 10 percent by volume and an austenite phase of at least about 90 percent by volume and a yield strength in the range of about 130,000 psi to about 230,000 psi;

(b) cooling the wire to a temperature no higher than about minus 75° C.; and

(c) drawing the cooled wire thereby by the cross-sectional area of the wire is reduced by a certain percentage and the wire has a martensite phase of at least about 50 percent by volume and an austenite phase of at least about 10 percent by volume,

the improvement comprising carrying out the drawing of step (c) by drawing the wire through two dies placed in series in such a manner that the cross-sectional area of the wire is reduced by the first die by a percentage in the range of about 8 to about 15 percent and the cross-sectional area of the reduced wire is further reduced by the second die by a percentage in the range of about 8 to about 15 percent based on the area of the wire exiting the first die.

4,204,886

METHOD FOR IMPROVING AND ARTICLE HAVING IMPROVED WEAR RESISTANCE

Frederick P. Bens, Grosse Point City, Mich., assignor to Kolene Corp., Detroit, Mich.

Filed Apr. 24, 1979, Ser. No. 32,736

Int. Cl.² C23C *9/16*

U.S. Cl. 148—15.5 **4 Claims**

1. A method of improving the resistance of ferrous metal parts to galling and seizure in friction environments which process comprises,

first providing a nitride case on said metal part,

thereafter applying a coating of molybdenum-disulfide over said nitride case.

4. A ferrous metal part having increased resistance to galling and seizure in friction application comprising, a nitride case on said part, and a coating of molybdenum-disulfide over said nitride case.

4,204,887

HIGH DAMPING CAPACITY ALLOY

Hakaru Masumoto, and Showhachi Sawaya, both of Sendai, Japan, assignors to The Foundation: The Research Institute of Electric & Magnetic Alloys, Sendai, Japan

Continuation of Ser. No. 672,313, Mar. 31, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 881,847

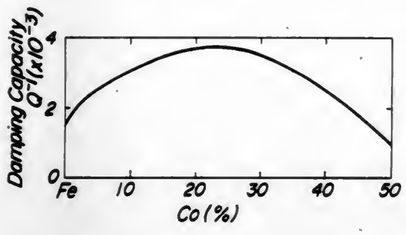
Claims priority, application Japan, Apr. 4, 1975, 50-41083

Int. Cl.² H01F *1/00*

U.S. Cl. 148—31 **9 Claims**

2. A process for producing a high damping capacity alloy comprising the steps of melting a starting material consisting essentially of 1–20 weight % of cobalt and remainder iron as a main component and further including a 0.01–30 weight % in total of an additional subcomponent consisting of at least one element selected from the group consisting of less than 20 weight % of chromium, aluminum and copper, less than 10 weight % of manganese, antimony, niobium, molybdenum, tungsten, titanium, vanadium and tantalum, less than 5 weight % of silicon, tin, zinc, zirconium, and less than 1 weight % of yttrium in a furnace, adding to the melt a small amount less

than 1% of an element selected from a group consisting of manganese, silicon, titanium, aluminum and calcium so as to remove undesirable impurities, shaping the product into a desired form, heating the thus formed article at a high tempera-



ture between its melting point and above 800° C. for more than one minute to 100 hours, and cooling the article at a suitable cooling rate to room temperature to produce an alloy having a damping capacity more than 2×10^{-3} against vibration.

4,204,888

HIGH DAMING CAPACITY ALLOY

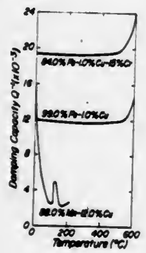
Hakaru Masumoto, and Showhachi Sawaya, both of Sendai, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

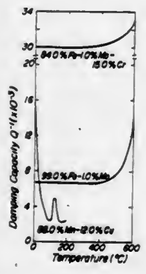
Division of Ser. No. 685,986, Mar. 13, 1976, abandoned. This application Jun. 1, 1978, Ser. No. 911,695

Claims priority, application Japan, May 19, 1975, 50-58735; May 29, 1975, 50-63424

Int. Cl.² C22C *39/14, 39/20*

U.S. Cl. 148—31 **4 Claims**





1. A high damping capacity alloy consisting essentially of from 0.01 to 5% of either copper, molybdenum or mixtures of the two, with the balance being essentially iron, and at least one additional ingredient or ingredients in an amount of from 0.01 to 40 weight percent, which ingredients fall in at least one of the following groups (A) through (D):

(A) up to 40% chromium

(B) up to 10% aluminum, antimony, niobium, tungsten, titanium, vanadium or tantalum

(C) up to 5% silicon, tin, zinc or zirconium

(D) up to 1% cobalt, lead or yttrium,

said alloy having been formed into an article at a temperature lower than 1,300° C. and thus formed article being subjected to a heat treatment according to the following schedule:

(a) heated to a temperature of not less than 500° C. but below its melting point for one minute to 100 hours to effect solution treatment, followed by

(b) cooling at a rate of between 1° C./sec and 1° C./hour, said treatment being effective to achieve a damping capacity of more than 2×10^{-3} against vibration.

4,204,889

SOFT SOLDERING OF ALUMINIUM

Bernard M. Allen; Wallace Rubin, and Brian Watson, all of Hemel Hempstead, England, assignors to Multicore Solders Limited, Hemel Hempstead, England

Filed Sep. 13, 1978, Ser. No. 941,768

Claims priority, application United Kingdom, Oct. 18, 1977, 43375/77

Int. Cl.² B23K *35/34*

U.S. Cl. 148—26 **10 Claims**

1. A flux for use in soft soldering an aluminium or aluminium-based alloy member to a member formed from a metal or alloy capable of being soft soldered to aluminium at a joint site, the flux consisting essentially of a mixture, based on the total weight of the flux, of (1) from 60 to 90 percent of a heavy metal chloride selected from zinc chloride, stannous chloride and mixtures thereof, (2) from 2to 25 percent of an ammonium or alkali metal halide, (3) from 1 to 20 percent of an ammonium or alkali metal fluorine-containing compound, and (4) from 0.5 to 20 percent of a silver halide selected from silver chloride, silver bromide and silver iodide.

4,204,890

METHOD OF PRODUCING NON-ORIENTED SILICON STEEL SHEETS HAVING AN EXCELLENT ELECTROMAGNETIC PROPERTY

Toshio Irie, Chiba; Ko Matsumura, Ichihara; Hiroto Nakamura, Chiba; Hiroshi Shimanaka, Funabashi, and Toshio Suzuki, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Nov. 8, 1978, Ser. No. 958,607

Claims priority, application Japan, Nov. 11, 1977, 52/134688

Int. Cl.² H01F *1/04*

U.S. Cl. 148—111 **7 Claims**

1. A method of producing non-oriented silicon steel sheets having excellent electromagnetic properties, comprising annealing a hot rolled sheet consisting of not more than 0.02% of C, 0.5-3.5% of Si, 0.1-1.0% of Al, 0.1-1.0% of Mn, not more than 0.007% of S, 0.005-0.30% of Sb and the remainder being substantially Fe at a temperature of 700°-950° C. for 2 minutes to 20 hours, cold rolling the annealed sheet into a final gauge, and annealing the cold rolled sheet at a temperature of 750°-1,000° C.

4,204,891

METHOD FOR PREVENTING THE EDGE CRACK IN A GRAIN ORIENTED SILICON STEEL SHEET PRODUCED FROM A CONTINUOUSLY CAST STEEL SLAB

Morio Shiozaki; Masafumi Okamoto; Kiyoshi Tanaka, and Takahide Shimazu, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 965,241

Int. Cl.² H01F *1/04*

U.S. Cl. 148—111 **3 Claims**

1. In a method for producing a grain oriented silicon steel sheet having an excellent uniform shaped edge from a continuously cast steel slab, which comprises: heating a continuously cast steel slab containing 2.5 to 4.0% silicon to a temperature between 1280° C. and 1430° C., hot rolling the heated slab at a starting temperature not lower than 1050° C. in a finish hot rolling step, continuously annealing the hot rolled sheet, cold rolling the annealed sheet and finally annealing the cold rolled sheet at a high temperature for secondary recrystallization, the improvement which comprises subjecting the slab to a series of rough hot rolling passes prior to the hot finishing step such that the reduction rate in the last half stage of the rough hot rolling is 5 to 35% so as to prevent edge cracks in a hot coil thus-produced from the method; said rough rolling being performed at a temperature not less than 1050° C.

4,204,892

HEAT-TREATING TUBULAR STEEL SECTIONS

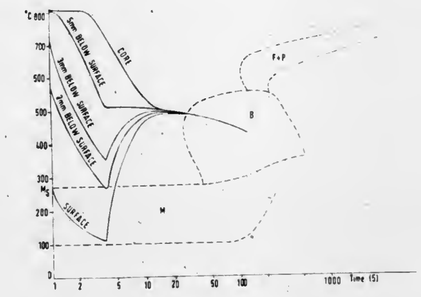
Marios Economopoulos, Liege, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum voor Research In de Metallurgie, Brussels, Belgium

Filed Oct. 13, 1978, Ser. No. 950,985

Claims priority, application Belgium, Oct. 14, 1977, 859780; Apr. 25, 1978, 866366

Int. Cl.² C21D *9/08*

U.S. Cl. 148—145 **14 Claims**



1. A process for treating a tubular steel section by the sequential steps of providing the section at a temperature greater than a temperature between Ac_3 and Ac_1, corresponding to at most 15% ferrite in the steel, comprising:

(a) subjecting the section to quenching producing martensite, by intense cooling by means of a cooling agent to a temperature below M_s, and subjecting the section to still air cooling, in which the conditions of intense cooling are such that the effects of quenching are limited to at least one surface layer of the section and that, at the end of the quenching step, that part of the section remote from the quenched surface layer is at a temperature above 675° C. which permits self-tempering of the quenched surface layer at a temperature above 450° C. and ensures transformation of residual austenite to a martensite-free structure;

(b) terminating the self-tempering of the superficial martensite at a skin temperature lower than the theoretical equalisation temperature or tempering temperature, the said theoretical temperature being the temperature to which the surface and the central part of the tube would converge if the following step (c) were not applied;

(c) following step (b), subjecting the section to sudden and intense cooling such that the points of the section reaching a temperature lower than M_s during this cooling are at most those that have already been cooled below this temperature during the initial quenching step; and

(d) after this cooling step (c), allowing renewed self-tempering of the cooled zone to take place, resulting in temperature equalisation throughout the section and then in the transformation of the residual austenite starting from the equalisation temperature thus reached.

4,204,893

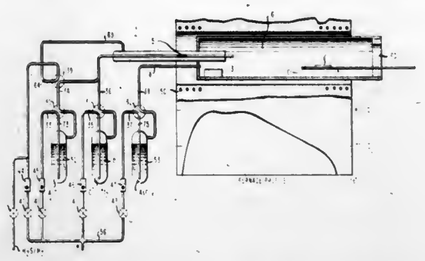
PROCESS FOR DEPOSITING CHROME DOPED EPITAXIAL LAYERS OF GALLIUM ARSENIDE UTILIZING A PRELIMINARY FORMED CHEMICAL VAPOR-DEPOSITED CHROMIUM OXIDE DOPANT SOURCE

Herbert M. Cox, Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 16, 1979, Ser. No. 12,713

Int. Cl.² H01L *21/205, 21/84*

U.S. Cl. 148—175 **7 Claims**



1. A process for depositing a chrome doped epitaxial layer of GaAs on a substrate comprising the steps of combining a gas phase composition which contains a GaAs precursor with a chromium containing dopant to form a deposition composition and forming said epitaxial layer by contacting said substrate with said deposition composition under conditions which result in epitaxial growth of GaAs on said substrate characterized in that a dopant source is obtained by the chemical vapor deposition of a chromium oxide and said chromium containing dopant is then formed by passing a reactive gas which forms volatile chromium containing compounds with chromium oxide over said dopant source wherein said reactive gas is substantially absent over said dopant source during said chemical vapor deposition of said dopant source.

4,204,894

PROCESS FOR FABRICATION OF SEMICONDUCTORS UTILIZING SELECTIVELY ETCHABLE DIFFUSION SOURCES IN COMBINATION WITH MELT-FLOW TECHNIQUES

Tadao Komeda, Yamatotakada, and Kazufumi Ogawa, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 2, 1979, Ser. No. 35,236

Claims priority, application Japan, Nov. 5, 1978, 53/56303

Int. Cl.² H01L *21/225, 21/316*

U.S. Cl. 148—188 **17 Claims**

1. A process for fabricating semiconductor devices characterized by the steps of

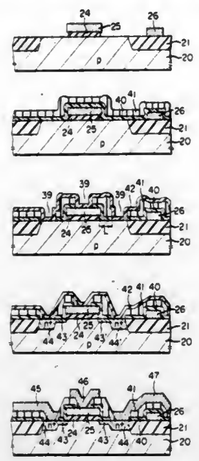
forming a first insulating layer containing n- or p-type impurities over the surface of a p- or n-type semiconductor wafer,

forming a second insulating layer over said first insulating layer, said second insulating layer being softened or meltable at low temperatures, selectively removing portions of said first and second insulating layers so as to selectively expose said semi-conductor wafer,

forming a third insulating layer containing n- or p-type impurities over the surface of said semiconductor wafer including its exposed areas, said third layer being selectively etchable from said second layer,

heating said wafer so as to fluidize or soften or melt said

second insulating layer while diffusing said n- or p-type impurities from said first and third insulating layers into



said semiconductor wafer, and removing said third insulating layer by selective etching.

4,204,895

GREEN FLARE COMPOSITIONS

Henry A. Webster, III, Ellettsville, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 17, 1978, Ser. No. 934,659
Int. Cl.² C06G *45/10*
U.S. Cl. 149—19.6 **2 Claims**

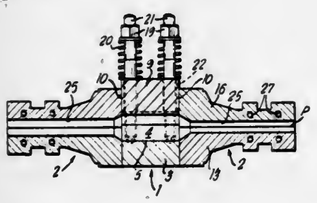
1. A green flare composition free of chlorine containing compounds consisting essentially, by weight of between 25 and 40 percent of magnesium, between 5 and 15 percent of boron, between 40 and 55 percent of barium nitrate, and about 5 percent of an epoxy binder.

4,204,896

PRODUCTION OF CABLE JOINTS

John Richardson, Luton, England, assignor to Hayward Tyler Limited, Bedfordshire, England

Filed Sep. 5, 1978, Ser. No. 939,733
Claims priority, application United Kingdom, Sep. 9, 1977, 37634/77
Int. Cl.² B21F *15/02*; B29C *6/02*
U.S. Cl. 156—49 **9 Claims**



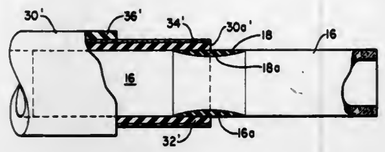
1. A method for producing a joint, between a plurality of cables, insulated by cross-linked polyethylene material, comprising connecting electrically conductive parts of said cables together, covering the electrical joint thus produced and adjacent portions of the cables with cross-linked polyethylene material in uncured condition, placing the said covered electrical joint and adjacent cable portions in a mould, closing the mould with the said joint and cable portions enclosed with a tight fit therein, heating the enclosed joint within the mould until the said polyethylene material is cured throughout its thickness, cooling the joint in the mould, and, during the cooling of the joint, producing compression over at least substantially the whole of the joint by applying pressure mechanically to at least one relatively movable wall part of the mould in contact with the said material, whereby the formation and persistence of voids in the cured joint is substantially suppressed.

4,204,897

METHOD AND APPARATUS FOR SPLICING HOSE

Jeffrey M. Bartell, Rome, N.Y., and Robert V. D'Elia, Canton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 25, 1978, Ser. No. 927,717
Int. Cl.² B32B *31/00*
U.S. Cl. 156—155 **5 Claims**



1. A method of splicing two segments of hose the ends of which are in abutting relationship to form a juncture therebetween, said hose comprised of an inner elastomeric liner tube, and at least one ply of a textile reinforcement fabric, and an elastomeric cover, the method comprising the steps of:

removing the covering material for a length "L" from each hose end to expose the underlying reinforcement fabric;

preparing the ends by buffing the bore of the liner tube and the hose covering for a length L' and cleaning the buffed areas with an appropriate solvent;

winding a length of an uncured sealing elastomer about the midpoint of a cylindrical plaster mandrel, the mandrel being characterized by an annular concave groove at its midpoint, the sealing elastomer filling the groove to the outer surface of the mandrel, the circumference of the outer surface of the mandrel being substantially equal to the bore circumference of the hose being spliced when positioned on the mandrel;

inserting the mandrel into each hose end bore such that the ends are in an abutting relationship at the approximate midpoint of the mandrel in the area of the sealing elastomer;

filling the juncture of the abutted ends with an uncured elastomeric packing for the depth of the hose liner tube and the reinforcement fabric to fill any gaps that may exist therebetween due to a mismatch of the ends;

wrapping the juncture of the abutted ends with a reinforcement textile fabric material having uncured elastomeric gum on both surfaces to provide a bond with the underlying hose reinforcement for the length 2L of the exposed hose reinforcement;

wrapping an uncured elastomer cover about and completely covering the reinforcement textile fabric for the length 2L and extending an additional length in either longitudinal direction to overwrap the existing hose cover for the length L' such that the overall covering has a width at least 2L+2L';

wrapping a cure tape about the splice area such that the multiple thicknesses of the tape result across the width of the splice;

heating the splice area to vulcanize the underlying splice components; and

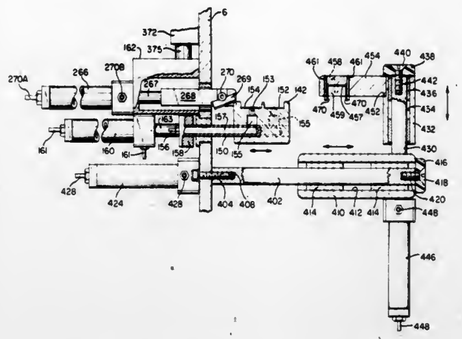
removing cure tape upon completion of the vulcanization and breaking up the plaster mandrel within the hose so that it may be washed out under normal fluid pressure.

4,204,898

TAPE WINDING AND SPLICING MACHINE

James L. King, Southboro, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Jun. 21, 1978, Ser. No. 917,638
Int. Cl.² B65H *19/20*
U.S. Cl. 156—159 **9 Claims**



1. In a tape winding machine for splicing a selected supply tape into a leader tape connected between first and second hubs and winding said supply tape onto said first hub, said winding machine comprising: hub-holding means, a splicing block assembly for supporting the leading end of a supply tape and a leader tape, cutting means for cutting along a predetermined cutting line a supply tape or a leader tape that is supported by said splicing block assembly and extends across said predetermined cutting line, splicing means for splicing together abutting ends of the leader and supply tapes, drive means for rotating said first hub so as to wind said supply tape on to that hub, and means for operating said foregoing means whereby: (a) said leader may be severed into two sections, (b) the leader section attached to said first hub may be spliced to the leading end of said supply tape, (c) a selected length of supply tape and the one leader section may be wound onto said first hub, (d) the supply tape may be severed so as to form a trailing end for said length of supply tape on said splicing block assembly, and (e) the leader section may be spliced to the trailing end of the severed length of supply tape;

a splice trimmer assembly for removing substantially all tape overhang from a splice, said splice trimmer assembly comprising:

(1) cutting means for trimming the splice of a spliced tape on said splicing block so as to eliminate any tape overhang from the edges of said spliced tape at said splice; and

(2) transport means for supporting said cutting means and for moving said cutting means into and out of engagement with opposite edges of a spliced tape on said splicing block, said transport means comprising a first means for mounting and moving said cutting means vertically relative to said splicing block and a second means for mounting and moving said first means horizontally relative to said splicing block.

4,204,899

CORK-RESIN ABLATIVE INSULATION FOR COMPLEX SURFACES AND METHOD FOR APPLYING THE SAME

Hill M. Walker, Guntersville; Max H. Sharpe, and William G. Simpson, both of Huntsville, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 12, 1978, Ser. No. 941,711
Int. Cl.² B29C *17/00, 17/04*
U.S. Cl. 156—212 **3 Claims**

1. The method of preparing cork-resin ablative insulation material for application to a complex curved substrate comprising:

(a) mixing finely divided cork with a B-stage curable thermosetting resin, said resin comprising 20 to 60 weight percent of the mixture;

(b) forming the resulting mixture into a block;

(c) B-stage curing the resin-containing block by heating at a temperature of 280° F. to 320° F. for a period of at least about 15 minutes;

(d) cutting the B-stage cured block into sheets;

(e) draping the resultant sheet material over said substrate or a surface corresponding in shape thereto;

(f) enclosing the resulting assembly in a vacuum bag;

(g) evacuating said bag; and

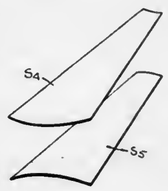
(h) further curing the resultant shaped sheet material by heating said sheet material at a temperature of 280° F. to 320° F. for at least 30 minutes.

4,204,900

METHOD OF PRODUCING THIN BALSA WOOD SHEETS

Jean Kohn, New York, N.Y., assignor to Baltek Corporation, Northvale, N.J.

Filed Feb. 13, 1979, Ser. No. 11,936
Int. Cl.² B32B *31/00*; B27D *1/00, 9/00*
U.S. Cl. 156—255 **7 Claims**



1. A technique for converting logs cut from balsa wood trees into two-ply sheets which are substantially immune to changes in relative humidity and ambient temperature, the technique comprising the steps of:

A stripping the bark from the logs;

B cutting the debarked logs into bolts of a predetermined length, each bolt being cut in a veneer lathe to produce a continuous web of veneer;

C slicing each web into green sheets of veneer;

D kiln-drying the green veneer sheets to produce dried sheets having a curvature due to the cutting and drying operations;

E assembling the curved dried sheets having opposing curvatures into matched pairs whose curvatures are in face-to-face relationship, the sheets in each pair being derived from a common web whereby they share like wood characteristics; and

F laminating the sheets in each pair together to produce two-ply flat sheets suitable for model making and for forming light-weight multi-ply plywood, the two-ply flat sheets having a planarity which is substantially immune to atmospheric changes.

4,204,901

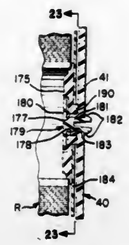
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 790,519, Apr. 25, 1977, Pat. No. 4,116,747.
This application Feb. 7, 1978, Ser. No. 875,827
Int. Cl.² B32B *31/00*
U.S. Cl. 156—384 **5 Claims**

1. Hand-held apparatus for applying labels, comprising: a frame having a handle, means carried by the frame for mounting a label roll comprised of labels releasably secured by pres-

sure sensitive adhesive to a web of supporting material, an actuator disposed at the handle, a platen mounted by the frame, a print head cooperable with the platen, means for delaminating printed labels from the supporting material web, means disposed adjacent the delaminating means for applying printed labels, means for advancing the web about the delaminating means, and means responsive to movement of the actuator for moving the print head into printing cooperation with the platen and for moving the web advancing means, wherein the label roll mounting means includes a pair of spaced apart hub members mounted for rotation about a common axis and pro-



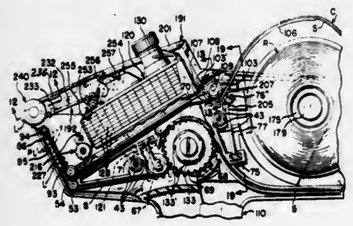
jecting into opposite ends of a central hole in the label roll, a disc adjacent at least one of the hub members, the disc having a continuous outer periphery, a first generally central hole and a second hole opening into the first hole and being larger in size than the exterior of the related hub member, the disc having a greater radial extent than the related hub member, and means received in the first hole for mounting the disc, a gap at the opening between the first and second holes being less than the outside dimension of the mounting means, the disc being capable of being installed by passing the hub member through the second hole and thereupon shifting the disc so that the disc is snapped onto the mounting means.

4,204,902

HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 790,519, Apr. 25, 1977, Pat. No. 4,116,747.
This application Feb. 7, 1978, Ser. No. 875,840
The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—384 **4 Claims**



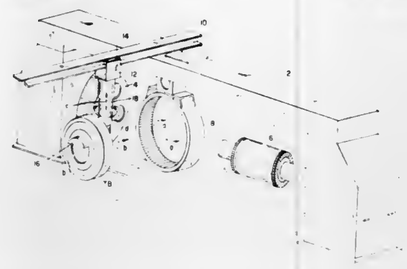
1. Hand-held apparatus for printing and applying pressure sensitive labels releasably adhered to a web of supporting material, the web being wound into a roll comprising: a frame having a handle, a platen and a cooperable print head mounted by the frame, the print head being movable from an initial position to a printing position in cooperation with the platen, means disposed adjacent the platen for delaminating labels from the web, means for advancing the web, an actuator disposed at the handle, means responsive to movement of the actuator for moving the print head into printing cooperation with the platen and for moving the web advancing means, a brake including a roller mounted by the frame downstream of the place where the web is paid out of the label roll and upstream of the platen for applying a braking force to the web, the brake further including a plurality of leaf springs carried by the print head and in contact with the brake roller at spaced apart locations when the print head is in or near the initial position.

4,204,903

APPARATUS AND METHOD FOR HANDLING UNCURED TIRES

Joseph H. Alexander, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Sep. 22, 1978, Ser. No. 945,045
Int. Cl.[2] B29H *17/20, 17/37*
U.S. Cl. 156—394 **5 Claims**



1. In an apparatus for removing an uncured tire band from a tire building drum having horizontal axis of rotation, said apparatus including rail means extending parallel to said axis of said drum, a carriage mounted on said rail means and movable along said rail means in a direction parallel to said tire building drum axis, and a transfer ring mounted on said carriage for holding said uncured tire band, the improvement comprising:

(a) journal and bearing means having a vertical axis connecting said transfer ring to said carriage, said transfer ring being rotatable relative to said carriage about said vertical axis of said journal and bearing means;

(b) a first lug surface on said transfer ring and a second lug surface on said carriage, said first and second lug surfaces positioned to engage each other to stop the rotation of said transfer ring in a first direction when said transfer ring is axially aligned with said tire building drum;

(c) a third lug surface on said transfer ring and a fourth lug surface on said carriage, said third and fourth lug surfaces positioned to engage each other to stop the rotation of said transfer ring in the direction opposite from said first direction when the axis of said transfer ring is disposed at the desired angle to the axis of said building drum for transferring an uncured tire band held by said transfer ring to a suitable transport means;

(d) first releasable means for holding said first lug surface in engagement with said second lug surface to hold said transfer ring in axial alignment with said tire building drum; and

(e) second releasable means for holding said third lug surface in engagement with said fourth lug surface to hold said transfer ring with its axis disposed at said desired angle to said axis of said building drum.

4,204,904

ROOFING MATERIAL HANDLING AND SEALING MACHINE

Donald R. Tabor, P.O. Box 1606, Anderson, Ind. 46014

Filed Oct. 17, 1977, Ser. No. 842,939
Int. Cl.[2] B32B *31/00;* **B44C** *7/00*
U.S. Cl. 156—497 **7 Claims**

1. A roofing material handling and sealing machine for installing partially-overlapping heat-sealable roll roofing material and the like, comprising:

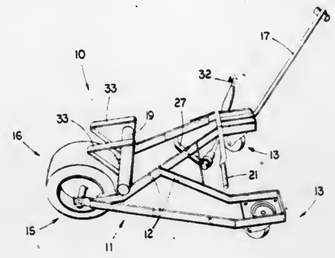
(a) A frame having a front portion and a rear portion thereof;

(b) means for moving said frame along the joint formed by the overlapping edge portions of two laid sheets of the material;

(c) means for lifting only the upper overlapping edge portion of the material while said frame is moved therealong;

(d) means for heating both contact surfaces on the overlapping edge portions of the material while the upper portion is lifted and said frame is moved therealong, said means for heating being to an extent sufficient to allow the contact surfaces to the sealably joined; and

(e) means for pressing the heated contact surfaces together with sufficient force to sealably join the overlapping edge portions of the material, said frame including two spaced-



apart front wheel assemblies and a rear wheel assembly mounted thereto, said means for moving and for pressing including means for straddling the overlapping edge portions of the material with the two front wheel assemblies while the rear wheel assembly presses against the overlapping joint formed thereby, said means for lifting including a lifting foot mounted to said frame and positioned on the underside thereof, said lifting foot being forward of said means for heating,

said means for heating including a heating element mounted to said frame and positioned back of said lifting foot,

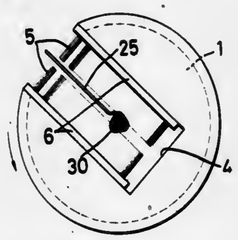
said lifting foot including a rotating elongated portion that rotatably contacts the upper overlapping edge portion of the material while said frame is moved therealong.

4,204,905

TAPING MACHINE

Saburo Miyamoto, Ibaraki, Japan, assignor to Nitto Denki Kogyo Kabushiki Kaisha (Nitto Electric Industrial Co., Ltd.), Osaka, Japan

Filed Aug. 4, 1978, Ser. No. 931,281
Claims priority, application Japan, Aug. 19, 1977, 52/111327[U]
Int. Cl.[2] B31F *1/00*
U.S. Cl. 156—351 **3 Claims**



1. A taping machine for winding an adhesive tape around an object such as a cable, said machine comprising:

(a) a rotor mounted in said machine for rotation having a radial opening extending from its outer periphery beyond its axis;

(b) a drive means connected to said rotor for rotating said rotor a predetermined number of turns per cycle of operation;

(c) a tape feed means for feeding the adhesive tape into position over said rotor;

(d) a tape cutting means adjacent the path of feed of the tape for cutting the tape to a predetermined length;

(e) a brush on each of the opposite walls of said radial opening for winding the tape around the object by frictional action as the rotor turns with the object held in the opening;

(f) a first detector means located near the mouth of said radial opening and connected to said tape cutting means, for actuating said tape cutting means as the object is inserted into said radial opening; and

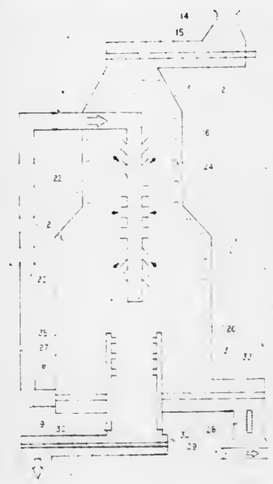
(g) a second detector means located further from the mouth of said radial opening than said first detector means and connected to said drive means and said tape feed means, for actuating said drive means and said tape feed means as the object is inserted into said radial opening.

4,204,906

METHOD OF SEPARATING FUSIBLE PLASTICS FROM SOLID WASTE

Hsin Liu, 40-25 Hampton St., Elmhurst, N.Y. 11373

Filed Aug. 25, 1977, Ser. No. 827,693
Int. Cl.[2] D21C *5/02;* **B03B** *1/00;* **C10B** *57/04*
U.S. Cl. 162—6 **6 Claims**



1. A method for treating a solid waste containing fibrous combustible matters and fusible plastics in a single waste-treating vertical and elongated, heating zone, comprising the steps of:

providing in said zone a gaseous atmosphere which will not support combustion at the temperature in said zone,

said temperature being higher than the combustion initiating temperature of said fibrous combustible matters in air;

feeding said solid waste to a top portion of said elongated heating zone;

dropping said solid waste into said heating zone, said solid waste falling under gravity inside said zone;

during the gravitational drop heating said waste to a temperature sufficiently high to fuse said fusible plastics without initiating combustion; and

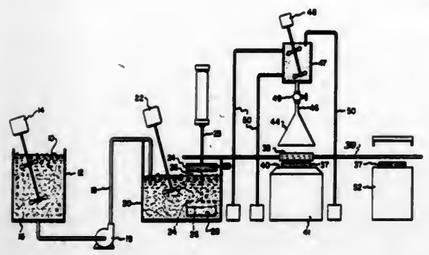
simultaneously establishing within said zone a gas flow that has a substantial, horizontal component to separate said falling and fusing plastics from said falling fibrous combustible matters.

4,204,907

CONDITIONED COLLOIDAL SILICA POST IMPREGNANT TO PREVENT BINDER MIGRATION

Harris J. Korklan, Granger, and John K. Greany, South Bend, both of Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 29, 1978, Ser. No. 891,368
Int. Cl.² D21F *13/00*
U.S. Cl. 162—135 **10 Claims**



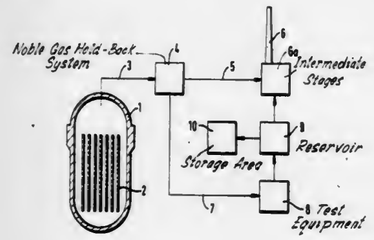
1. A process for forming a refractory fiber article comprising placing a refractory fiber slurry into a mold and draining liquid therefrom; impregnating the resulting fiber article with a conditioned colloidal silica composition comprising colloidal silica, acid and a multivalent cation containing gelling compound; applying a differential pressure through said article, waiting for the conditioned colloidal silica composition to gel and drying the resulting fiber article.

4,204,908

METHOD OF IDENTIFYING LEAKY COMPONENTS OF A MULTI-COMPONENT SYSTEM

Walfried Michaelis, Bullenhausen, and Claus Weitkamp, Wentorf, both of Fed. Rep. of Germany, assignors to Gesellschaft für Kernenergieverwertung in Schiffbau und Schiffahrt mbH, Geesthacht-Tesperhude, Fed. Rep. of Germany

Filed Jan. 12, 1978, Ser. No. 868,796
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1977, 2700952
Int. Cl.² G21C *17/00*
U.S. Cl. 176—19 LD **1 Claim**



1. A method of identifying leaky components of a multi-component nuclear reactor system in which the components contain a nuclear fuel charge, which includes in combination the steps of:

adding additional substances which are noble gases having different compositions, including different element and isotope compositions, to the charges of the respective components;

collecting from the used air of the nuclear reactor those portions of the nuclear fuel charges which escape in the event of leaks;

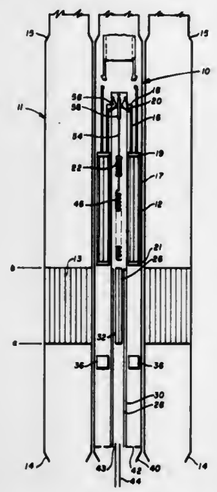
subjecting said collected portions to appropriate element and isotope analysis of said additional substances, prior to the analysis, separating the additional substances chemically and/or physically from the portions of the charge escaping in the event of leaks, optically determining the composition of the additional substances, the isotope composition of the additional substances being determined by optical saturation spectroscopy, determining the absorption of radiation from a variable-frequency laser in a cell filled with the sample substance as a function of the wavelength, and eliminating the collision and Doppler broadening by measuring the Lamb Dip at reduced pressure.

4,204,909

TEMPERATURE SENSITIVE SELF-ACTUATED SCRAM MECHANISM

Nicholas Giuggio, East Longmeadow, Mass.; Richard C. Noyes, New Britain, and Shakir U. Zaman, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 10, 1977, Ser. No. 805,251
Int. Cl.² G21C *7/06, 7/08, 7/10*
U.S. Cl. 176—22 **23 Claims**



1. An apparatus for inferring the core average outlet temperature in a liquid metal-cooled nuclear reactor and rapidly dropping poison material into the reactor core upon occurrence of a critical value of the temperature, comprising:

a. said reactor core having a liquid metal coolant flow therethrough;

b. a safety duct located in said reactor core and extending upward above said core;

c. a vertical reactor coolant flow path through said duct;

d. at least one fuel pin axially disposed in said safety duct and within said coolant flow path;

e. temperature responsive actuating means located in said flow path above said fuel pins, said actuating means including a fixed mass of sensor fluid confined to expand or contract in response to the temperature of the coolant in the flow path above said fuel pins, whereby a linear motion is imparted to a portion of said actuating means;

f. a poison bundled including neutron absorbing poison material movably located in said duct; and

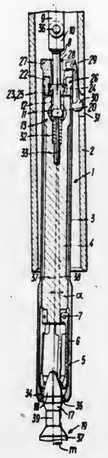
g. holding means operatively connected between said poison bundle and said actuating means for suspending said poison bundle above said core and for releasing said poison bundle upon a predetermined motion of said actuating means.

4,204,910

GRIPPING MEANS FOR REFUELLING A NUCLEAR REACTOR

Jury N. Koshkin, ulitsa Zvezdinka, 3, kv. 10; Georgy V. Ordynsky, ulitsa Strazh revoljutsii 9/6, kv. 9; Tsolak G. Shkhlyan, naberezhnaya imeni Zhdanova, 6, kv. 12; Alexandr F. Shapkin, ulitsa Zvezdinka, 3, kv. 64; Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46; Fedor V. Laptev, prospekt Lenina, 57, kv. 31; Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29; Konstantin I. Korolkov, ulitsa Shalyapina, 19, kv. 77, and Ivan V. Borodin, ulitsa Shalyapina, 15, kv. 2, all of Gorky, U.S.S.R.

Filed Aug. 24, 1977, Ser. No. 827,331
Int. Cl.² G21C *19/20; B66C 17/08, 1/10*
U.S. Cl. 176—30 **4 Claims**



1. In a refuelling machine for a nuclear reactor, containing a manipulator tube driven by means of a drive and provided with longitudinally extending grooves on its internal surface, having end walls, a gripping means arranged inside said manipulator tube and comprising:

a housing;

a slider accomodated in said housing and having a first end and a second end, said slider having a hole provided at its first end;

thrust pins having a longitudinal axis, mounted on said slider and interacting with said longitudinally extending grooves;

a working member intended to grip the head of a fuel assembly of said nuclear reactor and pivotably secured at said second end of said slider;

a rod mounted on said housing and driven by said drive;

a spherical lug provided on said rod, received in said hole of said slider and interacting with the surface of said slider, thus forming a first articulated joint having a center, whereby said slider is mechanically coupled to said rod.

4,204,911

METHOD AND APPARATUS FOR REMOVING IODINE FROM A NUCLEAR REACTOR COOLANT

Martin H. Cooper, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

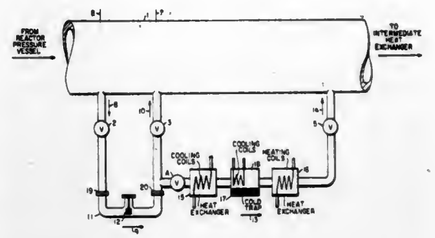
Continuation of Ser. No. 493,373, Jul. 31, 1974, abandoned, which is a continuation of Ser. No. 263,054, Jun. 15, 1972, abandoned. This application Mar. 16, 1976, Ser. No. 668,162
Int. Cl.² G21C *19/30*
U.S. Cl. 176—37 **16 Claims**

1. A method for continuously removing iodine-131 and iodine-125 from a liquid sodium reactor coolant of a nuclear reactor, said method comprising the steps of

diverting a portion of said reactor coolant from a location in the main stream of said nuclear reactor to a bypass system,

adding non-radioactive iodine to said reactor coolant by passing said diverted coolant over a solid body containing said non-radioactive iodine,

then lowering the temperature of said diverted reactor coolant,



precipitating said iodine-131 and iodine-125 from said bypassed reactor coolant,

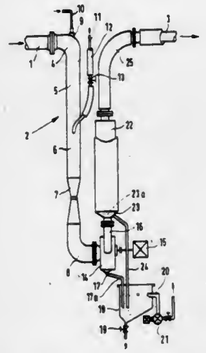
and reintroducing said bypassed reactor coolant into said main stream downstream of the point of said diverting location.

4,204,912

METHOD AND APPARATUS FOR PURIFYING GASES LEAKING FROM COKE OVENS

Fritz Schulte, Meerbusch-Büderich, and Wilfried Hürter, Essen, both of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 8, 1978, Ser. No. 958,667
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750139
Int. Cl.² C10B *27/00*
U.S. Cl. 201—29 **8 Claims**



6. A method for treating the tar-containing gases leaking from the oven door of a coke oven by separating tar from the gases in a manner to avoid substantial plugging of the apparatus and to substantially reduce the probability of explosion comprising the steps of:

sucking said gases through at least one extraction device located at the point of leakage and thereafter through a collection duct connected thereto and into an extractor fan;

spraying hot ammonia liquor into the gases within the upstream portion of the collection duct; and

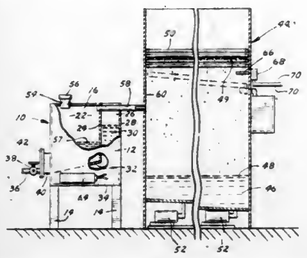
introducing saturated steam into said gases dispersed through the ammonia liquor spray.

4,204,913

SOLVENT RECOVERY APPARATUS

Winston E. Sabatka, Lakeville, Minn., assignor to Finishing Equipment, Inc., St. Paul, Minn.

Filed Apr. 6, 1978, Ser. No. 894,045
Int. Cl.² B01D 3/00; B08B 7/04
U.S. Cl. 202—168 **1 Claim**



1. In combination with a treatment tank having therein a first volatile treatment fluid having at least a first relatively highly volatile ingredient which is non-flammable in vapor phase and having at least a second ingredient which is flammable in vapor phase and relatively less volatile than said first ingredient and having therein a second treatment fluid having at least one ingredient which is more highly volatile than the second ingredient in said first fluid and which, when heated, forms a heavier-than-air vapor phase over its liquid phase, and in combination with treatment means for applying heat energy to a bottom portion of said treatment tank to cause said second fluid to form in said tank such a vapor phase over such a liquid phase, a treatment fluid recovery apparatus for recovering said first volatile treatment fluid from a mixture of said first fluid and non-volatile constituents; said treatment fluid recovery apparatus including:

A. a boiling vessel;

B. means to introduce a mixture of such a first volatile fluid and non-volatile constituents into said vessel;

C. energy means to continuously add heat energy to said mixture to cause said first fluid to progressively and continuously vaporize; and

D. transfer means to continuously introduce vapor from said first fluid in said boiling vessel into said tank above the top surface of the liquid phase of such second volatile fluid and below a vapor phase of such second volatile fluid;

E. control means to initiate and interrupt the application of heat energy to said mixture in said boiling vessel; and

F. a "vapor-up" measuring device associated with said tank operative on said control means to allow said control means to initiate application of heat energy to said mixture in said boiling vessel only when the vapor phase of said second fluid is above a predetermined upper position in said tank above the point of discharge of vapor from said first fluid into said tank.

4,204,914

APPARATUS FOR DESALINATING WATER

Richard E. Diggs, 12A Rd., Carthage, Mo. 64836

Division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283. This application Jan. 12, 1978, Ser. No. 868,999
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.² C02B 1/04; B01D 3/10; F24J 3/02
U.S. Cl. 202—176 **8 Claims**

1. A distillation device comprising:

a first water transfer means for withdrawing contaminated water from a body of water having solid contaminants dissolved therein;

a grid connected to said first water transfer means so that contaminated water received from said body of water flows across said grid, said grid having an outer peripheral edge and an inner peripheral edge and comprising a header located on said grid outer peripheral edge and fluidly connected to said first water transfer means so that contaminated water flows into said header from the body of water, said header being fluidly attached to said grid so that contaminated water flows from said header onto said grid whereby contaminated water flows from the body of water to said grid via said header, and a trough located on said grid inner peripheral edge and fluidly attached to said grid so that contaminated water flows into said trough from said grid, and means for transferring solar energy to said water flowing across said grid;

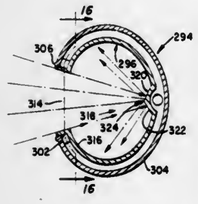
a water storage means having a side wall attached to said grid trough so that contaminated water flowing on said grid flows into said water storage means via said trough;

second water transfer means connected with said water storage means for removing contaminated water from said storage means;

a third water transfer means located in said trough and connected to said water storage means for transferring water from said trough to said water storage means and temperature control means connected to said third water transfer means for actuating said third water transfer means when the temperature of said water in said trough reaches or exceeds said predetermined temperature so that only water having a temperature which equals or exceeds said predetermined temperature is transferred to said water storage means;

a heat exchange structure connected to said water storage means;

a recirculation apparatus mounted in said trough and connected to said header for recirculating said water from said trough back to said header prior to transferring water from said trough into said water storage means and temperature control means connected to said recirculation apparatus for actuating said apparatus when the temperature of said water in said trough falls below a predetermined temperature;



a vaporizer means connected to said heat exchange structure for separating said water from said solid contaminants dissolved therein, said vaporizer means having a solar concentrator means for transferring solar energy to said contaminated water flowing from said heat exchange structure into said vaporizer means;

vacuum producing means for producing a vacuum in said vaporizer means so that said contaminated water is vaporized under vacuum conditions to form water vapor and thereby separate said water from said solid contaminants, and solid removing means connected to said vaporizer means for removing said solid contaminants from said vaporizer means;

water vapor transfer means connected to said vaporizer means for removing said water vapor from said vaporizer means;

condenser means connected to said water vapor transfer means for condensing said water vapor to form distilled water which is free of solid contaminants; and

distillate transfer means connected to said condenser means for withdrawing condensed water from said condenser means; and

a heat exchange means, said heat exchange means comprising:

a hollow case having inner walls and defining a chamber therewithin;

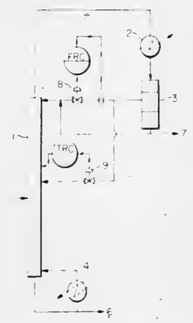
a plurality of fins located in said chamber and each having one end connected to one of said inner walls and a free end spaced from said inner walls, said fins being connected to said case so that adjacent fins are connected to opposite walls of the case, thereby positioning the free end thereof immediately adjacent the connected end of fins located adjacent thereof to form a tortuous path through said chamber for conducting water used in a distillation process through said chamber.

4,204,915

PROCESS FOR AZEOTROPIC DISTILLATION

Kenzi Kurata, Iwakuni; Toshito Fukumoto, Otake; Yuji Yoshida, Iwakuni; Masanori Kusama, Otake, and Shintaro Tsuruta, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 17, 1978, Ser. No. 887,609
Claims priority, application Japan, Mar. 19, 1977, 52/29783
Int. Cl.² B01D 3/36, 3/42; C07C 51/46, 29/28
U.S. Cl. 203—2 **8 Claims**



1. A process for separating a compound from a mixture of water and the compound which comprises:

(a) distilling the mixture in a distillation column in the presence of an entrainer which forms an azeotrope with the water in an azeotropic zone of the column;

(b) separating the azeotrope as an overhead fraction;

(c) condensing the azeotrope to form a water-rich phase and an entrainer-rich phase;

(d) refluxing a first portion of the entrainer-rich phase into the upper region of the azeotropic zone through a first entrainer feed and a second portion into the lower region of the azeotropic zone through a second entrainer feed;

(e) detecting the temperature in the lower region of the azeotropic zone; and

(f) controlling the amount of entrainer refluxed through the second entrainer feed based on the temperature so as to suppress a temperature change in the lower azeotropic zone.

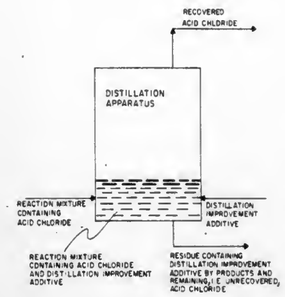
4,204,916

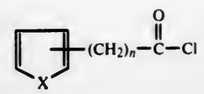
PROCESS FOR RECOVERING ACID CHLORIDES BY DISTILLATION

Thomas F. Cisco, Ardsley; George E. Hansen, Yorktown Heights, both of N.Y., and Robert N. Agate, Freehold, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 30, 1977, Ser. No. 866,138
Int. Cl.² B01D 3/34
U.S. Cl. 203—6 **7 Claims**

1. A process for recovering an acid chloride having the structure:





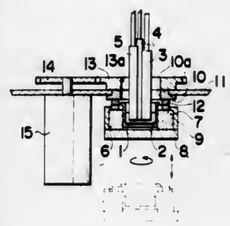
wherein X is a divalent oxygen or divalent sulfur atom, and n has the value 0, 1, 2, or 3, from a non-aqueous mixture containing the same, comprising distilling the acid chloride from the mixture in the presence of an effective quantity of a distillation improvement additive which is a mineral oil or an organopolysiloxane, wherein the distillation improvement additive remains substantially liquid under the conditions of distillation and the effective quantity of distillation improvement additive is from about 25% to about 300% based on the weight of the acid chloride.

4,204,917

METHOD FOR MEASURING ION ACTIVITY

Tadao Yamamoto, Machida; Hiroshi Takekawa, Kunitachi; Taichi Banno, Hachioji, and Kiyozo Koshiishi, Sagamihara, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Division of Ser. No. 739,052, Nov. 5, 1976. This application Dec. 18, 1978, Ser. No. 970,239
Claims priority, application Japan, Nov. 10, 1975, 50-134836
Int. Cl.² G01N 27/46
U.S. Cl. 204—1 T **11 Claims**



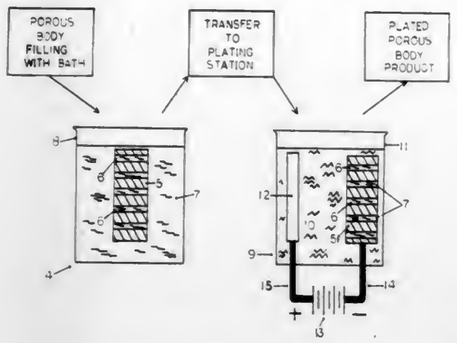
1. A method of measuring ion activity comprising placing a cup filled with test solution to be measured on a cup receiver, lifting a cup lifting arm to engage said cup receiver with a rotary plate, rotating the cup by rotating said rotary plate to stir the test solution in the cup, measuring a potential difference between a reference electrode and another electrode after completion of the stirring of the solution, and indicating the ion activity to be measured.

4,204,918

ELECTROPLATING PROCEDURE

James A. McIntyre; Robert F. Phillips, both of Midland, and Joseph D. Lefever, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 939,597, Sep. 5, 1978, abandoned. This application Apr. 4, 1979, Ser. No. 26,861
Int. Cl.[2] C25D 7/00, 7/04
U.S. Cl. 204—24 15 Claims



1. Procedure for providing internal surface deposit layers on the walls of void spaces in a porous electroconductive body comprising:

at least substantially filling the void space in the porous body with a bath of a therein dispersed electrodepositable substance which forms deposit layers on an oppositely electrocharged body when subject to passage therethrough of a deposit-forcing electrical current;

immersing the bath-replete porous body in an electroconductive liquid medium that is different than the bath and which in itself contains substantially nothing of a deposit-releasing nature when the liquid is subject to passage of electrical current therethrough; then

applying a direct electrical potential across the liquid and to said bath-replete body to cause current to flow through said liquid and body whereupon interior deposits are laid on the internal surface areas of said body from said bath occupying the void space therein.

4,204,919

TREATING ETCHED ALUMINUM ELECTROLYTIC CAPACITOR FOIL

John J. Randall, Jr., and Walter J. Bernard, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed May 2, 1979, Ser. No. 35,145
Int. Cl.[2] C25D 11/16
U.S. Cl. 204—29 10 Claims

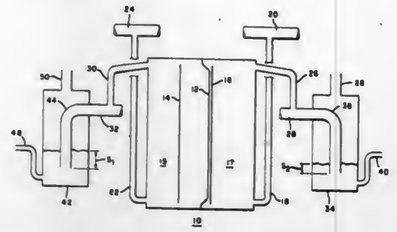
1. Aluminum electrolytic capacitor foil is treated prior to anodization in a two-step process comprising contacting said foil with boiling water and then contacting said foil with a boiling aqueous solution containing ions chosen from the group consisting of phosphate, tartrate, silicate, and combinations thereof, whereby a hydrous oxide film formed in the first step is modified by interaction with said ions of the second-step so that capacitance is enhanced and power consumption reduced in subsequent anodization.

4,204,920

ELECTROLYTIC PRODUCTION OF CHLORINE AND CAUSTIC SODA

Bruce E. Kurtz, Marcellus, and Robert H. Fitch, Syracuse, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 6, 1978, Ser. No. 966,923
Int. Cl.[2] C25B 1/16, 1/26
U.S. Cl. 204—98 4 Claims



1. In a process for the electrolysis of sodium chloride brine wherein (a) aqueous brine is introduced into the anode compartment of an electroytic cell, (b) water or aqueous sodium hydroxide is introduced into the cathode compartment of the cell, (c) said compartments being separated by a cationic permselective membrane, (d) chlorine and depleted brine are withdrawn through a common first conduit from the anode compartment to a brine collection point and (e) sodium hydroxide solution and hydrogen are withdrawn through a common second conduit from the cathode compartment to a sodium hydroxide solution collection point, the improvement which comprises providing a pressure differential between the anode compartment and cathode compartment sufficient to prevent substantial contact between the membrane and the anode and reducing fluctuations in said pressure differential by maintaining free, uninterrupted flow of clorine and depleted brine through said first conduit and of hydrogen and sodium hydroxide solution through said second conduit.

4,204,921

METHOD FOR REJUVENATING CHLOR-ALKALI CELLS

Wayne E. Britton, Plano, Tex., and Michael Krumpelt, Naperville, Ill., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Mar. 19, 1979, Ser. No. 21,354
Int. Cl.[2] C25B 1/26, 1/16
U.S. Cl. 204—98 4 Claims

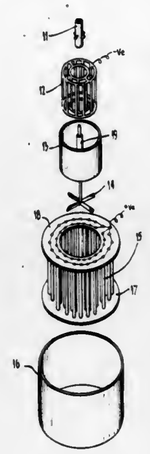
1. In a chlor-alkali cell having an anode, a cathode and a membrane separating the cell into an anolyte compartment and a catholyte compartment, and wherein cell efficiency is reduced by build-up of deposits containing calcium and magnesium, a method of rejuvenating the cell and cathode comprising the step of adding an acid to the catholyte compartment in an amount sufficient to reduce the pH of the catholyte below pH 8, said acid having an anion of the class which forms soluble salts with both calcium and magnesium, the cell current being maintained at the normal operating level while the acid is added to the catholyte chamber.

4,204,922

SIMULTANEOUS ELECTRODISSOLUTION AND ELECTROWINNING OF METALS FROM SIMPLE SULPHIDES

Donald B. Fraser, Rankin Park; Alexander Dim, Speers Point; Kevin E. Anthony, Cardiff; Wayne R. Costello, Dudley, and Phillip E. Grazier, Kilaben Bay, all of Australia, assignors to The Broken Hill Propietary Company Limited, Melbourne, Australia

Filed Nov. 28, 1978, Ser. No. 964,351
Claims priority, application Australia, Dec. 6, 1977, PD2671
Int. Cl.[2] C25C 1/00, 1/06, 1/12, 1/16
U.S. Cl. 204—105 R 13 Claims



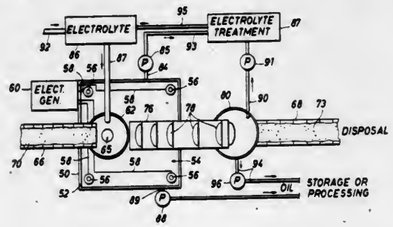
13. Process according to claim 12, wherein the current density is no greater than 100 ampers per square meters.

4,204,923

METHOD AND APPARATUS FOR RECOVERY OF HYDROCARBONS FROM TAR-SANDS

Neil L. Carpenter, 175 Nimitz Rd., Kerrville, Tex. 78208

Filed Jun. 8, 1978, Ser. No. 913,629
Int. Cl.[2] C25B 1/02, 1/00
U.S. Cl. 204—129 55 Claims



1. A method of releasing bitumen forming a component of an earth aggregate, comprising the steps of

electrically insulating a preselected volume of the earth aggregate containing the bitumen and an electrolyte dispersed therein from substantially all earth material adjacent thereto, and

establishing an electrical current flow through said electrolyte dispersed in the earth aggregate for electrochemically breaking the molecular bond of the bitumen from the earth aggregate material and releasing the bitumen therefrom.

4,204,924

METHOD OF MANUFACTURING RUBBING SURFACES OF CAST IRON

Rudolf Harlfinger; Theobald Ehehalt, and Alfred Kappes, all of Neckarsulm, Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Jun. 15, 1976, Ser. No. 696,384
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1975, 2531013
Int. Cl.[2] C25F 3/06
U.S. Cl. 204—129.35 2 Claims

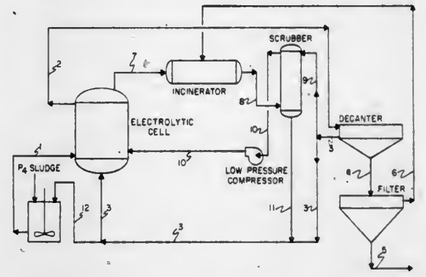
1. Method of manufacturing rubbing surfaces of cast iron comprising providing a perlitic or ferritic basic structure or matrix and free graphite particles wherein the rubbing surface is machined to its final dimensions and as a result of this machining particles of the basic structure or matrix are smeared over the graphite, the rubbing surface is then degreased, and thereafter the rubbing surface is subjected to an electro-chemical etching process by placing the rubbing surface in an electrolyte in which electrodes have applied between them a predetermined voltage by which the basic structure or matrix which has been smeared over the graphite particles by the machining step is etched away to expose the graphite particles so that the rubbing surface can immediately be put under full load without any running-in period.

4,204,925

RECOVERY OF PHOSPHORUS FROM SLUDGE

Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 11, 1977, Ser. No. 786,728
Int. Cl.[2] C25B 1/00
U.S. Cl. 204—152 22 Claims



1. A process for recovering elemental phosphorus from sludge derived from the production of elemental phosphorus by the smelting of phosphate rock which comprises subjecting said sludge to electrolysis under conditions of voltage, current and time sufficient to enable the separation of elemental phosphorus from said sludge and recovering said separated elemental phosphorus by recovery means.

4,204,926

METHOD FOR THE REMOVAL OF PHOSGENE IMPURITIES FROM BORON TRICHLORIDE

Harry C. Meyer; George A. Tanton, both of Huntsville, Ala.; Raymond I. Greenberg, Andover, Mass., and Joe E. Williams, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 16, 1979, Ser. No. 21,037
Int. Cl.[2] B01J 1/10; B01K 1/00; C01B 35/06
U.S. Cl. 204—157.1 H 5 Claims

1. A method for the removal of phosgene impurities from boron trichloride comprising:

(i) Admitting a gaseous mixture of BCl_3 containing $COCl_2$ as an impurity into a reaction cell to achieve a predetermined pressure in said reaction cell that is operable with the

electrical excitation energy level employed to effect decomposition of said $COCl_2$ impurity;

(ii) delivering an electrical excitation energy level for a predetermined time period through said gaseous mixture to effect decomposition of said $COCl_2$ impurity;

(iii) monitoring said $COCl_2$ impurity concentration level to determine when all of said $COCl_2$ impurity has been decomposed; and,

(iv) repeating said step of delivering an electrical excitation energy level when said monitoring step determines that $COCl_2$ impurity is present in said reaction cell.

4,204,927

CROSSLINKING OF ESTERIFIED FLUOROCARBON POLYMER

Dana P. Carlson, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 680,874, Apr. 27, 1976, abandoned. This application Jan. 20, 1978, Ser. No. 871,116

Int. Cl.[2] C08J *3/28, 7/10;* **C08F** *8/14*

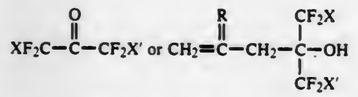
U.S. Cl. 204—159.18 **2 Claims**

1. Process for crosslinking an esterified polymer of

(a) 40–60 mole percent ethylene,

(b) 60–40 mole percent tetrafluoroethylene or chlorotrifluoroethylene, said mole percents being based on (a) and (b) monomers present, and

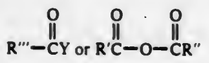
(c) 0.1 to 30 weight percent, based on weight of (a) (b), and (c) monomers present, of the esterification reaction product of



(I)

wherein X and X′ are each independently H, F, Cl, Br, perfluoroalkyl of 1–3 carbon atoms, or ω-hydrofluoroalkyl of 1–3 carbon atoms, and X and X′ taken together form a divalent perfluoroalkylene of 1–3 carbon atoms, and R is hydrogen or methyl, with

(2) an acid halide or anhydride selected from



wherein Y is Cl, Br or F; and R′, R″ or R‴ each independently is aryl of 6–10 carbon atoms,

which comprises subjecting said esterified polymer in the absence of other materials to ultraviolet radiation.

4,204,928

PHOTOPOLYMERIZABLE COMPOSITION STABILIZED WITH NITROGEN-CONTAINING AROMATIC COMPOUNDS

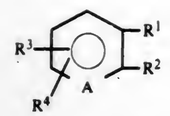
Francis A. Via, Yorktown Heights, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 773,370, Mar. 1, 1977, Pat. No. 4,141,807. This application Oct. 10, 1978, Ser. No. 950,208

Int. Cl.[2] C08F *2/46, 4/00*

U.S. Cl. 204—159.23 **12 Claims**

1. A process for preparing a photopolymerizable composition comprising forming a mixture containing a photopolymerizable ethylenically unsaturated compound, a benzoin ether in an amount sufficient to initiate photopolymerization and a stabilizing amount of a stabilizer having the formula:



wherein A is a carbon or nitrogen; R^1 and R^2 are independently selected hydrogen or $-X-R^5$ where X is zero, oxygen, sulfur, N=N, S—S, $-R^6$ or N—R^6 where R^6 is hydrogen or alkyl of 1 to 6 carbon atoms, and R^5 is phenyl or pyridyl with the proviso that both R^1 and R^2 cannot be hydrogen; and R^3 and R^4 are independently selected hydrogen, hydroxyl, or an alkali metal salt thereof; with the further proviso that said stabilizer must contain at least one nitrogen.

4,204,929

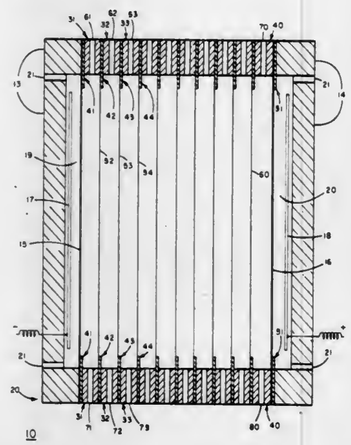
ISOELECTRIC FOCUSING METHOD

Milan Bier, Tucson, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Filed Apr. 18, 1978, Ser. No. 897,261

Int. Cl.[2] B01D *13/02;* **G01N** *27/26*

U.S. Cl. 204—180 R **42 Claims**



1. A method for isoelectric focusing of fluids containing buffering components capable of establishing a stable pH gradient in an electric field, comprising the steps of:

establishing a flow of said fluids in a first direction;

streamlining the flow of said fluids in said first direction by providing a plurality of permeable membranes which define generally parallel channels oriented in said first direction; and

applying an electrical potential across the streamlined channels of flowing fluids.

4,204,930

METHOD AND APPARATUS FOR REGENERATING SPENT PHOTOGRAPHIC BLEACH-FIXER SOLUTION

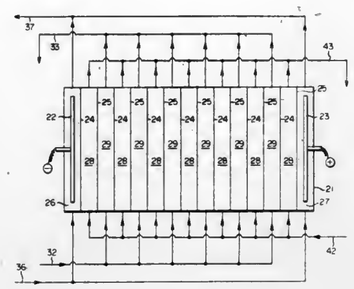
Takezo Ono, Kodaira; Seiki Iribe, and Mineo Watanabe, both of Mihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 13, 1979, Ser. No. 29,866

Int. Cl.[2] B01D *13/02*

U.S. Cl. 204—180 P **6 Claims**

1. A method for regenerating a spent bleach-fixer solution by electrodialysis using an electrodialysis cell comprising a cathode, an anode and alternating anion exchange membranes and cation exchange membranes arranged therebetween to define a cathode compartment, a plurality of intermediate enionation and deionation compartments with a set of the deionation compartments alternately disposed between a set of the enionation compartments, and an anode compartment; said method comprising filling an electrolyte solution in the cathode com-



partment, the enionation compartments and anode compartment, and the spent bleach-fixer solution in the deionation compartments, and passing a direct electric current across the cathode and the anode.

4,204,931

PROCESS FOR THE PRE-TREATMENT OF NON-FERROUS METALS TO BE ELECTROPHORETICALLY COVERED WITH CERAMIC MATERIALS

Jürgen Neisen, Harsewinkel, Fed. Rep. of Germany, assignor to Miele & Cie GmbH & Co., Gutersloh, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,867

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710122

Int. Cl.[2] C25D *13/02, 13/20*

U.S. Cl. 204—181 N **2 Claims**

1. A process for coating a non-ferrous metal with a ceramic material for dental applications, comprising the steps of:

zinc plating by electrolysis a non-ferrous base material to produce a metallic zinc layer thereon; and

electrophoretically applying to said plated base material an even layer of ceramic material, said electrophoretically applying step simultaneously causing said zinc layer to convert into zinc oxide by electrolysis, and said zinc layer being initially adjusted to a sufficient thickness such that the conversion time of the entire metallic zinc layer into zinc oxide coincides with the concurrent electrophoretic coating time, thereby avoiding, on the one hand, that during the electrophoretic coating with the ceramic material the entire metallic zinc will have not yet been converted into zinc oxide, and avoiding, on the other hand, that the conversion of metallic zinc into zinc oxide will have been completed before the electrophoretic coating has been terminated, said electrophoretically applying step lasting only a few seconds, and said thickness of said metallic zinc layer not exceeding 1 mg/cm^2.

4,204,932

PROCESS FOR ELECTRODEPOSITION OF COMPOSITIONS CONTAINING CARBAMOTHIOATE CURING AGENTS

Vincent D. McGinniss, Valley City, and Donald R. Stevenson, Dover, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 812,801, Jul. 5, 1977, Pat. No. 4,133,916. This application Sep. 18, 1978, Ser. No. 942,994

Int. Cl.[2] C25D *13/10*

U.S. Cl. 204—181 R **9 Claims**

1. An electrocoating process for coating a substrate with an electrocoating composition dispersed in an aqueous electrocoating bath, which comprises:

electrodepositing said electrocoating composition onto said substrate, said composition comprising: a compound A containing at least about two functional groups each reactive with an isocyanate group, a compound B containing at least about two functional groups each reactive with a mercaptan group, and a carbamothioate curing agent adapted to generate a plurality of curing units upon being heated to above about critical temperature, said curing units containing at least two isocyanate groups and at least two mercaptan groups with at least one of said curing units containing at least two of said groups; and

heating said coated substrate to a temperature above about said critical temperature to generate said plurality of curing units to cure said coating.

4,204,933

ELECTROCOATING PROCESS FOR PRODUCING A SEMICONDUCTING FILM

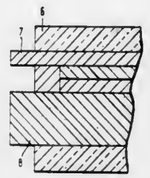
William A. Barlow; Maurice Rhodes; Francis R. Sherliker, and Edward W. Williams, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 27, 1978, Ser. No. 955,244

Claims priority, application United Kingdom, Nov. 15, 1977, 47443/77

Int. Cl.[2] C25C *15/00;* **C25D** *13/02*

U.S. Cl. 204—181 N **20 Claims**



1. A method for the preparation of a thin substantially pinhole-free film which method comprises the deposition of a film of a semiconducting sulphide, sulphoselenide, selenide or telluride of cadmium, zinc, mercury, copper (I), lead, or other suitable metal or precursor thereof on a surface of a substrate by electrophoresis of a colloidal suspension of colloidal particles of the semiconductor or precursor thereof in an aqueous medium, said particles having an average diameter between 1 and 100 nm, and the application of heat preferentially to a first surface of the film to raise the temperature of the said first surface to between 300° C. and 600° C. while the temperature of a second surface of the film is kept below 100° C.

4,204,934

PROCESS FOR APPLICATION OF ELECTROSTATIC FIELDS TO MIXING AND SEPARATING FLUIDS

Kenneth W. Warren, Jenks, and Floyd L. Prestridge, Mounds, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 892,612, Apr. 3, 1978, Pat. No. 4,161,439. This application Feb. 21, 1979, Ser. No. 12,997

Int. Cl.[2] B03C *5/00*

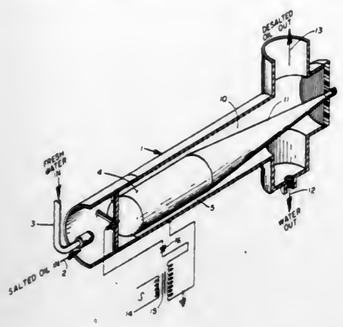
U.S. Cl. 204—186 **6 Claims**

1. A process for first mixing and then separating two fluids which are immiscible and wherein one fluid is more polar than the other fluid, including,

passing both fluids into a first common zone,

generating an electrostatic field of a first intensity in the first common zone at which intensity drops of the more polar of the two fluids will be moved by the field force fast

enough to shear into smaller sizes of drops and distribute throughout the less polar of the fluids,
maintaining the fluids in the first common zone for a first predetermined residence time,
flowing the mixture of fluids from the first common zone to a second common zone,
generating an electrostatic field of a second intensity less than the first intensity in the second common zone to provide a force on the droplets of the more polar of the



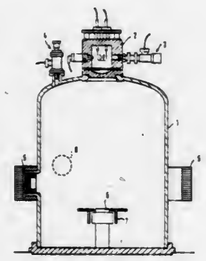
two fluids to move the droplets into collision with each other and coalesce into drops of larger size,
maintaining the fluids in the second common zone for a second predetermined residence time,
passing the fluids from the second common zone and providing a third residence time to enable the coalesced drops of the more polar fluid to gravitate from the remaining fluid and separate,
and separately flowing the fluids after they have gravitated from each other.

4,204,935

THIN-FILM RESISTOR AND PROCESS FOR THE PRODUCTION THEREOF

Fritz Klesse, Landshut, and Jürgen Förster, Freising, both of Fed. Rep. of Germany, assignors to Resista Fabrik Elektrischer Widerstände G.m.b.H., Landshut, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 764,015, Jan. 31, 1977, abandoned. This application May 23, 1978, Ser. No. 908,679
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605174
Int. Cl.² C23C *15/00*; H01C *7/06*
U.S. Cl. 204—192 F **10 Claims**



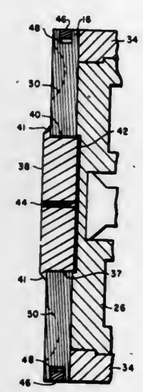
1. Process for the production of a thin-film resistor with an insulating carrier member and a resistor film applied to the carrier member, comprising the steps of:
depositing the resistor film on the insulating carrier member by reactive sputtering of the metals chromium and nickel with an added amount of at least one of the metals selected from the group consisting of gold, cobalt, aluminum, and tin, the composition of said film being 30–80 mole percent chromium or chromium compound, 10–35 mole percent nickel or nickel compound and 10–35 mole percent of said added metal or metals, in the presence of oxygen having a partial pressure of from 1×10^{-6} to 1×10^{-4} Torr.

4,204,936

METHOD AND APPARATUS FOR ATTACHING A TARGET TO THE CATHODE OF A SPUTTERING SYSTEM

Larry D. Hartsough, Berkeley, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 29, 1979, Ser. No. 25,226
Int. Cl.² C23C *15/00*
U.S. Cl. 204—192 R **17 Claims**



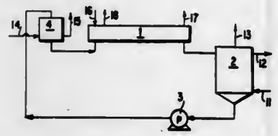
1. A method for attaching a target to a sputtering cathode assembly including a backing plate and a magnetic subassembly coupled to said backing plate, the method comprising the steps of,
positioning a first surface of said target against a surface of said backing plate, and
placing a ferromagnetic retainer against a second surface of said target so that said retainer is attracted to said magnetic subassembly means with sufficient force to firmly hold said target to said backing plate.

4,204,937

NOVEL ELECTROLYTIC AMALGAM DENUDER APPARATUS

Giuseppe Bianchi; Oronzio deNora, both of Milan, Italy, and Placido M. Spaziante, Lugano, Switzerland, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 906,656, May 16, 1978, Pat. No. 4,166,780. This application Feb. 28, 1979, Ser. No. 16,191
Claims priority, application Italy, Jan. 24, 1978, 19560 A/78
Int. Cl.² C25B *1/44, 11/12, 11/18*
U.S. Cl. 204—219 **4 Claims**



1. An amalgam denuder comprising a container filled with a catalytic material, means for introducing amalgam at the top of the container, means for introducing water at the bottom of the container, means for removing hydrogen at the top of the container, means for removing alkali metal hydroxide solution at the top of the container, a divider plate separating the container from a chamber provided at the bottom of the container for collecting mercury and provided with a negatively charged counter-electrode above the mercury and water and means for removing mercury from the chamber.

4,204,938

METHOD OF MAKING POROUS PLASTIC DIAPHRAGMS AND THE RESULTING NOVEL DIAPHRAGMS

Jean Bachot, Fontenay-aux-Roses; Pierre Bouy, Enghien-les-Bains, and Michel Juillard, Orsay, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 686,723, May 17, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 924,795
Claims priority, application France, Jun. 11, 1975, 75 18246
Int. Cl.² B29D *27/04*
U.S. Cl. 204—252 **17 Claims**

1. An electrolytic cell for the electrolysis of alkali chlorides, said electrolytic cell being equipped with anodes and cathodes, having interposed between said anodes and cathodes porous diaphragms consisting of an asbestos cloth of from about 0.5 to 1 millimeter thick, weighing less than about 500 grams per square meter, integrated with the anode face of a microporous, uniform membrane of substantially uniform pore size and comprising asbestos fibers, said membrane, being consolidated by a fluorinated polymer resin, said asbestos fibers of between about 0.5 and 50 millimeters in length, said diaphragm having a relative resistance less than about 4, a flow rate of liquid through the diaphragm of from about 0.25 to 0.02 milliliters per minute per square centimeter under 50 grams per square centimeter of liquid charge at 20° C. and said diaphragm being of total thickness of from about 2.5 to 5 millimeters.

2. A method of manufacturing porous electrolytic cell diaphragms which are consolidated by a fluorinated polymer resin, comprising agitating a suspension of asbestos fibers in water, a sulfonic anionic surfactant, a fluorinated polymer resin latex and a solid mineral pore-former, to form a stable, homogeneous suspension, depositing and filtering said suspension on an asbestos cloth reinforcing element to form a preform, drying the resulting preform, sintering the said fluorinated polymer resin by heat at a temperature above the crystalline melting point of said fluorinated polymer resin, removing said solid mineral pore-former to form a uniform, porous membrane having uniform pore size, integrated on its anode face to said asbestos cloth reinforcing element, wherein said asbestos cloth reinforcing element has a structure which is at least as open with respect to the passage of liquor as said uniform, porous, homogeneous membrane.

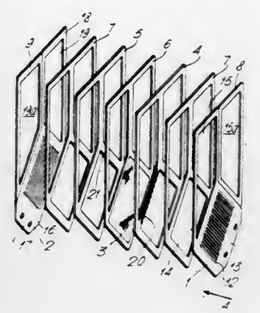
4,204,939

DIAPHRAGM CELL

Thomas W. Boulton, and Brian J. Darwent, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 23, 1978, Ser. No. 880,878
Claims priority, application United Kingdom, Mar. 4, 1977, 9189/77
Int. Cl.² C25B *9/00, 11/03, 11/10, 1/16*
U.S. Cl. 204—258 **35 Claims**

1. A monopolar filter press electrolytic cell suitable for use in the electrolysis of aqueous alkali metal halide solution (hereinafter referred to as brine) to produce an aqueous alkali metal hydroxide solution (hereinafter referred to as cell liquor), halogen and hydrogen, which cell comprises a plurality of anode plates and cathode plates, and a hydraulically permeable diaphragm positioned between each adjacent anode plate and cathode plate, the anode plates comprising an anode portion of a film-forming metal which carries an electrocatalytically active coating, the cathode plates comprising a metallic cathode portion, characterised in that the cell comprises at least one spacing plate of a non-conducting material positioned between each anode plate and adjacent diaphragm and between each cathode plate and adjacent diaphragm, the anode plates, cathode plates and spacing plates being provided with at least two openings in the faces of the plates which, when the said plates are assembled into a filter press cell, define in combination a first compartment lengthwise of the cell and a second compartment lengthwise of the cell separated from the first compartment, the said compartments in the filter press cell being located above the anolyte and catholyte compartments of the cell defined respectively by the spaces between the anodes and diaphragms and the spaces between the cathodes and diaphragms, the anode portion of the anode plate and the cathode portion of the cathode plate and the diaphragm being of substantially the same shape and being of circular shape or of square or rhombus shape with the diagonals of the square or rhombus being substantially horizontal or vertical, the spacing



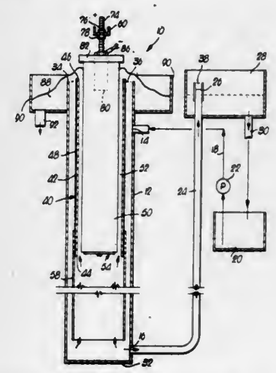
plates between the anodes and adjacent diaphragms being provided with at least one passage which permits brine to pass between the first compartment and the anolyte compartments and which permits halogen to be released from the anolyte compartments to the first compartment, and the spacing plates between the cathodes and adjacent diaphragms being provided with at least one passage which permits cell liquor and hydrogen to pass from the catholyte compartments to the second compartment, the cell being provided with end plates which provide end walls for the aforementioned first and second compartments, the anode plates and cathode plates being made in part of a non-conducting material so that the first and second compartments are electrically insulated from one another.

4,204,940

APPARATUS FOR PRODUCING FOAM

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Division of Ser. No. 807,051, Jun. 16, 1977, Pat. No. 4,120,765. This application May 11, 1978, Ser. No. 904,989
Int. Cl.² C25B *9/00, 15/08*
U.S. Cl. 204—272 **12 Claims**



1. Foam producing apparatus comprising:
containing means adapted to receive a body of foamable liquid and having a bottom;

tubular structure arranged in upright disposition within said containing means wholly above said bottom thereof and defining an upright passage,

said structure having an inlet to said passage adjacent the normally lower end of the structure and an outlet from said passage adjacent the normally upper end of the structure; and

a pair of opposed, oppositely charged electrodes associated with said structure and disposed at least in part on opposite sides of said upright passage whereby, when said containing means is supplied with said body of liquid to the level of said outlet, an electric field will be established within the part of said passage between said electrodes so as to generate bubbles that rise through the passage and avoid diffusion into the body of liquid outside of said structure until leaving the structure through said outlet,

said electrodes being concentrically arranged one within the other, their opposed surfaces serving to define said passage.

said other electrode being provided with a sleeve adjacent said lower end of the structure, said sleeve having said inlet defined therein and being extensible relative to the other electrode for selectively varying the position of said inlet.

4,204,941

PROCESS FOR THE MANUFACTURE OF A PERMEABLE DIAPHRAGM FOR AN ELECTROLYSIS CELL

Giuseppe Niccolini, Catiglioncello, Italy, assignor to Solvay & Cie, Belgium

Filed Oct. 5, 1978, Ser. No. 948,777

Claims priority, application Luxembourg, Oct. 19, 1977, 78350/77

Int. Cl.[2] C25B *13/06, 13/08*

U.S. Cl. 204—296 **12 Claims**

1. Process of manufacturing a liquid permeable diaphragm for a cell for the electrolysis of aqueous solutions of alkali metal halides, which comprises forming a sheet comprising inorganic fibres and a polymer in the form of finely divided solid dispersed in said sheet, said polymer being selected from amongst the polyelectrolytes which are insoluble in aqueous solutions of alkali metal halides, and heating said sheet to at least partially melt said polymer sufficiently for said polymer to coat said inorganic fibres partially and to weld them to one another.

4,204,942

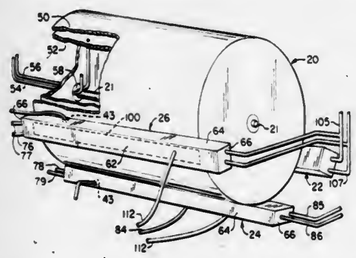
APPARATUS FOR MULTILAYER THIN FILM DEPOSITION

Day Chahroudi, Berkeley, Calif., assignor to Heat Mirror Associates, Palo Alto, Calif.

Filed Oct. 11, 1978, Ser. No. 950,356

Int. Cl.[2] C23C *15/00*

U.S. Cl. 204—298 **10 Claims**



1. Sputtering apparatus for thin film deposition of at least a first and a second material onto an elongate substrate having a predetermined transverse dimension, comprising:

an evacuable chamber including pump means connected thereto for lowering the interior pressure of the chamber;

at least a first and a second means for deposition of the first and second material, respectively, onto the substrate, each one of the deposition means being mounted interior of the chamber and including an enclosure having terminal portions forming an edge that defines an elongate opening;

means mounted interior of the chamber for transporting the substrate to and from the first and the second deposition means, the transport means including means for supporting a portion of the substrate proximate each one of the deposition means, positioning the substrate in confronting relation with the opening of each one of the enclosures to form a generally uniform interstitial gap between each said edge of each said enclosure and said supporting means; and means for introducing and maintaining a first and a second gas into the respective enclosure of the first and the second deposition means at pressures greater than the interior pressure of the chamber, said interstitial gap being configured and dimensioned to restrict outflow of said first and second gas from the respective enclosure of said first and second deposition means.

4,204,943

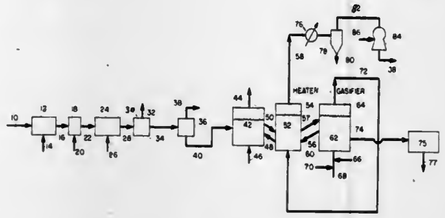
COMBINATION HYDROCONVERSION, COKING AND GASIFICATION

William J. Metrailer; Roby Bearden, Jr., and Clyde L. Aldridge, all of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 889,744, Mar. 24, 1978. This application Sep. 15, 1978, Ser. No. 942,689

Int. Cl.[2] C10G *37/06*

U.S. Cl. 208—50 **22 Claims**



1. A process for upgrading a liquid-containing carbonaceous chargestock which comprises:

(a) adding to said chargestock hydroconversion catalytic solids having an average particle size of less than about 10 microns in diameter to form a mixture, said solids being selected from the group consisting of fluid coke, delayed coke, coal coke, carbonaceous residue derived from the gasification of coke, an ash of said coke, an ash of said carbonaceous residue and mixtures thereof;

(b) reacting the chargestock containing said catalytic solids as a slurry with a molecular hydrogen-containing gas under hydroconversion conditions in a hydroconversion zone to produce an upgraded hydrocarbonaceous oil product;

(c) separating a heavy oil fraction from said hydrocarbonaceous oil product;

(d) subjecting at least a portion of said separated oil fraction to coking conditions in a coking zone to produce coke, and

(e) reacting at least a portion of said coke with steam and a molecular oxygen-containing gas to produce a hot gaseous stream containing hydrogen and a solid carbonaceous residue.

4,204,944

PROCESS FOR REMOVING POLLUTANTS FROM NONZEOLITIC CATALYST REGENERATOR FLUE GAS

Robert L. Flanders, San Anselmo, and William A. Blanton, Jr., Woodacre, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 786,724, Apr. 11, 1977, Pat. No. 4,115,251, which is a continuation-in-part of Ser. No. 666,115, Mar. 11, 1976, Pat. No. 4,071,436. This application Jul. 10, 1978, Ser. No. 923,426

The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

Int. Cl.[2] B01J *29/06;* **C01G** *11/04;* **C01B** *17/00*

U.S. Cl. 208—120 **10 Claims**

1. In a process for cracking hydrocarbons in the absence of added molecular hydrogen wherein a nonzeolitic cracking catalyst including of at least one acidic cracking component from the group consisting of silica-containing nonzeolitic crystalline refractory inorganic oxides and silica-containing amorphous refractory inorganic oxides is cycled between a cracking zone and a catalyst regeneration zone, a sulfur-containing hydrocarbon stream is cracked in contact with said catalyst in said cracking zone, and a sulfur-containing flue gas is formed in said regeneration zone by burning sulfur-containing coke off said nonzeolitic catalyst with an oxygen-containing gas, the method for reducing the amount of carbon monoxide and sulfur oxides in said flue gas which comprises:

(a) reacting carbon monoxide and oxygen to form carbon dioxide in said regeneration zone in contact with a carbon monoxide oxidation promoter comprising a metal or compound of a metal selected from platinum, palladium, iridium, rhodium, osmium, ruthenium and copper;

(b) forming a sulfur- and aluminum-containing solid in said regeneration zone by reacting sulfur trioxide with alumina, said alumina having a surface area of at least 50 square meters per gram and being included in a particulate solid physically admixed with said catalyst, said particulate solid being substantially free from said metal or metal compound; and

(c) removing sulfur from said particulate solid and forming hydrogen sulfide in said cracking zone by contacting said sulfur- and aluminum-containing solid with said hydrocarbon stream.

4,204,945

REMOVING POLLUTANTS FROM FLUE GAS IN NONZEOLITIC CATALYTIC CRACKING

Robert L. Flanders, San Anselmo, and William A. Blanton, Jr., Woodacre, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 786,723, Apr. 11, 1977, Pat. No. 4,115,250, which is a continuation-in-part of Ser. No. 666,115, Mar. 11, 1976, Pat. No. 4,071,436. This application Jul. 10, 1978, Ser. No. 923,427

The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

Int. Cl.[2] B01J *29/06;* **C01G** *11/04;* **C01B** *17/00*

U.S. Cl. 208—120 **4 Claims**

1. In a process for cracking hydrocarbons in the absence of added molecular hydrogen wherein a nonzeolitic cracking catalyst including of at least one acidic cracking component from the group consisting of silica-containing nonzeolitic crystalline refractory inorganic oxides and silica-containing amorphous refractory inorganic oxides is cycled between a cracking zone and a catalyst regeneration zone, a sulfur-containing hydrocarbon stream is cracked in contact with said catalyst in said cracking zone, and a sulfur-containing flue gas is formed in said regeneration zone by burning sulfur-containing coke off said nonzeolitic catalyst with an oxygen-containing gas, the method for reducing the amount of carbon monoxide and sulfur oxides in said flue gas which comprises:

(a) reacting carbon monoxide and oxygen to form carbon dioxide in said regeneration zone in contact with a carbon monoxide oxidation promoter comprising a metal or compound of a metal selected from platinum, palladium, iridium, rhodium, osmium, ruthenium and copper associated with a particulate solid other than said particulate nonzeolitic catalyst, said particulate being physically admixed with said catalyst;

(b) introducing sufficient molecular oxygen into said regeneration zone to provide an atmosphere therein having a molecular oxygen concentration of at least 0.5 volume percent;

(c) removing sufficient coke from said nonzeolitic catalyst in said regeneration zone to provide an average carbon content of less than 0.2 weight percent in catalyst passed from said regeneration zone to said cracking zone;

(d) including in said particulate catalyst a substantially silica-free alumina phase, said alumina phase including about 50 to 5000 parts per million of reactive alumina, said particulate catalyst being substantially free from said metal or compound of said metal;

(e) forming a sulfur- and aluminum-containing solid in said particulate nonzeolitic catalyst in said regeneration zone by reacting sulfur trioxide with alumina present in said alumina phase in said catalyst;

(f) removing sulfur from said particulate nonzeolitic catalyst and forming hydrogen sulfide in said cracking zone by contacting said sulfur- and aluminum-containing solid with said hydrocarbon stream.

4,204,946

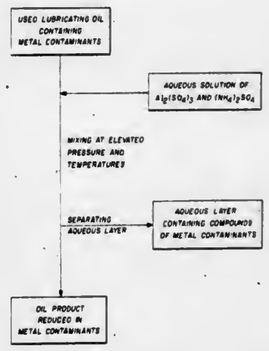
PROCESS FOR REMOVING METAL CONTAMINANTS FROM USED LUBRICATING OILS

Conrad B. Johnson, Edmonton, Canada, assignor to Turbo Resources Ltd., Edmonton, Canada

Filed Feb. 12, 1979, Ser. No. 11,093

Int. Cl.[2] C10M *11/00*

U.S. Cl. 208—181 **7 Claims**



1. A process for removing metal contaminants from used lubricating oil comprising:

contacting the lubricating oil with an aqueous solution of ammonium sulphate and aluminum sulphate in a closed vessel at elevated temperatue to form compounds of the metal contaminants separable from the oil in an aqueous phase; and

separating said aqueous phase from the lubricating oil to provide an oil product reduced in metal contaminants.

4,204,947

PROCESS FOR THE REMOVAL OF THIOLS FROM HYDROCARBON OILS

Robert L. Jacobson, Hercules, and Kirk R. Gibson, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 892,544, Apr. 3, 1978, Pat. No. 4,163,708. This application Jun. 12, 1978, Ser. No. 915,022
The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.
Int. Cl.² C10G 29/16, 29/06, 29/04
U.S. Cl. 208—243 13 Claims

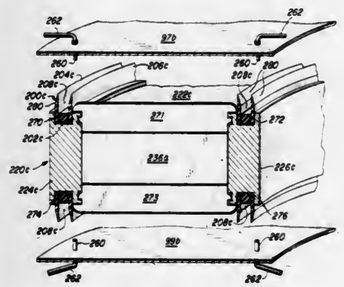
1. A process for absorbing thiol impurity from a hydrocarbon oil boiling in the range from about 10° C. to 300° C. and having a total sulfur-containing-impurity content, calculated as elemental sulfur, below 1000 ppm, including at least 0.4 ppm of thiol impurity, which comprises contacting said oil in the substantial absence of molecular oxygen with a scavenger at a temperature in the range 120° to 400° C., said scavenger comprising an essentially oil insoluble solid composite having a copper component and an inorganic porous carrier component, and having a surface area in the range from about 20 to 1000 square meters per gram, said copper component being copper metal, a copper compound or a mixture thereof, said carrier being a porous inorganic refractory metal oxide or a mixture of such oxides or carbon, and said contacting being continued until the resulting oil product from said contacting has a thiol content below about 0.3 ppm.

4,204,948

SELF-PURGING SEAL

Ionel Wechsler, Framingham; John A. Oberteuffer, Lexington; John J. Nolan, W. Wareham; Henry H. Kolm, Wayland; Eric Georgelis, Hyde Park, and Bo R. Arvidson, Acton, all of Mass., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 18, 1978, Ser. No. 970,245
Int. Cl.² B03C 1/02
U.S. Cl. 209—223 R 12 Claims



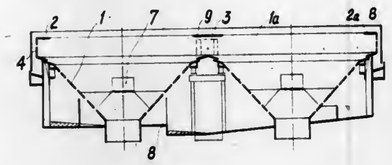
1. In a moving matrix magnetic separator in which a matrix device moves relative to a processing device and a seal assembly seals a longitudinal section of the matrix device to an associated processing device, said seal assembly including a sealing surface on one of the devices and a seal on the other, the improvement comprising said seal including a base portion extending generally longitudinally to the direction of motion of the matrix device and having an inflatable passage extending longitudinally therethrough, first and second salient, resilient lip portions extending from said base portion toward an associated sealing surface in the gap between the matrix device and processing device, and means for inflating and deflating said passage to control the contact pressure between said lip portions and said associated sealing surface, said lip portions extending generally longitudinally to the direction of motion of the matrix device and spaced from each other transversely to the direction of motion of said matrix device and forming a channel therebetween; a pressurized purge fluid chamber formed by said channel and the associated sealing surface; and means for suppling purging fluid to the purge fluid chamber formed by said channel and lip portions with the associated sealing surface.

4,204,949

DEVICE FOR WET CLASSIFICATION OF A MIXTURE OF SOLID COMPONENTS ACCORDING TO SIZE

Antoni Jedo, Gliwice, and Waclaw Jachna, Tychy, both of Poland, assignors to Centralny Osrodek Projektowo-Konstrukcyjny Maszyn Gorniczych KOMAG, Gliwice, Poland

Filed Dec. 8, 1978, Ser. No. 967,733
Int. Cl.² B07B 1/06
U.S. Cl. 209—250 5 Claims



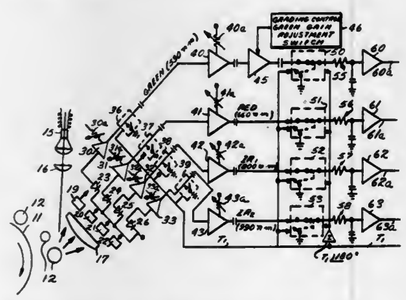
1. A device for wet classification of solid particles by size, comprising: at least two curvilinear conic sieve planes formed of segments, two horizontal circular chutes situated tangentially and adjacently at an upper level of said sieve planes, a common feeding nozzle tangential to and between said circular chutes, a dividing wedge facing said common feeding nozzle, a distributing hole holding said dividing edge, a vibratory unit located on a central vertical axis of each of said sieve planes, said circular chute being horizontal and lying above the edge of said sieve planes, said solid particles flowing along said sieve planes in a downward direction, part of liquid used in wet classification returning near said common feeding nozzle and being reused, said dividing wedge being swivel-mounted for dividing flow equally.

4,204,950

PRODUCE GRADING SYSTEM USING TWO VISIBLE AND TWO INVISIBLE COLORS

Henry H. T. Burford, Jr., Springfield, Va., assignor to Sortex North America, Inc., Lowell, Mich.

Filed Feb. 8, 1978, Ser. No. 876,085
Int. Cl.² B07C 5/342
U.S. Cl. 209—558 15 Claims



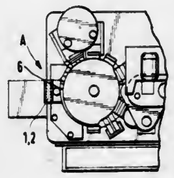
1. A method for sorting articles of a given produce according to a desired red color of that produce and for sorting undesired nonvegetable articles such as dirt clods and rocks from desired produce to be retained, comprising
- passing through an inspection position the given articles of produce to be sorted along with mingled dirt clods and rocks,
- illuminating the inspection position with light that includes a narrow band of visible green light substantially centered at approximately 530 nm, a narrow band of visible red light substantially centered at approximately 660 nm, and first and second narrow bands of invisible light respectively centered at approximately 800 nm and 990 nm,
- receiving light reflected from articles passing through the inspection position,
- producing first, second, third and fourth signals corresponding, respectively, to the amount of light that exceeds predetermined amounts of light in said 530, 660, 800 and 990 nm bands,
- detecting the presence of an article at the inspection position,
- comparing the first and second signals to determine if an acceptable amount of red color is present in detected articles, including whitish-green articles
- comparing the second and third signals to determine if an acceptable amount of red color is present in detected articles, including dark green articles,
- comparing the third and fourth signals to determine if a detected object is vegetable or nonvegetable matter.

4,204,951

APPARATUS FOR SORTING CAPSULES AND THE LIKE

Theo Moser, Remseck; Andrä Rolf; Roland Rittler, both of Fellbach, and Armin Strampfer, Hegnach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 905,075
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722499
Int. Cl.² B07C 5/06
U.S. Cl. 209—625 5 Claims



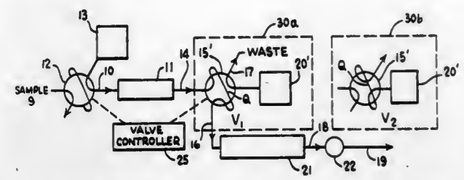
1. An apparatus for sorting capsules, comprising:
- a first member having a plurality of cylindrical apertures therein for receiving capsules, said capsules including intact capsules having a top part and a bottom part and having been filled with powdery contents and also including defective capsules, lacking at least the top part or being deformed;
- a second member disposed in juxtaposition to and movable with respect to said first member and also having a plurality of cylindrical apertures;
- means for permitting said first and second members to assume a first relative position in which the cylindrical apertures of both members are axially aligned permitting movement of intact capsules into the cylindrical apertures of said second member and a second relative position in which the cylindrical apertures of said first and second members are relatively displaced; and
- suction means, for applying suction to the capsules in said first and second members, said suction means being adapted to urge intact capsules to be transferred from said first member to said second member and aspirate and remove the powdered contents of any capsule lacking a top part.

4,204,952

CHROMATOGRAPHIC APPARATUS AND METHOD

Lloyd R. Snyder, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jul. 7, 1978, Ser. No. 922,712
Int. Cl.² B01D 15/08
U.S. Cl. 210—31 C 5 Claims



1. A method of increasing the throughput of a chromatographic system, which system is continuously operated and fed a series of samples, each sample containing a particular constituent of interest, said method comprising the steps of:
- (a) periodically passing a series of samples at a first controlled rate into a first chromatographic column for the purpose of separating a particular constituent of interest from each of said samples;
- (b) obtaining eluant materials for each sample passing from said first chromatographic column and retaining in said chromatographic system only that fraction of each sample containing said particular constituent of interest; and
- (c) periodically passing the retained fraction of each sample into a second chromatographic column at a second controlled rate, said first rate being in substantial synchronism with said second rate such that there is sufficient separation between the particular constituent of interest of each of said fractions leaving said second column to provide an improved throughput of the chromatographic system, because a fraction of a number of samples will be concurrently passing through said second chromatographic column.

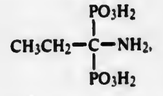
4,204,953

PROCESS FOR ALKALINE SCALING

Thomas D. Hodgson, Abingdon; Kenneth W. Carley-Macauly, Stanford in the Vale, and Sidney Smith, Alderley Edge, all of England, assignors to Ciba-Geigy Limited, London, England

Continuation of Ser. No. 570,371, Apr. 22, 1975, abandoned.
This application Sep. 6, 1978, Ser. No. 940,132
Claims priority, application United Kingdom, Apr. 30, 1974, 18980/74
Int. Cl.² C02B 5/06
U.S. Cl. 210—58 2 Claims

1. In a method for inhibiting the deposition of scale from saline water having bicarbonate alkalinity, onto the heat exchange surfaces of a saline water evaporation plant at temperatures between about 104° and 120° C., by the addition of a scale inhibiting additive selected from the group consisting of hydrolyzed polymaleic anhydride, polyacrylic acid, a terpolymer of maleic anhydride, vinyl acetate and ethyl acrylate, aminotrismethylene phosphonic acid,



and polymethacrylic acid, said additive being employed in an amount of from 0.5 to 6 ppm of water to be treated, the improvement which comprises adding a mineral acid to the saline water to neutralize 50–75% of the bicarbonate alkalinity thereof, the amount of acid being such that the pH of the saline water which is flowing within the plant is not reduced below 7.5.

4,204,954

DETOXIFICATION OF RESIDUAL QUATERNARIES

Jose T. Jacob, Lake Zurich, Ill., assignor to Chemed Corporation, Cincinnati, Ohio

Continuation of Ser. No. 929,981, Aug. 1, 1978, abandoned. This application Jun. 8, 1979, Ser. No. 47,186

Int. Cl.² C02C 5/02

U.S. Cl. 210—59 4 Claims

1. The method of detoxifying water containing residual toxic amounts of a biocidal quaternary ammonium salt that comprises adding thereto at least a neutralizing amount of an anionic substance, sufficient to provide 0.3 to 600 ppm thereof in the water, followed by discharge into a waste stream, the quaternary being thereby rendered inactive to aquatic life; said anionic substance being a member selected from the group consisting of sodium stearate, sodium dodecyl sulfate, dodecyl glycine, dodecyl amino ethyl glycine, sodium palmitate, sodium oleate, sodium linoleate, or sodium dioctyl sulfosuccinate.

4,204,955

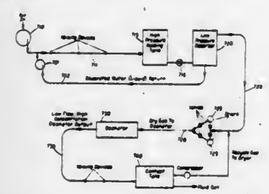
SYSTEM FOR POLLUTION SUPPRESSION

Edward T. Armstrong, 490 Pepperidge Tree Ter., Smoke Rise, Butler, N.J. 07405

Continuation of Ser. No. 616,486, Sep. 24, 1975, abandoned, which is a division of Ser. No. 531,095, Dec. 9, 1974, Pat. No. 3,998,714, which is a continuation-in-part of Ser. No. 355,738, Apr. 30, 1973, Pat. No. 3,853,764, which is a continuation-in-part of Ser. No. 100,333, Dec. 21, 1970, Pat. No. 3,730,881, which is a continuation-in-part of Ser. No. 813,382, Feb. 28, 1969, Pat. No. 3,549,528, which is a continuation-in-part of Ser. No. 362,118, Apr. 23, 1964, abandoned. This application Apr. 25, 1978, Ser. No. 898,484

Int. Cl.² C02C 5/04

U.S. Cl. 210—61 18 Claims



1. A process for producing, injecting, and dispersing an ozonated oxygen containing gas into a fluid, comprising the steps of:

adding a feed gas selected from the class consisting of air, oxygen-enriched air, and oxygen, to an ozone generator at a reduced feed gas flow rate compared to an ozonator feed gas rate corresponding to a maximum ozone production rate, said reduced feed gas flow rate being associated with reduced efficiency of ozone production as measured by the criteria of pounds of ozone produced per kilowatt hour of ozonator energy expended, the concentration of produced ozone in said feed gas being relatively increased to levels greater than the concentration typical of either said ozone production at maximum rates or at maximum ozone production rate per unit of ozonator energy expended;

creating a downstream vena contracta portion by a constriction in a conduit, said constriction being a flat plate orifice, said flat plate orifice having a diameter ranging from about 0.7 to about 0.9 conduit diameters, said flat plate orifice also creating said vena contracta portion from about 0.25 to about 0.5 conduit diameters downstream from said orifice;

injecting said ozonated feed gas into said conduit in said vena contracta portion; and

injecting said ozonated feed gas at a flow rate such that the concentration of said ozone in said fluid is at least 0.5 parts per million.

4,204,956

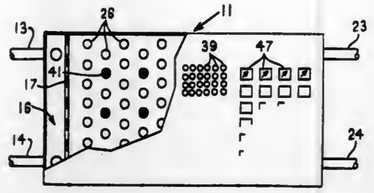
WATER PURIFICATION SYSTEM

Robert E. Flatow, 2010 Farallon Dr., San Leandro, Calif. 94577

Filed Oct. 2, 1978, Ser. No. 947,619

Int. Cl.² C02B 3/08

U.S. Cl. 210—87 12 Claims



1. A water purification system comprising

a tank having a plurality of parallel high intensity ultra-violet lamps disposed laterally across the tank in evenly spaced array with the lamps thereof disposed in close proximity without ultra-violet attenuators therebetween,

water inlet means including an apertured diffusion plate directing water uniformly through said tank laterally across said lamps for irradiation of said water with high intensity ultra-violet rays, and

sensing means disposed in spaced relation uniformly throughout said lamp array in said tank for indicating the intensity of ultra-violet radiation as received by water passing through said tank.

4,204,957

ARTIFICIAL KIDNEY

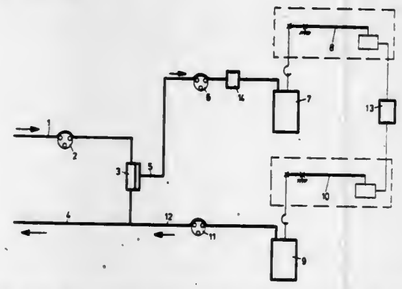
Ludwig Weickhardt, Bovenden, Fed. Rep. of Germany, assignor to Sartorius Membranfilter GmbH, Gottingen, Fed. Rep. of Germany

Filed Nov. 4, 1976, Ser. No. 738,905

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1975, 2552304

Int. Cl.² B01D 31/00; A61M 1/03

U.S. Cl. 210—98 7 Claims



1. An artificial kidney comprising a filter disposed between an artery connection and a vein connection, a collecting means for the filtrate to be discharged from said filter, a means for providing a metered supply of substituate to the purified blood, and a measuring means including two weighing devices, a first weighing device measuring the weight of the filtrate to be discharged, and a second weighing device measuring the weight of the substituate, said measuring means further including a means for forming a quotient of the weight recorded by the first weighing device and that recorded by the second weighing device, and a comparison means for comparing said quotient with at least one desired value, said measuring means controlling said providing means in dependence on the result of the comparison whereby the metered supply of substituate is in a fixed weight proportionability to the filtrate weight.

4,204,958

METHOD AND APPARATUS FOR TREATMENT OF SLUDGE

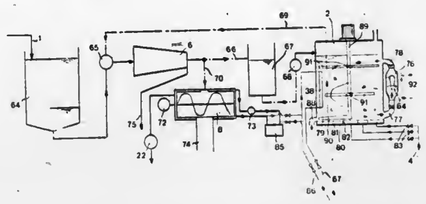
Joseph Richard Kaelin, Buochs, Switzerland, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 740,884, Nov. 11, 1976, abandoned. This application Jul. 27, 1978, Ser. No. 928,427

Claims priority, application Switzerland, Nov. 12, 1975, 14705/75; Dec. 31, 1975, 16932/75; Feb. 19, 1976, 2022/76; Oct. 25, 1976, 13471/76

Int. Cl.² C02C 3/00

U.S. Cl. 210—178 7 Claims



1. Apparatus for continuous treatment of wet sludge from a sewage treatment plant comprising:

(a) dewatering means with an inlet for supplying wet sludge thereto and an outlet for discharge of dewatered sludge therefrom, said dewatering means reducing the wet sludge to a maximum water content of 90%;

(b) a heat insulated wet sludge aeration vessel, said vessel being provided with an inlet, an outlet, and circulation means for circulating the dewatered sludge in the interior of the vessel and with aeration means for concurrently aerating the sludge with an oxygen-containing gas to develop temperatures of from 40° C. to 80° C. in the sludge by a thermophilic digestion biological conversion process, said circulationg means being located outside of the wet sludge aeration vessel and being fluidly connected to the interior thereof by a supply duct and a discharge duct with means disposed therein to render them capable of being shut off; the supply duct and the discharge duct opening into the wet sludge aeration vessel in an approximately tangential direction at points vertically spaced apart such that the sludge present in the aeration vessel is circulated along a helical path;

(c) conduit means connecting the outlet of the dewatering means with the inlet of said heat insulated wet sludge aeration vessel for transfer of dewatered sludge from the dewatering means to said wet sludge aeration vessel;

(d) a heat exchanger in heat exchange contact with the sludge circulating inside the vessel, and said inlet of said dewatering means being connected by conduit means to the outlet of the heat insulated wet sludge aeration vessel to reduce the sludge to a water content of from about 50% to about 80%; and

(e) means for discharging finally dewatered sludge from said dewatering means.

4,204,959

APPARATUS FOR THE TREATMENT AND COMPOSTING OF BIOLOGICAL WASTE

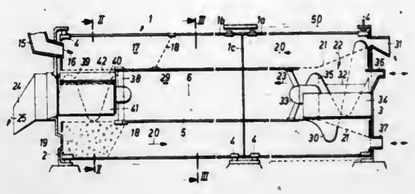
Eberhard Kreuzburg, Ratzeburg; Günter Eichholz, and Knut Dederichs, both of Mölln, all of Fed. Rep. of Germany, assignors to Gesellschaft zur Errichtung von Unweltschutzanlagen mbH, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,159

Int. Cl.² C02C 1/14, 1/40

U.S. Cl. 210—195.1 19 Claims

1. Apparatus for the biological composting of waste material comprising a first thermally insulated hollow cylinder mounted for rotation about its longitudinal axis; a second hollow cylinder mounted within said first cylinder for for conjoint rotation therewith; means for closing the ends of said first and second cylinders to define a first annular chamber therebetween and a second chamber within said second cylinder; inlet means communicating with said annular chamber adjacent one axial end thereof for the introduction into said annular chamber of materials to be composted, means adjacent the other axial end of said annular chamber for the transferring material



from said annular chamber to said second chamber within said second cylinder; discharge means communicating with the chamber within said second cylinders, whereby said waste material is moved in a path through said annular chamber from said one axial end to said other axial end thereof and countercurrently through the interior of said second cyliner, the heat generated during biological decay of the material during its movement in said annual chamber being employed to heat the material in said second chamber.

4,204,960

COMBINATION STRAINER AND SUCTION INLET PIPE

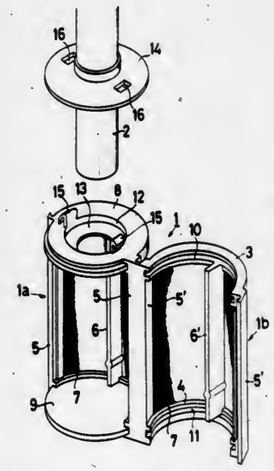
Masaaki Sugiyama, Fuji, and Takuo Yuda, Yokohama, both of Japan, assignors to Yamakawa Industry Company Ltd. and Nifco Inc., both of, Japan

Continuation of Ser. No. 847,973, Nov. 2, 1977, abandoned, which is a continuation of Ser. No. 689,705, May 24, 1976, abandoned. This application Aug. 31, 1978, Ser. No. 938,565

Claims priority, application Japan, May 26, 1975, 50-69689

Int. Cl.² B01D 35/02, 35/08

U.S. Cl. 210—232 4 Claims



1. A one-piece strainer in combination with a metallic suction pipe of predetermined diameter having an open free end and having a metallic flange at a predetermined length from said free end, said strainer including two mating generally symmetrical semi-cylindrical body portions, one of said body portions terminating with an integral annular top plate having a centrally disposed through hole therein greater in size than

said predetermined pipe diameter, said one body portion also having an integral imperforate bottom plate spaced from said top plate a distance greater than said predetermined length of said pipe from said flange to said free end, said one body portion further including circumferentially spaced substantially rigid column means maintaining said plates in spaced relationship, an integral injection molded resilient thin seal member having a substantially uniform thickness and extending radially inwardly from the margins of said top plate central through hole, said resilient thin seal member having a central co-axially disposed aperture defining a flexible thin inner margin having a diameter less than said predetermined pipe diameter and adapted to be deflected axially to sealingly grip said pipe when said pipe is axially telescoped therein, resilient snap fastener means extending substantially axially from said top plate and including shoulder means facing said top plate in spaced relation thereto whereby said shoulder means lockingly cooperate with said flange carried by said pipe when said flange is seated on said top plate, the second of said body portions including top and bottom semi-cylindrical elements having internal grooves for mating with said top and bottom plates, said elements maintained in spaced relation by circumferentially spaced substantially rigid column members, hinge means joining one of said column members disposed at an edge of said one body portion throughout a substantial portion of its length to one of said column members disposed at an edge of said second body portions, filtration net means embedded in and extending axially between said top and bottom plates and axially between said semi-cylindrical top and bottom elements and embedded at spaced points in said column members and said hinge, and locking means carried by said body portions for forming a cylindrical closed strainer chamber when said body portions are moved into locking matched relation by movement about said hinge, whereby said body portions are locked in closed sealing relation except for the aperture in the sealing member which accepts the pipe in sealed relation and the net for filtration purposes.

4,204,961

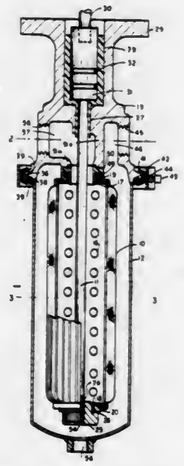
FILTER APPARATUS WITH CLEANING FUNCTION

John Cusato, Jr., 1902 Surrey Rd., Oreland, Pa. 19075

Continuation-in-part of Ser. No. 886,680, Mar. 15, 1978, abandoned. This application Jan. 31, 1979, Ser. No. 7,965

Int. Cl.[2] B01D *35/16*

U.S. Cl. 210—232 **7 Claims**



1. A fluid filter apparatus which comprises:

a housing forming an enclosed space and having an inlet opening and an outlet opening,

a filter element in said enclosed space of hollow cylindrical form with an opening at its opposite ends,

a gasket presenting a friction surface around the openings at both ends of the filter element,

a shaft rotatably mounted in the housing and passing therethrough and located at the axis of the filter,

connecting means between the shaft and the filter element to rotate the filter and spin off dirt collected thereon,

and a partition within the housing separating the inlet and outlet openings and directing fluid from the inlet opening to the exterior of the filter element, said partition having an opening therethrough which communicates with an end opening of the filter element so fluid from the hollow interior flows to the outlet opening,

and includes the improvement comprising:

an annular bearing element of a material of construction which is non-galling relative to the material of construction of the partition disposed between the partition at its opening and the gasket at the communicating end opening of the filter element,

said material of construction of said bearing element also being frictionally drivable by the material of construction of said gasket when the shaft is rotated and frictionlessly bearing on the partition to form a relatively free slippage area between them.

4,204,962

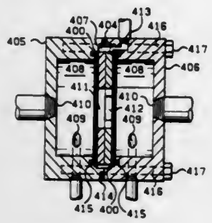
CONTINUOUS ANALYSIS OF BEVERAGES

Gregory A. Ford, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 3, 1978, Ser. No. 883,015

Int. Cl.[2] B01D *75/24*

U.S. Cl. 210—316 **11 Claims**



1. A bypass filter comprising first and second filter means separated by a filter spacer and secured between first and second filter body halves in a filtrate receiving cavity defined by adjoining portions of said first and second filter body halves; wherein said first and second filter body halves each contain a sample receiving cavity therein open to a substantial amount of the adjoining surface of the adjoining filter means, an inlet port communicating with said filter body half sample receiving cavity in such a manner that when liquid is passed into said port it will flow around the periphery of said sample receiving cavity in swirling motion, and a retentate outlet port allowing liquid to flow out of said sample receiving cavity without flowing through the adjoining filter means; wherein said filter spacer contains a cavity therein providing communication between said first and second filter means; wherein said filter spacer further contains an outlet providing for communication between said filter spacer cavity and said filtrate receiving cavity; and wherein there is a filtrate outlet port in communication with said filtrate receiving cavity to allow filtrate to flow out of said bypass filter.

4,204,963

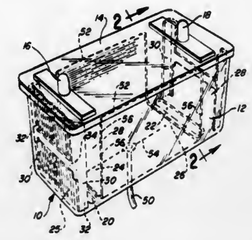
SEALING MEMBERS FOR A MEMBRANE DIFFUSION DEVICE

Daniel F. Bischof, McHenry, and John M. Munsch, Libertyville, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 20, 1978, Ser. No. 926,466

Int. Cl.[2] B01D *31/00*

U.S. Cl. 210—321 B **7 Claims**



1. A membrane diffusion device which comprises a stack of membrane wall pairs and membrane supports in alternating, interleaving relation, the stack being disposed in a casing and defining opposed ends, the casing inner walls defining a draft angle, the improvement comprising:

rigid shim member means spaced at the outer corners of said stack between said stack and the inner walls of the casing, said rigid shim member means being tapered and proportioned to compress the end portions of said stack between said inner walls of the casing and said shim member means to a degree which is generally equal across the entire length of said rigid shim member means, the rigid, tapered shim member means at respective ends of the stack being connected together by a cross bar member to form an integral unit.

6. A membrane diffusion device which comprises a stack of membrane wall pairs and membrane supports in alternating, interleaving relation, said stack being disposed in a casing having a lid, and an inflatable member positioned adjacent said stack, said inflatable member comprising a double-folded, flexible member defining a central seal line spaced from the edges of the flexible member except at the ends thereof, and defining two opposed, folded ends which are free of seal lines, said ends being positioned closely adjacent the casing and between said stack and casing adjacent said lid whereby, upon inflation, the degree of withdrawal of said seal lines is less compared with inflatable members which carry a seal line.

4,204,964

CONTINUOUS CENTRIFUGAL FILTER FOR VARIOUS FILTERING AND AUTOMATIC COFFEE MAKING

Serge Cailliot, Neuilly-sur-Seine, France, assignor to Societe Normande de Services, Boulogne; Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine; Societe Generale pour le Financement de l'Innovation, Soginnove, Paris; Bertrand Cor, Paris and Arnaud Gastinne, Paris, all of, France, part interest to each

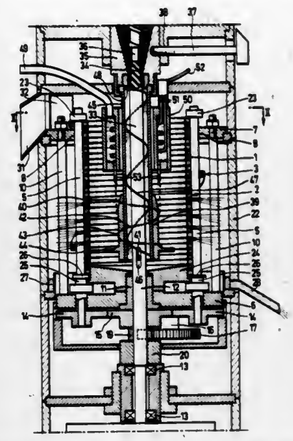
Filed Jun. 1, 1978, Ser. No. 911,696

Claims priority, application France, Jun. 2, 1977, 77 16927

Int. Cl.[2] B01D *33/14*

U.S. Cl. 210—370 **13 Claims**

1. A centrifugal separator comprising a support assembly comprising plural guide rods, endless band means on said support assembly, said endless band means being sufficiently stiff to provide means for positioning a helically wound wall portion entirely within said guide rods, a such helically wound wall portion defining a separator, and a return portion mounted around said rods and extending along a generally helical path between the ends of said helically wound wall portion, said guide rods being rotatably mounted on said support assembly and circumferentially spaced around and engaging said helically wound wall portion of said band, combined drive means for driving the entire support assembly in rotation about the central axis of said assembly and for simultaneously driving at least one of said plural guide rods so as to revolve said helical wall portion relative to said support and provide movement of said band relative to said support along said



helical path, generally about the central axis of said assembly to thereby cause continuous unwinding of the band from one end of the helical wall portion and rewinding of the band at the other end of the helical wall portion, said combined drive means being designed so that said rotation is substantially faster than said movement of said band along said helical path.

4,204,965

SAFETY DEVICE FOR OIL FILTERS AND THE LIKE

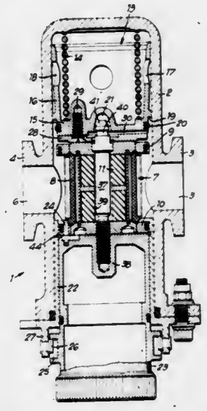
Rene J. Vincent, Oupeye, Belgium, assignor to Fabrique Nationale Herstal, en abrégé FN, societe anonyme, Herstal, Belgium

Filed Mar. 5, 1979, Ser. No. 17,559

Claims priority, application Belgium, May 9, 1978, 56947

Int. Cl.[2] B01D *35/12*

U.S. Cl. 210—447 **7 Claims**



1. Safety device for oil filters and the like, of the type which consists of a casing fitted in a fluid circuit and provided to receive a filtering cartridge therein, such a casing having a bottom which is opposite to an access opening which can be closed by a cover and which is intended to receive a filtering cartridge which can be entered and removed through aforesaid opening, characterized by the fact that it mainly consists of a

piston which is entered with frictional fit in aforesaid casing and is intended to be thrust down towards the bottom of the latter in a waiting position, subsequent to the insertion of the cartridge, at least one passage provided through aforesaid piston; a means for bringing the piston to its active position on removal of the cartridge from the casing, position in which aforesaid passage assures the continuity of flow through aforesaid line, whereas the piston prevents any flow out of the casing, and a means for locking aforesaid piston in its active position.

4,204,966

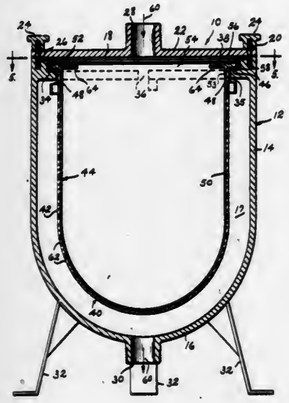
LIQUID FILTER AND FILTER ELEMENT

Howard W. Morgan, Jr., Michigan City, Ind., assignor to Filter Specialists, Inc., Michigan City, Ind.

Continuation-in-part of Ser. No. 854,482, Nov. 25, 1977, Pat. No. 4,133,769. This application Jan. 2, 1979, Ser. No. 174

Int. Cl.² B01D *29/30*

U.S. Cl. 210—455 **7 Claims**



1. In a liquid filter including a housing having a side wall defining a chamber therein, said chamber having an opening, an annular support carried by said housing and defining at least in part said chamber opening, an inlet port and an outlet port, the improvement comprising a filter bag having a wall part formed of a flexible liquid pervious material and a ring part formed of a shape-retaining liquid impervious material, said bag ring part including an annular lip defining the opening into said filter bag and an outturned annular flange, said bag wall part joined to said lip of the bag ring part, said filter bag fitting in said chamber with its wall part extending through said chamber opening within the path of liquid flow between said inlet and outlet ports and with its said ring part flange contacting said support, said ring part flange forming (at all times when contacting said support) a circumferential hermetic seal between said ring part and housing.

4,204,967

TUBEWELL SCREEN FILTERS

Alan S. Bannister, "Brelade", Fair Green, Diss, Norfolk, England

Filed Nov. 29, 1978, Ser. No. 964,696

Claims priority, application United Kingdom, Dec. 2, 1977, 50327/77

Int. Cl.² B01D *35/02*

U.S. Cl. 210—459 **14 Claims**

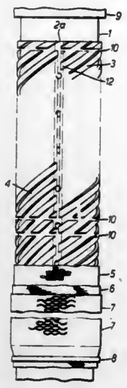
1. A tubewell screen filter comprising

means defining a passage for filtered water having apertures to allow filtered water to enter the passage, and

a filter assembly mounted on and surrounding the passage-defining means, said assembly comprising

support means defining channels leading to the apertures, said support means including

a coarse mesh material contiguous with and supported by another part of the support means, and the assembly further comprising



a fine mesh screen means contiguous with the coarse mesh material and having an open area of at least 12% of its overall area.

4,204,968

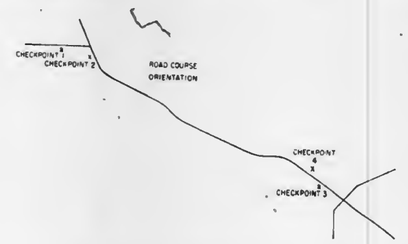
LUBRICANT ADDITIVE

Jack E. Mack, and Patrick K. Mack, both of Littleton, Colo., assignors to CLM International Corp., Englewood, Colo.

Filed Aug. 11, 1978, Ser. No. 932,863

Int. Cl.² C10M *1/54, 3/48*

U.S. Cl. 252—26 **17 Claims**



1. A lubricant additive composition comprising a lubricating liquid carrier containing an effective amount of a mixture of powdered copper and lead metal particles of spherical configuration not more than 20 microns in diameter.

4,204,969

LUBRICANT COMPOSITION CONTAINING SULFURIZED OLEFIN EXTREME PRESSURE ADDITIVE

Andrew G. Papay, Manchester, and Joseph P. O'Brien, Kirkwood, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Filed Oct. 10, 1978, Ser. No. 950,022

Int. Cl.² C10M *1/38*

U.S. Cl. 252—45 **11 Claims**

1. A sulfurized lubricating oil additive which imparts improved extreme pressure properties made by the process consisting essentially of (a) reacting S_2Cl_2 with a C_{3-6} aliphatic monoolefin at about 30°-100° C. to produce an adduct, (b) reacting said adduct with sulfur and Na_2S in an aqueous alkanol medium at a temperature of about 50° C. up to reflux using about 0.1-0.4 gm atom of sulfur per gm mole of Na_2S and then

(c) recovering said additive without heating with aqueous caustic.

11. A lubricating oil composition containing an extreme pressure improving amount of a sulfurized oil additive of claim 1.

4,204,970

LUBRICANT COMPOSITIONS CONTAINING ALKYLATED AROMATIC AMINO ACID ANTIOXIDANTS

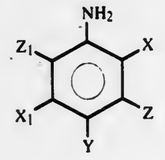
Richard J. Lee, Downers Grove, and Samuel W. Harris, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 7, 1978, Ser. No. 967,295

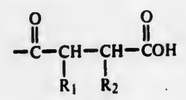
Int. Cl.² C10M *1/32*

U.S. Cl. 252—51.5 A **10 Claims**

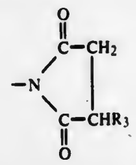
1. A lubricant composition resistant to oxidative deterioration comprising a major proportion of hydrocarbon oil and about 0.1% to 10% of an amino acid having the structure:



wherein X has the structure



one of R_1 and R_2 is hydrogen and the other is a residue of an olefin polymer; X_1 is selected from the group consisting of X and hydrogen; when X_1 is X, Y is NH_2; when X_1 is hydrogen, Y is selected from the group consisting of hydrogen, alkyl, aryl, halogen, nitro, amino, and



and R_3 is an olefin polymer residue; Z and Z_1 are separately selected from the group consisting of hydrogen, alkyl, halogen, nitro, amino, and fused benzene.

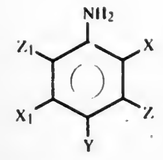
3. A process for the production of an alkylated aromatic amino acid which comprises

(a) reacting an aromatic amine with an anhydride of an alpha, beta dicarboxylic acid with an aliphatic chain in the alpha or beta position to generate a substituted imide

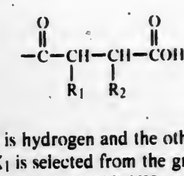
(b) intramolecularly acylating the imide of step (a) by a Lewis acid catalyst to generate a substituted cyclic keto amide

(c) hydrolyzing the cyclic keto amide of step (b) in base to generate the substituted aromatic amino acid.

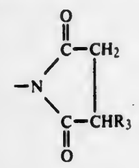
10. An amino acid having the structure



wherein X has the structure



one of R_1 and R_2 is hydrogen and the other is a residue of an olefin polymer; X_1 is selected from the group consisting of X and hydrogen; when X_1 is X, Y is NH_2; when X_1 is hydrogen, Y is selected from the group consisting of hydrogen, alkyl, aryl, halogen, nitro, amino, and



and R_3 is an olefin polymer residue; Z and Z_1 are separately selected from the group consisting of hydrogen, alkyl, halogen, nitro, amino, and fused benzene.

4,204,971

CALCIUM OXIDE OR HYDROXIDE TO IMPROVE THE CHARGE ACCEPTANCE OF ELECTROGRAPHIC DIELECTRIC RESINS

Gerson E. Beauchamp, Parkridge, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Division of Ser. No. 819,849, Jul. 28, 1977, Pat. No. 4,145,478. This application Oct. 25, 1978, Ser. No. 954,664

Int. Cl.² G03G *5/022*; H01B *3/42, 3/44*

U.S. Cl. 252—63.5 **12 Claims**

1. A resin solution adapted to deposit, upon drying, an electrographic dielectric coating having improved charge accepting capacity comprising, in volatile organic solvent solution, an organic solvent-soluble thermoplastic insulating resin having carboxyl functionality providing an acid value of from 5-100, and calcium oxide or calcium hydroxide dispersed in the resin solution in an amount of from 0.05-3% of the weight of the carboxyl-functional resin.

4,204,972

HYDRAULIC FLUIDS COMPRISING NITROGEN-CONTAINING BORIC ACID ESTERS

Wolfgang Knoblauch, Burghausen, and Konrad von Werner, Burgkirchen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft and Alfred Teves, both of Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,723

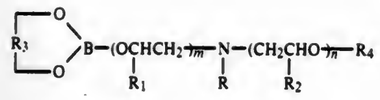
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804535

Int. Cl.² C10M *3/48, 3/26*

U.S. Cl. 252—78.1 **4 Claims**

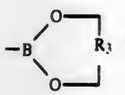
1. Hydraulic fluid essentially consisting of

(A) about 10 to about 60% by weight of at least one nitrogen-containing boric acid ester of the following formulae I to III



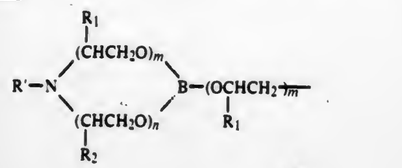
(I)

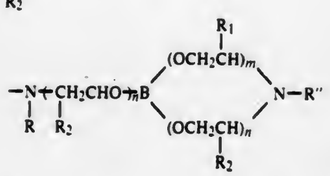
in which m and n each denotes an integer from 1 to 3, R denotes an alkyl group having from 1 to 9 carbon atoms, R_1 and R_2 denote hydrogen or methyl, R_3 denotes $-CH_2-CH_2-$ or $-CH_2CH_2OCH_2CH_2-$ and R_4 denotes hydrogen or a radical of the formula



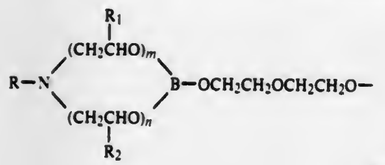
(II),

in which R_3 has the aforesaid meaning;

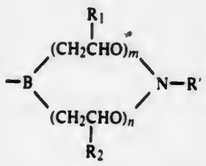




in which m, n, R, R_1 and R_2 have the aforesaid meaning and R' and R'' each has one of the meanings of R;

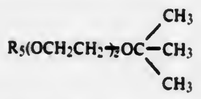


(III),



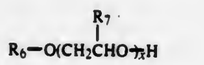
in which m, n, R, R', R_1 and R_2 have the aforesaid meaning;

(B) about 5 to about 30% by weight of an alkyl polyethylene glycol tert.butyl ether of the formula



in which R_5 denotes alkyl having from 1 to 4 carbon atoms and z is an integer from 2 to 10, and

(C) about 35 to about 75% by weight of a glycol monoalkyl ether of the formula



in which x denotes an integer from 2 to 5, R_6 denotes alkyl having from 1 to 4 carbon atoms and R_7 denotes hydrogen or methyl.

4,204,973

TREATMENT COMPOSITION FOR USE IN CHROME REMOVAL AND RECOVERY

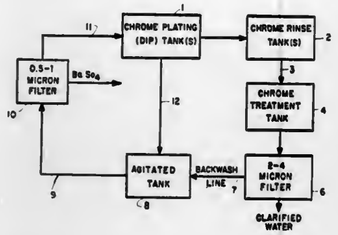
Edward J. Feltz, Dayton, and Ross Cunningham, Mt. Gilead, both of Ohio, assignors to John Cunningham, Portsmouth, Ohio

Division of Ser. No. 657,885, Feb. 13, 1976, Pat. No. 4,054,517, which is a continuation-in-part of Ser. No. 500,606, Aug. 6, 1974, Pat. No. 3,969,246. This application Aug. 29, 1977, Ser. No. 828,345

The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.

Int. Cl.² C02C 5/02

U.S. Cl. 252—181 **3 Claims**



1. A treatment composition for use in removing chromium from chromium-containing water comprising a dry powder mixture of components: (a) barium carbonate and/or barium hydrate and (b) a water-soluble acetate salt selected from the group consisting of the acetates of barium, calcium, strontium, iron, aluminum, tin, cerium, cobalt, copper, magnesium, manganese, nickel, uranium, sodium, zinc, and mixtures thereof, said components being present in the ratio of 3–15 parts by weight barium carbonate and/or barium hydrate to 1 part water-soluble acetate salt.

4,204,974

METHOD FOR REMOVING RADIOACTIVE PLASTIC WASTES AND APPARATUS THEREFOR

Anwer Puthawala; Lutz Hoffmann; Hermann Emmert, all of Erlangen; Werner Hild, Hochstetten; Hans-Erich John, and Wolfgang Kluger, both of Leopoldshafen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Continuation of Ser. No. 693,782, Jun. 8, 1976, abandoned. This application Nov. 10, 1977, Ser. No. 850,369

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1975, 2531584

Int. Cl.² G21F 9/08, 9/34

U.S. Cl. 252—301.1 W **4 Claims**

1. In a method for removing radioactive plastic wastes, consisting essentially of radioactively contaminated ion exchange filter material admixed with water, by drying and encapsulating in bituminous solidification substances and pouring into a container, the improvement which comprises subjecting the previously untreated radioactive waste separate and apart from siad bituminous substance to drying at temperatures of 60° to 80° C. to produce a flowably dry radioactive waste without decomposition of the waste, introducing regulated amounts of said dry radioactive waste into said bituminous substance at a temperature sufficient to permit the bitumen to be kneaded and encapsulate the resin but insufficient by itself to render the bitumen fluid enough to satisfactorily encapsulate the resin without agitation, subjecting said mixture of dry radioactive waste and bituminous substance to kneading to effect encapsulation of said radioactive waste by the mechanical action of said kneading, maintaining said mixture at a temperature below 120° C. during said kneading to prevent gas formation and foaming of the mixture, and discharging the kneaded, encapsulated, radioactive plastic waste into a container.

4,204,975

METHOD AND APPARATUS FOR ENCAPSULATING RADIOACTIVELY CONTAMINATED LUMPS OR GRANULAR MATERIAL IN METAL

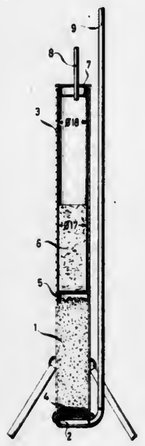
Dietrich Thiele, Julich-Stetternich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich, Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,362

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717389

Int. Cl.² G21F 9/34

U.S. Cl. 252—301.1 W **10 Claims**



1. A method for encapsulating in metal radioactively contaminated material of granular or lump form, comprising the steps of:

filling a first section of the inside of a substantially vertically disposed tube with said contaminated material in such a way that one of the boundaries of the filled section of said tube is constituted by a porous partition at the bottom of the said first section capable of passing molten metal but impermeable to said granular or lump material;

placing a quantity of said metal in said tube in a second section thereof above and substantially adjacent to said first section thereof,

heating said quantity of metal in said tube above the melting point of said metal and evacuating the insterstices of said filling of said first section of tube by applying suction to the bottom end of said tube so as to introduce said metal in the molten state into said filling and through said porous partition by suction, and

cooling said molten metal after it has fully penetrated said first section of tube to solidify said metal and form a consolidated solid plug encapsulating said contaminated material.

4,204,976

GLASS FOR RADIO-PHOTOLUMINESCENCE DOSIMETRY

Walter Jahn, Ingelheim, and Werner Schumann, Mainz, both of Fed. Rep. of Germany, assignors to JENAER Glaswerk Schott & Gen, Mainz, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,678

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731844

Int. Cl.² C03C 3/16, 3/30

U.S. Cl. 252—301.4 P **7 Claims**

1. A lithium-free silver-activated phosphate glass having a transparency suitable for radio-photoluminesence dosimetry, consisting essentially of, in percent by weight based on the total composition:

15–26% by weight of $NaPO_3$;

16–27% by weight $Mg(PO_3)_2$;

a radio-phospholuminescent activating amount of silver metaphosphate; and

balance, aluminum metaphosphate.

4,204,977

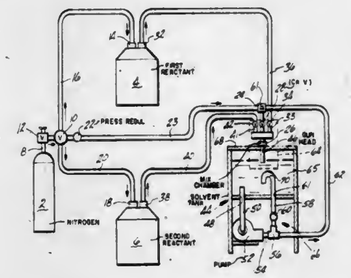
POLYURETHANE FOAM GENERATING APPARATUS

John F. Zwirlein, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 656,157, Feb. 9, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 866,976

Int. Cl.² B01F 3/04; B05B 15/02

U.S. Cl. 252—359 E **12 Claims**



1. A foam generating apparatus wherein first and second inter-reactive foam-forming materials are mixed and foam generated therefrom and the generated foam is dispensed through an outlet, which apparatus comprises:

(a) first tank means, having an outlet, for providing a supply of said first material;

(b) second tank means, having an outlet, for providing a supply of said second material;

(c) first, second and third inlet valves;

(d) mixing chamber means, having an inlet and an outlet for mixing said first and second materials to generate foam and dispensing said generated foam through said mixing chamber outlet;

(e) first connector means connecting the outlet of said first tank means to said inlet through said first inlet valve;

(f) second connector means connecting said outet of said second tank means to said inlet through said second inlet valve;

(g) means for propelling said first and second materials from their respective tank means through said mixing chamber means and out of said mixing chamber outlet;

(h) control means for simultaneously opening and closing said inlet valves;

(i) third tank means for providing a supply of solvent for cleaning said mixing chamber means, said tank having an outlet;

(j) third connector means connecting said outlet of said third tank means to the inlet of said mixing chamber means through said third inlet valve;

(k) pump means in said third connector means interposed between said third tank means outlet and said third inlet valve to cause the flow of solvent through said mixing chamber means and out of said mixing chamber outlet when said inlet valve is opened, said pump means having an inlet and an outlet, fourth connector means for connecting said pump inlet to said third tank means outlet, and fifth connector means for connecting said pump outlet to said mixing chamber inlet and sixth connector means for connecting said pump outlet to the interior of said third tank means ; and

(l) means for recycling said solvent, after said solvent flows through said mixing chamber means and out of said mixing chamber outlet, back to said third tank means through said third tank inlet.

4,204,978

TOOTH CRACK DETECTOR

Robert L. Ibsen; William R. Glace, and William R. Reed, Jr., all of Santa Maria, Calif., assignors to Den-Mat, Inc., Santa Maria, Calif.

Continuation-in-part of Ser. No. 954,841, Oct. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 830,461, Sep. 6, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,401

Int. Cl.[2] **C09K** *3/00;* **G01N** *19/08, 31/00;* **A61C** *19/00*

U.S. Cl. 252—408 **24 Claims**

1. A tooth crack detection composition for detecting ordinarily invisible cracks in a tooth in situ and in vitro, consisting essentially of:

a dye chosen from the group consisting of methyl violet, crystal violet, gentian violet, malachite green, erythrosin B, and acid fuchsin, in a solvent consisting essentially of water or a non-toxic organic solvent for such dye,

a small but effective amount of from about 0.05% to about 5% by weight of said solution of a non-toxic surfactant to cause the composition to coat the suspected area of a tooth, and

a small amount of a non-toxic weak acid to provide a ph of the solution of about 1.0 to 6.5,

said dye being present in said solution in an amount of from about 0.01% to about 5% by weight of said solution, sufficient to selectively color said cracks, and from zero to about 10% of a compatible non-toxic thickening agent.

4,204,979

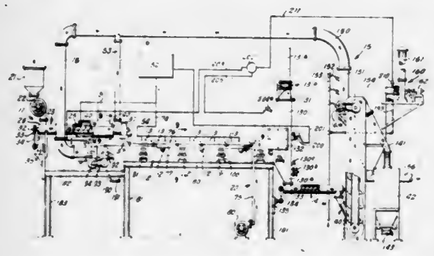
METHOD OF PROCESSING ACTIVATED CARBON

Jim F. Hobbs, 618 Winchester Dr., Richardson, Tex. 75079, and Craig Smyser, 4013 Miramar, Dallas, Tex. 75200

Division of Ser. No. 627,651, Oct. 31, 1975, Pat. No. 4,050,900, which is a continuation of Ser. No. 423,398, Dec. 10, 1973, abandoned, which is a continuation of Ser. No. 173,803, Aug. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 38,936, May 20, 1970, Pat. No. 3,648,630. This application Jun. 20, 1977, Ser. No. 808,176

Int. Cl.[2] **C01B** *31/10, 31/08;* **B01J** *21/20, 21/18*

U.S. Cl. 252—416 **9 Claims**



1. A method of thermal processing of active carbon particles for the purpose of removing material foreign to said carbon particles from internal and external surfaces of said particles comprising:

defining an elongated chamber having an inlet end and a discharge end,

supporting an endless conveyor belt for horizontal movement within said chamber,

moving said belt within said chamber such that an upper belt portion moves from said inlet end to said discharge end of said chamber and wherein a lower return belt portion moves from said discharge end to said inlet end,

receiving active carbon particles from a source and discharging said active carbon particles on said upper belt portion in the region of said inlet end of said chamber,

directing infrared rays from the upper portion of said chamber on the active carbon particles deposited on said upper belt portion as said belt moves said active carbon particles from said inlet end to said discharge end, said infrared rays being of sufficient magnitude to thermally gasify matter from said active carbon particles,

maintaining at least a partial vacuum in said chamber,

flowing gases produced by said gasifying of matter along said chamber in a direction parallel to the direction of movement of said belt for minimizing the required heat from said infrared rays,

sensing the air temperature within said chamber above said conveyor belt,

in response to the temperature sensed, controlling the temperature within said chamber in order to complete the thermal gasification of said active carbon particles, and

discharging the processed active carbon particles from said belt at said discharge end of said chamber.

4,204,980

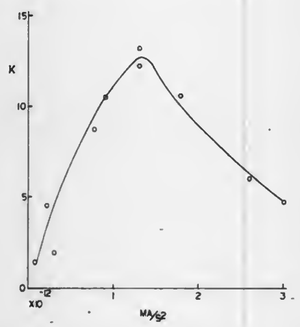
METHOD AND COMPOSITION FOR REMOVING IODINE FROM GASES

Mohiuddin Pasha; David K. O'Hara, and Joseph A. French, all of Lousiville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Jan. 8, 1976, Ser. No. 647,333

Int. Cl.[2] **B01D** *53/04;* **G21F** *9/02*

U.S. Cl. 252—428 **1 Claim**



1. A radioactive iodine-iodide sorbent material comprising a ceramic material impregnated with a mixture of silver nitrate and a water soluble secondary amine, said amine comprising triethylene diamine.

4,204,981

SUPPORTED CATALYSTS FOR THE HOMO- AND CO-POLYMERIZATION OF α-OLEFINES

Renzo Invernizzi, Milan; Ferdinando Ligorati, Usmate, and Maurizio Fontanesi, Concorezzo, all of Italy, assignors to Euteco S.p.A., Milan, Italy

Filed Sep. 29, 1978, Ser. No. 947,229

Claims priority, application Italy, Sep. 30, 1977, 28133 A/77

Int. Cl.[2] **C08F** *4/02, 4/64*

U.S. Cl. 252—429 B **21 Claims**

1. In a Ziegler catalytic system formed by the combination of an organo-metallic compound of a metal of Group I, II or III of the Periodic System of the Elements according to Mendeleef and a compound of a heavy metal of Group IV, V or VI of said Periodic System supported on a carrier, the improvement which comprises said carrier being an active complex obtained by reacting (i) one or more metal alloys each consisting of two or more metals selected from the group consisting of Mg, Fe, Al, Ni, Cr and Zn, (ii) gaseous hydrogen chloride and (iii) one or more aliphatic, cycloaliphatic, aromatic or alkylaromatic alcohols in the liquid or gaseous state, at a temperature of from 60° to 300° C., said active complex having:

(a) a content of free alcoholic hydroxyl groups of from 1 to 20% by weight;

(b) a chlorine content of from 15 to 70% by weight;

(c) a metal content of from 5 to 35% by weight;

(d) a porosity of from 0.1 to 1 cc/g; and

(e) a surface area of from 1 to 200 m^2/g.

4,204,982

LIGNIN AMINE CARBOXYLATED CONJUGATED DIENE TIRE CORD ADHESIVES

Terry C. Neubert, Ravenna, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 842,851, Oct. 17, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,533

Int. Cl.[2] **C08L** *9/00;* **C09J** *3/14, 3/28*

U.S. Cl. 260—5 **8 Claims**

1. A method for adhering a reinforcing element to a vulcanized conjugated diene rubber compound which comprises treating said element with a composition comprising an aqueous alkaline dispersion of from about 10 to 30% by weight (as dry solids) of a mixture of 100 parts of a rubbery carboxylated copolymer containing about 60 to 95% of a conjugated diolefin, about 5 to 40% of acrylic acid or lower alkyl acrylic acid and about 0 to 40% of a styrene; about 1.0 to 30 parts of a lignin amine-formaldehyde reaction product; and heat treating said element to remove the water and to heat set the solids from said composition and to deposit on said element from said composition a total of from about 2 to 30% by weight (solids), said heat treatment being conducted at temperatures of from about 150° C. to 270° C. for from about 5 to 150 seconds, cooling said treated element, combining said cooled treated element with an unvulcanized vulcanizable rubber consisting essentially of conjugated diene as the major elastomer component, and vulcanizing the same.

4,204,983

ABSORBENT POLYMERIC COMPOSITIONS DERIVED FROM AMYLACEOUS MATERIAL-FORMALDEHYDE SUBSTRATES

E. Jack Swarthout, and Phillip Antholz, both of Paris, Ill., assignors to Illinois Cereal Mills, Paris, Ill.

Filed May 7, 1979, Ser. No. 36,750

Int. Cl.[2] **C08L** *1/02*

U.S. Cl. 260—17.4 GC **12 Claims**

1. A method of forming a water-insoluble, aqueous fluid-absorbing copolymer comprising:

(a) mixing an ungelatinized amylaceous material with a formaldehyde solution containing from about 0.5 to about 9 weight percent formaldehyde based on the weight of the amylaceous material to form an amylaceous material-formaldehyde substrate;

(b) graft copolymerizing acrylonitrile onto the amylaceous material-formaldehyde substrate to form a graft copolymer;

(c) saponifying the graft copolymer in an aqueous solution to form a water-soluble saponified graft copolymer; and

(d) isolating and drying said saponified graft copolymer to form a water-insoluble, aqueous fluid-absorbing copolymer.

4,204,984

LIGNIN AMINE CARBOXYLATED CONJUGATED DIENE TIRE CORD ADHESIVES

Terry C. Neubert, Ravenna, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Oct. 17, 1977, Ser. No. 842,851

Int. Cl.[2] **C08L** *9/00, 47/00;* **C09J** *3/14, 3/28*

U.S. Cl. 260—17.5 **3 Claims**

1. A composition comprising an aqueous alkaline dispersion of a minor amount by weight of a mixture of 100 parts of a copolymer of a conjugated diolefin having 4 to 6 carbon atoms and an acrylic acid or lower alkyl substituted acrylic acid and from 6 to 30 parts of a reaction product of formaldehyde and a lignin amine, wherein the lignin amine is selected from the class consisting of a reaction product of lignin, formaldehyde and a primary or secondary amine; a reaction product of lignin with a reaction product of an epichlorohydrin and a tertiary amine; and a a salt of a quaternized lignin amine.

4,204,985

Patent Not Issued For This Number

4,204,986

SEALING, CAULKING AND PROTECTIVE SHIELDING COMPOSITION OF THERMOPLASTIC SYNTHETIC MATERIALS AND CARBONACEOUS MATERIALS

Ingo Romey, Hünxe; Aloys Schlütter, and Rolf Sommerfeld, both of Kempen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Ruhrkohle AG, both of Essen, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,391

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801154

Int. Cl.[2] **C08L** *91/00*

U.S. Cl. 260—28.5 AS **11 Claims**

1. A sealing, packing, caulking and protective shielding composition comprising a mixture of (a) at least one synthetic thermoplastic compound which may include at least one elastomer having thermoplastic properties and (b) between 3 and 97% by weight of a carbonaceous material obtained by the liquefaction of coal which material has a boiling point above 350° C. at atmospheric pressure.

4,204,987

AQUEOUS POLYESTER DISPERSION FOR ADHERING VINYL FILM TO WOOD

Roger L. Streets, Mansfield; Thomas G. Rabito, Ashland, and John Von Kamp, New London, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 31, 1975, Ser. No. 627,722
Int. Cl.[2] C08L *67/02*; C08J *5/12*
U.S. Cl. 260—29.2 E **4 Claims**

1. An adhesive composition capable of adhering a vinyl film to wood, consisting of a mixture of 100 parts by weight of saturated polyester of an organic dicarboxylic acid or its anhydride with a glycol and 80 to 125 parts by weight of a carrier, 50 to 160 parts by weight of water and an emulsifying agent, said mixture being mixed to give an oil in water dispersion of 30 to 55 percent solids, said polyester having a molecular weight of 10,000 to 30,000.

4,204,988

METHOD OF FORMING A PRODUCT FOR USE AS A CONCRETE SUBSTITUTE

Pierre A. Crouzet, 20 Romney Way, Parkwood, Western Australia, Australia

Division of Ser. No. 773,097, Feb. 28, 1977, Pat. No. 4,115,336, which is a continuation-in-part of Ser. No. 711,182, Aug. 3, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,700
Claims priority, application Australia, Aug. 7, 1975, PC2687; Apr. 27, 1976, 13401/76
Int. Cl.[2] C04B *7/35*; C08J *3/06, 9/28*; C08L *67/06*
U.S. Cl. 260—29.6 S **28 Claims**

1. A method of forming a product which method comprises the steps of

(A) preparing a water in resin emulsion by mixing

(i) water with

(ii) a mixture consisting essentially of (a) an unsaturated polyester resin having a molecular weight from about 3100 to 3600 formed by a condensation polymerization reaction, which is allowed to proceed until the polyester has an acid number of no more than about 25, between polyhydric and polycarboxylic compounds or derivatives thereof, said polyhydric compounds being present in excess over stoichiometric requirements, at least one of said compounds being unsaturated, the remainder being saturated; and (b) an unsaturated monomer; the mixture (ii) containing no more than about 30% by weight of the unsaturated monomer (b); wherein said emulsion is so stable that demulsification does not occur when a setting agent of the kind hereinafter defined is added thereto;

(B) mixing the water in resin emulsion of step (A) with a setting agent of a kind which sets by hydration thereof to form a hardenable mixture;

(C) causing an addition polymerization reaction to occur between said unsaturated polyester resin and said unsaturated monomer; and

(D) allowing the hardenable mixture to harden thereby forming a product, wherein the quantity of emulsion mixed with the setting agent is such that sufficient water is provided by said emulsion to allow said hydration to occur.

4,204,989

ISOLATION OF HEPATITIS B e ANTIGEN

William J. McAleer, Ambler, and Edward H. Wasmuth, Telford, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 13, 1978, Ser. No. 968,896
Int. Cl.[2] C07G *7/00*
U.S. Cl. 260—112 B **10 Claims**

1. A method for isolating hepatitis B e antigen or hepatitis B e antibody which comprises isopycnically banding human biological fluid which contains hepatitis B surface antigen, recovering a fraction having a density range of from about 1.04 to about 1.15 g/cc, and and isolating HB_eAb if the plasma has an HB_sAg titer measured by complement fixation of at least about 256, or isolating HB_eAg if the plasma has an HB_sAg titer measured by complement fixation of less than about 128.

4. A method for isolating hepatitis B e antigen which comprises isopycnically banding human biological fluid which has a hepatitis B surface antigen titer measured by complement fixation of at least about 256, recovering a first fraction having a density range of from about 1.04 to about 1.15 g/cc, recovering a second fraction in the density range of from about 1.17 to about 1.22 g/cc, dialyzing and concentrating the second fraction, subjecting the concentrated second fraction to rate zonal banding and recovering a third fraction having a density range of from about 1.04 to about 1.15 g/cc, and dialyzing and concentrating the first and third fractions.

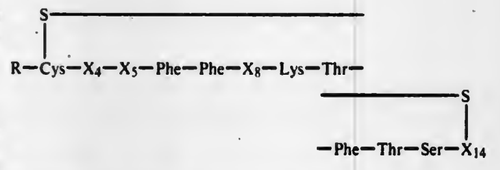
4,204,990

SOMATOSTATIN ANALOGUES

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 777,276, Mar. 14, 1977, and a continuation-in-part of Ser. No. 830,929, Sep. 6, 1977, abandoned. This application Apr. 12, 1978, Ser. No. 895,577
Int. Cl.[2] C07C *103/52*; A61K *37/00*
U.S. Cl. 260—112.5 S **7 Claims**

1. A polypeptide of the formula:



its linear precursors or a non-toxic acid addition salt thereof in which:

R is hydrogen, lower alkanoyl, benzoyl, Ala-Gly-, Gly-Gly-Gly, Ala-D-Ala, or p-Glu;

X_4 is Arg or Lys;

X_5 is D-Tyr, D-Trp, D-Ser, D-His or D-Arg;

X_8 is L-Trp or D-Trp and

X_{14} is Cys or D-Cys.

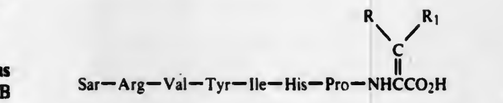
4,204,991

SARCOSINE[1] DEHYDROALANINE[8] ANGIOTENSIN II DERIVATIVES

E. Ann Hallinan, Evanston, and Robert H. Mazur, Deerfield, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 844,999, Oct. 25, 1977, abandoned. This application May 14, 1979, Ser. No. 39,025
Claims priority, application United Kingdom, Oct. 24, 1978, 41664/78
Int. Cl.[2] C07C *103/52*; H61K *37/00*
U.S. Cl. 260—112.5 R **4 Claims**

1. Compounds of the formula



wherein R is hydrogen or an alkyl radical containing 1-4 carbon atoms; R_1 is hydrogen or an alkyl radical containing 1-4 carbon atoms; and the stereochemical configuration of each of the optically active amino acid residues is L or DL.

4,204,992

METHOD FOR PREPARING PYROGEN FREE COLLAGEN

Mamerto M. Cruz, Jr., Pennington, N.J., assignor to Avicon, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 828,350, Aug. 29, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,661
Int. Cl.[2] C07G *7/00*; C08H *1/06*; C08L *89/04*
U.S. Cl. 260—123.7 **12 Claims**

1. The method for producing pyrogen free collagen which comprises removing mechanically foreign substances from the surfaces of the collagen while in contact with an aqueous solution of an alkalie or alkaline earth metal hypochlorite, washing the collagen with an aqueous ethanol solution and thereafter washing the collagen with pyrogen free water.

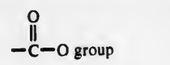
4,204,993

NONDIFFUSIBLE 6-ARYLAZO-2-AMINO-3-PYRIDINOL DYE-RELEASING COMPOUNDS

Derek D. Chapman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 927,188, Jul. 24, 1978, abandoned, which is a division of Ser. No. 822,189, Aug. 5, 1977, abandoned. This application Jan. 16, 1979, Ser. No. 3,836
Int. Cl.[2] C09B *29/36*; G03C *1/40, 5/54, 7/00*
U.S. Cl. 260—156 **14 Claims**

1. A nondiffusible compound having a releasable 6-arylazo-2-amino-3-pyridinol dye moiety or precursor thereof, said compound containing in the ortho position of the arylazo moiety a ballasted carrier moiety attached thereto either through a sulfonamido linking group or through the oxygen of a



which said ballasted carrier moiety contains, and wherein said ballasted carrier moiety will release said diffusible 6-arylazo-2-amino-3-pyridinol dye or precursor thereof under alkaline conditions.

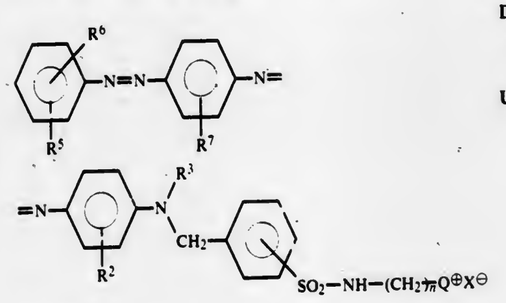
4,204,994

AZOANILINO-TOLUENE SULFONAMIDOALKYLENEAMINE CATIONIC DISAZO DYES FOR PAPER

Kishor A. Desai, Lock Haven, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Filed Jan. 18, 1979, Ser. No. 4,442
Int. Cl.[2] C09B *31/02*
U.S. Cl. 260—174 **2 Claims**

1. A cationic disazo dye characterized by outstanding affinity for paper pulp and having the structural formula:



wherein

R^2 is H, lower alkyl, lower alkoxy, chloro or bromo;

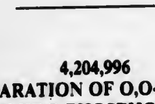
R^3 is lower alkyl or cyano lower alkyl;

R^5 and R^6 are independently H, chloro, bromo, lower alkyl, lower alkoxy or N,N-di(lower alkyl)sulfonamido;

R^7 is H, lower alkyl, lower alkoxy, chloro or bromo;

n is an integer of 2–4;

Q is $N(R^4)_3$, where R^4 is lower alkyl, or is



; and

X is chloro, bromo, methosulfate, ethosulfate or methanesulfate.

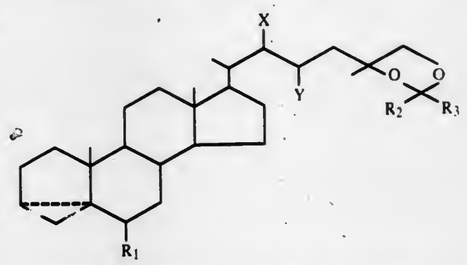
4,204,995

CHOLESTANE DERIVATIVES

Richard Barner, Witterswil, and Joseph Hübscher, Seon, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 26, 1979, Ser. No. 15,021
Claims priority, application Switzerland, Mar. 15, 1978, 2818/78
Int. Cl.[2] C07J *17/00*
U.S. Cl. 260—239.55 C **5 Claims**

1. A cholestane derivative of the formula



wherein R_1 is lower alkoxy, R_2 and R_3 each independently is lower alkyl or R_2 and R_3 taken together are lower alkylene, X is hydrogen, hydroxy or $—OSO_2R_4$ where R_4 is lower alkyl, phenyl or substituted phenyl, and Y is hydrogen or X and Y taken together are a carbon-carbon bond.

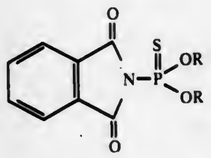
4,204,996

PREPARATION OF O,O-DIALKYL PHTHALIMIDO-PHOSPHONOTHIOATE

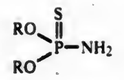
David P. Clifford, Kings Lynn, England, assignor to Dow Chemical Company Limited, London, England

Filed Nov. 2, 1978, Ser. No. 957,115
Int. Cl.[2] C07D *209/48*
U.S. Cl. 260—326 E **15 Claim**

1. A method of preparing a compound of the formula



which method comprises reacting a phthalic anhydride wit compound of the formula



in the presence of an effective catalytic amount of at least one tertiary amine, said amine being an aliphatic tertiary amine of the formula NR_3 or a cyclic tertiary amine of the formula $(CH_2)_n N—R$ where n is 4, 5 or 6, wherein, in all of the above formulas each R substituent is, individually, an alkyl group having from 1 to 4 carbon atoms, thereby to produce a dialkyl phthalimidophosphonothioate.

4,204,997

ASYMMETRIC AMINATION OF 1,3-DIENES

Charles F. Hobbs, Des Peres, and Dudley E. McMackins, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 19, 1979, Ser. No. 21,387
Int. Cl.[2] C07D *207/06*; C07C *85/18*
U.S. Cl. 260—326.8 **14 Claims**

1. A process for the asymmetric synthesis of amines which comprises amination of a conjugated diene having from 4 to about 20 carbon atoms in the presence of a catalyst system comprising a palladium compound and an optically active phosphine ligand containing at least two phosphorus atoms.

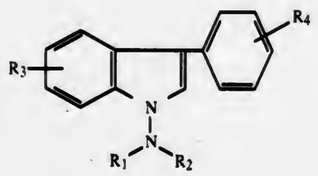
4,204,998

N-AMINO INDOLE DERIVATIVES HAVING PHARMACOLOGICAL ACTIVITY

Franz Schatz, Maria-Enzersdorf Südstadt; Christian Stammbach, Zofingen; Kurt Thiele, Zofingen; Theodor W. Wagner-Jauregg, Zofingen; Ludwig Zirngibl, Zofingen; Johanna Fischer, Reiden, and Ulrich Jahn, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

Continuation of Ser. No. 813,856, Jul. 8, 1977, abandoned, which is a continuation of Ser. No. 565,739, Mar. 31, 1975, abandoned. This application May 5, 1978, Ser. No. 903,128
Claims priority, application Switzerland, Mar. 29, 1974, 4339/74
Int. Cl.[2] C07D *209/44, 209/08, 249/18, 235/22*
U.S. Cl. 260—326.15 **8 Claims**

1. A compound of the formula:



wherein:
R_1 is C_1–C_3 dialkylamino-C_2–C_5 alkyl;
R_2 is selected from the group consisting of hydrogen, C_1–C_3 alkyl and C_1–C_3 dialkylamino-C_2–C_5 alkyl;
R_3 is selected from the group consisting of hydrogen, halogen and methyl; and
R_4 is selected from the group consisting of hydrogen, methyl, methoxy and chloro
and pharmaceutically acceptable salts of such compounds.

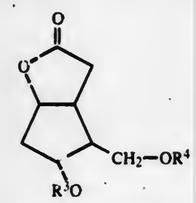
4,204,999

PROCESS FOR MAKING BICYCLIC LACTONE DERIVATIVES FOR USE AS INTERMEDIATES IN THE SYNTHESIS OF PROSTAGLANDINS

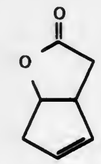
Istvan Tömösközi; Gabor Kovacs, both of Budapest; Istvan Szekely, Szentendre; Vilmos Simonidesz, Budapest; Marianna Lovasz nee Gaspar, Budapest; Borbala Keresztes nee Ordög, Budapest; Julia Remport nee Radoczi, Budapest; Istvan Stadler, Budapest; Zsuzsa Visky nee Gombos, Budapest, and Csaba Szantay, Budapest, all of Hungary, assignors to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

Division of Ser. No. 770,998, Feb. 22, 1977, Pat. No. 4,126,622. This application Oct. 20, 1978, Ser. No. 952,950
Claims priority, application Hungary, Feb. 20, 1976, CI 1644
Int. Cl.[2] C07D *493/02, 307/77*
U.S. Cl. 260—340.3 **7 Claims**

1. A process for the preparation of an optically active or racemic 4-beta, 5-alpha-lactone diol of the Formula I



wherein R^3 and R^4 are each hydrogen, which comprises reacting a racemic or optically active lactone of the Formula II



with formaldehyde or with a formaldehyde polymerizate in the presence of a mixture of a strong acid and water to yield a compound of the Formula I.

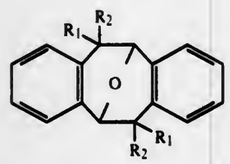
4,205,000

DIBENZO-OXA-BICYCLONONA-2,6-DIENES

Jacques Kagan, Wilmette, Ill., assignor to The University of Illinois Foundation, Urbana, Ill.

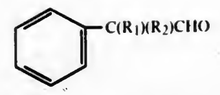
Filed Nov. 24, 1978, Ser. No. 963,454
Int. Cl.[2] C07D *311/02*
U.S. Cl. 260—345.2 **10 Claims**

1. The compound



where R_1 and R_2 are selected from the group consisting of hydrogen, methyl, phenyl, and carboethoxy.

6. A process for preparing dibenzo-9-oxa-bicyclonona-2,6-dienes comprising condensing in the presence of a strong acid a phenylacetaldehyde having the formula



where R_1 and R_2 are selected from the group consisting of hydrogen, methyl, phenyl, and carboethoxy, said strong acid having an acid strength within the range defined by sulfuric acid and fluorosulfuric acid.

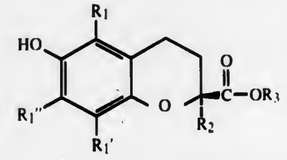
4,205,001

INVERSION PROCESS

Noal Cohen, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 873,185, Jan. 30, 1978, Pat. No. 4,150,050. This application Jan. 11, 1979, Ser. No. 2,485
Int. Cl.[2] C07D *311/72*
U.S. Cl. 260—345.5 **4 Claims**

1. A process for producing a compound of the formula



wherein R_1, R_1' and R_1'' are independently hydrogen or lower alkyl; and R_2 and R_3 are lower alkyl; comprising reducing in a polar solvent a compound of the formula

wherein
R_1, R_1', R_1'', R_2 and R_3 are as above; and
R_4 is lower alkyl
either in the presence of a base or followed by the addition of a base.

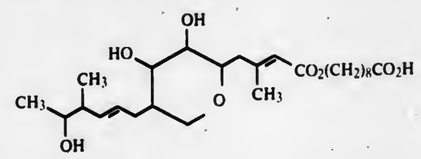
4,205,002

ANTIBACTERIAL COMPOUNDS

Norman H. Rogers, Rudgwick, and Peter J. O'Hanlon, Redhill, both of England, assignors to Beecham Group Limited, England

Filed Oct. 27, 1978, Ser. No. 955,196
Claims priority, application United Kingdom, Nov. 1, 1977, 45305/77
Int. Cl.[2] C07D *309/06*; A61K *31/35*
U.S. Cl. 260—345.8 R **6 Claims**

1. A compound selected from the group consisting of an acid of formula:



or a pharmaceutically acceptable salt or ester thereof.

4,205,003

2-[5-(4-CHLOROPHENYL)FURFURYL]-1,3,-PROPANEDIOL

Chia-Nien Yu, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,472
Int. Cl.[2] C07D *307/46*
U.S. Cl. 260—347.8 **1 Claim**

1. The compound 2-[5-(4-chlorophenyl)furfuryl]-1,3,-propanediol.

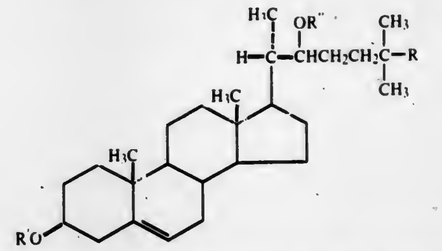
4,205,004

25-ALKYLCHOLEST-5-ENE-3β,22-DIOLS AND ESTERS THEREOF

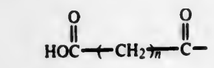
Robert J. Chorvat, Arlington Heights, Ill., assignor to D. G. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 828,385, Aug. 29, 1977. This application Jul. 28, 1978, Ser. No. 929,068
Int. Cl.[2] C07J *9/00*
U.S. Cl. 260—397.2 **3 Claims**

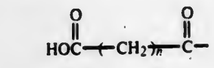
1. A compound of the formula



wherein R represents alkyl containing fewer than 5 carbons; R' represents a radical of the formula



wherein n represents a positive integer less than 4; and R'' represents hydrogen, acetyl, or a radical of the formula



wherein n is defined as before.

4,205,005

ANTHRAQUINO-CYCLOALKANE DYES

Judith B. Fahey, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

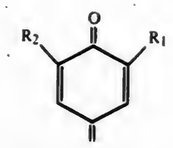
Filed Aug. 11, 1977, Ser. No. 823,628
Int. Cl.[2] C07C *49/76*; C09B *3/78*
U.S. Cl. 430—72 **8 Claims**

1. The dyes which can be represented by the formulae:



wherein
A consists of an anthraquinoid group;

B^1 and B^2 consist of
(1) A, or



wherein R_1 and R_2 individually are H or C_1 to C_5 alkyl; or
(2) B^1 is an anthraquinoid group and B^2 is an exocyclic double bond with oxygen, =0.

4,205,006
PHYSIOCHEMICALLY DESIGNED FAT COMPOSITIONS FROM TALLOW AND PROCESS FOR MAKING

Francis E. Luddy, Hatboro; James W. Hampson; Samuel F. Herb, both of Philadelphia, and Herbert L. Rothbart, Flourtown, all of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 825,742, Aug. 18, 1977, Pat. No. 4,130,572, which is a division of Ser. No. 642,837, Dec. 22, 1975, Pat. No. 4,049,839, which is a division of Ser. No. 337,789, Mar. 5, 1973, Pat. No. 3,944,585. This application Mar. 31, 1978, Ser. No. 891,956
Int. Cl.² A23D *5/00*
U.S. Cl. 260—410.7 **1 Claim**

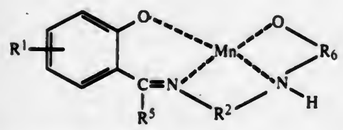
1. A liquid tallow fraction useful as a component in shortenings and margarines and for combining with other tallow fractions to make specialty fats consisting essentially of monosaturated, triunsaturated glycerides having a gas-liquid chromatographic profile indicating a composition having 4%, 18%, 45% and 33% of glycerides having carbon numbers of 48, 50, 52 and 54, respectively, and a thermal profile indicating that it it not completely solid at −15° C. and that the portion that does solidify at −15° C. melts at about 5° C.

4,205,007
MANGANESE COMPLEXES OF SALICYL-ALDEHYDE-ALKANOLIMINES AS CATALYSTS FOR THE POLYMERIZATION OF 2,6-DI-SUBSTITUTED PHENOLS

Walter K. Olander, Clifton Park, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 753,506, Dec. 21, 1976, Pat. No. 4,093,597. This application Feb. 22, 1978, Ser. No. 880,135
Int. Cl.² C07F *00/00*
U.S. Cl. 260—429 C **4 Claims**

1. A catalyst for the oxidative coupling of a phenolic monomer which comprises a compound of the formula:



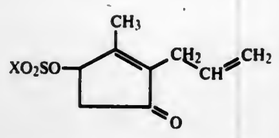
wherein R^1 and R^5 are selected from the group consisting of hydrogen, lower alkyl of from 1 to 8 carbon atoms and phenyl; and R^2 and R^6 are independently lower alkylene of from 2 to 3 carbon atoms or o-phenylene.

4,205,008
OPTICALLY ACTIVE SULFONATES OF ALLETHROLONE

Jacques Martel, Bondy, and Jean Tessier, Vincennes, both of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 807,069, Jun. 16, 1977, Pat. No. 4,128,584. This application Sep. 25, 1978, Ser. No. 945,328
Claims priority, application France, Jun. 23, 1976, 76 19087
Int. Cl.² C07C *143/68*
U.S. Cl. 260—456 R **4 Claims**

1. Optically active sulfonates of allethrolone of the formula



wherein X is selected from the group consisting of alkyl of 1 to 3 carbon atoms and phenyl optionally substituted in the para position with a member selected from the group consisting of methyl, fluorine, chlorine and bromine with an (R) or (S) configuration.

4,205,009
PROCESS FOR THE PREPARATION OF CYCLOPROPYLCYANIDE

Michael J. Onore, and Francis J. Mettille, both of Ypsilanti, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 7, 1979, Ser. No. 9,996
Int. Cl.² C07C *121/46*
U.S. Cl. 260—464 **10 Claims**

1. A process for the preparation of cyclopropylcyanide comprising reacting a 4-halobutyronitrile selected from the group consisting of 4-chlorobutyronitrile, 4-bromobutyronitrile, 4-iodobutyronitrile, and mixtures thereof with from about 1.0 to about 3.5 moles of solid alkali metal hydroxide per mole of 4-halobutyronitrile reactant in the presence of an inert organic solvent and a catalytic amount of an anionic surfactant at a temperature of from about 40 to about 150 degrees centigrade and at a pressure of from about 0.1 to about 10 atmospheres.

4,205,010
METHOD FOR THE CATALYTICAL PRODUCTION OF ACRYLONITRILE

Sumio Umemura; Kyoji Ohdan; Taizo Uda; Tokuo Matsuzaki; Mikio Hidaka; Yasuo Nakamura, and Masao Tsuruoka, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Aug. 30, 1976, Ser. No. 718,513
Claims priority, application Japan, Sep. 5, 1975, 50/107085
Int. Cl.² C07C *120/14*
U.S. Cl. 260—465.3 **26 Claims**

1. A method for the catalytical production of acrylonitrile, comprising contacting a reaction feed containing propylene, ammonia and molecular oxygen in a gas phase at an elevated temperature with a catalyst consisting of an oxide composition of the empirical formula:

$$Mo_aCo_bFe_cX_dO_e$$

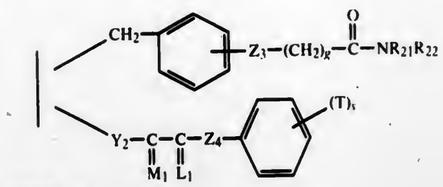
wherein X represents at least one atom of an element selected from the group consisting of phosphorus, arsenic, antimony and bismuth; the subscripts a, b, c, d and e, respectively denote the numbers of the respective atoms of the element, the ratio a:b:c:d being in the range of 12:4 to 9:1 to 5:0.01 to 0.07; and the subscript e represents the number of oxygen atoms which satisfies the average valency of the elements, the ratio a:e being in the range of 12:39.5 to 52.7.

4,205,011
INTER-PHENYLENE-ω-ARYL-PG AMIDES

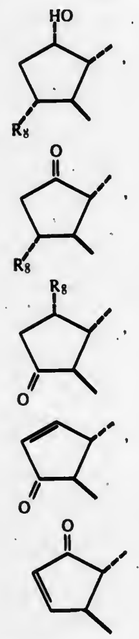
Walter Morozowich, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 788,455, Apr. 18, 1977, Pat. No. 4,100,192. This application Apr. 20, 1978, Ser. No. 898,224
Int. Cl.² C07C *103/20*
U.S. Cl. 260—558 R **48 Claims**

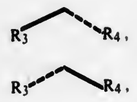
1. A prostaglandin analog of the formula



wherein D is



wherein R_8 is hydrogen or hydroxy;
wherein Y_1 is
(1) trans—CH=CH—, or
(2) cis—CH=CH—,
wherein g is one, 2, or 3;
wherein Z_3 is oxa or methylene;
wherein L_1 is



or a mixture of

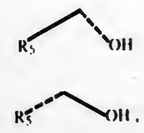


and

-continued



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
wherein M_1 is



or

wherein R_5 is hydrogen or methyl;
wherein R_{21} and R_{22} are
(i) hydrogen;
(ii) alkyl of one to 12 carbon atoms, inclusive;
(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;
(iv) aralkyl of 7 to 12 carbon atoms, inclusive;
(v) phenyl;
(vi) phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy or nitro;
(vii) hydroxyalkyl of one to 4 carbon atoms, inclusive;
(viii) dihydroxyalkyl of one to 4 carbon atoms; or
(ix) trihydroxyalkyl of one to 4 carbon atoms;
with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl.
wherein Z_4 is

$-(CH_2)_h$ or oxa,

wherein h is zero to 3, inclusive, and
wherein s is zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, or alkoxy of one to 3 carbon atoms, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl.

4,205,012
MANUFACTURE OF AMINES FROM ALCOHOLS WITH ZEOLITE FU-1 CATALYSTS

David G. Parker, and Alan J. Tompsett, both of Middlesbrough, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 19, 1979, Ser. No. 31,604
Claims priority, application United Kingdom, Apr. 21, 1978, 15865/78
Int. Cl.² C07C *85/06*
U.S. Cl. 260—583 J **10 Claims**

1. A process for the manufacture of an amine which comprises reacting an alcohol with ammonia at an elevated temperature in the presence of a catalyst comprising zeolite FU-1 in which some or all of the protons of the zeolite have been replaced by monovalent cations.

4,205,013
PROCESS FOR THE MANUFACTURE OF 2,3-DIMETHYLPENTANAL

Jürgen Weber, Oberhausen, and Helmut Springer, Voerde, both of Fed. Rep. of Germany, assignors to Ruhrchemie Atkiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 891,380
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1977, 2716288
Int. Cl.² C07C *45/10*
U.S. Cl. 568—451 **8 Claims**

1. In a process for the preparation of 2,3-dimethylpentanal by hydroformylation of 3-methyl-2-pentene with carbon mon-

oxide and hydrogen in the presence of a rhodium containing catalyst at an elevated temperature and pressure and at a time sufficient to produce 2,3-dimethylpentanal, the improvement wherein said rhodium containing catalyst is a non-phosphene rhodium carbonyl catalyst.

4,205,014

PROCESS FOR 1,2,4,5-TETRACHLOROBENZENE

Irvin W. Potts, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 869,562, Jan. 16, 1978. This application Apr. 30, 1979, Ser. No. 34,785

Int. Cl.[2] C07C *25/00*

U.S. Cl. 260—650 R **8 Claims**

1. In the process of preparing 1,2,4,5-tetrachlorobenzene, the process comprising contacting at reactive conditions 1,2,4-trichlorobenzene and chlorine gas in the presence of a catalytic amount of Lewis acid, the improvement comprising using as a cocatalyst at least one polymeric compound having a plurality of iodinated benzene nuclei.

4,205,015

DEHYDROHALOGENATION OF (POLYHALOALKYL) BENZENES WITH SUPPORT LEWIS ACID CATALYSTS

Chun S. Wang; Stanley D. McGregor, and Terry J. Nestrick, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 18, 1978, Ser. No. 906,893

Int. Cl.[2] C07C *25/00*

U.S. Cl. 260—651 R **6 Claims**

1. A process for the dehydrohalogenation of a (polyhaloalkyl)arene wherein in the polyhaloalkyl one halogen is a benzylic chlorine or benzylic bromine and at least one halogen is a non-benzylic chlorine or bromine which process comprises contacting said (polyhaloalkyl)arene with a catalytic amount of a suitably active Lewis acid deposited on an inert solid particulate support under dehydrohalogenation conditions in the liquid phase at a temperature below 100° C. such that the benzylic halogen is selectively eliminated to form a (haloalkenyl)arene.

4,205,016

MULTIFUNCTIONAL LITHIUM CONTAINING INITIATOR

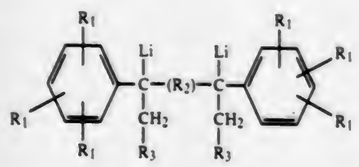
Lu H. Tung; Grace Y-S. Lo; Joseph W. Rakshys, and Douglas E. Beyer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 859,356, Dec. 12, 1977, which is a continuation-in-part of Ser. No. 601,577, Aug. 1, 1975, abandoned. This application Aug. 7, 1978, Ser. No. 931,790

Int. Cl.[2] C07F *1/02*

U.S. Cl. 260—665 R **16 Claims**

1. A multifunctional, lithium containing, polymerization initiating compound of the Formula:



wherein

R_1 is individually selected from the group consisting of hydrogen, an alkyl hydrocarbon radical, a cycloalkyl hydrocarbon radical, alkoxy radical, and an aromatic radical with the further limitation that R_1 contains from 0 to 16 carbon atoms;

R_2 is a divalent organic radical having at least 6 carbon atoms, R_2 having at least one aromatic ring and the aromatic ring being directly attached to a carbon which is attached to an aromatic ring of the above formula, with the further limitation R_2 contains carbon and hydrocarbon, and optionally oxygen; oxygen when present is present only in the configuration of a diphenyl oxide;

R_3 is selected from the group consisting of alkyl, cycloalkyl, and aromatic radicals containing from 1 to 20 carbon atoms.

4,205,017

HYDRODEHYDROXYLATION PROCESS USING A RHENIUM-FLUORIDED ALUMINA CATALYST

Geir Bjornson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 19, 1978, Ser. No. 917,045

Int. Cl.[2] C07C *15/00*

U.S. Cl. 585—469 **6 Claims**

1. A hydrodehydroxylation process which comprises contacting at least one substituted aromatic compound having at least one hydroxyl group with hydrogen in the presence of a catalyst consisting essentially of rhenium and fluorided alumina under hydrodehydroxylation conditions sufficient to dehydroxylate at least one of said aromatic compounds and produce dehydroxylated products at high conversion and high selectivity.

4,205,018

RADIATION CURABLE RESIN COMPOSITION

Kohtaro Nagasawa; Osamu Ogitani, both of Tokyo, and Ryuichi Fujii, Soka, all of Japan, assignors to Somar Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1978, Ser. No. 957,502

Claims priority, application Japan, Nov. 3, 1977, 52-132053; Nov. 14, 1977, 52-135766

Int. Cl.[2] C08L *61/02*

U.S. Cl. 525—404 **11 Claims**

1. A radiation curable resin composition comprising, as essential ingredients:

(I) a urethanized epoxy resin obtained by reacting a compound containing at least one epoxy group and at least one hydroxyl group with a compound containing at least one isocyanate group, or a urethanized epoxy resin acrylate or methacrylate obtained by the addition of acrylic acid or methacrylic acid to said urethanized epoxy resin;

(II) a ketone resin obtained by condensing a ketone compound with an aldehyde, and

(III) a cross-linkable or polymerizable compound containing at least two ethylenically unsaturated groups, wherein said Components (I), (II) and (III) are present in amounts of 2 to 55% by weight for Component (I), 5 to 40% by weight for Component (II), and 5 to 93% by weight for Component (III).

4,205,019

PROCESS FOR PRODUCING THERMOPLASTIC RESIN

Takesaburo Shima, Saijo; Hiroshi Kozima; Tomio Yoshida, both of Niihama, and Joji Nakamura, Nishinomiya, all of Japan, assignors to Sumitamo Naugatuck Co., Ltd., Japan

Continuation of Ser. No. 750,766, Dec. 15, 1976, Pat. No. 4,112,021. This application Dec. 12, 1977, Ser. No. 860,029

Claims priority, application Japan, Dec. 26, 1975, 50-156731

Int. Cl.[2] C08F *279/04*

U.S. Cl. 525—243 **2 Claims**

1. A thermoplastic resin, which is produced by emulsion polymerizing monomers consisting of 80 to 60% by weight of an aromatic monovinyl monomer and 20 to 40% by weight of a vinyl cyanide monomer in the presence of an aqueous elastomeric latex, said monomers being used in the ratio of 20 to 100 parts by weight per 100 parts by weight of the elastomer contained in the aqueous elastomeric latex; mixing with agitation the resulting copolymer latex with monomers consisting of 80 to 60% by weight of an aromatic monomvinyl monomer and 20 to 40% by weight of a vinyl cyanide monomer in the presence of a polyalkylene oxide selected from the group consisting of polyethylene oxide and polypropylene oxide and a coagulant selected from the group consisting of an inorganic acid having a dissociation constant of 1×10^{-5} or more at 25° C., an organic acid having 1 to 10 carbon atoms and having a dissociation constant of 1×10^{-5} or more at 25° C. and a water-soluble salt of the inorganic or organic acid with a monovalent, divalent or trivalent metal, said monomers being used in the ratio of 100 to 1000 parts by weight per 100 parts by weight of the elastomer contained in the resulting copolymer latex; and suspension polymerizing the mixture.

4,205,020

GRAFT COPOLYMERS CONTAINING RUBBER, ACRYLONITRILE AND AN AROMATIC OLEFIN

Brian N. Hendy, Knebworth; Carl F. Mathews; Eric Nield, both of Ware; John B. Rose, St. Albans, and Peter I. Vincent, Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 573,329, Apr. 30, 1975, Pat. No. 4,151,224, which is a continuation of Ser. No. 107,563, Jan. 18, 1971, abandoned, which is a continuation of Ser. No. 755,801, Aug. 28, 1968, abandoned, which is a continuation-in-part of Ser. No. 622,904, Mar. 14, 1967, abandoned. This application Feb. 13, 1979, Ser. No. 11,897

Claims priority, application United Kingdom, Mar. 24, 1966, 13071/66; Sep. 20, 1967, 42899/67

Int. Cl.[2] C08L *9/00, 47/00*

U.S. Cl. 525—275 **18 Claims**

1. A graft copolymer consisting essentially of up to 95% by weight of a substrate of a diene rubber containing from 40% to 100% molar of units from at least one conjugated 1,3-diene monomer and from 0 to 60% molar of units from at least one other ethylenically unsaturated monomer copolymerizable therewith using free radical catalysts, and a homogeneous superstrate consisting of units of acrylonitrile, randomly distributed units of at least one monovinylidene aromatic compound, the molar ratio of units of acrylonitrile to units of said monovinylidene aromatic compound in the superstrate being between 2 and 9, and 0 to 5% molar of ethylenically unsaturated monomer copolymerizable with acrylonitrile and said monovinylidene aromatic compound using free radical catalysts, said graft copolymer being the product obtained by forming a mixture of said rubber, a portion of said monovinylidene aromatic compound and at least a portion of said acrylonitrile and said ethylenically unsaturated monomer, polymerizing said mixture and adding quantities of a monomeric feed selected from the group consisting of said monovinylidene aromatic compound and mixtures of said monovinylidene aromatic compound with any of said acrylonitrile and said ethylenically unsaturated monomer not present in said mixture, said monomeric feed being added to said mixture at a rate determined by the rate of polymer formation and such that the relative concentration of said monovinylidene aromatic compound and acrylonitrile in the reaction mixture remains at about the initial level.

4,205,021

ETHYLENE COPOLYMERS

Yoshinori Morita; Hiroshi Inoue, both of Iwakuni, and Kenji Fujiyoshi, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Jan. 18, 1978, Ser. No. 870,365

Claims priority, application Japan, Jan. 27, 1977, 52-7315

Int. Cl.[2] C08F *210/14*; C08L *23/20*

U.S. Cl. 525—240 **12 Claims**

1. A copolymer consisting essentially of ethylene and an α-olefin with 5 to 18 carbon atoms, said copolymer having

(i) a density of 0.90 to 0.94 g/cm^3,

(ii) an intrinsic viscosity [η] of 0.8 to 4.0 dl/g,

(iii) a maximum melting point, determined by differential thermal analysis, of 115° to 130° C., and

(iv) a $g_\eta^*(=[\eta]/[\eta]_l)$ value of 0.05 to 0.78, in which formula [η] is the intrinsic viscosity of the copolymer and $[\eta]_l$ is the intrinsic viscosity of a linear polyethylene having the same weight average molecular weight determined by the light scattering method as said copolymer.

10. A composition comprising a blend of the copolymer of claim 1 with polyethylene.

4,205,022

2,2-BIS(HALOALKYL)-3-HYDROXY-1-PROPYL PHOSPHORIC ACIDS

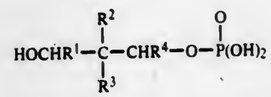
Richard R. Nicholson; Ray E. Smith, and Jayendra G. Shukla, all of Ann Arbor, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Sep. 5, 1978, Ser. No. 939,629

Int. Cl.[2] C07F *9/09*

U.S. Cl. 260—953 **5 Claims**

1. A compound of the formula



wherein R^1 and R^4 are independently selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and haloalkyl of 1 to 4 carbon atoms and 1 to 2 halogen atoms; and R^2 and R^3 are each haloalkyl containing 1 to 4 carbon atoms and 1 to 2 halogen atoms selected from the group consisting of chlorine, bromine and mixtures thereof.

4,205,023

PROCESS FOR REMOVING SOLUBLE METALLIC SALTS FROM A PHOSPHATE ESTER FUNCTIONAL FLUID

Joseph F. Anzerberger, Sr., New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 2, 1978, Ser. No. 947,790

Int. Cl.[2] C07F *9/09*

U.S. Cl. 260—990 **12 Claims**

1. A process for removing dissolved metallic salts from a functional fluid consisting essentially of a phosphate ester and dissolved metallic salts comprising:

(a) contacting the functional fluid with an effective amount of a chelating agent which is substantially free of water, the chelating agent being capable of precipitating at least part of the metallic salts contained therein to form a precipitate and being selected from the group consisting of:

(i) triethanol amine;

(ii) ethylenediaminetetraacetic acid;

(iii) diethylenetriaminepentaacetic acid;

(iv) N-hydroxyethylenediaminetriacetic acid;

(v) the alkali metal, alkaline earth or ammonium salts of (i) through (iv); and

(vi) mixtures of (i) through (v); and subsequently

(b) separating the precipitate from the functional fluids.

4,205,024

CARBURETOR

Tamio Hirosawa, Odawara, Japan, assignor to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,944

Int. Cl.[2] F02M *19/06*

U.S. Cl. 261—34 R **7 Claims**

1. A carburetor provided with a butterfly-shaped throttle valve, comprising a carburetor body including therein at least a suction bore having a horizontally extending venturi portion, a first hole extending vertically across said suction bore and opening in said venturi portion and a second hole arranged in

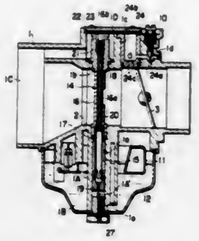
parallel with said first hole; a float chamber defined below said body; a main nozzle assembly screwed in said first hole from above said body and including therein at least a main air jet, a plurality of nozzles opening in said suction bore and a main jet capable of being positioned in said float chamber; a pilot air jet screwed in said second hole; and a cover plate secured removably to said body and capable of covering the upper portion of said main nozzle assembly and pilot air jet.

4. A carburetor provided with a butterfly-shaped throttle valve, comprising

a carburetor body including therein at least a suction bore having a horizontally extending venturi portion, a first hole extending vertically across said suction bore and opening in said venturi portion and a second hole arranged in parallel with said first hole and opening in said suction bore;

a float chamber defined below said body;

a nozzle tube having a lower end, an intermediate portion and an upper end portion, said nozzle tube inserted into



said first hole from above said body and capable of being sealably fitted within said first hole and including therein

a main jet capable of being positioned in said float chamber at the lower end,

at least one nozzle opening in said suction bore in the intermediate portion,

a main air jet in the upper end portion, and

a bleed pipe connected to said main air jet;

said nozzle tube having a means capable of determining a correct position of inserting said nozzle tube into said first hole in cooperation with said body;

a bottom cylindrical jet block having a bottom wall inserted into said second hole, capable of being sealably fitted within said second hole and having third holes communicated with said suction bore in the bottom wall; and

a cover plate secured removably to said body and capable of respectively holding said nozzle tube and jet block in respective predetermined positions within said first and second holes.

4,205,025

SYNTHETIC POLYMERIC FIBRIDS, FIBRID PRODUCTS AND PROCESS FOR THEIR PRODUCTION

John R. Hart; Donald W. Lare, both of Hamilton, Ohio, and James J. Nault, Appleton, Wis., assignors to Champion International Corporation, Stamford, Conn.

Filed Dec. 22, 1975, Ser. No. 643,501

Int. Cl.[2] B29C *23/00*

U.S. Cl. 264—14 **6 Claims**

1. A process for the production of synthetic paper pulp product comprising preparing an aqueous solution of naturally occurring or modified naturally occurring film forming polymer which has been treated to render it more hydrophobic, injecting said solution into a liquid organic precipitating medium miscible with water but in which said polymer is insoluble and which precipitating medium additionally contains an agent which will render the polymer more hydrophobic, and providing sufficient shear to precipitate said polymer in fibrid morphology.

4,205,026

RADIATION CURABLE POLYBORSILOXANE POLYMER COMPOSITION AND METHOD OF USING SAME TO PRODUCE THERMOSTABLE INSULATING MATERIALS

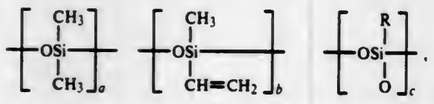
Isaak Y. Poddubny, Bulvar Novatorov 28, kv. 47; Sergei V. Averyanov, prospekt Narodnogo Opolchenia, 181, kv. 18; Lidia A. Averyanova, prospekt Narodnogo, Opolchenia, 181, kv. 18; Mark P. Grinblat, ulitsa Chernyshevskogo, 9, kv. 135, all of Leningrad; Rinat R. Safin, ulitsa Zhdanova, 1, kv. 99, Kazan; Alexandr K. Breger, ulitsa Polyarnaya, 10, kv. 131, Moscow; Vladimir A. Goldin, ulitsa Markhlevskogo, 11, kv. 147, Moscow; Elena Z. Branzburg, ulitsa Uralskaya, 6, korpus 2, kv. 29, Moscow; Viktor S. Kondratovsky, Pogonny proezd, 40, kv. 24, Moscow; Albert G. Kabirov, ulitsa Botanicheskaya, 13, kv. 87, Kazan; Alexandr T. Sanzharovsky, Leninsky prospekt, 99, korpus 3, kv. 186, Moscow; Valeria B. Shtukareva, Tishinskaya ploschad, 6, kv. 85, Moscow; Jury N. Svatikov, Buzheninovskaya ulitsa, 26/6, kv. 41, Moscow, and Nadezhda M. Stepanova, ulitsa Gastello, 41, kv. 78, Moscow, all of U.S.S.R.

Division of Ser. No. 760,027, Jan. 17, 1977, Pat. No. 4,151,158. This application Nov. 8, 1978, Ser. No. 958,789

Int. Cl.[2] B01D *47/00;* **C08F** *2/46, 30/08*

U.S. Cl. 264—22 **5 Claims**

1. A method for producing thermostable insulating materials, whereby a polymer composition, comprising 8 to 20 parts by weight of polyborsiloxane having a molecular weight of 2,000 to 5,000 and containing structural units. $BOSi\frac{}{}(CH_3)_2SiO\frac{}{}$ with a B:Si molar ratio of 1:4 to 5, 40 to 90 parts by weight of polysiloxane rubber, 10 to 60 parts by weight of an organic polymer selected from the group consisting of polyolefins, copolymers of olefins and dienes, halogenated polyolefins and halogenated copolymers of olefins and dienes, 2 to 10 parts by weight of branched polyorganosiloxane having a molecular weight of 2,000 to 5,000, of the general formula:



R is a radical selected from a group of radicals composed of CH_3 and C_6H_5, a=43 to 50 mole %, b=0 to 2 mole %, c=50 to 55 mole %, 10 to 25 parts by weight of silicon dioxide, and 5 to 10 parts by weight of a variable valency metal oxide, is molded on a substrate to produce a blank which is exposed to ionizing radiation to reach an absorbed radiation dose of 6 to 35 megarads.

4,205,027

METHOD OF THERMOFIXING CONTINUOUS COUPLING ELEMENTS OF SYNTHETIC-RESIN MONOFILAMENT FOR USE IN SLIDE-FASTENER STRINGERS

Helmut Heimberger, Locarno, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

Filed Oct. 6, 1977, Ser. No. 839,906

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2645454

Int. Cl.[2] B06B *3/00*

U.S. Cl. 264—23 **5 Claims**

1. A process for the thermal treatment of continuous coupling elements of synthetic-resin monofilament for use in a slide-fastener stringer, comprising the steps of:

introducing a succession of turns of synthetic-resin monofilament forming respective coupling members in the spaces between teeth of a support with a lower shank of each coupling member bearing against said support and an upper shank of each coupling member being disposed freely above said support;

heating said coupling members on said support to a thermofixing temperature; and

pressing the upper shank only of each member while applying ultrasonic energy thereto to depress each upper shank toward the respective lower shank and to simultaneously form a thread-receiving recess in the upper shank over only a limited portion of the length thereof while the upper shank is held at said temperature.

4,205,028

FORMING PROTECTIVE SKIN ON INTRICATELY MOLDED PRODUCT

Walter H. Brueggemann, Chagrin Falls, and John A. Brenner, Independence, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Jan. 11, 1979, Ser. No. 2,658

Int. Cl.[2] B29C *5/00, 5/08;* **B29D** *9/00*

U.S. Cl. 264—24 **15 Claims**

1. A process for molding in a mold having relatively sharp bends and intricately curving, irregular surface contours a two-part bulk article comprising a sheet molding compound of relatively inferior physical properties, subject to exhibiting sink marks, porosity, waviness, pits, dimples, and the like after molding, defining the bulk of said article, and a resinous film of relatively superior physical properties, having little or no tears or film blemishes after molding, coating said sheet molding compound, said process comprising: coating the intricately curving, irregular surface contours of said mold while hot with particles of a partially cured, cross-linking polyester resin, substantially all of said particles containing within the particulate form said polyester resin, a catalytic amount of a peroxide catalyst, and a flow agent, causing said particles to fuse and bond from the heat of the mold and coalesce into a substantially continuous film coating said mold, said flow agent causing said polyester resin particles to flow along the mold after said fusing, filling the mold with a bulk, curable, organic sheet molding compound compatible with said polyester resin, and then heating the mold to cure said bulk fill resin to the shape of the mold and finally cure said polyester film while adhering the film to said molded bulk fill resin, said molded film having little or no tears or film blemishes in spite of the intricately curving irregular surface contours of the mold.

4,205,029

PRE-STRESSED CONCRETE CONSTRUCTION

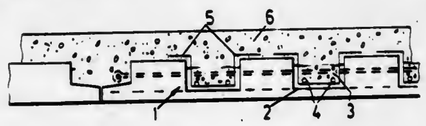
Esli J. Forrest, 54 Winetere Rd., Papatoetoe, Auckland, New Zealand

Continuation of Ser. No. 773,327, Mar. 1, 1977, abandoned, which is a continuation of Ser. No. 645,457, Dec. 30, 1975, abandoned, which is a continuation of Ser. No. 545,161, Jan. 29, 1975, abandoned. This application Jan. 5, 1978, Ser. No. 867,296

Claims priority, application Australia, Feb. 6, 1974, PB6480

Int. Cl.[2] B28B *23/04, 21/60*

U.S. Cl. 264—34 **4 Claims**



1. A method of forming a pre-stressed concrete member comprising:

forming a concrete shell with at least one inner trough;

curing said concrete shell sufficiently to permit the shell to withstand stress;

drying out at least the inner surface of said trough so as to temporarily arrest hydration therein;

locating at least one stressing member within said trough, in stress-application relationship therewith, and stressing said member so as to stress the shell;

dampening said inner surface of the trough;

infilling the trough with concrete so as to cover the stressed member; and

allowing the infilling concrete and the concrete shell to cure concurrently.

2. A method of forming a pre-stressed concrete member comprising:

forming a concrete shell with at least one inner trough;

applying a concrete setting retarding agent over inner surfaces of said trough(s);

curing said concrete shell sufficiently to permit the shell to withstand stress;

exposing the concrete of said inner surface of said trough;

drying out at least said inner surface of said trough so as to temporarily arrest hydration therein;

locating at least one stressing member within said trough, in stress-application relationship therewith, and stressing said member so as to stress the shell;

dampening said inner surface of the trough;

infilling the trough with concrete so as to cover the stressed member; and

allowing the infilling concrete and the concrete shell to cure concurrently.

4,205,030

METHOD FOR EXTRUSION OF HIGHLY VISCOUS THERMOSETTING MATERIAL

Vasily P. Menshutin, Proletarsky prospekt, 72, korpus 3, kv. 131; Modest S. Akutin, B. Tishinksy pereulok, 26, korpus 16, kv. 16, both of Moscow; Nikolai V. Iovdalsky, ulitsa Stepnaya, 45, Krasnodar; Alla N. Minakova, Komsomolsky bulvar, 46, kv. 171, Zhdanov; Evgeny R. Zherebtsov, poselok Tuchkovo, ulitsa Partizan, 31, kv. 101, Moskovskaya oblast, Ruzsky raion; Anatoly D. Sokolov, Molodezhnaya ulitsa, 4, kv. 109; Vsevolod V. Abramov, Poklonnaya ulitsa, 2, kv. 4, both of Moscow; Galina D. Melekhova, Pravolinelnaya ulitsa, 26, Moskovskaya oblast, stantsia Bykovo, and Alexandr N. Ustkachkintsev, ulitsa Kozlova, 11, kv. 29, Moskovskaya oblast, Orekhove-Zuevo, all of U.S.S.R.

Filed May 15, 1978, Ser. No. 905,953

Int. Cl.[2] B29F *3/01;* **B29G** *2/00*

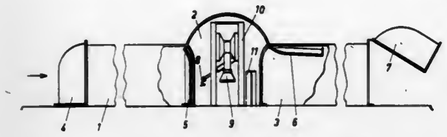
U.S. Cl. 264—40.1 **8 Claims**

1. A method for extrusion of a highly viscous thermosetting or thermoplastic resin material comprising determining the melt viscosity of a selected thermosetting resin material or melt index of a selected thermoplastic resin material and the ratio of internal and external friction values of said selected material; adding substances to said material to diminish the external friction of the selected material until said ratio is within the range of from 1.5 to 4.0 when said ratio of the selected material initially falls outside said range; in the case of a thermosetting resin material, adjusting the melt viscosity of the thermosetting resin material to a viscosity in the range of from 50×10^6 to 300×10^6 poises when said melt viscosity of the selected thermosetting resin material initially falls outside said range, in the case of a thermoplastic resin material adjusting the melt index of the selected thermoplastic resin material to a melt index in the range of from 0.1 to 0.01 g/10 min. when said melt index of the selected thermoplastic resin material initially falls outside said range and extruding the material at a rate in the range of 20 to 300 m/min.

4,205,031
METHOD OF PRODUCING LAMINATES OF REINFORCED OR NON-REINFORCED THERMOSETTING RESIN IN A LOW PRESSURE CHAMBER

Kent R. Almqvist, Box 5159, S-43400 Kungsbacka; Jan A. Christensen, Vallhamnsgatan 106, S-42166 Västra Frölunda, both of Sweden; Roar L. Alfheim, Idunsvei 12, N-3200 Sandefjord, and Lars Torgersen, Storängsveien 62 B, N-1320 Stabekk, both of Norway

Filed Jun. 2, 1977, Ser. No. 802,875
Claims priority, application Sweden, Jun. 10, 1976, 7606540
Int. Cl.² B29D *9/04*
U.S. Cl. 264—40.4 **6 Claims**



1. An improved method of manufacturing thermoset products such as products of fiberglass-reinforced polyester, by building up a laminate layer by spraying resin onto the wall of a mould with the use of spraying equipment, comprising the steps of positioning the mould in a chamber for performing said method in the chamber, maintaining said chamber at a partial vacuum, spraying the resin on the mould in the chamber while the partial vacuum is maintained, the entire equipment for performing said method enclosed inside chamber, spraying an airtight surface layer onto said laminate to prevent penetration of air, and subsequently exposing the mold, laminate and surface layer to atmospheric pressure for collapsing any pores and bubbles formed in said laminate during the process immediately upon exposure of said laminate to air at atmospheric pressure following said laminate build-up.

4,205,032
METHOD FOR PRODUCING RIGID ARTICLES OF REFRACTORY FIBERS

Ian R. Walters, Huddersfield, and Harold G. Emblem, Mirfield, both of England, assignors to Zirconal Processes Limited, Bromley, England

Continuation-in-part of Ser. No. 786,238, Apr. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 561,347, Mar. 24, 1975, Pat. No. 4,025,350, and Ser. No. 780,352, Mar. 23, 1977, Pat. No. 4,102,691. This application Feb. 12, 1979, Ser. No. 11,714
Claims priority, application United Kingdom, Mar. 28, 1974, 13834/74; Aug. 13, 1974, 35610/74
The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.
Int. Cl.² C04B *35/64*
U.S. Cl. 264—63 **3 Claims**

1. A method of producing a rigid refractory article of refractory fibres comprising:

(a) impregnating an article of refractory fibres with an aqueous solution of a zirconium salt which when dissolved in water yields an aqueous solution that is acidic, a gellation-inducing agent, and a gellation-delaying agent; said gellation-inducing agent is selected from the group consisting of aminoalcohols, morpholine, dead burned magnesia powder and powdered magnesia-containing spinels and said gellation-delaying agent is selected from the group consisting of magnesium acetate, magnesium lactate, ammonium lactate, glycine, betaine, fructose and polyhydric alcohols; the amounts of the solution of zirconium salt, gellation-inducing agent and gellation-delaying agent is such that the article will rigidise on standing;

(b) forming the impregnated article to the desired shape;

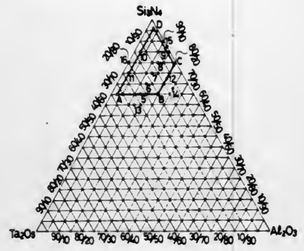
(c) allowing the impregnated article to set; and

(d) firing the impregnated article to form a rigid refractory article.

4,205,033
PROCESS FOR PRODUCING COMPACT SILICON NITRIDE CERAMICS

Yoshinori Hattori, and Tamotu Miyachi, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Aug. 22, 1978, Ser. No. 935,416
Claims priority, application Japan, Aug. 22, 1977, 52-100314
Int. Cl.² C04B *35/58*
U.S. Cl. 264—65 **7 Claims**



1. A process for producing a compact silicon nitride ceramic product which comprises molding a powder mixture of Si_3N_4, Ta_2O_5 and Al_2O_3 in the volume proportions defined by the region A, B, C and D in the FIGURE, the points A, B, C and D representing powder mixtures of the compositions, in volume percent, indicated below:

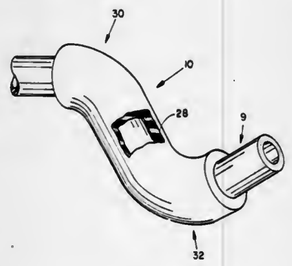
	Si_3N_4	Ta_2O_5	Al_2O_3
A	65.0%	32.0%	3.0%
B	65.0%	15.0%	20.0%
C	79.0%	1.0%	20.0%
D	96.0%	1.0%	3.0%

and then firing the powder mixture in a non-oxidizing atmosphere containing a carbon compound; or hot-pressing the powder mixture; in a graphite mold.

4,205,034
METHOD FOR MAKING A REINFORCED TUBULAR ARTICLE

Mark A. Newberry, Lakewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 583,068, Jun. 2, 1975. This application Aug. 8, 1977, Ser. No. 822,591
Int. Cl.² B29H *7/14;* **B29C** *17/02;* **B29D** *23/05*
U.S. Cl. 264—103 **10 Claims**



1. A method for forming a flexible curved tubular unitary article having a protective sleeve integral therewith, comprising:

forming an elongated tube defined by respective inner and outer surfaces and comprised of elastomeric material in an uncured state;

forming an elastomeric sleeve, separate of the tube, in an uncured state and shorter in length than the tube;

positioning the sleeve upon the outer surface of the tube at a desired location spaced from each end of the tube while each of the tube and sleeve are uncured;

said sleeve at said desired location defining the radial outermost portion of the hose;

applying radially outwardly directed pressure to the inner surface of the tube from internally within the tube to force the tube outwardly and apply pressure against the sleeve; and thereafter

curing the tube and sleeve together to form the curved unitary article whereby the tube and sleeve are integrally attached together and free from mutual slippage said outwardly directed pressure being supplied by positioning the tube and sleeve over a rigid curved mandrel having an outer diameter greater than the inner diameter of the tube.

4,205,035
COAL-CONTAINING SHAPED BODIES AND PROCESS FOR MAKING THE SAME

Carl Kröger, Aachen; Ingo Romey, and Georg Kölling, both of Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Division of Ser. No. 649,920, Jan. 16, 1976, Pat. No. 4,113,817, which is a continuation of Ser. No. 461,738, Apr. 7, 1974, abandoned, which is a continuation-in-part of Ser. No. 238,519, Mar. 27, 1972, abandoned. This application Jun. 1, 1978, Ser. No. 911,702
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1971, 2116417; May 18, 1971, 2124555
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.
Int. Cl.² C08L *7/00*
U.S. Cl. 264—120 **17 Claims**

1. A process for making shaped bodies by extrusion or injection molding, the bodies having the form of slabs, sheets, profiles, tubes, pipes or foils,

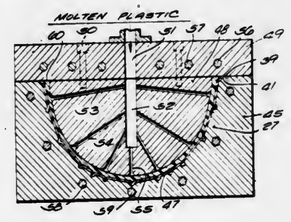
the said process comprising forming a mixture between (a) coal particles having a size of at most 200 microns and (b) about 10 to 30% by weight of thermoplastic polymer and copolymer,

and pressure-shaping said mixture by extrusion or injection molding to its final form at a temperature of about 100° to 250° C.

4,205,036
METHOD OF MAKING SIMULATED THREE-DIMENSIONAL STAINED GLASS OBJECTS

Charles E. Trame, Mequon, Wis., assignor to Everbrite Electric Signs, Inc., South Milwaukee, Wis.

Division of Ser. No. 871,302, Jan. 23, 1978, Pat. No. 4,110,393. This application Jun. 5, 1978, Ser. No. 912,661
Int. Cl.² B29C *17/00;* **B29D** *9/00;* **B29F** *1/00*
U.S. Cl. 264—132 **3 Claims**



1. A method for making generally non-planar contoured simulated stained glass articles composed of an array of simulated stained glass facets the majority of which are non-coplanar with respect to each other, said facets being bounded by simulated solder joints between them, said method comprising the steps of: coating a sheet of resin having a thickness in the range of 0.015 inch to 0.025 inch with materials which define an array of facets and bounding simulated solder joints having the colors desired in the finished article,

providing a first mold having a surface conforming generally with the contour of said article and said surface having planar areas arranged in correspondence with said facets and grooves arranged in correspondence with said joints and with a majority of said planar areas being non-coplanar with other said areas,

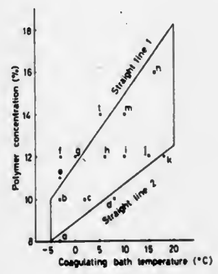
forming said resin sheet under the influence of heat and pressure to the contour of said first mold surface to conform said array of facets on said sheet with corresponding planar areas in said mold surface and to conform said joints on said sheet with corresponding grooves in said mold surface so that said joints are produced in relief, said resin sheet being generally concave on one side and substantially correspondingly convex on its other side after said forming,

disposing the concave and convex sheet produced in the preceding step in a second mold with the convex side of said sheet registering with a correspondingly concave surface in the second mold, said concave surface having planar areas and grooves corresponding with the planar areas and the relief joints on said concave and convex sheet for said relief joints and said planar areas on said concave and convex sheet to register accurately with said areas and grooves, respectively, on said second mold and, then injecting a layer of fluid resin material on a side of said concave and convex sheet opposite the side having said relief for said material to form a layer that is bonded to said concave and convex sheet to to produce a thick and rigid article when said resin material solidifies.

4,205,037
PROCESS FOR PRODUCING ACRYLIC SYNTHETIC FIBERS HAVING ANTI-PILLING PROPERTIES

Masaaki Fujimatsu, Okayama, Japan, assignor to Japan Exlan Company Limited, Osaka, Japan

Filed Oct. 23, 1978, Ser. No. 953,535
Claims priority, application Japan, Nov. 16, 1977, 52-138219
Int. Cl.² D01D *5/10*
U.S. Cl. 264—182 **5 Claims**



1. A process for producing acrylic synthetic fibers having anti-pilling properties characterized by obtaining said acrylic synthetic fibers by unitary combination of the following process requirements (1) to (6) of:

(1) using an acrylic polymer containing combined therewith at least 85 weight % acrylonitrile,

(2) wet-spinning a spinning solution prepared from said polymer and stretching the thus-obtained spun fibers at a stretching ratio of 4–9 times,

(3) while adjusting the internal water content of the water-

swollen gel fibers after stretching to 50–130% based on the dry weight of the fiber-forming polymer,
(4) drying-compacting the stretched fibers in a tension-free state,
(5) subjecting the fibers to a secondary stretching step at a stretching ratio of 1.1–2.0 times in a wet-heat atmosphere above 100° C., and
(6) subjecting the fibers to a relaxing heat treatment at a temperature below 120° C.

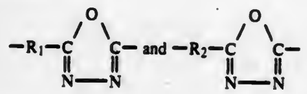
4,205,038

PROCESS FOR PRODUCING SHAPED ARTICLES OF POLYOXADIAZOLES

Donald L. Brydon, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 610,843, Sep. 5, 1975, Pat. No. 4,035,465. This application Dec. 9, 1976, Ser. No. 748,917
Int. Cl.² D01D *5/12*
U.S. Cl. 264—184 **12 Claims**

1. A method for the production of a drawn filament of polyphenylene-1,3,4-oxadiazole which comprises
(a) extruding through a shaped orifice a solution of the polymer in oleum or sulphuric acid, the polymer having as characteristic units



in which
R_1 is a p-phenylene radical, and
R_2 is a m-phenylene radical,
the ratio of R_1 radicals to R_2 radicals lying within the range 100/0 to 50/50, at least some of the phenylene radicals being bromine substituted in a position ortho to the heterocyclic ring, the bromine content of the polymer being at least T%/6 where T is the mole percent of p-phenylene radicals,
(b) passing the extruded polymer solution through a gaseous medium for a short distance, and then into an aqueous coagulant to form an undrawn, filament of the polymer,
(c) and stretching the undrawn filament at least six times its length, the filament being stretched at least two times while heated to a temperature of at least 350° C.

4,205,039

PROCESS FOR MELT-SPINNING ACRYLONITRILE POLYMER FIBER

William E. Streetman, Gulf Breeze, and Shashikumar H. Daftary, Pensacola, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 853,014, Nov. 17, 1977. This application Apr. 12, 1978, Ser. No. 895,576
Int. Cl.² D01F *6/18*
U.S. Cl. 264—206 **6 Claims**

1. A process for preparing an acrylonitrile polymer fiber having a dye intensity of at least about 60 and a shade change of less than about 15 when subjected to hot-wet processing, which process comprises extruding a homogeneous single phase fusion melt of water and acrylonitrile polymer containing hydrophilic moieties chemically bonded therein through a spinnerette, the amount of water in said melt being in the lower half of the range of amounts required to provide a single phase fusion melt under the conditions of extrusion and the amount of hydrophilic moieties contained in said polymer being sufficient to control the rate of release of water from the nascent extrudate in conjunction with processing and prevent substantial formation of a separate water phase; passing said nascent extrudate directly into a steam-pressurized solidification zone maintained under conditions of saturation and pressure to provide a solidified nascent extrudate and to prevent the substantial formation of a separate water phase in the solidified exrudate while removing water from said extrudate; releasing the solidified extrudate from said steam-pressurized solidification zone into the atmosphere to provide a solidified extrudate containing residual water in a single water-polymer phase; and drying the resulting extrudate under conditions of temperature and humidity indicated by a dry bulb temperature in the range of about 120°–180° C. and a wet bulb temperature in the range of about 60°–100° C. to remove water therefrom and to avoid the substantial formation of a separate water phase therein.

4,205,040

EXPOSED AGGREGATE FINISHING METHOD FOR CONCRETE

Tsuyoshi Aoyama, Hoya; Yoshimasa Hayashi, Tokyo; Hirotaka Toba, Yokohama; Akira Yoshida, Himji; Kenji Goto, Kawanishi, and Motoaki Kawakama, Chiba, all of Japan, assignors to Ohbayashi-Gumi, Ltd.; Daicel Ltd. and Fujisawa Pharmaceutical Co., Ltd., all of Osaka, Japan

Filed Oct. 22, 1975, Ser. No. 624,833
Claims priority, application Japan, Oct. 22, 1974, 49/121790
Int. Cl.² B28B *11/22*
U.S. Cl. 264—233 **3 Claims**

1. An exposed aggregate finishing method for concrete which comprises coating the inside faces of a form for concrete with a mixture of a cement setting retarder and a synthetic organic polymer coating material which is soluble in an aqueous alkaline solution of cement, but insoluble in water, and drying the coated faces and then placing concrete into said concrete form, removing the form and washing the surface of the molded concrete to make the surface rough; the organic polymer being a copolymer of an organic compound having unsaturated groups selected from the group consisting of methyl methacrylate, vinyl acetate, vinyl chloride, ethylene, propylene and styrene, and an organic acid having unsaturated groups and selected from the group consisting of acrylic acid, crotonic acid and maleic acid.

2. An exposed aggregate finishing method for concrete which comprises coating the inside faces of a form for concrete with a cement setting retarder; drying; coating the said dried faces with a synthetic organic polymer coating material which is soluble in an aqueous alkaline solution of cement, but is insoluble in water; and drying the coated faces and then placing concrete into said concrete form, removing the form and washing the surface of the molded concrete to make the surface rough; the organic polymer being a copolymer of an organic compound having unsaturated groups selected from the group consisting of methyl methacrylate, vinyl acetate, vinyl chloride, ethylene, propylene and styrene, and an organic acid having unsaturated groups and selected from the group consisting of acrylic acid, crotonic acid and maleic acid.

4,205,041

TAPELESS JOINT COMPOUND

Richard H. Hymes, 7416 W. Shore Dr., Minneapolis, Minn. 55435

Filed Sep. 19, 1977, Ser. No. 834,284
Int. Cl.² B32B *31/06*; C08L *23/08, 27/06, 31/04*
U.S. Cl. 264—261 **5 Claims**

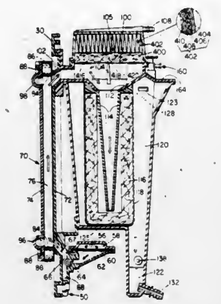
1. An ambient curable cohesive self-supporting formulation for application to wall panels and for curing thereon, and consisting of a flowable mixture of an internally plasticized binder selected from the group consisting of vinyl acetate-ethylene copolymers and vinyl acetate-ethylene-vinyl chloride interpolymers together with inert fillers and water, with said binder solids comprising between about 2% and 13% by total weight of the formulation.

4,205,042

BLOOD OXYGENATOR WITH A GAS FILTER

Donn D. Lobdell, Golden; Stephen J. Herman, Evergreen, and Joel F. Giurtino, Littleton, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Jun. 23, 1978, Ser. No. 918,359
Int. Cl.² A61M *1/03*
U.S. Cl. 422—47 **1 Claim**



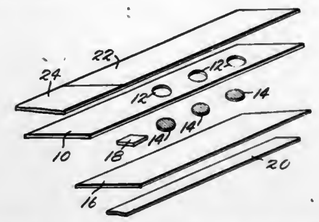
1. A blood oxygenator comprising:
a venous blood inlet chamber comprised of a first plastic housing and a venous blood inlet means connected thereto,
bubble generating means for forming oxygen bubbles in the blood in said blood inlet chamber, said means including a porous member positioned along one wall of said inlet chamber,
a gas exchange column means extending upwardly above said blood inlet chamber for transporting said bubbles while gas is exchanged with the blood, said column comprising a second plastic housing fastened to said housing forming said blood inlet chamber,
defoaming means connected to and communicating with the outlet of said gas exchange means for breaking up said bubbles,
blood reservoir means connected to and below said defoaming means for collecting oxygenated blood, said reservoir means and defoaming means comprising a third plastic housing fastened to said exchange column, and
oxygen filtering means, comprising
a fourth plastic housing fastened to at least one of said other plastic housings, said fourth housing comprising upper and lower plastic members each with mating flanges,
an oxygen inlet means secured to said upper member for introduction of oxygen into said fourth housing, oxygen outlet means secured to said lower member, and
a filter element in the form of a sheet of hydrophobic material, the thickness of said sheet being substantially less than the transverse dimensions of said sheet, said sheet being positioned completely above said porous member of said bubble generating means to allow for gravity return through said porous member of said bubble generating means and away from the surface of said filter of blood or priming solution accidentally ingested through said porous member of said bubble generating means during a loss of oxygen flow and bonded at its periphery between said mating flanges of said upper and lower members, thereby dividing said housing into upper and lower chambers,
said oxygen outlet means being connected to and communicating with said porous member of said bubble generating means.

4,205,043

HAZARDOUS ATMOSPHERE BADGE

Victor H. Esch, 10717 Stanmore Dr., Potomac, Md. 20854, and Robert M. Fristrom, 10610 Mantz Rd., Silver Spring, Md. 20403

Filed May 4, 1978, Ser. No. 902,963
Int. Cl.² G01N *31/22*; A62C *39/02*
U.S. Cl. 422—56 **5 Claims**



1. Apparatus for indicating hazardous atmospheric conditions in a firefighting environment, consisting essentially of
a substantially planar indicating assembly including a substrate having front and back surfaces, and having a plurality of apertures therein; a plurality of gas indicator elements, corresponding in number to the number of apertures in said substrate, each for indicating by color change the presence of respective predetermined time and concentration exposures to a gas, said gas indicator elements being of greater dimensions than said substrate strip apertures; backing means, adherent to said back surface of said substrate, for maintaining said indicator elements in aligned relationship with said substrate apertures; and a strip of pressure sensitive tape adhering to said front surface of said substrate for maintaining said indicator elements in a condition wherein they are not exposed to said hazardous atmospheric conditions, and so that upon removal of said tape said indicator elements are exposed to said hazardous atmospheric conditions, said tape having a non-adhesive pull tab at one end thereof; and
means for attaching said indicating assembly to a user for use in detecting hazardous atmospheric conditions during firefighting, so that said pressure sensitive tape may be readily removed from said substrate while said indicating assembly remains attached to the user, said attaching means comprising a clip having elongated edges supporting edges of said substrate, and supporting clip loops extending from one end of each of said elongated edges for engaging an article of clothing of the user, said non-adhesive pull tab of said pressure sensitive tape extending from an end of said substrate adjacent the ends of said clip elongated edges from which said supporting clip loops extend.

4,205,044

REACTOR FOR CATALYZED EXOTHERMIC REACTIONS

Giorgio Gramatica, Milan, Italy, assignor to Tecnimont S.p.A., Milan, Italy

Filed Sep. 20, 1977, Ser. No. 835,005
Claims priority, application Italy, Sep. 24, 1976, 27626 A/76
Int. Cl.² B01J *8/04*
U.S. Cl. 422—191 **1 Claim**

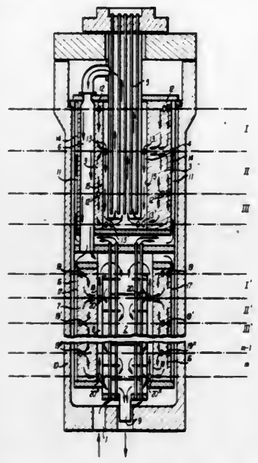
1. A catalytic reactor for catalyzed exothermic reactions having two catalyst layers, lying one over the other, wherein each of said two catalyst layers is contained within two coaxial cylindrical shells, said shells being provided with inlets to and outlets from said catalyst layer for reacting gases, each of said inlets and outlets consisting essentially of a plurality of openings in said cylindrical shells aligned on circumferences of said cylindrical shells defined by the intersections of said cylindrical shells with planes equi-

spaced from one another and perpendicular with respect to the axis of said cylindrical shells, wherein

the distance between two of said equispaced and perpendicular planes, one of which defines an inlet and the other an adjacent outlet, is between 1000 and 4000 mm, and

at least one of said inlets is in a median position with respect to an adjacent pair of outlets, and the portion of catalyst layer bounded by the planes of said adjacent outlets defines a catalyst zone through which the reacting gases flow substantially in axial and opposite directions,

said reactor is provided with a heat exchanger means arranged coaxially with respect to the two cylindrical shells



defining the lower catalyst layer and positioned inside the internal cylindrical shell thereof,

said reactor is provided with a boiler means for steam generation arranged coaxially with respect to the two cylindrical shells of the upper catalyst layer and positioned inside the internal cylindrical shell thereof, and

reaction gas feed means communicating with said heat exchanger means such that reacting gases fed to the reactor are pre-heated in said heat exchanger, passed through said upper catalyst layer, cooled in said boiler, passed through said lower catalyst layer, and finally cooled in said heat exchanger.

4,205,045

RADIAL-FLOW REACTOR WITH HEATABLE CATALYST FILLING

Helmut Westernacher, Haltern; Peter Schimpff, and Ferdinand Botthof, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Fed. Rep. of Germany

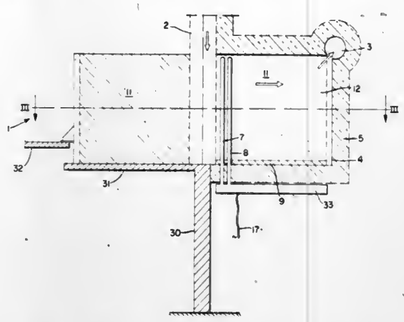
Filed Mar. 21, 1978, Ser. No. 888,746

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712371

Int. Cl.² B01J *8/02*

U.S. Cl. 422—192 **13 Claims**

1. A radial-flow reactor for effecting endothermic, catalytic reactions, which comprises a closed reactor housing, having a reactor chamber therein, a centrally arranged, inlet duct for introducing gaseous reactants radially into said reactor chamber, a catalyst bed disposed around the inlet duct and located within said chamber, and at least one outlet duct arranged on an outer rim of the housing containing the catalyst bed, for removing gaseous material from said reactor chamber, a plurality of heating elements embedded in the catalyst bed, said heating elements being constructed as straight electrically heated heating tubes each projecting with one free end into the reactor chamber and being attached with the other end to a base plate, a plurality of base plates forming part of a wall structure defining the reactor chamber and forming said reac-



tor housing, said base plates being joined to the wall structure of the reactor housing in a detachable fashion.

4,205,046

REACTOR FOR PHOSPHORIC ACID PRODUCTION

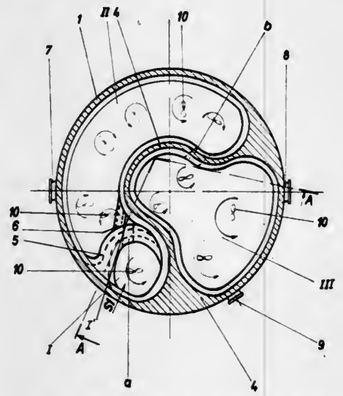
Neculai Popovici, Bucharest, Romania, assignor to Institutul de Inginerie Tehnologica Si Proiectare Pentru Industria Chimica, Bucharest, Romania

Filed Sep. 6, 1978, Ser. No. 940,147

Claims priority, application Romania, Jan. 18, 1978, 92938

Int. Cl.² F01C *1/08, 1/00*

U.S. Cl. 422—193 **1 Claim**



1. A reactor for the manufacture of phosphoric acid by the wet process starting with natural phosphate and sulphuric acid, comprising a circular cylindrical tank of which a lateral circular wall together with a sinusoidal vertical wall, a circular vertical wall and another vertical wall delimit inside the reactor a first compartment for the pre-mixing of reactants, a second overflowing compartment, a third compartment for the completion of the natural phosphate decomposition, and a fourth, final compartment in which the crystallization process of calcium sulphate is taken to completion, the first, pre-mixing compartment and the second, overflowing compartment communicating with each other by means defining a hole situated in the circular vertical wall bottom side, the third and fourth compartments communicating through means defining a hole in the sinusoidal vertical lower side, all the compartments providing both the pre-mixing of reactives and the reaction proper, the sinusoidal wall promoting simply by its configuration the guiding of the stream of reagents whose forward movement is adjusted according to the requirements of each phase of the reaction process: pre-mixing, decomposition, crystal formation and crystal growth.

4,205,047

TUBULAR APPARATUS FOR CONDUCTING GASES

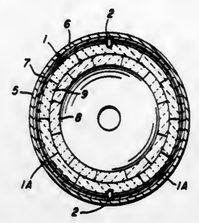
Heinz Thubeauville, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,059

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2705981

Int. Cl.² B01J *3/04;* F27D *1/00*

U.S. Cl. 422—242 **10 Claims**



1. A tubular apparatus for conducting gases under a high pressure and at an elevated temperature, said tubular apparatus including the combination of:

a lining of refractory brick adapted to undergo stressing to form a gas-impervious seal while conducting gases under a high pressure and elevated temperature,

an inner cylindrical shell assembly surrounding the outer surface of said lining of refractory brick, said inner cylindrical shell assembly including an elongated metal cylinder having the wall thereof divided along at least one longitudinal parting line and a stress compensator member extending along said parting line between the parted wall edge surfaces in the elongated metal cylinder to maintain said lining of refractory brick under stress by resisting forces imposed on the refractory brick due to the high pressure of the gases at an elevated temperature,

an outer cylindrical metal shell to receive and support therein said inner cylindrical shell assembly and constrain the stress compensator member thereof, and

conduit means to pass gases under a high pressure and elevated temperature along said lining of refractory brick.

4,205,048

LIQUID-LIQUID EXTRACTION OF CU, CO, NI FROM AMMONIACAL SOLUTIONS WITH 7-ETHYL-UNDECA-2,4-DIONE

Jai H. Kyung, and Harvey J. Richards, both of Columbus, Ohio, assignors to Sherex Chemical Company, Inc., Columbus, Ohio

Continuation of Ser. No. 867,660, Jan. 9, 1978, abandoned. This application Feb. 8, 1979, Ser. No. 10,354

Int. Cl.² C01G *3/00, 51/00, 53/00;* C07C *49/12*

U.S. Cl. 423—24 **1 Claim**

1. In a liquid-liquid ion exchange process for the recovery of copper, cobalt or nickel values from a dilute ammoniacal solution thereof whereby said ammoniacal solution is contacted with an organic solution of a metal chelating agent to effect transfer of said metal values to the organic phase and whereupon the metal-loaded organic phase is then separated and contacted with an aqueous solution of a strong acid to effect transfer of the metal values to said aqueous acid phase from whence the metal values are recovered; the improvement wherein the metal chelating agent is 7-ethyl-undeca-2,4-dione.

4,205,049

WATER INJECTION FOR CONTROL OF FINES FOR PRODUCING DEFLUORINATED PHOSPHATE ROCK GRANULES

Ronald J. Smith, Friendswood, and Manuel A. Gonzalez, Houston, both of Tex., assignors to Olin Corporation, New Haven, Conn.

Filed May 31, 1977, Ser. No. 801,883

Int. Cl.² C01F *1/00, 5/00, 11/00*

U.S. Cl. 423—167 **8 Claims**

1. In the process for preparing defluorinated phosphate rock granules from fluorine-containing phosphate rock which comprises the steps:

(a) admixing fluorine-containing phosphate rock, phosphoric acid, sodium carbonate, and water to form a non-granulated feed slurry;

(b) forming granules in a granulation zone from said non-granulated feed slurry;

(c) drying said granules in a drying zone;

(d) classifying said dried granules to form a product fraction, an over-size fraction, and a fines fraction of said granules;

(e) crushing said over-size fraction and recycling said crushed over-size fraction, said fines fraction and from 0% to about 95% by weight of said product fraction back to step (b);

(f) heating the unrecycled product fraction to defluorinate said fluorine-containing phosphate rock contained therein without fusion;

(g) recovering said defluorinated phosphate rock granules; and

(h) wherein more than about 20% by weight of said dried granules discharged from said drying zone are less than about 20 mesh in size,

the improvement which comprises:

adding an aqueous solution to said granulation zone in a proportion equivalent to from about 5% to about 30% by volume of said non-granulated feed slurry fed to said granulation zone.

4,205,050

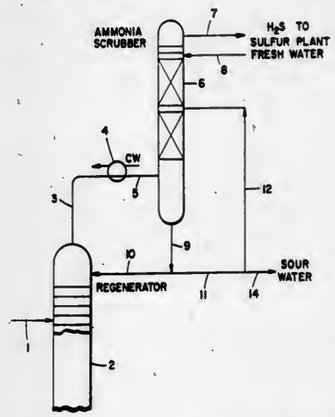
METHOD OF REDUCING CORROSION IN SOUR GAS SWEETENING SYSTEMS

Robert L. Piehl, Napa, and W. Bertram Scarborough, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 17, 1976, Ser. No. 697,073

Int. Cl.² B01D *53/34*

U.S. Cl. 423—228 **3 Claims**



1. In a process for the recovery of hydrogen sulfide from a gaseous mixture containing ammonia and said sulfide by contacting the mixture with an aqueous alkanolamine solution and

recovering said hydrogen sulfide by passing the resulting hydrogen-sulfide-rich aqueous alkylolamine to an alkanolamine regenerating column operating under aqueous alkanolamine solution reflux conditions and withdrawing an overhead hydrogen-sulfide-rich stream from the overhead section of said regenerating column, the improvement comprising reducing corrosion in said section by steps including:

(i) passing said withdrawn overhead regenerating column stream to an ammonia scrubber column operating under ammonia scrubbing conditions;

(ii) withdrawing an overhead stream comprising hydrogen sulfide from said scrubber column;

(iii) withdrawing a bottoms stream comprising water from said scrubber column; and

(iv) introducing a portion of said withdrawn bottoms stream into said overhead section of said regenerating column, said portion based upon the bottoms effluent from said scrubber column, being in the range from about 20 to 70 percent thereof.

4,205,051

STABILIZED ZIRCONIA FOR OXYGEN ION-CONDUCTIVE SOLID ELECTROLYTE

Takehiko Takahashi, and Yutaka Suzuki, both of Nagoya, Japan, assignors to Toyota Jidosha Kogyo Kabushika Kaisha, Toyota, Japan

Filed Aug. 14, 1978, Ser. No. 933,478
Claims priority, application Japan, Oct. 15, 1977, 52-123896
Int. Cl.² C01G *25/02*
U.S. Cl. 423—266 **3 Claims**

1. Stabilized zirconia for an oxygen ion-conductive solid electrolyte, comprising zirconium oxide containing scandium oxide and ytterbium oxide having the formula:

$$\alpha ZrO_2 \cdot \beta Sc_2O_3 \cdot \gamma Yb_2O_3$$

wherein α, β, γ are molar fractions; and $\alpha+\beta+\gamma=1$, and the molar fractions α, β, γ are in the following ranges:

$0.86<\alpha<0.94$
$0<\beta<0.14$
$0<\gamma<0.14$.

4,205,052

MANUFACTURE OF SYNTHETIC MORDENITE

Louis D. Rollmann, Princeton, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,368
Int. Cl.² C01B *33/28*
U.S. Cl. 423—329 **6 Claims**



Tributyl amine

15μ

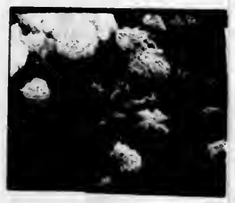
1. In a process for manufacturing synthetic mordenite, which process comprises hydrothermally treating an aqueous, inorganic mordenite forming solution that contains a source of SiO_2 whereby forming substantially pure synthetic mordenite having a characteristic microscopic texture, the improvement which comprises adding to said forming solution an amount of substantially colorless organic basic nitrogen compound, said amount being effective to alter said microscopic texture of said substantially pure mordenite.

4,205,053

MANUFACTURE OF NITROGENOUS ZEOLITES

Louis D. Rollmann, Princeton, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,374
Int. Cl.² C01B *33/28*
U.S. Cl. 423—329 **11 Claims**



ZSM-35

EXAMPLE 2

1.5μ

1. In a process for manufacturing a synthetic zeolite having a silica to alumina ratio of at least about 12 and a characteristic microscopic texture, which process comprises crystallizing an aqueous forming solution comprising a source of SiO_2 and a nitrogenous template, and recovering said synthetic zeolite, the improvement which comprises adding to said forming solution an amount of substantially colorless organic basic nitrogen compound selected from the group consisting of quaternary ammonium compounds having not more than three methyl, three ethyl or three propyl substituents, and amines, said basic nitrogen compound having a chemical structure different from said template, and said amount being effective to alter said microscopic texture.

4,205,054

PROCESS FOR RECOVERY OF NITRIC ACID FROM NITRATES

Yujiro Sugahara, Tokyo; Hiroyuki Naito, Tsuruoka; Kiyoshi Takai, Tsuruoka, and Tatuya Kondo, Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 28, 1978, Ser. No. 890,910
Claims priority, application Japan, Mar. 28, 1977, 52/33279
Int. Cl.² C01B *21/42*
U.S. Cl. 423—390 **10 Claims**

1. A process for recovery of nitric acid comprising mixing an aqueous solution containing nitric acid and/or a nitrate with a dry powder of an oil-absorbing inorganic carrier having an oil-absorbing capacity of at least 20 ml/100 g and being selected from the group consisting of oxides, hydroxides, carbonates and silicates of polyvalent metals and silica with the proviso that when the aqueous solution contains only nitrate said inorganic carrier may be silica, to form a nitrate-carrier granule containing the carrier in an amount of 40 to 250 percent by weight as calculated as the oxide based on the anhydrous nitrate and water in the form of a hydroxide, a hydrate or adsorption moisture in an amount of 2.18 to 8.6 moles per mole of the nitric acid radical (NO_3) in the nitrate, heating the formed granule while keeping the substantially non-sticky state in the granule to decompose the nitrate in the granule to a vapor of nitric acid, and recovering the generated vapor of nitric acid.

4,205,055

DUAL PORE-STRUCTURE ARTIFICIAL CARBON AND GRAPHITE

Jacques Maire, Epinay sur Seine; Jacques Fourre, Soisy sous Montmorency, and Jean P. Gervais, Noisy le Sec, all of France, assignors to Le Carbone-Lorraine, Paris, France

Filed May 8, 1978, Ser. No. 903,915
Claims priority, application France, May 12, 1977, 77 14581
Int. Cl.² C01B *31/02, 31/04*
U.S. Cl. 423—445 **9 Claims**



1. An artificial dual pore-structured carbon or graphite which is suitable for use as a catalyst substrate or an electrode material consisting essentially of a macro-porous agglomeration of strongly bonded microporous grains of carbon or graphite, the radius of the macropores being from substantially 10 to 350 μm and that of the micropores being substantially 0.2 to 1.0 μm, said macropores being joined by intercommunicating channels thus forming a fluid permeable structure, said carbon or graphite having a density of from 0.70 to 1.50 gms/cc., a permeability to gases of from 20 to 500 cm^2/sec/atmos, and a porosity of from 30 to 50%.

2. A process for the production of an artificial dual pore-structured carbon suitable for use as a catalyst substrate or an electrode material consisting essentially of a macroporous agglomeration of strongly bonded microporous grains of carbon which process comprises preparing an aggregate of (a) 15–35% by weight of tar or pitch and (b) 85–65% by weight of a finely divided carbonaceous material having a particle size up to 100 microns, intimately admixing the resulting aggregate with a particulate, eliminable, non-carbon forming material which material is substantially insoluble in said aggregate, shaping the resulting product is desired shape by compression or extrusion, heating the resulting shaped product to a carbonisation temperature for a time sufficient to carbonize the pitch content thereof, cooling the carbonized shaped material and, when a residue of said particulate material is present in the cooled carbonaceous product, treating said cooled product to remove said residue therefrom, said particulate eliminable material being used in the form of particles which will produce macropores having a radius of 10 to 350 μm in the ultimate product and in such a proportion that the resulting artificial carbon will have a density of from 0.70 to 1.50, a permeability to gases of from 20 to 500 cm^3/sec/atmos and a porosity of 30 to 50%.

4,205,056

PROCESS FOR ORTHO-PARA-HYDROGEN CONVERSION

Hiroo Inokuchi, Okazaki; Kentaro Murano, Ibaraki; Hiroshi Kawazura, Kamifukuoka, and Tsutomu Kobayashi, Ibaraki, all of Japan, assignors to Japan Synthetic Rubber Company, Limited, Tokyo, Japan

Continuation of Ser. No. 843,600, Oct. 19, 1977, abandoned, which is a continuation of Ser. No. 756,696, Jan. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 552,203, Feb. 24, 1975, abandoned. This application Apr. 11, 1979, Ser. No. 28,990
Claims priority, application Japan, Feb. 26, 1974, 49-21983
Int. Cl.² C01B *1/00*
U.S. Cl. 423—649 **8 Claims**

1. In a process for the ortho-para conversion of hydrogen wherein hydrogen is contacted with a catalyst at the desired conversion temperature, the improvement which comprises said catalyst being a sulphur-containing semiconductive polymer produced by dehalogenating a poly(tetrahalophenylene sulphide) in the presence or absence of an organic solvent at a temperature from 150° to 500° C.

4,205,057

CEREBROSPINAL FLUID PROTEIN FRAGMENTS

John N. Whitaker, Memphis, Tenn., assignor to Government of the United States, Washington, D.C.

Filed Jan. 17, 1978, Ser. No. 870,090
Int. Cl.² G01N *33/16;* A61K *43/00*
U.S. Cl. 424—1 **3 Claims**

1. In a method for detecting an acute phase of multiple sclerosis in a patient, the improvement which comprises subjecting the cerebrospinal fluid of said patient to a double antibody radioimmunoassay procedure to determine the presence therein of a fragment of encephalitogenic protein (EP) containing residues 43–88, said fragment being designated EP-P1, said radioimmunoassay procedure comprising forming a radioimmunoassay reaction mixture containing said cerebrospinal fluid, rabbit anti-EP serum, and ^{125}I-EP-P1 to produce a radioactive product including the reaction product of said anti-EP serum and said ^{125}I-EP-P1, adding a second antibody to precipitate said radioactive product, and measuring the radioactivity of said precipitated radioactive product from which the presence of the EP-P1 fragment is determined.

4,205,058

COLUMN CHROMATOGRAPHY SPECIFIC BINDING ASSAY METHOD AND TEST KIT

Daniel B. Wagner; Anthony J. Pick, and Judith Feingers, all of Jerusalem, Israel, assignors to Ames-Yissum, Ltd., Jerusalem, Israel

Filed Nov. 16, 1977, Ser. No. 852,105
Claims priority, application Israel, Jan. 28, 1977, 51354
Int. Cl.² G01N *33/16;* A61K *43/00;* B65D *81/32*
U.S. Cl. 424—1 **44 Claims**

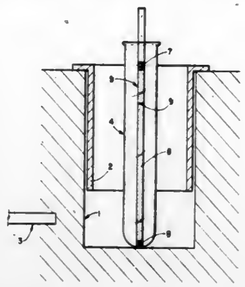
1. In a specific binding assay method for determining a ligand in or the ligand binding capacity of a liquid medium,

wherein for determining said ligand, said liquid medium is combined with assay reagent means comprising (i) as labeled component, said ligand or a binding analog thereof incorporated with a label and (ii) a binding reagent for said ligand; or wherein for determining the ligand binding capacity of said liquid medium suspected of containing a binding agent for said ligand, said liquid medium is combined with assay reagent means comprising, as labeled component, said ligand or a binding analog thereof incorporated with a label, thereby to form a binding reaction mixture having a bound-species as said labeled component bound to said binding reagent and a free-species as said labeled component not bound to said binding agent,

wherein said bound-species and said free-species are separated, and

wherein said label is measured in one of the separated species;

the improvement which comprises accomplishing said separation of said bound-species and said free-species by contacting at least a portion of said binding reaction mixture, a predetermined time after formation thereof, with a column comprising an adsorbent material which is both selective for binding one of said bound-species and said free-species and capillarily absorbent relative to said reaction mixture whereby said at least a portion of said reaction mixture is drawn into said column by capillary action and said bound-species and said free-species are separated along said column.



4,205,059

ANIMAL AND VEGETAL TISSUES PERMANENTLY PRESERVED BY SYNTHETIC RESIN IMPREGNATION

Günther von Hagens, Jahnstrasse 8, D-6900 Heidelberg, Fed. Rep. of Germany

Filed Nov. 14, 1977, Ser. No. 851,101

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710147; May 7, 1977, 2720607

Int. Cl.² A01G *5/06*

U.S. Cl. 427—4 **15 Claims**

1. A method of preparing a body consisting essentially of anhydrous animal or vegetal tissue and a water-insoluble synthetic resin substantially uniformly distributed in said tissue which comprises:

(a) replacing the water content of a water-bearing body of animal or vegetal tissue with an organic solvent volatile in a vacuum at ambient temperature;

(b) holding said body bearing said solvent in contact with a fluid precursor composition in a vacuum and at said temperature until said solvent is volatilized and replaced in said body by said composition, said composition being capable of being polymerized into a solid, water-insoluble, synthetic resin;

(c) removing adhering precursor composition from the surface of said body; and

(d) holding said body under polymerization conditions until said precursor composition in said body is cured to said solid resin.

4,205,060

MICROCAPSULES CONTAINING MEDICAMENT-POLYMER SALT HAVING A WATER-INSOLUBLE POLYMER SHEATH, THEIR PRODUCTION AND THEIR USE

Harold G. Monsimer, Norristown, and Howard A. Bohm, Harleysville, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 20, 1978, Ser. No. 971,243

Int. Cl.² A61K *9/50*

U.S. Cl. 424—14 **5 Claims**

1. Microcapsules comprising a core containing a water-soluble salt formed from a medicament and a water-soluble polymer, and a sheath of a water-insoluble film forming polymer wherein said salt is selected from one member of the group consisting of (1) a salt of a medicament which contains at least one basic group and a water-soluble polymer which contains at least one acid group and (2) a salt of a medicament which contains at least one acid group and a water-soluble polymer which contains at least one basic group; said microcapsules having an average particle size from about 0.5 to 50 microns.

4,205,061

ORAL ANTIMICROBIAL COMPOSITIONS

James D. Vidra, Clinton, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 14, 1978, Ser. No. 924,764

Int. Cl.² A61K *7/24, 31/44, 31/60, 31/625*

U.S. Cl. 424—55 **5 Claims**

1. An oral antimicrobial composition comprising as the active antimicrobial ingredients a synergistic combination of 3,5-dibromo-3'-trifluoromethylsalicylanilide and cetylpyridinium chloride wherein the 3,5-dibromo-3'-trifluoromethylsalicylanilide and cetylpyridinium chloride are present in a ratio of from about 10:1 to about 1:10.

4,205,062

PERSPIRATION-INHIBITING SOAPS

Gähn Däahn, Holzminden, Fed. Rep. of Germany, assignor to Bayer Atkiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 30, 1975, Ser. No. 573,213

Claims priority, application Fed. Rep. of Germany, May 11, 1974, 2422903

Int. Cl.² A61K *7/34, 7/36, 7/38*

U.S. Cl. 424—66 **4 Claims**

1. A perspiration-inhibiting soap comprising by weight

(a) 40 to 70% of a synthetic washing-active material;

(b) 10 to 30% of a builder;

(c) 10 to 30% of a perspiration-inhibiting agent of the group consisting of an aluminum salt, a zinc salt, a zirconium salt and a salt of a rare earth element; and

(d) 5 to 35% of other soap additives known per se.

4,205,063

LOW IRRITANT CONDITIONING SHAMPOO COMPOSITION

Ezzat N. Khalil, Oak Park, and Ali N. Syed, Hazelcrest, both of Ill., assignors to Johnson Products Co., Inc., Chicago, Ill.

Filed Apr. 12, 1979, Ser. No. 29,382

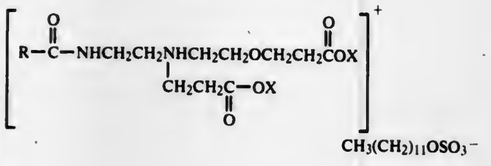
Int. Cl.² A61K *7/06*

U.S. Cl. 424—70 **7 Claims**

1. A conditioning, detangling hair shampoo composition with low eye irritancy having a pH of about 6.0 to about 7.0 comprising water having dispersed therein a hair conditioning complex consisting essentially of:

(A) a water-soluble cationic cellulose ether derivative having a chain of anhydroglucose units with substituent groups pendant therefrom and spaced along said chain, said cellulose ether derivative containing a plurality of quaternary nitrogen-containing groups having from zero to 3 moles of quaternary nitrogen-containing groups per anhydroglucose unit, said cellulose ether derivative having an average molecular weight of about 10,000 to about 4,000,000, and

(B) an amphoteric surfactant of the formula



where



is selected from the group consisting of saturated fatty acids containing twelve to eighteen carbon atoms and unsaturated fatty acids containing twelve to eighteen carbon atoms, and X is an alkali metal cation; said cationic cellulose derivative being present in the composition at about 0.25 to about 2.5 weight percent and said amphoteric surfactant being present in the composition at about 5 to about 12 weight percent; said complex being dispersed by a mixture of nonionic surfactants consisting essentially of:

(C) about 1 to about 10 weight percent fatty acid N,N-diethanolamide wherein the fatty acid contains twelve to eighteen carbon atoms, and

(D) about 0.5 to about 7 weight percent polyoxyethylene sorbitan fatty acid ester, said ester being selected from the group consisting of a polyoxyethylene sorbitan fatty acid monoester wherein the fatty acid of said monoester contains twelve to eighteen carbon atoms and a polyoxyethylene sorbitan fatty acid triester wherein the fatty acid of said triester contains twelve to eighteen carbon atoms; all of said weight percentages being based upon the total weight of said shampoo composition.

4,205,064

BILE ACID SEQUESTERING COMPOSITION CONTAINING POLY[{ALKYL-(3-AMMONIOPROPYL)IMINO}-TRIMETHYLENEDIHALIDES]

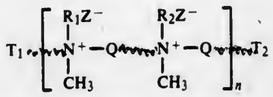
Arthur F. Wagner, Princeton; Nathaniel Grier, Englewood, and Tsung-Ting Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 956,472, Oct. 30, 1978, abandoned, which is a division of Ser. No. 895,908, Apr. 13, 1978, abandoned, which is a division of Ser. No. 783,886, Apr. 1, 1977, Pat. No. 4,098,726, which is a continuation-in-part of Ser. No. 570,910, Apr. 23, 1975, Pat. No. 4,016,209, and a continuation-in-part of Ser. No. 462,263, Apr. 19, 1974, abandoned, and a continuation-in-part of Ser. No. 369,042, Jun. 11, 1973, abandoned. This application Apr. 11, 1979, Ser. No. 28,955

Int. Cl.² A61K *31/14, 31/74*

U.S. Cl. 424—78 **2 Claims**

1. A pharmaceutical composition for binding bile acids in the gastroitestinal tract of mammals comprising in unit dosage form from 0.1 to 10 grams of a linear unbranched non-cross-linked polymer of the formula:

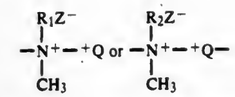


wherein R_1 and R_2 are the same or different and are ammonioloweralkyl, loweralkylammonioloweralkyl; diloweralkylammonioloweralkyl, triloweralkylammonioloweralkyl, or lower alkyl with the proviso that only one of R_1 and R_2 may be lower alkyl where said ammonio cation is countered with the anion Z; wherein n is an integer such that the number average molecular weight is from 300–50,000;

T_1 and T_2 are end groups;

Z^- is monovalent or polyvalent counter anion;

Q is trimethylene; and the symbol indicates a bond to a plurality of the groups



where R_1, R_2, Q, and Z^- are previously defined.

4,205,065

NON-YELLOWING COMPOSITIONS CONTAINING HEXAMETHYLENETETRAMINE 1,3-DICHLOROPROPENE SALTS

David A. Wilson, Richwood, and Avis L. McCrary, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 17, 1979, Ser. No. 4,096

Int. Cl.² A61K *31/78;* **A01N** *9/22;* **A61K** *31/53;* **A01N** *9/00*

U.S. Cl. 424—81 **15 Claims**

1. A composition of matter having antimicrobial properties which consists essentially of

(a) cis-1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride; and

as a color-stabilizing additive for the said adamantane in solution, to prevent yellowing of the adamantane solution on aging,

(b) a reducing agent selected from alkali metal sulfites, alkali metal bisulfites, alkaline earth metal sulfites, alkaline earth metal bisulfites, amine sulfites, amine bisulfites, ammonium sulfites, ammonium bisulfites, inorganic hydrides, hydroxylamine, hydroxylamine acid salts and mixtures thereof,

wherein the weight ratio of (a) to (b) is from 1:0.01 to 1:4.

4. A latex formulation of the composition of claim 1, said latex containing a bactericidal amount, from about 0.01 to about 1.0 weight percent of said adamantane.

5. A latex formulation of the composition of claim 4, wherein said latex is 75 percent vinyl acetate/-25 percent butyl acrylate.

4,205,066

BAIT COMPOSITIONS FOR ANTHROPOPHILIC FLIES

Claude Hennart, Seraincourt; Bernard Rabussier, Avanton; Jean-Pierre Mandon, Chasseneuil-du-Poitou, and Joel Sapin, Liguge, all of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Oct. 10, 1978, Ser. No. 949,600

Claims priority, application Luxembourg, Oct. 10, 1977, 78277

Int. Cl.² A01N *7/14*

U.S. Cl. 424—84 **13 Claims**

1. A bait composition for anthropophilic flies, containing a lure and a food, wherein the lure is present in the composition in a proportion of about 0.05 to 2 percent relative to the weight of the composition and is selected from the group consisting of the cis- stereoisomers of straight-chain alkenes having 19 to 23 carbon atoms in which the ethylenic bond is located after a carbon atom in the 9-position and mixtures of these alkenes, and wherein the food is or contains an aminoacid source of the biochemical class of protides.

4,205,067

ANTIBIOTICS

Martin Cole, Dorking; John D. Hood, Cranleigh, and Dennis Butterworth, Redhill, all of England, assignors to Beecham Group Limited, England

Division of Ser. No. 725,383, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,772, Aug. 23, 1976, abandoned, which is a division of Ser. No. 559,803, Mar. 19, 1975, abandoned. This application Dec. 7, 1977, Ser. No. 858,101
Claims priority, application United Kingdom, Mar. 28, 1974, 13856/74
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—114 32 Claims

1. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises a synergistically effective amount of a pharmaceutically acceptable dibasic salt of MM 13902 which is at least 50% pure and an antibacterially effective amount of amoxycillin or the acetoxymethyl, pivaloyloxymethyl or phthalidyl ester thereof, which substance MM 13902 is a solid carboxylic acid of the molecular formula $C_{13}H_{16}O_8N_2S_2$ which in the form of a substantially pure sodium salt has the following characteristics:

(a) in aqueous solution, it has a characteristic ultraviolet spectrum with absorption maxima at about 305 nm and at about 225 nm substantially as shown in FIG. 1;

(b) when present at 0.4% w/w in a freshly prepared KBr disc, it has a characteristic infra-red spectrum which has absorption maxima at inter alia about 3450, 2950, 1750, 1620, 1510, 1400 and 1260 cm^{-1};

(c) it has a characteristic N.M.R. spectrum when taken in D_2O which spectrum possesses inter alia (i) a pair of low field doublets centered at approximately 2.85t and 4.00t with coupling constants of approximately 14 Hz; (ii) a doublet centered at approximately 8.55t and (iii) a sharp singlet at approximately 8.00t;

(d) it possesses antibacterial activity against various species including inter alia, strains of *Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiella aerogenes, Proteus mirabilis, Salmonella typhi* and *Pseudomonas aeruginosa;* and

(e) when mixed with ampicillin it synergizes its activity against organisms including strains of *Escherichia coli, Klebsiella aerogenes, Proteus mirabilis, Proteus morganii* and *Staphylococcus aureus Russell,*

in combination with a pharmaceutically acceptable carrier; said pharmaceutically acceptable di-basic salt of MM 13902 and said amoxycillin or ester being present in a ratio of 10:1 to 1:10.

4,205,068

β-LACTAMASE INHIBITOR EM4615

Richard B. Sykes, Rocky Hill; J. Scott Wells, Ringoes; Pacifico A. Principe, South River, and Wen C. Liu, Princeton Junction, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 18, 1978, Ser. No. 906,906
Int. Cl.[2] A61K *37/64*
U.S. Cl. 424—117 10 Claims

10. β-lactamase inhibitor EM4615, and salts thereof, said EM4615 having an infrared spectrum, as the sodium salt, as in FIG. 1; having the following approximate elemental analysis as the sodium salt: C,49.99%; H,7,71%; O,23.69%; S,10.51%; Na,8.10%; the barium salt thereof melts in the range of about 144°-146° C., the sodium salt thereof is soluble in water and methanol and insoluble in acetone and chloroform; the barium salt thereof is soluble in dimethylsulfoxide and dimethylformamide and insoluble in water, methanol, acetone and chloroform.

4,205,069

DIPEPTIDE NARCOTIC ANTAGONISTS

James D. Belluzzi, King of Prussia; William H. McGregor, Malvern, and Larry Stein, Haverford, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 947,276
Int. Cl.[2] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 5 Claims

1. A process for antagonizing the effect of a narcotic analgesic agent in warm-blooded animals which comprises administering to a warm-blooded animal in need thereof a sufficient amount of a compound of the formula:

A—X—Y—B

wherein X is D-Tyr or L-Tyr; Y is D-Ala; A is hydrogen, allyl, or lower alkyl of 1 to 3 carbon atoms; B is $—NH_2$, —OMe, or $—NHNH_2$; and the pharmacologically acceptable salts thereof.

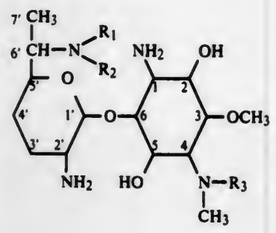
4,205,070

6'N-ALKYL- AND 6',6'-DI-N-ALKYL DERIVATIVES OF FORTIMICINS A AND B

John S. Tadanier, Waukegan; Daniel A. Dunnigan, Winthrop Harbor; Leslie A. Freiberg, and Jerry R. Martin, both of Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 21, 1977, Ser. No. 863,018
Int. Cl.[2] A61K *31/71;* C07H *15/22*
U.S. Cl. 424—180 29 Claims

1. A compound of the formula



wherein R_1 is loweralkyl, R_2 is hydrogen or loweralkyl and R_3 is selected from the group consisting of hydrogen acyl of the formula



wherein R is loweralkyl, hydroxyacyl, aminoacyl, N-monoloweralkyl-aminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, aminoacyl, an aminoacid residue, loweralkyl, hydroxyloweralkyl, aminoloweralkyl, N-monoloweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, or hydroxy-substituted aminoloweralkyl, and the pharmaceutically acceptable salts thereof.

29. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

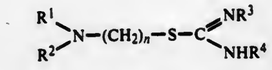
4,205,071

PHARMACEUTICAL COMPOSITIONS HAVING IMMUNOSUPPRESSANT ACTIVITY AND METHODS THEREFOR

Graham J. Durant; Charon R. Ganellin, and Margaret R. Vickers, all of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

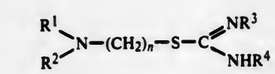
Continuation-in-part of Ser. No. 795,983, May 11, 1977, abandoned. This application Nov. 21, 1977, Ser. No. 853,773
Claims priority, application United Kingdom, May 14, 1976, 19994/76
Int. Cl.[2] A61K *31/33, 31/415, 31/505;* C07D *233/42*
U.S. Cl. 424—244 9 Claims

1. An isothiourea derivative of the Formula:



wherein n is 2, 3 or 4; R^1 and R^2, which may be the same or different, are lower alkyl; and R^3 and R^4, which may be the same or different, together form a $—(CH_2)_x—$ group wherein x is 2, 3 or 4; provided that when n is 2, R^3 and R^4 must be such that together they form a $(CH_2)_4$ group; and the pharmaceutically acceptable acid addition salts thereof.

5. A method of producing immunosuppressant activity by administering to an animal in need thereof an effective amount of an isothiourea of the formula:



wherein

n is 2, 3 or 4;

R^1 and R^2, which may be the same or different, are lower alkyl; and

R^3 and R^4, which may be the same or different, together form a $—(CH_2)_x—$ group where x is 2, 3 or 4, or a pharmaceutically acceptable acid addition salt thereof.

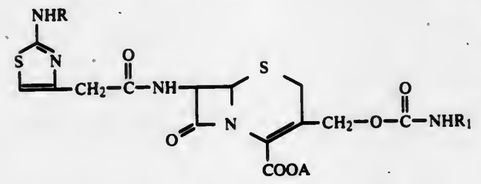
4,205,072

3-CARBAMOYLOXYMETHYL-7-(AMINO-4-THIAZOLYL-ACETAMIDO)-CEPHALOSPORANIC ACID DERIVATIVES

Michel Vignau, Neuilly-sur-Seine, and Andre Lutz, Strasbourg, both of France, assignors to Roussel Uclaf, Paris, France

Filed Feb. 4, 1977, Ser. No. 765,439
Claims priority, application France, Feb. 5, 1976, 76 03210
Int. Cl.[2] C07D *501/20*
U.S. Cl. 424—246 13 Claims

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen and a group easily removable by acid hydrolysis or hydrogenolysis selected from the group consisting of tert.-butoxycarbonyl, trityl, benzyl, dibenzyl, trichloroethyl, carbobenzyloxy, formyl, trichloroethoxycarbonyl and 2-tetrahydropyranyl, R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and A is selected from the group consisting of hydrogen, alkali metal, an equivalent of alkaline earth metal and magnesium and a non-toxic, pharmaceutically acceptable organic amine base.

7. An antibiotic composition comprising an antibiotically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

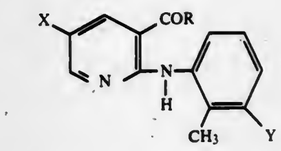
4,205,073

ANTI-DIARRHEAL ANILINO NICOTINIC ACIDS AND METHOD OF USING SAME

Margaret H. Sherlock, Bloomfield, and James F. Long, Whippany, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Apr. 30, 1975, Ser. No. 572,982
Int. Cl.[2] A61K *31/455;* A61J *3/06, 3/10*
U.S. Cl. 424—266 11 Claims

1. The method for the treatment and control of diarrhea which comprises administering to a mammal suffering from diarrhea a therapeutically effective quantity of an anilino nicotinic acid of the formula:



and the pharmaceutically acceptable salts thereof, wherein Y represents trifluoromethyl, difluoromethyl, or nitro, X represents hydrogen, halogeno, or hydroxy, and R represents OH, —O-lower alkyl, $O—CH_2CHOHCH_2OH$, O-alkyl-NR_1R_2, NHOH or NR_1NR_2, wherein R_1 and R_2 are each hydrogen or lower alkyl.

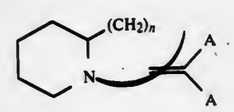
4,205,074

ANTI-SPASMODIC SUBSTITUTED QUINOLIZIDINE AND INDOLIZIDINE COMPOUNDS

Hideo Kato, and Eiichi Koshinaka, both of Katsuyamashi, Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Japan

Continuation-in-part of Ser. No. 904,498, May 10, 1978, abandoned, and a continuation-in-part of Ser. No. 904,530, May 10, 1978, abandoned, and a continuation-in-part of Ser. No. 904,533, May 10, 1978, abandoned, and a continuation-in-part of Ser. No. 904,534, May 10, 1978, abandoned, and a continuation-in-part of Ser. No. 904,535, May 10, 1978, abandoned, and a continuation-in-part of Ser. No. 969,400, Dec. 14, 1978, abandoned, and a continuation-in-part of Ser. No. 969,401, Dec. 14, 1978, abandoned. This application Mar. 1, 1979, Ser. No. 16,515
Claims priority, application Japan, May 16, 1977, 52/55266; Aug. 9, 1977, 52/107270; Nov. 9, 1977, 52/133526; Dec. 8, 1977, 52/146613; Dec. 21, 1977, 52/152841; Feb. 28, 1978, 53/21534; Mar. 22, 1978, 53/31652; Mar. 22, 1978, 53/31653; May 23, 1978, 53/60654; May 23, 1978, 53/60656
Int. Cl.[2] A61K *31/445;* C07D *455/02, 471/04*
U.S. Cl. 424—267 32 Claims

1. A compound selected from quinolizidine- and indolizidine compounds of the formula:



wherein A represents a phenyl group or a 2-thienyl group, n is an integer of 3 or 4, and a pharmaceutically acceptable acid addition salt thereof, and quaternary ammonium salt thereof.

2. A compound as claimed in claim 1 wherein n represents 4.

4. Method of treating spasm or spasm-associated ulcer in a

patient afflicted therewith, which comprises the step of administering to said patient an effective antispasmodic amount of a compound of claim 2.

4,205,075

PROCESSES AND COMPOSITION FOR COMBATING FUNGI

Brian C. Baldwin, Wargrave; Margaret C. Shephard, Maidenhead, and Anthony M. Skidmore, Wokingham, all of England, assignors to Imperial Chemical Industries Limited, London, England

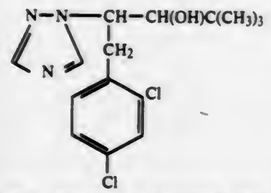
Filed Jul. 29, 1977, Ser. No. 820,630

Claims priority, application United Kingdom, Jul. 29, 1976, 31649/76

Int. Cl.[2] A01N *9/02, 9/22, 9/28*

U.S. Cl. 424—269 **2 Claims**

1. A process for combating powdery mildew in cereal seed which comprises treating said seed with an effective amount of a synergistic combination of gibberellic acid and a compound of the formula:



, the ratio of said compound of gibberellic acid being 50:1 to 5:1.

4,205,076

LIPOGENESIS INHIBITION BY CERTAIN ESTERS OF SUBSTITUTED BENZODIOXINCARBOXYLIC ACIDS

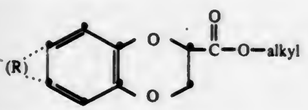
Harry G. Durham, Modesto, Calif., and John B. Carr, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 951,535, Oct. 16, 1978, abandoned. This application Apr. 26, 1979, Ser. No. 33,635

Int. Cl.[2] A61K *31/425*

U.S. Cl. 424—270 **1 Claim**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally a lipogenesis inhibiting amount of a compound of the formula



wherein "alkyl" is alkyl of from one to four carbon atoms, and R is a moiety which is one of: formyl, acetyl, benzoyl, acetamido, (hydroxyimino)methyl, 1-(hydroxyimino)ethyl, (methoxyimino)methyl, 1-(methoxyimino)ethyl, amino, benzamido, methylsulfonylamino, and 2-methyl-4-thiazolyl.

4,205,077

BENZIMIDAZOLE SULPHIDES AS ANTHELMINTIC AGENTS

Ernst Aufderhaar, Kaiseraugst; Jean J. Gallay, Magden; Manfred Kühne, Pfeffingen; Alfred Meyer, Basel; Oswald Rechsteiner, Binningen; Max Schellenbaum, Muttenz, and Jean-Paul Fumeaux, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

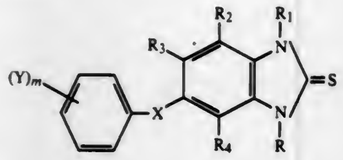
Filed Apr. 10, 1978, Ser. No. 894,974

Claims priority, application Luxembourg, Apr. 12, 1977, 77121; Apr. 12, 1977, 77122; Mar. 14, 1978, 79227

Int. Cl.[2] A61K *31/415;* **C07D** *235/20, 235/28*

U.S. Cl. 424—273 B **8 Claims**

1. A method for combating parasitic helminths in animals which comprises administering to an animal infested with said helminths an anthelmintically effective amount of a compound of the formula



in which

each of R and R_1 is hydogen, alkanoyl of from 1 to 4 carbon atoms, alkoxycarbonyl or from 1 to 4 carbon atoms, alkylsulphonyl of from 1 to 4 carbon atoms, benzoyl, phenylsulphonyl or p-methylphenylsulphonyl,

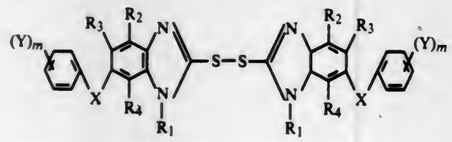
each of R_2 and R_4 is hydrogen, halogen or methyl,

R_3 is hydrogen, halogen, methyl or methoxy,

X is oxygen or sulphur,

Y is halogen, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, methylthio, methylsulphinyl, methylsulphonyl, trifluoromethyl, nitro, hydroxyl, cyano or acetyl, and

m is 0, 1, 2 or 3, including the possible tautomers of said compound and the disulphide of the formula



obtainable by oxidation of said compound in which R is hydrogen.

4,205,078

3-PYRROLIN-2-ONE DERIVATIVES

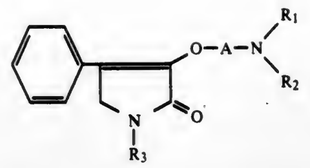
Gerhard Satzinger, Denzlingen; Manfred F. Herrmann, St. Peter, and Gustav Hechtfischer, Freiburg, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 821,259, Aug. 3, 1977, abandoned. This application Jul. 5, 1978, Ser. No. 922,018

Int. Cl.[2] C07D *207/38;* **A61K** *31/40*

U.S. Cl. 424—274 **12 Claims**

1. A compound of the formula:



wherein R_1 and R_2, which can be the same or different, are straight-chain or branched alkyl radicals containing up to 3 carbon atoms, A is a straight-chain or branched hydrocarbon chain containing 2 to 4 carbon atoms and R_3 is a saturated or unsaturated, straight-chain or branched aliphatic hydrocarbon radical containing up to 6 carbon atoms or is the radical —Alk—Ar, wherein Alk is an alkylene chain containing up to 3 carbon atoms and Ar is a phenyl radical; and the pharmacologically compatible salts thereof.

12. A pharmaceutical composition comprising an anti-hypertensive effective amount of at least one compound according to claim 1, in admixture with a solid or liquid pharmaceutical diluent or carrier.

4,205,079

BENZODIOXINCARBOXAMIDES

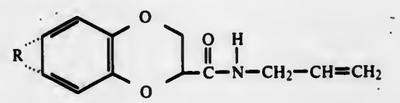
Harry G. Durham, Modesto, Calif., and John B. Carr, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 951,536, Oct. 16, 1978, abandoned. This application Apr. 26, 1979, Ser. No. 33,633

Int. Cl.[2] A61K *31/38, 31/335;* **C07D** *319/08*

U.S. Cl. 424—275 **2 Claims**

1. A compound of the formula



wherein R is a moiety which is one of (hydroxyimino)methyl, 1-(hydroxyimino)ethyl, (methoxyimino)methyl, 1-(methoxyimino)ethyl, acetamido, benzamido, and 2-methyl-4-thiazolyl.

2. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally a lipogenesis inhibiting amount of a compound of claim 1.

4,205,080

2,3-DIHYDRO BENZOFURAN CARBOXAMIDES

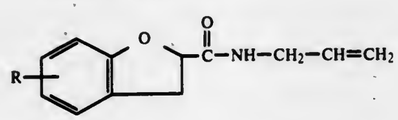
John B. Carr, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 938,610, Aug. 31, 1978, abandoned, which is a continuation-in-part of Ser. No. 817,898, Jul. 31, 1977, abandoned. This application May 16, 1979, Ser. No. 39,624

Int. Cl.[2] A61K *31/38, 31/34;* **C07D** *307/85*

U.S. Cl. 424—275 **2 Claims**

1. A compound of the formula:



wherein

(a) R is bonded to the carbon atom at the 5-position in the molecule, and is cycloalkyl of from three to six carbon atoms; alkyl of from four to eight carbon atoms; thienyl; or phenyl, phenoxy, benzyl or benzoyl or any of these substituted by one of alkyl or alkoxy of from one to six carbon atoms, acetamido, 1-hydroxyethyl, and nitro;

(b) R is bonded to the carbon atom at the 4-position in the molecule, and is phenoxy or substituted phenoxy as indicated above.

2. A method of inhibiting lipogenesis in a mammal, which comprises administering orally or parenterally an effective amount of a compound of claim 1.

4,205,081

COMPOSITION AND METHOD FOR PREVENTING OR TREATING SWINE DYSENTERY

Koji Sakamoto; Takeshi Asano, both of Takasaki; Kazuo Mizuochi, Tokyo, and Kanemichi Sasaki, Koshigaya, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha and Chugai Seiyaku Kabushiki Kaisha, both of Tokyo, Japan

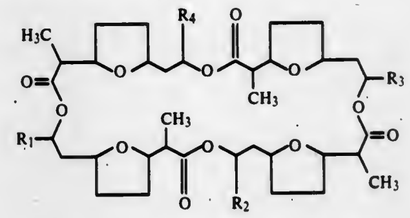
Filed Jan. 30, 1979, Ser. No. 7,794

Claims priority, application Japan, Jan. 31, 1978, 53-8827

Int. Cl.[2] A61K *31/335*

U.S. Cl. 424—279 **7 Claims**

1. A method for treating swine dysentery characterized by administering, to swine, an effective quantity of one or more kinds of macrotetrolide antibiotic substances represented by the following general formula:



wherein R_1, R_2, R_3 and R_4 are lower alkyl groups.

4,205,082

SUBSTITUTED COUMARIN COMPOUNDS

Pier G. Ferrini, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

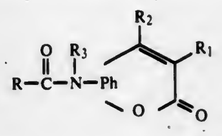
Filed Aug. 19, 1977, Ser. No. 826,224

Claims priority, application Luxembourg, Aug. 31, 1976, 75688

Int. Cl.[2] C07D *311/16;* **A61K** *31/37;* **C07D** *405/04*

U.S. Cl. 424—281 **9 Claims**

1. A benzopyrane compound of the formula:



wherein R is carboxyl, carboxyl esterified by a lower alkanol which is unsubstituted or substituted by substituted or unsubstituted phenyl or carboxyl esterified by a substituted or unsubstituted phenol, Ph denotes a 1,2-phenylene radical which contains the group R—CO—NR_3— and is otherwise unsubstituted or is substituted, R_1 and R_2 independently of one another are hydrogen, lower alkanoyl, free carboxyl or carboxyl esterified by a lower alkanol, lower alkyl which is unsubstituted or substituted by phenyl, which, in turn, can be substituted, or substituted or unsubstituted phenyl or pyridyl, or conjointly are tri-, tetra- or penta-methylene, and R_2 can also be free hydroxyl or hydroxyl etherified by a lower alkanol or esterified by a lower alkanecarboxylic acid, and R_3 is hydrogen or lower alkyl, substituents of substituted phenyl, phenol, 1,2-phenylene Ph and pyridyl radicals are lower alkyl, lower alkoxy,

halogen, hydroxyl and trifluoromethyl, or a pharmaceutically acceptable salt thereof.

9. A pharmaceutical composition comprising an anti-allergically effective amount of a compound as claimed in claim 1 together with a conventional pharmaceutical carrier.

4,205,083

CYCLOPENTAPYRANS

Peter W. Thies, Hanover, Fed. Rep. of Germany, assignor to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

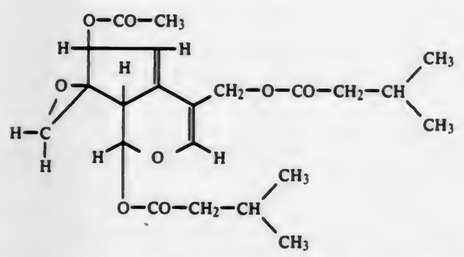
Continuation-in-part of Ser. No. 519,986, Jan. 11, 1966, abandoned, and a continuation of Ser. No. 601,548, Apr. 8, 1975, abandoned, which is a continuation of Ser. No. 401,904, Sep. 28, 1973, abandoned, and Ser. No. 764,199, Oct. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 519,986,. This application Jan. 13, 1978, Ser. No. 869,385

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1968, 1768092

Int. Cl.[2] A61K *31/33;* **C07D** *407/02*

U.S. Cl. 424—283 **7 Claims**

1. A cyclopentapyran ester $C_{22}H_{30}O_8$ of the formula



said ester, in the substantially pure state, having a refraction index $n_D^{20}=1.4923$ and an optical rotation of $[\alpha]_D^{21}=+151°$ (in methanol), said ester, on degradation by heating to 100° C. and chromatographical separation, yielding 4-isovaleroxy methyl-7-formyl cyclopenta(c)pyran as thermal degradation product.

7. In a method of treating humans or animals affected by bacterial infections and especially by infections caused by bacteria of the Mycobacterium group, the step which comprises administering to such humans or animals an effective amount of the compound of claim 1.

4,205,084

CONTROL OF INSECTS WITH 2-ETHYL-1,6-DIOXASPIRO[4.4]NONANE

Jean P. Vite, Freiburg i. Breisgau; Ernst J. W. Francke, Reinbek, both of Fed. Rep. of Germany, and Günther Ohloff, Bernex, Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

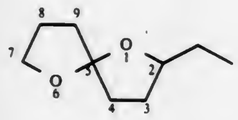
Filed Sep. 18, 1978, Ser. No. 943,488

Claims priority, application United Kingdom, Sep. 23, 1977, 39828/77

Int. Cl.[2] A01N *9/28*

U.S. Cl. 424—285 **3 Claims**

1. A method of attracting insects of the order *Pityogenes chalcographus,* which comprises permeating the atmosphere in an area infested with said insects with an effective attractant amount of a compound of formula



(I)

4,205,085

HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC 4-(POLYFLUOROALKYLAMINO)PHENYL COMPOUNDS

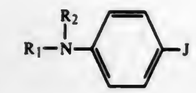
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 9, 1978, Ser. No. 884,941

Int. Cl.[2] A01N *9/20;* **C07C** *103/22, 101/58, 87/48, 143/58*

U.S. Cl. 424—309 **10 Claims**

1. A compound of the formula



wherein R_1 is a saturated or unsaturated hydrocarbon radical of 7–19 carbon atoms which may be branched or unbranched and which may contain a saturated or unsaturated cycloalkyl group, said radical containing one or more perfluorinated ($-CF_2-$ or $-CF_3$) carbon atoms excluding the carbon adjacent to the nitrogen atom; R_2 is selected from the group consisting of hydrogen, methyl, carboxymethyl, acetyl, succinyl, 1-(sodiumsulfo)loweralkyl, 1-(sodiumsulfo)polyhydroxyalkyl, and 3-aryl-1,3-bis(sodiumsulfo)alkyl; and J is carboxyloweralkyl, carboxyloweralkenyl, carboxyloweralkynyl, carboalkoxyloweralkyl, carboalkoxyloweralkenyl, carboalkoxyloweralkynyl; and the pharmaceutically acceptable non-toxic acid-addition and cationic salts thereof.

4,205,086

METHOD FOR THE TREATMENT OF GALLSTONES

Vigen K. Babayan, Indianapolis, Ind., assignor to Stokeley-Van Camp, Inc., Indianapolis, Ind.

Filed Dec. 2, 1977, Ser. No. 857,001

Int. Cl.[2] A61K *31/23, 31/20, 31/22, 31/19*

U.S. Cl. 424—312 **21 Claims**

1. A method for gradually dissolving a cholesterol-containing gallstone in a patient which comprises perfusing adjacent the gallstone an effective amount of a liquid form of a physiologically-compatible compound selected from the group consisting of fatty acids, alcohol esters of fatty acids and mixtures of fatty acids and alcohol esters of fatty acids, said perfusion being performed to solubilize at least a portion of the gallstone.

4,205,087

ACETIC ACID DERIVATIVES

Wilson S. Waring, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

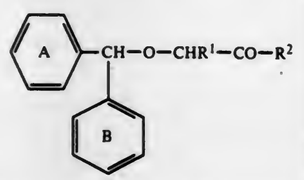
Filed Apr. 26, 1977, Ser. No. 790,873

Claims priority, application United Kingdom, May 21, 1976, 21064/76

Int. Cl.[2] A61K *31/19, 31/215*

U.S. Cl. 424—317 **4 Claims**

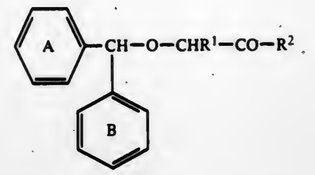
1. A sterile pharmaceutical composition in a form suitable for administration in the treatment of arthritic joint diseases and which comprises an effective amount of an acetic acid derivative of the formula



I

wherein R^1 is hydrogen, R^2 is a hydroxy or a C_{1-6}-alkoxy radical; and ring A and ring B, which may be the same or different, are monohalogenophenyl radicals; or a pharmaceutically acceptable base-addition salt of said derivatives wherein R^2 is a hydroxy radical in association with a pharmaceutically acceptable diluent or carrier.

4. A method for the treatment of arthritic joint diseases in warm-blooded animals requiring such treatment which comprises administering an effective amount of a composition which comprises an effective amount of an acetic acid derivative of the formula



I

wherein R^1 is hydrogen, R^2 is a hydroxy or a C_{1-6}-alkoxy radical; and ring A and ring B, which may be the same or different, are monohalogenophenyl radicals; or a pharmaceutically acceptable base-addition salt of said derivatives wherein R^2 is a hydroxy radical in association with a pharmaceutically acceptable diluent or carrier.

4,205,088

COMPOSITIONS OF AND NEW USES FOR N-ACYLANILINOBUTYRIC ACIDS

Wolfgang Schoetensack, Hegne, and Richard Riedel, Constance, both of Fed. Rep. of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

Division of Ser. No. 571,501, Apr. 25, 1975, Pat. No. 4,034,111. This application Apr. 8, 1977, Ser. No. 785,959

Claims priority, application Luxembourg, Apr. 30, 1974, 69970; Fed. Rep. of Germany, Oct. 25, 1974, 2450680

Int. Cl.[2] A61K *31/195*

U.S. Cl. 424—319 **19 Claims**

1. A process which comprises administering to a warm-blooded animal having a pancreas insufficiency an amount of medicament composition sufficient to alleviate such insufficiency, the medicament composition having a plurality of ingredients and comprising from one to 95 percent by weight of at least one physiologically-active and pharmacologically-acceptable N-acylanilinobutyric acid or a substantially non-toxic salt thereof.

4,205,089

SOLVENT VEHICLE FOR THE PARENTERAL ADMINISTRATION OF THERAPEUTICS

Cornelis A. Ladage, De Meern; Douwe J. van Linge, Eemnes, and Huibert A. van Riessen, Lunteren, all of Netherlands, assignors to ACF Chemiefarma N.V., Maarssen, Netherlands

Filed Jan. 16, 1979, Ser. No. 3,968

Claims priority, application Netherlands, Jan. 20, 1978, 7800762

Int. Cl.[2] A61K *47/00, 45/00, 31/055*

U.S. Cl. 424—365 **4 Claims**

1. A solvent vehicle for the parenteral administration of therapeutics, said vehicle comprising DMSO and a symmetric or unsymmetric ester of adipic acid wherein both alkyl groups together contain six to twelve carbon atoms and wherein the smaller alkyl group present if said ester is unsymmetric contains at least two carbon atoms.

4,205,090

PREPARATION OF CHEESE USING ULTRAFILTRATION

Jean-Louis J. Maubois, Rennes; Germain P. C. B. Mocquot, Versailles, and Louis J. Vassal, Jouy En Josas, all of France, assignors to Etablissement Public: Institut National de la Recherche Agronomique, Paris, France

Continuation of Ser. No. 299,837, Oct. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 53,002, Jul. 7, 1970, abandoned. This application Dec. 5, 1975, Ser. No. 637,981

Claims priority, application France, Jul. 18, 1969, 69.24555; Oct. 22, 1971, 71.38091

Int. Cl.[2] A23C *19/02*

U.S. Cl. 426—40 **16 Claims**

1. A process for making a fat containing rennet coagulated cheese from milk, the cheese containing substantially all the casein and soluble proteins of the milk, which comprises

separating the milk by ultrafiltration into a filtrate and a liquid retentate, by flowing the milk over semi-permeable membranes by introducing said milk into a series of modules, each consisting of porous plates, each of said porous plates serving as a frame for one of said semipermeable membranes and said plates being separated by a specific interval to form an interspace, whereby said milk is separated into a filtrate, which is collected in spaces separating pairs of consecutive modules, and into retentate which circulates through said modules and becomes more concentrated in proteins as it circulates, the semipermeable membranes having an average pore diameter falling in the range which will permit water, lactose and soluble mineral salts contained in the milk to pass through the membrane as a filtrate up to 30 mμ, the flow of the liquid within the interspaces being sufficient to hinder film formation on the surface of said membranes which would prevent the flow of said water, lactose and soluble mineral salts passing through said membranes, said separation occurring at a pressure of 1 to 50 kg/cm^2, and such that substantially all the casein and soluble proteins of said milk are retained in the liquid retentate;

continuing said separation until a free flowing liquid retentate, collected separately from said filtrate, is obtained which has substantially the same total protein concentration and non-protein soluble constituents concentration as is known to exist in the milk derived components of a desired natural cheese at the end of the whey draining process, and thereafter adding sufficient rennet to said retentate to cause coagulation and cheese formation.

4,205,091

EDIBLE SERVER

William J. Van Horne, P.O. Box 39113 Bolton Station, Atlanta, Ga. 30318

Filed Nov. 3, 1975, Ser. No. 627,943

Int. Cl.[2] A21D *13/00*

U.S. Cl. 426—138 **2 Claims**



1. A set of edible servers each comprising an elongated wafer formed with a series of cup-shaped receptacles sized for individual disposition within a human mouth and with bridges joining adjacent receptacles together with each bridge having a score line extending between and segmenting adjacent cup-shaped receptacles and wherein said cup-shaped receptacles have substantially flat, mutually coplanar flanges extending from their lips and merging with said bridges whereby the cup-shaped receptacles may be filled with fluid foodstuff, serially inserted into a human mouth, and individually broken

off from the remainder of the wafer along the score lines and eaten, and wherein said edible servers are stacked one upon the other with at least a portion of the cup-shaped receptacles of one server nestled within the cup-shaped receptacles of another server.

4,205,092

ACID REDUCTION IN WINE BY ION EXCHANGE

Leonard R. Mattick, Geneva, N.Y., and Edward V. Gogel, Downers Grove, Ill., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,223
Int. Cl.[2] C12H *1/04*
U.S. Cl. 426—271 **4 Claims**

1. A method of treating wines having an undesirably high total acidity contributed by a high malic acid concentration, without significantly affecting pH, which comprises:
   (a) passing the wine through a cation exchange resin in the H^+ form;
   (b) subsequently passing said wine through a weakly basic, nonporous, amine type anion exchange resin in the free base form, thereby lowering the malic acid content of said wine, while maintaining the ratio of malic acid to tartaric acid constant;
   (c) blending a volume of the ion exchanged wine with a volume of untreated wine in a manner such that the volume of ion exchanged wine is less than or equal to the volume of untreated wine.

4,205,093

FOOD PRODUCT CONTAINING ORANGE CITRUS JUICE VESSICLE SOLIDS

Jon R. Blake, Brooklyn Center, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Dec. 7, 1978, Ser. No. 967,443
Int. Cl.[2] A23B *7/10*; A23L *1/212*
U.S. Cl. 426—333 **11 Claims**

1. A shelf-stable, elastic, solid form food product exhibiting prolonged moisture retention, comprising:
   A. from about 12% to 40% by weight of a nutritive carbohydrate sweetening agent;
   B. from about 20% to 90% by weight orange citrus juice vessicle solids wherein the orange citrus juice vessicle solids comprise a mixture of:
      (1) pasteurized raw orange citrus juice vessicles having a moisture content of about 95% to about 98% by weight of said raw juice vessicles, and
      (2) highly processed orange citrus juice vessicles having a moisture content of about 3% to about 12% by weight of said highly processed juice vessicle solids,
      wherein the weight ratio of solids provided by the raw juice vessicles to the solids provided by the highly processed juice vessicle solids ranges from about 10:1 to about 20:1;
   C. sufficient amounts of edible organic acid to provide a pH of from about 2.5 to 4.5; and
   D. a moisture content of about 8% to 30% by weight; said food product having a water activity of from about 0.30 to 0.85.

4,205,094

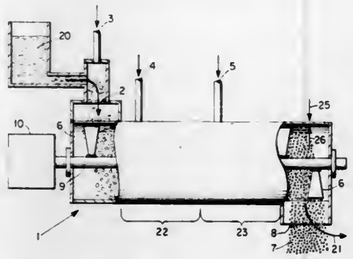
TEXTURIZING AND STEAM DEFLAVORING SOY PROTEIN WITH HIGH-SPEED TURBINE MIXING

James C. Baird, Cincinnati, and Glenn R. Warfield, Hamilton, both of Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Filed May 3, 1978, Ser. No. 902,512
Int. Cl.[2] A23J *1/14*
U.S. Cl. 426—459 **19 Claims**

1. A process for texturizing and deflavoring defatted particulate oil seed protein material comprising the steps of:
   1. uniformly wetting said material until its moisture content is raised to a value of from about 25% to about 65%, said material being maintained in a particulate form;
   2. steam cooking the moistened material with from about 0.1 to about 2 parts of direct steam per part of material on a dry weight basis;
   3. subjecting said material to high-speed centrifugal mixing while performing said steam cooking step;

said high-speed centrifugal mixing being provided by a turbine mixer having a cylindrical chamber and a number of rotating



paddle-blades which sweep said particulate material along the inner surface of said cylindrical chamber and wherein said high-speed mixing paddle-blades rotate at an angular velocity greater than a velocity sufficient to balance gravity force on said particulate material with centrifugal force, said blades sweeping said particulate material against said inner surface to provide sufficient high shear turbulence for fast and efficient deflavoring and texturization to produce a wet, texturized, deflavored particulate oil seed material.

4,205,095

GLYCERIDES

Marshall Pike, Stanhope Rd., Camberley, Surrey; Iain G. Barr, 35, Regent Rd., Liverpool L5 9TB, both of England, and Florent Tirtiaux, 601, Chaussee de Charleroi, B6220 Fleurus, Belgium

Continuation of Ser. No. 847,557, Nov. 1, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 957,686
Claims priority, application United Kingdom, Nov. 4, 1976, 45986/76
Int. Cl.[2] A23D *5/00, 5/02*
U.S. Cl. 426—607 **13 Claims**

1. A method for producing a cocoa butter substitute or extender comprising the steps of:
   1. maintaining a phospholipid-free neutralized pre-bleached palm oil having an IV of 50–55 at a temperature of 42°–52° C. for a period of at least 6 hours to initiate crystal formation.
   2. increasing the temperature of the palm oil to 70°–75° C. over a period not exceeding 2 hours to melt all the solids except seed crystals and then immediately subjecting to cooling the palm oil to a temperature of 28°–33° C. over a period of not less than 5 hours to produce a first liquid fraction of IV 55–60 and a first solid fraction of IV 38-44 and melting point 50°–55° C.
   3. separating the first liquid fraction from the first solid fraction within 5 hours of completion of formation of the first solid fraction.
   4. maintaining the first liquid fraction at a temperature of at least 65° C. for a period of time sufficient to form a fluid homogeneous crystal free oil and then subjecting the first liquid fraction to a temperature of 38°–48° C. for a period of at least 4 hours to initiate crystal formation.
   5. increasing the temperature of the first liquid fraction to 60°–65° C. over a period of 1.5–2 hours to melt all the solids except seed crystals and then immediately subjecting to cooling the first liquid fraction to a temperature of 14°–17° C. over a period of not less than 10 hours to form a second liquid fraction of IV 59-64 and a cloud point of 3°–7° C. and a palm oil mid-fraction of IV 48-53 and a slip melting point of 32°–36° C.
   6. separating the second liquid fraction from the mid-fraction at a temperature of 14°–17° C. within 3 hours of completion of formation of the mid-fraction, to give a separated mid-fraction for use as said cocoa butter substitute or extender.

4,205,096

CASE III (C) ADHERENT CONTROLLED RELEASE PESTICIDE

Robert W. Young, New York, N.Y.; Samuel Prussin, Carmel, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Filed Jun. 15, 1976, Ser. No. 696,269
Int. Cl.[2] A61K *31/695*; A01N *17/08*
U.S. Cl. 427—4 **19 Claims**

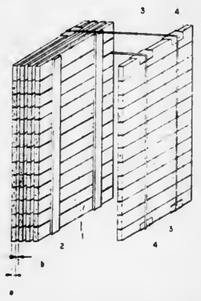
1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of an insecticide consisting essentially of (a) a hydrolyzable silane selected from the group consisting of (1) a hydrocarbon substituted hydrolyzable silane, and (2) an organopolysiloxane containing hydrolyzable silane groups, or a partial hydrolyzate thereof, and (b) an insecticide.

4,205,097

PROCESS FOR THE THERMAL POLYMERIZATION, POLYCONDENSATION OR CONDENSATION OF MONOMERIC SYNTHETIC-RESIN MATERIALS IN POROUS WORKPIECES

Hanns F. Arledter, Andritzer Reichsstrasse 122, Graz, Austria (A-8010), and Werner Mehl, Badgasse 4, Mödling, Austria (A-2340)

Filed Mar. 14, 1978, Ser. No. 886,612
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711478
Int. Cl.[2] B05D *3/06, 3/02*
U.S. Cl. 427—44 **22 Claims**



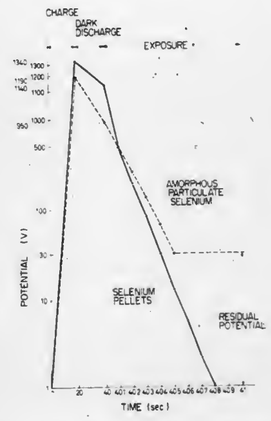
1. A process for producing an impregnated article, comprising the steps of:
   impregnating a porous workpiece consisting predominantly of wood with a thermally activatable substantially hot-water-insoluble polymerizable solution capable of gelling and hardening within the pores of the workpiece; and
   thermally polymerizing said solution within the pores of said workpiece by immersing said workpiece after impregnation directly in a liquid heat carrier consisting predominantly of water and having a viscosity of at most 3 cps so that the heat carrier contacts surfaces of the workpiece impregnated with said solution and penetrates limitedly into said pores without significant removal of said solution from said pores, said heat carrier being at a temperature sufficient to effect chemical reaction of the solution within the pores of the workpiece.

4,205,098

SELENIUM PELLETS FOR USE IN VACUUM-DEPOSITION AND METHOD OF PRODUCING SUCH PELLETS

Shuji Kobayashi, Inagi; Mitsuo Aoyagi, Hadano; Tominori Kanno, Hadano; Kazuei Ueno, Hadano, and Shin-ichi Nomura, Hadano, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,217
Claims priority, application Japan, Oct. 18, 1977, 52-124020
Int. Cl.[2] C23C *13/00*; G03G *5/082*
U.S. Cl. 427—76 **6 Claims**



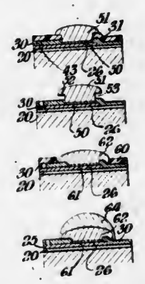
1. A method for vacuum-depositing a material selected from a group consisting of selenium alone and selenium containing at least one additive by depositing said material through evaporation thereof in vacuum onto a substrate to produce a deposited selenium film thereon, the improvement wherein a powdery material selected from a group consisting of powdery metallic selenium alone and a mixture of powdery metallic selenium and at least one additive is compacted under pressure to produce tablets, and the tablets are degased by heating the tablets at an elevated temperature below the melting point of metallic selenium, and thereafter the tablets are used as a source material for the vacuum deposition.

4,205,099

METHOD FOR MAKING TERMINAL BUMPS ON SEMICONDUCTOR WAFERS

Leith Jones, Wakefield, Mass., and N. Christian McGrath, Strafford, N.H., assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 14, 1978, Ser. No. 896,256
Int. Cl.[2] C23C *3/00*; C25D *5/02*
U.S. Cl. 427—90 **20 Claims**



1. A method for making solderable bump terminals on each

of a plurality of semiconductor devices, a group of said plurality of devices being formed in each of a plurality of wafers, each of said semiconductor devices having at least one PN junction formed at a front surface of one of said wafers, comprising

(a) forming a first insulative layer over said front surface of each of said wafers;

(b) forming over said first layer two spaced aluminum film strips that contact the P-type and the N-type regions, respectively, of said PN junction through vias provided in said first insulative layer;

(c) forming a second insulative layer over said first insulative layer and over said aluminum strips;

(d) applying a masking layer over said second insulative layer;

(e) opening holes, through both said masking layer and said second layer, in a region over a terminal pad portion of each of said two aluminum strips, respectively;

(f) immersing said wafers in a nickel plating solution to form through said holes a nickel bump over each of said pads; and

(g) providing a dark environment at said PN junction during said immersing; whereby said darkness prevents the generation by said PN junction of photo electric currents and whereby said masking layer prevents the formation of spurious metal bumps through microcracks in said second layer during said immersing steps.

4,205,100

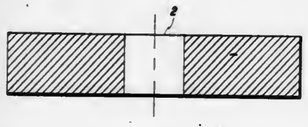
SYSTEM FOR PROVIDING ELECTROLESSLY NICKEL COATED POLISHED HIGH SPEED MULTI-FACETED POLYGONAL SCANNERS

Tibor Fisli, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 19, 1976, Ser. No. 687,961

Int. Cl.² G02B *1/10, 5/08*

U.S. Cl. 427—162 **5 Claims**



1. A process for providing high speed multi-faceted polygonal scanners comprising providing a precisely machined aluminum polygon having a multiplicity of smoothly machined facet faces, electrolessly plating said aluminum polygon with nickel and polishing the nickel coated faces to a mirrorlike finish.

4,205,101

PRETREATMENT PROCESS

Norman M. Ness, Taplow, England, assignor to Imperial Chemical Industries Limited, London, England

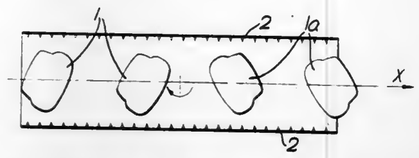
Continuation-in-part of Ser. No. 605,174, Aug. 15, 1975, abandoned. This application Feb. 8, 1977, Ser. No. 766,785

Claims priority, application United Kingdom, Aug. 19, 1974, 36359/74

Int. Cl.² B05D *7/22*

U.S. Cl. 427—233 **12 Claims**

1. A method of treating a metal automotive hollow body which contains apertures to receive windows or doors with a pretreatment liquid which is capable of rendering the metal of said body resistant to corrosion wherein the body is traversed with respect to a multiplicity of orifices through which the pretreatment liquid is projected at the body and wherein the longitudinal axis of the body is at right angles to its direction of traverse and the body is placed in such relation to the orifices that the major part of the liquid with which the body is treated is projected at an angle to the longitudinal plane of symmetry



of the body within the range 30°–60° and coats the interior and exterior of the body which is rendered resistant to corrosion.

4,205,102

METHOD FOR COATING A CURED POLYALKYLENE RUBBER SUBSTRATE

Pieter H. J. Schuurink, Noordwijk-Binnen, and Arie W. Levering, Haarlem, both of Netherlands, assignors to Akzo N.V., Netherlands

Continuation of Ser. No. 692,862, Jun. 4, 1976, abandoned. This application Nov. 30, 1977, Ser. No. 855,988

Claims priority, application Netherlands, Jun. 9, 1975, 7506793

Int. Cl.² B05D *3/00, 5/00, 1/32*

U.S. Cl. 427—393.5 **10 Claims**

1. In a method of coating a pre-treated, cured object of saturated or unsaturated polyalkylene rubber with a liquid coating composition formed from a hydroxyl groups-containing resin and an organic polyisocyanate, the improvement wherein the coating composition comprises a binder which is made up of a polyol component containing at least 60% by weight of polycaprolactone polyol free from ester groups which have the unsaturated residue of acrylic acid having a molecular weight between 250 and 3500 and an organic polyisocyanate, the ratio between the number of hydroxyl groups of the polyol component and the number of isocyanate groups of the polyisocyanate being between 0.8:1 and 1.35:1.

4,205,103

PROCESS USING SAME STABLE FOAM LATEX WITH BUILT-IN SELF GEL MECHANISM AND COATING

Joseph P. Davis, Akron, Ohio, and Julius S. Nagy, Calhoun, Ga., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 14, 1975, Ser. No. 577,491

Int. Cl.² B01J *13/00*; B05D *3/02*

U.S. Cl. 427—373 **5 Claims**

1. A heat sensitive stable gellant system comprising (A) an amphoteric surfactant acid, (B) an ionizable acid, and (C) a water soluble volatile base having a boiling point range of −33° C. to 180° C. at 760 millimeters wherein the amount of the base is sufficient to result in a total gellant system pH of from 8 to 12 wherein the weight ratio of amphoteric surfactant to acid to base is 0.25–5.0/0.25–5.0/0.5–7.5.

3. A process for producing a porous cellular solid foam from a rubber latex comprising adding the gellant system of claim 1 to a rubber latex prior to the addition of the vulcanization agents, foaming the latex, spreading the froth on a suitable textile substrate, drying the froth to form a foam and vulcanizing the foam wherein the amount of amphoteric surfactant acid is 0.25 to 5.0 parts and the amount of ionizable acid is 0.25 to 5.0 parts, all parts being parts by weight per 100 parts by weight of latex solids.

4,205,104

MULTIPLE PANE WINDOW HAVING A THICK SEAL AND A PROCESS AND APPARATUS FOR APPLYING THE SEAL

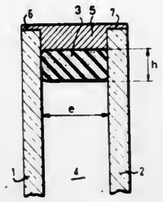
Pierre Chenel, Enghien les Bains, France, assignor to Saint Gobain Industries, Neuilly-sur-Seine, France

Division of Ser. No. 852,810, Nov. 18, 1977, which is a continuation of Ser. No. 639,787, Dec. 11, 1975, abandoned. This application Jan. 16, 1978, Ser. No. 869,948

Claims priority, application France, Dec. 11, 1974, 74 40824

Int. Cl.² E06B *3/24, 3/26*; C03B *23/24*

U.S. Cl. 428—34 **7 Claims**



1. A multiple pane window comprising a pair of transparent or translucent sheets with a filamentary seal between the sheets around the periphery of the window, said filamentary seal being formed of a plastic material having a viscosity greater than 115° Mooney at the end of an 8 minute test at 40° C. as measured by a Mooney consistometer, said plastic material consisting essentially of:

Polyisobutylene: 40–70 wt. %

Butyl Rubber: 5–17.5 wt. %

Carbon Black: 10–40 wt. %

Levilite: 0–20 wt. %

Molecular Sieve: 0–5 wt. %.

and in which the ratio by weight of the polyisobutylene to the butyl rubber is between 4 and 8 to 1.

4,205,105

PIPE INSULATION

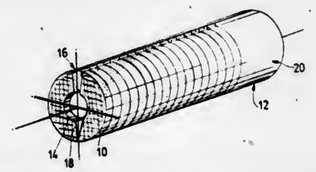
Kenneth Blundell, Shipley, England, assignor to P. H. Thermal Products Limited, Eldwick, England

Filed Dec. 19, 1977, Ser. No. 862,094

Claims priority, application United Kingdom, Jan. 21, 1977, 2628/77

Int. Cl.² F16L *9/22*; B32B *3/02*

U.S. Cl. 428—36 **5 Claims**



1. Insulation for lagging pipes which comprises a plurality of right cylindrical elements in the form of washers of fibres, said fibres lying substantially in planes perpendicular to the cylindrical axis of said elements, said elements having a bore therein in which said pipe is to be located, and a tubular surface coating of flexible material adhered to said elements holding said elements, said fibres, and said coating together in a predetermined length.

4,205,106

DOORS

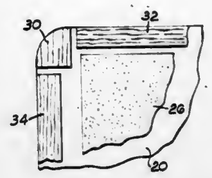
Donald J. Perry, Solihull, England, assignor to Perry Bros. (Hall Green) Limited, Birmingham, England

Filed May 3, 1978, Ser. No. 902,337

Claims priority, application United Kingdom, Mar. 3, 1978, 8649/78

Int. Cl.² B60J *5/04*

U.S. Cl. 428—45 **2 Claims**



1. A method of making a light weight door comprising locating on a first planar panel a plurality of separate wooden edge parts to form an unconnected and unjointed frame, locating separate blocks of expanded plastics material between selected areas of said frame, said blocks having a thickness greater than that of the wooden edge parts, and locating a second planar panel on the assembly so formed, the frame and the panels being generally rectangular but with at least two adjacent corners of the rectangle radiussed, and bonding the whole assembly together so that the panels become bonded to opposite faces of both blocks and edge parts and so that the blocks are compressed in the direction of their thickness, the bonding being effected between matched dies to impart curvature to each door so that the door is planar at a hinge edge and concave/convex at the opposite longitudinal edge.

4,205,107

ENDLESS COMPOSITE SHEET MATERIAL

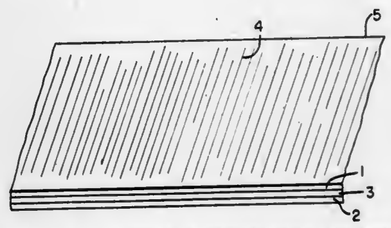
Hans Jaschke, Agustin; Rudolf Kautz, Hennef; Hermann Plate, Neunkirchen, and Horst Ulb, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 24, 1978, Ser. No. 954,077

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747978

Int. Cl.² B32B *3/00*; B27M *1/08*; B32B *21/14*

U.S. Cl. 428—58 **3 Claims**



1. A continuous composite sheet material which comprises a plurality of individual cut-to-size sections bonded together, each of said sections comprising a carrier sheet of a thermally weldable thermoplastic synthetic resin and a decorative genuine wood sheet having a thickenss of about 0.1–0.3 mm, the decorative genuine wood sheet being joined to the carrier sheet by a layer of an adhesive which can be activated in a high-frequency field, said plurality of individual, cut-to-size sections being bonded together at junction zones formed therebetween to provide a continuous decorative wood sheet extending in the longitudinal direction of the composite sheet material, said junction zones being formed along interlocking

edges provided between each adjacent section and each of the genuine wood sheets having a grain direction that extends in the longitudinal direction of the composite sheet material; each genuine wood sheet being microwood; the thermoplastic synthetic resin sheet being an ABS resin, polystyrene, polyethylene terephthalate, polycarbonate, polyamide, styrene-acrylonitrile copolymer or polyvinyl chloride and having a thickness of 0.1–0.5 mm; and the adhesive layer being formed of polyurethane, nitrile rubber, polyvinyl acetate, or a polyester and having a thickness of 0.01–0.1 mm.

4,205,108

SURFACE FINISHED FABRIC

Klaus Schmidt, Hirschberg, and Harald Hoffmann, Mannheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed May 12, 1977, Ser. No. 796,504

Claims priority, application Fed. Rep. of Germany, May 13, 1976, 2621141

Int. Cl.[2] D06N *7/04*; B32B *3/00*

U.S. Cl. 428—147 **3 Claims**

1. A process for the production of a sheet material finished on at least one side with a coherent surface layer, comprising said process consisting essentially of electrostatically spraying onto at least one surface of a rubber bonded support material fibrous substrate a liquid medium containing thermoplastic resinous fiber-forming material which medium upon spraying forms a very fine mat of fibers having a diameter of about 0.1 to 30 microns, and then applying to the mat sufficient heat and pressure to consolidate the fibers to one another and to the substrate while smoothing the surface to form a permeable microporous finished sheet material of high surface luster.

4,205,109

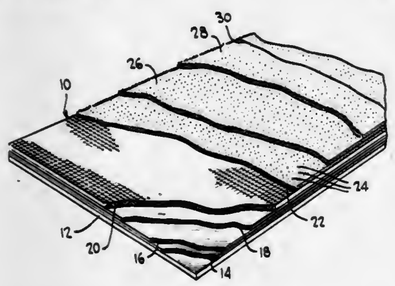
FLEXIBLE ANTI-SKID MATERIAL AND METHOD OF MAKING SAME

Jerry France, Rte. 2, Box 283, Roswell, N. Mex. 88201, and James P. Morgan, Rte. 1, Box 50, Lake Arthur, N. Mex. 88253

Filed Nov. 14, 1978, Ser. No. 960,627

Int. Cl.[2] B32B *9/04*

U.S. Cl. 428—150 **15 Claims**



1. A method of making a flexible anti-skid material comprising the steps of:
(a) coating a hard, smooth substrate with paint;
(b) placing a flexible carrier material on the coating of paint while the paint is still wet;
(c) coating the flexible carrier material with paint;
(d) distributing sand on the coating of paint formed in step (c);
(e) allowing the anti-skid material to dry; and
(f) removing the substrate.

4,205,110

SURFACE COVERINGS FOR WALLS, CEILINGS AND THE LIKE

Raymond W. Jean, 90 LaSalle St., New York, N.Y. 10017

Filed Mar. 14, 1978, Ser. No. 886,512

Int. Cl.[2] B32B *7/02, 15/00, 3/26*

U.S. Cl. 428—213 **3 Claims**



2. A flexible, unitary, multi-layer surface covering material for walls and ceilings comprising;
(a) an outer layer of opaque vinyl 3 to 5 mils thick;
(b) a second layer of material next ot said outer layer, said second layer of material selected from the group consisting of paper and fabric;
(c) a third layer of material next to said second layer, said third layer of material selected from the group consisting of polymeric foam, fiberglass, and mineral wool, said third layer being from 1/16 to ¾ inches thick;
(d) a fourth layer next to said third layer, said fourth layer being aluminum foil with a thickness of 0.00025 to 0.005 inches; and
(e) a backing layer of material next to said fourth layer, said backing layer of material selected from the group consisting of paper and fabric; said layers being laminated together.

4,205,111

LAMINATES COMPRISING A FOAMED POLYIMIDE LAYER

Wolfgang Pip, Darmstadt, and Klaus Winter, Seeheim, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,129

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822884; May 26, 1978, 2822885

Int. Cl.[2] B32B *5/28, 15/08, 27/08, 27/12*

U.S. Cl. 428—215 **14 Claims**

1. A laminate comprising at least one polyimide foam layer and at least one reinforcing layer bonded thereto, said polyimide foam layer being prepared by foaming an unfoamed polymer containing a blowing agent compatible with said polymer and present therein in an amount sufficient to foam the polymer on heating the polymer at a temperature from 170° C. to 250° C., said unfoamed polymer being obtained by free-radically polymerizing a member selected from the group consisting of
(I) a mixture of
(a) 20–99.99 percent by weight of acrylic acid or methacrylic acid,
(b) 0.01–5 percent by weight of a metal salt of acrylic acid or methacrylic acid,
(c) 0–79.99 percent by weight of a further ethylenically unsaturated comonomer copolymerizable with (a) and (b), and
(d) a blowing agent comprising a compound having an amide structure which cleaves ammonia on heating, and
(II) a mixture of
(a) acrylonitrile or methacrylonitrile with acrylic acid or methacrylic acid in a mole ratio from 2:3 to 3:2,
(b) 0–20 percent by weight of (a) of a further ethylenically unsaturated comonomer copolymerizable therewith, and
(c) 1–15 percent by weight of the sum of (a) and (b) of a monovalent aliphatic alcohol having 3–8 carbon atoms as said blowing agent.

9. The method of making a laminate which comprises pressure bonding at least one reinforcing layer to at least one polyimide foam layer with a heat-hardenable duroplast resin at a temperature of at least 100° C. and under such limitation on

temperature, pressure, and time that at least two of the following three conditions are met:
(i) the hardening temperature is at least 140° C.,
(ii) the compressive pressure is at least 1.0 N/mm^2,
(iii) the hardening time is at least 30 minutes,
said polyimide foam layer being prepared by foaming an unfoamed polymer containing a blowing agent compatible with said polymer and present therein in an amount sufficient to foam the polymer on heating the polymer at a temperature from 170° C. to 250° C., said unfoamed polymer being obtained by free-radically polymerizing a member selected from the group consisting of
(I) a mixture of
(a) 20–99.99 percent by weight of acrylic acid or methacrylic acid,
(b) 0.01–5 percent by weight of a metal salt of acrylic acid or methacrylic acid,
(c) 0–79.99 percent by weight of a further ethylenically unsaturated comonomer copolymerizable with (a) and (b), and
(d) a blowing agent comprising a compound having an amide structure which cleaves ammonia on heating, and
(II) a mixture of
(a) acrylonitrile or methacrylonitrile with acrylic acid or methacrylic acid in a mole ratio from 2:3 to 3:2,
(b) 0–20 percent by weight of (a) of a further ethylenically unsaturated comonomer copolymerizable therewith, and
(c) 1–15 percent by weight of the sum of (a) and (b) of a monovalent aliphatic alcohol having 3–8 carbon atoms as said blowing agent.

4,205,112

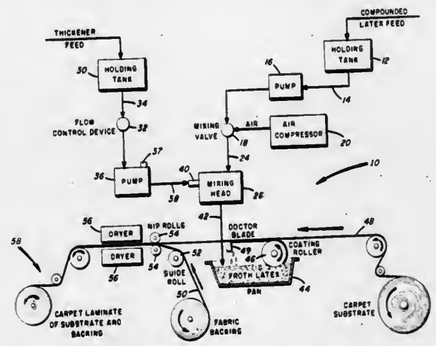
PROCESS FOR FORMING HIGH VISCOSITY COATING COMPOSITIONS FOR FABRIC SUBSTRATES

Gaillard A. Mervin, Concord, N.C., assignor to Reichhold Chemicals, Incorporated, White Plains, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,440

Int. Cl.[2] B05D *3/02*; B32B *27/00*; C08F *37/08*

U.S. Cl. 428—245 **8 Claims**



1. A process for continuously producing variable high viscosity butadiene-styrene frothed coating compositions from a prepared low viscosity butadiene-styrene coating composition consisting of:
(a) preparing a low viscosity butadiene-styrene polymeric coating composition having a viscosity ranging from about 1000 cps to about 12,000 cps from a low viscosity butadiene-styrene emulsion polymer resin having an alkaline pH range from about 7.5 to 10.5;
(b) flowing the thus formed low viscosity alkaline polymeric coating composition into a high speed froth producing mixing zone;
(c) mixing said low viscosity butadiene-styrene polymeric coating composition as it passes through said mixing zone and during mixing injecting at a selected rate of flow an acid-type polymeric thickener emulsion into the flow of said low viscosity alkaline polymeric coating composition to produce the desired high viscosity frothed coating composition exiting from said mixing zone and having a pH in the alkaline range, said frothed coating composition having an increased viscosity of from about 12,000 cps to about 25,000 cps;
(d) changing when desired the selected rate of flow of the acid-type polymeric thickener emulsion injected into said low viscosity alkaline butadiene-styrene polymeric coating composition being mixed to produce a different high viscosity coating composition in said mixing zone from the same low viscosity alkaline butadiene-styrene polymeric coating composition;
(e) flowing said frothed thickened polymeric composition having said desired high viscosity from said mixing zone to a fabric coating applicator means; and
(f) applying continuously to the surface of a carpet backing substrate the high viscosity frothed coating composition produced.

8. A fabric substrate coated by the process of claim 1 in which said fabric substrate is a carpet including a fabric backing adhesively secured to said carpet by said high viscosity butadiene-styrene coating composition.

4,205,113

FASHION FELT

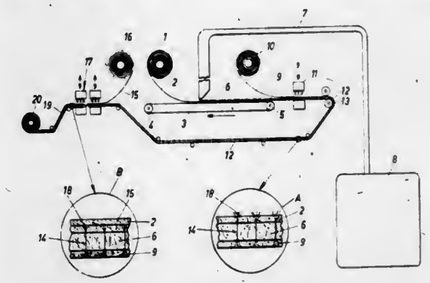
Hans O. Hermansson, Halmstad, and Bror E. Jönsson, Simlangsdalen, both of Sweden, assignors to Nordifa Industritextiler AB, Halmstad, Sweden

Filed Mar. 30, 1978, Ser. No. 891,499

Claims priority, application Sweden, Apr. 7, 1977, 7704121

Int. Cl.[2] B32B *5/02*

U.S. Cl. 428—286 **5 Claims**



1. An improved fashion felt comprising a first outer layer and a second outer layer, at least one of said outer layers consisting essentially of melt fibres, a third layer of synthetic fibres, preferably synthetic fibre waste, positioned intermediate said first and second layers thus separating said layers, said first and second layers interconnected to said third intermediate layer by needling, and a layer of surface batt secured to said first outer layer by means of needling, said felt having been given the desired shape in heat and compression treatments and the desired outlines through cutting, preferably stamping.

4,205,114

HEAT AND GREASE RESISTANT CONTAINERS COMPRISING POLY (P-METHYLSTYRENE)

Peter J. Canterino, Towaco, and Harold A. Arbit, Highland Park, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 943,416, Sep. 18, 1978, abandoned. This application Nov. 16, 1978, Ser. No. 961,353

Int. Cl.[2] C08J *9/00*

U.S. Cl. 428—315 **8 Claims**

1. Thermoformed and irradiated with ionizing radiation at a dose between about 30 megarads and about 70 megarads

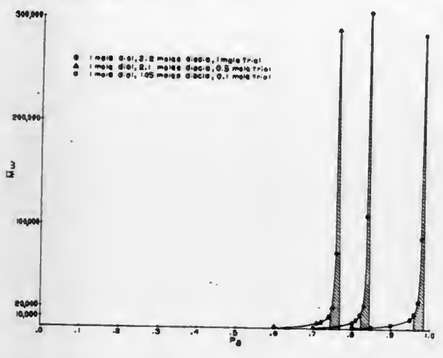
shaped articles of poly (p-methylstyrene) for use as food containers which are resistant to fats.

4,205,115

POLYESTER COATING COMPOSITION

Robert M. Piccirilli, Pittsburgh; Wen-Hsuan Chang; David T. McKeough, both of Gibsonia, and Samuel Porter, Jr., Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 19, 1978, Ser. No. 897,963
Int. Cl.[2] B32B *27/40, 27/06, 27/36*
U.S. Cl. 428—334 **25 Claims**



1. In a coating composition comprising a resinous binder and optionally pigment and diluent in an amount sufficient to provide the coating composition with a sufficient viscosity for coating, the improvement comprising:

using as the resinous binder an ungelled polyester having a hydroxyl value of 10–160 and a weight average molecular weight of about 50,000 to 300,000 as determined by gel permeation chromatography using a polystyrene standard, formed from reacting:

(A) 10 to 70 percent by weight of a difunctional active hydrogen component having two active hydrogens per molecule selected from the class consisting of hydroxyl, primary amine and secondary amine, said active hydrogen component comprising:

(1) 10 to 60 percent by weight of an acrylic diol having a carbon to oxygen ratio of at least 2,

(2) up to 60 percent by weight of a cyclic diol,

(3) up to 20 percent by weight of a compound selected from the class consisting of diamines and hydroxyl-containing amines;

(B) 25 to 85 percent by weight of a dicarboxylic acid component comprising:

(1) 5 to 85 percent by weight of an acyclic dicarboxylic acid containing from 2 to 36 carbon atoms,

(2) up to 80 percent by weight of a cyclic dicarboxylic acid;

(C) up to 30 percent by weight of an active hydrogen component having at least three active hydrogens per molecule, the active hydrogens being selected from the class consisting of hydroxyl, primary amine, secondary amine and carboxylic acid;

(D) up to 20 percent by weight of a monoamino monocarboxylic acid;

the percentages by weight being based on total weight of (A), (B), (C) and (D), the percentages of the reactants being adjusted such that the weight percentages of cyclic moieties in said polyester plus the weight percentages of amide moieties formed in said polyester multiplied by 4 is up to 35 and the weight percentages of the reactants being further adjusted such that these reactants contain about 0.01 to 1.0 gram-mole of reactants having a functionality of 3 or more per 500 grams of reactants.

9. The composition of claim 1 in combination with a curing agent.

10. The composition of claim 9 in which the curing agent is selected from the class consisting of aminoplast and polyisocyanates.

12. A coated article comprising:

(A) a substrate and as a coating thereon

(B) the cured resinous composition of claim 10.

13. The coated article of claim 12 in which the coating has a thickness of 0.1 to 5 mils.

4,205,116

FLUORESCENT X-RAY IMAGE INTENSIFYING SCREEN

Willy K. Van Landeghem, Sint-Gillis-Waas, and André R. Suys, Hove, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Apr. 18, 1978, Ser. No. 897,438
Claims priority, application United Kingdom, May 6, 1977, 19118/77
Int. Cl.[2] G03B *11/00*; G21K *3/00*; H05G *1/00*; G01D *15/14*
U.S. Cl. 428—409 **13 Claims**

1. X-ray image intensifying screen including at least one fluorescent layer comprising phosphor particles dispersed in a binder and on top of such layer a protective layer containing a crosslinked polymer mass obtained by an acid-catalyzed reaction of a polymer or mixture of polymers containing reactive hydrogen atoms and a crosslinking agent, the crosslinking agent being an organic compound containing a plurality of etherified N-methylol groups.

4,205,117

PIEZOELECTRIC CRYSTALLINE FILM OF ZINC OXIDE AND METHOD FOR MAKING SAME

Hiroshi Nishiyama, Mukou; Toshio Ogawa, and Tasuku Mashio, both of Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Sep. 7, 1978, Ser. No. 940,335
Claims priority, application Japan, Sep. 13, 1977, 52-110892
The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.
Int. Cl.[2] C23C *13/00*; C04B *35/00*
U.S. Cl. 428—411 **4 Claims**

1. A piezoelectric crystalline film disposed on a substrate, said film consisting essentially of a crystalline zinc oxide film with a hexagonal crystal structure and a c-axis substantially perpendicular to the substrate surface, said crystalline zinc oxide film containing 0.01 to 20.0 atomic percent of phosphorus.

4,205,118

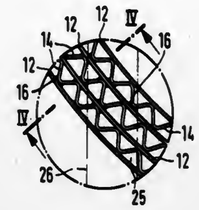
HONEYCOMB-LIKE PANEL STRUCTURE AND A METHOD FOR MANUFACTURING SAME

Gernot Schubert, Munich, Fed. Rep. of Germany, assignor to Steigerwald Strahltechnik GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,896
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754776
Int. Cl.[2] B23P *3/22*; B32B *3/12*
U.S. Cl. 428—594 **9 Claims**

1. A honeycomb-like structure comprising a plurality of layers each including two sheet metal panels, at least one of the panels in each layer being of undulating configuration and the panels engaging each other along multiple line contacts at the apexes of the undulations, affording a multiplicity of small channels extending through the structure parallel to the undulations of the one panel, characterized by the fact that the panels are joined together at a frontal surface, transverse to the channels, by a multiplicity of localized beam-welded joints limited to the contact portions of the panels immediately adjacent the frontal surface.

3. The method for the fabrication of a honeycomb-like structure from a plurality of sheet metal panels having large lateral surfaces which contact each other at a multiplicity of points and form a multiplicity of channels extending in a predetermined direction, characterized by the fact that the panels are



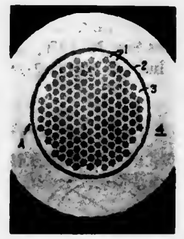
bonded at limited contact point areas which abut a frontal surface extending transversely to the holes, by a focused corpuscular beam which is directed with such orientation toward the frontal surface that it substantially extends essentially longitudinally of the channels.

4,205,119

WRAPPED TANTALUM DIFFUSION BARRIER

Morris S. Young, Murray Hill, N.J., and David C. Larbalestier, Madison, Wis., assignors to Airco, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 920,616, Jun. 29, 1978, abandoned. This application Aug. 14, 1978, Ser. No. 933,302
Int. Cl.[2] B21C *37/12*; H01L *39/06*
U.S. Cl. 428—614 **3 Claims**



1. A stabilized multifilamentary superconductor wherein the superconductive material is of the type A_3B, is selected from the group consisting of Nb_3Sn and V_3Ga, and is formed by diffusion of the B mateial from a matrix of an alloy of Cu and the B material onto the surfaces of wires or filaments of the A material embedded therein, and wherein the improvement comprises providing a quantity of a stabilizing metal on the external surface of the conductor selected from the group consisting of Ag, Au, Al and Cu and isolating this stabilizing metal from diffusion of the B material by providing a wrapped diffusion barrier consisting of at least one essentially complete layer, having substantial layer overflap, of a refractory metal foil impermeable to tin between the central matrix and the stabilizing metal, the overlapping portions of said layer being separated from one another by an interleaved foil of a metal softer than the refractory metal.

2. A stabilized multifilamentary superconductor, comprising: a central matrix consisting essentially of a plurality of Nb rods in a Cu/Sn matrix, Nb_3Sn having been formed at the interface of the matrix and the Nb rods;

a quantity of stabilizing Cu on the external surface of the conductor; and

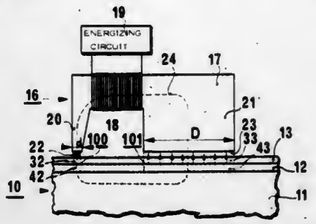
a barrier interposed between the matrix and the stabilizing Cu, the barrier comprising at least two nominally complete layers of a refractory metal foil, said layers having been formed by wrapping a continuous length of said foil around the matrix, and said layers being separated from one another by interleaved Cu foil.

4,205,120

MAGNETIC RECORDING ELEMENT

Henri Morizot, and Andre Lucan, both of Belfort, France, assignors to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

Filed Aug. 18, 1978, Ser. No. 934,849
Claims priority, application France, Sep. 7, 1977, 77 27073
Int. Cl.[2] B32B *15/00*; G11B *5/00*
U.S. Cl. 428—676 **14 Claims**



1. A magnetic recording element for use in a data storage unit provided with at least a magnetic recording head for recording information signals on said element, said recording element comprising:

a metal carrier of high magnetic permeability having a first and a second layer of material thereon, said first layer being disposed on said carrier intermediate the carrier and the second layer and being a non-ferrous non-magnetic conductive metal having a thickness between 20 and 40 microns, and said second layer being of magnetic material disposed on said intermediate layer.

6. A magnetic recording element according to claim 4 wherein the metal of the first intermediate layer is copper, aluminum, silver, gold or zinc.

8. In a data storage unit the combination comprising a magnetic recording element and a row of magnetic recording heads associated therewith for recording information signals on said element, each said head including an electromagnet having a core and a winding wound on said core and connected to an energizing circuit to receive information signals sent by the circuit, each said core having a recording pole and a flux-closing pole the recording pole and flux-closing pole each having a pole face, the cross section of the pole face of the recording pole being smaller than that of the pole face of the flux-closing pole, said magnetic recording element comprising:

a metal carrier of high magnetic permeability having a first and a second layer of material thereon, said first layer being disposed on said carrier intermediate the carrier and the second layer and being a non-ferrous non-magnetic conductive metal having a thickness between 20 and 40 microns, and said second layer being of magnetic material disposed on said intermediate layer.

11. In a data storage unit, the combination comprising a magnetic recording element and a row of magnetic recording heads for recording information signals on said element, each said head including an electromagnet having a core and a winding wound on said core and connected to an energizing circuit to receive information signals sent by said circuit, each said core having a recording pole and a flux-closing pole, the cross-section of the pole face of the recording pole being smaller than that of the pole face of the flux-closing pole, said magnetic element comprising:

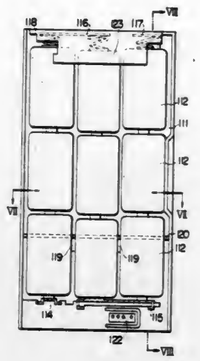
a rotatable metal cylinder of high magnetic permeability having a first and a second layer thereon, said first layer being disposed on said cylinder intermediate the cylinder and the second layer and being a non-ferrous non-magnetic conductive metal, said first layer having a thickness between 20 and 40 microns, and said second layer being a magnetic material deposited on said intermediate layer.

4,205,121

STORAGE COMPARTMENT

Yasuo Naitoh, Kamakura, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 20, 1978, Ser. No. 962,189
Claims priority, application Japan, Nov. 25, 1977, 52-158790[U]
Int. Cl.² H01M 2/10
U.S. Cl. 429—99 10 Claims



1. A battery storage compartment for selectively storing cylindrical batteries or another battery of the type having a non-cylindrical end and a length different from that of said cylindrical batteries, said battery storage compartment comprising:

a compartment member having first and second opposite end walls and a bottom portion interposed therebetween;

electrically conductive spring means secured to said first end wall and extending toward said second end wall;

electrically conductive means located at said second end wall; and

an abutment member attached to said compartment member projecting from said bottom portion at a location intermediate said first and second end walls and extending in a direction parallel thereto, said abutment member having a cutout portion therein and spaced rib members extending toward said second end wall;

said cylindrical batteries, when stored, fitting within the cutout portions of said abutment member and between said spaced rib members in electrical contact with said spring means, said cylindrical batteries being urged by said spring means toward said electrically conductive means; said another battery, when stored, having its non-cylindrical end supported by said abutment means and its other end electrically connected to said spring means, said another battery being urged by said spring means and toward said abutment means.

4,205,122

BATTERY SEPARATOR AND METHOD FOR BATTERY SEPARATION

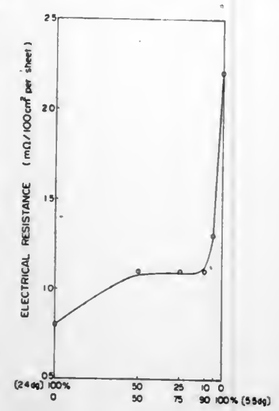
Yoshikazu Miura, Ichihara, and Yoshifumi Ichikura, Ageo, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Sep. 25, 1978, Ser. No. 945,293
Claims priority, application Japan, Apr. 26, 1978, 53-48747
Int. Cl.² H01M 2/16
U.S. Cl. 429—144 16 Claims

1. A battery separator comprising a self-supporting nonwoven mat consisting essentially of a mixture of

(A) olefinic resin flash-spun fibers having a coarseness of from 4.5 to 13 decigrex,

(B) olefinic resin flash-spun fibers having a coarseness of less than 4 decigrex to 1 decigrex in an amount of about 3 parts to about 70 parts by weight per 100 parts by weight of fibers (A) and



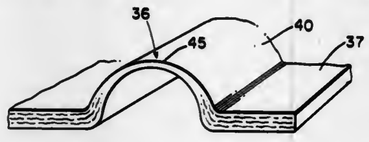
(C) inert filler materials in an amount of 0 to about 600 parts by weight per 100 parts by weight in total of fibers (A) and (B).

4,205,123

BATTERY SEPARATOR WITH POROUS BODY AND FUSED RIB

Nigel I. Palmer, Lexington, and Don O. Grammer, Scituate, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 317,107, Dec. 21, 1972, Pat. No. 4,003,758. This application Sep. 30, 1976, Ser. No. 728,341
Int. Cl.² H01M 2/16
U.S. Cl. 429—147 7 Claims



1. A battery separator comprising a nonwoven mat, said nonwoven mat comprised of plastic fibers and having a first region with interstices between said plastic fibers rendering said nonwoven mat porous and a second region extending outwardly of said first region, the plastic fibers at the outer extremity portion of said second region being fused rendering said outer extremity of said second region of said nonwoven mat imporous.

4,205,124

LOW GAMMA PHOTOGRAPHIC DEVELOPER

Harvey A. Hodes, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 876,444, Feb. 9, 1978, abandoned. This application Jan. 12, 1979, Ser. No. 3,056
Int. Cl.² G03C 5/30, 5/38
U.S. Cl. 430—456 4 Claims

1. A photographic developer composition for processing aerial-type film to a gamma less than 1, said composition consisting of 1 gram of 1-phenyl-3-pyrazolidone and 2 grams of hydroquinone as the sole developing agents, and sufficient water to make one liter, the composition also contains sufficient alkali to provide a pH ranging from about 9.8 to 10.4.

4,205,125

PROCESS FOR THE PRODUCTION OF COENZYME Q

Ko Aida, No. 681-2, Oazanegishi, Urawa-shi, Saitama-ken; Kinya Uchida, Mitaka, and Izumi Kawada, Yokohama, all of Japan, assignors to Ko Aida, Urawa, Japan

Continuation-in-part of Ser. No. 935,267, Aug. 21, 1978, abandoned. This application Jan. 25, 1979, Ser. No. 6,376
Claims priority, application Japan, Sep. 5, 1977, 52-105939
Int. Cl.² C12P 7/66
U.S. Cl. 435—133 9 Claims

1. In the process for producing Coenzyme Q_8-Q_{10} which comprises

cultivating a microorganism belonging to the genus Pseudomonas in a culture medium to produce Coenzyme Q_8-Q_{10}, and then recovering said Coenzyme Q_8-Q_{10} from the cultivated culture medium,

the improvement comprising admixing in said culture medium at least one member selected from the group consisting of isopentenyl alcohol, dimethyl allyl alcohol, geraniol, isopentenyl acetate, dimethyl allyl acetate, geranyl acetate and β-methyl crotonic acid.

4,205,126

SERUM-FREE CELL CULTURE MEDIA

Oscar A. Cartaya, 6 Soldiers Field Park, Apartment 319, Boston, Mass. 02163

Continuation-in-part of Ser. No. 951,500, Oct. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 866,338, Jan. 1, 1978, abandoned. This application Dec. 14, 1978, Ser. No. 969,590
Int. Cl.² A01N 1/02
U.S. Cl. 435—2 13 Claims

1. An MEM zinc option medium wherein the amino acid profile is about as follows:

Item	Amount (milligrams per liter)
L alanine	8.9
L asparagine	75.0
L aspartic acid	13.0
L glutamic acid	14.7
L glycine	7.5
L proline	11.5
L serine	52.5
L arginine HCl	196.52
L cystine	37.2
L glutamine	584.0
L histidine HCl	65.0
L isoleucine	80.88
L leucine	160.88
L lysine	112.38
L methionine	23.30
L phenyl-alanine	50.15
L threonine	74.18
L tryptophan	15.61
L valine	71.4
L tyrosine	45.9

4,205,127

PROCESS FOR THE RENEWAL OF AN INSOLUBILIZED GLUCOSE ISOMERASE

Yoshimasa Fujita, Tokyo; Akiyoshi Matsumoto, Hino; Isao Miyachi; Nobuo Imai, both of Higashiyamato; Isao Kawakami, Machida; Tadashi Hishida, Tokyo, and Akira Kamata, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited and Seikagaku Kogyo Company, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 780,843, Mar. 24, 1977, Pat. No. 4,113,568. This application Jun. 20, 1978, Ser. No. 917,256
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.
Int. Cl.² C12N 11/12, 11/08, 11/10
U.S. Cl. 435—179 15 Claims

1. A process for the renewal of an insolubilized glucose isomerase comprising the steps of:

(1) desorbing the adsorbed materials from an insolubilized glucose isomerase by treating sequentially with an aqueous mineral acid in combination with an aqueous alkali solution, an aqueous electrolytic salt solution, an aqueous mineral acid or a mixture thereof, said insolubilized isomerase being glucose isomerase adsorbed on and bonded to a supporter of synthetic anion exchange resin and having been used in the isomerization of glucose into fructose,

(2) converting said supporter resin into a salt type to regenerate the supporter, and

(3) adsorbing fresh glucose isomerase on the regenerated supporter.

4,205,128

PROCESS FOR PRODUCING IMMOBILIZED ENZYME COMPOSITIONS

Yoshiaki Ishimatsu, Machida; Shigeki Shigesada, Sagamihara; Hiroyasu Suzuki, Tokyo; Hironoshin Kitagawa, and Shoji Kimura, both of Machida, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 781,921, Mar. 28, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,773
Claims priority, application Japan, Mar. 31, 1976, 51/35471
Int. Cl.² C07G 7/02
U.S. Cl. 435—182 13 Claims

1. A process for producing an immobilized enzyme composition which comprises the steps of

reacting enzyme and/or enzyme containing microorganic cells with a cross-linking agent and an anionic exchange high molecular substance containing a quaternary pyridine ring in the molecule at a weight ratio of the enzyme and/or enzyme containing microorganic cells to the anionic exchange high molecular substance of between 1:0.005 and 1:0.05, in an aqueous dispersion having a pH range of from about 5 to 9, at a temperature from about 0° C. to about 30° C,

adjusting the water contents of the resulting reaction products to from about 25 to about 80 wt.%,

subjecting to extrusion molding the adjusted reaction products with an extruder at a temperature from about 0° C. to 25° C., thereby obtaining an extrudate,

pelletizing said extrudate, and then

drying the pellets at a temperature from about 40° C. to 80° C. for about 15 minutes to 20 hours.

4,205,129
METHOD FOR PURIFYING GALACTOSYLTRANSFERASE ISOENZYMES AND PRODUCT

Daniel K. Podolsky, Boston, Mass., and Milton M. Weiser, Buffalo, N.Y., assignors to The Massachusetts General Hospital, Boston, Mass.

Filed Mar. 5, 1979, Ser. No. 17,288
Int. Cl.[2] C07G *7/026*
U.S. Cl. 435—193 6 Claims

1. A composition of matter derived from the body fluids of animals having cancer or from extracts of malignant cells or tumor which comprises:

a galactosyltransferase isoenzyme having a molecular weight of about 71,000 and having an activity of at least about 1×10^5 pmole/mg protein/60 min.

4,205,130
METHOD OF PURIFICATION OF HUMAN PROSTATIC ACID PHOSPHATASE

Pirkko Vihko, Jaakonkuja 1 E 3, 90230 Oulu 23, Finland

Filed Mar. 12, 1979, Ser. No. 19,644
Int. Cl.[2] B01D *15/08*
U.S. Cl. 435—196 10 Claims

1. A method of purification of human prostatic acid phosphatase, which comprises the steps of:

(a) treating a solution containing acid phosphatase by means of affinity chromatography by introducing said solution into a column packed with an agarose gel coupled with tartrate groups, by passing an eluent through said column and by collecting the eluate as successive fractions, and

(b) subjecting a portion of the eluate containing said phosphatase to a further treatment by means of isoelectric focusing, whereby the phosphatase is divided into its isoenzymes.

4,205,131
VIRUS PROPAGATION

June D. Almeida, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Nov. 30, 1978, Ser. No. 965,045
Claims priority, application United Kingdom, Dec. 1, 1977, 50094/77; Dec. 24, 1977, 53906/77
Int. Cl.[2] C12N *7/00*
U.S. Cl. 435—235 7 Claims

1. A method of propagating rotavirus in vitro comprising growing the virus in cell cultures susceptible to the virus in the presence of a serum-free medium containing a proteolytic enzyme.

4,205,132
LYOPHILIZATION OF BACTERIA

William E. Sandine, Corvallis, Oreg., and Ebenezer R. Vedamuthu, Bradenton, Fla., assignors to Microlife Technics, Inc., Sarasota, Fla.

Filed Jul. 17, 1978, Ser. No. 925,034
Int. Cl.[2] C12K *1/08, 3/00*; A23C *19/02*
U.S. Cl. 435—260 6 Claims

1. The method of producing a storage stable lyophilized bacterial product which comprises:

(a) providing acid producing bacteria mixed with a lyophilizing composition consisting essentially of at least about five percent by weight of the bacteria of an alkali metal glycerophosphate as a buffering agent in an aqueous medium including milk solids which has a pH between about 6 and 8 without the bacteria;

(b) rapidly freezing the bacteria in a sealable container;

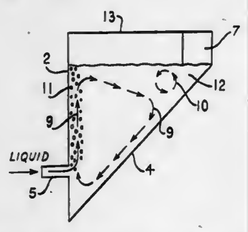
(c) lyophilizing the bacteria with a vacuum in a sealed chamber to remove water wherein the bacteria contain less than five percent by weight water as a result of lyophilization; and

(d) surrounding the bacteria with argon which is essentially free of oxygen and sealing the container, wherein at least about ten percent of the bacteria surviving lyophilization remain viable for 90 days.

4,205,133
APPARATUS FOR FERMENTING LIQUIDS

Emil Wick, San Pablo, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 26, 1978, Ser. No. 900,371
Int. Cl.[2] C12M *1/00*
U.S. Cl. 435—287 2 Claims



1. An apparatus for fermenting liquids, which comprises

a rear member disposed to the horizontal at an angle of about 90°–160°,

two vertical side members attached to said rear member,

a front member attached to said vertical side members and said rear member at its base, said front member being disposed to the horizontal at an angle of about 20°–70°, the angular disposition between said rear member and said front member being no less than 20° and no more than 140°, the apparatus thus having a horizontal cross-sectional area at its base substantially less than the horizontal cross-sectional area at its top,

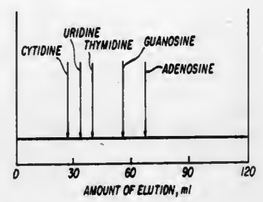
means for introducing liquids to be fermented into the apparatus attached to the base of the apparatus, said means cooperating with said rear member, said vertical side members, and said front member to create within the fermenting liquid two turbulent zones and a non-turbulent zone, the flow patterns of the liquid within the turbulent zones being opposite and upward for a part of the time, horizontal for a part of the time, and slant for a part of the time, and

means for removing fermented liquid from the apparatus at the top of the apparatus.

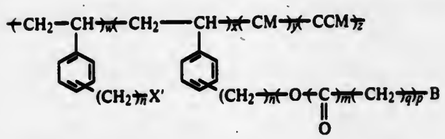
4,205,134
CARRIER FOR LIQUID CHROMATOGRAPHY

Toru Seita; Akihiko Shimizu; Yoshio Kato, and Tsutomu Hashimoto, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Company, Ltd., Yamaguchi, Japan

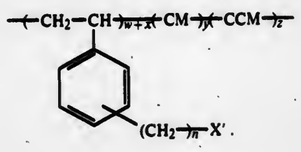
Division of Ser. No. 849,466, Nov. 7, 1977, Pat. No. 4,128,706.
This application Jun. 30, 1978, Ser. No. 920,988
Claims priority, application Japan, Nov. 9, 1976, 51-133761; Nov. 12, 1976, 51-135276
The portion of the term of this patent subsequent to Dec. 19, 1995, has been disclaimed.
Int. Cl.[2] C08J *9/00*
U.S. Cl. 521—53 11 Claims



1. A carrier for liquid chromatography having main units


(I)

wherein n=0 or an integer of 1 to 3; m=0 or 1; q=an integer of 1 to 3; p=0 or 1; w=90 to 16; x=57 to 2, y=0 to 30 and; z=5 to 30; B represents adenine, guanine, thymine, uracil or cytosine; X' represents OH, Cl, Br or I; CM represents styrene, a substituted styrene, acrylonitrile, a substituted acrylonitrile, acrylic acid or a substituted acrylic acid and CCM represents crosslinking agent having two or more unsaturated groups, which is prepared by reacting a nucleic acid base or a derivative thereof with a porous gel having main units



4,205,135
CLOSED CELL PHENOLIC FOAM

John H. Beale, and Ernest K. Moss, both of St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Mar. 18, 1976, Ser. No. 668,066
The portion of the term of this patent subsequent to Jul. 6, 1993, has been disclaimed.
Int. Cl.[2] C08J *9/02*
U.S. Cl. 521—116 42 Claims

1. A process for producing a closed cell phenolic-resin foam, said process comprising reacting phenolic-resin foam forming reactants in the presence of a blowing agent and a surfactant that:

a. is branched,

b. is non-ionic,

c. has a hydroxyl value less than 50,

d. has its hydroxyl groups, which would otherwise give the surfactant a higher hydroxyl value, capped.

4,205,136
PROCESS FOR PRODUCING A RIGID POLYURETHANE FOAM HAVING EXCELLENT FLAME RETARDANCE AND LOW-SMOKE DEVELOPMENT

Takashi Ohashi, Iruma; Minoru Kojima, Ohme; Masako Yoshida, Kodaira; Toru Okuyama, Sagamihara, and Ryozo Sakata, Higashiyamato, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

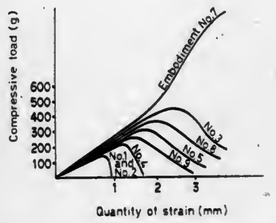
Filed Feb. 21, 1979, Ser. No. 13,751
Claims priority, application Japan, Feb. 21, 1978, 53-18080
Int. Cl.[2] C08G *18/14, 18/32, 18/26*
U.S. Cl. 521—118 15 Claims

1. In a process for producing a rigid polyurethane or polyisocyanurate foam having excellent flame-retardance and low-smoke development by reacting a polyhydroxyl compound with an organic polyisocyanate in the presence of a blowing agent, a surfactant and a catalyst, the improvement comprising using 3-methyl-pentane-1,3,5-triol in admixture with said polyhydroxyl compound, in an amount of 0.2–2.0 equivalent of said triol per equivalent of said polyhydroxyl compound.

4,205,137
BASIC MATERIAL FOR MAKING A POROUS MATERIAL FOR SEALS

Osamu Akiyama, Kobe, Japan, assignor to Bando Chemical Industries, Ltd., Hyogo, Japan

Filed Aug. 1, 1977, Ser. No. 820,943
Claims priority, application Japan, May 2, 1977, 52-51050
Int. Cl.[2] C08J *9/36*
U.S. Cl. 521—145 6 Claims



1. A moldable composition for making a porous stamp, which composition is made by a process comprising:

(a) forming a polyvinylchloride plastisol from polyvinylchloride and a plasticizer;

(b) foaming the plastisol of step a);

(c) gelating or semigelating the foamed plastisol of step b), said gelated or semigelated foam having an apparent specific gravity of 0.3–0.5; and

(d) pulverizing the gelated or semigelated foamed plastisol of c).

4,205,138
POLYURETHANE FOAMS AND ELASTOMERS PREPARED FROM LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Hanns P. Müller, and Küno Wagner, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 934,567, Aug. 17, 1978, Pat. No. 4,156,636.
This application May 10, 1979, Ser. No. 38,033
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738512
Int. Cl.[2] C08G *18/14, 18/32*
U.S. Cl. 521—158 1 Claim

1. A process for the preparation of cellular or non-cellular polyurethane resins by the reaction of

(a) polyisocyanates with

(b) compounds containing at least 2 active hydrogen atoms

and having a molecular weight of from 32 to 400, optionally

(c) compounds containing at least 2 active hydrogen atoms and having a molecular weight of from 400 to 10,000, and optionally

(d) blowing agents, catalysts and other known additives, characterized in that the compounds used as component (b) are low molecular weight polyhydroxyl compounds prepared by condensing formaldehyde hydrate in the presence of calcium hydroxide as catalyst and in the presence of compounds capable of enediol formation as co-catalyst, adjusting a formaldehyde-containing solution of the co-catalyst in water to a pH value of from 9 to 12 by the addition of calcium hydroxide at a temperature of from 80° to 110° C. so that condensation of the formaldehyde hydrate is started, and then adding to this reaction mixture,

(1) an aqueous formalin solution and/or paraformaldehyde dispersion containing from 20 to 65%, by weight, of formaldehyde, and

(2) calcium hydroxide at such a rate that the reaction mixture is maintained at a pH value of from 7.5 to 9.5 at a temperature of from 80° to 110° C., the concentration of formaldehyde being maintained at from 0.5 to 10%, by weight, based on the total reaction mixture, throughout the condensation reaction.

4,205,139

CURABLE COATING COMPOSITION

Helmut Barzynski, Bad Durkheim; Heinrich Hartmann, Limburgerhof; Dieter Lautenbach, Schifferstadt; Rolf Osterloh, Ludwigshafen; Lutz Goethlich, Ludwigshafen, and Guenter Heil, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 603,445, Aug. 11, 1975, abandoned. This application Jul. 28, 1977, Ser. No. 819,816

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1974, 2441148

Int. Cl.² C08L 67/06

U.S. Cl. 525—38 **7 Claims**

1. A coating composition that is curable by means of high energy radiation containing as a binder a mixture of

(A) 70 to 97% by weight of one or more olefinically polyunsaturated esters with a molecular weight of from 70 to 20,000 and a boiling point above 50° C., and

(B) 30 to 3% by weight of one or more compounds copolymerizable with (A) but different therefrom, with a molecular weight of from 110 to 2,000, and carrying at least two N-vinyl groups and at least one carbonyl group, each nitrogen of the N-vinyl groups being bonded to a carbonyl group, said carbonyl group in turn being bonded to a nitrogen or carbon atom.

4,205,140

THERMOPLASTIC MOULDING COMPOSITIONS

Lothar Liebig; Frank Wingler, both of Leverkusen; Dieter Margotte, and Werner Nouvertne, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 18, 1977, Ser. No. 852,628

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1976, 2653143

Int. Cl.² C08L 67/06

U.S. Cl. 525—67 **4 Claims**

1. A thermoplastic moulding composition comprising:

(1.) 80 to 20 parts by weight of a thermoplastic polycarbonate based on a dihydroxy diaryl alkane,

(2.) 20 to 80 parts by weight of a graft polymer of

2.2. a monomer mixture, polymerised onto

2. a diene rubber with a glass transition temperature below −30° C., said monomer mixture consisting of

2.2.1. 95 to 50% by weight of styrene, methyl methacrylate or a mixture thereof; and

2.2.2. 50 to 5% by weight of acrylonitrile, methacrylonitrile or a mixture thereof,

the ratio by weight of rubber (2.1) to monomer mixture (2.2.) being in the range of from 80:20 and 10:90, and the moulding composition containing from 5 to 35% by weight of the rubber (2.1), and

(3.) 5 to 75 parts by weight of a copolymer which is chemically uniform in structure and which comprises:

3.1 93 to 50 parts by wieght of styrene, methyl methacrylate or a mixture thereof;

3.2 40 to 5 parts by weight of acrylonitrile, methacrylonitrile or a mixture thereof; and

3.3 2 to 30 parts by weight of maleic acid anhydride.

4,205,141

THERMOPLASTIC MOULDING COMPOSITIONS

Lothar Liebig; Frank Wingler, both of Leverkusen; Gert Humme, Odenthal, and Richard Prinz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 18, 1977, Ser. No. 852,630

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1976, 2653146

Int. Cl.² C08L 67/06

U.S. Cl. 525—67 **6 Claims**

1. A thermoplastic moulding composition comprising:

(1) 80 to 20 parts by weight of a thermoplastic polycarbonate based on a dihydroxy diarylalkane,

(2) 0 to 60 parts by weight of a graft copolymer of a

(2.2) monomer mixture of

(2.2.1) 95 to 50% by weight of styrene, methyl methacrylate or a mixture thereof; and

(2.2.2) 50 to 5% by weight of acrylonitrile, methacrylonitrile or a mixture thereof,

polymerised onto

(2.1) a rubber which has a glass temperature below −20° C., and which contains less than 30 C=C-double bonds per 1000 carbon atoms, the moulding composition containing from 0 to 35% by weight of the rubber (2.1), and

(3) 5 to 75 parts by weight of a copolymer which is chemically uniform in structure and comprises:

(3.1) 95 to 50% by weight of styrene, methyl methacrylate or a mixture thereof;

(3.2) 40 to 5% by weight of acrylonitrile, methacrylonitrile or a mixture thereof; and

(3.3) 2 to 30% by weight of maleic acid anhydride, the sum of 3.1, 3.2 and 3.3 being equal to 100% by weight.

4,205,142

FLAME RETARDANT RESIN COMPOSITIONS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 2, 1977, Ser. No. 847,959

Int. Cl.² C08L 67/06

U.S. Cl. 525—166 **17 Claims**

1. A resin composition comprising

A. a thermoplastic polyester;

B. an effective amount of a halogenated flame retardant additive; and

C. an effective amount of a flame retardant synergist of average particle size less than about 2 microns, wherein the particles of the synergist are substantially occluded with a non-blocking rubber.

4,205,143

MIXTURES OF POLYCATIONIC AND POLYANIONIC POLYMERS FOR SCALE CONTROL

Richard M. Goodman, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 766,329, Feb. 7, 1977. This application Nov. 13, 1978, Ser. No. 960,216

Int. Cl.² C08L 33/02

U.S. Cl. 525—213 **5 Claims**

1. A magnesium scale inhibiting composition comprising a polyanionic polymer containing at least about 50 mole percent of repeating units derived from an acrylic acid and any balance of repeating units derived from one or more monomers compatible therewith, the acid units being in the form of at least one member selected from the group consisting of free acid radical, ammonium salts, and a polycationic polymer of poly(-dimethyldiallylammonium chloride), said polyanionic polymer having a molecular weight in the range of about 500 and about 50,000 said polycationic polymer having a molecular weight in the range of about 1,500 and about 500,000 and the molar ratio of said polycationic polymer to said polyanionic polymer based on the average molecular weight of the repeating units therein being in the range of about 2:1 and 25:1.

4,205,144

PREPARATION OF GRAFT COPOLYMERS

Herbert Naarmann, Wattenheim; Graham E. McKee, Ludwigshafen, and Burghard Schmitt, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 19, 1978, Ser. No. 952,801

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749579

Int. Cl.² C08L 51/04

U.S. Cl. 525—273 **1 Claim**

1. A process for the preparation of graft copolymers by polymerization of monomers which form hard polymers in the presence of a saturated crosslinked elastomeric polymer having a glass transition temperature below 0° C. and selected from the group consisting of acrylate polymers consisting of acrylic acid esters and mixtures thereof, with up to 30% by weight of other unsaturated comonomers and EPDM rubbers, which EPDM rubbers are prepared by polymerizing ethylene and propylene in the presence of a small amount of a non-conjugated diolefin, in which first (A) the monomers which form the saturated crosslinked elastomeric polymer are copolymerized with copolymerizable monomeric compounds, containing free radical-forming groups, under conditions which preserve the said groups, to give a saturated crosslinked elastomeric polymer containing free radical-forming groups, and thereafter (B) the monomers which form hard polymers are selected from the group consisting of styrene, acrylonitrile and/or methylmethacrylate and are polymerized in the presence of the elastomeric polymer obtained in process stage (A), under conditions under which the free radical-forming groups of the elastomeric polymer decompose, in which process the copolymerizable monomeric compounds containing free radical-forming groups are added, during the preparation of the saturated crosslinked elastomeric polymer, to the polymerization mixture in process stage (A) only when the conversion of the monomers forming the elastomeric polymer is from 50 to 90% by weight, after which polymerization of the mixture is taken to completion.

4,205,145

RESINS FOR PRINTING INKS

Shozo Tsuchiya, Tokyo; Akio Oshima, and Hideo Hayashi, both of Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1978, Ser. No. 887,280

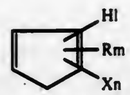
Claims priority, application Japan, Mar. 25, 1977, 52-32045

Int. Cl.² C08F 283/00; C08L 61/06, 61/10

U.S. Cl. 525—502 **8 Claims**

1. A process for the preparation of a resin for printing inks, comprising the steps of:

reacting (A) a conjugated double bond-containing five-membered cyclic compound represented by the following formula



wherein H is hydrogen, R is an organic residue having 1-24 carbon atoms, X is halogen, and 1, m and n are each an integer of 0-6 with the total thereof being 6, or a Diels-Alder reaction product thereof, with (B) a phenolic compound in a ratio by weight of from 60:40 to 95:5 in the absence or presence of a catalyst at 150°-330° C. for 10 minutes-20 hours to produce a resin,

addition reacting the thus produced resin with (C) an unsaturated carboxylic acid in an amount by weight of 2-20 parts per 100 parts by weight of the resin at 150°-250° C. for 30 minutes-7 hours to produce an acid-modified resin and then

reacting the thus produced acid-modified resin with (D) a resol-type phenol resin in an amount by weight of 5-40 parts per 100 parts by weight of the acid-modified resin at 160°-300° C. for 30 minutes-15 hours, the resol-type phenol resin (D) being obtained by reacting with formaldehyde in the presence of a basic catalyst phenol or an alkyl-substituted phenol selected from the group consisting of cresol, ethylphenol, isopropylphenol, tert.-butylphenol, tert.-octylphenol and nonylphenol, thereby to prepare the resin for printing inks.

4,205,146

PROCESS FOR THE PREPARATION OF POLYVINYLBUTYRAL HAVING IMPROVED PROPERTIES

Hans D. Hermann, Bad Soden am Taunus; Joachim Ebigt, Frankfurt am Main, and Ulrich M. Hutten, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,873

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732717

Int. Cl.² C08F 8/28

U.S. Cl. 525—61 **8 Claims**

1. Process for the preparation of a polyvinylbutyral having improved properties, which comprises subjecting a polyvinylbutyral having a viscosity of from 10 to 200 cp (measured according to DIN 53 015 at a 5% by weight solution in ethanol at 23° C.) and a content of from 17 to 24% by weight of vinyl alcohol units in an aqueous medium, at a temperature of from 50° to 70° C. in the presence of from 0.01 to 0.5% by weight, calculated on the polyvinylbutyral, of an organic sulfonic acid having from 8 to 30 carbon atoms and being effective as emulsifier to an acetalizing after-treatment for a period of from 0.5 to 10 hours in the presence of from 1 to 100 parts by weight of water per part of polyvinylbutyral and from 0.1 to 5% by weight of inorganic acid, calculated on the aqueous medium, and thereafter recovering the after-treated polyvinylbutyral.

4,205,147

PROCESS FOR RECOVERING MODIFIED POLYVINYL ALCOHOLS FROM AQUEOUS SOLUTION CONTAINING THEM

Hiroshi Kato, Nishinomiya, Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 27, 1978, Ser. No. 873,064
Claims priority, application Japan, Jan. 31, 1977, 52-10072
Int. Cl.² C08F 6/12
U.S. Cl. 525—62 7 Claims

1. A process for recovering a modified polyvinyl alcohol from an aqueous solution thereof consisting essentially of the steps of adding an acid to an aqueous solution of a modified polyvinyl alcohol while maintaining said aqueous solution at a temperature of not less than 40° to cause the modified polyvinyl alcohol to deposit, and recovering the deposited polyvinyl alcohol; said modified polyvinyl alcohol being a polymer obtained by alkali-hydrolysis of a copolymer of vinyl acetate and an unsaturated carboxylic or sulfonic acid, the copolymer containing 0.1 to 2% by mole of units of the unsaturated carboxylic or sulfonic acid and the degree of hydrolysis of the vinyl acetate units being 50 to 80% by mole and said acid being added in a amount of an equivalent or more with respect to the unsaturated carboxylic or sulfonic acid component of said modified polyvinyl alcohol and being at least one member selected from the group consisting of hydrochloric acid, sulfuric acid, nitric acid, phosphoric acid, pyrophosphoric acid, phosphorous acid, acetic acid, oxalic acid and citric acid.

4,205,148

DYEABLE POLYOLEFIN COMPOSITION

Yoshiharu Tatsukami, Niihama; Hazime Nishibara, Shonaimachi; Yasutoshi Kobayashi, Niihama, and Hideo Shinonaga, Nakasonemachi, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 866,402, Dec. 30, 1977, Pat. No. 4,166,079. This application Apr. 26, 1979, Ser. No. 33,403
Claims priority, application Japan, Jan. 4, 1977, 52-281; Jan. 4, 1977, 52-282; Dec. 1, 1977, 52-144795
Int. Cl.² C08D 8/32
U.S. Cl. 525—379 8 Claims

1. A method for producing aminated ethylene-glycidyl acrylates copolymers by amination of ethylene-glycidylacrylates copolymers, which comprises conducting the amination in a heterogeneous system comprising the ethyleneglycidyl acrylates copolymers and a mixed solvent of a secondary amine amine and a lower alcohol, to the extent that not less than 90% of epoxy groups present in the copolymer are aminated, the volume ratio of the amine to the alcohol in the mixed solvent being 20/80 to 85/15, and the amount of the mixed solvent being 1 to 100 parts by weight of the copolymer.

4,205,149

METHOD OF REMOVING VINYL CHLORIDE MONOMER FROM POLYVINYL CHLORIDE RESINS

Frank A. Cich, Norton; Emmett J. Glazer, Stow, and Edwin S. Smith, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 23, 1974, Ser. No. 535,775
Int. Cl.² C08F 2/60, 2/16, 6/10, 16/6
U.S. Cl. 526—89 4 Claims

1. The method which comprises polymerizing monomeric vinyl chloride in an emulsion or suspension polymerization system to form vinyl chloride polymer in the presence of propane and reducing the pressure in the system to remove substantially all of the unreacted vinyl chloride and propane from the system.

4. The method which comprises polymerizing vinyl chloride in a bulk polymerization system to form polymeric vinyl chloride, adding butane to the system and then reducing the pressure in the system to remove substantially all of the unreacted vinyl chloride monomer and butane from the system and recovering the polymeric vinyl chloride formed substantially free of monomeric vinyl chloride.

4,205,150

THERMO-REVERSIBLE ELASTOMER COMPOSITION COMPRISING A LIQUID CHLOROPRENE POLYMER AND A POLYVALENT METAL OXIDE OR HYDROXIDE

Kiyonobu Marubashi, Ohmi, Japan, assignor to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1978, Ser. No. 894,952
Int. Cl.² C08F 36/16, 236/16; C08G 79/10
U.S. Cl. 526—252 16 Claims

1. A thermo-reversible elastomer composition comprising 100 parts by weight of a liquid chloroprene polymer having a Brookfield viscosity (measured at 25° C.) ranging from about 3,000 to about 3,000,000 cps containing at least one carboxyl group in the molecule and having a number average molecular weight of from about 500 to about 20,000 and at least 1 part by weight of a metal compound which is a polyvalent metal oxide or hydroxide or a metal salt complex comprising a polyvalent metal oxide or hydroxide, said liquid chloroprene polymer having been prepared by (1) homopolymerizing a chloroprene monomer or (2) copolymerizing a chloroprene monomer with a monomer copolymerizable with the chloroprene monomer, in the presence of an organic solvent having a boiling point of less than about 150° C. at atmospheric pressure which is miscible with a mercapto-carboxylic acid and is selected from the group consisting of aromatic hydrocarbons, aliphatic halogenated hydrocarbons, cyclic ethers, aliphatic alcohols, aliphatic ketones and aliphatic esters and 0.5 to 20 parts by weight of a mercaptocarboxylic acid per 100 parts by weight of the monomers.

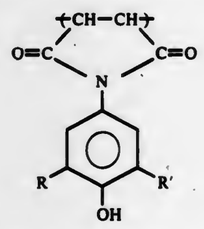
4,205,151

POLYMERIC N-SUBSTITUTED MALEIMIDE ANTIOXIDANTS

James A. Dale, Menlo Park, and Steve Y. W. Ng, San Francisco, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Division of Ser. No. 642,038, Dec. 18, 1975, Pat. No. 4,078,091, which is a division of Ser. No. 565,168, Apr. 4, 1975, abandoned. This application Aug. 2, 1977, Ser. No. 821,163
Int. Cl.² C08F 122/40, 222/40, 4/04
U.S. Cl. 526—262 9 Claims

1. A polymeric maleimide comprising n



units, wherein R and R' independently are lower saturated alkyls of from 1 to 5 carbon atoms and n is an integer from 20 to about 1500.

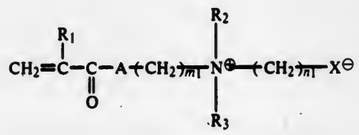
4,205,152

THERMOSETTING RESIN AND ITS PRODUCTION

Ryuzo Mizuguchi, Tondabayashi; Atsushi Takahashi, Kyoto; Shin-ichi Ishikura, Takatsuki, and Akimitsu Uenaka, Suita, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

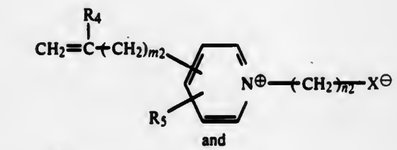
Filed Dec. 9, 1977, Ser. No. 859,102
Claims priority, application Japan, Dec. 9, 1976, 51-148373; Dec. 9, 1976, 51-148374; Dec. 9, 1976, 51-148375
Int. Cl.² C08F 220/06, 220/06, 28/00; C08J 3/74
U.S. Cl. 526—265 16 Claims

1. A thermosetting resin which is a linear copolymer having a number average molecular weight of 1,000 to 50,000 and a glass transition point of −20° to +80° C., obtained by polymerizing in a hydrophilic organic solvent (1) 0.5 to 30% by weight of at least one polymerizable monomer having an ampho-ionic structure, selected from the group consisting of (i) compounds representable by the formula



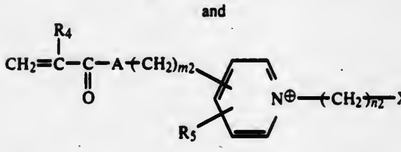
[I]

wherein R_1 is a hydrogen atom or a methyl group, R_2 and R_3 are each, the same or different, a C_1–C_6 alkyl group, A is O or NH, m_1 and n_1 are each, the same or different, an integer of 1 to 12 and $X^{\ominus}$ is $SO_3^{\ominus}$, $SO_4^{\ominus}$ or $CO_2^{\ominus}$ and (ii) compounds representable by either one of the formulae:



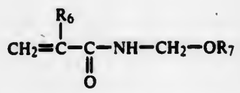
[II]

and



[III]

wherein R_4 is a hydrogen atom or a methyl group, R_5 is a hydrogen atom or a C_1–C_3 alkyl group, m_2 is an integer of 0 to 6 and n_2 is an integer of 1 to 6, and A and $X^{\ominus}$ are as defined above, (2) 1 to 60% by weight of at least one polymerizable monomer containing a reactive amide group, representable by the formula:



[IV]

wherein R_6 is a hydrogen atom or a methyl group and R_7 is a hydrogen atom or a C_1–C_4 alkyl group and (3) 2 to 40% by weight of at least one polymerizable monomer containing a carboxyl group and (4) 5 to 95% by weight of at least one of other polymerizable monomers containing an ethylenic double bond.

4,205,153

DIENE INTERPOLYMERS WITH HALOGENATED MONOMERS

Arthur H. Weinstein, Hudson, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 811,495, Jun. 30, 1977, abandoned, which is a division of Ser. No. 642,816, Dec. 22, 1975, abandoned. This application Aug. 21, 1978, Ser. No. 935,407
Int. Cl.² C08F 236/16, 2/26
U.S. Cl. 526—292 5 Claims

1. An elastomeric interpolymer prepared by the method which comprises aqueous emulsion polymerizing, at a temperature in the range of about 40° C. to 60° C., in the presence of a free radical generating catalyst selected from at least one of bis-azo isobutyronitrile, postassium persulfate, ammonium persulfate, benzoyl peroxide, p-methane hydroperoxide and cumene hydroperoxide and in the presence of an alkali metal salt of an organic sulfonic acid emulsifier, a monomer mixture comprised of (A) about 45 to about 70 weight percent dienes selected from at least one of 1,3-butadiene and isoprene, (B) about 15 to about 40 weight percent of at least one comonomer selected from pentachlorophenyl methacrylate, 2,4,6-tribromophenyl methacrylate, 2,3,4,6-tetrachorophenyl acrylate, 2,4,6-trichlorophenyl acrylate, pentabromophenyl acrylate, 2,4,6-tribromophenyl acrylate, 2,4-dimbromophenyl acrylate, pentachlorophenyl methacrylate, 2,3,4,6-tetrachlorophenyl methacrylate, 2,4,6-trichlorophenyl methacrylate, pentabromophenyl methacrylate, 2,4-dibromophenyl methacrylate, pentachlorothiophenyl acrylate, pentachlorothiophenyl methacrylate, N-2,4,6-tribromophenyl acrylamide and N-2,4,6-tribromophenyl methacrylamide, and (C) about 5 to about 20 weight percent of a termonomer selected from at least one of (1) styrene, α-methyl styrene, acrylonitrile and α-methacrylonitrile, or (2) alkyl esters selected from at least one of ethyl acrylate, butyl acrylate, 2-ethyl hexyl acrylate and methyl methacrylate; where said elastomeric interpolymer has a glass transition temperature in the range of about −40° C. to about −66° C.

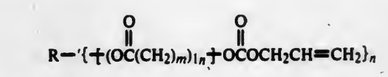
4,205,154

TRIALLYL CARBONATE POLYMERS

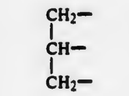
Henry C. Stevens, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 839,684, Oct. 5, 1977, Pat. No. 4,144,262. This application Nov. 1, 1978, Ser. No. 956,544
Int. Cl.² C08F 18/24
U.S. Cl. 526—314 2 Claims

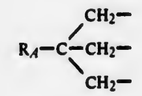
1. A solid polymerizate of an allyl carbonate monomer having the formula:



where the l_n's are integers from 0 to 5, the sum of the l_n's is at least 2, m is 4 or 5, n is greater than 2 and R is chosen from the group consisting of

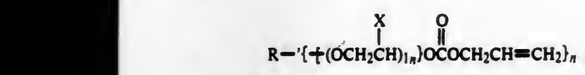


and

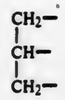


where R_A is chosen from the group consisting of —H, —CH_3, —CH_2CH_3, —$CH_2CH_2CH_3$, and —$CH_2CH_2CH_2CH_3$.

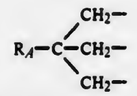
2. A solid polymerizate of an allyl carbonate monomer having the formula:



where the l_n's are integers from 0 to 5, the sum of the l_n's is at least 2, X is —H or —CH_3, n is greater than 2 and R is chosen from the group consisting of



and



where R_A is chosen from the group consisting of —H, —CH_3, —CH_2CH_3, —$CH_2CH_2CH_3$, and —CH_2—CH_2—CH_2—CH_3.

4,205,155

PROCESS FOR THE PRODUCTION OF POLY(ALLYL HALIDE AMINE SILICATE) REACTION PRODUCTS

David H. Blount, 545 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 862,020, Dec. 19, 1977, Pat. No. 4,157,438, which is a continuation-in-part of Ser. No. 757,239, Jan. 6, 1977, Pat. No. 4,069,391, which is a division of Ser. No. 622,525, Oct. 15, 1975, Pat. No. 4,020,259. This application Aug. 25, 1978, Ser. No. 936,751

Int. Cl.² C08F 283/12; C08G 63/76; C08L 67/00; C08F 30/08

U.S. Cl. 528—28 **9 Claims**

1. The process for the production of allyl halide amine silicate reaction products by the following steps:

(a) mixing an organic polyamine with an oxidized silicon compound, selected from the group consisting of hydrated silica, silica, silicoformic acid and mixtures thereof, in the ratio of about 1 or 2 mols of the polyamine to 1 mol of the oxidized silicon compound;

(b) mixing in an alkali catalyst in the amount of 1% to 10% by weight, percentage based on the weight of the oxidated silicon compound;

(c) heating the mixture to just below the boiling temperature of the polyamine while agitating at ambient pressure for 20 to 90 minutes, thereby

(d) producing an amine silicate reaction product;

(e) adding said amine silicate reaction product to an allyl halide compound in the ratio of 1 mol of the amine silicate reaction product to 0.5 to 6 mols of the allyl halide compound;

(f) agitating said mixture for 10 to 60 minutes at a temperature between ambient temperature and the boiling point of the reactants, thereby producing a poly(allyl halide amine silicate) resinous product.

4,205,156

NOVEL IMIDAZOLE-ISOCYANURIC ACID ADDUCTS AND UTILIZATION THEREOF

Natsuo Sawa; Tadao Nomoto, both of Nakatado; Keiko Iuchi, Tokushima; Toshihiro Suzuki, Marugame, and Shunichi Kawata, Mitoyo, all of Japan, assignors to Shikoku Chemicals Corporation, Kagawa, Japan

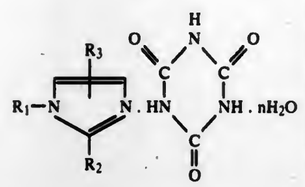
Division of Ser. No. 885,948, Mar. 13, 1978. This application Jan. 22, 1979, Ser. No. 5,493

Claims priority, application Japan, Mar. 18, 1977, 52-30886

Int. Cl.² C08G 59/56

U.S. Cl. 528—117 **8 Claims**

1. An epoxy resin composition comprising (a) 100 parts by weight of an epoxy resin having more than 1 epoxy group in one molecule and (b) 1 to 10 parts by weight of a compound represented by the following general formula:



wherein R_1 is a member selected from the group consisting of a hydrogen atom, a β-cyanoethyl group, a benzyl group and a β-[3,5-diamino-S-triazinyl-(1)]-ethyl group, R_2 stands for a monovalent hydrocarbon group having up to 17 carbon atoms, R_3 is a member selected from the group consisting of a hydrogen atom and an alkyl group having up to 4 carbon atoms, with the proviso that when R_1 is a hydrogen atom, R_2 is a methyl or phenyl group and R_3 is a hydrogen atom and when R_1 is a β-cyanoethyl group, R_2 is a phenyl group and R_3 is a hydrogen atom, and n is a number of from 0 to 2.

4,205,157

METHOD FOR PRODUCTION OF HIGH MOLECULAR WEIGHT POLYESTER WITH LOW CATALYST LEVEL AND LOW CARBOXYL CONTENT

Ben Duh, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 2, 1979, Ser. No. 25,697

Int. Cl.² C08G 63/18, 63/36

U.S. Cl. 528—272 **44 Claims**

1. A method for the production of a high molecular weight, high purity polyester comprising the steps of

(a) reacting a glycol and a dicarboxylic acid to form a polyester prepolymer, said polyester prepolymer having an intrinsic viscosity from about 0.15 dl/g to about 0.45 dl/g and having less than 20% carboxyl end group content,

said dicarboxylic acids selected from the class consisting of alkyl dicarboxylic acids having a total of from 2 to 16 carbon atoms, and aryl dicarboxylic acids containing a total of from 8 to about 16 carbon atoms,

said glycol selected from the class consisting of glycols having from 2 to 10 carbon atoms; and

(b) polymerizing in a solid state in a fluidized bed, said polyester prepolymer so that a high molecular weight high purity polycondensed polyester is formed, said polycondensed polyester having an intrinsic viscosity at least 0.60 dl/g and having less than 20% carboxyl end group content.

21. A high molecular weight, high purity polyester, comprising:

a polycondensed polyester produced by a two-step polymerization, said polycondensed polyester having an intrinsic viscosity at least 0.60 dl/g and having less than 20% carboxyl end group content;

said two-step polymerization comprising a melt process and a solid-state polymerization in a fluidized bed;

said melt process forming a polyester prepolymer having an intrinsic viscosity from about 0.15 dl/g to about 0.45 dl/g, and having less than 20% carboxyl end group content;

said prepolymer polyester formed by a reaction of a glycol and a dicarboxylic acid;

said dicarboxylic acid selected from the class consisting of alkyl dicarboxylic acids having a total of from 2 to 16 carbon atoms, and aryl dicarboxylic acids containing a total of from about 8 to about 16 carbon atoms;

said glycol having from 2 to 10 carbon atoms; and

said solid state polymerization forming said polycondensed polyester from said polyester prepolymer.

4,205,158

COPOLYETHERESTER BASED ON ETHYLENE OXIDE-CAPPED POLY(PROPYLENE OXIDE) GLYCOL AND BRANCHING AGENT

Guenther K. Hoeschele, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1979, Ser. No. 24,859

Int. Cl.² C08G 63/18

U.S. Cl. 528—300 **8 Claims**

1. A copolyetherester composition derived from terephthalic acid or its ester-forming equivalent, 1,4-butanediol, an ethylene oxide-capped poly(propylene oxide) glycol and a branching agent having a functionality of 3-6, said ethylene oxide-capped poly(propylene oxide) glycol having an ethylene oxide content of from about 15-35 weight percent and a number average molecular weight ranging from about 1500-2800, and said branching agent being present in a concentration of from about 1.5-6.0 equivalents per 100 moles of terephthalic acid or ester-forming equivalent thereof; and said copolyetherester composition containing from about 25-48 weight percent, 1,4-butylene terephthalate units and having a melt index at 230° C. of less than about 50 grams per 10 minutes.

4,205,159

TRANSPARENT POLYAMIDES FROM PACM AND A MIXTURE OF DICARBOXYLIC ACIDS

Rolf-Volker Meyer; Rolf Dhein, and Friedrich Fahnler, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,409

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732928

Int. Cl.² C08G 69/26

U.S. Cl. 528—338 **4 Claims**

1. A transparent thermoplastic polyamide which is the polycondensation product of

(1) from 70 to 100 mol % of bis-(4-aminocyclohexyl)methane;

(2) 0 to 30 mol % of at least one member selected from the group consisting of hexamethylene diamine and C_8-C_{15} cycloaliphatic diamines other than bis-(4-aminocyclohexyl)-methane, the molar ratio of the total cycloaliphatic diamines in (1) and (2) to hexamethylene diamine being at least 4:1 and the sum of (1) and (2) being 100 mol %, and

(3) an equivalent quantity of a dicarboxylic acid mixture consisting of

(a) from 70 to 85 mol % of azelaic acid and

(b) from 30 to 15 mol % of at least one member selected from the group consisting of isophthalic acid and adipic acid, the sum of (a) and (b) being 100 mol %.

4,205,160

INDANE CONTAINING POLYMERS

Richard E. Gloth, Copley, and James J. Tazuma, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 11, 1976, Ser. No. 665,838

Int. Cl.² C08G 83/00

U.S. Cl. 528—425 **5 Claims**

1. The method which comprises treating a material selected from the group consisting of 1,3-diisopropyl benzene diol, 1,4-diisopropyl benzene diol or mixtures of 1,3- and 1,4-diisopropyl benzene diols with an acidic clay, silica alumina, Bronsted acid or Lewis acid catalyst in the presence of a water azeotroping agent at temperature at which the azeotroping agent refluxes and removes water from the system for a time sufficient to form a resin having an average softening point of 120° C. to 200° C. and an indane unit content of about 20 to 100 mol percent.

4,205,161

PROCESS FOR REDUCING CONTENT OF FREE VINYL CHLORIDE BY POSTTREATING COPOLYMER WITH REDOX CATALYST

Hubert Wiest; Peter Ludwig; Klaus Häfener, and Erwin Lieb, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,206

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1977, 2701147

Int. Cl.² C08F 6/24, 6/16

U.S. Cl. 528—487 **6 Claims**

1. A process for the production of vinyl chloride copolymer dispersions having a reduced content of free vinyl chloride comprising the steps of polymerizing a monomer mixture containing from 15% to 90% by weight of vinyl chloride and the remainder, mono-olefinically unsaturated monomers copolymerizable with vinyl chloride selected from the group consisting of vinyl alkanoates having from 1 to 18 carbon atoms in the alkanoate, esters of alkanols having from 1 to 8 carbon atoms with acrylic acid and methacrylic acid, diesters of alkanols having from 1 to 8 carbon atoms with maleic acid, fumaric acid and itaconic acid, ethylene, propylene and mixtures thereof, with from 0 to 5% of the monomer mixture, mono-olefinically-unsaturated monomers copolymerizable with vinyl chloride and having functional groups and from 0 to 2% of the monomer mixture, poly-olefinically-unsaturated monomers copolymerizable with vinyl chloride, under aqueous emulsion polymerization conditions at temperatures of 30° C., to 80° C., in the presence of from 0 to 10% by weight of emulsifiers and from 0 to 5% by weight of protective colloids, with a minimum of 0.1% of at least one of said emulsifiers and said protective colloids, as well as from 0.05% to 2% by weight of free-radical-former polymerization catalysts, all based on the polymerization product, post-polymerizing until a decrease in the autogeneous pressure occurs, releasing the pressure, flushing the gas space above the copolymer dispersion free of monomer, cooling the copolymer dispersion by at least 10° C. to 40° C., to a temperature of from 10° C. to 40° C., said cooled copolymer dispersion having a vinyl chloride content of over 50 ppm, adding a redox catalyst to the cooled dispersion consisting of from 0.002% to 0.5% by weight of the dispersion, of an oil-soluble peroxy compound, and a water-soluble sulfur-containing reducing agent in a ratio of reducing agent to peroxy compound of 0.5 to 3 equivalents, allowing the dispersion to stand at a temperature of from 10° C. to 40° C. for a period of two hours to two days and recovering a copolymer dispersion having a vinyl chloride content of less than 50 ppm.

4,205,162

POLYMER RECOVERY PROCESS

Eva J. Herscovici, Chappaqua, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 3, 1978, Ser. No. 957,596

Int. Cl.² C08J 3/00

U.S. Cl. 528—499 **10 Claims**

1. A process for the removal, in finely divided form, of a polymer product from a solution consisting essentially of an inert organic solvent having a boiling point temperature below the boiling point temperature of water and polymer product, said process comprising adding said solution to a non-boiling, hot water solution under conditions of sufficient, non-shearing agitation and turbulence to effect removal of the solvent from the solution, by boiling off of the solvent, with production of a slurry of water and finely divided polymer product.

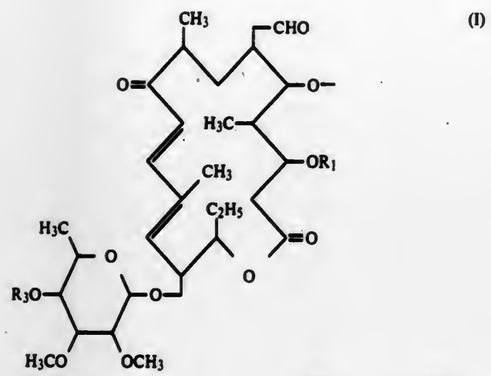
4,205,163

TYLOSIN DERIVATIVES

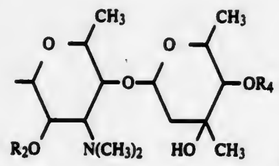
Shunro Mori; Rokuro Okamoto, both of Fujisawa; Taiji Inui, Chigasaki, and Tomio Takeuchi, Tokyo, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 954,055
Claims priority, application Japan, Nov. 8, 1977, 52/134428; Nov. 9, 1977, 52/134961
Int. Cl.[2] A61K *31/71*; C07H *17/08*
U.S. Cl. 536—17 R 50 Claims

1. An acyl derivative of tylosin of the following formula I:



(I)



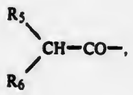
wherein

R_1 represents hydrogen or acetyl,

R_2 represents hydrogen, acetyl, propionyl or chlorinated acetyl,

R_3 represents hydrogen, chlorinated acetyl, carboethoxy or phenoxyacetyl, and

R_4 represents hydrogen or



wherein

R_5 represents hydrogen, methyl, ethyl, hydroxyl or acetoxy, and R_6 represents an alkyl having 3 to 8 carbons (when the number of the carbons is 3, R_5 being a group other than hydrogen), phenyl, 4-nitrophenyl, 4-acetoxyphenyl, naphthyl, benzyl, 4-acetoxybenzyl, cyclohexylmethyl, thienyl, pyridyl, N-acetylanilino, imidazolylmethyl, phenylthio, 4-methylphenylthio, 3-methylphenylthio, 4-chlorophenylthio, benzylthio, phenylthiomethyl, cyclohexylthio, pyridylthio, benzenesulfonyl, phenoxy, naphthoxy or phenoxymethyl,

with the proviso that when R_4 represents hydrogen, R_2 and R_3 each represents a group other than hydrogen, and when R_4 represents a group other than hydrogen, R_2 and R_3 each represents hydrogen and

a nontoxic acid addition salt thereof.

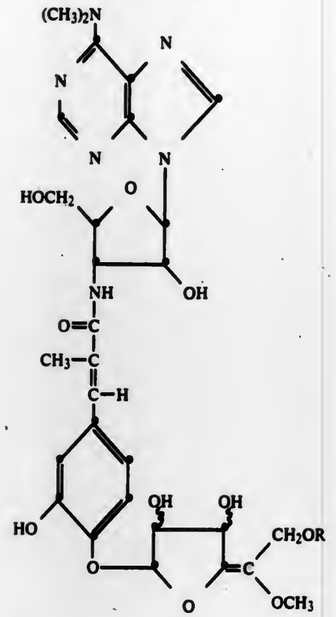
4,205,164

ANTIBIOTIC A201C, A201D AND A201E

Herbert A. Kirst, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 2, 1979, Ser. No. 17,018
Int. Cl.[2] C07D *405/14*
U.S. Cl. 542—421 3 Claims

1. The compound of the formula



wherein R is

α-3,4-di-O-methylrhamnosyl.

4,205,165

PROCESSING OF CEPHALOSPORIN C

Harry C. Stables, and Kenneth Briggs, both of Ulverston, England, assignors to Glaxo Group Limited, London, England

Filed Dec. 1, 1978, Ser. No. 965,586
Claims priority, application United Kingdom, Dec. 6, 1977, 50772/77
Int. Cl.[2] C07D *501/12*
U.S. Cl. 544—20 6 Claims

1. A process for the recovery of cephalosporin C which comprises

(a) contacting a fermentation broth containing cephalosporin C with an anion exchange resin which is either a weak-base resin in the weak acid salt form or free base form or a strong-base resin in the weak acid salt form, to obtain a weakly acidic percolate containing said cephalosporin C from which anions of strong acids present in said broth have been removed;

(b) contacting said percolate with a strong cation exchange resin in the acid form, whereby cations in said resulting solution are replaced by protons and said cephalosporin C remains in the substantially deionised percolate; and

(c) adsorbing cephalosporin C from said percolate onto a weak-base anion exchange resin.

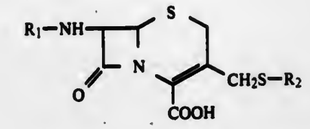
4,205,166

7-SUBSTITUTED-3-AMINOALKYL-, ACYLAMINOALKYL-, OR HYDROXYALKYL-SUBSTITUTED HETEROCYCLIC THIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACID DERIVATIVES AND PREPARATION THEREOF

Takashi Kamiya, Suita; Kunihiko Tanaka; Tsutomu Teraji, both of Toyonaka, and Keiji Hemmi, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 454,805, Mar. 26, 1974, abandoned, Ser. No. 509,905, Sep. 27, 1974, Pat. No. 4,077,965, and Ser. No. 519,030, Oct. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 509,905, , and Ser. No. 454,805, , said Ser. No. 509,905, is a continuation-in-part of Ser. No. 454,805,. This application Feb. 18, 1975, Ser. No. 550,341
Claims priority, application Japan, Feb. 20, 1974, 49-20915
Int. Cl.[2] C07D *501/56, 501/54, 257/04, 285/12*
U.S. Cl. 544—27 38 Claims

1. A compound of the formula:



wherein

R_1 is (a) lower alkyl-substituted or unsubstituted thienyl(lower)alkanoyl, tetrazolyl(lower)alkanoyl, oxadiazolyl(lower)alkanoyl, (b) lower alkylthio(lower)alkanoyl, in which the alkanoyl moiety may be substituted with hydroxy, amino or lower alkoxycarbonylamino, or (c) phenyl(lower)alkanoyl, in which the alkanoyl moiety may be substituted with hydroxy, and

R_2 is amino(lower)alkyl-, lower alkanoylamino(lower)alkyl-, lower alkanesulfonylamino(lower)alkyl-, lower alkoxycarbonylamino(lower)alkanoylamino(lower)alkyl-, guanidinocarbonylamino(lower)alkyl-, lower alkylcarbamoylamino(lower)alkyl-, sulfo(lower) alkylamino(lower)alkyl- or hydroxy(lower)alkyl-substituted thiadiazolyl or amino(lower)alkyl-, lower alkoxycarbonylamino(lower) alkyl- or sulfo(lower)alkylamino(lower)alkyl-substituted tetrazolyl,

and nontoxic pharmaceutically acceptable salts thereof.

4,205,167

PROCESS FOR PRODUCING CYAMELURIC CHLORIDE

Claude Gremmelmaier, Aesch, and Jean Riethmann, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,262
Int. Cl.[2] C07D *403/14*
U.S. Cl. 544—209 6 Claims

1. A process for producing cyameluric chloride, which process comprises passing cyanuric chloride, mixtures of cyanuric chloride and cyanogen chloride, or cyanogen chloride, at temperatures of 200° to 700° C., together with oxygen over active charcoal, and separating the resulting cyameluric chloride by desublimation from the gas mixture obtained.

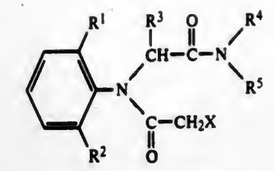
4,205,168

N-CARBAMYLALKYL-2,6-DIALKYL-α-HALOACETANILIDES

David C. K. Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1973, Ser. No. 400,287
Int. Cl.[2] C07D *295/00*; C07C *103/24*
U.S. Cl. 544—165 19 Claims

1. A compound of the formula



wherein R^1 and R^2 individually are alkyl of 1 to 6 carbon atoms; R^3 is hydrogen; R^4 and R^5 individually are hydrogen, alkyl of 1 to 6 carbon atoms or alkenyl of 3 to 6 carbon atoms; and X is chlorine or bromine, with the proviso that R^4 and R^5 may together form a divalent alkylene group of 4 to 6 carbon atoms or $-CH_2CH_2OCH_2CH_2-$.

4,205,169

N-[4-AZIDO-5-(2-ETHOXYETHYL)-6-PHENYL-2-PYRIMIDINYL]ACETAMIDE AND CONGENERS

Hans A. Wagner, Skokie, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Apr. 9, 1979, Ser. No. 28,034
Int. Cl.[2] C07D *239/48, 487/04*
U.S. Cl. 544—323 11 Claims

1. A compound of the formula

wherein Am represents (1-oxoalkyl)amino, bis(1-oxoalkyl-)amino, [(alkylamino)carbonyl]amino, (alkoxycarbonyl)amino or bis(alkoxycarbonyl)amino in which each of the constituent oxoalkyls, alkyls, and alkoxys contains fewer than 5 carbons.

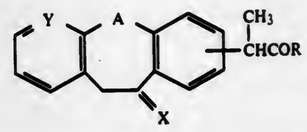
4,205,170

PROPIONIC ACID DERIVATIVES

Yasuo Fujimoto, Tokyo, and Shigeru Yamabe, Kobe, both of Japan, assignors to Nippon Chemiphar Company, Limited, Tokyo, Japan

Filed Nov. 28, 1977, Ser. No. 855,076
Claims priority, application Japan, Dec. 3, 1976, 51-145403; Dec. 3, 1976, 51-145404; Jun. 17, 1977, 52-71690
Int. Cl.[2] C07D *491/04, 495/04, 313/14, 337/14*
U.S. Cl. 546—80 44 Claims

1. A compound of the formula,



wherein X represents an oxygen or two hydrogen atoms, Y represents CH or N, A represents an oxygen or sulfur atom, and R represents hydroxy, amino or a lower alkoxy group having 1 to 5 carbon atoms.

4,205,171

AMINOMETHANOBENZAZOCINES AND NITROMETHANOBENZAZOCINES

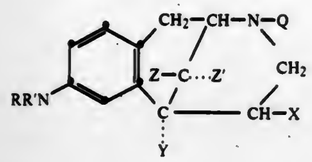
Noel F. Albertson, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 648,509, Jan. 12, 1976, abandoned, which is a division of Ser. No. 507,966, Sep. 20, 1974, Pat. No. 3,968,114. This application Jan. 16, 1978, Ser. No. 869,708

Int. Cl.[2] C07D *221/26*

U.S. Cl. 546—97 **34 Claims**

1. Hexahydro-3-Q-8-RR'N-5-X-6-Y-11-Z-11-Z'-2,6-methano-3-benzazocine having the formula



wherein:

Q is propyl, isobutyl, neopentyl, allyl, 2-methyl-2-propenyl, 2-chloro-2-propenyl, cis-3-chloro-2-propenyl, cis-3-chloro-2-butenyl, trans-3-chloro-2-butenyl, propargyl, cyclopropylmethyl or (2,2-dichlorocyclopropyl)methyl;

R is hydrogen or methyl;

R' is hydrogen, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, sec-butyl, benzyl or cyclopropylmethyl;

X is hydrogen, methyl or ethyl;

Y is hydrogen, methyl, ethyl, propyl, allyl or phenyl;

Z is hydrogen, methyl, ethyl or hydroxy; and

Z' is hydrogen, methyl or ethyl; or an acid addition salt thereof.

4,205,172

7,10-DICHLORO-3-METHYL-4-PHENYL-1,2,3,4-TETRAHYDROBENZ[H]ISOQUINOLINE HYDROBROMIDE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,610

Int. Cl.[2] C07D *221/10*; A61K *31/47*

U.S. Cl. 546—101 **1 Claim**

1. The compound 7,10-dichloro-3-methyl-4-phenyl-1,2,3,4-tetrahydrobenz[h]isoquinoline hydrobromide.

4,205,173

1-HETEROCYCLIC ALKYL-1,2,3,4-TETRAHYDROQUINAZOLINONES AND ANALGESIC INTERMEDIATES THEREOF

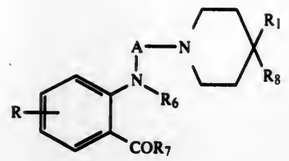
Bola V. Shetty, Rockville, Md., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 452,587, Mar. 19, 1974, abandoned, which is a continuation of Ser. No. 108,659, Jan. 21, 1971, abandoned, which is a division of Ser. No. 691,955, Dec. 20, 1967, Pat. No. 3,635,976. This application Aug. 23, 1976, Ser. No. 716,930

Int. Cl.[2] C07D *211/52*

U.S. Cl. 546—218 **4 Claims**

1. A member of the group consisting of (a) a compound having the formula:



wherein:

R is H, lower alkyl, hydroxy, lower alkoxy, halogen, amino or—NHCHO;

A is $(CH_2)_n$, where n is 1–5, or branched chain alkyl of 3–5 carbons;

R_1 is phenyl;

R_6 is H, lower alkyl, lower alkanoyl, benzoyl, benzyl or benzyl substituted in the ring with NH_2, OH, OCH_3 or Cl;

R_7 is $—NH_2$, —NH-lower alkyl or —N=(disubstituted with lower alkyl);

R_8 is —OH or $—OCOR_9$;

R_9 is lower alkyl; and

(b) a pharmacologically acceptable acid addition salt thereof.

4,205,174

PROCESS FOR THE PRODUCTION OF 6-SUBSTITUTED 4-METHYL-2-PYRIDONES

Urs Michel, Visp, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

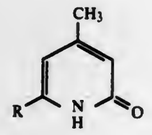
Filed Jan. 11, 1979, Ser. No. 2,594

Claims priority, application Switzerland, Jan. 11, 1978, 272/78

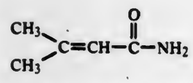
Int. Cl.[2] C07D *213/64*

U.S. Cl. 546—249 **17 Claims**

1. Process for the production of a 6-substituted-4-methyl-2-pyridone having the formula:



wherein R is a branched alkyl group, an unbranched alkyl group a halogenated branched alkyl group, an halogenated unbranched alkyl group, a substituted aryl group or an unsubstituted aryl group, characterized in that: (a) senecioic acid amide having the formula:



is reacted in a solvent at an elevated temperature in the presence of a Lewis acid, as the catalyst, with an acyl chloride having the formula:



wherein R has the same meaning as above, (b) the resultant reaction mixture is inserted into an aqueous phase, whereby hydrolysis occurs, and (c) the 6-substituted-4-methyl-2-pyridione is separated by extraction through the buffering of the reaction mixture at a pH of 4 to 5.

4,205,175

CHLORINATION PROCESS

Roy D. Bowden, and Thomas Seaton, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 7, 1979, Ser. No. 10,598

Claims priority, application United Kingdom, Feb. 15, 1978, 5982/78

Int. Cl.[2] C07D *213/26*

U.S. Cl. 546—345 **4 Claims**

1. A process for the preparation of a mixture of a partially chlorinated derivative of 3-methyl-pyridine selected from the group consisting of, 2-chloro-5-(trichloromethyl)-pyridine, 2-chloro-3-(trichloromethyl)-pyridine, 2-chloro-3-(dichloromethyl)-pyridine and 2-chloro-5-(dichloromethyl)-pyridine, which process comprises chlorinating 3-methyl-pyridine in the vapour phase at a temperature in the range from 250° C. to 400° C., the proportion of chlorine employed being at least 5 moles per mole of 3-methyl-pyridine.

4,205,176

ESTER SUBSTITUTED OXAZOLINES

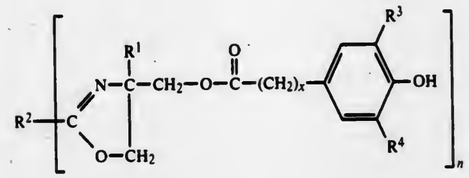
Mary J. Zestermann, Cincinnati, and John F. Hussar, Loveland, both of Ohio, assignors to Cincinnati Milacron Chemicals Inc., Reading, Ohio

Filed Oct. 18, 1978, Ser. No. 952,492

Int. Cl.[2] C07D *263/14*

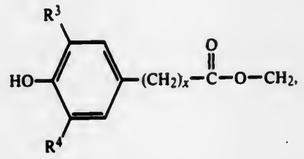
U.S. Cl. 548—239 **9 Claims**

1. An oxazoline compounds having the following formula



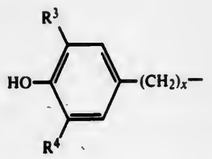
wherein

R^1 is



CH_3 or $CH_3—CH_2$,

R^2 is, when n is 1,



or an alkyl group having from 1 to 23 carbon atoms,

R^2 is when n/is 2, an alkylene group having from 1 to 8 carbon atoms,

R^3 and R^4 are the same or different monovalent straight or branched chain alkyl groups having from 1 to 8 carbon atoms,

n is 1 or 2 and

x is an integer of from 1 to 4.

4,205,177

CARBAMYLTRIAZOLE INSECTICIDES

Joel L. Kirkpatrick, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 662,496, Mar. 1, 1976, Pat. No. 4,160,839. This application Oct. 5, 1977, Ser. No. 839,695

Int. Cl.[2] C07D *249/12*

U.S. Cl. 548—265 **6 Claims**

1. 1-(N,N-Dimethylcarbamyl)-3-cyclopropyl-5-(2-propynylthio)-1H-1,2,4-triazole.

2. 1-(N,N-Dimethylcarbamyl)-3-propyl-5-(2-propynylthio)-1H-1,2,4-triazole.

3. 1-(N,N-Dimethylcarbamyl)-3-cyclopropyl-5-(2-bromoallylthio)-1H-1,2,4-triazole.

4. 1-(N,N-Dimethylcarbamyl)-3-tert.-butyl-5-allylthio-1H-1,2,4-triazole.

5. 1-(N,N-Dimethylcarbamyl)-3-isopropyl-5-allylthio-1H-1,2,4-triazole.

4,205,178

6-KETO PROSTAGLANDIN E-TYPE COMPOUNDS

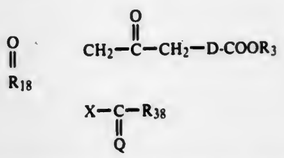
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 755,675, Dec. 30, 1976, abandoned. This application Sep. 2, 1977, Ser. No. 829,679

Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—121 **44 Claims**

1. A compound of the formula



or a mixture comprising that compound and the enantiometer thereof

wherein D is

(1) $—(CH_2)_3—C(R_2)_2—$

(2) $—CH_2—O—CH_2—Y—$ or

(3) $—CH_2CH=CH—$

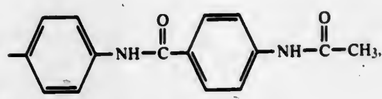
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $—CH_2—$ or $—(CH_2)_2—$,

wherein Q is

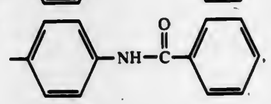


wherein R_8 is hydrogen, methyl, or ethyl, wherein R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

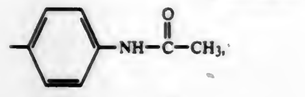
(g)

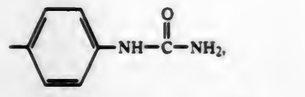


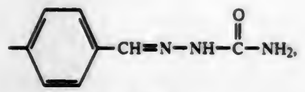
(h)

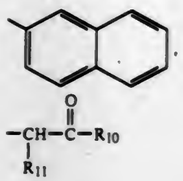


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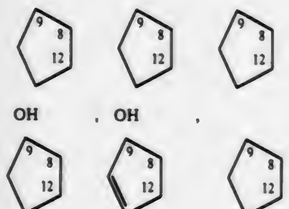




wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or

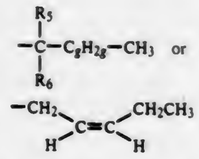
(n) a pharmacologically acceptable cation,

wherein R_{18} is





wherein R_{38} is



(1)

or

(2)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and

wherein X is

(1) trans—CH=CH—

(2) cis—CH=CH—

(3) —C≡C—

(4) $-CH_2CH_2-$,

including the lower alkanoates thereof.

4,205,179

TRANS-2,3,13,14-TETRADEHYDRO-9-DEOXY-9-METHYLENE-PGF COMPOUNDS

(i) **Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

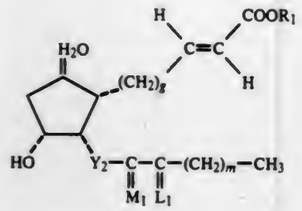
Division of Ser. No. 893,771, Apr. 5, 1978, Pat. No. 4,165,436. This application Aug. 11, 1978, Ser. No. 932,998

Int. Cl.[2] C07C *177/00*

(j) **U.S. Cl. 560—121** **14 Claims**

1. A prostaglandin analog of the formula

(k)



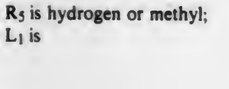
(l)

(m)

wherein m is one to 5, inclusive;

wherein Y_2 is —C≡C—;

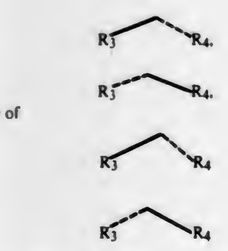
wherein M_1 is



or

wherein R_5 is hydrogen or methyl;

wherein L_1 is



or a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein g is 4, 5, or 6;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,205,180

α-ALKOXYIMINO-β-OXO-γ-BROMOBUTYRIC ACID

Michihiko Ochiai, Osaka; Taiiti Okada, Kyoto; Osami Aki, Kawanishi; Akira Morimoto; Kenji Kawakita, both of Osaka, and Yoshihiro Matsushita, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

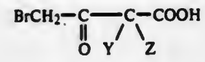
Division of Ser. No. 642,356, Dec. 19, 1975, Pat. No. 4,098,888. This application Jan. 18, 1978, Ser. No. 870,932

Claims priority, application Japan, Dec. 19, 1974, 48/46567; United Kingdom, Jun. 9, 1975, 24611/75

Int. Cl.[2] C07C *119/12*

U.S. Cl. 560—168 **8 Claims**

1. A member selected from the group of (a) a compound of the formula:



wherein Y and Z together represent a group of the formula:

$$=NR^5$$

wherein R_5 is lower alkoxy, (b) an alkali metal salt thereof and (c) an ester thereof selected from the group of C_1 to C_4 alkyl esters, β-methylsulfonylethyl ester, trichloroethyl ester, diphenylmethyl ester, phenyl ester, tolyl ester, p-tert-butylphenyl ester, p-nitrophenyl ester, benzyl ester, phenethyl ester, tolubenzyl ester, p-methoxybenzyl ester and p-nitrobenzyl ester.

4,205,181

PROCESS FOR PREPARING UNSATURATED ESTERS

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 972,856

Int. Cl.[2] C07C *67/05*

U.S. Cl. 560—241 **8 Claims**

1. A process for the preparation of unsaturated esters which comprises contacting a C_3 to C_8 olefin, oxygen and a C_2 to C_8 carboxylic acid in the vapor phase in the presence of a catalytically effective amount of the catalyst consisting essentially of an oxide of uranium and at least one oxide selected from the group consisting of arsenic, antimony and bismuth oxides at an elevated temperature and a pressure above about 40 psig.

4,205,182

PROCESS FOR PREPARING ETHYL ESTERS OF ALIPHATIC CARBOXYLIC ACIDS

Yusuke Izumi, Shinnanyo; Junji Maekawa, Kudamatsu, and Katsumi Suzuki, Tokuyama, all of Japan, assignors to Celanese Corporation, New York, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,666

Claims priority, application Japan, Sep. 28, 1977, 52/115540

Int. Cl.[2] C07C *67/04*; B01J *21/02*

U.S. Cl. 560—247 **27 Claims**

1. In a process for producing an ethyl ester of an aliphatic carboxylic acid which comprises reacting ethylene with an aliphatic carboxylic acid in the liquid phase in the presence of an acid catalyst, the improvement wherein the acid catalyst used is a heteropolyacid of tungsten or its acid metal salt selected from the group consisting of acidic alkali metal salts and acidic copper salt, said heteropolyacid having a central atom of silicon, phosphorus, boron, arsenic, germanium, titanium, cobalt, iron, aluminum, chromium, zirconium, gallium or tellurium and the reaction is carried out in the presence of water in an amount ranging from about 0.01 to about 7.5% by weight based on the weight of said aliphatic carboxylic acid.

4,205,183

FACILE METHOD FOR ISOLATING RESOLVED AMINO ACIDS

Anita L. Hong, San Jose, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 8, 1978, Ser. No. 967,747

Int. Cl.[2] C07B *19/02*

U.S. Cl. 562—401 **4 Claims**

3. A method for isolating L and D amino acids from an aqueous solution of resolved amino acids comprising (L)—H_2N—CHX—COOH and (D)—H_2N—CHX—COOY, wherein X is an amino acid side chain and derivatives thereof and wherein Y is a suitable alkyl group, comprising:

(a) protecting the N-terminus of (L)—H_2N—CHX—COOH and (D)—H_2N—CHX—COOY present in said aqueous solution of resolved amino acids with an N-protecting group to thereby obtain an aqueous solution comprising (L)—R—NH—CHX—COOH and (D)—R—NH—CHX—COOY, wherein R represents said N-protecting group;

(b) contacting said aqueous solution with a base capable of reacting with (L)—R—NH—CHX—COOH to form the N-protected L-amino acid salt thereof in said aqueous solution;

(c) contacting said aqueous solution with a suitable water immiscible organic solvent thereby forming a water layer and an organic solvent layer whereby said N-protected L-amino acid salt is isolated in said water layer and said (D)—R—NH—CHX—COOY is isolated in said organic solvent layer;

(d) separating said layers to thereby obtain a water fraction comprising said L-amino acid salt and an organic fraction comprising said (D)—R—NH—CHX—COOY;

(e) adding a suitable acid to said water fraction to neutralize said base and thereby obtain (L)—R—NH—CHX—COOH;

(f) contacting said neutralized water fraction with a suitable water immiscible organic solvent thereby forming a second water layer and a second organic solvent layer whereby said (L)—R—NH—CHX—COOH is isolated in said second organic solvent layer;

(g) separating said second layers to thereby obtain a second organic fraction comprising said (L)—R—NH—CHX—COOH; and

(h) evaporating off said organic solvent from said second organic fraction layer to obtain (L)—R—NH—CHX—COOH.

4,205,184

METHOD FOR PROCESSING A TAR CONTAINING BENZYL BENZOATE

Cornelis Jongsma, Geleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 27, 1977, Ser. No. 864,722

Claims priority, application Netherlands, Dec. 28, 1976, 7614458

Int. Cl.[2] C07C *63/08, 103/22, 31/16*

U.S. Cl. 562—494 **10 Claims**

1. Method for processing a tar consisting essentially of a benzyl benzoate and tar residue which is formed during the oxidation of an alkyl-benzene compound and which contains substituted or unsubstituted benzyl benzoate, comprising the steps of

(a) subjecting said tar which contains substituted or unsubstituted benzyl benzoate to a hydrolysis reaction, said reaction effected by means of sufficient aqueous basic solution, or an acid, or by using an acid ion exchange catalyst, at a temperature between about 30° C. and about 200° C. to convert essentially all of said benzyl benzoate to the corresponding benzyl alcohol and the corresponding benzoic acid or benzoate salt and provide a hydrolysis reaction mixture comprising an aqueous phase,

(b) contacting said hydrolysis reaction mixture with sufficient organic extracting agent having 12 at most carbon

atoms per molecule to cause said reaction mixture to separate into liquid phases, and to extract essentially all of the organic material except said benzoic acid or benzoate salt into the organic phase, and

(c) separating said liquid phases for further processing.

2. Method for processing a tar consisting essentially of a benzyl benzoate and tar residue which is formed during the oxidation of an alkyl-benzene compound and which contains substituted or unsubstituted benzyl benzoate, comprising the steps of,

(a) subjecting said tar which contains substituted or unsubstituted benzyl benzoate to an ammonolysis reaction, said ammonolysis reaction effected by means of sufficient ammonia, or liquid ammonia, or an amine, at a temperature between about 30° C. and about 200° C. to convert essentially all of said benzyl benzoate to the corresponding benzyl alcohol and the corresponding benzoic acid amide and provide an ammonolysis reaction mixture,

(b) contacting said ammonolysis reaction mixture with an organic extracting agent having at most 12 carbon atoms per molecule to cause said reaction mixture to separate into liquid phases, and to extract essentially all of the organic material except said benzoic acid amide into the organic phase, and

(c) separating said liquid phases for further processing.

4,205,185

PROCESS FOR PREPARING RACEMIC 4-HYDROXYPHENYLGLYCINE

Michael J. Elton, Newcastle; Arthur Jackson, Washington, and John W. Harrison, Newcastle upon Tyne, all of England, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 449,363, Mar. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 160,152, Jul. 6, 1971, abandoned. This application Aug. 31, 1978, Ser. No. 938,475

Int. Cl.² C07B *20/00*

U.S. Cl. 562—444 **7 Claims**

1. A process for the preparation of racemic 4-hydroxyphenylglycine, wherein, based on the total amount of hydroxyphenylglycine formed, less than about 10 percent is 2-hydroxyphenylglycine and greater than about 90 percent is 4-hydroxyphenylglycine, which comprises reacting in an aqueous medium and at a pH of 4 or greater:

(a) ammonia;

(b) phenol; and

(c) glyoxylic acid;

in a molar ratio of a:b:c of about 4:1.25:1 to about 19:13:1; at a temperature in the range of from about 20° C. to about 75° C.; and for a period of time sufficient to effect condensation of a, b and c to form the hydroxyphenylglycine.

4,205,186

PROCESS FOR PREPARING SUBSTITUTED OXYACETALDEHYDES AND ACETALS THEREOF

Mark A. Sprecker, Sea Bright; John J. Kryschuk, Howell, and John B. Hall, Rumson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

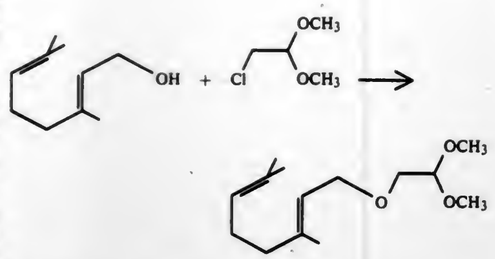
Continuation-in-part of Ser. No. 928,717, Jul. 27, 1978, abandoned, which is a division of Ser. No. 811,480, Jun. 30, 1977, abandoned. This application Jan. 16, 1979, Ser. No. 3,883

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.² C07C *43/30*

U.S. Cl. 568—600 **2 Claims**

1. A process for producing a mixture of geranyl oxyacetaldehyde dimethyl acetal and neryl oxyacetaldehyde dimethyl acetal according to the reaction:



comprising the step of intimately admixing a mixture of geraniol and nerol with chloroacetaldehyde dimethyl acetal in the presence of a base selected from the group consisting of sodium hydroxide and potassium hydroxide and a phase transfer agent which is tricapryl methyl ammonium chloride; the reaction temperature being in the range of from 120° C. up to about 200° C.; the mole ratio of the mixture of geraniol and nerol to chloroacetaldehyde dimethyl acetal being between 0.5:1 up to 2:1; the mole ratio of mixture of geraniol and nerol to base being from 1:1 up to 1:2, the concentration or tricapryl methyl ammonium chloride in the reaction mass based on amount of chloroacetaldehyde dimethyl acetal being in the range of from 0.5 grams of tricapryl methyl ammonium chloride per mole of chloroacetaldehyde dimethyl acetal up to 25 grams of tricapryl methyl ammonium chloride per mole of chloroacetaldehyde dimethyl acetal; the reaction being carried out in the absence of solvent of in the presence of a solvent selected from the group consisting of xylene and decalin; then fractionally distilling the resulting product whereby the mixture of geranyl oxyacetaldehyde dimethyl acetal and neryl oxyacetaldehyde dimethyl acetal is recovered.

4,205,187

PROCESS FOR PREPARING P,P'-BIPHENOL OF HIGH PURITY

Jorge N. Cardenas, Somerville, and Walter T. Reichle, Warren, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 2, 1979, Ser. No. 120

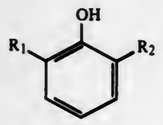
Int. Cl.² C07C *37/00*

U.S. Cl. 568—730 **5 Claims**

1. A process for producing p,p'-biphenol which comprises heating a 4,4'-bis(substituted phenol) at elevated temperatures below the decomposition temperature of p,p'-biphenol in the absence of a catalyst under an inert non-reactive atmosphere for the length of time sufficient to obtain a reaction product containing a substantial amount of p,p'-biphenol while removing the olefin by-product formed and then recovering the p,p'-biphenol product.

5. A process for producing p,p'-biphenol which comprises:

(a) contacting a phenol having the formula



wherein R_1 and R_2 may be the same or different and is a member selected from the group consisting of alkyl radicals containing from 2 to 10 carbon atoms, aralkyl radicals containing from 8 to 10 carbon atoms and having a β alkyl carbon—hydrogen group, and cyclic alkyl radicals having a β alkyl carbon—hydrogen group with oxygen or an oxygen containing gas in the presence of a catalytic quantity of a catalyst selected from the group consisting of alkali metal hydroxides, alkali metal salts of a weak acid, alkaline earth metal hydroxides, alkaline earth metal salts of a weak acid, amine bases, and mixtures of the same at an elevated temperature for the time necessary to react up to a stoichiometric amount of oxygen with said phenol to form a reaction product containing a substantial amount of 4,4'-bis(2,6-disubstitutedphenol);

(b) dealkylating the substituent groups other than hydroxyl from said biphenol, said dealkylating comprises heating said biphenol reaction product at an elevated temperature below the decomposition temperature of p,p'-biphenol in the absence of a catalyst under an inert, non-reactive atmosphere for the length of time sufficient to obtain a reaction product containing a substantial amount of p,p'-biphenol while removing the olefin by-product formed, and then

(c) recovering said p,p'-biphenol.

4,205,188

PROCESS FOR THE PRODUCTION OF HYDROXYBENZYL ALCOHOLS

Wayne C. Muench; Thad S. Hormel; Pamela M. Kirchhoff, and Lanny A. Robbins, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 8, 1978, Ser. No. 940,698

Int. Cl.² C07C *37/24*

U.S. Cl. 568—764 **3 Claims**

1. In a process for the production of mixtures of ortho- and para-hydroxybenzyl alcohols formed during the sodium hydroxide-catalyzed condensation of phenol with aqueous formaldehyde in an alkaline solution, the improvement comprising the solvent extraction of unreacted phenol from the alkaline solution containing the hydroxybenzyl alcohol condensate, at temperatures between about 20° C. and about 60° C., with solvents selected from the group consisting of methyl ethyl ketone, methyl isobutyl ketone, and mixtures thereof.

4,205,189

METHOD FOR PRODUCING 3-ALKYLPHENOLS AND 1,3-DIHYDROXYBENZENE

Lewis B. Young, Skillman, and George T. Burress, Bridgewater, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,629

Int. Cl.² C07C *39/08, 179/02, 3/52*

U.S. Cl. 568—768 **16 Claims**

1. In the process for the production of hydroxybenzene compounds having substituents in the 1 and 3 positions on the benzene ring, said process comprising: (a) alkylation of an aromatic compound with an alkylating agent to produce an isomeric mixture of dialkylbenzene compounds; (b) separation of the isomers of said dialkylbenzene compounds to obtain a material enriched with respect to the 1,3-dialkylbenzene isomer; (c) oxidation of said material enriched with respect to said 1,3-dialkylbenzene isomer with oxygen to yield the hydroperoxide thereof; and (d) acid catalyzed rearrangement of said hydroperoxide by contacting the hydroperoxide with an inorganic acid or a cation exchange resin to yield a 1,3-disubstituted benzene compound having at least one hydroxyl substituent thereon; the improvement comprising

I. in alkylation step (a), carrying out said alkylation of said aromatic compound in the presence of a particular type of zeolite alkylation catalyst at a temperature of from about 100° C. to about 400° C. and a pressure of from about $10^5 N/m^2$ to about $4\times10^6\times N/m^2$, said zeolite alkylation catalyst being characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12; and said improvement further comprising

II. in the separation step (b) contacting said isomeric mixture of dialkylbenzene compounds with a shape selective zeolite catalyst at a temperature of between about 150° C. and about 800° C. and a pressure of between about $10^4 N/m^2$ and about $10^7 N/m^2$, to selectively react the 1,4-dialkyl isomer of said dialkylbenzene compounds, the reaction mixture thereby becoming enriched with respect to the 1,3-dialkyl isomer thereof, said shape selective zeolite catalyst being characterized by a constraint index within the range of from about 1 to about 12 and further by a silica to alumina ratio of at least 12.

4,205,190

PROCESS FOR THE HYDROCARBONYLATION OF METHANOL TO ETHANOL IN THE PRESENCE OF ADDED OXYGEN-CONTAINING ORGANIC COMPOUNDS

Brian R. Gane, Weybridge, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Feb. 12, 1979, Ser. No. 11,190

Claims priority, application United Kingdom, Feb. 17, 1978, 06291/78

Int. Cl.² C07C *31/08*

U.S. Cl. 568—902 **12 Claims**

1. A process for the production of ethanol which process comprises contacting a mixture of methanol and synthesis gas at elevated temperature and pressure with a cobalt-containing catalyst in the presence of an additive which is deliberately charged to the reaction mixture, said additive being an oxygen-containing organic compound selected from the group consisting of acetaldehyde, 1,4-dioxan, tetrahydrofuran, di-n-propyl ether, and diphenyl ether.

4,205,191

HYDROCARBON HYDROGENATION USING ZERO VALENT METAL CATALYSTS

Murray S. Cohen, Convent Station, N.J.; Jan G. Noltes, Huis Ter Heide, and Gerard van Koten, Bilthoven, both of Netherlands, assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 827,278, Aug. 24, 1977, Pat. No. 4,152,303.

This application Nov. 20, 1978, Ser. No. 962,268

Int. Cl.² C07C *5/02, 5/04, 5/06, 5/08*

U.S. Cl. 585—250 **6 Claims**

1. A process for the hydrogenation of aromatic, olefinic and acetylenic compounds comprising treating such compounds with hydrogen in the presence of a zero-valent metal catalyst prepared by reacting an organic metal cluster compound of the formula $Ar_{x+y}M_xLi_y$ where Ar is aromatic hydrocarbyl, M is a group 1B metal, and x and y are 1–4, with a metal halide complex of the formula TX_aL_b where T is a transition metal, X is halogen, L is an organic ligand, b is 1–4, and a is 1–3, in a hydrocarbon solvent.

4,205,192

PROCESS FOR PRODUCING 5-ALKYLIDENENORBORNENE

Tetsuya Harada, Tokyo, Japan, assignor to Japan Synthetic Rubber Company, Limited, Tokyo, Japan

Filed Sep. 25, 1978, Ser. No. 945,348

Claims priority, application Japan, Mar. 31, 1977, 52-35437

Int. Cl.² C07C *13/28*

U.S. Cl. 585—363 **12 Claims**

1. A process for producing a 5-alkylidenenorbornene, which comprises:

contacting a 5-alkenylnorbornene with a catalyst system of ammonia and at least one alkali metal hydride selected from the group consisting of lithium, sodium and potassium hydrides.

4,205,193

PROCESS FOR PRODUCTION OF ISOPRENE CYCLIC TRIMERS

Hiroyuki Morikawa, and Shooji Kitazume, both of Amimachi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed Jul. 26, 1978, Ser. No. 927,982
Claims priority, application Japan, Aug. 3, 1977, 52-93135
Int. Cl.[2] C07C *3/10, 3/21*
U.S. Cl. 585—367 **7 Claims**

1. A process for producing isoprene cyclic trimers which comprises catalytically oligomerizing isoprene to produce trimethylcyclododecatriene, by contacting said isoprene at a temperature of about room temperature to about 150° C. with a catalyst consisting essentially of a combination of:

(A) a tri-valent titanium compound;

(B) an organoaluminum compound;

(C) an oxygen-containing compound selected from the group consisting of:

(a) a carbonyl compound having the formula

$$R^1—\overset{\overset{O}{\|}}{C}—R^2,$$

wherein R^1 is a member selected from the group consisting of C_1-C_{10} alkyl, aryl, and aralkyl radicals; R^2 is a member selected from the group consisting of hydrogen, C_1-C_{10} alkyl, aryl, aralkyl, and OR^3 groups wherein R^3 is a member selected from the group consisting of C_1-C_{10} alkyl, aryl, and aralkyl radicals; and R^1 and R^2 may be combined with each other to form a cyclic structure, and

(b) an ether compound having the formula

$$R^4—O—R^5,$$

where R^4 and R^5 each represents a member selected from the group consisting of C_1-C_{10} alkyl, aryl, and aralkyl radicals; and R^4 and R^5 may be combined with each other to form a cyclic structure; and

(D) a compound selected from the group consisting of:

(a) a sulfur-containing compound having the formula

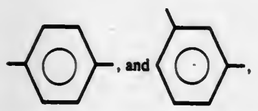
$$R^6—\overset{\overset{O}{\|}}{S}—R^7$$

where R^6 and R^7 each represents a member selected from the group consisting of hydrogen, C_1-C_{10} alkyl which can contain a thioether bond in its chain, aryl, and aralkyl radicals; and R^6 and R^7 may be combined with each other to form a cyclic structure, and

(b) a compound having the following formula

$$Y—R^8—Y',$$

where Y and Y' each represents a member selected from the group consisting of CN, SCN, and SR^9 radicals wherein R^9 is a member selected from the group consisting of C_1-C_{10} alkyl, aryl, and aralkyl radicals; and R^8 is a member selected from the group consisting of $-(CH_2)_n-$ wherein n is an integer having a value of 1-10, inclusive,



wherein the mole ratio of compound (C)/compound (A) is about 0.1 to 10 and the mole ratio of compound (D)/compound (A) is about 0.5 to 5.

4,205,194

PROCESS FOR THE CONVERSION OF RELATIVELY LOW MOLECULAR WEIGHT HYDROCARBONS, TO HIGHER MOLECULAR WEIGHT HYDROCARBONS, CATALYST-REAGENTS FOR SUCH USE IN SUCH PROCESS, AND THE REGENERATION THEREOF

Howard L. Mitchell, III, and Robert H. Waghorne, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 903,814, May 8, 1978. This application Dec. 18, 1978, Ser. No. 970,540
Int. Cl.[2] C07C *3/44*
U.S. Cl. 585—407 **31 Claims**

1. The process for the oligomerization of a hydrocarbon feed which comprises

contacting said hydrocarbon feed with a catalyst-reagent comprising (1) a Group VIII noble metal having an atomic number of 45 or greater, nickel, or a Group I-B noble metal having an atomic number of 47 or greater, (2) a Group VI-B metal oxide which is capable of being reduced to a lower oxide, and (3) a Group II-A metal, composited with a spinel-coated inorganic oxide support,

at temperatures ranging from about 1150° F. to about 1600° F.

11. A process for the oligomerization of methane which comprises

contacting said methane with a catalyst-reagent comprising (1) a Group VIII noble metal having an atomic number of 45 or greater, nickel, or a Group I-B noble metal having an atomic number of 47 or greater, (2) a Group VI-B metal oxide which is capable of being reduced to a lower oxide, and (3) a Group II-A metal, composited with a spinel-coated inorganic oxide support,

at temperatures ranging from about 1150° F. to about 1600° F.

4,205,195

PROCESS FOR THE DIMERIZATION OF C_8-C_{20} OLEFINS AND THE OLEFIN DIMERS OBTAINED THEREBY

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Mar. 23, 1979, Ser. No. 23,288
Claims priority, application France, Mar. 28, 1979, 79 08852
Int. Cl.[2] C07C *3/10*
U.S. Cl. 585—510 **12 Claims**

1. A process of dimerizing C_8-C_{20} olefins in the presence of hydrofluoric acid, comprising:

(1) contacting for about 1 to 30 minutes at least one C_8-C_{20} olefin with liquid hydrofluoric acid at a temperature of between about −20° C. and +60° C. in a molar ratio of hydrofluoric acid to olefin of between about 1:1 and 50:1;

(2) immediately after the contacting operation, substantially instantaneously separating the hydrofluoric acid present from the dimerization medium;

(3) effecting a defluorination of said medium; and

(4) recovering the resultant olefin dimers.

4,205,196

ACID-TYPE HYDROCARBON ALKYLATION WITH ACID RECYCLE STREAMS AT SPACED POINTS OF A VERTICALLY-DISPOSED ELONGATED REACTOR

Donald J. Makovec, and Donald M. Haskell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 5, 1979, Ser. No. 27,426
Int. Cl.[2] C07C *3/54*; G01N *25/00*; B01J *8/00*
U.S. Cl. 585—701 **36 Claims**

1. A method of alkylating at least one alkylatable hydrocarbon with at least two different alkylating agents and an equal number of different reaction temperatures, respectively, in a single reaction zone and in the presence of an acid-type catalyst, comprising:

introducing a first alkylating agent, at least a portion of at least one alkylatable hydrocarbon and an acid-type catalyst at a first point adjacent the lower end of a vertically-disposed, elongated alkylation reaction zone and passing the same upwardly through said reaction zone;

introducing at least one other alkylating agent, differing from said first alkylating agent and from one another, into said reaction zone at at least one spaced, other point, above said first point and passing the same upwardly through said reaction zone;

passing effluent from the upper, discharge end of said reaction zone into a separation-surge zone;

separating said effluent into a hydrocarbon product phase and an acid phase in said separation-surge zone; and

maintaining different reaction temperatures adjacent each of said first point and said at least one other point by dividing the thus separated acid phase into a number of recycle acid phase streams equal to the number of said first point and said at least one other point and recycling one of said recycle acid phase streams to said reaction zone adjacent said first point and recycling each of said other streams of said number to said at least one other point respectively.

26. Apparatus for alkylating at least one alkylatable hydrocarbon with at least two different alkylating agents at an equal number of different reaction temperatures, respectively, in the presence of an acid-type catalyst comprising:

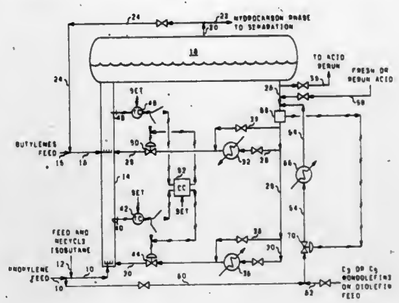
a vertically-disposed, elongated alkylation reactor means;

first alkylating agent feed conduit means operatively connected to said reactor adjacent the bottom thereof and adapted to introduce a first alkylating agent upwardly through said reactor;

at least one additional alkylating agent feed conduit means operatively connected to said reactor at an equal number of separate points above said first alkylating agent conduit and adapted to introduce at least one additional alkylating agent upwardly through said reactor;

at least one alkylatable hydrocarbon feed conduit means operatively connected to said reactor and adapted to introduce at least one alkylatable hydrocarbon into said reactor at one of the point of introduction of said first alkylating agent, the point of introduction of said at least one additional alkylating agent or both the point of introduction of said first alkylating agent and the point of introduction of said at least one additional alkylating agent;

separator-surge means operatively connected to the upper, outlet end of said reactor and adapted to receive effluent from said reactor and to separate said effluent into a hydrocarbon product phase and a recycle catalyst phase; and

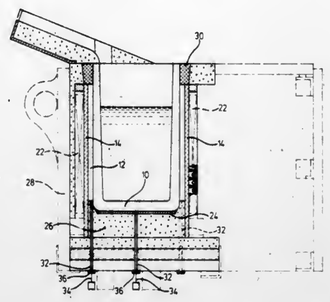


recycle catalyst conduit means operatively connected to said separator-surge means and said reactor and adapted to receive the thus separated recycle catalyst phase and introduce one portion of said recycle catalyst phase into said reactor adjacent one of said point of introduction of said first alkylating agent and said point of introduction of said at least one additional alkylating agent and the remainder of said recycle catalyst phase into said reactor adjacent the other of said point of introduction of said first alkylating agent and said point of introduction of said at least one additional alkylating agent.

4,205,197
INDUCTION FURNACE OF GRAPHITE CRUCIBLE

Tsuguharu Omori, and Michio Kawasaki, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 28, 1978, Ser. No. 964,297
Claims priority, application Japan, Dec. 2, 1977, 52-160884
Int. Cl.² H05B 5/12
U.S. Cl. 13—27 5 Claims

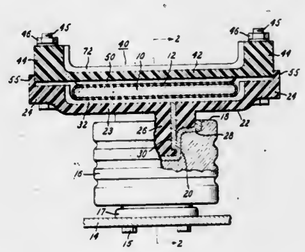


1. An induction furnace comprising a supporting housing having a furnace bed and surrounding furnace walls, a graphite crucible located within said housing in upright position, a thermal insulated outer sheath having a height less than said furnace wall and surrounding said crucible, a coil wound about the exterior of said sheath, said crucible and said sheath being mounted on said furnace bed spaced from each other to define an annular air space therebetween closed at its bottom end and open at its upper end, a removable seal for closing the upper end of said air space comprising an annular member having a wedge shaped cross section insertible between the inner periphery of said furnace wall and the outer periphery of said crucible and having a frontal edge adapted to seat on the upper end of said thermal sheath, and at least one conduit extending through the furnace base in communication with said air space for the removal of molten metal therefrom.

4,205,198
BUS STRUCTURE COMPRISING AN INSULATING SUPPORT AND A COATED ELECTRIC BUS BAR

Malachy V. Boyle, Narberth, Pa., and Mid Ouyang, Cherry Hill, N.J., assignors to General Electric Company, Philadelphia, Pa.

Filed Jul. 10, 1978, Ser. No. 923,290
Int. Cl.² H01B 17/18
U.S. Cl. 174—171 8 Claims

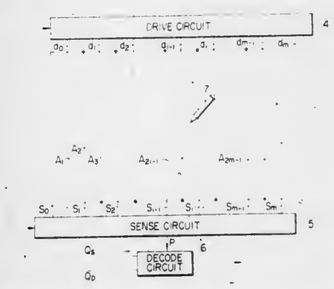


1. In electric bus structure:
(a) a bus bar,
(b) a post-type insulator supporting said bus bar and having an end surface facing said bus bar,
(c) a coating of insulating material completely covering all external surfaces of said bus bar in the general region of said insulator,
(d) a bracket of insulating material with a U-shaped cross-section mounted on said insulator and having a bight portion extending across said end surface and a pair of spaced-apart arms at opposite ends of said bight portion extending in a direction away from said insulator,
(e) means clamping said bus bar to said bracket in a position between said arms without perforating said insulating coating comprising a clamping member of insulating material extending between said arms and attached thereto,
(f) said bracket and said clamping member each having end surfaces located at points spaced apart along the length of said bus bar,
(g) said bracket and said clamping member each having rib structure projecting toward said bus bar and providing the sole surfaces through which contact is made between the coating on said bus bar and the bracket and clamping member when the bus bar is clamped to said bracket,
(h) said rib structure being spaced from each of said end surfaces by a substantial distance considered longitudinally of said bus bar so that there are present between said rib structure and said end surfaces shallow tunnels bounded by insulation and extending along the length of said bus bar adjacent said insulating coating.

4,205,199
TABLET INPUT DEVICE

Tamotsu Mochizuki, Yokosuka, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed May 24, 1978, Ser. No. 909,282
Claims priority, application Japan, May 31, 1977, 52-63477; May 31, 1977, 52-63478; Jun. 2, 1977, 52-65040; Jun. 7, 1977, 52-66935; Jun. 7, 1977, 52-66936; Jan. 31, 1978, 53-8816
Int. Cl.² G08C 21/00
U.S. Cl. 178—19 16 Claims



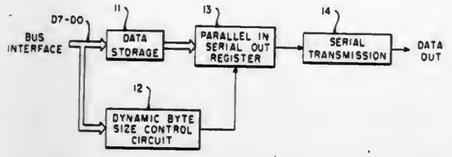
1. A tablet input device comprising
(a) a manipulation pad consisting of
a drive line group consisting of a plurality of parallel conductors, and
a sense line group consisting of a plurality of parallel conductors,
said groups being parallel to each other and mutually interlaced;
(b) a drive circuit connected to said drive line group for selecting sequentially one or more drive lines and passing a variable drive current through said selected drive line or drive lines;
(c) a sense circuit connected to said sense line group for selecting one or more sense lines at the positions corresponding to said one or more selected drive lines and detecting the voltage induced across said one or more selected sense lines, at least two lines of one group and one line of the other group disposed therebetween being simultaneously selected; and
(d) an input pen for coupling together adjacent drive and sense lines at any selected point on said manipulation pad;
whereby when said variable drive current flows through said one or more selected drive lines adjacent to the point indicated by said input pen, said sense circuit may detect voltage induced across said one or more selected sense lines, thereby detecting the point selected by said input pen.

4,205,200

DIGITAL COMMUNICATIONS SYSTEM UTILIZING CONTROLLABLE FIELD SIZE

Bipin D. Parikh; Haresh C. Patnaik; Bhagubhai K. Patel, all of Cambridge, Ohio; Prabodh M. Dharia, Des Plaines, Ill., and John J. Kurtz, Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 4, 1977, Ser. No. 839,483
Int. Cl.² H04J 3/16
U.S. Cl. 370—83 **14 Claims**



1. In a digital data communications system wherein data is assembled from its constituent bytes at a transmitter terminal, serially transmitted, and disassembled into its constituent bytes at a receiver terminal, a method of controlling the byte size of the data serially transmitted from said transmitter terminal and received at said receiver terminal without the use of filler bits, comprising the steps of:

at the transmitter terminal,

generating a first byte which contains information as to whether there is to occur a change in the size of data bytes transmitted, and the size of the data bytes transmitted subsequent to the change,

generating a second byte which contains information representative of the number of data bytes to be transmitted prior to the change in byte size, and

transmitting said first and second bytes followed by the bytes of the data field to be transmitted, and

at the receiver terminal,

receiving the first and second bytes transmitted from said transmitter,

decoding the information contained in said first and second bytes relative to the size of the bytes of the data field, and

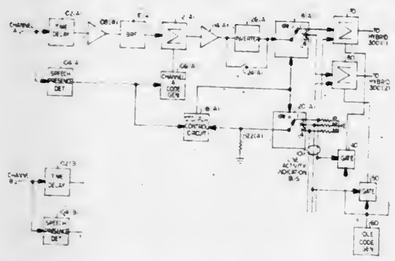
receiving said data field and disassembling said data field into the bytes of which it is composed in accordance with said decoding step.

4,205,201

METHOD AND MEANS FOR REDUCING INTELLIGIBLE CROSSTALK IN TELEPHONE SYSTEMS

Leonard R. Kahn, 137 E. 36 St., New York, N.Y. 10016

Division of Ser. No. 870,330, Jan. 18, 1978. This application Oct. 10, 1978, Ser. No. 950,012
Int. Cl.² H04J 6/02
U.S. Cl. 370—81 **5 Claims**



1. The method of improving the line utilization efficiency of a multichannel telephone system comprising:

(a) sensing speech activity of a channel,

(b) selecting a line from an inactive group of lines to transmit the speech sensed in Step (a), and subsequently connecting the channel's speech wave to the selected line,

(c) rapidly transmitting the initial channel identification information over substantially the entire bandwidth of the selected line to the remote end of the line, and

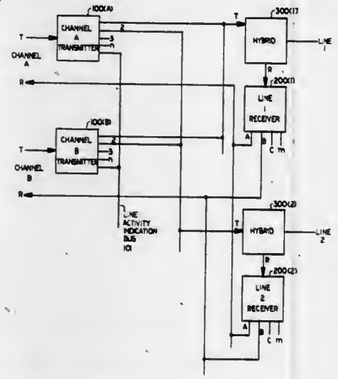
(d) transmitting continuous channel verification information in a narrowband slot in the passband of the line concurrently with the transmission of the speech.

4,205,202

METHOD AND MEANS FOR IMPROVING THE SPECTRUM UTILIZATION OF MULTICHANNEL TELEPHONE SYSTEMS

Leonard R. Kahn, 70 N. Grove St., Freeport, N.Y. 11520

Filed Jan. 18, 1978, Ser. No. 870,330
Int. Cl.² H04J 3/10
U.S. Cl. 370—81 **5 Claims**



1. The method of implementing a TASI type system utilizing transmission lines of the two wire configuration comprising;

(a) separating talk and listen signals at junctions of two wire and four wire lines and rendering crosstalk, due to imperfect separation, unintelligible by,

(b) encoding the speech transmitted in one direction differently than speech transmitted in the other direction, and

(c) decoding the encoded speech at the far end of the system.

4,205,203

METHODS AND APPARATUS FOR DIGITALLY SIGNALING SOUNDS AND TONES IN A PCM MULTIPLEX SYSTEM

Madhu A. Mehta, Alkapuri, India; Satyan G. Pitroda, Villa Park, Ill., and Sagunabalan Vasanthkumar, Kareli Baug, India, assignors to Wescom Switching, Inc., Downers Grove, Ill.

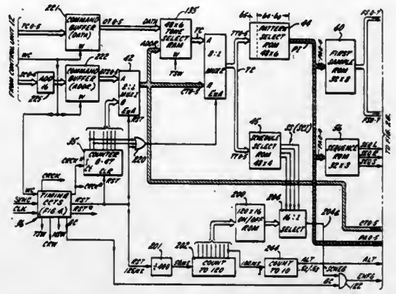
Filed Aug. 8, 1978, Ser. No. 931,876
Int. Cl.² H04J 3/12
U.S. Cl. 370—110 **110 Claims**

1. The method of digitally signaling different ones of a plurality of sounds SD_o-SD_n in different ones of a plurality of successive time slots TS_o-TS_n of repeating cycles in a PCM multiplex communication system, said method comprising

(a) for each sound SD_o-SD_n initially storing in addressable, readable main memory—as multi-bit digital numerical words—a pattern of successive samples representing the sampled magnitudes of at least a symmetrical portion of an analog wave corresponding to the desired sound,

(b) during and only within the duration of each time slot, applying address signals to said main memory to effect readout to a common bus of one sample of a preselected pattern for that slot, and

(c) as each cycle transpires, changing the address signals so applied during each time slot so that the samples of the



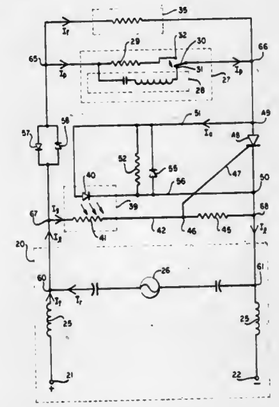
preselected pattern are scanned with the passage of ongoing cycles.

4,205,204

TELEPHONE LOOP EXTENDING APPARATUS

Richard W. Clenney, 812 59th St., NW., Bradenton, Fla. 33505

Continuation-in-part of Ser. No. 775,429, Mar. 8, 1977, Pat. No. 4,140,881. This application Oct. 25, 1978, Ser. No. 954,370
Int. Cl.² H04M 1/76
U.S. Cl. 179—16 F **11 Claims**



1. A loop extender for a telephone system including a central office, a subscriber loop which conducts a loop current and a termination of said subscriber loop, said termination being selectively operable to draw a predetermined off hook current from said central office through said subscriber loop, comprising:

a shunt resistance connected across said loop for conducting a shunt current;

control means responsive to said loop current flowing in said subscriber loop for causing said shunt resistance to vary in an inverse relationship to said loop current until said shunt current reaches a first predetermined value; and

switching means for providing a substantially instantaneous increase in said shunt resistance in response to said shunt current reaching said first predetermined value;

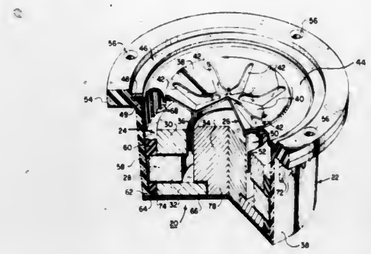
wherein said switching means renders said control means unresponsive to said loop current upon the occurrence of said increase until said loop current reaches a second predetermined value less than said predetermined off hook current.

4,205,205

DYNAMIC LOUDSPEAKER HAVING MAGNETIC ASSEMBLY ADHESIVELY BONDED WITHIN A SURROUNDING BASKET

Burton A. Babb, Dallas County, Tex., assignor to Babbco, Ltd., Richardson, Tex.

Filed Jun. 12, 1978, Ser. No. 914,782
Int. Cl.² H04R 9/06, 31/00
U.S. Cl. 179—115.5 R **13 Claims**



2. A loudspeaker comprising:

a magnetic assembly forming an annular flux gap;

a frame having a peripheral flange adapted for mounting the loudspeaker in a suitable baffle, and walls extending rearwardly from the flange and forming a cylindrical liquid container disposed around the magnetic assembly and spaced therefrom to form an annular space,

an acoustic radiator assembly peripherally suspended within the frame, and having a voice coil reciprocally disposed in the annular flux gap, the voice coil being adapted to acoustically excite the acoustic radiator assembly in response to a current flowing therein; and

an adhesive hardened from a liquid state disposed in the annular space and circumferentially bonding the magnetic assembly to the walls of the frame.

4,205,206

CARBON GRANULE MICROPHONE WITH MOLDED RESIN-CONDUCTIVE CARBON ELECTRODE

Tetsusuke Eishima; Takehiro Ikariyama, both of Tokyo; Raizo Jinnouchi, Machida; Kunioki Oyagi, Tokyo, and Takashi Soda, Inagi, all of Japan, assignors to Iwatsu Electric Co. Ltd. and Nippon Telegraph and Telephone Public Corp., both of Tokyo, Japan

Continuation of Ser. No. 736,408, Oct. 28, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 886,156
Claims priority, application Japan, Oct. 31, 1975, 50-130324; Dec. 15, 1975, 50-148455
Int. Cl.² H04R 21/02
U.S. Cl. 179—124 **8 Claims**

1. A carbon telephone transmitter comprising:

a diaphragm;

a movable electrode attached to said diaphragm;

a fixed electrode; and

a pack of carbon granules packed between said movable and said fixed electrodes, at least one of said electrodes comprising a cured thermosetting resin molding having 30 to 95% by weight, based on the weight of the electrode, of particulate conductive carbon dispersed therein.

4,205,207

DRAW OUT CIRCUIT BREAKER ASSEMBLY

Challiss I Clausing, Marlton, N.J., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 16, 1978, Ser. No. 869,777
Int. Cl.² H01H 9/20
U.S. Cl. 200—50 AA **9 Claims**

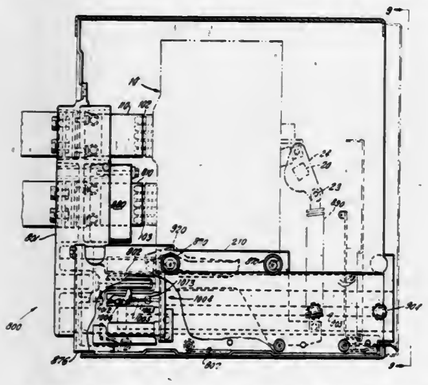
1. In a switchboard having a cubicle for a draw-out circuit breaker; said cubicle having a plurality of buses at the rear

thereof, side walls, a bottom wall, a front opening and means for closing said front opening; a circuit breaker insertable in said cubicle movable therein toward and away from the rear thereof and removable from said cubicle; said circuit breaker including movable and stationary contacts and means for closing and opening said contacts; said circuit breaker also having sets of upper and lower disconnect contacts extending from the portion of the circuit breaker directed toward the rear of the cubicle when the circuit breaker is inserted in the cubicle; racking means on said circuit breaker for cooperating in moving said circuit breaker in said cubicle toward and away from the rear thereof; and means on said circuit breaker for cooperating with and riding on a pair of tracks;

a cradle for said cubicle;

a pair of parallel fixed tracks forming the principal structural members of said cradle;

said tracks extending parallel to and substantially adjacent said side walls of said cubicle from an area substantially



adjacent said rear of said cubicle to said front opening of said cubicle;

said cradle having a bottom wall connecting said tracks;

a vertical support wall of insulating material at the rear of said cradle supported between and connected to said tracks;

means for securing said cradle in said cubicle;

upper and lower sets of stationary disconnect contacts;

openings in said vertical support wall of said cradle receiving and supporting said upper and lower stationary disconnect contacts; and

means for connecting said stationary disconnect contacts to their respective buses; and

means connected to said vertical support wall engageable with said racking means of said circuit breaker and providing a stationary anchor with respect to which the racking means of said circuit breaker may operate to draw the circuit breaker into the cubicle and to push the circuit breaker toward the front of the cubicle.

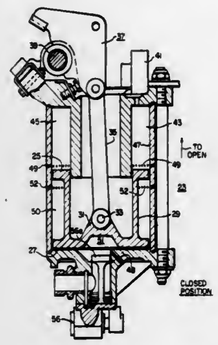
4,205,208

DOUBLE-FLOW COMPRESSED-GAS OPERATING MECHANISM FOR A HIGH-VOLTAGE CIRCUIT-BREAKER

Ben J. Calvino, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 16, 1978, Ser. No. 887,283
Int. Cl.² H01H *35/38*
U.S. Cl. 200—82 R **3 Claims**

1. In combination, a high-voltage, compressed gas circuit-interrupting structure having one or more separable contacts to effect the opening and closing of a connected circuit, operating means for moving the contacts between open and closed positions, means defining a stationary operating cylinder having an inwardly-directed tubular guide-portion extending therewithin and thus forming an annular chamber (45), the operating means comprising a movable double-flanged driving piston having one flange portion thereof slidable and guided by said inwardly directed tubular guide-portion and with the outer periphery of said flange portion guided by an inner cylinder wall, an opposite flange portion of said movable piston extending entirely across an entire inner cross-section of the stationary operating cylinder so as to present a greatly-increased surface working area, as contrasted with the relatively-small annular surface (25) of the first mentioned flange portion of the movable driving piston, means defining a rotatable operating shaft, means interconnecting said movable piston structure to said rotatable operating shaft by a pivotally-connected piston-rod extending through the center of said inwardly-directed tubular guide-portion and connected to a crank-arm lever affixed to said rotatable operating shaft, valve



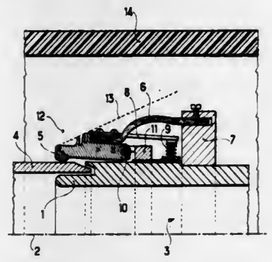
means (41) for admission of high-pressure gas to the annular volume (45) formed between the inner cylinder wall and the outer surface of said inwardly-directed tubular guide-portion, additional valve means for the admission of the high-pressure gas across the entire opposite working face of said piston throughout the entire inner diameter of the stationary operating cylinder, means defining a plurality of exhaust apertures communicating with said annular volume (45) so as to exhaust the gas within said annular volume (45) at the end of the movable piston at one end of its stroke, and means defining a plurality of other exhaust apertures provided in the wall of the stationary operating cylinder to thereby exhaust the high-pressure gas from the volume of the operating cylinder at the other end of the working stroke of said movable piston.

4,205,209

ARTICULATED CONTACT FINGER

Edmond Thuries, Pusignan; Bernard Raynaud, Caluire, and Armand Scarato, Lyons, all of France, assignors to Societe Anonyme Dite: Delle-Alsthom, Villeurbanne, France

Filed Feb. 7, 1979, Ser. No. 10,281
Int. Cl.² H01H *1/38, 1/50, 33/02*
U.S. Cl. 200—163 **4 Claims**



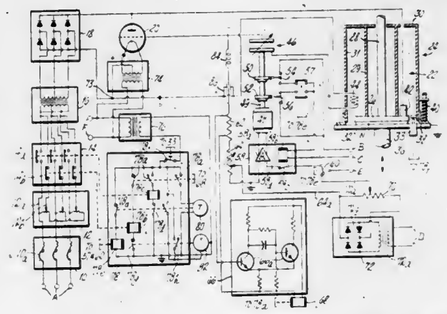
1. A longitudinally extending articulated contact finger assembly for a circuit-breaker, to establish an electrical connection between a longitudinally separable stationary contact and a moving contact, said finger assembly including a contact piece, means for pivoting said contact piece about a pin which is integral with a first support mechanically connected to the stationary contact, a spring for providing a force to press the contact piece against the moving contact, a flexible connection connected to a second support mechanically and electrically connected to the stationary contact, the improvement wherein said pin is disposed longitudinally between the contact piece and said spring, said spring is a compression spring and disposed between said stationary contact and a lever integral with said contact finger.

4,205,210

HIGH FREQUENCY CAVITY PRESS

Malcolm Salway-Waller, Rowley Fields, and Frederick H. Langton, Groby, both of England, assignors to USM Corporation, Farmington, Conn.

Continuation-in-part of Ser. No. 767,773, Feb. 11, 1977, abandoned, which is a continuation of Ser. No. 638,331, Dec. 8, 1975, abandoned. This application Jan. 4, 1978, Ser. No. 866,934
Claims priority, application United Kingdom, Dec. 20, 1974, 55256/74
Int. Cl.² H05B *9/04;* B29C *27/04;* C09J *5/06*
U.S. Cl. 219—10.81 **4 Claims**



1. An apparatus for applying a high frequency electric field and pressure on workpieces comprising:

a resonant cavity wherein the workpiece on which a high frequency operation is to be performed can be enclosed and pressure can be applied by an arrangement of platen members;

a triode tube having an anode which is connected to the interior of said resonant cavity;

a variable tuning means connected between a grid on said tube and a feedback coil contained within said resonant cavity;

a voltage applying means for applying a first, lower, voltage, or a second, higher, voltage to said tube;

operating means for varying said variable tuning means while said first voltage is applied to said tube, thereby causing the grid current of said tube to increase and a high frequency field to be built up in said resonant cavity, said voltage applying means comprising switching means operable upon the grid current attaining a predetermined value to replace said first voltage by said second voltage;

signaling means sensitive to changes in the grid current of said tube for causing said operating means after said second voltage has been applied to said tube to vary said variable tuning means so as to bring the grid current to a second predetermined value and thereafter to return the grid current to said value should it deviate therefrom;

holding means arranged to maintain the grid current at the maximum value attained should the grid current fail to attain the second predetermined value;

a relay operable to switch from the first to the second voltage in response to a current sensor arranged to sense the grid current of said tube;

a timing means arranged to switch off the high frequency field in said resonant cavity after a predetermined time interval; and

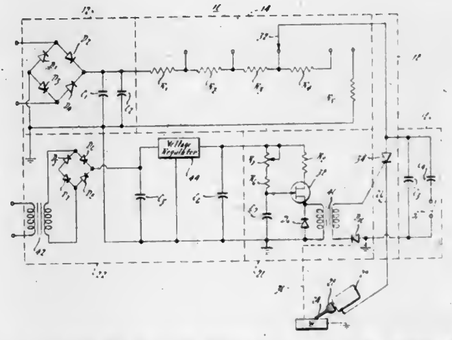
a second timing means which is arranged to release the pressure on said workpiece after a further predetermined time interval.

4,205,211

SURFACE ALLOYING APPARATUS INCLUDING SAFETY CIRCUIT

Richard A. Serlin, 10 Barbour La., Bloomfield Hills, Mich. 48013, and Thomas A. Field, Rochester, Mich., assignors to Alloying Surfaces, Inc., Troy, Mich. and Richard A. Serlin, Bloomfield Hills, Mich.

Filed Nov. 23, 1977, Ser. No. 854,134
Int. Cl.² B23K *9/10*
U.S. Cl. 219—76.13 **2 Claims**



2. For a surface alloying apparatus including an electrode adapted to be electrically energized and to engage a workpiece to form an alloy upon the surface of said workpiece, and energization means for said electrode including storage means for storing electrical energy and firing means connected between said storage means and said electrode for repetitively providing electrical energy stored by said storage means to said electrode including controlled conduction means having a control terminal and at least one other terminal for causing energization of said electrode and triggering circuit means connected between said control terminal and said other terminal for providing a triggering signal to said controlled conduction means for causing said controlled conduction means to conduct to cause energization of said electrode, the improvement comprising:

said triggering circuit means being series connected in circuit with said electrode and said workpiece so as to open circuit said triggering circuit means when said electrode is not engaged with said workpiece and to close circuit said triggering circuit means when said electrode is engaged with said workpiece thereby being responsive to the electrical engagement of said electrode to said workpiece for preventing firing of said firing means when said triggering circuit means is open circuited consequent said electrode being not electrically engaged with said workpiece and for causing firing of said firing means when said triggering circuit means is closed circuited consequent said electrode being electrically engaged with said workpiece, said triggering circuit means being associated with said controlled conduction means such that said triggering signals for causing conduction of said controlled conduction means are provided to said controlled conduction means only when said trigger circuit means is closed circuited by electrical engagement of said electrode and said workpiece.

4,205,212

ELECTRO-EROSION MACHINE TOOLS AND HEAD ASSEMBLIES THEREFOR

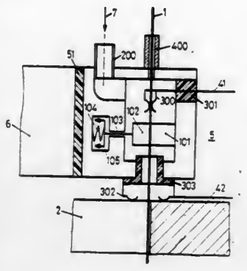
Werner Ullmann, Locarno; Ernst Bühler, Tenero; Beat Kilcher, Ascona; Herbert Ruh, Laupen-Wald, and Arno Sieg, Locarno, all of Switzerland, assignors to A.G. für industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

Filed Apr. 26, 1977, Ser. No. 791,055

Claims priority, application Switzerland, Aug. 20, 1976, 10633/76

Int. Cl.[2] B23K *1/12*

U.S. Cl. 219—69 W 11 Claims



1. Electro-erosion apparatus of the type in which an elongated tool electrode (1) is moved under tension between first and second head assemblies (5*a*, 5*b*) for performing an electro-erosion work process on a workpiece (2) wherein

the workpiece is disposed between said head assemblies,

each said head assemblies includes

means (300*a*, 300*b*) for making electrical contact to said electrode and each of said head assemblies further includes means directing scavenging fluid to the electro-erosion location working gap,

wherein each of said assemblies comprises a housing;

fluid inlet means (200*a*, 200*b*) leading to the interior of the respective housing for passing scavenging fluid (7*a*, 7*b*) to the respective interior of the respective housing to fill the respective housing;

an outlet nozzle (303) defining an opening between the interior and the exterior of the respective housing through which a tool electrode can pass from one housing to the other, and through which scavenging fluid also can pass from the interior of the respective housing as an envelope surrounding and in contact with said tool electrode, and being directed toward the workpiece;

electrical contacts (300*a*, 300*b*) mounted in the respective interior of the respective housing and being cooled by the scavenging fluid therein and in electrical contact engagement with said tool electrode;

and tool electrode guide means (100*a*, 100*b*) mounted in the interior of the respective housing, each guide means being cooled by the scavenging fluid within the respective housing and guiding said tool electrode in its path through said outlet means, at least one of said guide means comprising two support members (101, 102), two parallel pivot pins (119) attached to respective ones of said support members, a first set of polygonal guide plates (115, 116) rotatably mounted one above another on one of said pivot pins, and a second set of polygonal guide plates (117, 118) rotatably mounted one above another on the other of said pivot pins, said plates being so arranged in relation to one another that edge portions thereof bound a space in which said tool electrode can be located so that said edge portions are in sliding contact with said tool electrode and such that, for each plate, there is another one of said plates which is at the same level on said pivot pins and which contacts said tool electrode on the opposite side thereof.

4,205,213

METHOD OF AND APPARATUS FOR ELECTRICAL DISCHARGE MACHINING WITH A VIBRATING WIRE ELECTRODE

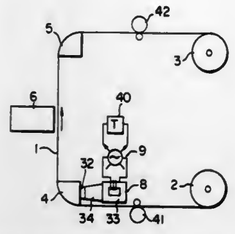
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed May 12, 1977, Ser. No. 796,369

Claims priority, application Japan, May 14, 1976, 51-55743; May 20, 1976, 51-58271; Jul. 21, 1976, 51-87614; Jul. 23, 1976, 51-88376; Aug. 19, 1976, 51-99306; Feb. 18, 1977, 52-16175

Int. Cl.[2] B23P *1/12*

U.S. Cl. 219—69 W 25 Claims



1. In a method of electrically machining a conductive workpiece in which:

a travelling-wire electrode and the workpiece are relatively displaced transversely to the axis of the travelling wire electrode and define a machining gap therebetween,

a machining liquid is supplied to said gap, and

a series of electrical pulses are applied across the workpiece and the electrode to generate machining discharges in the gap to remove material from the workpiece, the improvement which comprises:

imparting a vibration to the travelling-wire electrode which is at a frequency not lower than 100 Hz; and periodically modifying a parameter of said vibration.

4,205,214

APPARATUS FOR MACHINING FLASH AND UPSET MATERIAL FORMED IN FLASH WELDING OPERATION

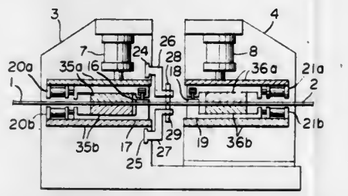
Takao Suzuki; Yoshimasa Komatsu, both of Chita; Akimichi Takeda, and Toshihiko Baba, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 923,225

Claims priority, application Japan, Jul. 12, 1977, 52-83456

Int. Cl.[2] B23K *11/04*

U.S. Cl. 219—97 6 Claims



1. An apparatus for machining flash and upset material formed on a workpiece in a flash welding operation, said apparatus comprising:

a pair of main clamps for clamping a workpiece, said main clamps being disposed so as to face a weld line;

a pair of electrode tables for feeding a welding current to said workpiece, said electrode tables being disposed nearer to said weld line than said main clamps and being adapted to be shifted relative to said weld line;

a tool holder adapted to be movably inserted into a space between said electrode tables and adapted to be movable in said space along said weld line;

means for shifting said electrode tables relative to said weld line;

means for moving said tool holder in said space along said weld line; and

at least one tool held by said tool holder, whereby the shifting of said electrode tables permits said tool holder to move with said tool along said weld line so as to machine said flash and upset material formed around said welding line.

4,205,215

METHOD AND DEVICE FOR WELDING IN A THERMALLY IONIZED GAS

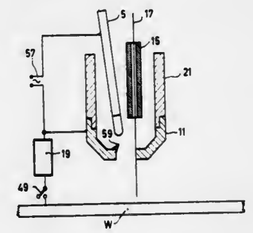
Gerardus A. M. Willems, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 778,602, Mar. 17, 1977, abandoned. This application Jan. 23, 1978, Ser. No. 871,712

Claims priority, application Netherlands, Mar. 31, 1976, 7603320

Int. Cl.[2] B23K *9/00*

U.S. Cl. 219—121 P 8 Claims



1. A method of plasma-MIG welding, which comprises flowing a thermally ionizable inert gas past a non-consumable electrode out through a nozzle toward a workpiece; establishing a plasma arc between said non-consumable electrode and said workpiece to initiate and sustain a plasma flow; feeding a consumable electrode in an axial direction through said plasma flow and out through said nozzle toward the workpiece; establishing a MIG-arc between said consumable electrode and said workpiece; and supplying power for establishing said MIG-arc to the consumable electrode at a point downstream of said non-consumable electrode.

4,205,216

LASER WELDING SYSTEM AND METHOD

Robert R. Douglas, Omaha, Nebr., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 945,963

Int. Cl.[2] B23K *26/00*

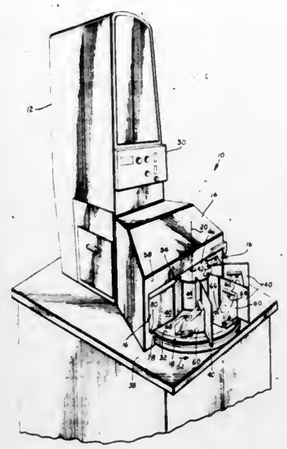
U.S. Cl. 219—121 L 16 Claims

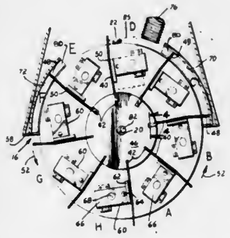
1. A laser welding system comprising a housing having an opening through which workpieces may be passed;

means for generating and directing a laser beam into a welding station within said housing;

light trap means for inhibiting light from passing from said welding station through said opening to the exterior of said housing and

conveyor means for conveying workpieces with step by step intermittent motion between workpiece loading and unloading stations located externally of said housing and said welding station through said housing opening and said light trap means whereby workpieces may be loaded and unloaded from the conveyor means at the loading and unloading stations as another workpiece is simultaneously





welded at the welding station while the conveyor means is momentarily stationary.

4,205,217

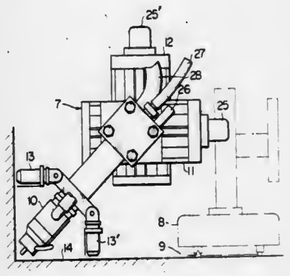
AUTOMATIC WELD LINE COPYING APPARATUS

Takeshi Araya, Shimoinayoshi, and Tsugio Udagawa, Tomobemachi, both of Japan, assignors to Hitachi, Ltd. and Hitachi Seiko Ltd., both of, Japan

Filed Dec. 29, 1976, Ser. No. 755,427

Int. Cl.[2] B23K *9/12*

U.S. Cl. 219—124.34 5 Claims



1. An automatic weld line copying apparatus comprising:

a welding head;

at least one sensor means including a fixed core, primary winding means wound around said core and excited with a signal having a desired current characteristic, and secondary winding means including a plurality of secondary coils differentially wound substantially directly over the

outer circumference of said primary winding means, said sensor means being mounted on said welding head such that said sensor means is spaced from a base metal to be welded when applied to welding process;

means for detecting the output voltage of said secondary winding; and

means for moving said welding head and said sensor means so as to keep said output voltage at a predetermined value.

4,205,218

COVERED ELECTRODE FOR ARC WELDING

Kousuke Fukami; Masanori Fujimoto, both of Ibaraki; Fumio Fujita, Osaka, and Tsuneyuki Nagase, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Hayashibara Biochemical Laboratories, Inc., Okayama, both of, Japan

Filed Mar. 27, 1978, Ser. No. 890,506

Claims priority, application Japan, Mar. 29, 1977, 52-35725

Int. Cl.² B23K *35/365*

U.S. Cl. 219—145.23 **2 Claims**

1. A covered electrode for arc welding comprising a core wire coated with a coating composition comprising (a) a powdered mixture of an inorganic oxide, carbonate and fluoride, (b) an alkali silicate and (c) 0.001 to 5.0% by weight of pullulan based on the alkali silicate.

4,205,219

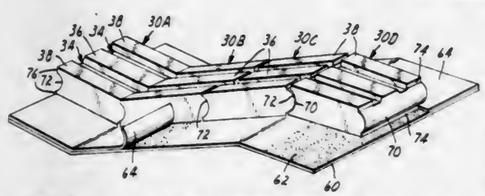
DOUBLE GROOVED WELDING BACKUP

John B. Snell, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 7, 1978, Ser. No. 913,511

Int. Cl.² B23K *5/22, 9/02*

U.S. Cl. 219—160 **14 Claims**



12. An improved heat resistant welding backup useful in welding two slightly spaced apart plates, said backup having a generally planar working face with two parallel grooves therein, a central ridge disposed between said grooves and substantially flat lands at the sides of said grooves, said ridge adapted to be aligned with the space between said plates and to be melted upon contact with molten weld material to thereupon flow as a melt into said grooves.

4,205,220

ELECTROGRAPHIC FUSING APPARATUS AND METHOD

Robert J. O'Brien, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 254,278, May 17, 1972, abandoned. This application Jul. 29, 1974, Ser. No. 492,797

Int. Cl.² H05B *1/00*; G03G *15/00*

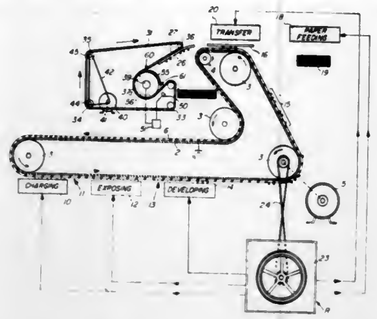
U.S. Cl. 219—216 **5 Claims**

1. An improved flash fusing apparatus for fusing toner images onto a copy sheet comprising:

an elongated flashlamp,

a cylindrically shaped member circling said flashlamp along the longitudinal axis thereof, and

means for positioning a copy sheet bearing toner images along the cylindrical member to form a circular path around said flashlamp whereupon energizing said lamp



uniform direct radiation is imparted to the sheet to fuse the toner particles at a reduced power output.

4,205,221

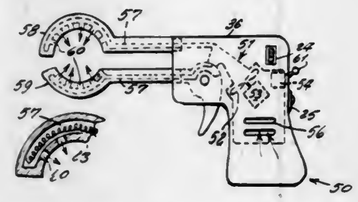
ELECTRICALLY HEATED SOLDERING TOOL HAVING WORK GRIPPING JAWS

Hugo G. Meyer, 312 Main St., Elk River, Minn. 55330

Filed May 26, 1978, Ser. No. 909,792

Int. Cl.² B23K *3/04*; H05B *1/00*

U.S. Cl. 219—230 **3 Claims**



1. In an electric heat gun, the combination of a case, said case including a pistol-grip handle portion adapted to be held in a person's hand, an upper stationary jaw secured to said case and extending forwardly from a front end thereof, a pivotable lower jaw pivotable toward and away from said upper jaw, said lower jaw being pivotable about a transverse pin supported laterally in said case, said lower jaw extending forwardly from the front end of said case, and arranged in juxtaposed relation to the upper jaw for clamping an object therebetween, a trigger-like lever protruding from said case, and being positioned relative to said handle, for being squeezed by an operator's finger while holding said handle, said trigger-like lever being connected to said pivotable lower jaw for pivoting said pivotable jaw about said pin, heating means associated with each of said jaws for heating said jaws, and means associated with said case for energizing said heating means, said heating means comprising an electric heating element within an interior of each of said jaws, said means for energizing said heating elements comprising an electric circuit extending into an interior of said case, said electric circuit including an on-off switch and an indicator lamp supported by said case, an electric extension cord extending outwardly of said case, and an outer end of said extension cord having a male plug for connection to a household electric socket, and the confronting portions of each said jaws being approximately semi-cylindrical in shape, so that, together, they can grasp around a cylindrical pipe when the pivotable jaw is moved toward the stationary jaw by said lever for heating said pipe; each of said jaws being interchangeably removable from said case, each of said jaws having a pair of jack-like prongs and adapted to be inserted into a jack-like socket, said prongs being electrically

connected to said heating element in said jaw and said jack-like socket forming a part of said electric circuit, one of said jack-like sockets being integral with said case, and the other of said jack-like sockets being carried on an arm that is integral with the free end of said trigger-like lever pivotable about said transverse pin; said electric heat gun additionally including a separately controlled forced air draft system that includes a motor-driven fan associated with said case and operated by a manually triggered switch button, an air duct extending from said fan into each of said jaws, and a plurality of radially extending openings on the confronting portion of each jaw and communicating with said air duct for directing air against a surface of a work held by said jaws.

4,205,222

ELECTRODE TYPE WATER HEATING BOILER

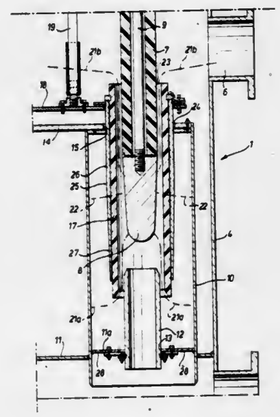
Stanley A. Williams, 10, Durlston Rd., Poole, Dorset BH14 8PQ, England

Filed Jan. 10, 1978, Ser. No. 868,342

Claims priority, application United Kingdom, Jan. 14, 1977, 1461/77

Int. Cl.² H05B *3/60*; H01C *10/02*

U.S. Cl. 219—290 **12 Claims**



1. A high tension electrode hot water boiler comprising an elongated casing; an inlet for admitting water into said casing; an outlet for leading heated water from said casing, said inlet and outlet being spaced in the elongated direction of said casing; a high tension electrode within said casing and electrically insulated therefrom; a counter-electrode spaced from said electrode; an electrically-insulating shield spaced from said electrode and said counter-electrode to provide first and second regions for flow of water between said electrode and said shield and between said shield and said counter-electrode, respectively; means for selectively moving said shield between said electrode and said counter-electrode to vary the length of the path of a major portion of the current flowing between said electrode and at least part of said counter electrode; and means associated with at least one of said electrode, counter-electrode and shield for varying, in dependence on the length of said current path, the ratio of the area available for the flow of water, as it passes from said inlet to said outlet, in said first region relative to the available area of said second region, said ratio decreasing as the length of said current path is decreased by movement of said shield relative to said electrode and said counter-electrode.

4,205,223

HEATING CIRCUITS FOR DETECTION OF LOCALIZED OVERHEATING

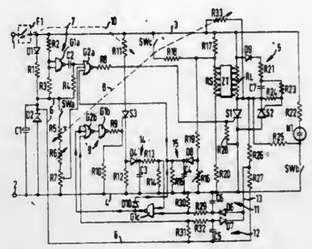
Graham M. Cole, Lymington, England, assignor to Dreamland Electrical Appliances Limited, Southhampton, England

Filed Aug. 14, 1978, Ser. No. 933,604

Claims priority, application United Kingdom, Aug. 15, 1977, 34214/77

Int. Cl.² H05B *1/02*

U.S. Cl. 219—501 **10 Claims**



1. A heating circuit comprising input terminals for connection to an AC supply, an elongate heating conductor and switch means connected in series between the input terminals such that one end only of the heating conductor is connected to the input terminals via the switch means, switch control means operative to close the switch means to cause AC current to flow from the supply through the heating conductor, an elongate sensor conductor spaced from the heating conductor, temperature sensitive means disposed between the heating and sensor conductors and responsive to overheating at any position along the length of the heating conductor to drop substantially in impedance at that position to connect the sensor conductor to the potential of the heating conductor at that position, means to cause the control means, whilst the control means is operative to close the switch means, to periodically open the switch means so that the heating conductor is at substantially the same potential along its length, and sensing means to sense the potential on the sensor conductor during each periodic opening of the switch means and responsive to the potential being such as to indicate that there is an overheat at any position along the length of the heating conductor to prevent subsequent re-closure of the switch means.

4,205,224

BINOCULAR VIEWING TECHNIQUE

Richard A. Mecklenborg, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Jul. 11, 1978, Ser. No. 923,661

Int. Cl.² G01J *1/20*

U.S. Cl. 250—201 **16 Claims**

1. A method for the binocular viewing of images in proper perspective optically displayed through a common display to each eye of one or more movable observers, whereby only an image corresponding with a particular eye is viewed at said particular eye, such that each observer can view said display using retinal disparity comprising the steps of:

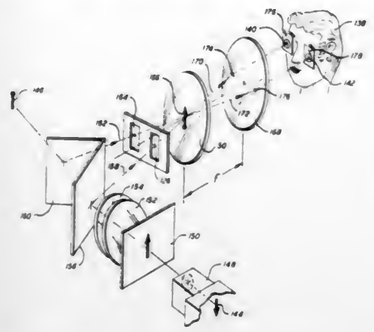
a. developing each of said images corresponding with a particular eye such that said proper perspective is determined by the location of the eyepoints relative to said images;

b. projecting of each of said developed images through corresponding aperture stop pupils so that said developed images are coincidentally focused upon optical transfer means, whose orientation is capable of change without changing images focused thereon;

c. defining said display as having optical properties such that each of said images focused upon said transfer means are viewed by their respective eyepoints, and real images of

each of said corresponding pupils are simultaneously focused at each of said respective eyepoints; and

d. controlling said optical transfer means orientation such that said real images of said corresponding aperture stop pupils continuously track said respective eyepoints when



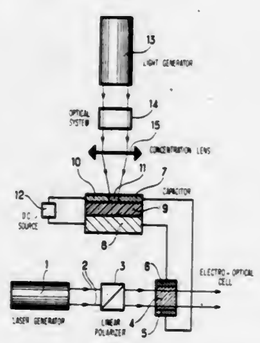
said eyepoints change location, thereby allowing each of said individual images, as confined by their respective real pupil images, to be viewed at their corresponding eyepoints in their proper perspective without optical interference from any other of said developed images.

4,205,225

METHOD OF GENERATING AN ELECTRIC PULSE OF PREDETERMINED SHAPE AND APPLICATION TO CUTTING OUT A PORTION FROM A LASER PULSE

Denis LeGoff, Saint Cyr l'Ecole, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed Aug. 21, 1978, Ser. No. 935,290
Claims priority, application France, Aug. 25, 1977, 77 25940
Int. Cl.[2] G01D *5/34*
U.S. Cl. 250—229 **8 Claims**



1. A method of generating an electric pulse of predetermined waveform, said method comprising the steps of:

providing a capacitor having first and second plates, the first plate being connected to a conductor by a portion of semiconductor material which is rendered conductive by the application of light thereto,

connecting said conductor and the second plate of the capacitor to respective poles of a DC source;

illuminating said semiconductor material with a sequence of light pulses of intensity sufficient to enable an electric charge to accumulate on the capacitor at each pulse thereby causing the capacitor to charge following a staircase charging curve;

adjusting the duration of the intervals of time which separate two successive light pulses in accordance with a predetermined program, so that the average of the staircase charging curve of the capacitor has a waveform which approximates the rising portion of the predetermined waveform; a variation in one direction of the duration of an interval of time causing a variation in the opposite direction of the instantaneous gradient of the curve; and

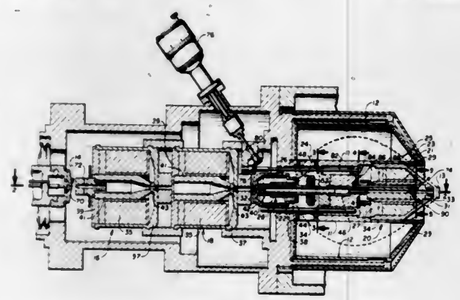
after illumination, equalizing the potentials of the plates so as to discharge the capacitor along a curve whose form is substantially identical to that of the falling portion of the predetermined waveform.

4,205,226

AUGER ELECTRON SPECTROSCOPY

Robert Gerlach, Minnetonka, Minn., assignor to Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 1, 1978, Ser. No. 938,842
Int. Cl.[2] H01J *39/00*
U.S. Cl. 250—305 **38 Claims**



1. In an apparatus for electron spectroscopy, the improvement comprising:

magnetic lens means for condensing and focusing electrons onto a test sample;

means defining a housing disposed about the axis of the instrument and adapted for receiving electrons emitted by the sample;

means defining an off-axis annular gap of adjustable width associated with the housing means in a concentric relationship therewith and with the instrument axis, the means being adapted for admitting emitted electrons through the gap into the housing, and

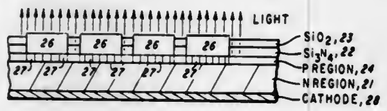
electron detector means positioned within the housing proximate the gap for detecting electrons admitted through the gap.

4,205,227

SINGLE JUNCTION EMITTER ARRAY

Bruce S. Reed, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 745,153, Nov. 26, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,657
Int. Cl.[2] H01J *31/50*
U.S. Cl. 250—330 **3 Claims**



2. In an infrared detection system, a light emitter array comprising:

(a) a substrate of n-type conductivity semiconductor material having opposing first and second major surfaces;

(b) a surface passivation layer and an oxide mask layer, said layers selectively covering portions of the first major surface of the substrate to form an uncovered portion;

(c) a diffused stripe of a p-type conductivity material diffused in the uncovered portion of the first major portion of the substrate to form an elongated p-n junction; and

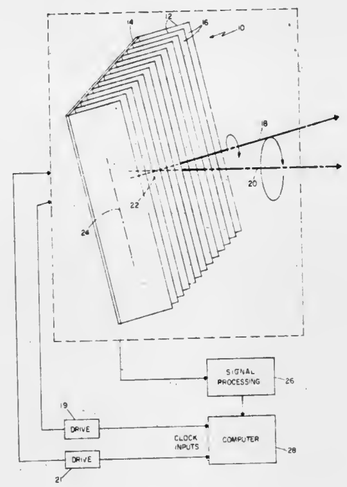
(d) a plurality of selectively spaced contacts formed on the oxide mask layer and in contact with the diffused stripe of p-type semiconductor material, and at least one contact in electrical contact with the second major surface of the substrate said contacts for connection to a source of power for providing from a single p-n junction an array of light emitting diodes whereby each diode is responsive substantially independent of adjacent diodes.

4,205,228

FAR FIELD IMAGING

Christopher H. Tosswill, Sturbridge, Mass., assignor to Galileo Electro-Optics Corp., Sturbridge, Mass.

Filed Jul. 3, 1978, Ser. No. 921,200
Int. Cl.[2] G01T *1/00*; G01J *1/20*
U.S. Cl. 250—336 **7 Claims**



1. Apparatus for imaging distant radiation sources, comprising

a collimator having an axis along which radiation can be transmitted through said collimator,

a first drive for rotating said collimator about said axis,

a second drive for moving said collimator to cause said collimator axis to move through a path about a fixed axis pointing toward the field of view of the collimator, and

means for detecting radiation passing through said collimator during its rotation about said collimator axis, for different positions of said collimator axis along said path,

each pair of values of the angular position α of said collimator about said collimator axis, and the position β of said collimator axis along said path, at the time radiation passes through said collimator, defining a response plane,

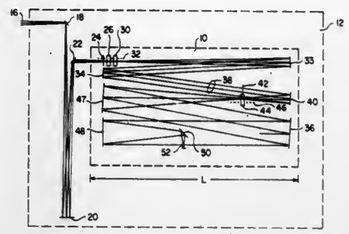
said response planes intersecting in at least one line pointing at a radiation source in said field of view.

4,205,229

COOLED ECHELLE GRATING SPECTROMETER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Reinhard Beer, Glendale, Calif.

Continuation of Ser. No. 646,333, Jan. 2, 1976, abandoned. This application Oct. 31, 1978, Ser. No. 956,529
Int. Cl.[2] G01J *1/00*
U.S. Cl. 250—352 **7 Claims**



1. An echelle grating infrared spectrometer comprising:

an entrance aperture;

an echelle grating;

a dispersing grating which is cross-oriented with respect to said echelle grating;

infrared detection means;

means for angularly positioning said dispersing grating so that predetermined echelle orders are directed to said detection means;

a first collimating means for collimating infrared radiation from said entrance aperture, said collimated infrared radiation being directed to said dispersing grating;

an intermediate aperture;

a first focusing means for focusing ordered infrared radiation reflected from said dispersing grating on a plane defined by said intermediate aperture,

a second collimating means for collimating infrared radiation passing through said intermediate aperture, said collimated infrared radiation being directed to said echelle grating;

a second focusing means for focusing further ordered infrared radiation reflected from said echelle grating on said detection means; and

means for cooling said dispersing grating, echelle grating and said detection means so that infrared radiation entering through said entrance aperture, ordered by said dispersing grating, and further ordered by said echelle grating is detected by said detection means.

4,205,230

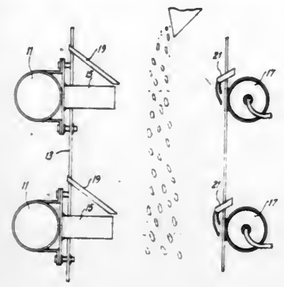
SOLID MATERIALS FLOW RATE MEASUREMENT

Raymond F. Stubbs, Osborne Park, Australia, assignor to Pretron Electronics Pty. Ltd., Osborne Park, Australia

Filed Aug. 29, 1977, Ser. No. 828,674
Int. Cl.[2] G01F *1/00*
U.S. Cl. 250—356 **23 Claims**

1. The method of measuring the mass flow rate of a freely flowing material flowing under the force of gravity through a path comprising the steps of measuring the density of flow at a

first sensing location, measuring the mass density of flow at a second sensing location spaced a predetermined vertical distance below said first sensing location and computing the mass flow rate of the material from the measurements thus obtained.

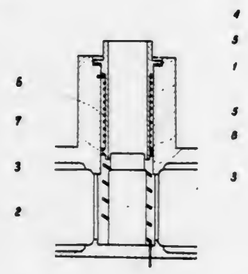


4,205,231

DEVICE FOR LIGHT FLUX ATTENUATION, ESPECIALLY FOR ADDITIONAL QUENCHING OF SCINTILLATIONS AT RADIONUCLIDE ACTIVITY DETERMINATION

Krzysztof K. Pochwalski, Warsaw, Poland, assignor to Instytut Badan Jadrowych, Warsaw, Poland

Filed Oct. 10, 1978, Ser. No. 950,312
Claims priority, application Poland, Oct. 12, 1977, 201490
Int. Cl.[2] G01T *1/20, 1/00;* G02B *9/00*
U.S. Cl. 250—364 8 Claims



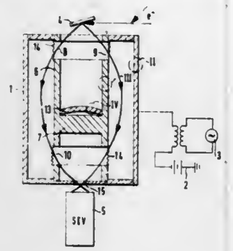
1. Apparatus for light flux attenuation for additional quenching of scintillations in the determination of radionuclide activity, said apparatus comprising a counting chamber, a counting vial in said chamber serving as a light source, photomultiplier tubes optically coupled with said counting vial in spaced relation therewith to serve as light detectors, a coil spring including coils disposed between said counting vial and photomultiplier tubes and means for adjusting the spacing between said coils to serve as an adjustable light diaphragm.

4,205,232

ARRANGEMENT FOR PREVENTING THE ALTERATION OF THE PRIMARY BEAM BY UNWANTED PARTICLES, SUCH AS SPUTTER PRODUCTS, CHARGED IONS AND ELECTRONS AND THEIR SECONDARY PROCESSES

Uwe Maixner, Barum, and Dieter Milferstädt, Tespe-Bütlingen, both of Fed. Rep. of Germany, assignors to Gesellschaft für Kernenergieverwertung in Schiffbau und Schiffahrt mbH, Geesthact-Tesperhude, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 827,307, Aug. 24, 1977, Pat. No. 4,123,655. This application Aug. 29, 1978, Ser. No. 937,729
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831791
The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.
Int. Cl.[2] H01J *35/16;* G01K *1/08*
U.S. Cl. 250—397 17 Claims



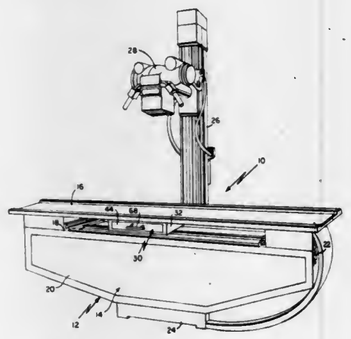
1. An electron or ion beam instrument having a surface of the instrument along the beam path formed from a metal having a low atomization rate and a very low desorption rate and also provided with closely spaced apertures extending an incline to the surface with a diameter of less than 0.5 mm, the depth of the apertures being at least equal to their opening cross section and the total cross sectional area of the apertures corresponding to at least half of the metal surface in which they are provided.

4,205,233

AUTOMATIC BUCKY LOCK

James R. Craig, Glenview, and George W. Otto, Jr., Elmhurst, both of Ill., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 22, 1978, Ser. No. 963,064
Int. Cl.[2] G01N *21/00*
U.S. Cl. 250—439 R 18 Claims



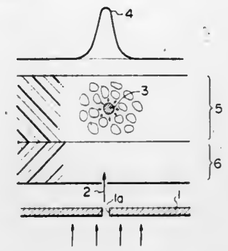
1. A fluoroscopic table comprising a base, a top position on said base, a bucky positioned beneath said top, operating means for moving said bucky beneath the top and longitudinally thereof, said bucky comprising a boxlike frame having a front opening and a tray slidable into and out of the frame through said opening, and means responsive to selective positioning of said tray within the frame for immobilizing said bucky selected positions of said tray within the frame.

4,205,234

INTENSIFYING SCREENS

Yujiro Suzuki, Odawara; Keiji Shimiya, and Takashi Miyagawa, both of Hiratsuka, all of Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Jan. 16, 1978, Ser. No. 870,016
Claims priority, application Japan, Jan. 17, 1977, 52-3697
Int. Cl.[2] G01J *1/58*
U.S. Cl. 250—483 5 Claims



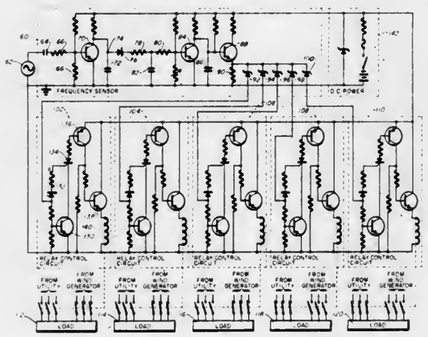
1. A radiographic intensifying screen comprising a support having applied thereon a fluorescent layer containing a pigment coated phosphor wherein pigment particles adhere to the surface of a phosphor and partly absorb the light emitted by said phosphor wherein the reflectance of said pigment at the main peak of the emission spectrum of said phosphor is within the range of 20 to 80% when the reflectance of magnesium oxide plate is defined to be 100%.

4,205,235

AUTOMATIC ELECTRICAL LOAD MATCHING DEVICE FOR WIND GENERATORS

Dharam Pal; Kwang T. Huang, both of Ventura, and Maurice N. Smith, Oxnard, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1978, Ser. No. 884,075
Int. Cl.[2] H02P *9/04*
U.S. Cl. 290—44 7 Claims



1. In a device having a rotatable means responsive to a moving fluid having a variable velocity, said device generating alternating current power having a frequency related to the velocity of said fluid, apparatus responsive to the frequency of the generated power for selectively coupling and decoupling the generated power to a plurality of loads, which comprises:

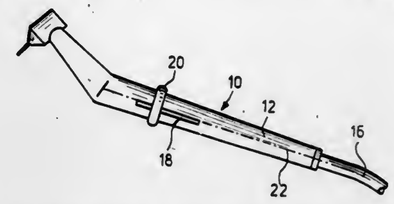
a. means for generating a direct current signal proportional to the frequency of the generated power; and
b. switch means responsive to said direct current signal for selectively coupling and decoupling the generated power to the plurality of loads.

4,205,236

FINGER OPERATED CONTROL SYSTEM FOR HAND-HELD APPLIANCES

Sven K. L. Goof, Gammel Strandvej 236 B, Humlebaek, Denmark (DK-3050)

Division of Ser. No. 667,831, Mar. 17, 1976. This application Aug. 10, 1977, Ser. No. 823,422
Claims priority, application Denmark, Mar. 20, 1975, 1184/75; Mar. 20, 1975, 1185/75
Int. Cl.[2] H01H *35/24;* A61C *3/02*
U.S. Cl. 307—118 11 Claims



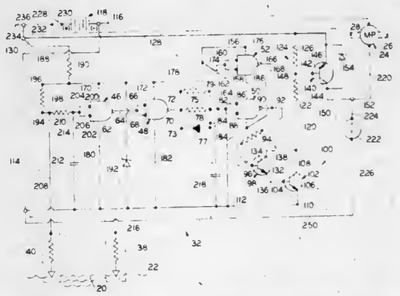
1. A hand-held appliance comprising a handle portion and at least one finger-operable control device for controlling a variably actuatable device associated with said appliance;
said control device comprising a sealed and compressible enclosure member mounted on said handle portion, said enclosure member being filled with a working fluid;
said enclosure member having a wall portion which is movable responsive to displacements in said working fluid upon squeezing said enclosure member against said handle portion, the movable wall portion being formed as part of a protruding tubular branch portion with a free end extending into the interior of said handle portion; and
said movable wall portion being operatively connected with a movable member of a control unit in said handle portion, said control unit being arranged to variably control said actuatable device dependent on the extent of moving said movable member, whereby said actuatable device is variably actuated responsive to the degree of squeezing said enclosure member against said handle portion.

4,205,237

LIQUID LEVEL SENSOR, PUMP SYSTEM MEANS AND CIRCUIT MEANS

Gerald K. Miller, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

Filed Dec. 16, 1977, Ser. No. 861,435
Int. Cl.[2] H01H *35/18*
U.S. Cl. 307—118 27 Claims



2. Liquid level sensing apparatus, comprising first gate

means having first input terminal means and first output terminal means, second gate means having second input terminal means and second output terminal means, third gate means having third input terminal means and third output terminal means, control transistor means, output power circuit means, power transistor means in said output power circuit means, said first output terminal means being electrically operatively connected to said second input terminal means, said second output terminal means being electrically operatively connected to said third input terminal means, said third output terminal means being electrically operatively connected to said control transistor means, said control transistor means being electrically operatively connected to said power transistor means, first electrical conductor means of a first electrical potential electrically connected to said first input terminal means, second electrical conductor means of a second electrical potential relatively less than said first electrical potential, first electrical probe means electrically connected to said first electrical conductor means, second electrical probe means electrically connected to said second electrical conductor means, said first and second electrical conductor means being effective for operative electrical connection to opposite electrical sides of a related source of electrical potential, said first probe means being effective whenever said liquid engages both said first and second probe means for creating a first signal of a first logic value on said first electrical conductor means and applying said first signal to said first input terminal means, said first gate means upon receiving said first signal being effective to produce a second signal of a second logic value at said first output terminal means for application to said second input terminal means, said second gate means upon receiving said second signal on said second input terminal means being effective to produce a third signal of said first logic value at said second output terminal means for application to said third input terminal means, said third gate means upon receiving said third signal on said third input terminal means being effective to produce a fourth signal of said second logic value at said third output terminal means for application to said control transistor means, said control transistor means being effective upon receiving said fourth signal to switch from a first of its states to a second of its states, and said power transistor means being effective to switch from a first of its states to a second of its states when said control transistor switches from its said first state to its said second state.

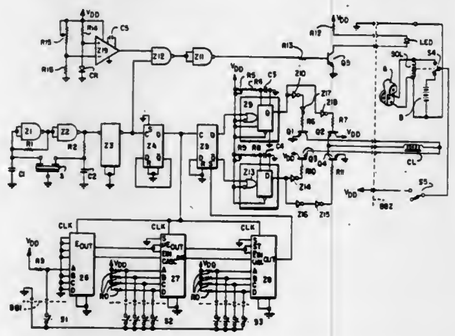
4,205,238

DIGITAL ELECTRONIC APPARATUS AND CASETTE SIZED FOR INTRAVENOUS FLUID-FLOW LIMITING EQUIPMENT

Norman Shim, Glenview, and Vincent L. Knigge, Mundelein, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 17, 1978, Ser. No. 878,846
Int. Cl.² G06M *3/02*; A61M *5/14*
U.S. Cl. 235—92 CT **40 Claims**

1. In a controller for use with a casette having:
(a) metering means for holding a predetermined volume of a fluid;
(b) closable inlet means, in fluid communication with said metering means, for permitting the flow of a fluid into said metering means; and
(c) closable outlet means, in fluid communication with said metering means, for permitting the flow of a fluid out of said metering means, said controlling having:
(a) first member means, movable between a first position and a second position for, when in said second position, closing said inlet means;
(b) second member means, movable between a third position and a fourth position for, when in said fourth position, closing said outlet means; and
(c) moving means coupled to said first member means and said second member means for moving said first member means between said first and second positions and said second member means between said third and fourth positions; and
(d) regulating means, coupled to said moving means, for controlling the operation of said moving means, the improvement wherein said regulating means comprises:
(A) crystal controlled oscillating means for producing digital pulses at a predetermined first frequency of less than 1 MHz;
(B) digital gate means coupled to said oscillating means for, upon the receipt of pulses at said first frequency from said oscillating means, providing output pulses at a second frequency which is less than half of said first frequency; and
(C) responding means coupled to said gate means and to said moving means for, upon the receipt of an output pulse from said gate means, causing said moving means to alternatingly move said first member means between said first and second positions and move said second member means between said third and fourth positions; said digital gate



means including (1) binary divider means coupled to said oscillating means, for producing, at regular intervals, intermediate pulses equal in number to the number of electronic pulses divided by a positive integral power of two, and (2) variable rate-divider means coupled to said binary divider means, for producing said second predetermined number of said output pulses with said second predetermined number being less than one third the number of said intermediate pulses, and wherein said responding means receives said intermediate pulses and said output pulses and, upon receipt of an output pulse, causing said moving means either (i) to move said first member means into said second position and said second member means into said third position or (ii) to move said first member means into said first position and said second member means into said fourth position, and upon the receipt of an intermediate pulse, causes said moving means to move said first and second member means in the opposite direction than upon the receipt of an output pulse.

4,205,239

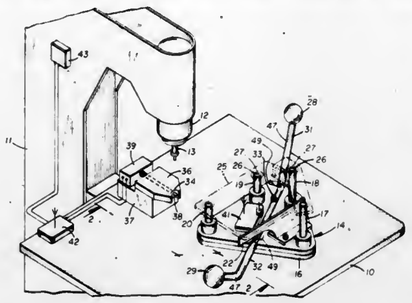
RADIO SIGNAL SAFETY FACILITIES FOR CONTROLLING THE OPERATION OF A WORK FABRICATING DEVICE

Jerold F. Arts; William L. Owen, Jr., and Bernie D. Tull, Jr., all of Shreveport, La., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,325
Int. Cl.² G05B *9/03*
U.S. Cl. 307—328 **12 Claims**

1. A safety system for controlling a work fabricating device, which comprises:
a radio transmitter for transmitting a predetermined signal;
a work holder;

means for supporting the work holder for movement to and from the work fabricating device;
a pair of spaced electrodes mounted on said work holder, said spacing of said electrodes being sufficient to insure that an operator must individually grasp an electrode in each hand;
circuit means including said electrodes connected to said



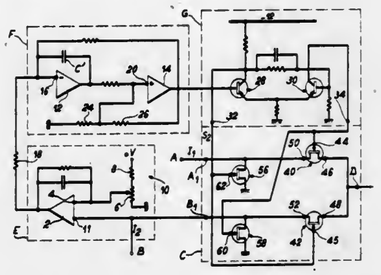
radio transmitter and rendered effective by the operator grasping said electrodes to initiate a consequent flow of current through the body of the operator and between the electrodes for operating said radio transmitter to transmit said predetermined signal; and
means responsive to the receipt of said predetermined signal for controlling the operation of the work fabricating device.

4,205,240

DEVICE FOR PROGRESSIVE ELECTRICAL SWITCHING

Yves Plaige, Bures-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 11, 1977, Ser. No. 840,527
Claims priority, application France, Oct. 15, 1976, 76 31061
Int. Cl.² H03K *17/00*
U.S. Cl. 307—350 **4 Claims**



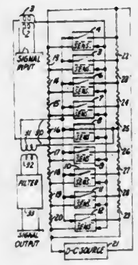
1. A device for progressive electrical switching for obtaining at the output thereof an electrical output signal having a mean amplitude which changes progressively from the amplitude of a first electrical signal to the amplitude of a second electrical signal, wherein said device comprises: a switch unit constituted essentially by two first switches mounted in parallel, each switch being provided with one input, one output and one control input, one of the signals being applied to each input of said switches, the outputs of said switches being connected to a common output terminal of the device at which said electrical output signal is obtained, a logical control unit for controlling said switching unit in order to produce two logical control signals S_1 and S_2, one of said signals being applied to each control input of the switching unit, each signal being capable of assuming a first logical level for closing said first switches and a second logical level for opening said first switches, the two signals S_1 and S_2 being such as to have different logical levels at each instant, said logical control unit being provided with means for giving the first logical level to the signal S_1 during a first period and a second logical level to said signal during a second period and for giving to the same signal during an intermediate period between the first and the second periods alternately the first logical level and the second logical level with a predetermined frequency so as to ensure that the successive time durations during which the said signal has the first logical level decrease progressively when passing from the first period to the second period.

4,205,241

QUANTIZED MODULATION SYSTEMS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 53 Morrison, Montreal, Quebec, Canada (H3R 1K3)

Filed Mar. 13, 1979, Ser. No. 20,175
Int. Cl.² H03C *1/52, 3/00*; H03F *3/38*; H03K *13/175*
U.S. Cl. 307—361 **5 Claims**



1. A quantizing modulation system for a signal which comprises:
a plurality of sensing means which compare said signal amplitude against the amplitudes of a plurality of equally spaced voltages extending across the amplitude range of said signal, said spacing being equal to or less than the smallest signal amplitude step to be reproduced, each of said sensing means sensing the instant at which the amplitude of said signal is substantially equal to a different one of said equally spaced voltages, and
a plurality of switching means, each of which is associated with and is operated by one of said sensing means when said signal amplitude is substantially equal to one of said equally spaced voltages, and
output means comprising a plurality of terminals on a network, each of which terminals is connected by one of said switching means to an output circuit, said network including one or more sources of power, and
filter means connected to said output circuit, so that the output of said filter means is a function of said signal amplitude.

4,205,242

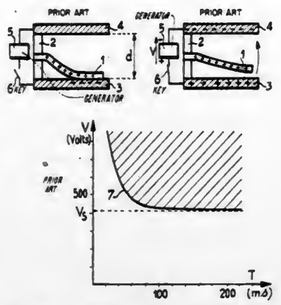
ELECTRET BISTABLE SYSTEM

Francois Micheron; Jean L. Bruneel, and Pierre Leclerc, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 3, 1978, Ser. No. 866,341
Claims priority, application France, Jan. 4, 1977, 77 00076
Int. Cl.² G11C *13/02*; H01H *36/00*
U.S. Cl. 307—400 **8 Claims**

1. Electret bistable system comprising:
a moving element inserted between two fixed electrodes forming a capacitor:
at least one layer of electret material arranged within said capacitor for holding said moving element in either of two rest positions; and
means positioned within said capacitor for lowering the electrostatic force holding said moving element near one

of said two fixed electrodes, said force being created by said layer of electret material, said means comprising spacer means interposed between said moving element



and said two fixed electrodes respectively in said two rest positions, said spacer means comprising solid dielectric layers deposited on the inner faces of said fixed electrodes.

4,205,243

SYNCHRONOUS LINEAR MOTOR

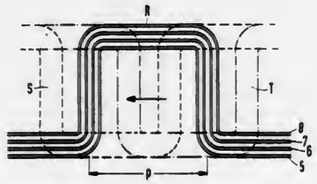
Stenio Lingaya, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 13, 1977, Ser. No. 860,192

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1976, 2656389

Int. Cl.² I02K *41/02*

U.S. Cl. 310—13 **2 Claims**



1. In an iron-free synchronous long stator linear motor, having an exciter disposed as a comoving translator on a track bound vehicle, and having a traveling field winding subdivided into switching sections which are supplied from a stationary, controlled static frequency changer, the improvement comprising the traveling field winding being a plurality of conductors disposed and connected electrically in parallel so as to reduce the operating reactance, said plurality of conductors having spacings with respect to each other which are uneven so as to minimize excitation flux interlinkage.

4,205,244

MICRO STEPPING MOTOR

Yasuhiro Fukushima, Ichikawa, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

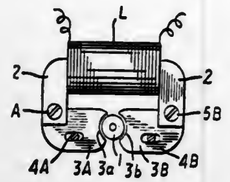
Division of Ser. No. 556,200, Mar. 6, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 760,828

Claims priority, application Japan, Mar. 7, 1974, 49-26655; Jun. 25, 1974, 49-72509; Jul. 8, 1974, 49-78098; Jul. 8, 1974, 49-80436[U]; Aug. 29, 1974, 49-103672[U]

Int. Cl.² H02K *37/00*

U.S. Cl. 310—49 R **10 Claims**

1. A micro stepping motor for use in compact watches and the like comprising: a magnetic core; a coil winding wound on said magnetic core; a stator composed of a solid one-piece plate having opposite end portions thereof connected to said magnetic core to define therewith a closed magnetic flux path, said stator having a symmetrical necked portion of reduced cross-sectional area along its length and having a circular hole extending through said stator at the center of said necked portion; a rotor having a pair of magnetic poles rotatably disposed in said hole with an air gap therebetween; and means disposed at only one site around the circumference of said hole and coacting with said rotor for determining the rotor stationary or rest position, said means for determining the rotor rest position comprising a recess in said stator and opening into said hole at said site thereby forming a region in the air gap of maximum reluctance for the rotor flux at said site so that said rotor assumes a rest position in which said pair of magnetic poles are equally spaced from said recess.



4,205,245

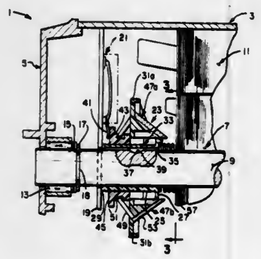
CENTRIFUGAL ACTUATOR FOR ELECTRIC MOTOR STARTING SWITCH

Eugene F. Hildebrandt, and Herbert G. Fellner, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 24, 1978, Ser. No. 927,145

Int. Cl.² H02K *11/00*

U.S. Cl. 310—68 E **7 Claims**



1. In an electric motor comprising a first end shield, a second end shield, a stator mounted between said first and second end shields, said stator including a starting winding adapted to be energized during start up of the motor and to be deenergized during normal operation of the motor, a rotor rotatable within said stator, a shaft affixed to said rotor and being journalled in said end shields for rotation with said shaft and rotor, a motor starting switch for energizing said starting winding during startup of the motor and for deenergizing said starting winding once the motor has attained a predetermined operating speed, a centrifugal actuator carried by and rotatable with said shaft, and linkage means interconnecting said centrifugal actuator and said motor starting switch for actuation of the latter, said centrifugal actuator including a main body mounted on and rotatable with said shaft, a switch actuator member operatively connected to said motor starting switch via said linkage, said switch actuator member being carried by said main body for rotation with the latter and being movable axially relative to said main body member between a first position in which said motor starting switch is actuated to energize said starting winding and a second position in which said motor starting switch is actuated to deenergize said starting winding, centrifugal means carried by said main body responsive to the speed of rotation of said shaft for moving said switch actuator member from its first to its second position upon the motor attaining said predetermined operating speed and for returning said switch actuator member from its second to its first position upon slowing of the motor, and means for biasing said centrifugal means toward its first position, wherein the improvement comprises; means for mounting said main body member on said shaft in substantially fixed relation with respect to said motor starting switch, and means for rotatably coupling said main body to said shaft and for permitting axial movement of said shaft relative to said main body whereby the shaft may move axially relative to said main body member without affecting operation of said motor starting switch.

4,205,246

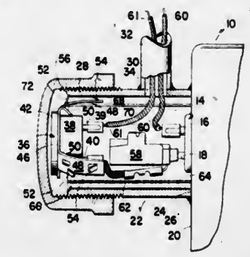
EXPLOSION RESISTANT OVERLOAD AND RELAY MOUNTING FOR EXPLOSION RESISTANT MOTOR

Kennard L. Wise, Tecumseh, and George H. Schroeder, Clinton, Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Mar. 17, 1978, Ser. No. 887,618

Int. Cl.² H02K *11/00*

U.S. Cl. 310—68 C **11 Claims**



1. In combination with an explosion-resistant motor having a metal casing with a cluster of electrical terminals extending from a wall thereof and sealed thereto: a metal tubular member having an open inner end attached to said wall by an integral connection, said tubular member extending outwardly from said wall to an open outer end, said inner end of said tubular member surrounding said terminal cluster in spaced relationship therewith; an inherent thermal overload device having terminals; means for mounting said device in said tubular member in heat transfer relation therewith whereby said device responds to excessive casing temperature; means in said tubular member for electrically coupling one of said motor terminals to one of said device terminals; electrical leads respectively connected to another motor terminal and another device terminal and having portions extending outwardly through an opening in the side wall of said tubular member; means sealingly connected to said side wall around said opening for enclosing said lead protions, and means for removably and sealingly closing said open end of said tubular member thereby to complete an explosion resistant enclosure for said overload device.

4,205,247

PRIME MOVER AND METHODS

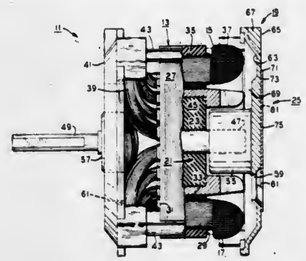
Allen A. Brammerlo, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 15, 1978, Ser. No. 886,874

Int. Cl.² H02K *1/12*

U.S. Cl. 310—256 **32 Claims**

1. In a prime mover adapted to be operated in an environment in which foreign ferrous material objects may be present, the prime mover having a stator, a pair of opposite end faces on the stator, a bore in the stator and intersecting with the opposite end faces, at least one pair of opposite pole winding means associated with the stator for creating a magnetic field upon the excitation of the at least one winding means pair, the at least one winding means pair having at least one grouping of end turns with the at least one grouping of end turns being disposed adjacent one of the opposite end faces so as to extend therebeyond, at least one non-ferrous material end plate disposed on the prime mover and spaced from the one opposite end face so as to be adjacent the at least one grouping of end turns, a rotatable shaft having a section rotatably received in the at least one end plate, a rotor mounted to the shaft so as to be conjointly rotatable therewith and disposed at least in part within the bore in magnetic coupling relation with the at least one winding means pair upon the excitation thereof, at least one means in the at least one end plate for the passage therethrough of ambient air into cooling relation with the at least one grouping of end turns and at least a part of the rotor; the improvement comprising a device adapted for obviating the ingress of the foreign ferrous material objects into the prime mover into deleterious magnetic attraction engagement with the at least one grouping of end turns or the rotor upon the excitation of the at least one winding means pair to create the magnetic field, said device including a shield 25, 71 of ferrous material mounted to the at least one end plate so as to provide



generally thereacross a path for leakage flux of the magnetic field created between the at least one winding means pair upon the excitation thereof, an outer peripheral portion on said shield, another portion on said shield spaced from said outer peripheral portion so as to be disposed generally adjacent the shaft section in flux transfer relation therewith, at least another means between said outer peripheral portion and said another portion of said shield and arranged at least in part with the at least one passage means for the passage of the ambient air through the at least one passage means and said at least another passage means into the cooling relation with the at least one grouping of end turns and the at least part of the rotor, and said shield having a preselected cross-sectional area generally in the direction of said path for the leakage flux so that said shield remains unsaturated in response to the leakage flux in said path and said at least another passage means defines a null area with respect to the leakage flux in said path thereby to obviate magnetic attraction in response to the excitation of the least one winding means pair of the foreign ferrous material objects through the at least one passage means said at least another passage means into the prime mover.

4,205,248

QUARTZ CRYSTAL VIBRATOR ELECTRODE CONFIGURATION

Mutsumi Negita, Minowa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 31, 1977, Ser. No. 801,982

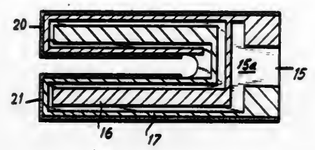
Claims priority, application Japan, May 31, 1976, 51-63135

Int. Cl.² H01L *41/10*

U.S. Cl. 310—370 **4 Claims**

1. A quartz crystal vibrator comprising a quartz crystal plate photo-etched to define a tuning fork having two vibratory tines including first and second opposed substantially planar surfaces and side surfaces between the respective opposed planar surfaces of said tines, both opposed planar surfaces of each said tine having at least two like configured electrodes

photo-etched thereon, and thin conductive film side electrodes spattered on at least the lengthwise extents of said side surfaces



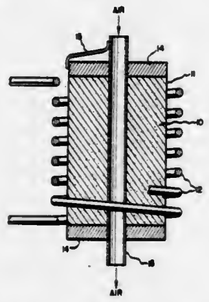
of said tines for electrically coupling said respective like configured electrodes on both surfaces of said tines to each other.

4,205,249

ELECTRODE STRUCTURE FOR HALOGEN LEAK DETECTOR

William D. Davis, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,091
Int. Cl.[2] H01J *7/26, 1/02*
U.S. Cl. 313—30 **7 Claims**



1. An electrode structure for a halogen leak detector comprising:

a heated anode filament composed of an oxidation-resistant metal with a melting point above approximately 1,000° C.;

a substantially cylindrical cathode envelope composed of an oxidation-resistant metal with a melting point above approximately 1,000° C., said cathode being disposed within said anode filament;

an alkali metal source compound contained within said cathode envelope; and

a hollow electrically-conductive lead disposed through the center of said cylindrical cathode envelope and being electrically connected thereto, whereby ambient air may be passed through said hollow lead to controllably cool said cathode and said alkali metal source compound contained therein.

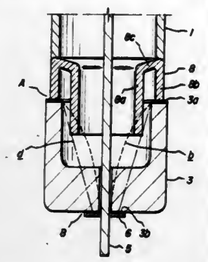
4,205,250

ELECTRONIC TUBES

Ichiro Ohara, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1978, Ser. No. 915,743
Claims priority, application Japan, Aug. 3, 1977, 52/92526
Int. Cl.[2] H01J *1/52*
U.S. Cl. 313—242 **4 Claims**

1. In an electronic tube of the type comprising a cup shaped first electrode, a cup shaped insulator with its opening opposed the opening of said first electrode through a first joint so as to form an envelope together with said first electrode, and a second electrode secured to said insulator through a second joint, said electronic tube operating under electric field and magnetic field impressed across said first and second electrodes, the improvement which comprises a shielding member disposed between said first and second joints so as to intersect equimagnetic potential planes of the leakage flux of said mag-



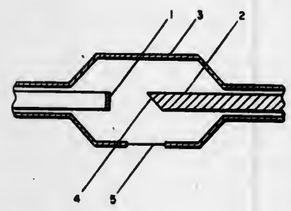
netic field between said first and second joints, thereby preventing thermal fracture of said insulator.

4,205,251

X-RAY TUBE FOR THE EXAMINATION OF FINE STRUCTURES

Gerrit Zwep, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 20, 1977, Ser. No. 834,958
Claims priority, application Netherlands, Oct. 4, 1976, 7610948
Int. Cl.[2] H01J *35/08*
U.S. Cl. 313—330 **4 Claims**



1. An X-ray tube comprising an envelope, an anode and a cathode for generating an electron beam, said anode and said cathode being arranged in said envelope in spaced relationship such that said electron beam strikes a surface portion of said anode to thereby generate X-ray radiation of a predetermined wavelength range, and an additive selected from the group consisting of cobalt, chromium, iron, silver, and mixtures thereof diffused into said surface portion for increasing the heat resistance of said anode without significantly affecting the wavelength range of said X-ray radiation.

4,205,252

FLAT CATHODE RAY TUBE WITH REPELLER ELECTRODE

Clive M. Sinclair, Cambridge, and Anthony V. Krause, Huntingdon, both of England, assignors to Sinclair Radionics Limited, Cambridgeshire, England

Filed May 15, 1978, Ser. No. 906,062
Claims priority, application United Kingdom, May 18, 1977, 20962/77
Int. Cl.[2] H01J *29/72, 29/80, 29/90*
U.S. Cl. 313—422 **14 Claims**

1. A cathode ray tube, comprising

(a) an evacuated envelope including a plurality of sections (1,2) at least one of which (1) is planar and formed of a transparent material;

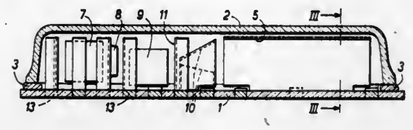
(b) a generally planar fluorescent screen (5) arranged in said envelope opposite, parallel with and spaced from said one transparent envelope section;

(c) an electron gun (7) arranged within said envelope in laterally spaced relation to said screen for projecting an

electron beam between said screen and said one transparent envelope section along a path generally parallel with the plane of said screen;

(d) first deflecting means (10) arranged in said envelope for causing the electron beam to scan a line;

(e) second deflecting means (9) arranged in said envelope for causing the electron beam to scan a frame including a



plurality of lines, thereby to produce an image on the screen; and

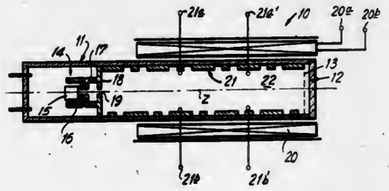
(f) beam directing means compensating for the increase of the angle of incidence of the beam at the screen relative to the direction of the electron beam, said beam directing means comprising a single electrically conductive repeller electrode (12) mounted in said envelope opposite said screen.

4,205,253

ELIMINATION OF LANDING ERRORS IN ELECTRON-OPTICAL SYSTEM OF MIXED FIELD TYPE

Takehiro Kakizaki, Yokohama; Susumu Tagawa, Atsugi, and Masahide Sawai, Ebina, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 22, 1978, Ser. No. 880,209
Claims priority, application Japan, Feb. 25, 1977, 52-20504
Int. Cl.[2] H01J *29/74*
U.S. Cl. 313—437 **3 Claims**



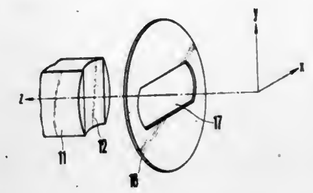
1. In an electron-optical system comprising an envelope having an axis, a target structure in said envelope extending normal to said axis, an electron gun structure in said envelope directing a beam of electrons toward said target structure and including means defining an object of the electron optical system which is spaced in the direction along said axis from said target structure, magnetic field means for generating a constant magnetic field along said axis within a cavity of said envelope between said object and said target structure, and electric field means for generating a variable electric field within said cavity orthogonal to said magnetic field and capable of causing deflection of said beam along two coordinates in a plane orthogonal to said axis so that said magnetic and electrical fields are respectively operative in said cavity to project a focused image of said object upon said target structure and to simultaneously scan said image across the surface of said target structure; said magnetic and electric fields being non-uniform in the direction along said axis, and said magnetic field means being located and dimensioned so that landing errors of said beam on said target structure due to the non-uniformity of said electric field are substantially cancelled by landing errors of the beam due to the non-uniformity of said magnetic field.

4,205,254

ELECTRON GUN FOR A CATHODE RAY TUBE

Hiromi Kanai, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 918,810
Claims priority, application Japan, Jul. 1, 1977, 52-77922
Int. Cl.[2] H01J *29/04, 29/58*
U.S. Cl. 313—454 **4 Claims**



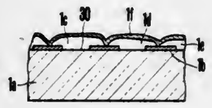
1. In an electron gun of a cathode ray tube comprising a cathode electrode having a surface for emitting an electron beam, a first grid electrode supplied with a first predetermined potential with respect to said cathode electrode, and a second grid electrode supplied with a second predetermined potential with respect to said cathode electrode, said cathode electrode and said first and second grid electrodes being contained in an evacuated envelope of said cathode ray tube and disposed coaxially along an axis of said cathode ray tube with predetermined spacing therebetween, whereby said electron beam is focused by said first grid electrode while being accelerated by said second grid electrode, the improvement wherein said cathode surface has a nonplanar form which creates different electron beam focusing effects in two different directions, said first grid electrode takes the form of a flat plate provided with an iris opening for passing said electron beam, and wherein said cathode electrode and said first grid electrode are positioned relatively such that one direction of said iris opening in which the focusing effect is strong coincides with one direction of said cathode surface in which the focusing effect is weak whereas the other direction of said iris opening in which the focusing effect is weak coincides with the other direction of said cathode surface in which the focusing effect is strong.

4,205,255

COLOR CATHODE RAY TUBE WITH REFLECTIVE LAYERS HAVING APICES CENTERED BETWEEN MATRIX WINDOWS

Yoshifumi Tomita, Mobara, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 918,839
Claims priority, application Japan, Jun. 29, 1977, 52-76509
Int. Cl.[2] H01J *29/28, 29/30, 29/32*
U.S. Cl. 313—470 **4 Claims**



1. In a black matrix type color picture tube comprising an envelope including a cylindrical neck, a funnel with its small diameter end connected to said neck, and a face plate sealed to the large diameter end of said funnel, a fluorescent screen formed on the inner surface of said face plate, said fluorescent screen including three color stripe shaped phosphors which are arranged on said fluorescent screen through light absorbing

layers, an electron gun assembly contained in said neck and including three electron guns for emitting three electron beams, and a color selection electrode disposed on the rear side of said fluorescent screen and including apertures for passing said electron beams and causing them to impinge upon said fluorescent screen so as to form a picture image, the improvement wherein said fluorescent screen comprises a plurality of spaced apart light absorbing layers respectively formed between adjacent matrix windows provided for said fluorescent screen, light reflection layers formed on said light absorbing layers on the side thereof facing said electron gun assembly, stripe shaped three color phosphors respectively formed between adjacent light reflection layers to fill said matrix windows, and a metal back layer covering said light reflection layers and said three color phosphors on the side thereof facing said electron gun assembly, each one of said light reflection layers having an apex at the center between the centers of adjacent windows, the height of said apex being substantially equal to the thickness of said phosphors, the height of each light reflection layer decreasing gradually toward the sides of said windows, and each window having a width equal to the difference between maximum electron beam diameter and one half the difference between the pitch of said windows and the width of each window.

4,205,256

MAGNETRON SUPPORTING STRUCTURE

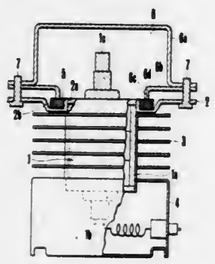
Tomokatsu Oguro, Mobara, Japan, assignor to HitachiLtd., Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 918,811

Claims priority, application Japan, Aug. 10, 1977, 52/106174[U]

Int. Cl.² H01J 25/50

U.S. Cl. 315—39.51 **4 Claims**



1. In a magenetron device comprising a magnetron tube having an output terminal at one end thereof, a unit which is combined with the magnetron tube through a metal gasket, and supporting means connected to the periphery of said magnetron tube near said output terminal for supporting the magnetron tube, the improvement wherein said metal gasket is mounted on said supporting means such that the edge of an opening provided in said unit for receiving the output terminal is urged against said supporting means through said metal gasket.

4,205,257

MAGNETRON STRAP RING STRUCTURE

Tomokatsu Oguro, Mobara; Tatsuji Sakamoto, Inashiki, and Akio Yasukawa, Shimoinayoshi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

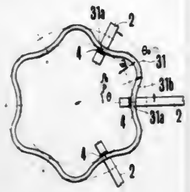
Filed Jun. 26, 1978, Ser. No. 918,812

Claims priority, application Japan, Sep. 7, 1977, 52-119359[U]

Int. Cl.² H01J 23/22

U.S. Cl. 315—39.69 **3 Claims**

1. In a magnetron of the type comprising a cathode electrode, a cylindrical anode electrode concentrically surrounding the cathode electrode, a plurality of radial vanes secured to the inner surface of said anode electrode for defining an interaction space between the inner ends of said vanes and said cathode electrode, and concentric inner and outer strap rings which are secured to alternate vanes to short-circuit the same, the improvement wherein intermediate portions of said strap



rings between the points at which the strap rings are secured to said vanes are projected outwardly from circles passing through said securing points, and wherein each strap ring lies entirely in a plane perpendicular to the axis of the cylindrical anode.

4,205,258

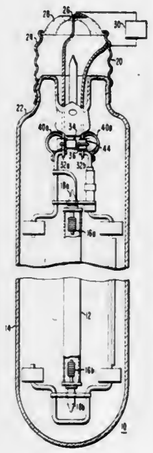
INTERNAL SHORTING FUSE FOR A HIGH-INTENSITY DISCHARGE LAMP

Patrick C. Ward, Sparta, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 21, 1979, Ser. No. 22,404

Int. Cl.² H01J 7/44

U.S. Cl. 315—73 **6 Claims**



1. In combination with a high-intensity discharge lamp comprising an arc tube which is enclosed by and supported within a light-transmitting outer envelope which is spaced from said arc tube, said outer envelope enclosing a hard vacuum, said arc tube enclosing a discharge-sustaining filling and having electrodes operatively positioned therein proximate the ends thereof, electrical lead-in means sealed through said arc tube and connected to said electrodes, electrical adapter means affixed to the outer surface of said protective envelope to facilitate electrical connection of said lamp to a source of electrical power, a pair of electrical conductors electrically connecting said electrical adapter means to said electrical lead-in means, fuse means comprising a fusible element extending from one of said electrical conductors and separated from and encircling an insulating sleeve means carried about the other of said electrical conductors with the spacing between said fusible element and the other of said electrical conductors as determined by said insulating sleeve means constituting the shortest gap within said envelope between opposite current-carrying components so that any arc occurring between said current-carrying components will occur proximate said insulating sleeve means and melt said insulating sleeve means and fuse said fusible element to said other electrical conductor and thus render said lamp inoperative, and the hard vacuum enclosed by said outer envelope having been obtained by flashing barium getter means, the improvement which comprises:

an improved insulating sleeve means separating said fusible element from the other of said electrical conductors, said improved insulating sleeve means comprising an outer hollow elongated sleeve member, said outer hollow elongated sleeve member about which said encircling fusible element is wrapped, said outer hollow elongated sleeve member having insulating spacing means integral therewith and projecting inwardly from the inner surface thereof and positioned a predetermined distance inwardly from the ends of said outer sleeve member, said insulating spacing means provided with a bore to receive and encircle said other electrical conductor in electrically insulative relationship to prevent said outer hollow elongated sleeve member from contacting said other electrical conductor, whereby barium flashed during gettering that may be adhered to the surface of said outer sleeve member is prevented from causing an electrical short of said arc tube.

4,205,259

HORIZONTAL DEFLECTION CIRCUIT FOR TELEVISION SYSTEMS

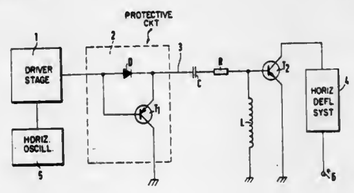
Bernd Schindler, Rastede, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,386

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809378

Int. Cl.² H01J 29/70, 29/76

U.S. Cl. 315—408 **9 Claims**



1. Horizontal deflection circuit for a television system having an output transistor (T_2);

a driver stage (1) connected to the base of the output transistor (T_2) to alternately control the transistor to conduction and blocking state;

means (L) providing a high-voltage pulse of reverse polarity to the base of the output transistor (T_2) to cause rapid change-over from conduction to blocking state thereof, and drain stored charge carriers,

and comprising, in accordance with the invention,

a protective circuit (2) to protect the driver stage against the reverse high-voltage pulse including

controlled switch means (T_1) controlled by the driver stage (1) and preventing application of said reverse polarity high-voltage pulse to the driver stage.

4,205,260

MOTOR CONTROL SYSTEM

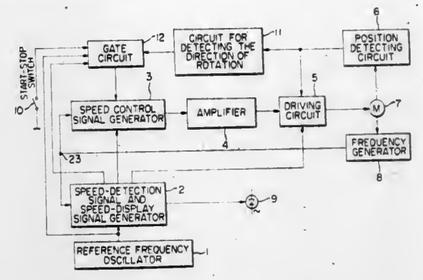
Toshinobu Maeda, Kawanishi; Yoshikazu Nakamura, Yamatokoriyama, and Akio Kawazoe, Kanagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Oki Electric Industry Co., Ltd., Tokyo, both of, Japan

Filed Jun. 28, 1978, Ser. No. 919,973

Claims priority, application Japan, Jun. 30, 1977, 52/78756; Jun. 30, 1977, 52/78757

Int. Cl.² H02P 5/16

U.S. Cl. 318—318 **5 Claims**



1. A motor speed control system, comprising:

an electric motor,

a driving means for providing a drive signal to said motor to selectively generate acceleration and deceleration torques therein;

a frequency generator coupled to said motor for generating speed indicating pulses having a frequency corresponding to the motor speed;

a clock pulse generator for generating clock pulses at a fixed frequency substantially greater than the particular frequency of said speed indicating pulses corresponding to a desired speed of said motor;

a synchronizing circuit for selectively delaying each of said speed indicating pulses to synchronize the same with said clock pulses,

a frequency divider coupled to said clock pulse generator for providing reference pulses having said particular frequency and synchronous with said selectively delayed speed indicating pulses;

a multistage counter having a pulse count input terminal, a reset terminal and a plurality of output terminals;

means for applying said reference pulses to said input terminal and said selectively delayed speed indicating pulses to said reset terminal of said counter;

decoding means coupled to the output terminals of said counter for (i) generating a motor control signal for controlling the operation of said driving means to drive said motor at said particular speed, (ii) generating a display signal for indicating when said motor is at said particular speed, and (iii) generating a warning signal when the counter output appears to correspond to a motor speed in excess of said particular speed, for starting said motor or reducing a braking torque applied thereto.

4,205,261

ULTRACENTRIFUGE OVERSPEED DISK DETECTION SYSTEM

Robert C. Franklin, Los Gatos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 13, 1978, Ser. No. 924,270

Int. Cl.² H02P 5/06

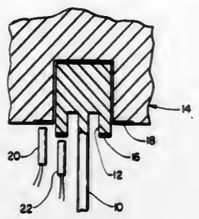
U.S. Cl. 318—480 **14 Claims**

1. An apparatus for determining the absence of an overspeed indicator in a centrifuge system having a centrifuge speed indicator, having a plurality of light reflective segments, coupled to a centrifuge drive assembly and a rotor speed indicator,

having a greater number of light reflective segments than the speed indicator, coupled to a rotor, said apparatus comprising:

a first means associated with the centrifuge speed indicator for detecting the speed of the centrifuge and producing a signal having a first frequency proportionate thereto;

a second means associated with the rotor speed indicator for detecting the speed of the rotor and producing a signal having a second frequency proportionate thereto;



circuit means connected to said first means and said second means for receiving and comparing said first frequency and said second frequency; and

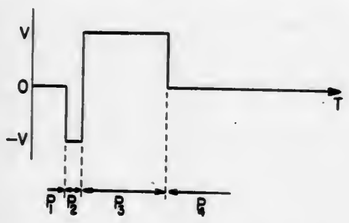
switch means connected to said circuit means for disabling operation of the centrifuge when said first frequency exceeds said second frequency.

4,205,262

ELECTRONIC WATCH

Masaharu Shida, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Dec. 7, 1977, Ser. No. 858,440
Claims priority, application Japan, Dec. 7, 1976, 51-146939
Int. Cl.[2] H02P 1/22
U.S. Cl. 318—696 7 Claims



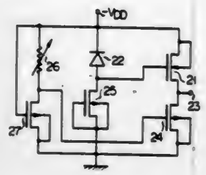
1. In a step motor and driving circuit for an electronic watch: a rotor having at least two poles, a stator composed of material of high magnetic transmission factor magnetically engaging with the rotor, means composed of a coil magnetically connected to the stator for driving the rotor in response to electrical signals applied thereto, means for positioning the rotor in advance in order to determine a direction of rotation of the rotor, wherein said rotor is normally rotated in a predetermined direction in response to a sequence of alternate polarity driving pulses applied to said coil, and means for applying a narrow pulse narrower than the driving pulses and immediately preceeding a driving pulse to said coil for reversing the direction of rotation of said rotor so that said rotor is driven in the reverse direction by the sequence of alternate polarity driving pulses.

4,205,263

TEMPERATURE COMPENSATED CONSTANT CURRENT MOS FIELD EFFECTIVE TRANSISTOR CIRCUIT

Kenji Kawagai, and Shigeki Yoshida, both of Kawasaki, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Aug. 2, 1977, Ser. No. 821,198
Claims priority, application Japan, Aug. 3, 1976, 51-92452
Int. Cl.[2] G05F 3/08
U.S. Cl. 323—22 R 6 Claims



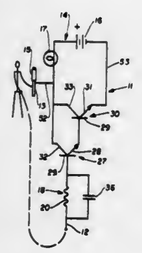
1. A MOS field effect transistor circuit comprising a first and a second power terminal, a MOS field effect transistor, a unidirectional circuit element coupled in the forward direction between the gate of said MOS field effect transistor and said first power terminal, a high-resistance element coupled between the junction of said unidirectional circuit element and the gate of said MOS field effect transistor and said second power terminal; said MOS field effect transistor circuit further comprising a voltage-dividing circuit coupled between said first and second power terminals, and a switching element coupled between said MOS field effect transistor and said second power terminal, said switching element being controlled by a voltage divided by said voltage-dividing circuit.

4,205,264

HIGH IMPEDANCE ELECTRICAL TESTING INSTRUMENT FOR AC AND DC VOLTAGE DETECTION AND CONTINUITY TESTING

Charles Gold, 8840 NW. 16th St., Plantation, Fla. 33322

Filed Apr. 25, 1978, Ser. No. 899,794
Int. Cl.[2] G01R 31/02, 19/16, 1/06
U.S. Cl. 324—51 1 Claim



1. An electric testing instrument comprising:

a housing having a wall of electrically conductive material adapted for manual engagement by the user and forming an input terminal for completion of an input circuit through the body of the user;

an amplifier mounted in said housing and having its input connected to an input circuit comprising a probe providing a second input terminal adapted for engagement with an electric signal, said amplifier having an output circuit comprising in series a collector, an emitter, a battery and a current responsive indicator;

said housing wall being connected to the side of said battery connected to said collector and having polarity opposite said emitter;

said indicator providing a manually discernible signal at and above an operating current flow in said output circuit, said amplifier having a gain sufficient to provide said operating current flow in said output circuit when said input circuit is biased with an input current;

said input circuit providing said input current derives solely from said battery when said input terminals are connected across a resistance from zero ohms to as high as at least one megohm;

an electrically nonconductive material covering a portion of said housing wall;

said amplifier having a sufficient gain to provide said operating output current flow when said probe is connected to a conventional live power line providing approximately 110 volts a.c. and said nonconductive material is manually engaged by the user; and

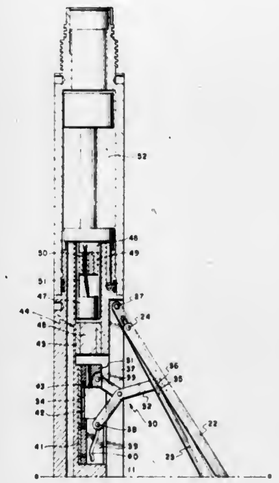
said material covering a part only of said wall leaving an uncovered portion for direct manual engagement by the user for through the body continuity testing and for detecting the presence of d.c. voltage, thereby enabling the user to distinguish between a.c. and d.c. signals.

4,205,266

METHOD AND APPARATUS TO DETERMINE THE PROXIMITY OF A PERMANENT MAGNET USING A MAGNETOMETER

Heinz D. Lichtenberg, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 787,199, Apr. 13, 1977, abandoned.
This application Nov. 13, 1978, Ser. No. 960,679
Int. Cl.[2] G01R 33/02
U.S. Cl. 324—253 4 Claims

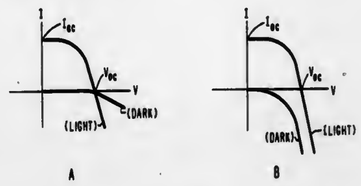


4,205,265

LASER BEAM APPARATUS AND METHOD FOR ANALYZING SOLAR CELLS

David L. Staebler, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,302
Int. Cl.[2] G01R 27/14
U.S. Cl. 324—158 D 15 Claims



1. An apparatus for automatically determining and recording the open circuit voltage of a solar cell in which the light IV curve crosses the IV curve in the dark, on a point by point basis, said apparatus comprising:

a light source means for producing a pulse beam of light;

means for scanning said pulsed beam of light over at least a portion of said solar cell;

lock-in amplifier means responsive to the output of said solar cell and the timing of said pulsed beam of light for providing an output signal representative of the output from said illuminated portion of said solar cell;

drive amplifier means responsive to the output of said lock-in amplifier means for applying a bias voltage to a solar cell being tested, said bias voltage being one which is near enough to the open circuit voltage of that portion of the solar cell on which said pulsed beam of light is focussed so that that portion of the solar cell is operating at a quasi open circuit voltage bias level; and

recording means for recording the quasi open circuit voltage value for at least some of said selected portions of said solar cell.

1. A magnetic flux sensor apparatus, for generating a signal functionally related to the distance said sensor apparatus is located from a magnet comprising:

a non-magnetic metallic housing;

a sensing coil wound coaxially around the outer circumference of a tubular bobbin formed from a non-magnetic metallic material;

said coil wound bobbin positioned inside said non-magnetic metallic housing and arranged to generate a first electrical signal in response to external magnetic flux impinging said coil from outside said housing;

a drive coil wound on a doughnut shaped toroidal core, having a square loop characteristic, said drive coil and doughnut shaped core positioned completely inside said tubular bobbin;

a magnetic window, formed by a non-magnetic sleeve surrounding a magnetically permeable material and located between said magnetic flux sensor and said magnet;

a biasing magnet positioned in a predetermined spaced relation to said housing;

voltage means connected to said drive coil for impressing a square wave voltage across said drive coil, said impressed voltage operative to drive said drive core to saturation for preventing said external magnetic flux from impinging said sensing coil; and

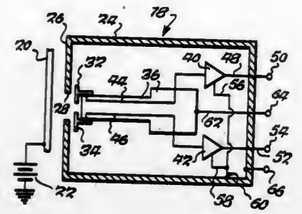
a signal transmitter system connected to said sensing coil for receiving said generated first electrical signal and transmitting a second electrical signal relating thereto.

4,205,267

HIGH SPEED ELECTROSTATIC VOLTMETER

Bruce T. Williams, 86 Park Lane Cir., Lockport, N.Y. 14094

Filed Nov. 3, 1977, Ser. No. 848,345
Int. Cl.² G01R 5/28, 29/12
U.S. Cl. 324—458 23 Claims



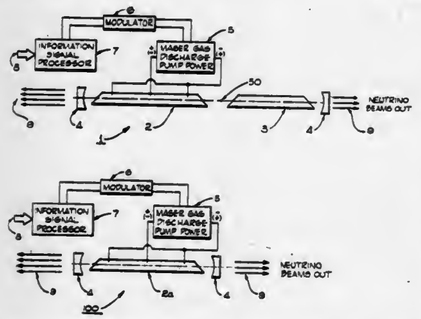
1. A non-contacting voltage follower comprising:
(a) a pair of voltage sensitive electrodes;
(b) means for varying the capacitive coupling between said electrodes and an electrical field or potential to which said electrodes are exposed and in an inverse manner to induce signals on said electrodes;
(c) means for defining an electrical reference surface exposed to said electrical field or potential;
(d) an output amplifier having an input and an output and connected as a voltage follower;
(e) signal processing circuit means having a pair of inputs and an output, means for coupling one of said circuit inputs to one of said electrodes, means for coupling the other of said circuit inputs to the other of said electrodes, and means for coupling said circuit output to said output amplifier input, said circuit means applying to said amplifier signals containing static and dynamic data of the electrical field or potential derived from said signals induced on said electrodes; and
(f) means for coupling the output of said amplifier to said electrical reference surface;
(g) whereby said amplifier output follows the static and dynamic characteristics of the electrical field or potential.

4,205,268

NEUTRINO COMMUNICATION ARRANGEMENT

Jozef W. Eerkens, 1342 Lachman La., Pacific Palisades, Calif. 90272

Filed Jan. 31, 1977, Ser. No. 764,292
Int. Cl.² H04B 1/00
U.S. Cl. 455—620 56 Claims



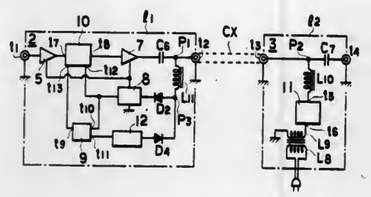
1. In a communication system, the improvement comprising:
a first emitter means for generating a first coherent neutrino-antineutrino beam in a first direction; and
a first receiver means aligned with said first emitter means and in neutrino-antineutrino beam receiving relationship therewith for receiving said first coherent neutrino-antineutrino beam and generating a first detectable output signal in response thereto.

4,205,269

REMOTE CONTROL VARIABLE ATTENUATION DEVICE FOR AN ANTENNA AMPLIFIER

Masakatsu Watanabe, Akatsukashinmachi, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Jun. 7, 1978, Ser. No. 913,269
Claims priority, application Japan, Jun. 9, 1977, 52-75100
Int. Cl.² H04N 7/16
U.S. Cl. 455—4 7 Claims



1. A remote control device for a variable attenuation circuit in an amplifier which is inserted in a signal transmission line in the vicinity of a television community receiving system antenna and is energized through said signal transmission line by a power supply unit in a subscriber's house, comprising:
a first diode in said power supply unit for supplying a first half cycle of an A.C. power supply signal to said amplifier;
a second diode in said power supply unit for supplying the second half cycle of said A.C. power supply signal to said amplifier;
a variable resistor in the power supply unit for varying the amount of said second half cycle signal supplied by said second diode;
a DC power supply section in said amplifier which receives the first half cycle signal from said first diode and supplies said first half cycle signal as an amplifier power signal to an amplifier section; and
an attenuation control means in said amplifier for varying the attenuation factor of said variable attenuation circuit in correspondence to the amount of said second half cycle signal supplied by said second diode.

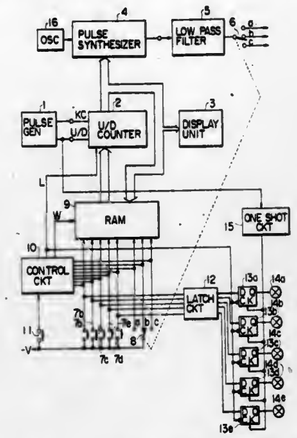
4,205,270

STATION SELECTION INDICATING DEVICE

Masanao Okatani; Hiroshi Onishi; Yoshiaki Ishibashi; Reisuke Sato; Hisashi Suganuma; Tomohisa Yokogawa; Yoshiharu Ueki; Haruo Kama; Tadashi Kouga, all of Kawagoe, and Tadashi Ogawa, Tokorozawa, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,154
Claims priority, application Japan, Jun. 30, 1977, 52-78081
Int. Cl.² H04B 1/16
U.S. Cl. 455—158 3 Claims

1. A multiband radio receiver with an electronic preset tuning system having an up-down counter, a read-write memory which is addressed by the output signals from a band select switch and channel select switches to store the count output of said up-down counter and to deliver read-out information to said up-down counter in response to write and load signals, respectively, and a control section for providing said write and load signals in response to the outputs of a preset switch and said channel select switches and band select switch, the improvement characterized in that said multiband radio receiver further includes a display section for indicating the most recently energized channel select switch, said display section comprising:
a latch circuit having a plurality of input terminals and a plurality of corresponding output terminals, said latch circuit receiving output signals from said channel select switches as its inputs and providing a latch output signal on the output terminal corresponding to the most recently energized channel select switch; and
a plurality of indicating elements disposed adjacent said channel select switches and connected to said latch output terminals, said indicating elements being energized by the output signal from said latch circuit and said load signal so that the indicating element adjacent the most recently energized channel select switch is energized and remains energized even when the band select switch is switched.

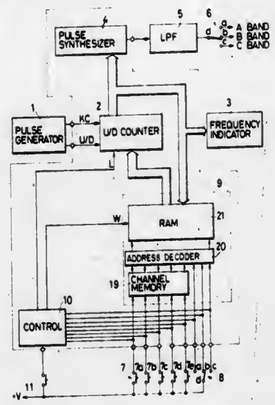


4,205,271

CONTROL DEVICE OF ELECTRONIC PRESET TYPE TUNER FOR MULTI-BAND RADIO RECEIVER

Tadashi Ogawa, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 2, 1978, Ser. No. 911,850
Claims priority, application Japan, Jun. 3, 1977, 52/66069; Jun. 9, 1977, 52/68305; Jun. 10, 1977, 52/68495
Int. Cl.² H04B 1/16
U.S. Cl. 455—186 4 Claims



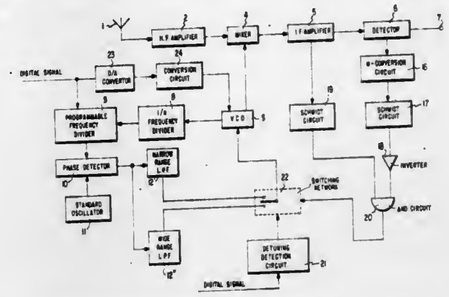
1. In an electronic preset type tuning device for a multi-band radio receiver having a plurality of tuning circuits which tuning device includes a preset switch, a pulse generator capable of generating clock pulses and up or down count pulses, a first band selector switch, a second band selector switch ganged with said first band selector switch and connected to said tuning circuits, a plurality of channel selector switches, a random access memory addressed by outputs from said first band selector switch and said channel selector switches, an up/-down counter responsive to the up or down count pulses for counting up or down the clock pulses, a digital-to-analog converter responsive to an output of said up/down counter for converting said up/down counter output into an analog signal to be fed through said second band selector switch to the tuning circuits, said counter being responsive to a load signal for receiving output data from said random access memory and supplying said data to said converter, said random access memory being responsive to a write signal for storing an output from said counter, said tuning device further characterized by a control circuit comprising:
a band selector detector having inputs connected to said first band selector switch for detecting a selected frequency band;
a first load signal generator connected to said band selection detector and in response thereto for generating a load signal to be supplied to said up/down counter; and
a controller connected to said preset switch and said channel selector switches for providing a load signal in response to an output from any one of said channel selector switches and providing a write signal to said radom access memory in response to outputs from said preset switch and any one of said channel selector switches.

4,205,272

PHASE-LOCKED LOOP CIRCUIT FOR USE IN SYNTHESIZER TUNER AND SYNTHESIZER TUNER INCORPORATING SAME

Morio Kumagai, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1978, Ser. No. 896,148
Claims priority, application Japan, Apr. 13, 1977, 52-41489; Apr. 13, 1977, 52-41490; Apr. 13, 1977, 52-41491; Apr. 13, 1977, 52-41492; Apr. 13, 1977, 52-41493
Int. Cl.² H04B 1/06
U.S. Cl. 455—83 24 Claims



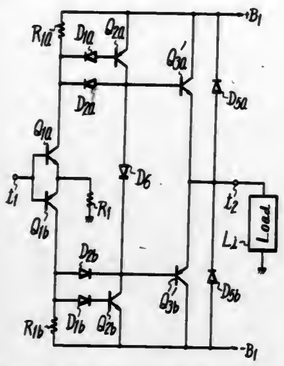
1. In a synthesizer tuner having a phase-locked loop circuit for a voltage controlled local oscillator where the frequency of the local oscillator output signal is divided by a programmable frequency divider and then compared with a standard frequency signal source by a phase detector, the phase detector output being applied to a low-pass filter means to derive a first DC control signal having a ripple component for controlling the frequency of the voltage controlled local oscillator, the improvement comprising
control means for producing a second DC control signal for further controlling the phase of the said local oscillator output signal so that the phase difference between the signals compared by said phase detector is reduced, said ripple component is lessened and the S/N ratio of the tuner is improved.

4,205,273

PULSE SIGNAL AMPLIFIER

Tadao Yoshida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,763
Claims priority, application Japan, Jan. 30, 1978, 53-9138
Int. Cl.² H03F 3/18, 3/30
U.S. Cl. 330—251 10 Claims



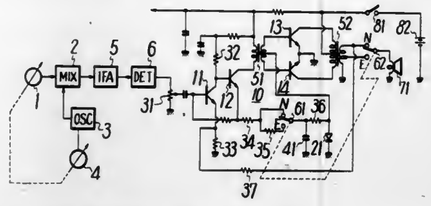
1. A pulse signal amplifier comprising:
(a) DC voltage source means having a pair of first and second terminals;
(b) pulse signal source means for supplying a pulse signal to be amplified;
(c) pre-drive means including a pair of complementary first and second drive transistors each having control, first and second output electrodes, the control electrodes of which are supplied with the pulse signal from said pulse signal source means, the first output electrodes of which are connected to each other and to a reference point, and the second output electrodes of which are connected to the first and second terminals of said DC voltage source means through first and second loads, respectively;
(d) drive means including a pair of complementary third and fourth drive transistors each having control, first and second output electrodes, the control electrodes of which are connected to the second output electrodes of said first and second drive transistors and the first output electrodes of which are connected to the first and second terminals of said DC voltage source means, respectively;
(e) output stage means including a pair of complementary first and second transistors each having base, emitter and collector electrodes, the base electrodes of which are connected to the second output electrodes of said third and fourth drive transistors, respectively, and collector and emitter circuits of which are connected in series between the first and second terminals of said DC voltage source means, and the connection point of which is connected to an output terminal to which an inductive load is connected;
(f) first and second diode means connected between the collector and emitter electrodes of said first and second output transistors, respectively, through the first diode means of which flows a first bypass current from said inductive load during the first quarter-period of the pulse signal from said pulse signal source means and through the second diode means of which flows a second bypass current from said inductive load during the third quarter-period of said pulse signal source means; and
(g) current limiting means connected between the second output electrodes of said third and fourth drive transistors such that said first and second bypass currents are prevented from flowing through the base-emitter circuit of said second and first output transistors, respectively, into the second output electrodes of said third and fourth drive transistors.

4,205,274

POWER AMPLIFIER CIRCUIT

Keizo Tsukada, Kawaguchi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,219
Claims priority, application Japan, Jan. 24, 1978, 53/6530; May 4, 1978, 53/60511[U]; May 9, 1978, 53/61978[U]
Int. Cl.² H03F 3/26; H04B 1/06
U.S. Cl. 330—276 11 Claims



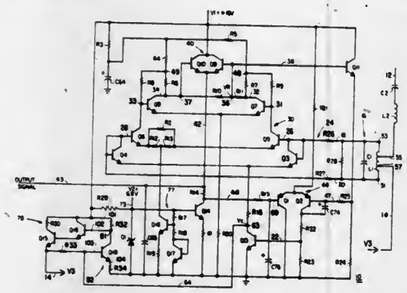
1. A power amplifier circuit comprising:
(a) an amplifying circuit including an input transistor, a driving transistor having a resistor in its emitter circuit, and a power amplifying transistor, each of said transistors having input, output and common electrodes;
(b) a loudspeaker;
(c) an output transformer provided between said power amplifying transistor and said loudspeaker;
(d) a first adjusting means connected to said output transformer for adjusting the output impedance of said output transformer;
(e) a second adjusting means for adjusting the value of said emitter resistor of said driving transistor, said second adjusting means being interlocked with said first adjusting means; and
(f) a biasing means connected to said emitter resistor of said driving transistor and for producing a biasing voltage for said power amplifying transistor.

4,205,275

METHOD AND APPARATUS OF CONTROLLING BIAS VOLTAGE IN REGULATING AMPLIFIERS

Tom L. Blackburn, San Jose, Calif., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Dec. 4, 1978, Ser. No. 965,973
Int. Cl.² H03G 3/30
U.S. Cl. 330—279 17 Claims



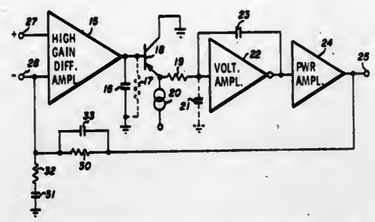
6. In a regulating amplifier circuit including electron control means driven by a bias voltage and being susceptible, as the level of current passed thereby increases in response to a control signal for regulating the circuit gain, to operation in a saturation region that limits the range of input signal levels over which it operates to provide the desired regulation, the method of extending the range of input signal level over which the desired regulation is maintained comprising the step of increasing the bias voltage as the current passed by the control means increases to hold the latter operating out of the saturation region over a range of input signal levels.

4,205,276

AUDIO AMPLIFIER WITH LOW AM RADIATION

John W. Wright, San Jose, and William H. Gross, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 4, 1978, Ser. No. 965,971
Int. Cl.² H03F 1/34, 3/183
U.S. Cl. 330—294 6 Claims



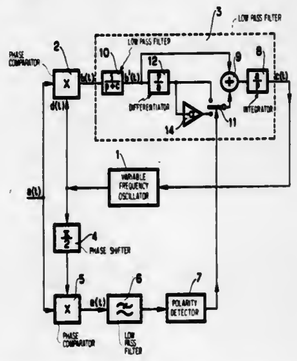
1. An operational amplifier for providing substantial gain at audio frequencies and having substantially zero gain at frequencies within the AM standard broadcast band, said amplifier comprising:
gain producing amplifier means having substantial intrinsic gain at audio frequencies and at frequencies well in excess of said AM band;
means coupled within said amplifier to produce a declining gain versus frequency curve that falls to substantially zero at a frequency at the low frequency end of said AM band and wherein said curve has a slope in excess of 6 db per octave; and
feedback means for further reducing the gain of said amplifier at frequencies above said audio frequencies and below said AM band whereby said amplifier is capable of high fidelity amplification, is stable within its passband, and produces very little energy within said AM band.

4,205,277

PHASE LOCKED LOOP WITH SWITCHABLE FILTER

Christian Poinas, Boulogne, France, assignor to Societe Anonyme Dite: Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 26, 1978, Ser. No. 954,803
Claims priority, application France, Nov. 4, 1977, 77 33248
Int. Cl.² H03B 3/04
U.S. Cl. 331—12 8 Claims



1. A phase-locked loop including: a voltage-controlled variable-frequency oscillator, a first cosine characteristic phase comparator having inputs receiving a reference oscillation and an oscillation supplied by the oscillator, a first low-pass filter connected between the output of the phase comparator and a frequency control input of the oscillator, said low-pass filter being provided with a switchable structure for selecting one of two possible configurations, a second cosine characteristic phase comparator having inputs receiving the reference oscillation and the oscillation which comes from the oscillator, a phase shifter for delaying one of said oscillations by $\pi/2$ radians before being applied to said second phase comparator, a second low-pass filter connected to the output of the second phase comparator, a polarity detector connected to the output of said second low-pass filter, and a changeover switch controlled by the polarity detector included in the first low-pass filter for switching between the two possible configurations thereof, and wherein in a first configuration, the first low-pass filter has a transfer function of the form:

$$F_1(p) = \frac{a+p}{p} \cdot \frac{1}{p+c}$$

with a and c as real and positive constants and p as the complex variable of the Laplace transform, and in a second configuration, said filter has a transfer function of the form:

$$F_2(p) = \frac{a-ap}{p} \cdot \frac{1}{p+c}$$

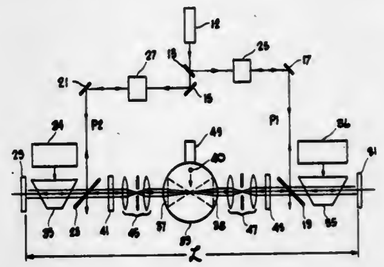
with α as a real and positive non-zero constant.

4,205,278

MULTIPLE EXCITATION REGENERATIVE AMPLIFIER INERTIAL CONFINEMENT SYSTEM

Victor E. George, Livermore; Roger A. Haas; William F. Krupke, both of Pleasanton, and Leland G. Schlitt, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1978, Ser. No. 868,639
Int. Cl.² H01S 3/091
U.S. Cl. 331—94.5 P 11 Claims



1. Apparatus for producing a high energy laser pulse, the apparatus comprising:
a large aperture light amplifier containing a regenerative medium;
an optical cavity including at least two light reflective means containing the amplifier therebetween;
laser means for producing a laser pulse to be amplified;
pulse injection means for introducing the laser pulse between two light reflective means of the optical cavity so as to permit the laser pulse to propagate as a beam from one light reflective means to the other;
pump means for repeatedly and transistorily exciting the amplifier medium so as to amplify the laser pulse as it passes through the amplifier medium, with the amplifier medium being excited at least once for each passage of the laser pulse therethrough; and
optical switch means to controllably remove the laser pulse from the optical cavity, positioned in the path of the laser

pulse, to allow the pulse to pass through undeviated in direction when the optical switch means is in its unactivated state, and to cause the pulse to deviate in direction when the optical switch means is in its activated state.

4,205,279

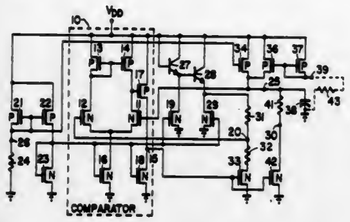
CMOS LOW CURRENT RC OSCILLATOR

Robert R. Beutler, Beaverton, Oreg., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 832,138, Sep. 12, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,905

Int. Cl.² H03K *3/353, 4/50*

U.S. Cl. 331—111 **7 Claims**



1. A low current oscillator using a differential amplifier as a comparator and having a first and a second voltage terminal, the differential amplifier having a current source, comprising: bias network for providing bias currents for the oscillator, the bias network being coupled to the comparator to establish a current through the current source; at least one substrate NPN transistor for providing a voltage drop; a pair of resistors in series with the substrate NPN transistor to provide a reference voltage for the comparator; switching means in series with the pair of resistors for completing a voltage divider circuit having the substrate NPN transistor and the pair of resistors, the switching means being enabled by an output from the comparator, and the at least one substrate NPN transistor, the pair of resistors and the switching means all being serially coupled between the first and second voltage terminals; a capacitor coupled to the comparator; a second current source coupled to the capacitor for linearly charging the capacitor; and discharging means coupled to the capacitor to discharge the capacitor, the discharging means being enabled by the output of the comparator and comprising a resistor in series with a field effect transistor.

4,205,280

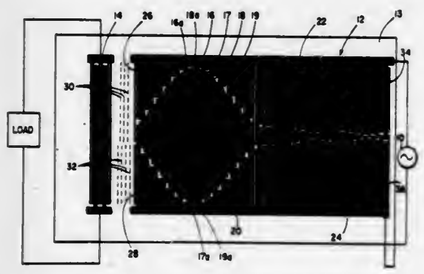
SURFACE WAVE DEVICE WITH SUPPRESSED BOUNDARY-REFLECTED WAVES

Forbes D. Gilchrist, Des Plaines; Robert L. Miller, Schaumburg, and Richard W. Myers, Northbrook, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 934,915, Aug. 18, 1978, abandoned. This application Sep. 5, 1978, Ser. No. 939,575

Int. Cl.² H03H *9/04, 9/26, 9/30, 9/32*

U.S. Cl. 333—151 **13 Claims**



1. In a surface wave transmitting device having a piezoelectric surface wave propagative medium and an interdigitated comb surface wave transducer on a surface of said medium for launching or receiving on said surface of said medium surface wave of predetermined wavelength, the improvement characterized by said transducer having at a transducer boundary or at an internal spacing irregularity in the transducer tooth pattern a first tooth on a first comb connected to its associated bus bar, and, on an opposed second comb a second tooth collinear with said first tooth but electrically isolated from its associated bus bar.

4,205,281

FERRITE COMPOSITE CIRCULATOR

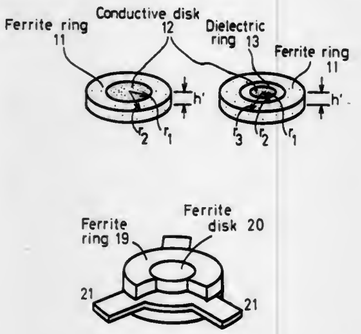
Tsukasa Nagao, 4-75, Mabori, Yokosuka-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 683,143, May 4, 1976, Pat. No. 4,122,418. This application May 16, 1978, Ser. No. 906,374

Claims priority, application Japan, May 10, 1975, 50-54922; Apr. 19, 1976, 51-44760

Int. Cl.² H01P *1/38*

U.S. Cl. 333—1.1 **3 Claims**



1. A ferrite composite circulator comprising a ferrite-dielectric-conductor composite positioned and centered in a common region having the same size as that of said composite with its axis common to aid common region between two ground planes, said composite being made of a centrally disposed non-magnetic conductive disk, a dielectric ring disposed concentrically with and encircling said conductive disk, and a ferrite ring disposed concentrically with and encircling said dielectric ring, the ratio of the thickness to the radius of said composite being 0.3 or less,

means for magnetically biasing said composite so that electromagnetic field energy in aid composite, whose ferrite anisotropic splitting factor $|\kappa/\mu|$ will range between 0.05 and 0.9, is equally resonant in non-, clockwise-, and counterclockwise-rotting modes of various orders determined by a magnetically short-circuited termination at the periphery of said composite, and said modes couple with one another at an operating point within the range of said ferrite anisotropic splitting factor $|\kappa/\mu|$, in order to produce unidirectional waveguiding operation of circulation along with a waveguiding structure in a given frequency band,

and a junction having said waveguiding structure forming at least three branches symmetrically extending away in the direction peripendicular to said axis from said common region to three respective ports.

4,205,282

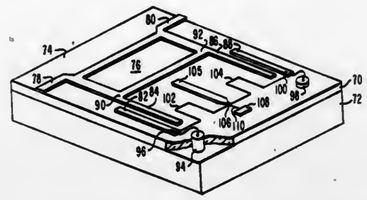
PHASE SHIFTING CIRCUIT ELEMENT

John W. Gipprich, Reistertown, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 21, 1978, Ser. No. 935,284

Int. Cl.² H01P *3/08, 1/18, 9/00, 5/16*

U.S. Cl. 333—161 **20 Claims**



1. An electrical phase shifting circuit element including a quadrature coupler branching network having an input port for receiving an electrical RF signal, an output port from which the phase shifted RF signal may be generated and first and second phase splitting ports; and two matched reflective termination networks, one being coupled to said first phase splitting port and the other being coupled to said second phase splitting port, said each matched reflective termination network comprising:

a pair of selectably coupled transmission lines being separated distributively from each other and from a first voltage potential by a dielectric material of a predetermined dielectric constant, one of said transmission lines being electrically coupled to said phase splitting port corresponding to said reflective termination network;

an electrical switching element operative to transfer between first and second switching states as governed by a switching signal, said switching element electrically connecting the other transmission line of each said pair to a second voltage potential when operated in said first switching state and electrically disconnecting said other transmission line from said second voltage potential when operated in said second switching state, said connecting and disconnecting of said other transmission line from said second voltage potential rendering a phase shift of said RF signal at the output of said quadrature coupler branching network, the magnitude and direction of said rendered phase shift being a function of the selected coupling of said pair of transmission lines; and

a filtering circuit for providing mutual electrical decoupling between said switching signal governing the switching element and said RF signal conducted through the phase shifting circuit element.

4,205,283

SIGNAL DELAY SYSTEM

William Donnally, Jr., Mine Hill, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 10, 1978, Ser. No. 949,586

Int. Cl.² H03H *7/28, 7/30;* **H03K** *5/159;* **G11C** *19/28*

U.S. Cl. 333—165 **5 Claims**

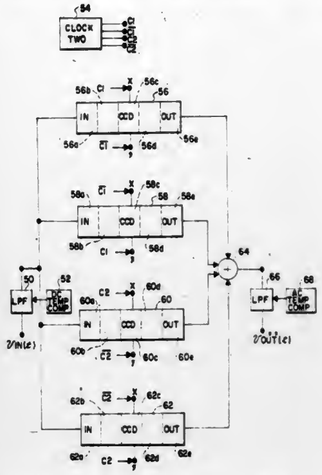
1. A system for delaying a first signal comprising:

a plurality of charge coupled devices, each being responsive to controlling clock pulses, for sampling said first signal;

a summer responsive to the output signals of each of said charge coupled devices;

an output low pass filter responsive to the output signal of said summer for reconstructing said summer output signal into a second signal which is substantially a delayed version of said first signal; and includes said output low pass filter which is temperature compensated to substantially neutralize the effect of temperature variations on the AC gain of said charge coupled devices; and

a clock pulse generator having a plurality of outputs connected to the clock inputs of said plurality of charge



coupled devices whereby each of said charge coupled devices are caused to regularly sample said first signal at sampling times different from and interleaved with the sampling times of each of the other charge coupled devices.

4,205,284

ELECTRICAL FREQUENCY FILTER COMPRISING PIEZOELECTRIC CRYSTALS

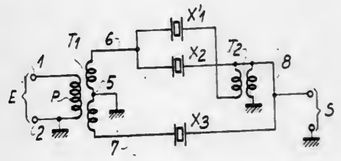
Paul Bouchou; Claude Nigoghossian, and Guy Sillioc, all of Sartrouville, France, assignors to Compagnie D'Electronique et de Piezo-Electricite, Sartrouville, France

Filed Jul. 19, 1978, Ser. No. 926,115

Claims priority, application France, Jul. 22, 1977, 77 22566

Int. Cl.² H03H *9/26, 9/32*

U.S. Cl. 333—189 **8 Claims**



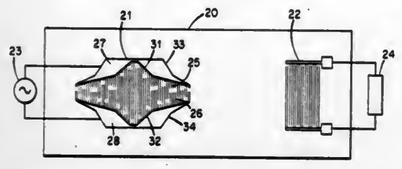
1. An electrical frequency filter comprising two input terminals (1) (2) and two output terminals (3) (4) for respectively introducing and extracting an electrical a.c. voltage having a frequency within respective given bands, the input terminals feeding an input winding of a differential transformer (T_1) of which two output windings coupled to said input winding have a common terminal (5) kept at a fixed potential, their two other seperate terminals being connected along two arms (6) (7) to two pluralities of piezoelectric crystals (X'_1) (X_2) (X_3), the two arms being connected by connecting means (8) to the two output terminals, wherein at least one of the piezoelectric crystals (X'_1) is accommodated in one of the arms by means of a transformer (T_2).

4,205,285

ACOUSTIC SURFACE WAVE DEVICE

Martin E. Dempsey, Acton, and Ching W. Lee, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 3, 1978, Ser. No. 957,400
Int. Cl.[2] H03H 9/04, 9/26, 9/32
U.S. Cl. 333—194 2 Claims



1. An acoustic surface wave device including an acoustic surface wave propagating medium and a transducer on a surface of said medium for launching acoustic surface waves along a propagation path in said medium; the transducer comprising

first and second sets of interleaved electrodes of conductive material on the surface of the acoustic surface wave propagating medium with the electrodes extending transversely to the propagation path of acoustic surface waves through the transducer;

portions of electrodes of the first set overlapping portions of electrodes of the second set with the lengths of the overlapping portions varying along the direction of the propagation path;

the overlapping portions defining an overlap envelope and the maximum amount of overlap defining the acoustic aperture of the transducer lying transverse to the propagation path;

a first continuous uninterrupted layer of conductive material on the surface of the acoustic surface wave propagating medium having the electrodes of the first set extending therefrom, said first continuous uninterrupted layer lying outside the overlap envelope and extending within the acoustic aperture; and

a second continuous uninterrupted layer of conductive material on the surface of the acoustic surface wave propagating medium having the electrodes of the second set extending therefrom, said second continuous uninterrupted layer lying outside the overlap envelope and extending within the acoustic aperture;

the total width of conductive material traversed by an acoustic surface wave propagated along the propagation path through the transducer being substantially the same over the span of the acoustic aperture;

the region of the first continuous uninterrupted layer of conductive material traversed by an acoustic surface wave propagated along the propagation path having an inner edge within the acoustic aperture generally following the overlap envelope, the electrodes of the first set extending from the first layer along the inner edge, and having an outer edge within the acoustic aperture;

the width of conductive material traversed by a line from the junction of each electrode of the first set with the inner edge of said region of the first layer through the transducer and parallel to the direction of the propagation path to the outer edge of said region of the first layer being substantially the same as the sum of the widths of the electrodes traversed by a line from the same electrode through the transducer parallel to the direction of the propagation path and lying centrally of the acoustic aperture;

the region of the second continuous uninterrupted layer of conductive material traversed by an acoustic surface wave propagated along the propagation path having an inner edge within the acoustic aperture generally following the overlap envelope, the electrodes of the second set extending from the second layer along the inner edge, and having an outer edge within the acoustic aperture;

the width of conductive material traversed by a line from the junction of each electrode of the second set with the inner edge of said region of the second layer through the transducer and parallel to the direction of the propagation path to the outer edge of said region of the second layer being substantially the same as the sum of the widths of the electrodes traversed by a line from the same electrode through the transducer parallel to the direction of the propagation path and lying centrally of the acoustic aperture;

and wherein

the first and second sets of electrodes each have the same number of electrodes and the electrodes extend normal to the propagation path;

each active electrode of each set is positioned opposed to an inactive electrode of the other set;

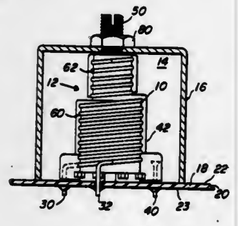
the outer edge of each region of each of said layers of conductive material lies at an acute angle to the direction of the propagation path whereby reflections from said outer edge are not propagated along the propagation path.

4,205,286

TEMPERATURE STABILIZED HELICAL RESONATOR

Edward C. Parish, Ft. Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1978, Ser. No. 881,308
Int. Cl.[2] H01P 7/00
U.S. Cl. 333—226 16 Claims



1. In a resonator assembly wherein a conductive winding is supported on a coil form with the resulting assembly being positioned in a cavity and wherein a tuning element is located in circuit configuration with the winding, the improvement comprising:

said coil form having first and second sections, each section supporting a portion of the winding;

interconnecting means for mechanically interconnecting said first and second coil form sections such that the axes of the coil portions supported thereon are substantially coincident, said interconnecting means providing strain relief between the coil sections in the direction of said coincident axes; and

means for affixing the axial end portions of said coil form with respect to said resonant cavity and said tuning element thereby maintaining a fixed spatial relationship between the resonant cavity and both ends of said coil form.

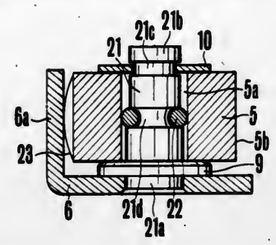
4,205,287

ELECTROMAGNETIC DEVICE

Masami Shimizu, Tokyo, and Teiji Hashimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1978, Ser. No. 931,531
Claims priority, application Japan, Aug. 11, 1977, 52/107561[U]
Int. Cl.[2] H01F 7/00
U.S. Cl. 335—271 5 Claims

1. An electromagnetic device comprising: an armature adapted to be electromagnetically energized including a top face, a bottom face and means defining a hole extending continuously through said armature from said top face to said bottom face; an armature lever mounted for rotative movement; a pivot axle formed with a circumferential groove on the outer periphery thereof fixedly mounted upon said armature lever and having said armature mounted thereon, said pivot axle extending through said armature hole and having an outermost diameter smaller than the diameter of said armature hole to define a gap therebetween; spring means applying to said armature lever a spring biasing force in a direction counteracting the force applied thereto by electromagnetic energization of said armature, said counteracting spring biasing force being weaker than the force applied by said electromagnetic energization of said armature; and a body of resilient material secured in said gap between said pivot axle and said armature hole to resiliently support said armature relative to said armature lever.

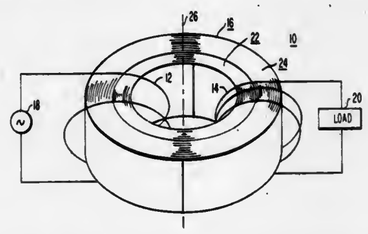


4,205,288

TRANSFORMER WITH PARALLEL MAGNETIC CIRCUITS OF UNEQUAL MEAN LENGTHS AND LOSS CHARACTERISTICS

Kou C. Lin, Hermitage; Belvin B. Ellis, Pulaski, and Charles E. Burkhardt, Sharon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 27, 1978, Ser. No. 956,142
Int. Cl.[2] H01F 33/00, 27/24
U.S. Cl. 336—5 4 Claims



1. An electrical power transformer for transmitting and distributing electrical power in an electrical power system, comprising:

a magnetic core devoid of non-magnetic gaps,

said magnetic core being constructed to provide inner and outer parallel, concentrically adjacent, magnetic circuits,

said inner and outer magnetic circuits being constructed of magnetic materials having different loss characteristics at like inductions, with the inner magnetic circuit being constructed of the material having the lower loss characteristic,

said outer magnetic circuit being constructed of a first grain oriented, regular B, electrical steel,

said inner magnetic circuit being constructed of a second grain oriented, high B, electrical steel having a higher permeability at like levels of induction, and a higher B_{10} value, than said first grain oriented electrical steel, with said second grain oriented electrical steel having a B_{10} value of at least 18.5 KG,

and first and second electrical windings each disposed to link both said inner and outer magnetic circuits, said first and second electrical windings being adapted for connection to a source of electrical potential and to a load circuit, respectively,

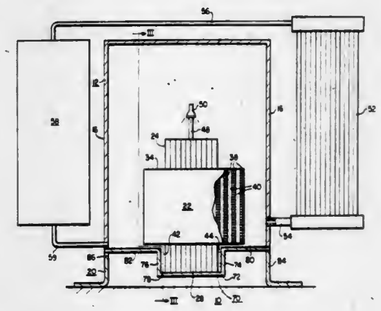
said inner magnetic circuit being constructed to provide 30 to 60% of the weight of said magnetic core to provide a lower overall core loss in watts per pound than the selected weight ratio would indicate, based upon the core losses of each of the first and second grain oriented electrical steels when used alone.

4,205,289

VAPORIZATION COOLED ELECTRICAL INDUCTIVE APPARATUS

Thomas W. Stubblefield, South Boston, Va., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 25, 1978, Ser. No. 900,040
Int. Cl.[2] H01F 27/10
U.S. Cl. 336—57 9 Claims



1. Electrical inductive apparatus comprising:

an enclosure;

a magnetic core and winding assembly disposed in said enclosure including a lower yoke portion disposed beneath the winding assembly and producing heat during normal operation;

a liquid dielectric disposed in said enclosure to a predetermined level, said liquid dielectric being vaporizable within the normal operating temperature range of said magnetic core and winding assembly;

a storage reservoir disposed in fluid flow communication with said enclosure; and

a gaseous dielectric substantially non-condensable over the operating temperature and pressure range of said magnetic core and winding assembly, said gaseous dielectric being transferable between said enclosure and said storage reservoir in response to pressure within said enclosure provided by the vapors of said liquid dielectric, with said gaseous dielectric filling substantially all of said enclosure at a first predetermined temperature and substantially all of said gaseous dielectric being within said storage reservoir at a second predetermined temperature, which temperatures are within the operating temperature range of said magnetic core and winding assembly;

a portion of said gaseous dielectric being absorbed into said liquid dielectric at said first predetermined temperature and released into said enclosure at said second predetermined temperature with a resulting increase in volume of said gaseous dielectric;

said enclosure including a bottom surface having a channel portion which defines a recess having said lower yoke portion disposed therein, and which laterally surrounds the yoke portion in said recess in spaced relationship therewith, thereby reducing the free volume of said enclosure, with the space between said lower yoke portion and said channel portion forming a sump for said liquid dielec-

tric thereby reducing the volume of said liquid dielectric necessary to fill said enclosure to said predetermined level, whereby the reduction in both the free volume of said enclosure and the volume of said liquid dielectric reduces the required volume of said storage reservoir necessary to contain substantially all of said gaseous dielectric at said second predetermined temperature, wherein the reduction in the required volume of said storage reservoir is substantially greater than the total reduction of the free volume of said enclosure plus the reduction in volume of said liquid dielectric, said storage reservoir having a required volume which is proportional to the free volume of said enclosure and the volume of said liquid dielectric and is given by:

$$V_S = \frac{V_E + K_1 V_L}{K_2 K_3 - 1}$$

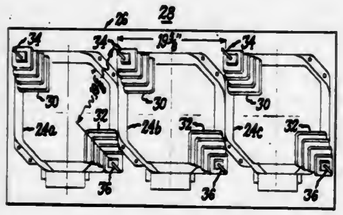
where V_S is the required volume of said storage reservoir, V_E is the free volume of said enclosure excluding the volume of said magnetic core and winding assembly, $K_1 = (\phi - 1)/(1 - \beta\phi)$ wherein ϕ is a ratio of the volume of said gaseous dielectric absorbed per unit volume of said liquid dielectric and β is a ratio of the density of the vapors of said liquid dielectric to the density of said liquid dielectric, V_L is the volume of said liquid dielectric, K_2 is a constant equal to $(1-\beta)/(1-\beta\phi)$, K_3 is a constant equal to T_1P_2/T_2P_1 wherein T_1 and P_1 respectively are the temperature and partial pressure of said gaseous dielectric at said first temperature and T_2 and P_2 are the temperature and partial pressure of said gaseous dielectric at said second temperature.

4,205,290

TRANSFORMER CONSTRUCTION

Robert S. Canney, Berwick, Me.; Ronald J. Ouellette, Bedford, and William H. Morong, Jr., Madbury, both of N.H., assignors to General Electric Company, Somersworth, N.H.

Filed Dec. 22, 1978, Ser. No. 972,505
Int. Cl.[2] H01F 27/04
U.S. Cl. 336—90 7 Claims



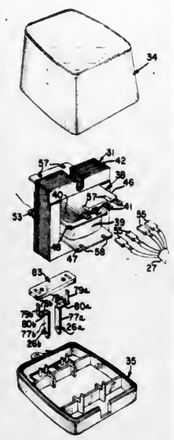
1. In an electrical apparatus, the combination comprising:
(a) a generally rectangular tank;
(b) a cover mounted on said tank;
(c) a pair of high voltage bushings mounted on diagonally opposite corners of said cover, with said bushings diametrically extending outward of said tank at their respective corners at acute angles with said cover;
(d) a generally rectangular core assembly mounted inside said tank and extending transversely between the remaining diagonally disposed corners of said tank; and
(e) a coil assembly disposed on said core assembly, said coil assembly including a pair of connecting means, each in substantial alignment with a respective bushing and each connected to a conductor extending through its aligned bushing into said tank.

4,205,291

HEAVY DUTY CONVERTER

Robert W. Flentge, Roselle, Ill., assignor to A. F. Dormeyer Manufacturing Co., Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 777,081, Mar. 14, 1977, abandoned. This application Feb. 13, 1978, Ser. No. 877,329
Int. Cl.[2] H01F 27/02, 15/10
U.S. Cl. 336—92 18 Claims



1. A heavy duty converter for use with electrical devices to reduce line voltage and provide a low operating voltage, said converter comprising a case and cover assembly and a transformer subassembly within the case and cover assembly,
said transformer subassembly including a bobbin of electrical insulating material having a hollow body, first and second outer winding flanges extending perpendicularly to the axis of the hollow body, primary and secondary windings on the hollow body between the winding flanges, each of said flanges having an outer side remote from the windings and an inner side adjacent said windings and an iron frame surrounding said bobbin along one axis and having a leg extending through the hollow body for magnetically coupling the windings,
said case and cover assembly including top, bottom side and end walls, means integrally formed with the top and bottom wall of the case and cover assembly and coacting with the outer winding flanges of the bobbin to mount the transformer subassembly within the case and cover assembly so that the frame is spaced from the walls and the subassembly is resiliently mounted to the case and cover assembly, said means being spaced outwardly of said hollow bobbin body and supporting said outer flange sides, and
connector means for said windings to connect the primary winding to a voltage source and the secondary winding to an electrical device.

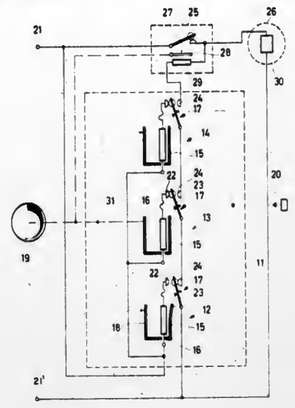
4,205,292

ELECTRIC TIME SWITCH

Gerhard Göessler, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Geraete Blanc und Fischer, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,172
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730446
Int. Cl.[2] H01H 71/16, 71/22
U.S. Cl. 337—101 18 Claims

1. An electric time switch mechanism comprising a plurality of units each having an operating thermal expansion member, electrical heating means for the thermal expansion member and a switch which is activated by the thermal expansion member, the units being connected in series in such a way that the activation of a switch turns off the heating means of the associated thermal expansion member and turns on that of the following unit, the switches remaining in the activated state after activation and being resettable by external activation.

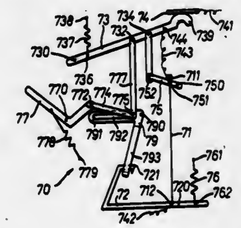


4,205,293

THERMOELECTRIC SWITCH

Keith N. Melton, Busslingen, and Olivier Mercier, Ennetbaden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 28, 1978, Ser. No. 900,866
Claims priority, application Switzerland, May 6, 1977, 5698/77
Int. Cl.[2] H01H 61/04, 61/06
U.S. Cl. 337—140 12 Claims



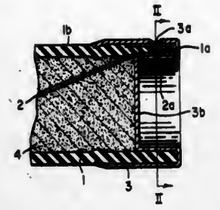
1. A thermoelectric switch comprising:
a current conducting triggering element made from a shape memory alloy exhibiting a two way temperature effect such that a thermally controlled transformation occurs when said triggering element passes from a partly matensitic state into an at least partly austenitic state, said triggering element then contracting, and when said triggering element reverses through the said transformation, said triggering element then expanding;
at least one stressing device operatively connected with said triggering element, said stressing device exerting force on said triggering element with said force determining the switching temperature of the switch;
means for movably supporting said triggering element; and
circuit means contacting said triggering element as a result of said transformation.

4,205,294

SOLDERLESS FUSE TERMINAL

Philip C. Jacobs, Jr., Newtonville, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 25, 1978, Ser. No. 945,542
Int. Cl.[2] H01H 85/16
U.S. Cl. 337—234 7 Claims



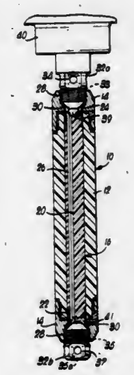
1. In an electric fuse the combination of
(a) a tubular deformable casing including a synthetic resin, said casing having a rim;
(b) a fusible element inside said casing bent over said rim and having a portion engaging the outer surface of said casing;
(c) a ferrule mounted on said casing and having a radially inwardly directed indentation in registry with said portion of said fusible element on the outer surface of said casing, said indentation engaging and deforming said portion of said fusible element on the outer surface of said casing and exerting such a pressure against said portion of said fusible element as to establish an electrically conductive solderless pressure-joint between said portion of said fusible element and said ferrule; and
(d) said ferrule having a portion engaging the inner wall of said casing and providing a back-up for said conductive solderless pressure joint.

4,205,295

HIGH CONTINUOUS CURRENT CAPACITY OIL EXPULSION FUSE

William R. Mahieu, Rt. 4, Centralia, Mo. 65240

Continuation-in-part of Ser. No. 837,992, Sep. 29, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,250
Int. Cl.[2] H01H 85/14, 85/02
U.S. Cl. 337—250 13 Claims



1. A high voltage distribution circuit expulsion fuse adapted for use while immersed in oil and comprising:
an elongated, non-conductive member having a number of individual, discrete bores extending therethrough, each of which is open at opposite ends thereof;
terminal means at each end of the member presenting corresponding chambers communicating with the open ends of the bores at opposite extremities of the member; and

a fusible element within each of the bores and extending along at least a part of the length thereof, each of said fusible elements being electrically connected to opposed terminal means in parallel for flow of electrical current through all of the elements when the fuse is functioning in the normal current carrying mode thereof.

each of said terminal means being provided with vent means therein communicating each of the chambers and thereby the corresponding open ends of the bores with the oil medium surrounding the fuse in normal use thereof whereby convective flow of oil through all of the bores is maintained during said normal current carrying mode of the fuse,

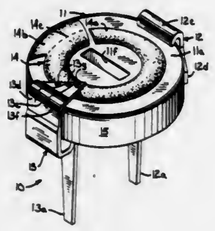
the vent means in one of the terminal means being of greater total effective vent area than the corresponding total event area of the vent means in the other terminal means so that upon interruption of a low fault or overload current which causes sequential melting of the elements to occur accompanied by suppression and extinguishment of the arc produced in the bore containing the last to melt element, restrike in any of the bores is effectively precluded when the high rate of rise recovery voltage is imposed on the fuse in that although oil-derived gases generated by arcing of the last to melt element flow through the bore containing such element into both of the chambers, such gas also flows through the other bores from the chamber in said other terminal means toward the chamber in said one terminal means by virtue of the greater resistance to outflow of gases from said other terminal means than said one terminal means.

4,205,296

RHEOSTAT TRIMMER

Sydney W. Frey, Jr., Brookfield, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Oct. 10, 1978, Ser. No. 949,526
Int. Cl.² H01C *10/26*
U.S. Cl. 338—150 **11 Claims**



1. A variable resistor control, which comprises:

a base having top and bottom surfaces and a peripheral side surface extending between and joined to the top and bottom surfaces to form top and bottom peripheral edges, respectively;

a resistance track disposed on the top surface of the base with an arcuate portion spaced inwardly from the top peripheral edge of the base and with a termination portion extending outwardly from the arcuate portion to the top peripheral edge of the base;

a collector track disposed on the base along its peripheral side surface, the collector track and the termination portion of the resistance track being electrically connected along the top peripheral edge of the base; and

a pair of spaced terminal pins adapted to slidably support the base for rotation therebetween, the first terminal pin including a first contact that engages the collector track, and the second terminal pin including a second contact that engages the arcuate portion of the resistance track, whereby the base can be rotated relative to the terminal pins to vary the resistance that is electrically connected between the terminal pins.

4,205,297

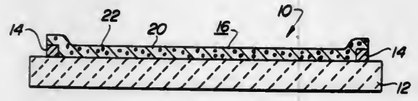
Patent Not Issued For This Number

4,205,298

RESISTOR MATERIAL, RESISTOR MADE THEREFROM AND METHOD OF MAKING THE SAME

Howard E. Shapiro, Philadelphia, and Kenneth M. Merz, Gladwyne, both of Pa., assignors to TRW, Inc., Cleveland, Ohio

Filed Nov. 20, 1978, Ser. No. 962,233
Int. Cl.² H01C *1/012*
U.S. Cl. 338—308 **25 Claims**



1. A resistor material consisting essentially of a mixture of a glass frit and particles of tantalum nitride (Ta_2N).

4,205,299

THIN FILM RESISTOR

Fritz Klesse, Schwestergasse 39, 8300 Landshut, Fed Rep. of Germany, and Jürgen Förster, Prinz-Ludwig-Str. 317, 8050 Freising, Fed. Rep. of Germany

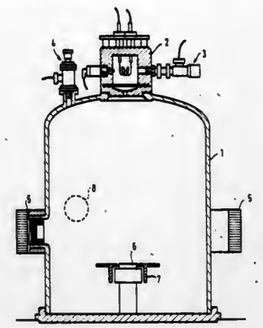
Division of Ser. No. 908,679, May 23, 1978, which is a continuation-in-part of Ser. No. 764,015, Jan. 31, 1977, abandoned. This application Dec. 29, 1978, Ser. No. 974,491
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605174
Int. Cl.² H01C *1/012*
U.S. Cl. 338—308 **2 Claims**

1. Thin-film resistor comprising an insulating carrier member with a resistor film deposited thereon,

the resistor film comprising 30 to 80 mole percent of a metal selected from the group consisting of chromiom and a chromiom compound, 10 to 35 mole percent nickel and 10 to 35 percent of an added amount of at least one metal

selected from the group consisting of gold, cobalt, aluminum, and tin in at least one form selected from the group consisting of metal and metal oxide,

said deposition having been carried out by reactive sputtering in the presence of a reactive gas containing oxygen, having a partial pressure of from 1×10^{6} to 1×10^{4} Torr,



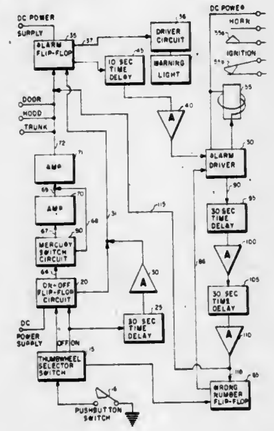
said resistor having a resistance range of between 1 Ohm to 10^{6} Ohm; electrical stress of 1 Watt to ambient temperature of 70° C.; temperature coefficient of -200×10^{-6}/°C.; change in resistance of $\leqq\pm1\%$ after 1,000 hours at 70° C. and 1 Watt of electrical stress; change in resistance of $\leqq\pm1.5\%$ after 10,000 hours at 70° C. and 1 Watt of electrical stress; change in value under the effect of moisture $\leqq\pm0.5\%$ and non-linearity (1,000 kohm)$\leqq$100 dB.

4,205,300

VEHICLE ANTITHEFT ALARM

Eugene Y. Ho, San Carlos, and Joseph A. Musolino, San Jose, both of Calif., assignors to Techne Electronics, Ltd., Redwood City, Calif.

Filed Aug. 30, 1976, Ser. No. 718,587
Int. Cl.² B60R *25/10, 25/04*; G 8B *13/08*
U.S. Cl. 340—65 **8 Claims**



3. Apparatus for inhibiting vehicle theft comprising:

(a) means operative for inhibiting vehicular theft;

(b) circuit means for controlling the operation of said theft-inhibiting means;

(c) means including a selector switch connected to said circuit means to select one code for enabling said circuit means to operate said theft-inhibiting means in response to one predetermined code setting and to select another code for disabling said circuit means to prevent said theft-inhibiting means from operating in response to another predetermined code setting; and

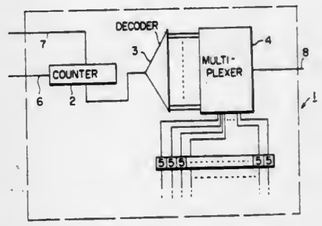
(d) wrong code means connected to said circuit means and responsive to said selector switch being actuated to a setting other than one of said predetermined codes for activating said circuit means to operate said theft-inhibiting means.

4,205,301

ERROR DETECTING SYSTEM FOR INTEGRATED CIRCUIT

Masahide Hisazawa, Yokohama, Japan, assignor to Fujitsu Limited, Japan

Filed Mar. 17, 1978, Ser. No. 887,919
Claims priority, application Japan, Mar. 17, 1977, 52-29644
Int. Cl.² G06F *11/10*
U.S. Cl. 371—3 **6 Claims**



1. An integrated circuit comprising:

a plurality of cooperating functional block means for processing digital signals, each block comprising digital circuitry and being formed with redundancy means for allowing detection of malfunctions;

a plurality of error detecting circuit means, each connected to one of said functional block means, for detecting malfunctions of the corresponding functional block means;

a plurality of memory element means, each connected to one of said error detecting circuit means, for storing a predetermined value when the corresponding error detecting circuit means detects a malfunction; and

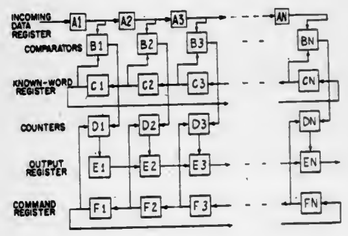
a log-out mechanism means, connected to said plurality of memory element means, for outputting the contents of said memory element means to the outside of the integrated circuit.

4,205,302

WORD RECOGNIZING SYSTEM

Einar Godo, 2407 170th Pl., SE., Bellevue, Wash. 98008

Continuation of Ser. No. 846,384, Oct. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 652,220, Jan. 26, 1976, abandoned. This application Nov. 29, 1978, Ser. No. 964,473
Int. Cl.² G06F *7/04*
U.S. Cl. 340—146.2 **7 Claims**



1. A method of recognizing a word containing a number of bits in a data stream, comprising:

recirculating a known word in a first shift register clocked in a first direction;

clocking said data stream through a second shift register in a direction opposite from said first direction;

comparing each bit of the known word stored in a respective stage of said first shift register with a bit of said data stream stored in a corresponding stage of said second shift register;

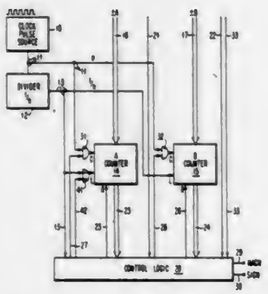
counting the number of comparing bits for each stage of registers during a plurality of clocking periods to determine if said word has been received in said data stream.

4,205,303

PERFORMING ARITHMETIC USING INDIRECT DIGITAL-TO-ANALOG CONVERSION

Carl F. Barnhart, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,244
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 DA **7 Claims**



1. Circuitry for converting a plurality of multi-bit, arbitrarily signed, coded digital input signals into a single analog output signal of predetermined amplitude but a duty cycle related to said digital input signals, said circuitry comprising, in combination:

a source of clock pulses;

divider means for providing a start pulse one out of every n clock pulses;

a pair of presettable counters, each operative while the respective counter is enabled by an enabling signal to count in a predetermined direction and at a rate determined by successive clock pulses from any numerical value set therein to a predetermined base value indicative of a count termination state;

means for setting the numerical value of each input signal into a respective one of said counters responsively to a start pulse;

means denoting whether the sign of each input signal is positive or negative; and

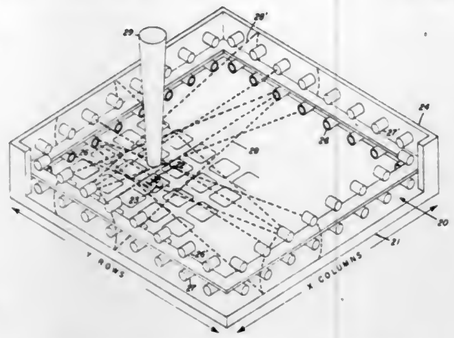
means for providing an enabling signal to each counter successively if the signs of both input signals are identical and concurrently if the signs of the input signals are different, thereby to generate a pair of binary signals representing the magnitude and sign, respectively, of a ternary analog output signal, the average value of which varies substantially linearly with changes in algebraic sum of the numerical values represented by said input signals and said predetermined base value.

4,205,304

TWO DIMENSIONAL LIGHT BEAM SELECTION SYSTEM

Stanley E. Moore, Los Gatos, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sep. 22, 1977, Ser. No. 835,718
Int. Cl.[2] G28C *1/00*; G21C *7/00*; G08C *21/00*
U.S. Cl. 340—365 P **12 Claims**



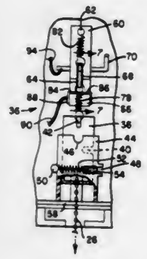
1. A selection system including a two-dimensional map of a plurality of selection positions arranged in columns and rows comprising: a selectively energizable light emitter at one end of each of said columns for emitting light in the direction of the columns; a normally disabled light detector at the other end of each of said columns for receiving light from the light emitters of the columns and responsive thereto to produce an output signal; means for successively energizing the light emitters of said columns, means for successively enabling the light detectors of said columns in synchronism with the energization of the light emitters thereof whereby the light detector of a column is enabled only in coincidence with the energization of the light emitter of the column; and column detection means for indicating the absence of an output signal from an enabled light detector of said columns.

4,205,305

BURGLAR ALARM

Tatsuji Nakada, 2, 35, 5-Chome, Tachibana, Sumida-ku, Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,837
Int. Cl.[2] G08B *13/08, 13/12*
U.S. Cl. 340—548 **7 Claims**



1. A burglar alarm for signaling relative motion between a first surface and a second surface, comprising:

a housing attachable to said first surface;

a magnet;

a flexible elongated member having first and second ends, said first end being attached to said magnet;

a switch assembly mounted within said housing, said switch assembly comprising a fixed first contact having first and second side, a second contact pivotably mounted adjacent to the first side of said first contact, a linearly movable element positioned adjacent to the second side of said first contact and linearly movable therefrom, said linearly movable element having a side with a slot therein, the second end of said flexible elongated member being attached to said linearly movable element, and first means cooperating with said linearly movable element for moving said second contact into electrical contact with said first contact and keeping said second contact in electrical contact with said first contact when said linearly movable element has been displaced a predetermined threshold distance, said first means inclusing a pin pivotably mounted adjacent to the side of said linearly movable element having said slot therein and spring means for urging said pin toward the side of said linearly movable element having said slot therein, said pin moving into said slot when said linearly movable element has been displaced said predetermined distance;

second means connected to said switch assembly for producing a continuing sound when said first contact is in electrical contact with said second contact; and

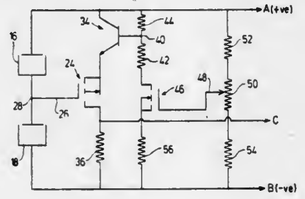
manually operated means movable between "on" and "off" positions and cooperating with said pin for moving said second contact out of electrical contact with said first contact when said linearly movable element is not displaced and said manually operated means is moved to "off" position.

4,205,306

BATTERY OPERATED SMOKE DETECTOR ELECTRONICS

Zbigniew W. Turlej, Toronto, Canada, assignor to Dicon Systems Limited, Toronto, Canada

Filed Jan. 9, 1978, Ser. No. 867,671
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—629 **7 Claims**



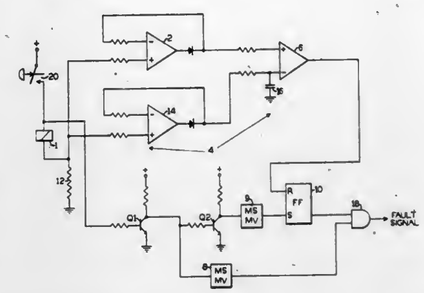
1. An electronic smoke detector for setting off an alarm on detecting a predetermined concentration of combustion products in the air, said detector having constant sensitivity throughout useable battery life, said detector comprising an ionization chamber having a radioactive source for ionizing molecules of air in such chamber and a pair of electrodes in such chamber for establishing an electric field in the chamber region between them, a battery for applying voltage across such chamber by way of said electrodes where presense of the predetermined concentration of combustion products in such chamber causes an increment in the voltage drop across such chamber, the increment in voltage drop increasing as the battery voltage decreases for the same concentration of combustion products in the air, a first electronic means adapted to monitor the voltage drop across such chamber, said first electronic means having a predetermined alarm threshold corresponding to the increment in voltage drop for a fully charged battery at which it causes an alarm signal for said predetermined concentration of combustion products, a second electronic means adapted to detect decrease in said battery voltage and adapted to adjust upwardly said alarm threshold on detecting decrease in said battery voltage to compensate for said increase in voltage drop increment so that said first electronic means causes such alarm signal at approximately the same predetermined concentration of combustion products in the air throughout useable battery life.

4,205,307

DEVICE FOR MONITORING THE FUNCTION OF ELECTROMAGNETS

Peter Liermann, Gehrden, and Lutz Weise, Mainz, both of Fed. Rep. of Germany, assignors to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 30, 1978, Ser. No. 956,001
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—644 **6 Claims**



1. Apparatus for monitoring the operation of a solenoid, which includes an electromagnet having a movable armature normally occupying a first position and operating to another position when the electromagnet is energized, comprising in combination,

(a) a sensing means coupled to said electromagnet and responsive to current flow through the electromagnet winding for sensing variations in that current when said armature operates to its energized position after said electromagnet is initially energized,

(1) said sensing means generating an output signal when an armature actuated current variation is sensed,

(b) a memory means coupled to said electromagnet and responsive to current flow for registering an indication of the initial application of energy to said electromagnet and for generating an output signal while said indication is stored,

(1) said memory means further controlled by said sensing means for cancelling said registered indication of said energy application when a sensing means output signal is generated,

(c) timing means coupled to said electromagnet and responsive to the initial application of energy to said electromagnet for initiating a predetermined timing period,

(1) said timing period having a length longer than the normal interval from initial energization to operation of said armature,

(2) said timing means normally producing an output signal except during said timing period, and

(d) a detector means coupled to said memory means and said timing means and responsive to the simultaneous reception of the output signals from both such means for producing a fault signal indicating the non-operation of said armature after energization of said electromagnet.

4,205,308

PROGRAMMABLE ALARM SYSTEM FOR MARINE LOADING ARMS

Frank P. Haley, Upland, and Louis S. McTamaney, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Nov. 21, 1977, Ser. No. 853,800
Int. Cl.[2] G08B *21/00*; B65B *1/04*; G01C *1/00*; G01B *3/56*
U.S. Cl. 340—686 **19 Claims**

1. An apparatus for sensing the position in space on the end

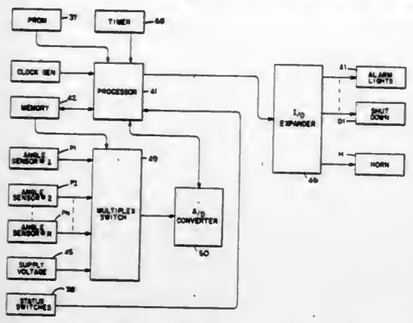
of an articulated arm having a plurality of pivotally interconnected limbs, a first one of which is pivotally mounted on a fixed support, the apparatus comprising:

means for sensing a first angle representative of the vertical orientation of said first limb;

means for sensing a second angle representative of the horizontal orientation of said arm;

means for sensing a third angle representative of the vertical orientation of a second limb;

calculator means for using the values of said first, second and



third angles to calculate the spatial position of the end of said articulated arm;

means for storing the spatial boundaries of a working area for said end of said arm;

means for comparing the actual spatial position of the end of said arm with said boundaries;

means for calculating the velocity of the end of said arm and for extending the boundaries of said working area by an amount which is dependent upon the arm velocity; and

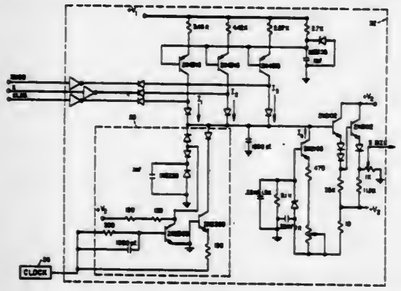
means for generating an alarm signal when the spatial position of said end of said arm equals any of said boundaries.

4,205,309

CHARACTER GENERATOR

John Music, Melbourne, Fla., assignor to Documation Incorporated, Melbourne, Fla.

Filed Feb. 21, 1978, Ser. No. 879,088
Int. Cl.² G06F *3/14*
U.S. Cl. 340—739 **12 Claims**



1. A character generator for generating highly accurate electronic reproductions of characters of any chosen style on the screen of a CRT display unit by simultaneously controlling the orientation, length and intensity of substantially linear strokes formed by the electron beam of the CRT comprising:

a. input means for receiving data representative of selected characters and converting said data into digital character addresses;

b. random access memory means coupled to said input means and having a data storage position corresponding to each CRT display position for storing a digital character address in each storage position, each digital character address being representative of the character to be displayed in each CRT screen display position;

c. means coupled to said random access memory means for loading digital character addresses into selected memory storage positions of said random access memory means and for sequentially reading out on a data output line the digital character addresses stored in said random access memory means;

d. read only memory means, including a plurality of multibyte microprograms each stored at a predetermined address of said read only memory means and representative of a single character, coupled to the data output line of said random access memory means for sequentially reading out each byte of the microprogram designated by each sequentially received digital character address, each byte containing digital data defining the magnitude and direction of the X, Y and Z components of each stroke formed by the electron beam; and

e. digital to analog converter means coupled to said read only memory means for converting the sequentially generated bytes of each microprogram read out from said read only memory means into three independent analog signals, said digital to analog converter means having X, Y and Z output lines and including

i. X fixed current source means coupled to the X output line for transferring a fixed magnitude current having a first polarity to the X output line

ii. X variable current source means coupled to the X output line for transferring a variable magnitude current having a second polarity to the X output line, the magnitude of the variable magnitude current being representative of the digital data in each byte which defines the magnitude and direction of the X component of each stroke, the fixed and variable magnitude currents being additively combined on the X output line

iii. Y fixed current source means coupled to the Y output line for transferring a fixed magnitude current having a first polarity to the Y output line.

iv. Y variable current source means coupled to the Y output line for transferring a variable magnitude current having a second polarity to the Y output line, the magnitude of the variable magnitude current being representative of the digital data in each byte which defines the magnitude and direction of the Y component of each stroke, the fixed and variable magnitude currents being additively combined on the Y output line.

v. Z variable current source means coupled to the Z output line for transferring a current to the Z output line having a magnitude representative of the digital data in each byte which defines the intensity of each stroke;

whereby said digital to analog converter means converts the sequentially generated bytes of each microprogram read out from said read only memory means into three independent analog signals for controlling the position and intensity of the CRT electron beam to form a selected character on the screen of the CRT by connecting substantially constant intensity, variable length linear strokes in patterns determined by each selected microprogram.

4,205,310

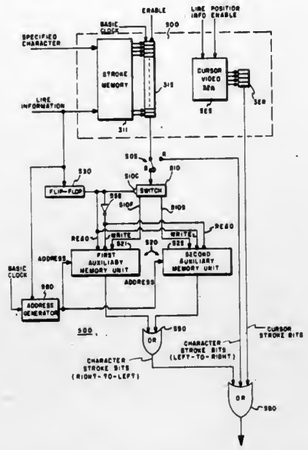
TELEVISION TITLING APPARATUS AND METHOD

Renville H. McMann, Jr., New Canaan, and Joseph Bakach, Bridgeport, both of Conn., assignors to Thomson-CSF Laboratories, Inc., Stamford, Conn.

Filed May 22, 1978, Ser. No. 908,084
Int. Cl.² G06K *15/20*
U.S. Cl. 340—750 **10 Claims**

1. In an apparatus for receiving a sequence of character-representative signals and for generating video control signals which are suitable for controlling a scanned display, said apparatus including timing generator means for generating timing signals which are synchronized with the display scan; character storage means for storing the character-representative

signals and periodically reading out character-representative signals which correspond to a character in the sequence; and stroke generator means responsive to the timing signals and the character-representative signals for producing stroke bits of the character to be displayed; a compatible subsystem for presenting characters of a language which reads right-to-left, comprising:



means for storing, in said stroke generator means, reverse image stroke representations of a font of characters of said language;

auxiliary storage means for storing a scanline of stroke bits from said stroke generator means; and

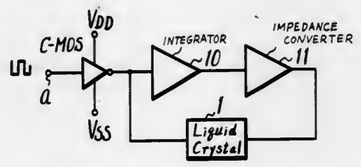
means for reading out said scanline of stroke bits from said auxiliary storage means, said scanline of stroke bits being read out in reverse order from the order in which they were read into said auxiliary storage means.

4,205,311

LIQUID CRYSTAL DISPLAY DEVICE

Ken Kutaragi, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,312
Claims priority, application Japan, Sep. 14, 1977, 52-110881
Int. Cl.² G02F *1/13*
U.S. Cl. 340—784 **8 Claims**



1. A liquid crystal display device comprising:

(a) a liquid crystal display cell interposed between first electrode means and second electrode means;

(b) exciting means applied to said first electrode means for obtaining an exciting voltage; and

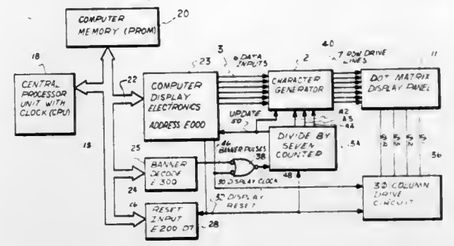
(c) integrating means applied to said second electrode means for obtaining a substantially mean DC voltage by integrating said exciting voltage.

4,205,312

METHOD AND APPARATUS FOR CAUSING A DOT MATRIX DISPLAY TO APPEAR TO TRAVEL

Jack P. Nelson, Agoura, Calif., assignor to Computer Kinetics Corporation, Westlake Village, Calif.

Filed Nov. 11, 1977, Ser. No. 850,778
Int. Cl.² G06K *15/18*
U.S. Cl. 340—792 **22 Claims**



1. In a cyclically refreshed display device of the type which displays information characters by selectively changing the visible state of a plurality of dots on a dot matrix display panel, the dots being arranged in N columns and Y rows of dots, said rows extending lengthwise of the display panel, an electrical circuit for causing the displayed characters to appear to travel across the display panel, said circuit comprising:

first means for sequentially enabling adjacent columns in the display along the length thereof;

second means for providing row-drive signals, selectively causing each dot of each column enabled by said first means to have a predetermined visible state;

a clock circuit for generating a display clock for synchronizing said first means with said second means;

means for generating a reset pulse for resetting said first and second means after N columns have been enabled to cause said first means to repeat sequencing through said columns and to cause said second means to repeat sequencing through its selection of dots to have said predetermined visible states; and

means for periodically altering said synchronizing means including means for selectively generating banner pulses, and gate means for combining said banner pulses with said display clock to define a banner display clock, said banner display clock being routed to one of said first and second means, the other of said first and second means receiving unaltered display clock, said banner display clock periodically incrementing said one of said first and second means by at least one column position, thereby displaying the information characters periodically stepwise displaced along the length of the display panel.

4,205,313

MARINE RADAR INCLUDING ANTICOLLISION UNIT

William M. Pease, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 25, 1978, Ser. No. 899,952
Int. Cl.² G01S *7/44*
U.S. Cl. 343—5 DP **14 Claims**

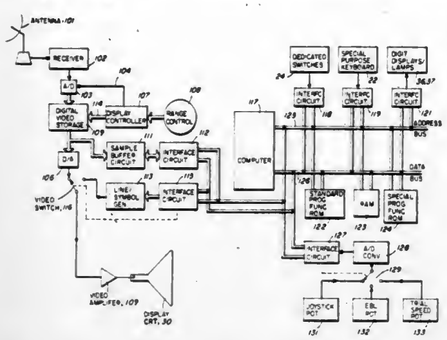
1. In combination:

means for forming digital samples of radar return signals, said digital samples being taken of said received signals at intervals of time determined by a radar range setting;

means for storing said digital samples of the received radar return signals;

means for reading said samples out of said storing means

sequentially at a rate constant over a plurality of radar range settings;



digital computing means coupled to the output of said storing means; and

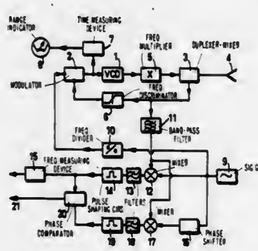
a visual display coupled to said digital computing means.

4,205,314

DEVICE FOR MEASURING THE RANGE OF A MOVING TARGET AND THE SPEED AT WHICH IT APPROACHES OR RECEDES

Raymond Strauch, Viroflay, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Dec. 19, 1977, Ser. No. 862,005
Claims priority, application France, Dec. 29, 1976, 76 39390
Int. Cl.[2] G01S *9/44, 9/02, 9/23*
U.S. Cl. 343—9 R **4 Claims**



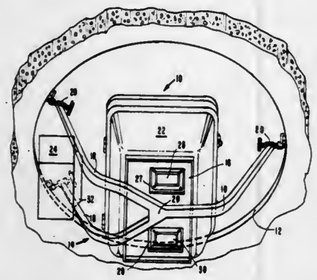
1. An apparatus for measuring the range and the recessional or approach speed of a target comprising means for generating a radio signal, means for frequency modulating said radio signal by a triangular waveform modulating signal of duration T to produce a linearly frequency modulated radio signal, means for transmitting said frequency modulated radio signal toward said target, means for receiving the radio signal reflected from said target, means for generating a beat signal between the transmitted and received signals, a frequency discriminator coupled to said beat signal generating means, said discriminator having a center frequency f_o and generating an error signal corresponding to the difference between f_o and the frequency of said beat signal, said error signal being coupled to said modulating means and controlling the slope of said triangular waveform of said modulating signal generated thereby so as to maintain the frequency of said beat signal equal to f_o, means for deriving from said triangular waveform a signal indicative of the range of the target, further means for generating a first signal of a constant frequency f_1 which is equal to the average value of f_o, means coupled to said modulating means for producing a second signal of a constant frequency f_1/n, where n is the order of the harmonics of the transmitted modulation signal whose frequency is nearest to f_o, said second signal controlling said modulating means so as to maintain the duration Tr between the start of two consecutive triangular waveforms of said modulating signal constant and equal to n/f_1, a mixer having an output, a first input coupled to said further means and a second input coupled to said means for generating said beat signal, a bandpass filter having an output and having an input connected to the output of said mixer, said filter having a maximum cut-off frequency equal to $f_1/2n$, and means coupled to said output of said filter for measuring the frequency of the signal at the output of said filter, the measured frequency being indicative of the velocity of the target relative to said apparatus.

4,205,315

FLUID LEVEL MEASUREMENT APPARATUS FOR MOUNTING IN MANHOLES AND SIMILAR STRUCTURES

Richard P. Fleenor, Santa Cruz, Calif., assignor to Manning Environmental Corp., Santa Cruz, Calif.

Filed Feb. 12, 1979, Ser. No. 11,403
Int. Cl.[2] G01S *9/24*
U.S. Cl. 343—14 **4 Claims**



1. A fluid level measurement apparatus for mounting in manholes and similar structures comprising:

support means including,

a bracket means having a seat portion and a plurality of support arm portions, each support arm having a terminal section positioned above said seat portion, said seat portion defining at least two spaces apart microwave antenna windows,

clamping means coupled to each of said terminal sections for selectively engaging and disengaging said bracket means from the inner rim of a manhole; and

microwave depth gauge means at least partially supported by said seat portion for determining fluid level beneath said support means, said microwave depth gauge means having microwave transmitting and receiving antennas spaced to communicate microwave radiation through said windows.

4,205,316

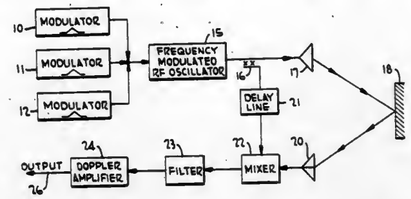
ENHANCED ACCURACY DOPPLER FUZE

Salvador J. Peperone, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 16, 1967, Ser. No. 624,671
Int. Cl.[2] G01S *9/24*; F42C *13/04*
U.S. Cl. 343—14 **6 Claims**

1. A method of improving the resolution and accuracy of

FM-CW radar distance measuring systems comprising the step of simultaneously modulating the carrier signal with each of a



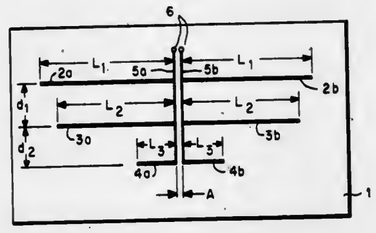
plurality of at least three asynchronous periodic linear wave signals.

4,205,317

BROADBAND MINIATURE ANTENNA

Paul T. K. Young, Westwood, Mass., assignor to Louis Orenbuch, Weymouth, Mass.

Filed Dec. 21, 1978, Ser. No. 971,652
Int. Cl.[2] H01Q *21/12, 9/44*
U.S. Cl. 343—720 **4 Claims**



1. A broadband antenna comprising

(1) a pair of parallel closely spaced elongate central conductors, each of said central conductors being connected at one end to antenna output terminal means,

(2) a plurality of pairs of dipole elements, the two elements of each pair being equal in length, the elements of each pair being disposed symmetrically on opposite sides of said closely spaced central conductors and extending outwardly therefrom, each element having its inner end connected to the adjacent one of the pair of closely spaced central conductors,

(3) the length of the longest pair of dipole elements being approximately one eighth the wavelength of the lowest frequency in the broadband,

(4) the length of the shortest pair of dipole elements being in the range of one third to one quarter of the wavelength of the highest frequency in the broadband,

(5) the length of a third pair of dipole elements being a half wavelength at some intermediate frequency in the broadband, the third pair of dipole elements being disposed between the longest and shortest pair of dipole elements, and

(6) adjacent pairs of dipole elements being spaced apart at their points of attachment to the central conductors by a distance in the range of a half to a quarter of the wavelength at the highest frequency in the broadband.

4,205,318

MINI-INDOOR TV ANTENNA

Vincent F. Pisano, 654 NE. 56th St., Miami, Fla. 33137

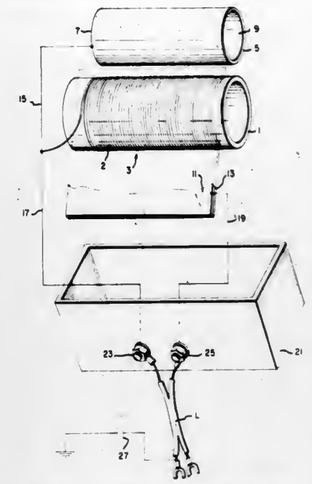
Filed Jan. 15, 1979, Ser. No. 3,588
Int. Cl.[2] H01Q *9/26*
U.S. Cl. 343—741 **8 Claims**

1. An antenna for receiving signals in the television band, comprising:

a conductor wound about a linear axis to form an elongated helix,

an elongated hollow cylindrical member of non-magnetic metal located within said helix in non-contacting relation with said conductor and extending substantially the length thereof,

said cylindrical member being closed at one end by a plate of non-magnetic metal,



one end of said conductor being electrically connected to said cylindrical member adjacent said closed end,

a layer of electrical insulating material supported by said helix,

a metallic foil sheet wrapped directly about said insulating layer,

a first electrical terminal connected to said one end of the conductor, and

a second electrical terminal connected to the foil.

4,205,319

FLEXIBLE DIPOLE ANTENNA FOR HAND-HELD TWO-WAY RADIO

Bernard Gasparaitis, Ft. Lauderdale, and Charles D. Albright, Lantana, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 5, 1978, Ser. No. 903,318
Int. Cl.[2] H01Q *9/16*
U.S. Cl. 343—792 **4 Claims**

1. A method of constructing a dipole antenna for portable radio use and comprising the steps of:

(a) cutting to approximately on-half wavelength a coaxial cable consisting of a center conductor of stranded wire, a layer of insulation over the stranded wire, a braided shield over the insulation layer; and an outer insulating jacket over the braided shield;

(b) stripping said jacket from all but a small portion of the cable length;

(c) stripping the shield from approximately the upper half of said cable and a very short length of the lower end thereof;

(d) removing the inner insulating layer from a very short portion of the lower end of said cable;

(e) permanently affixing a connector pin to the lower end of said cable;

(f) slipping a flexible, molded insulating sleeve onto the cable and over the still-shielded portion thereof;

(g) providing a portion of braided shielding formed with a portion having an inside diameter substantially equal to the outside diameter of the shielded portion of the cable

and a second portion having an inside diameter substantially equal to the outside diameter of the insulating sleeve;
(h) placing said formed shield over the insulating sleeve and the exposed portion of the cable shield;
(i) applying a metal ring over the double layer of shielding and crimping said ring thereon;
(j) applying a section of heat shrink tubing over the crimped ring and the smaller portion of the formed shield and heat shrinking the tubing thereon;
(k) providing a metal connector housing having a threaded portion for mating with a portion of the two-way radio;



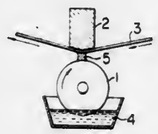
(l) inserting a molded section of flexible insulating elastomer into the connector housing;
(m) inserting a portion of a flexible conductive elastomer into the center of the insulating elastomer;
(n) providing a coil spring formed of music wire and having a pitch at the upper end for mating with threads on the lower end of the insulating sleeve and at the other end having a pitch for mating with threads on the upper end of the connector; and
(o) providing a resilient insulating cover over the entire antenna.

4,205,320

WET TYPE DIRECT IMAGE RECORDING METHOD

Tadashi Fujii, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Sep. 27, 1978, Ser. No. 946,185
Claims priority, application Japan, Sep. 30, 1977, 52-118178
Int. Cl.² G01D *15/16*
U.S. Cl. 346—1.1 **8 Claims**



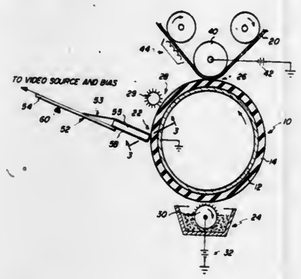
1. A wet type direct image recording method comprising the steps of:
impregnating a colored liquid into a surface of a colored liquid supplier means, said surface having depressions which permits capillarity of said colored liquid, and which are distributed uniformly all over said surface, and at least either of said colored liquid and said surface being electrically conductive,
scraping said colored liquid so as to leave it only in said depressions,
bringing an electrically non-conductive recording material into contact with said colored liquid supplier means, the surface of said non-conductive recording material being processed so as to repel said colored liquid, and having depressions which permit capillarity of said colored liquid,
bringing an image signal voltage applying electrode into contact with said recording material on the side opposite to that of said recording material facing said colored liquid supplier means, so as to produce an electric field corresponding to an image to be recorded, across said recording material between said electrode and said colored liquid or said colored liquid supplier means, said electric field being capable of attracting said colored liquid in said depressions to the surface of said recording material.

4,205,321

DC BIASED STYLUS FOR ELECTROSTATIC RECORDING

Richard N. Blazey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,913
Int. Cl.² G03G *15/052*
U.S. Cl. 346—153 **7 Claims**



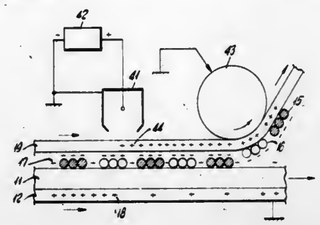
1. In an electrostatic stylus recorder of the type including (a) a recording element comprising a dielectric layer disposed on an electrically conductive member; (b) an electrically conductive stylus, said stylus being mounted adjacent said dielectric layer; (c) circuit means for producing an RF field between said stylus and said conductive member, said RF field being of sufficient intensity to ionize air molecules in the vicinity of said stylus and thereby produce an air plasma comprising positively-charged ions; and (d) means for applying a video signal to said stylus to cause said stylus to imagewise charge said dielectric layer; the improvement comprising:
means for electrically biasing said stylus to a negative potential relative to said conductive member, said biaising means comprising a DC voltage source operatively connected to said circuit means and to said stylus, said bias being sufficient to render said stylus more attractive to said positively-charged ions than said conductive member at all times said RF field is produced, whereby said positively-charged ions are prevented from impacting upon said dielectric layer.

4,205,322

ELECTROSTATIC METHOD OF SIMULTANEOUSLY TRANSFERRING TO A RECORDING MEDIUM A TONER IMAGE HAVING DIFFERENT POLARITIES

Mitsuo Tsuzuki, and Michihisa Suga, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 790,875, Apr. 26, 1977. This application Oct. 30, 1978, Ser. No. 955,716
Claims priority, application Japan, Apr. 27, 1976, 51/49097
Int. Cl.² G03G *15/044*
U.S. Cl. 346—153 **12 Claims**



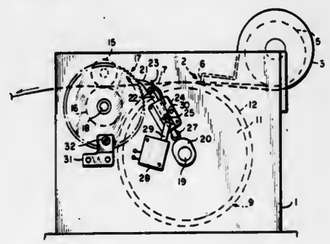
1. An electrostatic recording apparatus comprising a latent image retentive medium, means for forming a toner image of toner particles having different polarities on said latent image retentive medium, a recording medium, first means for corona-charging said toner image on said latent image retentive medium to one polarity, means for superposing said recording medium on said toner image of one polarity, second means for corona-charging the back surface of said recording medium to superpose an opposite polarity on said toner image of one polarity, and third means for inducing an electric field so that the toner image of one polarity becomes attracted to said recording medium, said third means including a backing electrode having a fixed potential and contacting the back surface of said recording medium, said second means being positioned between said first means and said third means so that a potential which is substantially equal to said fixed potential of said backing electrode may become uniformly distributed within said recording medium before said backing electrode contacts the back surface of said recording medium, whereby a high-speed transfer may be carried out when said recording medium has a high electrical resistivity, and gaseous discharge between said recording medium and said latent image retentive medium may be prevented when said recording medium is separated from said latent image retentive medium.

4,205,323

PAPER FEED CONTROL

George C. Williams, S. Easton, and Edward W. Fay, W. Bridgewater, both of Mass., assignors to Alden Research Foundation, Brockton, Mass.

Filed Jul. 31, 1978, Ser. No. 929,403
Int. Cl.² G01D *15/24*
U.S. Cl. 346—165 **11 Claims**



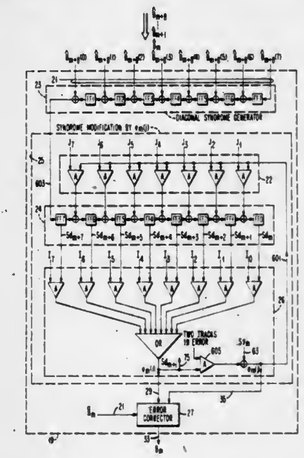
1. A graphic recorder of electrical signals comprising:
means defining a recording zone and including a linear electrode in combination with a scanning electrode which is disposed on a drum that rotates on a drum shaft;
means for holding a supply of recording paper;
feed roll means having a feed roll shaft disposed therein to draw said recording paper through the recording zone;
a ratchet wheel fixedly mounted on said feed roll shaft whereby when said ratchet wheel is rotated, said feed roll means is turned;
means to index said ratchet wheel including a pawl engaging at least one tooth of said ratchet wheel, said pawl being disposed on a pawl shaft;
an eccentric cam disposed on said drum shaft, means causing said pawl shaft to follow said eccentric cam whereby when an extreme of eccentricity is reached, the feed roll means will be advanced stepwise.

4,205,324

METHODS AND MEANS FOR SIMULTANEOUSLY CORRECTING SEVERAL CHANNELS IN ERROR IN A PARALLEL MULTI CHANNEL DATA SYSTEM USING CONTINUOUSLY MODIFIABLE SYNDROMES AND SELECTIVE GENERATION OF INTERNAL CHANNEL POINTERS

Arvind M. Patel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 863,653, Dec. 23, 1977. This application Mar. 7, 1978, Ser. No. 884,463
Int. Cl.² G06F *11/12*
U.S. Cl. 371—50 **11 Claims**



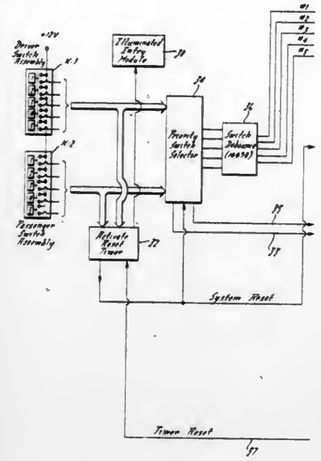
1. In combination: A parallel multi-channel data handling system, including one or more data channels, and an apparatus for correcting several channels in error simultaneously, said apparatus comprising:
means for encoding and writing into a first channel, vertical parity checks and for encoding and writing into a second channel diagonal parity checks taken over the channels, including the data channels, in a predetermined, positively or negatively sloped direction;
means for determining syndromes from the parity checks and data written into the channels;
means for detecting a mismatch among the vertical and diagonal syndromes intersecting the same error; and
means responsive to the detected mismatches for generating a pointer to an unknown error channel as a function of the displacement along the channel between the first mismatch and the next subsequent mismatch among the vertical and diagonal syndromes.

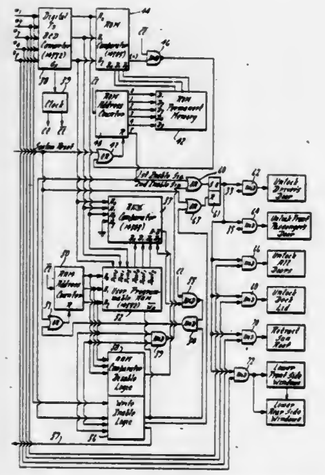
4,205,325

KEYLESS ENTRY SYSTEM

Juan C. Haygood, Detroit, and Ted L. Harman, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1977, Ser. No. 865,033
Int. Cl.[2] H04Q *3/02*; E05B *47/02*; H02G *3/00*
U.S. Cl. 340—147 MD 20 Claims





1. A keyless entry system for use in an automotive vehicle comprising:

means for entering at least one multi-digit code into said system and generating representative electrical signals;

means for permanently storing a predetermined code representing n sequential digits, where n is a predetermined number;

first means for addressing said permanent storing means in response to each individually entered digit;

means for storing a user programmed code representing n sequential digits;

second means for addressing said user code storing means in response to each individually entered digit;

means for sequentially comparing each individually digit entered into said system with the read out contents of said permanent storing means and with the read out contents of said user code storing means, wherein said comparing means is connected to respective first and second addressing means to advance a corresponding addressing means to its next address whenever a comparison indicates equality and to reset a corresponding addressing means to its initial address whenever a comparison indicates inequality;

said first and second addressing means respectively generate corresponding first and second enabling signals when sequentially advanced to an n+1th address; and

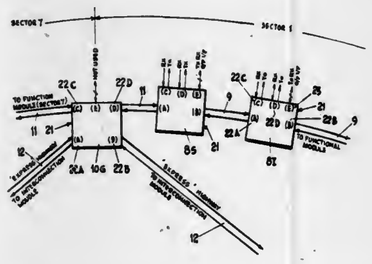
means for unlocking a door of said vehicle in response to either of said first and second enabling signals.

4,205,326

DATA COMMUNICATION APPARATUS

Cyril A. Porter, Kenton, and Malcolm R. Wardle, Berkhamsted, both of England, assignors to GEC-General Signal Limited, Hertfordshire, England

Filed Feb. 13, 1978, Ser. No. 876,916
Claims priority, application United Kingdom, Feb. 14, 1977, 6089/77
Int. Cl.[2] H04Q *9/00*; H04J *3/00*
U.S. Cl. 340—147 R 7 Claims



1. In a train describer system, data communication apparatus comprising

(A) a multiplicity of modules serially connected in a first closed loop,

(B) said modules being disposed in sectors,

(C) each of said sectors comprising a group of functional modules,

(D) said sectors being interconnected by interconnection modules,

(E) said interconnection modules being directly interconnected in a second closed loop in parallel with said first closed loop,

(F) each functional module imposing an originating address on any data message initiated by that functional module and being responsive to said originating address on reception of said data message to inhibit further transmission of the data message,

(G) the last functional module in each sector being responsive to a sector address in said data message to re-transmit said data message to the next interconnection module only in the event said data message originated within the same sector, and

(H) each interconnection module being responsive to said sector address to re-transmit a received data message to the next functional module and, in dependence upon said sector address, to the next interconnection module,

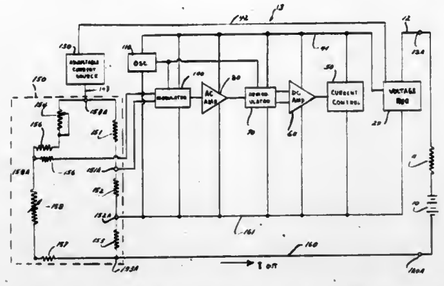
(I) a data message originating at a particular functional module being thereby transmitted to every sector by way of said second closed cloop.

4,205,327

TWO WIRE CURRENT TRANSMITTER WITH ADJUSTABLE CURRENT CONTROL LINEARIZATION

Charles J. Dahlke, New Germany, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Mar. 13, 1978, Ser. No. 886,095
Int. Cl.[2] G08C *19/04*; G01K *7/24*
U.S. Cl. 340—208 22 Claims



1. A two wire transmitter having two terminals for connection to two wires from a series connected source of DC voltage and a load, the two wire transmitter comprising:

a voltage regulator means powered solely through said terminals to provide a stable output voltage;

a sensing circuit including sensor means which is variable as a known nonlinear function of a parameter for providing electrical signals as a function of variation of the sensor means;

a current source powered by said voltage regulator means solely through said terminals for providing an energizing current to energize said sensing circuit, said current source including linearizing impedance means having an impedance having a predetermined relationship to said known non-linear function, and wherein said energizing current flows through said linearizing impedance means;

means connected to said sensing circuit and coupled between said two terminals to adjust the current flowing through said two terminals as a function of the electrical signals from said sensing circuit;

means sensitive to the current flowing through said two terminals to provide a feedback signal to said sensing circuit to cause said electrical signals to tend to return to a known state; and

means for adjusting the energizing current from said current source energizing said sensing circuit as a function of the current flowing through said two terminals to provide a linearizing effect on the relationship between the parameter sensed by the sensor means and the current flowing through said two terminals.

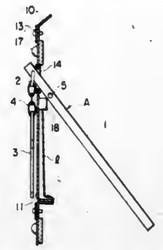
4,205,328

APPARATUS FOR CONTROLLING A POWER SOURCE FOR AN ELECTRICAL ALARM OR INDICATOR

Motohiro Gotanda, No. 3-6-29, Inokashira, Mitaka-City, Tokyo, Japan

Filed Jan. 9, 1978, Ser. No. 867,947
Claims priority, application Japan, Jan. 20, 1977, 52/4680[U]
Int. Cl.[2] G08B *19/00*; H01H *9/00*
U.S. Cl. 340—521 4 Claims

1. An apparatus for controlling actuation of a power source for an electrical alarm device, or the like, said apparatus including: a key holding member of elongated shape having a permanent magnet associated therewith, a key box adapted to be provided at the front of a hotel or the like including a corresponding opening for receiving the key holding member after the door of a room is locked by a key held by the key holding member thereby leaving the room vacant, a reed switch provided in the key box and located relative to the key holding member such that when said key holding member is received in said opening the permanent magnet associated with said key holding member renders the reed switch operative, and an electrical circuit, connected to the reed switch and including an indicator lamp for indicating whether or not the associated room is vacant and an electrical alarm device for,



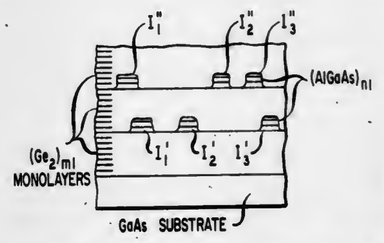
when enabled, indicating whenever the associated room is broken into or a fire starts in the room, for causing said lamp to change state so as to indicate that the associated room is vacant and for enabling said alarm device responsive to said reed switch being rendered operative.

4,205,329

PERIODIC MONOLAYER SEMICONDUCTOR STRUCTURES GROWN BY MOLECULAR BEAM EPITAXY

Raymond Dingle, Summit; Arthur C. Gossard, Warren; Pierre M. Petroff, Westfield, and William Wiegmann, Middlesex, all of N.J., assignors to Bell Telephone Laborstories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 671,565, Mar. 29, 1976, abandoned. This application Nov. 18, 1977, Ser. No. 852,845
Int. Cl.[2] H01L *29/26*
U.S. Cl. 357—16 15 Claims



1. A periodic semiconductor structure comprising in each period:

m contiguous monolayers of epitaxial Ge_2 having a major surface, and

a plurality of islands of epitaxial $Al_xGa_{1-x}As$ ($0 \leq x \leq 1$) formed on said major surface, the quantity of material in said islands being equivalent to m contiguous monolayers of $Al_xGa_{1-x}As$ on said surface.

12. In a double heterostructure, a semiconductor body comprising:

a semiconductor core region adapted for the propagation of radiation therein,

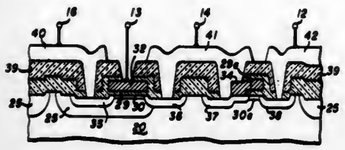
a pair of cladding regions which bound said core region so that said radiation is guided therein, characterized in that:

said cladding regions each comprise a superlattice of $(GaAs)_n(AlAs)_m$ where n and m are the number of contiguous monolayers of GaAs and AlAs, respectively, in each period of said superlattice.

4,205,330
METHOD OF MANUFACTURING A LOW VOLTAGE N-CHANNEL MOSFET DEVICE

Thomas Klein, Saratoga, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Division of Ser. No. 783,914, Apr. 1, 1977, Pat. No. 4,104,784. This application Apr. 17, 1978, Ser. No. 896,658
Int. Cl.² H01L 29/78, 27/02
U.S. Cl. 357—23 8 Claims

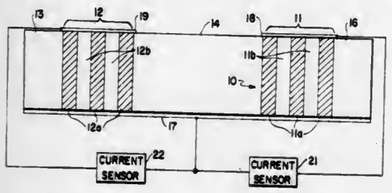


1. An integrated circuit structure including in combination an enhancement MOSFET and a depletion MOFSET, said structure comprising:
- a substrate having a resistivity of about 10 ohm centimeters or greater of one conductivity type;
- a first region of increased impurity concentration of said one conductivity type in at least the region of the gate of said enhancement transistor and in the field region surrounding said transistors;
- a second region of said one conductivity type reduced impurity concentration, said second region lying within that portion of said first region located under the gate of said enhancement transistor;
- a third region of opposite conductivity type located under the gate of said depletion transistor; and
- means for coupling said transistors together and into a circuit.

4,205,331
INFRARED OPTICAL DEVICES OF LAYERED STRUCTURE

Leo Esaki, Chappaqua; George A. Sai-Halasz, Mohegan Lake, and Leroy L. Chang, Lake Mohegan, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1978, Ser. No. 914,100
Int. Cl.² H01L 27/14
U.S. Cl. 357—30 4 Claims

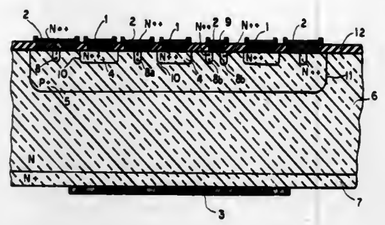


1. An optical detection device comprising: first and second superlattice semiconductor regions joined by an insulator; each said region including two different materials arranged alternately in parallel layers to form a plurality of semiconductor heterojunctions; the bottom of the conduction band of one of said materials in each said region being lower than the bottom of the conduction band of the other of said materials in said region to form a series of potential wells and potential barriers across each said region; each said potential well having at least two quantized allowed energy states separated by an energy corresponding to a light frequency; said energy separation for all of said potential wells being equal in each said region and being different for different ones of said regions; and current sensing means attached to said layers for selectively sensing currents flowing in said regions.

4,205,332
QUICK-QUENCHING POWER TRANSISTOR

Mario Conti; Gian P. Chiavarotti, both of Milan, and Sandro Luciani, Saronno, all of Italy, assignors to SGS-Ates Componenti Elettronici S.p.A., Milan, Italy

Filed Jul. 6, 1978, Ser. No. 922,505
Claims priority, application Italy, Jul. 8, 1977, 25518 A/77
Int. Cl.² H01L 29/72
U.S. Cl. 357—34 5 Claims

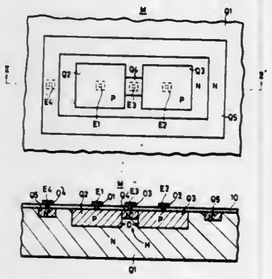


1. A junction transistor comprising a semiconductor body with a collector layer of one conductivity type, an adjoining base layer of the opposite conductivity type forming a surface of said body, an emitter layer of said one conductivity type embedded in said base layer along said surface and separated by said base layer from said collector layer, an insular ancillary layer of said one conductivity type embedded in said base layer along said surface in proximity to said emitter layer but separated by said base layer from said emitter and collector layers, and a set of electrodes in contact with said collector, base and emitter layers, respectively, said electrodes including a metallic contact layer on said surface bridging said base and ancillary layers.

4,205,333
LATERAL TRANSISTOR WITH MULTI-BASE CONTACTS

Yousuke Yamamoto, Musashino, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Continuation of Ser. No. 851,272, Nov. 14, 1977, abandoned, which is a continuation of Ser. No. 619,391, Oct. 3, 1975, abandoned. This application Mar. 15, 1979, Ser. No. 20,644
Claims priority, application Japan, Jul. 10, 1974, 49-115396
Int. Cl.² H01L 29/74
U.S. Cl. 357—35 1 Claim

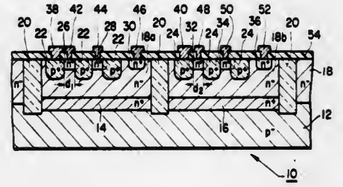


1. A semiconductor device comprising:
- a first semiconductor region of a first conductivity type formed of a semiconductor substrate and serving as a base region of a lateral bipolar transistor;
- second and third semiconductor regions of a second conductivity type formed in the upper surface of the first semiconductor region and serving as emitter and collector regions of the lateral bipolar transistor, respectively;
- a fourth semiconductor region of the first conductivity type formed in the upper surface of the first semiconductor region to extend between the second and third regions and having a lower resistance than the first semiconductor region; and
- first and second electrodes deposited on the second and third semiconductor regions, respectively to serve as emitter and collector electrodes of the lateral bipolar transistor, respectively;
- wherein there is provided a fifth semiconductor region of the first conductivity type formed in the upper surface of the first semiconductor region to encompass the second, third and fourth semiconductor regions and having a lower resistance than the first semiconductor region;
- wherein the first semiconductor region has a resistance less than 500 ohm-cm;
- wherein there are provided third and fourth electrodes are deposited on the fourth and fifth semiconductor regions, respectively, to establish a potential difference therebetween, each of the third and fourth electrodes serving as a base electrode of the lateral bipolar transistor; and
- wherein the area of the fourth semiconductor region is very small as compared with that of the fifth semiconductor region to produce a spreading resistance effect.

4,205,334
INTEGRATED SEMICONDUCTOR DEVICE

Terumoto Nonaka; Tadahiko Hotta, and Shin Yamashita, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 17, 1978, Ser. No. 925,624
Claims priority, application Japan, Jul. 27, 1977, 52-90146
Int. Cl.² H01L 27/02
U.S. Cl. 357—41 6 Claims

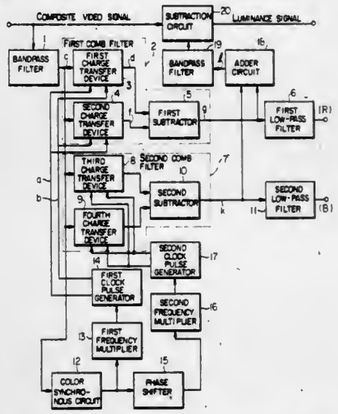


1. An integrated semiconductor device including at least one normally-on type first junction field effect transistor and at least one normally-off type second junction field effect transistor both being formed in a single common semiconductor body,
- said first transistor comprising: a first semiconductor region having a first conductivity type and formed in said semiconductor body; a gate region having a second conductivity type opposite to said first conductivity type and provided in said first semiconductor region to surround at least one portion of said first semiconductor region, thereby defining at least one current channel region oriented perpendicular to one surface of said semiconductor body; at least one source region having said first conductivity type and provided at one end of said current channel region; and at least one drain region having said first conductivity type and provided at the other end of said current channel region,
- the width of said channel region in a direction parallel to a principal surface of said semiconductor body being such as to cause the channel region to be rendered conductive in the absence of external bias being applied to said gate region during operation of said first transistor,
- said second transistor comprising: a second semiconductor region having said first conductivity type and formed in said semiconductor body but isolated from said first semiconductor region and having the same impurity concentration as said first semiconductor region; a gate region having said second conductivity type and provided in said second semiconductor region to surround at least one portion of the second semiconductor region, thereby defining at least one current channel region oriented perpendicular to said one surface of said semiconductor body; at least one source region having said first conductivity type and provided at one end of the current channel region of the second transistor; and at least one drain region having said first conductivity type and provided at the other end of said current channel region of said second transistor,
- said channel region for the second transistor having in said direction a width less than the first transistor channel region width and such as to cause this channel region to become substantially pinched off by a depletion layer extending from the p-n junction between said gate and channel regions for said second transistor in the absence of external bias being applied to the second transistor gate region during operation of said second transistor.

4,205,335
CIRCUIT ARRANGEMENT FOR SEPARATING CHROMINANCE AND LUMINANCE INFORMATION IN A COMPOSITE VIDEO SIGNAL OF AN NTSC SYSTEM

Isao Nakagawa, Yokohama; Hiroaki Nabeyama, Kamakura, and Tomomitsu Kuroyanagi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 21, 1978, Ser. No. 888,657
Claims priority, application Japan, Mar. 24, 1977, 52-31543
Int. Cl.² H04N 9/535, 9/50
U.S. Cl. 358—31 2 Claims



1. A circuit arrangement for separating chrominance and luminance signals in a composite video signal of an NTSC system comprising:
- (a) a first bandpass filter for extracting a modulated color signal from said composite video signal;
- (b) a first comb filter including a first charge transfer device for sampling and transferring said modulated color signal with use of a first clock pulse signal of the frequency of a color subcarrier signal, a second charge transfer device for sampling said composite video signal with use of a second clock pulse signal having the same frequency as said first clock pulse signal but an opposite phase thereto and delaying the transfer of said sampled signal for a single horizontal scanning period relative to the output signal from said first charge transfer device and a first subtraction circuit for determining arithmetically a difference signal between the output signals from said first and second charge transfer devices;
- (c) a second comb filter including a third charge transfer device for sampling said composite video signal with use of a third clock pulse signal having a same frequency as that of said first clock pulse and having a predetermined

phase different from that of said first clock signal, a fourth charge transfer device for sampling said modulated color signal with a fourth clock pulse having the same frequency as said third clock pulse signal but an opposite phase thereto and delaying the sampled color signal for the single horizontal scanning period relative to the output signal from said third charge transfer device and a subtraction circuit for arithmetically determining a difference signal between the output signals from said third and fourth charge transfer devices;

(d) an adder circuit for arithmetically determining a sum signal of the output signals from said first and second comb filters;

(e) a second bandpass filter for extracting from said sum signal only the modulated color signal; and

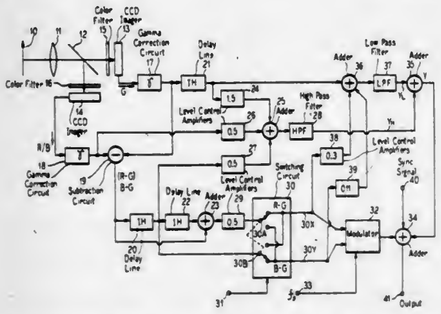
(f) a third subtraction circuit for arithmetically determining a difference signal between said composite video signal and said modulated color signal, whereby a demodulated color output signal is obtained from each of the output signals of said first and second comb filters through a low-pass filter, while a luminance output signal is obtained from said third subtraction circuit.

4,205,336

SIGNAL PROCESSING SYSTEM

Fumio Nagumo, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 18, 1978, Ser. No. 935,005
Claims priority, application Japan, Aug. 30, 1977, 52-10400
Int. Cl.² H04N 9/07
U.S. Cl. 358—43 **15 Claims**



1. A signal processing system for a color television camera having at least a line-sequential type color coding filter disposed in a light path of an object image, comprising:

(a) an image pick-up device on which said object image is focused;

(b) means for deriving a line sequential type color output signal alternately formed of non-delayed first and second color signals from said image pick-up device;

(c) delay means for alternately delaying said first and second non-delayed color signals by two horizontal scan intervals 2H, said delay means also having a 1H delay output; and

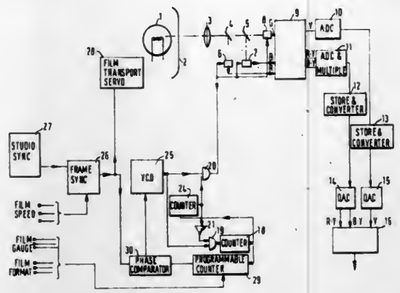
(d) mixing means for interpolating the first color signal when the second color signal is present at the 1H delay output by adding the 2H delayed first color signal to the non-delayed first color signal, and interpolating the second color signal when the first color signal is present at the 1H delay output by adding the 2H delayed second color signal to the non-delayed second color signal, so that said mixing means creates a mixed signal forming a portion of a luminance signal of the color television camera.

4,205,337

TELEVISION FILM SCANNER

John David Millward, Hitchin, England, assignor to The Rank Organisation Limited, London, England

Filed Jul. 5, 1978, Ser. No. 922,108
Claims priority, application United Kingdom, Jul. 6, 1977, 28285/77
Int. Cl.² H04N 5/36, 9/04
U.S. Cl. 358—54 **15 Claims**



1. Apparatus for producing television picture signals from motion picture film, said apparatus comprising

means for repeatedly scanning the film horizontally along a single fixed line at a scanning station; means for transporting the film vertically past the scanning station during such horizontal scanning to produce a plurality of sequential line scan signals;

means for varying the scanning repetition frequency of the horizontal scanning so as to permit, for any one of a plurality of different film sizes and/or transport speeds, a predetermined number of horizontal line scans to be performed in respect of each frame of the motion picture film, and

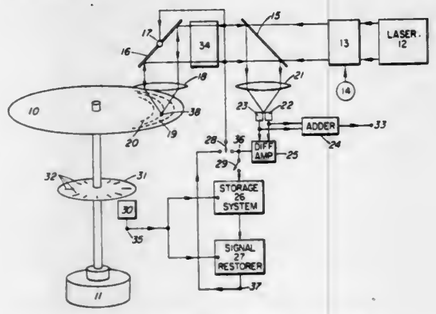
means for processing said line scan signals to produce a plurality of television picture fields having line and field frequencies conforming to a predetermined television standard.

4,205,338

DISC RECORDING TRACKING SYSTEM

Louis F. Schaefer, Palo Alto, Calif., assignor to Laser File Inc., Los Angeles, Calif.

Filed Nov. 3, 1977, Ser. No. 848,125
Int. Cl.² H04N 5/76
U.S. Cl. 358—28.5 **14 Claims**



1. In a method for recording on a disc the steps of:

tracking a previously recorded track on the disc using two adjacent photosensors positioned to read radially adjacent portions of the track and producing a radial tracking signal from the difference of the output of the two photosensors;

measuring the fundamental frequency components of the radial tracking signal using an amplitude detector and a phase detector;

storing the fundamental components of the radial tracking signal using an amplitude store and a phase store; and

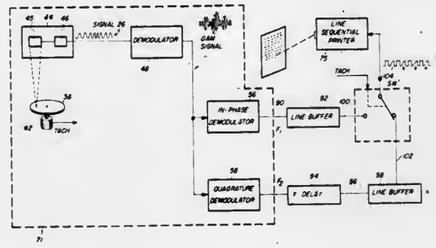
controlling the radial position of the newly recorded tracks using the stored components of the radial tracking signal.

4,205,339

FRAME STORAGE AND RETRIEVAL WHEREIN THE FRAME FIELDS ARE QUADRATURE AMPLITUDE MODULATED ON A SINGLE CARRIER

Dennis G. Howe, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 20, 1978, Ser. No. 926,174
Int. Cl.² H04N 5/76
U.S. Cl. 179—100.1 G **12 Claims**



1. A method of recording a video frame of information on a recording medium, said frame being comprised of two fields, said method comprising the steps of:

quadrature amplitude modulating the two fields of information on a carrier to produce a QAM signal;

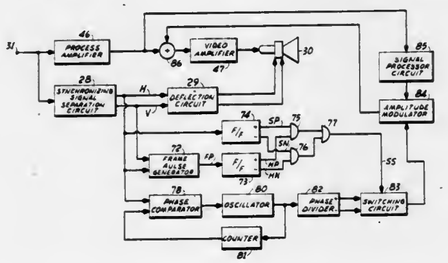
and recording said QAM signal on said recording medium, thereby forming a single track recording comprised of both fields of said frame of information.

4,205,340

CIRCUIT FOR MAKING A CRT DISPLAY A TV PICTURE FOR A COPY WITH DOTS SUPERPOSED ON HALF-TONE PICTURE AREAS

Akiyoshi Kouno; Masanobu Morishita, and Yoshio Yui, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 844,982
Int. Cl.² H04N 5/84, 1/40
U.S. Cl. 358—130 **12 Claims**



1. A circuit for use in a device comprising a cathode-ray tube responsive to a cathode-ray tube input signal for displaying a picture and means for forming a monochrome copy of said picture on a copying medium, said circuit being responsive to a sequence of discrete signal blocks included in a television signal for producing said cathode-ray tube input signal, said television signal comprising vertical synchronizing signals at a first predetermined period, horizontal synchronizing signals between two adjacent ones of said vertical synchronizing signals at a second predetermined period, and luminance components between two adjacent ones of said horizontal synchronizing signal, said signal blocks having signal levels variable between a first and a second level, said first and second levels inclusive, each of said signal blocks comprising the luminance components included in said television signal in a preselected interval longer than said second predetermined period and not longer than twice said first predetermined period, said picture having luminance levels dependent on said cathode-ray tube input signal, wherein the improvement comprises:

first means responsive to at least one of said signal blocks for producing a succession of dot superposed signals in a succession of the preselected intervals, respectively, said dot superposed signals comprising at least one of said signal blocks, the dot-superposed signal produced in each of the preselected intervals of said succession further comprising a plurality of dot signals superposed on those portions of the signal block included in the dot-superposed signals of said succession in said each preselected interval which have the signal levels intermediate between said first and second levels, each of said dot signals in each of the preselected intervals being substantially inphase with the respective dot signals in at least one of said preselected intervals that next follows the last-mentioned each interval; and

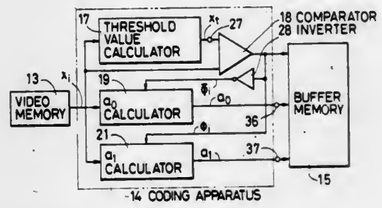
second means for delivering said dot-superposed signal from said first means as said cathode-ray tube input signal.

4,205,341

PICTURE SIGNAL CODING APPARATUS

Eiji Mitsuya, Yokohama; Tomio Kishimoto, Yokosuka; Katsusuke Hoshida, Hoya, and Naohiko Kamae, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Nov. 14, 1978, Ser. No. 960,541
Claims priority, application Japan, Jan. 24, 1978, 53-6388; Jan. 24, 1978, 53-6389; Jan. 24, 1978, 53-6390
Int. Cl.² H04N 7/12
U.S. Cl. 358—135 **10 Claims**



1. A picture signal coding apparatus comprising:

threshold value setting means for setting at least one threshold value for each of a plurality of coding blocks into which a frame of a gray-scaled picture is divided, based on the luminance distribution in each block;

means for classifying the luminance level of each picture element of each coding block into any one of level ranges defined by the threshold value to obtain a resolution component;

typical luminance level calculating means for obtaining at least two typical luminance levels from the classification result and the brightness levels of the picture elements of each coding block;

decoding means for decoding the picture elements of each

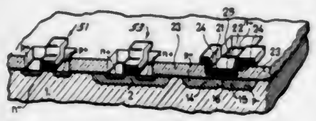
coding block based on the resolution component and the threshold value;
error calculating means for a calculating a coding error in the coding of the coding block from each decoded picture element and its original picture element;
block size changing means for comparing the calculated error with a set value to change the size of each coding block in accordance with the compared output; and
means for providing, as true coded outputs, the resolution component and the typical luminance levels when the error is in a predetermined range.

4,205,342

INTEGRATED CIRCUIT STRUCTURE HAVING REGIONS OF DOPING CONCENTRATION INTERMEDIATE THAT OF A SUBSTRATE AND A POCKET FORMED THEREIN

Mougahed Y. Darwish, Fontaines, and Henri J. Oguey, Corcelles, both of Switzerland, assignors to Centre Electronique Horologer S. A., Neuchatel, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,681
Claims priority, application Switzerland, May 5, 1977, 5637/77
Int. Cl.[2] H01L *29/78, 27/04, 21/22*
U.S. Cl. 357—23 **4 Claims**



1. An integrated circuit comprising a semi-conductor substrate of a first conductivity type, at least one pocket of doping formed in said substrate which has a conductivity opposite said first type, said pocket having a lateral diffusion of doping extending beyond the edges thereof, and at least one metal oxide semiconductor transistor having spaced drain and source regions of said first conductivity type in at least one of said pockets and a gate formed above the semi-conductor substrate surface between said drain and source regions by a thin dielectric film covered by a conducting material, the region under said gate defining a channel and having a surface doping concentration between that of said substrate and that of said pocket, said channel having side boundaries defined by two substantially parallel lines running from said source region to said drain region, said region being formed by the proximity of two adjacent pocket edges, said edges being substantially parallel to said lines running from said source region to said drain region in the channel and being separated by a space which is substantially not greater than twice the length of the lateral diffusion of the doping between a pocket edge, the doping of said region being accomplished by the lateral diffusion of said adjacent pocket edges.

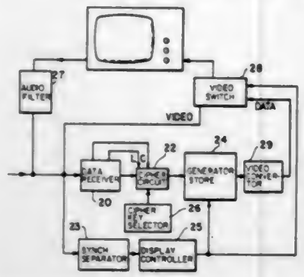
4,205,343

TELEVISION SYSTEM TRANSMITTING ENCIPHERED DATA SIGNALS DURING FIELD BLANKING INTERVAL

James H. Barrett, London, England, assignor to Independent Television Companies Association, London, England

Filed Nov. 8, 1976, Ser. No. 739,623
Int. Cl.[2] H04N *7/08*
U.S. Cl. 358—147 **8 Claims**

1. A television system receiving terminal for displaying a picture corresponding to the picture signal which terminal is for use with a transmitting terminal which includes a source of video signals, means operable to superimpose, or otherwise add to the video signals without interfering with the picture signal, digitally coded information carrying signals, wherein the digitally coded information carrying signals are enciphered prior to transmission, in accordance with a predetermined key, and including:
(a) means for extracting the enciphered information carrying signals from the video signals;
(b) a cipher circuit means, including user operable selection means for selecting a desired key from a number of keys, for operation in accordance with the selected key to decipher received enciphered information carrying signals;



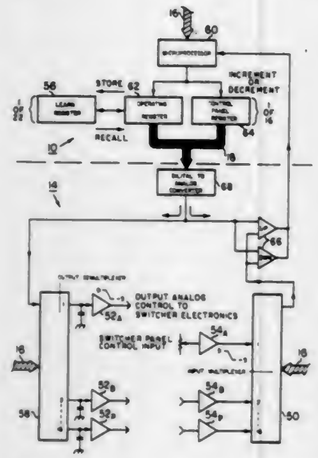
(c) said cipher circuit means including a generator for generating a sequence of pulses in accordance with the selected key;
(d) means for storing either the enciphered or the deciphered information carrying signals; and
(e) a decoder operable to convert the deciphered signals into a repetitive vision signal for selective display by the receiver of the information contained in the information carrying signals.

4,205,344

SPECIAL EFFECTS MEMORY SYSTEM

Bruce L. Rayner, Nevada City, Calif., assignor to The Grass Valley Group, Valley, Calif.

Filed Jun. 5, 1978, Ser. No. 912,900
Int. Cl.[2] H04N *7/00*
U.S. Cl. 358—160 **5 Claims**



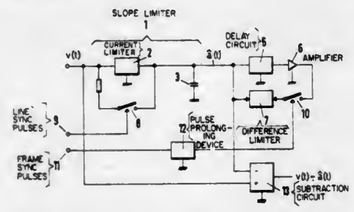
1. A special effects system for use with a television production switching system; the special effects system comprising:
a source of digital input signals representing switch on/off settings of the television production switching system;
a source of analog input signals representing analog control settings of the television production switching system;
means for storing said digital input signals and digital equivalents of said analog input signals; and
an addressable bi-directional analog interface connected between said analog input signal source and said storage means, said analog interface comprising:
(a) addressable means for selecting one of said analog input signals, said selecting means being responsive to input address commands;
(b) means connected to said storage means for converting the selected ones of said analog input signals to said digital equivalents for storing in said storage means and also for converting said stored digital equivalents to analog output signals; and
(c) addressable means for connecting one of said analog output signals to the television production switching system for controlling the operation thereof, said connection means being responsive to output address commands.

4,205,345

METHOD AND DEVICE FOR ELIMINATING THE BACKGROUND BRIGHTNESS VARIATION OF A VIDEO SIGNAL

Derk van der Houwen, Leidschendam, and Robert Wilcke, Leiden, both of Netherlands, assignors to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed May 22, 1978, Ser. No. 908,507
Claims priority, application Netherlands, May 27, 1977, 7705875
Int. Cl.[2] H04N *5/14*
U.S. Cl. 358—168 **8 Claims**



1. Device for eliminating the background brightness variation of a video signal, comprising:
a. a slope limiter (1), comprising a a video signal current input V(t) having line and frame synchronizing pulses, a current limiter (2) comprising a full wave rectifier circuit and a capacitor (3), and an output signal current a(t) which is limited as to its rate of build-up;
b. a delay circuit (5) for said output signal current for supplying a signal a(t−T) and terminated by a 1:1 amplifier;
c. a difference limiter (7), for limiting the difference between the output signal current a(t) and the signal a(t−T);
d. a first switch (8), connected between the input and the output of the current limiter (2) and controlled by the line synchronizing pulses of said video signal (9);
e. a second switch (10), connected in series with the difference limiter (7) and controlled by the frame synchronizing pulses (11) via a pulse prolonging device (12), and
f. a subtracting device (13) connected to said limiters for obtaining the signal V(t)−a(t).

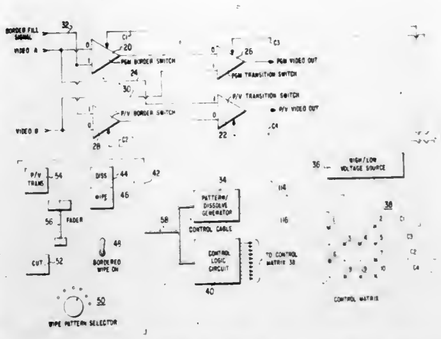
4,205,346

VIDEO TRANSITION CIRCUITRY INCLUDING TRANSITION PREVIEWING MEANS

John D. Ross, Iroquois, Canada, assignor to Ross Video Limited, Iroquois, Canada

Filed Jun. 9, 1978, Ser. No. 914,611
Int. Cl.[2] H04N *5/22*
U.S. Cl. 358—181 **17 Claims**

1. Improved video transition circuitry including means for previewing transitions from an on-air event signal to a next event signal comprising
program transition means responsive to said on-air event and next event signals for outputting the on-air event signal;
preview transition means responsive to said on-air event and said next event signals for outputting said next event signal; and



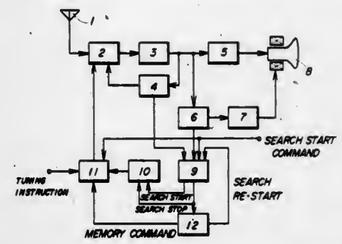
transition control means for either (a) controlling said program transition means to effect a predetermined transition at the output of said program transition means from said on-air event signal to said next event signal or (b) controlling said preview transition means to effect a preview of the said predetermined transition at the output of said preview transition means.

4,205,347

TELEVISION SIGNAL DETERMINATION IN AN AUTOMATIC TUNING SYSTEM

Nobuo Minoura, Ohtawara; Isao Matsumura, Yaita; Yasukazu Yoshinaga, Yaita; Takao Abumi, Yaita, and Kazuhiro Nakai, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 26, 1978, Ser. No. 900,246
Claims priority, application Japan, Apr. 30, 1977, 52-51528; Apr. 30, 1977, 52-51531; Sep. 17, 1977, 52-112011
Int. Cl.[2] H04N *5/44*
U.S. Cl. 358—191.1 **13 Claims**



1. A television signal determination circuit in an automatic tuning system comprising:
a first counter means for counting the number of received synchronizing signals;
a reference clock signal generator for developing reference clock pulses of a predetermined frequency;
a second counter means for counting said reference clock pulses derived from said reference clock signal generator;
count operation control means for initiating count operations of said first and second counter means at the same time upon receiving the synchronizing signal; and a determination means for comparing contents of said first and second counter means and developing a signal determina-

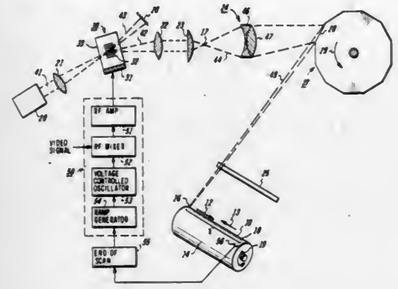
tion output representing whether received signals are the true television synchronizing signal.

4,205,348

LASER SCANNING UTILIZING FACET TRACKING AND ACOUSTO PULSE IMAGING TECHNIQUES

Leonard C. DeBenedictis, Los Angeles, and Richard V. Johnson, Pasadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 5, 1978, Ser. No. 922,259
Int. Cl.[2] H04N *1/04*; H01J *3/14*
U.S. Cl. 358—285 **19 Claims**



1. An improved flying spot scanning system for recording information from an electrical signal onto a scanned medium comprising:

means for providing a beam of radiant energy;

means for generating a signal representing the start or end of a scan;

a Bragg diffraction light-sound interaction medium including a transducer coupled to an acoustic wave transmitting medium characterized by a predetermined acoustic wave propagation velocity, said medium both modulating and deflecting said beam in accordance with the information content of a drive signal applied thereto,

scanning means having at least one reflective surface positioned in the optical path of said modulated and deflected beam for scanning said beam across said scanned medium by rotating said reflective surface a desired angle to impart the information content of said beam to said scanned medium;

means responsive to the start or end of a scan signal and said electrical signal for providing said drive signal, said drive signal causing said beam to track said reflective surface during the rotation and translation of said reflective surface during said scan, said drive signal being coupled to said transducer for also propagating intensity-modulated acoustic waves in said medium at a predetermined velocity, said beam of radiant energy being projected through said medium in a direction transverse to said acoustic waves to produce in said medium a moving image of information corresponding to said electrical signal, said image moving at said predetermined velocity, and

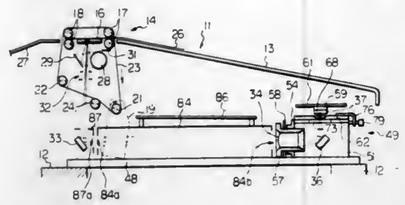
optical means interposed in the path of said intensity modulated beam and having magnification M associated therewith, for minimizing image blur on a recording medium said moving image being projected onto said scanned medium with said beam in a manner such that the velocity of said moving image is substantially equal to and in an opposite direction as the velocity of said scanning beam.

4,205,349

OPTOELECTRONIC SCANNING APPARATUS

Motoaki Kawazu; Takashi Yokota; Toshiyuki Inokuchi, and Yoshiaki Kanmoto, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 24, 1978, Ser. No. 899,245
Claims priority, application Japan, May 7, 1977, 52-51759
Int. Cl.[2] H04N *1/02*
U.S. Cl. 358—294 **5 Claims**



1. An optoelectronic scanning apparatus comprising:

an illumination unit for illuminating an original document; and

a reading unit horizontally spaced from the illumination unit and including a converging lens having a substantially horizontal optical axis, a photosensor array having a light receiving surface facing substantially downwardly and a reflector disposed below the array for reflecting a light image of the document from the lens upwardly onto the light receiving surface of the array;

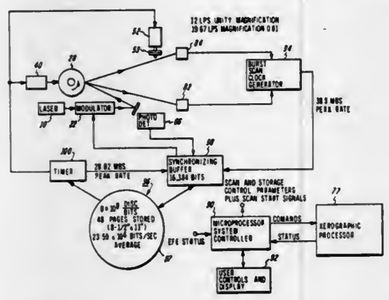
the reading unit comprising a reading unit housing having an upper surface formed with an elongated recess, a table slidable on said upper surface and being formed with a circular downwardly extending disc which snugly fits in the recess, the photosensor array being mounted on the table coaxially with the disc, the disc being rotatable about a center thereof and slidable in the recess for varying a transverse position of the table and thereby the array, and clamp means for clamping the table to the reading unit housing in a desired transverse position.

4,205,350

REPRODUCTION SCANNING SYSTEM HAVING INTERMEDIATE STORAGE BETWEEN INPUT AND OUTPUT SCANNING STATIONS

William F. Gunning, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 776,152, Mar. 10, 1977, abandoned. This application Apr. 5, 1978, Ser. No. 893,721
Int. Cl.[2] H04N *1/04*; G01J *1/20*; G02B *27/17*; G03G *15/28*
U.S. Cl. 358—296 **7 Claims**



1. A scanning system having the capability of scanning originals having images formed thereon in either a normal or inverted mode of operation such that electrical signals representing the scanned images can be stored in storage means such

that when the scanning system reads the stored representations of the images to reproduce the images on a recording medium the reproduced images each having the same image sense comprising:

first means for scanning said originals in a first direction in the normal mode and in a second direction, opposite to said first direction, in the inverted mode,

second means for scanning said originals in a third direction, which is orthogonal to said first and second directions whereby said originals are completely scanned with light,

means for converting the light reflected from said originals into corresponding electrical signals as the originals are scanned on a line to line basis,

buffer memory means for storing said electrical signals in the order in which the electrical signals are generated, and

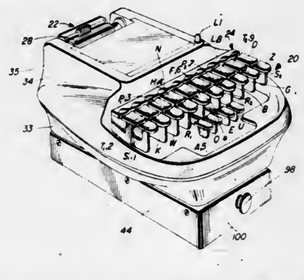
means for unloading said electrical signals stored in said buffer memory means into said storage means in a sequence determined by whether the scanning system is in the inverted or normal mode of operation.

4,205,351

DIGITAL DATA RECORDER

Richard A. Michals, Skokie, Ill., assignor to Stenograph Corporation, Skokie, Ill.

Filed Dec. 8, 1976, Ser. No. 748,511
Int. Cl.[2] G11B *5/00*
U.S. Cl. 360—4 **15 Claims**



1. An improved recorder in combination with a shorthand machine having a keyboard comprising a set of keys wherein numerals words or parts of words correspond to keys or combination of keys; a set of binary switches in one-to-one communication with said set of keys, a first binary state of each of said switches identifying the corresponding key as a key which is activated and a second binary state of each of said switches identifying the corresponding key as a key which is deactivated during a stroke, for designating the word or numeral information of the stroke; and means producing a plurality of parallel, independent data members, one each representing the binary state of one of said switches, said improved recorder of the type adapted for recording on a recording medium in phase encoded, serialized form a single data signal presented for a period defined by a single stroke, the data signal comprising a fixed, finite number of parallel data bits at least one of which is initially of the first binary state and any of which may change binary state during the period, the recorder comprising:

a. detecting means for producing a control signal in response to and during the continuous presence of at least one data bit of the first state, said control signal during corresponding to the period;

b. converter means associated with the detecting means and activated in response to the control signal for sequentially scanning all of the parallel data bits comprising the data signal and for producing a corresponding serial, digital data signal comprising a finite sequence of binary data bits, any of which may change identity during the definable period;

c. memory means coupled to said convertor means for accumulating and thereafter releasing the finite sequence of binary data bits, said memory means recognizing and accumulating as a data bit of the predetermined identity any data bit which is of said predetermined identity at any time during the definable period; and

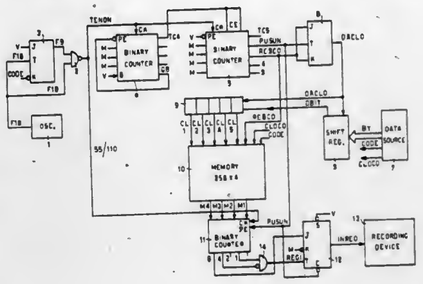
d. encoding means coupled to said memory means for receiving the accumulated and released data bits for producing a phase encoded, serial recording signal for recording on the recording medium.

4,205,352

DEVICE FOR ENCODING AND RECORDING INFORMATION WITH PEAK SHIFT COMPENSATION

Franco Tomada, Pavone, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Sep. 13, 1978, Ser. No. 941,935
Claims priority, application Italy, Sep. 30, 1977, 69162 A/77
Int. Cl.[2] G11B *5/09*
U.S. Cl. 360—45 **5 Claims**



1. A device for encoding and recording on a carrier, by means of a recording element, information emitted by a data source comprising encoding means for encoding the information coming from said data source in a predetermined recording code, said encoding means generating sequences of signals forming the input to said recording element, error precompensation means included in said encoding means for selectively introducing advances or delays into said sequences of signals, said error precompensation means comprising an addressable memory for permanently storing words corresponding to the advance or delay required by each sequence of signals, a shift register adapted to store the information sequentially in bits, at least part of the shift register being adapted to address said memory, said shift register being enabled to shift the information contained therein by a first timing signal generated by a timing circuit, a counter preset by said words and adapted to be incremented by a second timing signal generated by said timing circuit for generating corresponding advanced or delayed signals, and decoding means adapted to receive said advanced or delayed signals for generating said sequence of signals for said recording element.

4,205,353

COMBINATION DEVICE HAVING A MAGNETIC RECORDING AND REPRODUCING UNIT AND AN ELECTRONIC TUNING TYPE RECEIVER

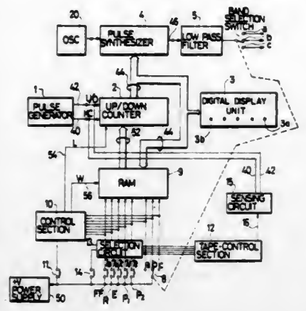
Masanao Okatani; Hiroshi Onishi; Yoshiaki Ishibashi; Reisuke Sato; Hisashi Suganuma; Tomohisa Yokogawa; Yoshiharu Ueki; Haruo Kama; Tadashi Kosuga, and Tadashi Ogawa, all of Kawagoe, Japan, assignors to Pioneer Electronics Corporation, Tokyo, Japan

Filed Jul. 20, 1978, Ser. No. 926,347
Claims priority, application Japan, Jul. 20, 1977, 52-87070
Int. Cl.[2] G11B *15/12*
U.S. Cl. 360—61 **7 Claims**

1. In a combination of an electronic tuning type receiver and a magnetic recording and reproducing unit, wherein said electronic tuning type receiver is of the type which is tuned by

control signals provided to a tuning means by a plurality of channel selecting switches, the improvement comprising:

a. selection circuit means interposed between said tuning means and said plurality of channel selecting switches for providing said plurality of control signals to said tuning means when a selection switch is in the first binary state,



and for providing said control signals from said plurality of channel selecting switches as a second set of outputs when said selection switch is in a second binary state; and

b. tape-control sensing means responsive to said second set of outputs for controlling the operation of said magnetic recording and reproducing unit in accordance with said second set of outputs.

4,205,354

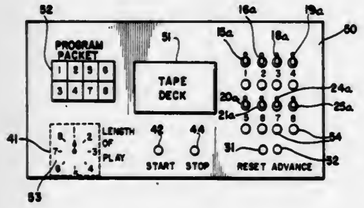
MUSIC DIRECTOR SYSTEM

Justin Kramer, Los Angeles, Calif.

Continuation-in-part of Ser. No. 722,737, Sep. 13, 1976, abandoned. This application Sep. 1, 1978, Ser. No. 938,814

Int. Cl.² G11B *15/18*

U.S. Cl. 360—72.1 **8 Claims**



1. A system for playing one or more of a multiple number of melodies from a plurality of items of melody information recorded on a sound tape comprising a strip of tape having a plurality of tracks, each track having plurality of and segments of random length, each item being recorded on a segment of said tape wherein the length of the segment is at least as long as the length of the item, said segments being separated one from another along the tape, there being a longitudinal intermediate portion between opposite ends of the tape, said segments between said longitudinal intermediate portion of the tape and one end being adapted to play during tape travel in one direction and segments between said longitudinal intermediate portion and the other end of the tape being adapted to play during tape travel in the opposite direction, there being a clear segment of tape between each segment, and an electronic sound reproduction circuit means for reproduction of said items recorded on said tape including a loud speaker and start and stop means for energizing and de-energizing the circuit, a plurality of tape heads in operative relationship with the respective tracks, a tape head selector means for selection of one from the plurality of tape heads to be employed, segment selector means for selecting at least one segment having the melody information to be played and play selection counter means for indicating the number of said segments to be played for a given setting, tape deck motor means for driving the tape in forward and in reverse directions, and a tape direction control means for control of said tape deck motor means, said tape direction control means being responsive to the segment selector means and play selection counter means for driving the tape in either forward or reverse direction, location unit means for directing the functions of rewind, advance, and play, said location unit means being responsive to the segment selector means and play selection counter means and in operative association with said tape deck motor means and tape direction control means to successively rewind the tape to the appropriate end and then advance and play the selected segmented, there being included an end-of-play sensor means indicating the end of play of each of the items of melody information recorded on each segment, said play selection counter means being responsive to signals received from the end-of-play sensor means to stop operation of the system after playing the melody information of the last selected segment.

4,205,355

FLEXIBLE DISK DRIVE APPARATUS

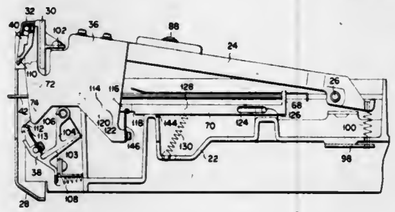
Kunio Hamanaka, Tokyo, and Yoshiki Sakurai, Oume, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 12, 1978, Ser. No. 950,721

Claims priority, application Japan, Oct. 19, 1977, 52-124571

Int. Cl.² G11B *5/06*

U.S. Cl. 360—99 **14 Claims**



1. A flexible disk drive apparatus in which a flexible disk cartridge containing a flexible magnetic disk is inserted, whereby information is recorded and/or reproduced in and/or from said disk, comprising:

a main frame;

disk driving means attached to said main frame;

a subframe attached to said main frame for movement between a disk driving position and a cartridge inserting position;

selective clamp means on said subframe and operable to engage said disk driving means whereby said disk is engaged with said disk driving means when said subframe is in said disk driving position, said clamp means being spaced from said disk driving means and said engagement is released when said subframe is in said cartridge inserting position;

ejector means for ejecting said cartridge from said drive apparatus, said ejector means engaging one edge of said cartridge and movable from a released position to a cocked position and including means to latch said ejector means in said cocked position when said cartridge is fully inserted into said drive apparatus; and

releasing means engageable with said ejector means upon movement of said subframe from said disk driving positon toward said cartridge inserting position to release said ejector means from its latched state, whereby said ejector means moves from said cocked position to said released position to eject said cartridge as said subframe moves from said disk driving position to said cartridge inserting position, said releasing means allowing said ejector means to be latched again in said cocked position in response to the insertion of said cartridge after said subframe has reached said cartridge inserting position.

4,205,356

ERASING HEAD

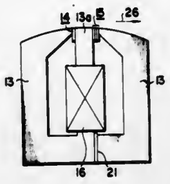
Fumio Tanaka, and Naohiko Toshimitsu, both of Chichibu, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Chichibu, both of, Japan

Filed Jun. 6, 1978, Ser. No. 913,228

Claims priority, application Japan, Jun. 17, 1977, 52-71842

Int. Cl.² G11B *5/25, 5/27, 5/47*

U.S. Cl. 360—118 **24 Claims**



1. An erasing head comprising:

a core of high permeability material and having spaced pole pieces;

a coil wound on said core; and

layers of non-magnetic and high permeability

materials alternately disposed between said pole-pieces characterized in that said layers comprise:

a first non-magnetic material being in contact with the upstream pole-piece and having thickness Ga;

a second non-magnetic material disposed between high permeability materials one of which contacts with said first non-magnetic material, and having thickness Gb less than Ga; and

a third non-magnetic material being in contact with the downstream pole-piece and having thickness Gd less than Gb and less than ½Ga.

4,205,357

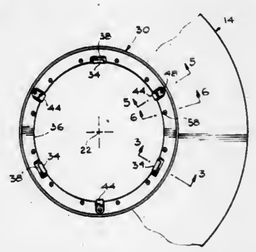
DISK DRIVE UNIT INCORPORATING A FIELD-REPLACEABLE FIXED DISK ASSEMBLY

Richard E. Barton, Scituate, Mass.; Jack V. Fultz, Thousand Oaks, Calif.; Yoshiyasu Narahara, Westlake Village, Calif., and Michael S. Shebanow, Chatsworth, Calif., assignors to Pertec Computer Corporation

Filed Jun. 15, 1978, Ser. No. 915,787

Int. Cl.² G11B *17/02*

U.S. Cl. 360—135 **9 Claims**



1. A disk assembly for mounting on a disk drive spindle, comprising:

a mounting ring for mounting closely around the drive spindle, said mounting ring defining a central opening to permit said drive spindle to pass therethrough;

at least one data storage disk; and

a coupling connecting said at least one data storage disk to said mounting ring;

said mounting ring including a plurality of flexure members spaced around the ring and extending radially inwardly from most of the rest of the mounting ring to contact the spindle, said flexure members being positioned to define an opening slightly smaller than the diameter of the drive spindle and being deflectable radially outwardly by the spindle to form a controlled interference fit therewith, said flexure members exhibiting substantially the same spring rate of radially outward deflection.

4,205,358

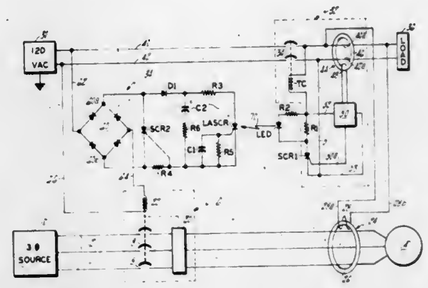
GROUND FAULT PROTECTION SYSTEM

Forest L. Washington, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 26, 1978, Ser. No. 955,076

Int. Cl.² H02H *3/28*

U.S. Cl. 361—44 **6 Claims**



1. A ground fault protection system for a power circuit including a source, a load and a power circuit breaker having contacts connected in series therebetween; said system comprising, in combination:

A. a sensor having a toroidal core embracing the conductors of the power circuit and a secondary winding on said core in which is developed a first ground fault signal indicative of a ground fault on the power circuit downstream from said core;

B. a control power source;

C. a current transformer having a primary winding connected in series with said secondary winding of said sensor and a secondary winding in which is developed a second ground fault signal proportional to said first ground fault signal;

D. a signal processor energized from said control power source and connected to said current transformer secondary winding for processing said second ground fault signal pursuant to developing a trip signal;

E. a first thyristor triggered into conduction by said trip signal to draw activating current from said control power source;

F. a light emitting device energized by said activating current to generate a light signal;

G. a shunt trip solenoid operatively coupled with the power circuit breaker and acting, when energized, to precipitate opening of the power circuit breaker contacts; and

H. a solid state switch including

(1) a silicon controlled rectifier connected in an AC energization circuit with said solenoid, said silicon controlled rectifier having anode, cathode and gate electrodes,

(2) a full-wave diode rectifier bridge having a pair of input terminals and a pair of output terminals, said solenoid connected in said energization circuit in series with said bridge input terminals, said anode of said controlled rectifier connected to one bridge output terminal and said cathode of said controlled rectifier connected to the other bridge output terminal,

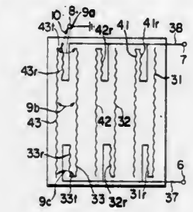
(3) a first resistor interconnecting said cathode and gate electrodes of said controlled rectifier, and
(4) a light activated device connected in series circuit with said first resistor across said bridge output terminals;
(5) whereby said light activated device, in response to said light signal, draws current from said bridge through said first resistor to develop thereacross a gate voltage triggering said controlled rectifier in conduction to impose a low impedance path across said bridge output terminals pursuant to energizing said solenoid to precipitate opening of the power circuit breaker contacts.

4,205,359

SAFETY TYPE ELECTRIC FIELD CURTAIN APPARATUS

Masahiro Yamamoto, Chiba; Yasunari Okamoto, Tokyo; Tsutomu Itoh, Tokyo, and Senichi Masuda, Tokyo, all of Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan

Continuation of Ser. No. 774,199, Mar. 3, 1977, abandoned. This application Sep. 21, 1978, Ser. No. 944,648
Claims priority, application Japan, Mar. 8, 1976, 51-024868
Int. Cl.[2] H02H *1/02*
U.S. Cl. 361—58 **13 Claims**



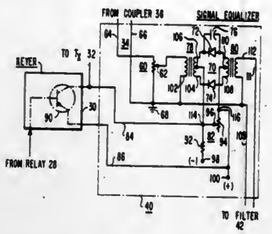
1. A safety type electric field curtain apparatus comprising:
a planar insulating layer;
a plurality of wire-shaped electrodes embedded within said planar insulating layer at a first predetermined depth from the surface of said layer, said electrodes being parallel to and spaced from each other;
a plurality of protective resistors, each of said protective resistors being coupled in series with one of said electrodes, said protective resistors being embedded in said layer at a second predetermined depth greater than said first predetermined depth, said second predetermined depth being sufficient to prevent grounded body spark ignition of an explosive powder to be processed by a short involving one of said protective resistors, each of said protective resistors having a predetermined resistance value higher than a first minimum A.C. ignition resistance value necessary for preventing spark ignition of an explosive powder to be processed due to grounded body arcs;
a plurality of terminals for coupling an A.C. high voltage power source to said electrodes for generating a silent discharge between adjacent electrodes and establishing an electric field curtain adjacent the surface of said insulating layer;
said electrodes having a ground capacitance with respect to ground and an interelectrode capacitance between adjacent electrodes; and
said first minimum A.C. ignition resistance having a value determined by applying the maximum voltage to be used with said ground capacitance to an equivalent circuit, dispensing the explosive powder to be processed in a spark gap connected in parallel with said ground capacitance, and adjusting a test resistance in series with said ground capacitance until the powder is no longer ignitable, the value of said test resistance being said first minimum A.C. ignition resistance for preventing grounded body arc ignition of an explosive powder to be processed.

4,205,360

POWER LINE CARRIER APPARATUS

Melvin H. Drucker, Denville, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 24, 1978, Ser. No. 927,217
Int. Cl.[2] H02H *7/20*
U.S. Cl. 361—68 **7 Claims**



1. Power line carrier apparatus, comprising:
local receiver including an input filter,
a local transmitter,
keying means for keying said local transmitter on and off,
a transmission line,
attenuation means,
said receiver being connected to receive communication signals from said transmission line via said attenuation means, with said attenuation means being connected between said transmission line and the input filter of said receiver,
said transmitter being connected to apply communications signals to said transmission line when it is keyed on by said keying means,
said attenuation means having an attenuation which is responsive to whether said transmitter is keyed, presenting a higher attenuation to communication signals from said transmission line when said transmitter is keyed on, then when it is not transmitting,
said attenuation means including a diode modulator connected between the transmission line and the input filter, and bias means for adjusting the bias of said diode modulator in response to the condition of the local transmitter, with said bias means forward biasing said diode modulator when the local transmitter is not transmitting, to enable communication signals to pass from the transmission line to the input filter, and with said bias means reverse biasing said diode modulator when the local transmitter is keyed on, to prevent communication signals from passing through the diode modulator to the input filter.

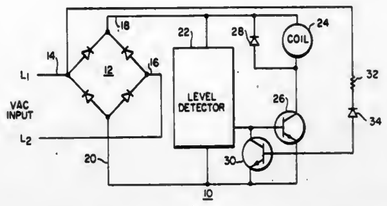
4,205,361

UNDERVOLTAGE CONTROL APPARATUS FOR CIRCUIT INTERRUPTER

Alan B. Shimp, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 21, 1978, Ser. No. 888,725
Int. Cl.[2] H02H *3/24*
U.S. Cl. 361—92 **7 Claims**

1. Circuit interrupter undervoltage control apparatus, comprising;
a holding coil;
an electronic switch having an output connected in series with said holding coil;
a rectifier having an input connected to alternating current control lines, and an output connected in series with said holding coil and said electronic switch;
a level detector responsive to the output voltage of said rectifier for supplying an activating signal to said electronic switch when said rectifier output voltage rises above a first predetermined value, and removing said activating signal when said rectifier output voltage falls below a second predetermined value; and
a switching regulator connected to said level detector, said electronic switch, and said rectifier input for modulating said actuating signal when the voltage on said alternating current control lines rises above a predetermined level, whereby said electronic switch is rendered periodically non-conducting to regulate the average voltage appearing across said holding coil.

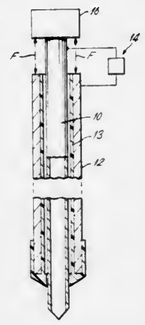


4,205,362

APPARATUS FOR MOVING ALONG OR THROUGH A MATERIAL

Roy Butterfield, Southampton, England, assignor to National Research Development Corporation, London, England

Filed Feb. 1, 1978, Ser. No. 874,223
Claims priority, application United Kingdom, Feb. 2, 1977, 04206/77
Int. Cl.[2] H02N *1/00*
U.S. Cl. 361—234 **5 Claims**



1. An apparatus for forcing itself along or through soil and like ground material with the aid of the direct application of electricity to the material, the apparatus comprising an annular first part, a first electrically conductive surface to said first part for electrically conductive engagement with the material, a second part, said second part being arranged to be movable relative to the first part and at least in part surrounded by the first part, a second electrically conductive surface to said second part for electrically conductive engagement with the material at a position separated from the first surface, the two conductive parts defining respective terminals of an external electrical path of the apparatus, means for connecting said two electrically conductive surfaces to a source of potential difference to energise the path in operation of the apparatus, electrical insulation in the apparatus between said two parts, and thrust means for exerting a force between the two parts to provide relative axial movement between them.

4,205,363

FUEL IGNITOR COMPRISING A NOVEL SILICON CARBIDE COMPOSITION

Charles J. Boos, Lewiston; Elwood B. Hausler, Grand Island; James A. Hirsch, Niagara Falls; Martin R. Kasprzyk, Buffalo, and Elmer G. Smith, Niagara Falls, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 666,297, Mar. 12, 1976, Pat. No. 4,120,827.
This application Jun. 29, 1978, Ser. No. 920,574
Int. Cl.[2] F23Q *7/00*
U.S. Cl. 361—264 **5 Claims**

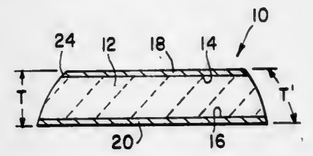
1. An electrical fuel igniter comprising an elongated body having a composition comprising particulate silicon carbide having an average particle size of less than about twenty microns pressed at a pressure of from about 1800° to about 2400° C. at a pressure of from about 70 to about 750 kilograms per square centimeter for a sufficient time to obtain a density above about 2.5 grams per cubic centimeter, said composition further comprising at least 95.0 weight percent silicon carbide containing from about 0.005 to about 0.05 moles per 100 grams of composition of at least one dissolved negative doping element, said at least one negative doping element being in sufficient mole excess of the total moles of all positive doping elements present in said composition to provide sufficient negative doping to said composition to reduce the cold volume resistivity to less than about 1.25 ohm cms and to reduce the ratio of cold volume resistivity at 20° C. to hot volume resistivity at 1200° C. of less than about 12 to 1, wherein the ignitor is a bar having a length of from about 0.1 to about 5 centimeters and a cross sectional area of from about 0.0002 to about 0.004 square centimeters.

4,205,364

MICROCAPACITORS HAVING BEVELED EDGES AND CORNERS

Robert J. Pereira, Jr., Plainview, N.Y., assignor to Phase Industries, Inc., Huntington Station, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,748
Int. Cl.[2] H01G *4/00*
U.S. Cl. 361—274 **5 Claims**



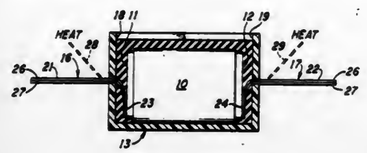
1. A microcapacitor assembly, comprising:
a dielectric body having upper and lower flat rectangular face parallel to each other, said upper face being smaller in area than said lower face;
a first metal electrode on said upper face completely covering the same; and
a second metal electrode on said lower face completely cover the same, lateral edges of said first and second electrode registering with corresponding edges of said dielectric body, lateral edges and corners of said dielectric body and adjacent edges and corners of said electrodes being beveled to eliminate abrupt metal to dielectric interfaces, and to reduce any tendency for separation of electrodes from said dielectric body when subject to thermal and mechanical shocks.

4,205,365

BOXED CAPACITOR WITH BIMETALLIC TERMINALS AND METHOD OF MAKING

Robert F. Kalina, Lombard, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,196
Int. Cl.² H01G 1/14
U.S. Cl. 361—308 **9 Claims**



1. A method of terminating an electrical component with a pair of terminals, which comprises:

positioning a pair of bimetallic terminals adjacent said component, with heat activated bonding material interposed between the terminals and the component, said bimetallic terminals being constructed of two laminations of metal having different coefficients of expansion, the laminations of the respective terminals having the lower coefficient of expansion facing said component; and

applying sufficient heat to said terminals to flex them against said component while said interposed heat activated bonding material is activated to bond the terminals to the component.

8. A boxed capacitor, comprising:

a box of insulating material, said box having an open end and a pair of opposed sidewalls;

a pair of terminals extending through said sidewalls of said box, each terminal constructed of laminations of metals having different coefficients of expansion, sections of laminations of the respective terminals having the lower coefficient of expansion facing and inclined toward each other; and

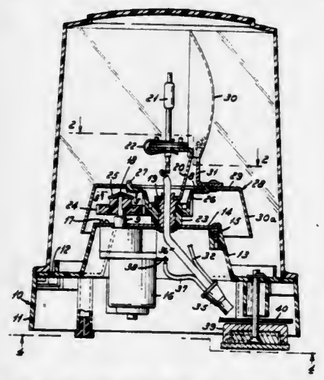
a capacitor having heat fusible end electrodes positioned in said box with the end electrodes bonded to the facing laminations of said terminals.

4,205,366

EMERGENCY WARNING LAMP

Arthur F. Bielweiss; Dumitru Cotoara, both of Toronto, and Robert J. Willkes, Caledon East, all of Canada, assignors to Dominion Auto Accessories Limited, Toronto, Canada

Filed Dec. 27, 1976, Ser. No. 754,125
Int. Cl.² F21Q 1/00
U.S. Cl. 362—35 **3 Claims**



1. In an emergency warning lamp, the combination comprising

a plastic base having a top wall and a peripheral wall,

said top wall including a generally frustoconical wall spaced radially inwardly of said peripheral wall,

a generally horizontal metal mounting plate mounted on said frustonconical wall base,

an electric motor mounted on said plate and having an output shaft extending upwardly through said plate,

a bushing disposed centrally of said base on said plate,

a gear rotatably mounted on said bushing,

a pinion meshing with said gear and fixed to the shaft of said motor,

a heat shield overlying said gears,

said heat shield including a flat horizontal wall and a peripheral wall,

said horizontal wall of said heat shield having a central opening therethrough,

means for supporting said heat shield on said gear on said bushing for rotation with said gear on said bushing

a lamp bulb,

mounting means on said bushing extending through said opening in the horizontal wall of said heat shield for supporting said lamp bulb in spaced relation to said bushing,

a reflector,

means for mounting said reflector on said horizontal wall of said heat shield for rotation therewith so that it is adjacent said lamp bulb,

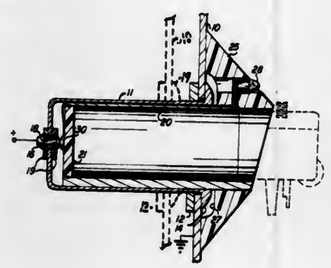
the frustoconical portion of said base extending axially upwardly within said peripheral wall of said heat shield.

4,205,367

CIGARETTE LIGHTER HOLDER AND ADAPTER

Benjamin L. Arnold, III, 6051 S. 42nd St., Phoenix, Ariz. 85040, assignor to Benjamin L. Arnold, III, Scottsdale, Ariz.

Filed Nov. 4, 1977, Ser. No. 848,589
Int. Cl.² F21V 33/00
U.S. Cl. 362—61 **5 Claims**



1. A cigarette lighter holder and adapter for use in a motor vehicle having a dash board with a conventional motor vehicle electric cigarette lighter socket in the dash board, said holder and adapter including in combination:

a generally cylindrically shaped housing member, open at one end, for insertion into the electric cigarette lighter socket in the dash board of the motor vehicle, said housing member made at least in part of electrically insulating material for electrically isolating the interior thereof from the exterior thereof;

electrical contact means in the other end of said cylindrically shaped housing member opposite said one end for making electrical contact with an electrical terminal in said cigarette lighter socket;

an outwardly flared collar attached to said one end of said housing member overlying te edge of the cigarette lighter socket; and

electrical illumination means in said collar electrically connected with said electrical contact means in said housing member for energization thereby;

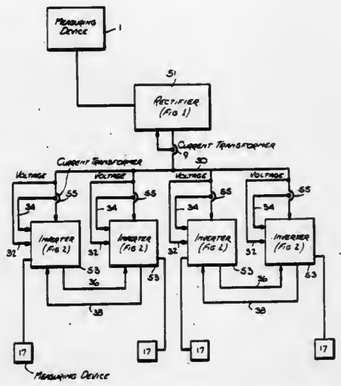
whereby a non electric cigarette lighter may be removably placed in said housing member.

4,205,368

METHOD FOR THE TRANSMISSION OF DC CURRENT BETWEEN AT LEAST ONE RECTIFIER STATION AND SEVERAL INVERTER STATIONS

Manfred Erche, Erlangen-Buckenhof; Ludwig Filberich, Erlangen; Dusan Pove, Nuremberg; Hermann Waldmann, and Manfred Weibelzahl, both of Weiher, near Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 677,962, Apr. 19, 1976, abandoned.
This application Nov. 22, 1977, Ser. No. 853,883
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1975, 2518910
Int. Cl.² H02M 5/40
U.S. Cl. 363—35 **3 Claims**



1. A method for the transmission of DC current via a DC network between at least one rectifier station and several inverter stations comprising the steps of:

forming a reference input for the voltage controller of the rectifier of the rectifier station by means of a computing means on the basis of a fixed, predetermined current-voltage characteristic as a function of the maximum possible current in the rectifier station, whereby said rectifier station is voltage-controlled;

forming a maximum value for reference input for the current controller of each inverter station by means of computing means on the basis of a fixed, predetermined voltage-current characteristic which is matched to said current-voltage characteristic and the output capacity of said rectifier station as a function of the voltage of the DC network; and

releasing for control of each current controller via a minimum selection circuit connected in series with that current controller the smaller of the maximum value of the reference input for that current controller and a value for the reference input corresponding to the power demand associated with the inverter station which includes that current controller, whereby each said inverter station is current controlled.

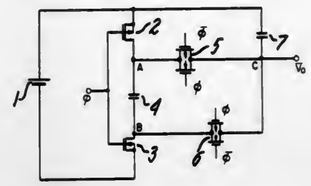
4,205,369

VOLTAGE DROPPING CIRCUIT

Kazuhiro Asano, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Feb. 9, 1978, Ser. No. 876,369
Claims priority, application Japan, Mar. 28, 1977, 52-34186; Feb. 16, 1977, 52-15916
Int. Cl.² H02M 7/00
U.S. Cl. 363—62 **3 Claims**

1. A voltage dropping circuit, comprising: a first MOS field effect transistor, a first capacitor and a second MOS field effect transistor connected in series in the named order; a first MOS field effect transmission gate responsive to control signals of opposite polarity and rendered conductive by a control signal of either polarity and a second capacitor connected in series with said first transmission gate, wherein the series combination of said first transmission gate and said second capacitor are connected in parallel with said first MOS field effect transistor with said first transmission gate connected to a junction of said first MOS field effect transistor and said first capacitor; a second MOS field effect transmission gate responsive to control signals of opposite polarity and rendered conductive by a control signal of either polarity and connected between a junction of said second capacitor and said first transmission



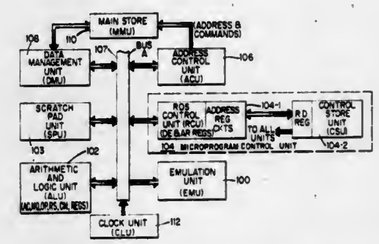
gate and a junction of said first capacitor and said second MOS field effect transistor; means for applying a first control signal to respective gates of said first and second MOS field effect transistors and to said first and second transmission gates so as to render one transmission gate conductive and the other transmission gate non-conductive; and means for applying a second control signal to said first and second transmission gates so as to render one transmission gate conductive and the other transmission gate non-conductive.

4,205,370

TRACE METHOD AND APPARATUS FOR USE IN A DATA PROCESSING SYSTEM

Allen C. Hirtle, Needham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 16, 1975, Ser. No. 568,643
Int. Cl.² G06F 9/16, 13/00
U.S. Cl. 364—200 **23 Claims**



1. A data processing system comprising:

processing means for processing instructions of a program, said processing means including storage means for storing signals for indicating when said processing means is to operate in a trace mode of operation;

a memory having a plurality of segments, one of said segments storing said instructions of said program, each instruction having an op code portion for defining the type of instruction and another one of said segments including a stack area and locations for storing a plurality of control words, at least one of said control words being coded to define types of executable instructions and another one of said control words being coded to define a plurality of modes of operations including said trace mode of operation for said processing means; and,

microprogrammed control means for generating control signals required for processing said instructions, said microprogrammed control means being coupled to said processing means and to said memory, said control means

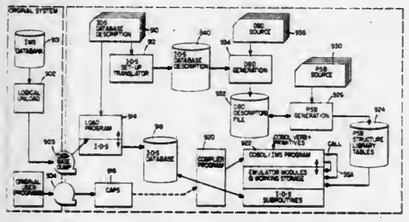
including a plurality of sequences of microinstructions, said control means being operative in accordance with said another one of said control words in response to signals from said storage means indicating said trace mode of operation to reference one of said plurality of sequences for generating said control signals for referencing said one control word during a predetermined point in the processing of each instruction of said program fetched from said one segment, said control means in response to signals derived from said one control word being operative to reference selectively another sequence of said microinstructions for recording information indicative of each instruction in said stack area prior to execution of said each instruction by said processing means thereby providing a history of all instructions executed by said processing means during the running of said program.

4,205,371

DATA BASE CONVERSION SYSTEM

Harvey E. Feather, Hudson, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 3, 1975, Ser. No. 628,671
Int. Cl.[2] G06F 9/00, 13/00
U.S. Cl. 364—200 **25 Claims**



1. A system for executing user programs written for execution on another system and to access data files in said system originally organized in accordance with a first data structure to form a data base, said system comprising:

auxiliary storage means for storing signal representations of said data files organized in accordance with a second data structure to form another data base which is characteristically different from the data base said first data structure;

working memory means having a plurality of sections, one section storing at least one user program, said program including instructions coded to define at least one call directing said system to perform a data base operation upon said data files of said another data base, said call having a predetermined format required for accessing data files corresponding to said first data structure and a second section having a plurality of tables, each table for storing a plurality of entries, said entries of different ones of said plurality of tables being coded for referencing said data base organized in said first data structure in terms of said second data structure;

processor means for executing said instructions of said user programs, said processor means being coupled to said memory means and to said auxiliary storage means; and,

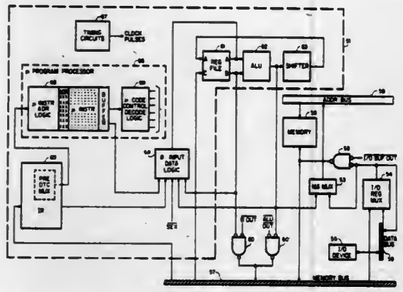
emulator control module means included in said working memory means, said control module means being operatively coupled to said processor means and to said auxiliary storage means, said module means including a plurality of modules, said control module means being operative in response to said instructions of said call for conditioning said processor means to reference different ones of said modules, said processing means including means being conditioned by said different ones of said modules to reference said plurality of tables for interpreting said call instructions to perform the operation specified upon said data files thereby requiring no change in the normal logical operation of said user program when executed by said another system.

4,205,372

CENTRAL PROCESSING UNIT EMPLOYING MICROPROGRAMMABLE CONTROL FOR USE IN A DATA PROCESSING SYSTEM

Ronald H. Gruner, Framingham, Mass., assignor to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 509,186, Sep. 25, 1974, Pat. No. 3,990,052. This application Nov. 1, 1976, Ser. No. 737,624
The portion of the term of this patent subsequent to Nov. 2, 1993, has been disclaimed.
Int. Cl.[2] G06F 9/12, 13/06
U.S. Cl. 364—200 **7 Claims**



1. In a computer comprising

memory means for storing at least computer instructions, microprogram processor means for providing microprograms of sequences of micro-instructions for performing first certain of said computer instructions, and

memory bus means connected from said memory means for conducting memory output signals representing said computer instructions to said microprogram processor means,

said microprogram processor means including

instruction register means connected from said memory bus means for receiving and holding one of said computer instructions at a time,

micro-instruction control store means connected from said instruction register means for storing and providing said micro-instructions,

controllable connection means connected from said memory bus means for providing first certain of said memory output signals representing portions of second certain of said first certain of said computer instructions present on said memory bus means,

buffer means (1) connected from said control store means for selectively receiving and holding one of said micro-instructions at a time, and (2) connected from said controllable connection means for selectively receiving and holding said portions of said second certain of said first certain of said computer instructions, and

micro-instruction decoding means connected from said buffer means for providing control signals to at least said microprogram processor means,

the method to be practiced therein for generating and responding to the initial micro-instruction of each of said sequences of micro-instructions in each of said microprograms for performing each one of said second certain of said first certain of said computer instructions, said method comprising the steps of:

(A) decoding a present one of first certain of said micro-instructions held in said buffer means by operation of said decoding means to provide first certain of said control signals to said microprogram processor means from said micro-instruction decoding means to initiate start of a next one of said sequences of micro-instructions of a next one of said second certain of said first certain of said computer instructions;

(B) enabling said instruction register means responsive to said first certain of said control signals from said micro-instruction decoding means to receive from said memory bus means and hold in said instruction register said next one of said second certain of said first certain of said computer instructions;

(C) enabling said controllable connection means responsive to first certain of said control signals from said micro-instruction decoding means to provide said first certain of said memory output signals representing said portions of said next one of said second certain of said first certain of said computer instructions to said buffer means from said memory bus means;

(D) enabling said buffer means responsive to said first certain of said control signals from said micro-instruction decoding means to (1) receive said first certain of said memory output signals from said controllable connection means and (2) to hold in said buffer means said portions of said next one of said second certain of said first certain of said computer instructions from said memory bus means,

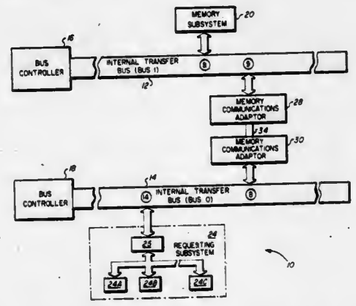
so that the initial micro-instruction of said next one of said sequences of micro-instructions is provided to said buffer means directly from said memory bus means.

4,205,373

SYSTEM AND METHOD FOR ACCESSING MEMORY CONNECTED TO DIFFERENT BUS AND REQUESTING SUBSYSTEM

Niranjan S. Shah, and James F. Taylor, both of Escondido, Calif., assignors to NCR Corporation, Dayton, Ohio

Filed May 22, 1978, Ser. No. 908,183
Int. Cl.[2] G06F 13/00, 3/04
U.S. Cl. 364—200 **16 Claims**



1. In a data processing system including first and second busses each having a plurality of addressable ports, a system comprising in combination:

(a) a memory subsystem connected to a first port of said second bus;

(b) a subsystem connected to a second port of said first bus, said subsystem including

i. a plurality of input/output means for transmitting a request message to said first bus;

ii. means for inserting first identification information into said request message, representing a one of said input-/output means from which said request message is transmitted;

(c) means coupled to said first and second busses, respectively, for routing said request message from said first bus to said second bus and routing any memory response message produced in response to said request message by said memory subsystem from said second bus to said first bus, said routing means including

i. means for receiving said request message from said first bus and determining if said request message requires a response from said memory subsystem;

ii. means for temporarily storing said first identification information;

iii. means responsive to said request message receiving means for modifying said request message to contain second identification information representing an addressable port on said second bus and the location of said stored first identification information in said means for temporarily storing;

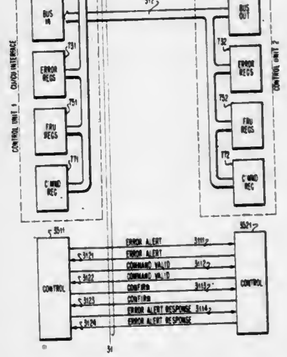
iv. means for transmitting said modified request message to said memory subsystem via said second bus.

4,205,374

METHOD AND MEANS FOR CPU RECOVERY OF NON-LOGGED DATA FROM A STORAGE SUBSYSTEM SUBJECT TO SELECTIVE RESETS

Henry Bardsley, III, Saratoga; Fernando A. Luiz, Monte Sereno, both of Calif.; Nils F. Nilsen, Tucson, Ariz., and Ronald C. Simpson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1978, Ser. No. 953,063
Int. Cl.[2] G06F 11/00, 13/00
U.S. Cl. 364—200 **6 Claims**



1. A method for the automatic recovery of data from a defaulting one of a pair of failure independent control units, each control unit having means for switchably interconnecting channel to device interfaces, means for the registration of its error state, and a control unit/control unit communications interface, each interface being of the asynchronous demand-/response type, the method steps comprising:

notifying a channel accessing the defaulting control unit of its unavailability responsive to a trouble signal originating within said defaulting control unit concurrent with notifying the companion control unit of this status;

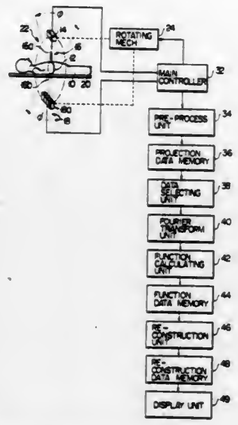
peer coupling data from the defaulting control unit to a channel interface coupling the companion control unit through and under the control of the companion control unit over the communications interface responsive to the unavailability status indication; and

buffering any accessing channel response at the defaulting control unit to the unavailability notification until said data has been offloaded subsequent to which the channel response may be executed.

4,205,375
METHOD AND APPARATUS FOR PERFORMING COMPUTED TOMOGRAPHY

Tamon Inouye, Tokyo, and Hiroyuki Mizutani, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jan. 31, 1978, Ser. No. 874,065
Claims priority, application Japan, Jan. 31, 1977, 52-8703
Int. Cl.[2] G01N 23/00
U.S. Cl. 364—414 4 Claims



1. In a computed tomography system, the method for generating an image of an internal area under examination comprising the steps of:

(a) projecting a plurality of radiation beams through said area and detecting the beams penetrating said area to generate projection data signals representing the intensities of said detected beams;

(b) repeating step (a) for a plurality of different scan angles θ located in a scan sector of less than 180° centered about a point in said area;

(c) dividing the projection data signals generated in steps (a) and (b) into groups wherein each said group includes data signals generated at a common scan angle;

(d) calculating the one-dimensional Fourier transform for each group of said data signals to derive sample values $G_1(\omega,\theta)$ for each of said groups, where ω is a predetermined Fourier angular frequency;

(e) calculating the real and imaginary part Fourier transform coefficients $A_n(\omega)$, $B_n(\omega)$, $C_n(\omega)$, and $D_n(\omega)$ according to the equations:

$$ReG(\omega,\theta) = \sum_{n=0}^{N} [A_n(\omega)\mathrm{Cos}2n\theta + B_n(\omega)\mathrm{Sin}2n\theta]$$

$$ImG(\omega,\theta) = \sum_{n=0}^{N} [C_n(\omega)\mathrm{Cos}(2n+1)\theta + D_n(\omega)\mathrm{Sin}(2n+1)\theta]$$

by substituting into said equations the real and imaginary part sample values corresponding to the $G_1(\omega,\theta)$ values obtained in step (d) and the values of the scan angles θ within said scan sector and solving the multiple equations so constructed for $A_n(\omega)$, $B_n(\omega)$, $C_n(\omega)$ and $D_n(\omega)$;

(f) utilizing the equations of step (e) with the calculated values of said Fourier transform coefficients and values of scan angles θ outside of said scan sector to calculate a plurality of one-dimensional Fourier transform sample values $G_2(\omega,\theta)$ for sca- angles θ outside of said scan sector;

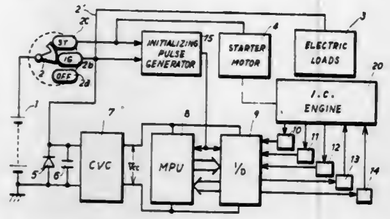
(g) determining absorption coefficient values for a plurality of points within said internal area under examination based on said Fourier transform sample values $G_1(\omega,\theta)$ and $G_2(\omega,\theta)$; and

(h) displaying said absorption coefficient values in a two-dimensional plot to construct an image of said internal area.

4,205,376
METHOD AND APPARATUS FOR INITIALIZING VEHICLE-MOUNTED COMPUTERS

Matuju Yoshida, Bisai, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 2, 1978, Ser. No. 882,923
Claims priority, application Japan, Apr. 15, 1977, 52-43956
Int. Cl.[2] H03K 5/13; G06F 15/20
U.S. Cl. 364—424 4 Claims



1. In a vehicle control system having an engine, a battery, a starter motor adapted to crank said engine with the electric power supplied thereto, a digital computer programmed to be initialized and perform calculations required for vehicle controls according to a preestablished operating sequence with the electric power supplied thereto, and a key switch connected to said battery and movable to a first terminal for supplying said digital computer with the electric power and to a second terminal for supplying said digital computer and said starter motor with the electric power, an initializing apparatus comprising:

first pulse generator means responsive to the voltage change developed on said first terminal when said key switch is moved thereto and effective to generate a first pulse having a first constant time period;

second pulse generator means responsive to the voltage change developed on said second terminal when said key switch is moved therefrom and effective to generate a second pulse having a second constant time period;

third pulse generator means responsive to said first and second pulses and effective to generate a third pulse in synchronism with each disappearance of said first and second pulses, said third pulse being applied to said digital computer to initialize the same; and

a battery circuit means including a diode and a capacitor which are connected such that said capacitor is charged by said battery through said diode with said key switch being moved to said first and second terminals and supplies said three pulse generator means with the electric power therefrom.

4. In a vehicle control system having an engine, a battery, a starter motor adapted to crank the engine with the electric power supplied thereto, a digital computer programmed to be initialized and perform calculations required for vehicle controls according to a pre-established operating sequence with the electric power supplied thereto, and a key switch connected to the battery and movable to a first terminal for supplying the digital computer with the electric power and to a second terminal for supplying the digital computer and the starter motor with the electric power, an initializing method comprising the steps of:

automatically generating a first pulse having a first constant time period responsive to the voltage change developed on the first terminal when the key switch is moved thereto;

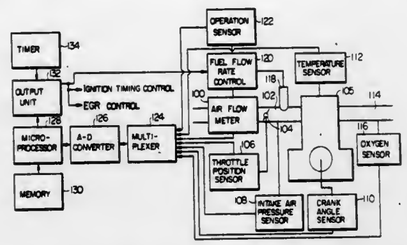
automatically generating a second pulse having a second constant time period responsive to the voltage change developed on the second terminal when the key switch is moved therefrom;

automatically generating a third pulse responsive to the first and second pulses and in synchronism with each disappearance of the first and second pulses, the third pulse being applied to the digital computer to initialize the same.

4,205,377
CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yoshishige Oyama; Teruo Yamauchi, and Yutaka Nishimura, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 24, 1978, Ser. No. 899,159
Claims priority, application Japan, Apr. 22, 1977, 52-45795
Int. Cl.[2] G06F 15/20; G02D 33/00
U.S. Cl. 364—431 11 Claims



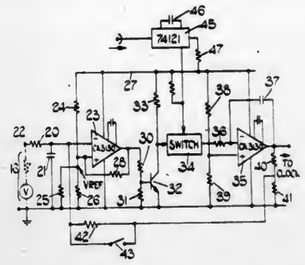
1. A control system for an internal combustion engine comprising: an air flow meter for metering the flow rate of intake air supplied to the engine and for producing an output signal relative to the flow rate of intake air; a plurality of sensors for detecting different conditions of engine operation; a microprocessor for carrying out digital computation on the basis of the output signal of said air flow meter and the output signals of said sensors thereby providing a plurality of control signals for controlling the controlled variables of the engine; fuel supply means for supplying fuel to the engine; and fuel flow rate control means for controlling the flow rate of fuel supplied by said fuel supply means according to a fuel flow rate control signal among the control signals; wherein said air flow meter includes means for producing, as said output signal relative to the flow rate of intake air, a non-linear signal having a non-linear characteristic such that the changing rate of said signal with respect to the flow rate of intake air is greater in a predetermined region in which the flow rate of intake air is small than in other regions of the flow rate of intake air, said microprocessor being supplied with said non-linear signal in a digital form for carrying out digital computation on the basis of said non-linear signal.

4,205,378
INTERNAL COMBUSTION ENGINE FUEL CONTROL SYSTEM

Peter J. Ward, Hampton in Arden, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 12, 1978, Ser. No. 914,454
Claims priority, application United Kingdom, Jun. 23, 1977, 26295/77
Int. Cl.[2] F02D 35/00; F02B 75/10
U.S. Cl. 364—431 7 Claims

1. An internal combustion engine fuel control system comprising an exhaust gas composition sensing device having a high output impedance at low temperature, but producing when at operating temperature, a voltage signal related to the exhaust gas composition and a fuel control circuit to which said sensing device is connected so that variations in the voltage signal therefrom vary the fuel flow to the engine so as to cause the voltage signal to approach a desired level, said fuel control circuit including an input stage connected to the sensor and to a reference voltage source such that the output of said input stage is dependent on the relative levels of the signal voltage and the reference voltage, an integrator stage connected to the output of the input stage and producing an output which changes relatively slowly as a result of changes in the output of the input stage, the output of the integrator stage determining the rate at which fuel is supplied to the engine and a high impedance negative feedback circuit connecting the output of the integrator stage to an input terminal of the input

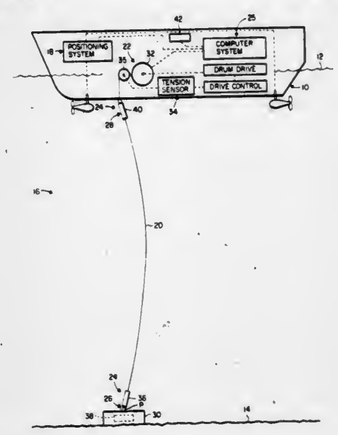


stage and including a high impedance feedback path of impedance less than that of the sensing device at low temperature and higher than that of the sensing device at operating temperature, said feedback circuit causing the output of the integrator to approach a desired value when the sensing device is at low temperature.

4,205,379
POSITION DETERMINING AND DYNAMIC POSITIONING METHOD AND SYSTEM FOR FLOATING MARINE WELL DRILL PLATFORMS AND THE LIKE

Marvin Fox; Donald L. Cooper, both of Houston, and Walter B. Warren, Seabrook, all of Tex., assignors to TRW Inc., Systems & Energy, Redondo Beach, Calif.

Continuation-in-part of Ser. No. 796,944, May 16, 1977, abandoned. This application May 9, 1978, Ser. No. 904,359
Int. Cl.[2] G06F 15/20; B63H 15/00
U.S. Cl. 364—432 18 Claims



1. A system for determining the relative horizontal positions of the upper and lower ends of a flexible connecting line suspended from a floating marine platform, and wherein the length of said line is many orders of magnitude greater than the relative horizontal displacement of the connecting line ends, said system comprising:

angle sensing means including upper and lower connecting line angle sensors for producing angle signals representing the vertical slope angles and azimuth angles of the upper and lower ends of said connecting line,

signal processing means for combining said angle signals in

accordance with a predetermined relationship of said slope angles which compensates for phase difference between the sensor outputs due to the propagation time of stress waves through said line to provide an output signal representing said relative horizontal positions, and

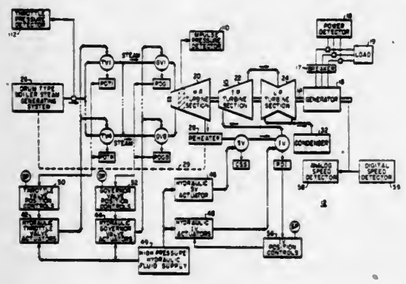
a positioning system adapted to correct said relative horizontal displacement of said platform in response to said output signal.

4,205,380

SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH DIGITAL COMPUTER CONTROL WITH ACCELERATING SETPOINT CHANGE

Andrew Braytenbah, Pennsauken, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 247,850, Apr. 26, 1972, abandoned. This application Aug. 10, 1973, Ser. No. 387,582
Int. Cl.[2] F01D *17/02*; H02P *9/04*; G05B *15/00*
U.S. Cl. 364—494 5 Claims



1. An electric power generating system with a steam turbine, a steam generator, and a generator rotated by said turbine, said system comprising:

means for digitally computing having central processing means;

means for converting input signals to digital data, said input converting means connected to said digital computing means;

means for converting digital data to output signals, said digital to output converting means connected to said digital computing means;

memory means interconnected to said central processing means;

means for valving a flow of steam through said steam turbine including at least one valve, said valving means being adapted for positioning from one position to another;

means for sensing a magnitude of a predetermined variable of said electric power generating system, and means connecting said sensing means with said input signal converting means;

means connecting said output converting means to said valving means;

said digital computing means and said valving means in combination being characterized by having

i. means for limiting said valving means at a predetermined position limit;

ii. means for changing said valve position limit at a predetermined nonlinear rate; and

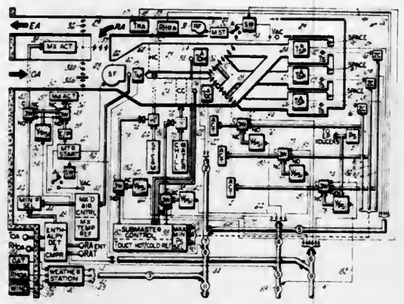
means for manually inputting rate data to said digital computing means for controlling said predetermined rate.

4,205,381

ENERGY CONSERVATIVE CONTROL OF HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) SYSTEMS

John E. Games, Granby; William W. Bitterli, Simsbury, both of Conn., and David M. Healey, Feeding Hills, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 31, 1977, Ser. No. 829,379
Int. Cl.[2] F24F *3/00*; G06F *15/46*
U.S. Cl. 364—505 6 Claims



1. Apparatus for controlling an HVAC which provides hot and cold discharge air to a plurality of temperature controlled spaces through associated hot and cold decks connected to an air handler source, each space selecting a portion of the hot and cold air by position modulation of space dampers from a full hot air to a full cold air position in dependence on a selectable reference temperature associated with the space, the air handler including a heating source and cooling source which provide the hot and cold discharge air by conditioning the mixed air discharge from a mixed air source provided as a mixture of outside air and return air from the spaces in a ratio determined by the position of mixed air dampers included therein, the apparatus comprising:

plurality of source temperature sensor means, disposed in the HVAC air handler source, for providing sensed signal information including an actual hot air discharge temperature signal and an actual cold air discharge temperature signal;

plurality of space temperature sensor means, one each disposed in each of the temperature controlled spaces, for providing an actual space temperature signal;

plurality of source control means, including a heating source control means and a cooling source control means, each operatively connected to the associated source and each responsive to actuating gate signals, actual discharge temperature signals and deck reference temperature signals presented thereto, said plurality of source control means each providing a turn on of the source associated therewith in response to the presence of said gate signal, and each providing regulation of the discharge air temperature from the source associated therewith in dependence on the difference temperature between said actual discharge temperature signals and said deck reference temperature signals; and

electronic processing means, connected to said plurality of source control means and responsive to said actual space temperature signals, said processing means comparing each of said actual space temperature signals to the lower limit and upper limit of a temperature drift band defined, respectively, by a heat set point temperature signal and a cool set point temperature signal stored in a memory portion of said processing means, said processing means providing to said cooling source control means an actuating gate signal and a cold deck reference temperature signal in response to an actual space temperature above said cool set point temperature and providing to said heating source control means an actuating gate signal and

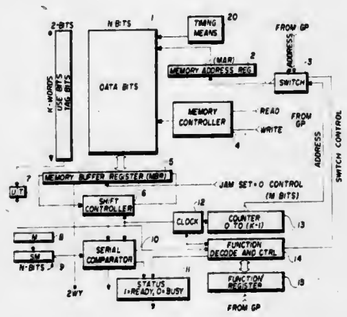
a hot deck reference temperature signal in response to an actual space temperature below said heat set point temperature, said cold deck reference temperature signal and said hot deck reference temperature signal each having a magnitude in dependence on the product of a proportional plus integral gain signal stored in said memory multiplied by an associated one of a space hot temperature error signal and a space cold temperature error signal respectively, said processing means providing said space hot temperature error signal at a magnitude equal to the temperature difference between said cool set point temperature signal and the highest value of said actual space temperature signals above said cool set point, said processing means providing said space cold temperature error signal at a magnitude equal to the temperature difference between said heat set point temperature signal and the lowest value of said actual space temperature signals below said heat set point temperature.

4,205,382

BINARY INTEGRATOR FOR FIXED CELL RADAR ALARM DATA

David J. Buscher, Silver Spring, and Marvin J. Schneider, Adelphi, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 2, 1979, Ser. No. 8,808
Int. Cl.[2] G01S *9/44*
U.S. Cl. 364—516 3 Claims



1. A method of determining whether M cell alarms have occurred in the last N processing times over an area of K cells, where M≦N, comprising,

providing a memory which is N bits wide by K words long, said bits corresponding to the last N processing times and said words corresponding to said K cells, each of said K words in said memory having a tag bit associated therewith,

defining N successive processing intervals,

responsive to the occurrence of a cell alarm or alarms in one of said N processing intervals, placing a binary 1 in the end-most bit of each word which corresponds to a cell in which an alarm has occurred and shifting all information in the word one bit position in the direction away from said end-most bit,

during the interval in which said alarm or alarms have occurred, setting the tag bit associated with each word which has a binary 1 in said end-most bit,

determining which of said tag bits are set at the end of each processing interval,

inserting binary 0's in the end-most bits and shifting all information in the word one bit position in the direction away from said end-most bit of each word which has a tag bit associated therewith which is not set,

determining which of said words include at least M binary 1's and

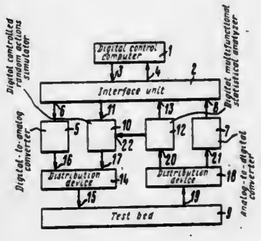
storing the addresses of said words which have at least M binary 1's.

4,205,383

METHOD OF TESTING OBJECTS FOR RANDOM ACTIONS THEREON AND DIGITAL SIMULATOR-COMPUTER SYSTEM FOR EFFECTING SAME

Eduard A. Bakanovich, ulitsa Chicherina, 4, kv. 19; Mikhail A. Orlov, prospekt Pushkina, 23, kv. 14; Sergei F. Kostjuk, ulitsa Mayakovskogo, 26, kv. 19; Vladimir P. Shmerko, ulitsa Tikhotskogo, 26, kv. 102, all of Minsk; Igor E. Gagen, Moskovsky prospekt, 189, kv. 60, Leningrad; Aron G. Gringlaz, Prazhskaya ulitsa, 27, kv. 17, Leningrad; Valery M. Kulakov, prospekt Slavy, 37, kv. 261, Leningrad; Valery B. Lysov, ulitsa Sevastianova, 4, kv. 41, Leningrad; Alexandr V. Menkov, Slobodskoi pereulok, 6-a, kv. 58, Moscow; Nikolai I. Pikin, ulitsa Goletiana, 26, kv. 24, Leningrad; Vladimir N. Chetverikov, ulitsa Malaya Bronnaya, 31/13, kv. 48, Moscow; Nikolai I. Melnik, ulitsa Lomonosova, 4, kv. 27, Minsk; Vladimir I. Novikov, ulitsa Karbysheva, 9, kv. 150, Minsk; Alexandr N. Popov, Partizansky prospekt, 105, kv. 24, Minsk, and Evgeny A. Yakushenko, ulitsa Leni Golikova, 94, kv. 58, Leningrad, all of U.S.S.R.

Filed Nov. 13, 1978, Ser. No. 959,422
Int. Cl.[2] G06F *15/36*
U.S. Cl. 364—554 39 Claims



1. A method of testing objects for random action, comprising the steps of:

recording said random actions, to which said object is subjected in the course of operation;

determining the spectral composition and statistical characteristics of said recorded random actions, to which said object is subjected;

reproducing said random actions as a simulating random pulse process, wherein the amplitudes, durations and polarities of pulses, as well as intervals between pulses, are random parameters with predetermined probability characteristics approximate to said recorded actions as regards their spectral and statistical characteristics;

selecting a combination of pulse shapes;

forming said simulating random pulse process as a train of pulses of different shapes from the preselected combination of pulse shapes;

forming statistically independent random parameters of said pulses;

applying said reproduced random actions to said object;

analyzing said spectral and statistical characteristics of said reproduced random actions and the response of said objects to these actions to obtain data for calculating the parameters for correcting the spectral and statistical characteristics of the simulating random pulse process; and

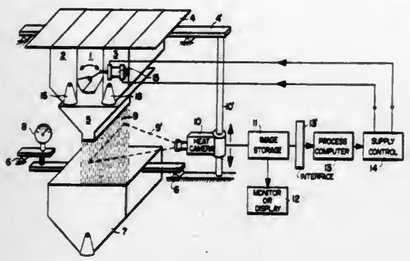
correcting said spectral and statistical characteristics of the simulating random pulse process by varying its probability characteristics.

4,205,384

METHOD FOR THE ANALYTIC DETERMINATION OF PHYSICAL CHARACTERISTICS OF A MATERIAL

Georg Merz, Gedern-Wenings, and Heinz Gehrmann, Biebergemuend-Bieber, both of Fed. Rep. of Germany, assignors to WIBAU GmbH, Gruendau-Rothenbergen, Fed. Rep. of Germany

Filed Aug. 30, 1978, Ser. No. 937,959
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741321
Int. Cl.² G01N *33/16*
U.S. Cl. 364—555 11 Claims



1. A method for the analytic determination of physical characteristics of a material, comprising the following steps: establishing a measuring zone, moving said material through said measuring zone, training sensor means in the form of heat image camera means for measuring said physical characteristics, onto said measuring zone, repeatedly operating said heat image camera means when said material is moving through said measuring zone to provide measured values representing said physical characteristics, said operating of said heat image camera means taking place during a predetermined time period to provide a number of heat image lines representing said physical characteristics, transferring the heat image lines onto a screen type image storage means, sorting said heat image lines into predetermined value ranges, summing the heat image lines within each value range to form individual sum values for the respective ranges by counting the heat image lines in groups whereby the groups are formed by coherent image lines for evaluation, and sorting the individual range sum values in a retrievable manner for display or evaluation.

4,205,385

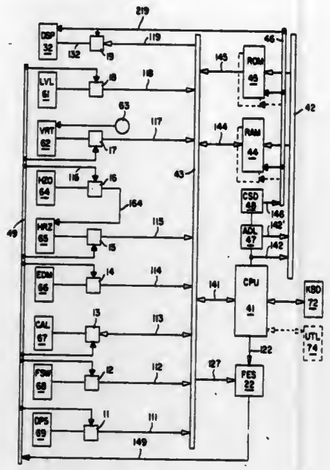
ELECTRONIC SURVEYING SYSTEM

Kent E. Erickson, Brookside; Stefan Orsen, Jersey City, and Gerhardt C. Rowe, Flemington, all of N.J., assignors to Keuffel & Esser Company, Morristown, N.J.

Division of Ser. No. 810,241, Jun. 27, 1977, Pat. No. 4,146,927. This application Sep. 27, 1978, Ser. No. 946,239
Int. Cl.² G01B *11/26*
U.S. Cl. 364—560 1 Claim

1. In the operation of a surveying system comprising a surveying instrument including an alidade and generating electronic data indicative of angular displacement of the line of sight in said alidade, electronic distance measuring means for providing data indicative of the displacement along the line of sight between said surveying instrument and a target under observation, level sensing means for providing electronic data indicative of the angular displacement of the spindle axis of said surveying instrument alidade from a vertical disposition, calculating means for processing said displacement data to determine the values of the extent of said displacements and vectors thereof, switching means for providing electronic data indicative of the selection of any one of the plurality of said displacements and vectors, and display means for presenting in digital form the value of the selected one of said plurality, the method which comprises operating computer means to atuomatically perform the steps of:

(a) interrogating said switching means to identify the selected one of said plurality;
(b) gathering those of said data relevant to the determination of the value of said selected one of said plurality;
(c) calculating said value;



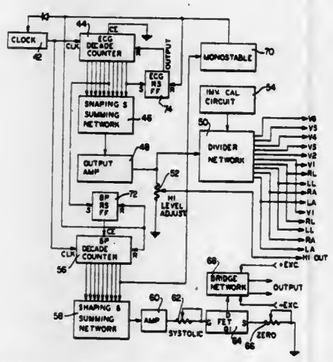
(d) directing to said display means data indicative of said value to be displayed; and
(e) repeating said interrogating and subsequent steps after each value display.

4,205,386

ELECTROCARDIOGRAPHIC AND BLOOD PRESSURE WAVEFORM SIMULATOR DEVICE

Frederick B. Ruszala, Sterling Heights, and Kenneth J. Cook, Troy, both of Mich., assignors to The Valeron Corporation, Oak Park, Mich.

Continuation-in-part of Ser. No. 882,357, Mar. 1, 1978, Pat. No. 4,204,261. This application Aug. 31, 1978, Ser. No. 938,430
Int. Cl.² G06G *7/26*; G06J *1/00*; H01C *10/46*
U.S. Cl. 364—607 25 Claims



11. Apparatus for simulating electrocardiographic and blood pressure waveforms utilized to check the operability of an electrocardiogram machine and a blood pressure monitor, respectively, said apparatus comprising:
first generator means for providing a simulated electrocardiographic waveform segments;
second generator means for providing simulated blood pressure waveforms; and
control means coupled between said first and second generator means for automatically initiating said blood pressure waveform after a predetermined number of the electrocardiographic waveform segments have been generated so that said electrocardiographic and blood pressure waveforms are provided in a time sequence corresponding to waveforms that would ordinarily be supplied by a live patient.

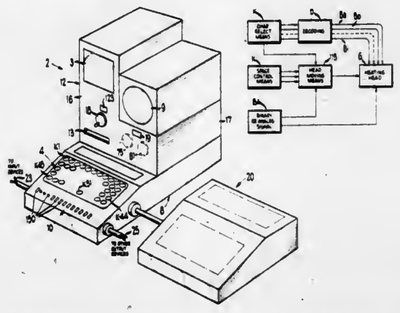
20. An interconnection device for interconnecting a blood pressure monitor and a blood pressure waveform simulator device, with said blood pressure monitor providing an excitation signal and including means for receiving an input signal, said interconnecting device comprising:
a cable having a plurality of conductors;
a first connector means on one end of said cable having terminals for coupling said conductors to the blood pressure monitor;
a second connector means at the other end of the cable having terminals for coupling said conductors to said simulator device; and
a plurality of resistors having first and second end portions, the first end portions of the resistors being commonly connected to one of the conductors for supplying the excitation signal from blood pressure monitor to the simulator device, the other end portions of the resistors each being coupled to a separate terminal in one of said connectors to provide alternative conductive paths from the blood pressure monitor to said simulator device.

4,205,387

DATA STORAGE AND RETRIEVAL SYSTEM

Stanford R. Ovshinsky, Bloomfield Hills; Peter H. Klose, and Wayne P. Messing, both of Troy, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 16, 1976, Ser. No. 724,084
Int. Cl.² G06F *3/12, 15/40*; H05B *1/00*; G01D *15/10*
U.S. Cl. 364—900 34 Claims



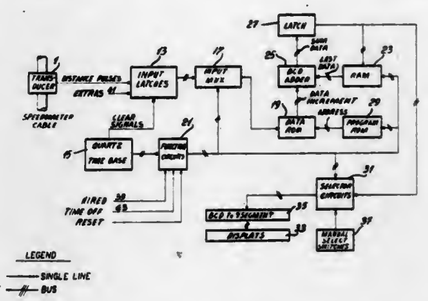
1. A system for producing microform records comprising, in combination: a source of electrical signals representing information to be recorded; heat producing means to be responsive to said signals and having at least one current-carrying point for producing a Joule heating of an adjacent record medium, each of said current-carrying points being individually selectively energizable and having dimensions of no greater than about 20 micron; an initially opaque or transparent dry process microform film supported adjacent to said heat producing means and including a layer of imaging material which is sensitive to and is imaged and developed by Joule heating internally produced or externally applied to its surface at selected points thereof to produce a pattern of light transparent or opaque areas corresponding to the heated portions thereof, wherein visible light can be projected through transparent areas of the film readily to project an image corresponding to said pattern, the flow of current of at least a given value through any one of said current-carrying points producing substantially instantaneously a transparent or opaque dot image in said layer of imaging material of a size of the order of magnitude of the dimension of the current-carrying point which produced the same; and positioning and image-forming means responsive to said source of electrical signals for moving one of said heat-producing means and said microform film relative to the other and for effecting the feeding of said current of said given value representing said electrical signals to said current-carrying points of said heat-producing means at selected instants of time to produce a desired record of said signals on said film.

4,205,388

TAXIMETER

Jack Steiner, Laval, Canada, assignor to Centrodyne Corporation, Montreal, Canada

Filed Jul. 18, 1977, Ser. No. 816,296
Int. Cl.² G07B *13/10*
U.S. Cl. 364—900 3 Claims



1. A processor for an electronic taximeter comprising:
(A) a computer loop including:
(1) a RAM having a plurality of updatable data storage locations therein accessible by a like plurality of addresses;
(2) a DATA ROM having a plurality of preset data storage locations therein accessible by a like plurality of addresses;
(3) a BCD adder receiving inputs from both said RAM and said DATA ROM to add the contents of predetermined storage locations of both;
(4) a PROGRAM ROM whose output is fed to said DATA ROM; and
(5) a latch receiving the output of said BCD adder and feeding an input of said RAM to thereby update said RAM with updated data from said BCD adder;
(B) input multiplexer means fed to said DATA ROM;
(C) means for addressing said RAM, said PROGRAM ROM, and cycling said input multiplexer means, said means comprising;
(1) clock means; and
(2) electronic counter means; and
(D) function circuit means including said counter and connected to said clock means for signalling taximeter functions such as HIRED and TIME OFF;
wherein, all calculations are performed in said computer loop.

4,205,389

APPARATUS FOR GENERATING A RASTER IMAGE FROM LINE SEGMENTS

Robert A. Heartz, Deland, Fla., assignor to General Electric Company, Philadelphia, Pa.

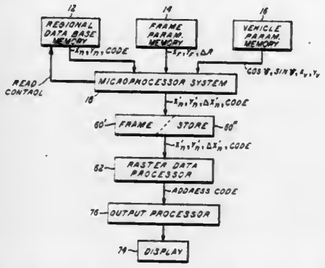
Continuation-in-part of Ser. No. 726,304, Sep. 24, 1976, abandoned. This application Mar. 15, 1978, Ser. No. 886,974
Int. Cl.² G06F *3/14*
U.S. Cl. 364—900 4 Claims

1. A digital display generator of the type wherein data, including stored data words describing characteristics of line segments utilizable to construct a predefined image, is processed to produce a digital control signal employed to effect presentation of a selected portion of said image on a raster

display, said line segments including line vectors representative of elongated features of said image and boundary vectors identifying boundaries between image areas of different brightness, each of said data words including X,Y coordinate data for defining the location of the end points of one of said line segments and a code defining either the intensity of said line segment if it is a line vector, or the brightness of the image areas on opposite sides of said line segment if it is a boundary vector, said generator comprising:

(a) a decision unit for selecting all of said stored data words describing line segments having an end point within said selected portion of the image;

(b) a processor unit for performing predefined macrosteps, including arithmetic manipulations on the data words selected by the decision unit, said manipulations including determining the change ΔX of X, where ΔX is the change per ΔY of each line segment described by said detected



data words and where ΔY is the distance between adjacent raster lines;

(c) a frame memory for storing said selected data words and data representative of ΔX determined by said processor unit;

(d) comparator means for reading all data in the frame memory prior to presentation of each raster line by the raster display and detecting all data words in said frame memory which describe line segments intersecting the raster line;

(e) means responsive to the codes included in the detected words to produce the digital control signal; and

(f) updating means adapted to substitute for the the X-coordinate X_n of each of said stored words detected a new value $X_n+\Delta X_n$ to locate the intersection of the line segment described by said word with the raster line to be presented following that on which the intersection occurs at X_n.

4,205,390

ADDRESS CONVERTER

Kiyoshi Sakurai; Tateo Matsumoto, both of Hiratsuka, and Teruo Ishikawa, Yokohama, all of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 25, 1978, Ser. No. 945,444
Int. Cl.² G06F 5/00, 13/00
U.S. Cl. 364—900 **6 Claims**

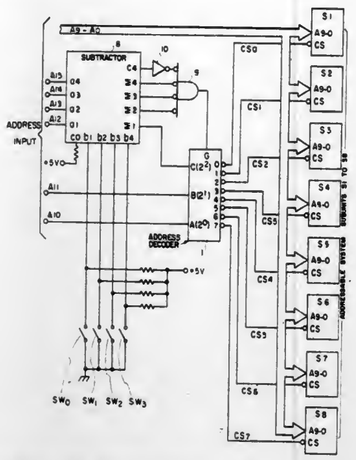
1. An address converter for decoding a multi-bit address comprising:

switching means for selectively supplying binary bit logic signals,

a subtraction circuit means connected to said switching means for subtracting bit information supplied by said switching means from a desired number of the most significant bit information in the address signal input to the subtractor circuit means,

an address-decode circuit means which receives as its input a first and a second output logic signal from said subtraction circuit and the intermediate order bit information in the address signal to produce one of a plurality of output signals as a decoded representation thereof, and

a plurality of system subunits each of which receives a respective output from said address-decode circuit means as



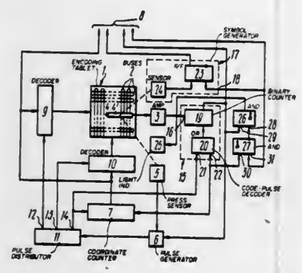
well as all of the remaining least significant bit information to access one of said subunits.

4,205,391

DEVICE FOR ENCODING AND INPUTTING TO COMPUTER ALPHABETIC AND TOPOLOGICALLY REPRESENTED GRAPHIC DATA THAT DESCRIBES, IN PARTICULAR, STRUCTURAL FORMULAE OF CHEMICAL COMPOUNDS

Gennady P. Ulyanov, and Anatoly R. Maslov, both of Novosibirsk, U.S.S.R., assignors to Novosibirsky Institut Organicheskoi Khimii Sibirskogo Otdelenia Akademii Nauk SSR, Novosibirsk, U.S.S.R.

Filed Jun. 9, 1978, Ser. No. 914,213
Claims priority, application U.S.S.R., Jun. 20, 1977, 2497583
Int. Cl.² G06F 3/14
U.S. Cl. 364—900 **10 Claims**



1. A device for encoding and inputting to a computer via a computer communication line alphabetic and topologically represented graphic data that describes, in particular, structural formulae of chemical compounds, said device comprising:

an encoding tablet incorporating coordinate buses made in the form of linearly extended induction coils, arranged as a rectangular grid for establishing a flux of electromagnetic energy so as to generate the coordinates of input data;

a coordinate counter having outputs, a counting input and a reset input;

two coordinate decoders each having data inputs and an output;

said outputs of said coordinate counter, coupled to a computer communcation line and to said data inputs of said coordinate decoders;

said outputs of said coordinate decoders, coupled to said coordinate buses of said encoding tablet;

a coordinate pickup having a housing for converting said flux of electromagnetic energy from said coordinate buses of said encoding tablet into electrical signals;

an amplifier disposed within said housing of said coordinate pickup and having an input and an output;

said coordinate pickup coupled to said input of said amplifier;

a pressure sensor disposed in said housing of said coordinate pickup, said pressure sensor having an output;

a pulse generator having a trigger input, a blocking input and an output;

said trigger input of said pulse generator, coupled to said output of said pressure sensor;

a changeable encoding form divided into two zones as follows: a zone in which the topological patterns of graphic input data, of the type including topological patterns of structural formulae of chemical compounds, are encoded, and another zone in which randomly selected data, of the type including names of atoms, structural fragments and various types of interatomic chemical bonds, is encoded; said changeable encoding form having a coordinate grid formed with a preselected spacing interval selected such that there is a sufficient area to accommodate at the adjacent nodal points of said coordinate grid the representations of the elements of graphic input data, which may be the adjacent tie points of structural formulae;

a pulse distributor having an input and a plurality of outputs, said input of said pulse distributor being coupled to said output of said pulse generator to produce successive pulses at three of said plurality of outputs of said pulse distributor, said pulses being time-shifted with respect to one another by a time interval equal to the oscillation period of said pulse ge ierator;

first and second outputs of said three outputs of said pulse distributor, coupled to said inputs of said coordinate decoders which operate to strobe in a given succession the signals from said two outputs of said outputs of said pulse distributor and to excite in a pulsed manner respectively coordinate buses of said coordinate buses of said encoding tablet;

the third output of said three outputs of said pulse distributor, coupled to said counting input of said coordinate counter;

said reset input of said coordinate counter, coupled to said output of said pressure sensor;

a code-pulse decoder for selecting a pair of pulses from a train of input signals, which follow each other with a delay equal to the oscillation period of said pulse generator, and to form a control signal;

an input and an output of said code-pulse decoder, said input being coupled to said output of said amplifier, and said output being coupled to a blocking input of said pulse generator and to said computer communication line;

a beginning-of-line symbol generator disposed within said housing of said coordinate pickup for generating interrelation symbols concerned with the elements of graphic input data, one of said symbols representing a relationship between the tie points of structural formulae of chemical compounds; a data output and a reset input of said beginning-of-line symbol generator, said data output and said reset input being coupled to said computer communication line;

a changeable writing member arranged as part of said pressure sensor and of said beginning-of-line symbol generator and disposed within said housing of said coordinate pickup;

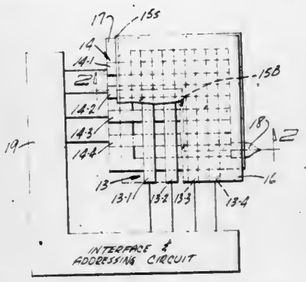
said amplifier, said changeable writing member, said beginning-of-line symbol generator which registers the displacement of said changeable writing member along its longitudinal axis, and said pressure sensor form altogether an electronic writing means which exercises control over the operation of the entire device so that the encoding and inputting to a computer of graphic data is performed concurrently with the representation of this data on said changeable encoding tablet.

4,205,392

GAS DISCHARGE DISPLAY DEVICE

Bernard W. Byrum, Jr., Toledo; Roger E. Ernsthausen, Luckey, and Michael E. Fein, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 293,555, Sep. 29, 1972, abandoned, which is a division of Ser. No. 210,093, Dec. 20, 1971, abandoned. This application Nov. 10, 1975, Ser. No. 630,587
Int. Cl.² G11C 11/28
U.S. Cl. 365—116 **29 Claims**



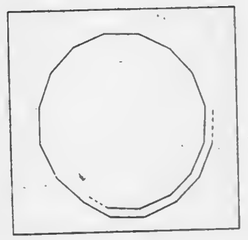
1. In a gas discharge device containing at least two electrodes defining a gas discharge site, at least one of the electrodes being insulated from the gas by a dielectric member, the improvement wherein the gas-contacting surface of at least one dielectric member contains a non-conductive inorganic oxide of at least one transition metal selected from the group consisting of Nb, Ta, Cr, Mn, Tc, Re, Fe, Ru, Os, Co, Rh, Ir, Pd, and Pt.

4,205,393

MAGNETIC DOMAIN STORAGE DEVICE

Herbert Henkler, Battenberg; Roland Koenig, Ludwigshafen; Hermann Deichelmann, Ludwigshafen, and Volker Koch, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,057
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712623
Int. Cl.² G11C 19/08
U.S. Cl. 365—133 **5 Claims**



1. A magnetic domain storage device comprising

(a) a ferromagnetic, polycrystalline metal layer which is applied to a support and comprises areas of different coercivity, the areas of lower coercivity in the form of strip-

shaped channels being surrounded by areas of higher coercivity,

(b) a system of electrical conductors, extending in planes arranged parallel and in close vicinity to the support, for creating, propagating and detecting magnetic domains in the channels of low coercivity, and

(c) a baseplate with electrical connections,

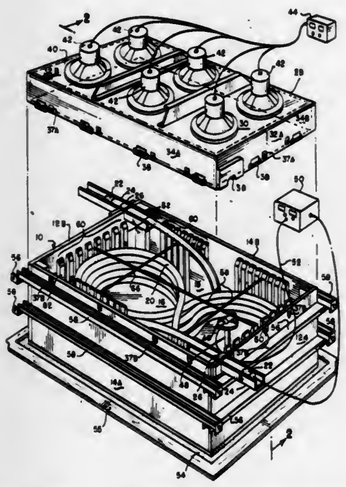
the areas of lower coercivity being in the form of channels which follow a quasi-spiral path on the support, with one end adjacent to the center of the support and the other end adjacent to a corner of the support and executing at least one full 360° turn.

4,205,394

SEALED CAVITY HYDROPHONE ARRAY CALIBRATION

George O. Pickens, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 3, 1978, Ser. No. 957,391
Int. Cl.² H04R 29/00
U.S. Cl. 367—13 **12 Claims**



1. Apparatus for calibrating an elongated array of electrically interconnected hydrophones over a range of acoustic signal frequencies having lower and upper frequency limits comprising:

means for simultaneously enclosing all of the hydrophones of said elongated array in a single sealed cavity containing a selected fluid;

means for projecting an acoustic signal of a frequency selected from said frequency range into said sealed cavity to generate an array response signal which represents the combined individual responses of said enclosed hydrophones to said projected acoustic signal;

reference hydrophone means contained within said sealed cavity for generating a reference signal in response to said projected acoustic signal; and

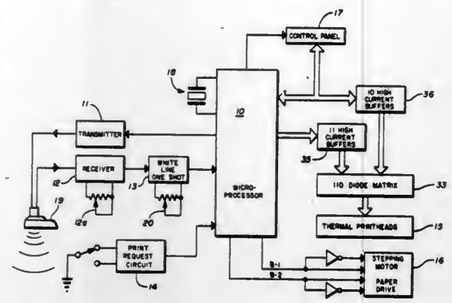
means coupled to said reference hydrophone means for enabling a selected characteristic of said reference signal to be compared with the same characteristic of said array response signal.

4,205,395

DEPTH RECORDER

Edward J. Shortridge, Coral Gables, Fla., assignor to Shakespeare Marine Electronics, Inc., Miami, Fla.

Filed Nov. 8, 1978, Ser. No. 958,743
Int. Cl.² G01S 9/70, 7/60
U.S. Cl. 367—115 **7 Claims**



1. An aquatic depth recorder system comprising, in combination, means for producing high frequency sound impulses and periodically transmitting said impulses through the water at predetermined time intervals, means for receiving high frequency sound impulses (echoes) reflected from a number of reflecting objects, means for producing return signals which are each coincident in time to one of said high frequency sound impulses, means for producing a predetermined clock frequency, thermally-sensitive paper strip chart recorder means, said strip chart recorder means comprising a plurality of heat-producing resistors arranged in a straight line transversely of the direction of movement of strip chart paper to be recorded on, electrical current drive means for selectively energizing said heat-producing resistors, said thermally-sensitive paper strip chart recorder means comprising drive means for step-wisely advancing the strip chart paper, a microprocessor, manually adjustable function control means for said microprocessor, said microprocessor being programmed: (a) to key the periodic transmission of said high frequency sound impulses producing means, (b) measure the time elapsed between the transmission of the high frequency sound impulse and the reception of the reflected sound impulse (echo), (c) store such elapsed time in memory, (d) decode such time intervals into printing format, (e) read said manual function control means, (f) control the energization of said strip chart paper step-wise drive means and, (g) to selectively activate said electrical current drive means for said heat-producing resistors, all at a rate related to said clock frequency, for periodically printing values of said return signals on said strip chart paper between said step-wise movements thereof, said plurality of heat-producing resistors comprising ten groups of eleven heat-producing resistors each, and said electrical drive means for selectively energizing said heat-producing resistors comprising multiplexed individual resistor group and individual group resistor signal pathways.

4,205,396

AUTOMATIC DIFAR CARDIOID FORMER

Cabell N. Pryor, Jr., Silver Spring, Md., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1975, Ser. No. 565,291
Int. Cl.² G01S 3/80
U.S. Cl. 367—125 **2 Claims**

1. An automatic cardioid former comprising:

a signal source;

a first hydrophone for detecting directional signal $f_1(t)$ of said signal source;

a second hydrophone for detecting directional signal $f_2(t)$ of said signal source, said $f_2(t)$ signal perpendicular to $f_1(t)$;

a third hydrophone for detecting omnidirectional signal $f_0(t)$ of said signal source;

means for summing $f_0(t)$ with signal $a_1f_1(t)$ and $a_2f_2(t)$ to provide a signal $f_c(t)$, wherein a_1 and a_2 are gain constants;

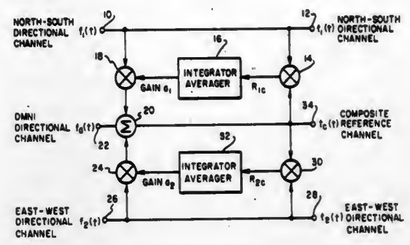
means for multiplying $f_1(t)$ with $f_c(t)$ to provide a first multiplied signal;

means for integrating the average of said first multiplied signal to provide a gain a_1;

means for multiplying said gain a_1 with directional signal $f_1(t)$ to provide said $a_1f_1(t)$ signal;

means for multiplying $f_2(t)$ with $f_c(t)$ to provide a second multiplied signal;

means for integrating the average of said second multiplied signal to provide a gain a_2; and



means for multiplying said gain a_2 with directional signal $f_2(t)$ to provide said $a_2f_2(t)$ signal.

DESIGN PATENTS

GRANTED MAY 27, 1980

ERRATA

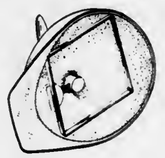
For CLASS	See PATENT NO.
D26-035	255,167

255,056
ATHLETIC PROTECTIVE SHIRT OR SIMILAR ARTICLE
Roger C. Parsons, 1349 S. State St., Hobart, Ind. 46342
Filed Jun. 7, 1978, Ser. No. 913,527
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27

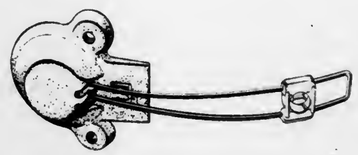


255,057
SOLAR CAP
Rees D. Walker, 722 Golfcrest, San Antonio, Tex. 78239
Filed Dec. 19, 1978, Ser. No. 971,068
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—250





255,058
SUPPORT FOR EAR PROTECTOR
Bo G. Lönnstedt, Kvarnbergsvägen 23, S-141 45 Huddinge, Sweden
Filed Apr. 20, 1978, Ser. No. 898,492
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—259



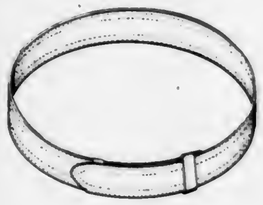
255,059
SIDE PATTERN FOR FOOTWEAR
Thomas J. Riley, Norwell, Mass., assignor to Ry-Co Corporation, Hingham, Mass.
Filed Apr. 14, 1978, Ser. No. 889,887
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



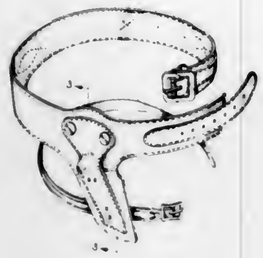
255,060
INSOLE
Kyozo Okazawa, San Francisco, Calif., assignor to Okazawa U.S.A. Inc., San Francisco, Calif.
Filed Aug. 7, 1978, Ser. No. 931,814
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—318



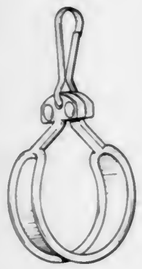
255,061
BUCKLELESS BELT
Richard D. E. Nichols, 813 Cozy Ct., Fallbrook, Calif. 92028
Filed Jan. 7, 1977, Ser. No. 757,643
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—380



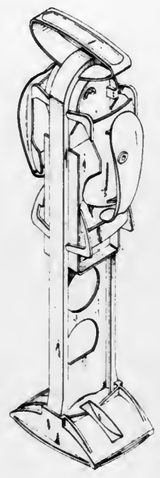
255,062
COMPETITION GUN BELT FOR SUPPORTING GUN BOOTS
Ernie H. Hill, and Ernest H. Hill, both of 4547 N. 51st Ave., Phoenix, Ariz. 85031
Filed Feb. 21, 1978, Ser. No. 879,711
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—381



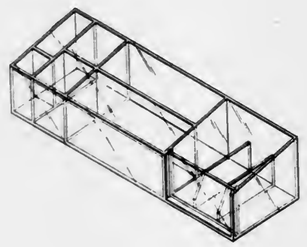
255,063
GOLF BALL HOLDER
Isaac B. Houston, 14 Cachet Parkway, R.R. #1, Unionville, Canada
Filed May 30, 1978, Ser. No. 910,585
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400



255,064
COMBINED CARRYING AND RETAINING DEVICE FOR SHOES
Ivor J. Allsop, 2079 N. Shore Rd., Bellingham, Wash. 98225
Filed Nov. 3, 1977, Ser. No. 848,099
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—36



255,065
COMPARTMENTED TRAY FOR STORING COSMETICS AND THE LIKE
Frank S. Salacuse, 710 Park Ave., New York, N.Y. 10021
Filed Jan. 18, 1978, Ser. No. 4,423
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D3—39



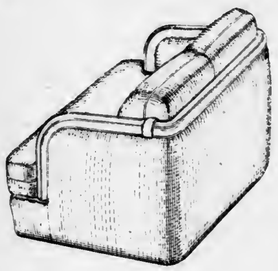
255,066
COMBINED KEY RING AND CLIP LOCK FOR HOLDING A GAS PUMP TRIGGER IN THE OPEN POSITION
Gregory S. Hadgis, 14078 Zaremba Dr., Brookpark, Ohio 44142
Filed Apr. 23, 1979, Ser. No. 32,717
Term of patent 14 years
Int. Cl. D3—*01*; D6—*08*; D8—*08*; D15—*02*; D23—*01*
U.S. Cl. D3—62



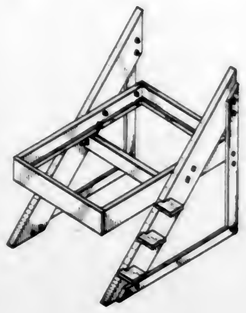
255,067
TELEPHONE BOOTH
Glen H. Furnell, 10112 E. Butte, Mesa, Ariz. 85207
Filed Nov. 16, 1978, Ser. No. 961,391
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D6—25



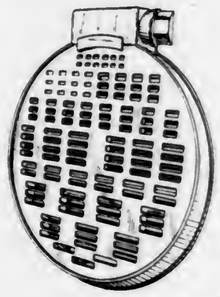
255,068
SEAT OR SIMILAR ARTICLE
Robert A. Gera, and Mary Ann Gera, both of Glencoe, Ill., assignors to Kroehler Mfg. Co., Naperville, Ill.
Filed Mar. 24, 1978, Ser. No. 890,090
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



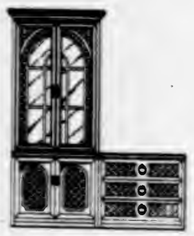
255,069
BEDSTEAD
William J. Wierdo, 801 W. Oakland Park Blvd., Ft. Lauderdale, Fla. 33311
Filed Apr. 8, 1977, Ser. No. 785,853
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—84



255,070
HOSE CLAMP DISPLAY RACK
Case J. Slaga, Hinsdale, and Douglas Nelson, Broadview, both of Ill., assignors to Advertising Metal Display Co., Chicago, Ill.
Filed Nov. 3, 1977, Ser. No. 848,370
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—114



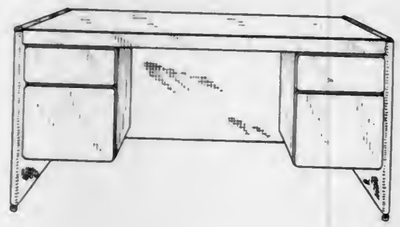
255,071
CABINET OR SIMILAR ARTICLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Dec. 12, 1977, Ser. No. 859,986
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



255,072
BREAKFRONT OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Dec. 12, 1977, Ser. No. 859,987
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



255,073
DESK
Otto W. Zapf, Eschborn, Fed. Rep. of Germany, assignor to Knoll International, Inc., Greenwich, Conn.
Division of Ser. No. 751,881, Dec. 17, 1976. This application Nov. 13, 1978, Ser. No. 960,045
Claims priority, application Switzerland, Jun. 22, 1976, 63313/76
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



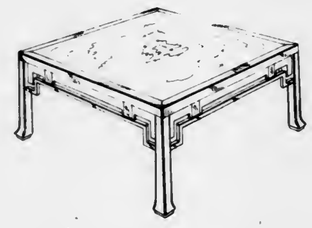
255,074
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Dec. 12, 1977, Ser. No. 859,731
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



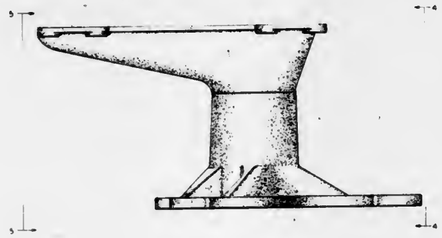
255,075
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Dec. 12, 1977, Ser. No. 859,978
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



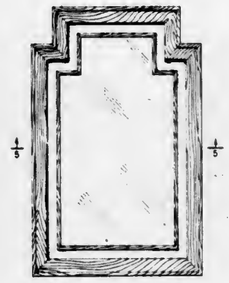
255,076
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Dec. 12, 1977, Ser. No. 859,540
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



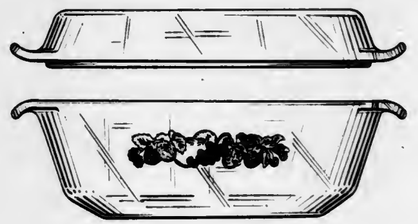
255,077
BASE FOR A VAN SEAT
Luis R. Garza, San Antonio, Tex., and Francis A. Tedesco, Chicago, Ill., assignors to Lifetime Foam Products, Inc., Franklin Park, Ill.
Filed Apr. 6, 1978, Ser. No. 894,232
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



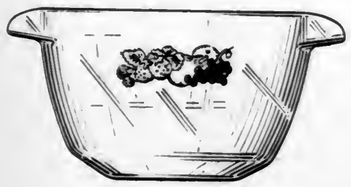
255,078
MIRROR OR THE LIKE
John Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,195
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—241



255,079
COMBINED DECAL AND GLASS RECEPTACLE
Peter A. Gobleck, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Mar. 15, 1976, Ser. No. 666,794
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—3



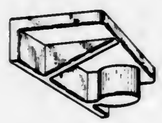
255,080
COMBINED DECAL AND GLASS RECEPTACLE
Peter A. Gobleck, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 666,794, Mar. 15, 1976. This application Jul. 17, 1978, Ser. No. 925,414
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—3



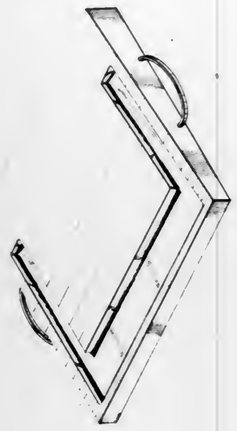


255,081
UTILITY TRAY
Lorin A. Ramorini, Vallecito, Calif., assignor to Fuzere Manufacturing Co., Inc., Sunnyvale, Calif.
Filed Jun. 17, 1977, Ser. No. 807,426
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—38





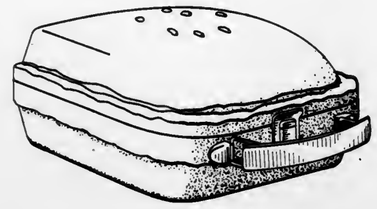
255,082
CARVING BOARD
John R. Barrera, 17 Gorham St., Middlebury, Vt. 05753
Filed Mar. 22, 1978, Ser. No. 889,121
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—46



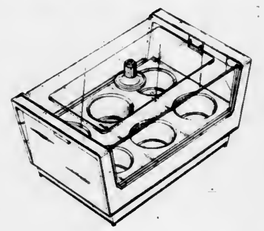
255,083
NAPKIN RING
Gerald P. Kott, New York, N.Y., assignor to Groundworks, Inc., New York, N.Y.
Filed Dec. 29, 1977, Ser. No. 865,720
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—72



255,084
LUNCHBOX
Ross J. Petrie, Fort Lauderdale, Fla., assignor to Cachet Designs, Inc., Miami, Fla.
Filed Feb. 21, 1978, Ser. No. 879,791
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—76



255,085
YOGURT MAKER
John H. Free, West Bend, Wis., and David L. Painter, Glenview, Ill., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 22, 1977, Ser. No. 863,272
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—94

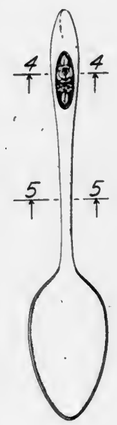




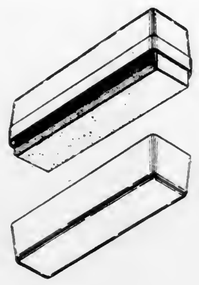
255,086
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jan. 30, 1978, Ser. No. 873,397
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—150



255,087
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Mar. 3, 1978, Ser. No. 883,335
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—150



255,088
GRAMOPHONE RECORD CLEANING DEVICE
Philip B. Arbib, Hemel Hempstead, England, assignor to Bib Hi-Fi Accessories Ltd., a British Company of Kelsey House, Hemelo Hempstead, England
Filed Mar. 10, 1978, Ser. No. 886,914
Claims priority, application United Kingdom, Oct. 6, 1977, 981808/77
Term of patent 14 years
Int. Cl. D7—*05*; D4—*01*
U.S. Cl. D7—161

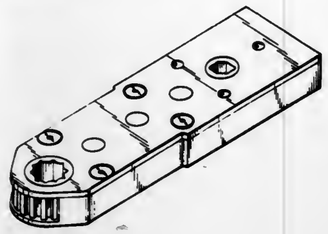


255,089
FLORAL STEM STRIPPER OR SIMILAR ARTICLE
George A. Walker, Middlebury, Conn., assignor to Talley Industries, Inc., Mesa, Ariz.
Filed Oct. 12, 1977, Ser. No. 841,641
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—4





255,090
WRENCH
Alfred V. Dacunto, Cheshire, Conn., assignor to Brimatco Corporation, Cheshire, Conn.
Filed Sep. 14, 1977, Ser. No. 833,380
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21



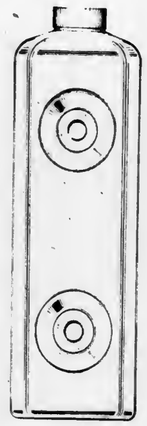
255,091
HANDLE FOR SCREW DRIVERS OR THE LIKE
Bernhard Kanold, Mikaelivagen 10, S-433 00, Partille, Sweden
Filed May 2, 1977, Ser. No. 793,155
Claims priority, application Sweden, Nov. 5, 1976, 76-2123
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—83



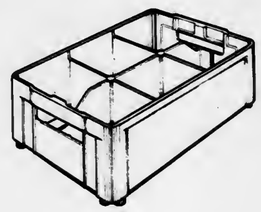
255,092
COMBINED VIAL AND SUPPORTING BASE
Johnson N. S. Wong, 2910 Palos Verdes Dr. North, Rolling Hills, Calif. 90724
Filed Nov. 18, 1976, Ser. No. 742,934
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—12



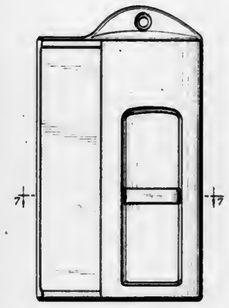
255,093
BOTTLE
Philip F. Hartung, 655 Main St., Greenwich, R.I. 02818, and John J. Tramonti, 142 Smith St., Warwick, R.I. 02886
Filed Jun. 21, 1977, Ser. No. 808,492
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168



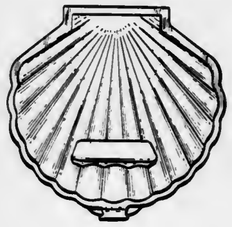
255,094
BOTTLE CASE
William V. Wright, 2412 Cloister Dr., Charlotte, N.C. 28204
Filed Jun. 15, 1977, Ser. No. 806,913
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—177



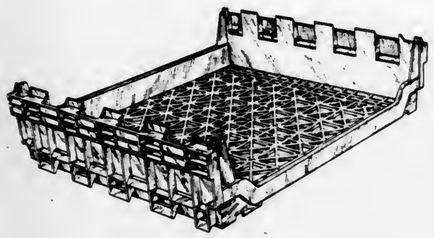
255,095
COMBINED DISPLAY PACKAGE AND ADVERTISING HOLDER
John J. Scalice, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Jan. 25, 1978, Ser. No. 872,014
Term of patent 14 years
Int. Cl. D9—*03*; D20—*02*
U.S. Cl. D9—191



255,096
TAKEOUT FOOD CONTAINER
Doris C. Etelson, Pomona, N.Y., assignor to Howard Johnson Company, Braintree, Mass.
Division of Ser. No. 792,481, Apr. 29, 1977. This application Feb. 5, 1979, Ser. No. 13,451
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



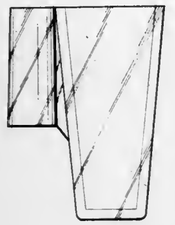
255,097
BAKERY TRAY OR THE LIKE
James C. Carroll, Hopkinsville, Ky., and Lewis T. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 3, 1978, Ser. No. 892,796
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—248



255,098
ACTUATOR CAP FOR PRESSURIZED CONTAINER OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., and Ralph E. Kruck, Clinton, Conn., assignors to Ethyl Products Company, Baton Rouge, La.
Filed Mar. 22, 1978, Ser. No. 889,104
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—258

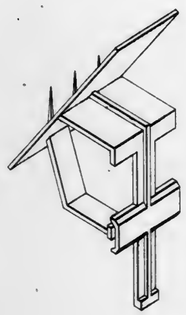


255,099
DISPLAY CARD HOLDER FOR A NAIL POLISH BOTTLE OR THE LIKE
Robert Borsuk, Old Bridge; Jerry Crandall, Montvale, both of N.J., and David Koslow, New York, N.Y., assignors to Revlon, Inc., New York, N.Y.
Filed Oct. 3, 1977, Ser. No. 839,283
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—261





255,100
PAINT BRUSH PROP
George E. Filice, 1028 Windsor, Lafayette, Calif. 94549
Filed Sep. 19, 1977, Ser. No. 834,549
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—289



255,101
ELECTRIC CLOCK
Donald J. Booty, 513 Durham Dr., Frankfort, Ill. 60423
Filed Jan. 16, 1978, Ser. No. 869,931
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

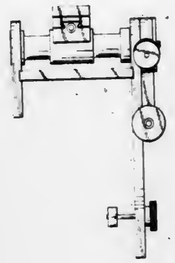


255,102
HOUSEHOLD WATER LEAK INDICATOR
Preston Ross, 307 S. Quincy, Commerce, Okla. 74339
Filed Oct. 31, 1977, Ser. No. 847,303
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—46

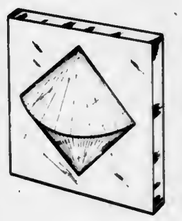
255,103
ROOM THERMOSTAT OR SIMILAR ARTICLE
Norbert T. Wolfe, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 25, 1977, Ser. No. 845,175
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—51



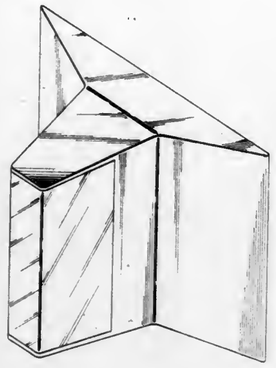
255,104
ACCESSORY MOUNT FOR THEODOLITE
Thomas N. Haidek, 11709 Century Dr., Oklahoma City, Okla. 73160
Filed Sep. 19, 1977, Ser. No. 834,312
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—74



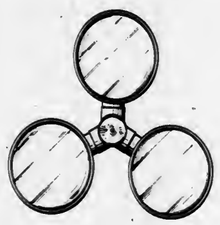
255,105
UP AND DOWN DIRECTIONAL SIGNAL FOR AN ELEVATOR
Pekka Perjo, Helsinki, Finland, assignor to Kone Osakeyhtio, Helsinki, Finland
Filed Apr. 10, 1978, Ser. No. 895,868
Claims priority, application Finland, Dec. 8, 1977, 77731
Term of patent 14 years
Int. Cl. D10—*06*; D26—*05*
U.S. Cl. D10—108



255,106
INDICATOR LAMP ASSEMBLY
Frederick F. Bodenrader, Georgetown, Mass., and John F. Gilleo, Jr., Kwajalein, Trust Ter. Pacific Isl., assignors to GTE Syivania Incorporated, Stamford, Conn.
Filed Feb. 16, 1978, Ser. No. 878,234
Term of patent 14 years
Int. Cl. D10—*06;* D26—*05*
U.S. Cl. D10—114



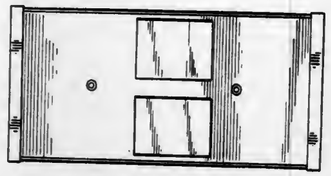
255,107
EMERGENCY VEHICLE WARNING LIGHT
Richard V. Slepetz, 722 Park Ave., Herndon, Va. 22070
Filed Apr. 12, 1978, Ser. No. 895,875
Term of patent 14 years
Int. Cl. D10—*06;* D26—*06*
U.S. Cl. D10—114



255,108
WATCHSTRAP
Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,764
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



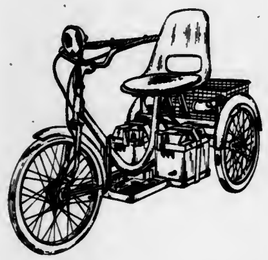
255,109
LIVE POULTRY TRANSFER STATION
Gary L. Squier, P.O. Box 231, Gaylord, Minn. 55334
Continuation-in-part of Ser. No. 508,191, Sep. 23, 1974, Pat. No. Des. 243,552. This application Feb. 28, 1977, Ser. No. 772,978
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



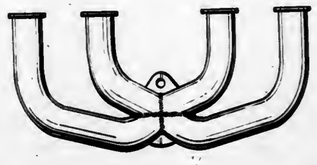
255,110
TRAILER
Robert J. Matthews, 5425 Myers Ct., Sioux City, Iowa 51106
Filed Sep. 29, 1977, Ser. No. 837,668
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—105



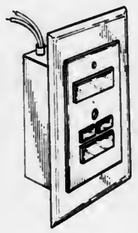
255,111
ELECTRIC POWERED TRICYCLE
Jack P. Palmer, 509 Paden St., Endicott, N.Y. 13760
Filed May 30, 1978, Ser. No. 910,663
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



255,112
ENGINE EXHAUST HEADER PIPE UNIT
Steven B. Alexander, Anaheim, Calif., assignor to American Turbo-Pak, Inc., Santa Ana, Calif.
Filed Oct. 16, 1978, Ser. No. 951,357
Term of patent 14 years
Int. Cl. D12—*11;* D15—*1*
U.S. Cl. D12—194



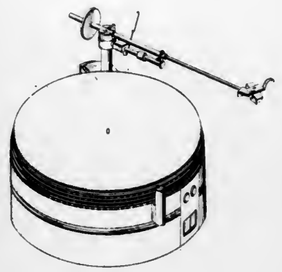
255,113
ELECTRIC POWER LOAD CONTROLLER
Hugh R. Pease, Saratoga, and Malcolm L. Stadtmiller, San Jose, both of Calif., assignors to Hutec Corporation, San Jose, Calif.
Filed Nov. 11, 1977, Ser. No. 850,603
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—11



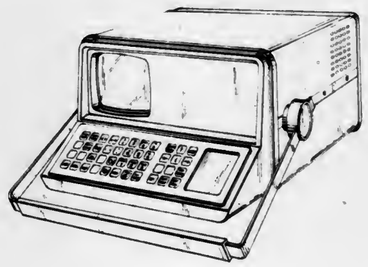
255,114
SNAP-IN SWITCH HOUSING
Wolfgang F. Bienwald, Melville, and Anthony Tufano, Rosedale, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.N.Y.
Filed Mar. 5, 1979, Ser. No. 17,511
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



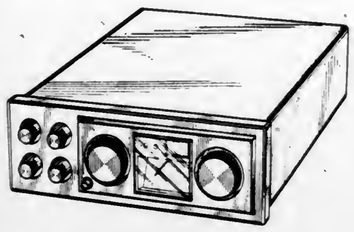
255,115
TURNTABLE
Cary L. Christie, 1027 Crosby, Simi Valley, Calif. 93065
Filed Jun. 3, 1977, Ser. No. 803,398
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—17



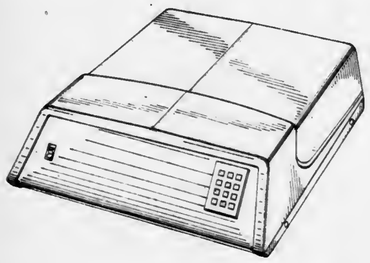
255,116
PORTABLE PROGRAMMER FOR PROGRAMMABLE CONTROLLER
John B. MacDonald, Boston, and Michael J. Mercadante, North Quincy, both of Mass., assignors to Gould Inc., Modicon Division, Andover, Mass.
Filed Mar. 3, 1978, Ser. No. 883,340
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—43



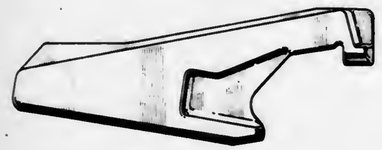
255,117
MOTOR VEHICULAR CITIZENS' BAND TRANSCEIVER
Kikuo Ohta, Katano, and Satoru Usami, Hurajata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jul. 20, 1977, Ser. No. 817,290
Claims priority, application Japan, Jan. 20, 1977, 52-1481
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



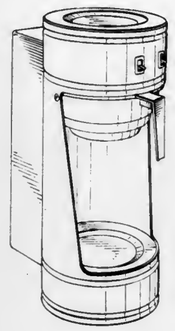
255,118
PAGING TERMINAL
William R. Van Horn, and James M. Longly, both of Lexington, Nebr., assignors to Reach Electronics, Inc., Lexington, Nebr.
Filed Dec. 28, 1978, Ser. No. 974,130
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



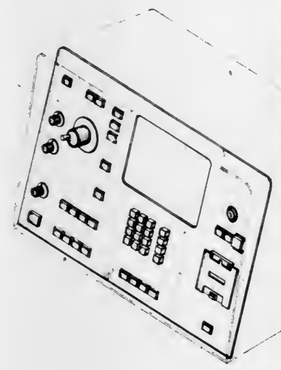
255,119
TOOTH FOR EXCAVATING EQUIPMENT
Jouko K. Korpi, Degerfors, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed Sep. 1, 1977, Ser. No. 829,838
Claims priority, application Sweden, Mar. 8, 1977, 77-0544
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—29



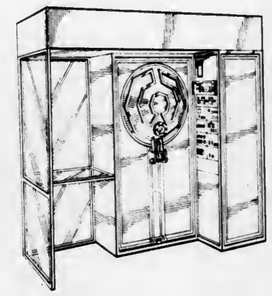
255,120
AUTOMATIC COFFEE MAKER
William M. Bardeau, 158 Norfinch Dr., Downsview, Ontario, Canada (M3N 1Y1)
Filed Mar. 14, 1978, Ser. No. 886,618
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—113



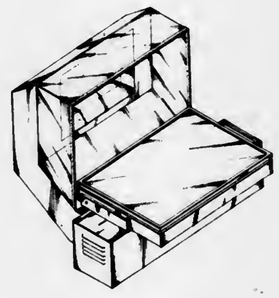
255,121
MILLING MACHINE CONTROL PANEL
Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Co., Inc., Indianapolis, Ind.
Filed Feb. 15, 1979, Ser. No. 12,398
Term of patent 14 years
Int. Cl. D14—*02*; D15—*09*
U.S. Cl. D15—138



255,122
VACUUM DEPOSITION APPARATUS
Gunard O. B. Mahl, San Francisco, Calif., assignor to Cha Industries, Menlo Park, Calif.
Filed Apr. 17, 1978, Ser. No. 896,901
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199



255,123
CONTACT PRINTING CABINET
Dennis C. Duerr, 3512 Iowa Trail, Frazier Park, Calif. 93225
Filed Aug. 8, 1977, Ser. No. 822,645
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—29



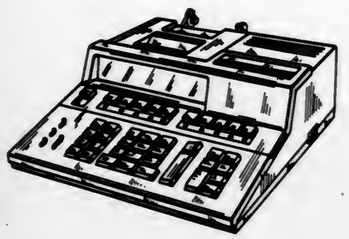
255,124
CALCULATING MACHINE
Yoshihisa Ohie, Osaka, Japan, assignor to Sharp Kabushiki Kaisha (Sharp Corp.), Osaka, Japan
Filed Feb. 16, 1978, Ser. No. 878,489
Claims priority, application Japan, Aug. 24, 1977, 52/33905
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



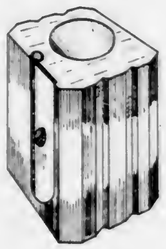
255,125
CALCULATING MACHINE
Shigetoshi Hazama, and Matafumi Ikeda, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corp.), Osaka, Japan
Filed Jun. 19, 1978, Ser. No. 916,872
Claims priority, application Japan, Dec. 27, 1977, 52/51933
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



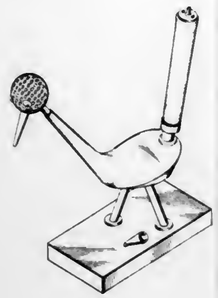
255,126
CALCULATING MACHINE
Yoshihisa Ohie, and Matafumi Ikeda, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corp.), Osaka, Japan
Filed Jun. 19, 1978, Ser. No. 917,030
Claims priority, application Japan, Jan. 6, 1978, 53/192
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



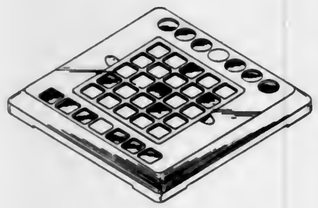
255,127
PENCIL SHARPENER
Werner Möbius, Hindenburgstrasse 77, Erlangen, Fed. Rep. of Germany
Filed Feb. 23, 1978, Ser. No. 880,349
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 7372
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—73



255,128
HOLDER FOR A WRITING INSTRUMENT OR SIMILAR ARTICLE
Kenneth Pirolozzi, 1834 N. Harvard Blvd., Hollywood, Calif. 90027
Filed May 30, 1978, Ser. No. 910,583
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—82



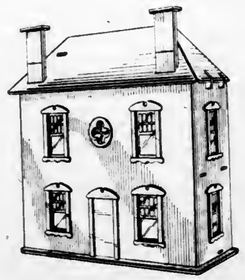
255,129
GAME BOARD
Ned Strongin, Baldwin, N.Y., assignor to CBS Inc., New York, N.Y.
Filed Mar. 13, 1978, Ser. No. 886,001
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—17



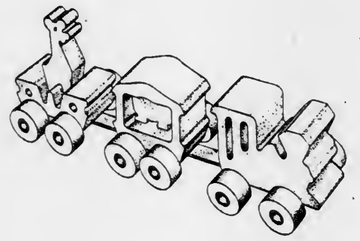
255,130
EXERCISE SUPPORT
Alfiero F. Balzano, 4333 Sunny La., Yorba Linda, Calif. 92686
Filed Jul. 22, 1977, Ser. No. 818,274
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191



255,131
TOY DOLL HOUSE
William D. Gordon, Sr., Glenview, Ill., assignor to Arvey Corporation, Chicago, Ill.
Filed Jun. 16, 1978, Ser. No. 916,050
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114



255,132
TOY CIRCUS TRAIN
Ralph M. Nowak, Marblehead, Mass., assignor to CPG Products Corp., Minneapolis, Minn.
Filed Jan. 23, 1978, Ser. No. 871,417
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—129



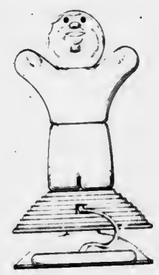
255,133
STUFFED ANIMAL TOY
Sheri Tingey, Moose, Wyo., assignor to The Freedom Zoo, Inc., Jackson, Wyo.
Filed Nov. 14, 1977, Ser. No. 850,979
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148



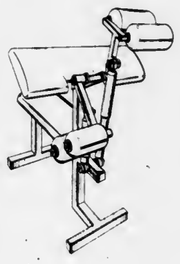
255,134
STUFFED ANIMAL TOY
Sheri Tingey, Moose, Wyo., assignor to The Freedom Zoo, Inc., Jackson, Wyo.
Filed Nov. 14, 1977, Ser. No. 850,980
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148



255,135
ANIMATE FIGURE TOY
Richard A. Chase, Baltimore, Md.; D. Michael Williams, Morin Heights, Canada, and Danny E. Simpson, Baltimore, Md., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Dec. 2, 1977, Ser. No. 856,888
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



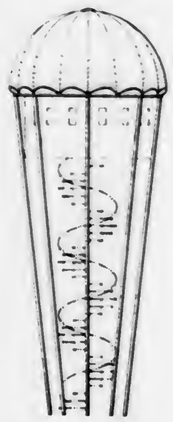
255,136
ARM CURL EXERCISING MACHINE
Jerry D. Brentham, 102 Elm Dr., Belton, Tex. 76513
Filed Jul. 11, 1977, Ser. No. 817,482
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



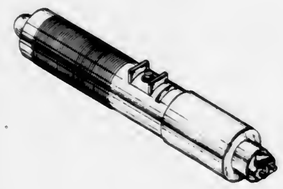
255,137
TABLE TENNIS PADDLE
John J. Bowen, 419 E. Chapman St., Ely, Minn. 55731
Filed Sep. 29, 1977, Ser. No. 838,119
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—213



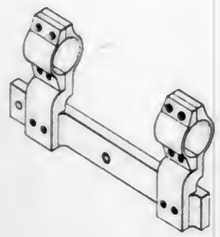
255,138
JUMP TOWER FOR AMUSEMENT RIDE
Gerald M. Sermersheim, Fort Wayne, Ind., assignor to Geronimo Trooper, Inc., Greenfield, Ind.
Filed Apr. 25, 1977, Ser. No. 790,765
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—242



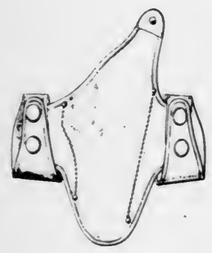
255,139
ELECTRIC BATON FOR LAW ENFORCEMENT PERSONNEL
James A. Smith, 1 Thayer Rd., Colorado Springs, Colo. 80906
Filed Sep. 26, 1977, Ser. No. 836,698
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



255,140
SIDE MOUNT FOR TELESCOPIC SIGHT
Gerald T. Weast, Detroit, Mich., assignor to John D. Vetter, Tulsa, Okla., a part interest
Filed Mar. 22, 1978, Ser. No. 889,106
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



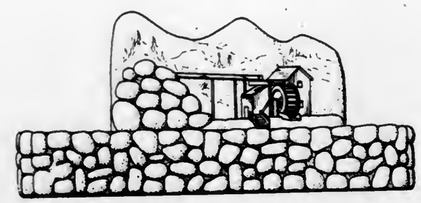
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HOLSTER
Earl J. Clark, Frederick, Md., assignor to Tandy Brands, Inc., Fort Worth, Tex.
Filed Jan. 12, 1978, Ser. No. 869,024
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13

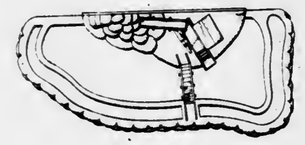


255,142
COMBINED WATERFALL AND GARDEN POND
Clarence F. Abbott, 2512 Whittier Dr., Davis, Calif. 95616
Filed May 3, 1978, Ser. No. 902,779
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—13

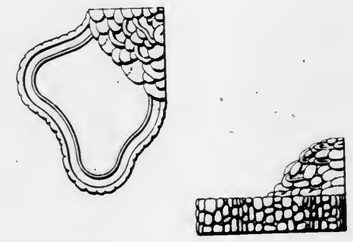


255,143
GARDEN POND
Clarence F. Abbott, 2512 Whittier Dr., Davis, Calif. 95616
Filed May 3, 1978, Ser. No. 902,784
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—13

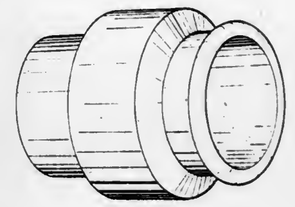




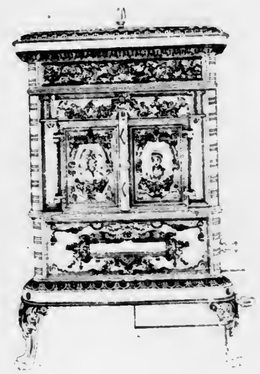
255,144
COMBINED WATERFALL AND GARDEN POND
Clarence F. Abbott, 2512 Whittier Dr., Davis, Calif. 95616
Filed May 3, 1978, Ser. No. 902,785
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—13



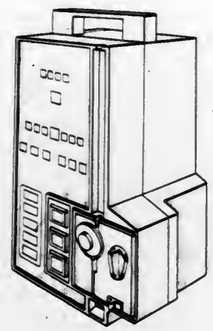
255,145
CONNECTION FITTING FOR TUBULAR CONDUITS
Bill P. P. Nederman, Haladid 3, S-252 33 Helsingborg, Sweden
Filed Apr. 11, 1977, Ser. No. 786,681
Claims priority, application Sweden, Oct. 21, 1976, 2040/76
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

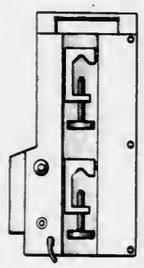


255,146
STOVE
Eugene Kuhl, Mertzwiller, France, assignor to De Dietrich & Cie, Niederbronn-les-Bains, France
Filed Feb. 17, 1978, Ser. No. 879,101
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—105

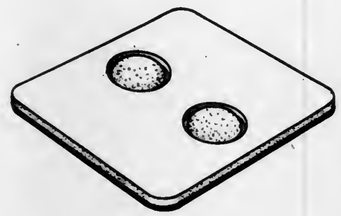


255,147
FLUID METERING APPARATUS
Thurman S. Jess, Mundelein, and Nicholas Zissimopoulos, Schaumburg, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Dec. 2, 1977, Ser. No. 857,047
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—8

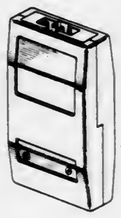




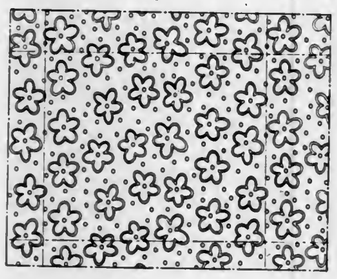
255,149
DUAL TERMINAL ELECTRODE FOR MEDICAL MONITORING
Albert J. Bevilacqua, Downers Grove, Ill., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Oct. 4, 1977, Ser. No. 839,265
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—29



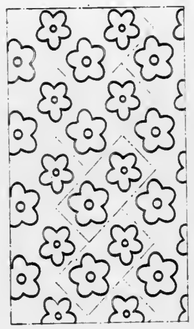
255,148
ELECTROSURGICAL CURRENT SUPPRESSOR
Earl F. Robinson; Rex O. Bare, both of Lawrence, and Wayne Hayob, Roeland Park, all of Kans., assignors to C. R. Bard, Inc., Murray Hill, N.J.
Filed Feb. 24, 1978, Ser. No. 881,153
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—8



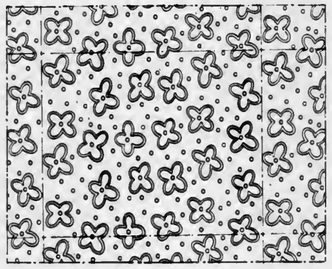
255,150
EMBOSSED PATTERNED SHEET OF MATERIAL FOR SANITARY NAPKINS
Paul S. Woon, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 3, 1977, Ser. No. 838,553
Term of patent 14 years
Int. Cl. D24—*04;* D5—*06*
U.S. Cl. D24—51



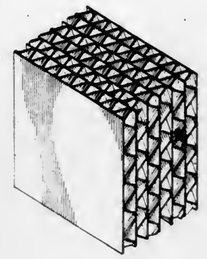
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EMBOSSED PATTERNED SHEET OF MATERIAL FOR SANITARY NAPKINS
Paul S. Woon, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 3, 1977, Ser. No. 838,554
Term of patent 14 years
Int. Cl. D24—*04;* D5—*06*
U.S. Cl. D24—51



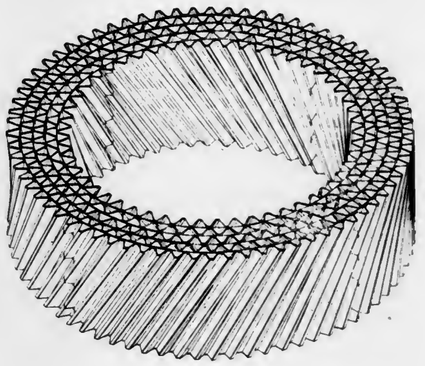
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EMBOSSED PATTERNED SHEET OF MATERIAL FOR SANITARY NAPKINS
Paul S. Woon, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 3, 1977, Ser. No. 839,220
Term of patent 14 years
Int. Cl. D24—*04;* D5—*06*
U.S. Cl. D24—51



255,153
TUBE SETTLER MODULE
Charles L. Meurer, 5937 E. Weaver Cir., Englewood, Colo. 80111
Filed Dec. 11, 1978, Ser. No. 967,997
Term of patent 14 years
Int. Cl. D24—*99;* D23—*01*
U.S. Cl. D24—99



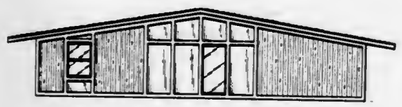
255,154
CIRCULAR TUBE SETTLER MODULE
Charles L. Meurer, 5937 E. Weaver Cir., Englewood, Colo. 80111
Filed Mar. 7, 1979, Ser. No. 18,427
Term of patent 14 years
Int. Cl. D24—*99;* D23—*01*
U.S. Cl. D24—99



255,155
CURVED TUBE SETTLER MODULE SECTION
Charles L. Meurer, 5937 E. Weaver Cir., Englewood, Colo. 80111
Filed Mar. 7, 1979, Ser. No. 18,428
Term of patent 14 years
Int. Cl. D24—*99*; D23—*01*
U.S. Cl. D24—99



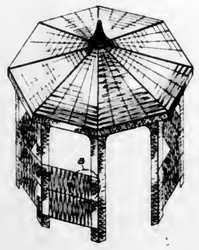
255,156
BUILDING
Monica P. Subtirelu, Columbus, Ohio, assignor to Cardinal Industries, Inc., Columbus, Ohio
Filed Jun. 5, 1978, Ser. No. 912,585
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



255,157
RESIDENTIAL BUILDING
Monica P. Subtirelu, Columbus, Ohio, assignor to Cardinal Industries, Inc., Columbus, Ohio
Filed Jun. 5, 1978, Ser. No. 912,586
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



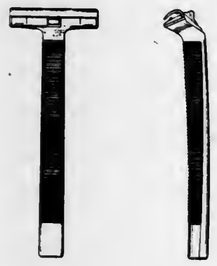
255,158
GAZEBO
Donald E. Hanaford, 4601 S. 35th St., Phoenix, Ariz. 85040
Filed Oct. 16, 1978, Ser. No. 951,467
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—23



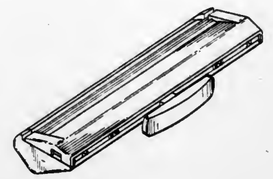
255,159
PORTABLE POST
James A. Selbee, Rte. 2, Box 301, Huntersville, N.C. 28078
Filed Jul. 18, 1977, Ser. No. 816,494
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—78



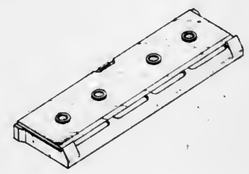
255,160
RAZOR
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 20, 1978, Ser. No. 888,515
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46



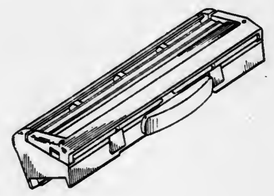
255,161
SAFETY RAZOR CARTRIDGE WITH CLEAN-OUT DEVICE
Evan N. Chen, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 15, 1978, Ser. No. 886,711
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—47



255,162
RAZOR BLADE ASSEMBLY
Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 24, 1978, Ser. No. 890,223
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—47



255,163
SAFETY RAZOR CARTRIDGE WITH CLEAN-OUT DEVICE
Evan N. Chen, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Sep. 27, 1978, Ser. No. 946,389
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—47



255,164
RAZOR HANDLE
David S. Byrne, Atlantic Highlands, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 11, 1978, Ser. No. 904,942
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—48



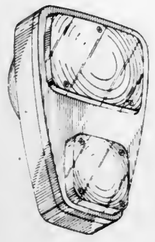
255,165
RAZOR HANDLE
David S. Byrne, Atlantic Highlands, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 11, 1978, Ser. No. 904,943
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—48



255,166
ELECTRIC SHAVER
Issao Ayukawa; Tamaki Takaoka, and Teruko Hayano, all of Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corp.), Osaka, Japan
Filed Mar. 20, 1978, Ser. No. 888,516
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—50



255,167
AUXILIARY LIGHT FOR VEHICLE HAVING ATTACHED PLOW BLADE
Vernon L. Hetrick, Fairview Park, Ohio, assignor to Meyer Products, Inc., Cleveland, Ohio
Filed Oct. 20, 1977, Ser. No. 843,896
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—35



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TO WHOM

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A. B. Dick Company: *See—*
Borneman, Lawrence A., 4,204,472, Cl. 101-426.000.
A. F. Dormeyer Manufacturing Co., Inc.: *See—*
Flentge, Robert W., 4,205,291, Cl. 336-92.000.
AB Scandinavian Energy Saving Co.: *See—*
Wikstrom, Axel T., 4,204,572, Cl. 165-95.000.
Abbott Laboratories: *See—*
Tadanier, John S.; Dunnigan, Daniel A.; Freiberg, Leslie A.; and Martin, Jerry R., 4,205,070, Cl. 424-180.000.
Abramov, Vsevolod V.: *See—*
Menshutin, Vasily P.; Akutin, Modest S.; Iovdalsky, Nikolai V.; Minakova, Alla N.; Zherebtsov, Evgeny R.; Sokolov, Anatoly D.; Abramov, Vsevolod V.; Melekhova, Galina D.; and Ustkachkintsev, Alexandr N., 4,205,030, Cl. 264-40.100.
Abumi, Takao: *See—*
Minoura, Nobuo; Matsumura, Isao; Yoshinaga, Yasukazu; Abumi, Takao; and Nakai, Kazuhiro, 4,205,347, Cl. 358-191.100.
ACF Chemiefarma N.V.: *See—*
Ladage, Cornelis A.; van Linge, Douwe J.; and van Riessen, Huibert A., 4,205,089, Cl. 424-365.000.
Acra Electric Corporation: *See—*
Hummel, Matt N., 4,204,316, Cl. 29-61.00N.
Acurex Corporation: *See—*
Kendall, Robert M.; Kesselring, John P.; and Krill, Wayne V., 4,204,829, Cl. 431-7.000.
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Knecht, Helmut, 4,204,465, Cl. 99-293.000.
Adams, Michael G., to Weyerhaeuser Company. Vase holder. 4,204,598, Cl. 206-426.000.
Agate, Robert N.: *See—*
Cisco, Thomas F.; Hansen, George E.; and Agate, Robert N., 4,204,916, Cl. 203-6.000.
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Bridoux, Edouard; Bruneel, Christian; Haine, Francis; and Thomin, Guy, 4,204,435, Cl. 73-626.000.
Cailliot, Serge, 4,204,964, Cl. 210-370.000.
AGFA-Gevaert, A.G.: *See—*
Bauer, Walter; Krobel; and Farber, 4,204,724, Cl. 354-281.000.
Hofstetter, Franz, 4,204,734, Cl. 355-68.000.
Kohler, Robert; Muller, Jorn; Gigiberger, Dieter; and Bestenreiner, Freidrich, 4,204,731, Cl. 355-16.000.
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Wurfel, Reinhart, 4,204,620, Cl. 226-91.000.
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Young, Morris S.; and Larbalestier, David C., 4,205,119, Cl. 428-614.000.
Airwick Industries, Inc.: *See—*
Hennart, Claude; Rabussier, Bernard; Mandon, Jean-Pierre; and Sapin, Joel, 4,205,066, Cl. 424-84.000.
Aisan Industry Co., Ltd.: *See—*
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Aktieselskabet Nordiske Kabel-og Traadfabriker: *See—*
Braad, Poul E.; Jensen, Knud B.; Rosendal, Hans; and Sevaldsen, Flemming, 4,204,415, Cl. 72-52.000.
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Menshutin, Vasily P.; Akutin, Modest S.; Iovdalsky, Nikolai V.; Minakova, Alla N.; Zherebtsov, Evgeny R.; Sokolov, Anatoly D.; Abramov, Vsevolod V.; Melekhova, Galina D.; and Ustkachkintsev, Alexandr N., 4,205,030, Cl. 264-40.100.
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Milliken, James W., Jr., 4,204,383, Cl. 56-10.200.
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Leyva, Rodolfo M.; and Allison, James E., Jr., 4,204,499, Cl. 119-5.000.
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Rouse, John W.; and Payne, Archibald H., 4,204,641, Cl. 239-121.000.
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Desai, Kishor A., 4,204,994, Cl. 260-174.000.
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Goodman, Richard M., 4,205,143, Cl. 525-213.000.
Shepherd, Robert G., 4,205,085, Cl. 424-309.000.
Streetman, William E.; and Daftary, Shashikumar H., 4,205,039, Cl. 264-206.000.
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Beluzzi, James D.; McGregor, William H.; and Stein, Larry, 4,205,069, Cl. 424-177.000.
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Wagner, Daniel B.; Pick, Anthony J.; and Feingers, Judith, 4,205,058, Cl. 424-1.000.
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Hall Jr., Harleston J.; Sassin, Roger I.; and Yuhas, Drew J., 4,204,681, Cl. 273-73.00C.

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Moorer, Howard H.; and Anderegg, Charles M., 4,204,877, Cl. 106-90.000.

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Moser, Theo; Andra Rolf; Rittler, Roland; and Strampfer, Armin, 4,204,951, Cl. 209-625.000.

Antholz, Phillip: *See—*
Swarthout, E. Jack; and Antholz, Phillip, 4,204,983, Cl. 260-17.4GC.

Anthony, Kevin E.: *See—*
Fraser, Donald B.; Dim, Alexander; Anthony, Kevin E.; Costello, Wayne R.; and Grazier, Phillip E., 4,204,922, Cl. 204-105.00R.

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Kobayashi, Shuji; Aoyagi, Mitsuo; Kanno, Tominori; Ueno, Kazuei; and Nomura, Shin-ichi, 4,205,098, Cl. 427-76.000.

Aoyama, Tokuichi: *See—*
Nakagawa, Itsusuke; and Aoyama, Tokuichi, 4,204,486, Cl. 123-41.600.

Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, to Ohbayashi-Gumi, Ltd.; Daicel Ltd.; and Fujisawa Pharmaceutical Co., Ltd. Exposed aggregate finishing method for concrete. 4,205,040, Cl. 264-233.000.

Araki, Yoshitaka: *See—*
Toyoda, Kenji; Araki, Yoshitaka; and Watanabe, Sakuji, 4,204,755, Cl. 354-36.000.

Araya, Takeshi; and Udagawa, Tsugio, to Hitachi, Ltd.; and Hitachi Seiko Ltd. Automatic weld line copying apparatus. 4,205,217, Cl. 219-124.340.

Arbit, Harold A.: *See—*
Canterino, Peter J.; and Arbit, Harold A., 4,205,114, Cl. 428-315.000.

Ardac, Inc.: *See—*
Iannadrea, Gerald; Gorgone, Robert L.; and Kovach, Alan J., 4,204,765, Cl. 356-71.000.

Arendt, Henry P.: *See—*
Holland, Warren E.; Burley, James D.; and Arendt, Henry P., 4,204,690, Cl. 277-27.000.

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Arnold Engineering Company, The: *See—*
Winn, Clarence W., 4,204,317, Cl. 29-827.000.

Arroyo Research and Consulting Company: *See—*
Kaelble, David H., 4,204,325, Cl. 433-9.000.

Arts, Jerold F.; Owen, William L., Jr.; and Tull, Bernie D., Jr., to Western Electric Company, Inc. Radio signal safety facilities for controlling the operation of a work fabricating device. 4,205,239, Cl. 307-328.000.

Arvidson, Bo R.: *See—*
Wechsler, Ionel; Oberteuffer, John A.; Nolan, John J.; Kolm, Henry H.; Georgelis, Eric; and Arvidson, Bo R., 4,204,948, Cl. 209-223.00R.

Asahi Glass Company, Limited: *See—*
Kozuka, Mikio, 4,204,644, Cl. 239-220.000.

Asahi Medical Co., Ltd.: *See—*
Yamakoshi, Kenichi, 4,204,545, Cl. 128-693.000.

Asaka, Urataro: *See—*
Tsuboi, Masaharu; and Asaka, Urataro, 4,204,585, Cl. 180-219.000.

Asano, Kazuhiro; Ueda, Makoto; Torisawa, Akira; Shida, Masaharu; Satoh, Katsuhiko; and Mandai, Masaaki, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,204,397, Cl. 368-202.000.

Asano, Kazuhiro, to Kabushiki Kaisha Daini Seikosha. Voltage dropping circuit. 4,205,369, Cl. 363-62.000.

Asano, Takeshi: *See—*
Sakamoto, Koji; Asano, Takeshi; Mizuochi, Kazuo; and Sasaki, Kanemichi, 4,205,081, Cl. 424-279.000.

Asanuma, Katsumi; and Mogi, Shigeru, to Fuji Photo Film Co., Ltd. Format film selecting device. 4,204,754, Cl. 353-116.000.

Atherton, John H.; Dobson, Derrick C.; Hodgkinson, Ian; and Clarke, John R. P., to Imperial Chemical Industries Limited. Method of analysis. 4,204,838, Cl. 23-230.00R.

Atlantic Richfield Company: *See—*
Yoo, Jin S.; Burk, Emmett H., Jr.; and Karch, John A., 4,204,840, Cl. 44-1.0SR.

Atlas Copco Aktiebolag: *See—*
Lavon, Erik V., 4,204,715, Cl. 299-16.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Harlfinger, Rudolf; Ehehalt, Theobald; and Kappes, Alfred, 4,204,924, Cl. 204-129.350.

Aufderhaar, Ernst; Gallay, Jean J.; Kuhne, Manfred; Meyer, Alfred; Rechsteiner, Oswald; Schellenbaum, Max; and Fumeaux, Jean-Paul, to Ciba-Geigy Corporation. Benzimidazole sulphides as anthelmintic agents. 4,205,077, Cl. 424-273.00B.

August Lepper, Maschinen-U. Apparatebau GmbH: *See—*
Muller, Franz, 4,204,339, Cl. 34-75.000.

Auracher, Franz; Zeitler, Karl-Heinz; and Rauscher, Walter, to Siemens Aktiengesellschaft. Process for producing a device for coupling two light conducting fiber cables. 4,204,310, Cl. 29-445.000.

Averyanov, Sergei V.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Averyanova, Lidia A.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Avicon, Inc.: *See—*
Cruz, Mamerto M., Jr., 4,204,992, Cl. 260-123.700.

AVM Corporation: *See—*
Sheppard, William L., 4,204,812, Cl. 417-395.000.

Axen, Udo F., to Upjohn Company, The. 6-Keto prostaglandin E-type compounds. 4,205,178, Cl. 560-121.000.

B.F.G. Glassgroup: *See—*
Hubert, Francois; Laurent, Michel; and Leger, Lucien, 4,204,721, Cl. 316-19.000.

Baba, Toshihiko: *See—*
Suzuki, Takao; Komatsu, Yoshimasa; Takeda, Akimichi; and Baba, Toshihiko, 4,205,214, Cl. 219-97.000.

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Babbco, Ltd.: *See—*
Babb, Burton A., 4,205,205, Cl. 179-115.50R.

Babcock-BSH Aktiengesellschaft vormals Buttner-Schilde-Haas AG: *See—*
Roos, Friedrich; and Bahner, Friedrich, 4,204,337, Cl. 34-31.000.

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Norton, Frank E., 4,204,305, Cl. 29-157.400.

Bachot, Jean; Bouy, Pierre; and Juillard, Michel, to Rhone-Poulenc Industries. Method of making porous plastic diaphragms and the resulting novel diaphragms. 4,204,938, Cl. 204-252.000.

Baer, Massimo, to Monsanto Company. Flame retardant resin compositions. 4,205,142, Cl. 525-166.000.

Bahner, Friedrich: *See—*
Roos, Friedrich; and Bahner, Friedrich, 4,204,337, Cl. 34-31.000.

Baird, James C.; and Warfield, Glenn R., to Procter & Gamble Company, The. Texturizing and steam deflavoring soy protein with high-speed turbine mixing. 4,205,094, Cl. 426-459.000.

Bakach, Joseph: *See—*
McMann, Renville H., Jr.; and Bakach, Joseph, 4,205,310, Cl. 340-750.000.

Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A. Method of testing objects for random actions thereon and digital simulator-computer system for effecting same. 4,205,383, Cl. 364-554.000.

Baker, Don R., to Stauffer Chemical Company. Diphenyl ether carbamates. 4,204,858, Cl. 71-111.000.

Balasubramanian, N., to Recognition Systems, Inc. Optical measuring system. 4,204,772, Cl. 356-376.000.

Baldwin, Brian C.; Shephard, Margaret C.; and Skidmore, Anthony M., to Imperial Chemical Industries Limited. Processes and composition for combating fungi. 4,205,075, Cl. 424-269.000.

Balfour, Lawrence H. Gasoline spill preventing apparatus. 4,204,564, Cl. 141-311.00A.

Ballast-Nedam Groep N.V., Amsterdamse Ballast Bagger en Grond (Amsterdam Ballast/Dredging) B.V. and Banegbo B.V.: *See—*
Wolters, Tjako A., 4,204,347, Cl. 37-67.000.

Baltek Corporation: *See—*
Kohn, Jean, 4,204,900, Cl. 156-255.000.

Bando Chemical Industries, Ltd.: *See—*
Akiyama, Osamu, 4,205,137, Cl. 521-145.000.

Bannister, Alan S. Tubewell screen filters. 4,204,967, Cl. 210-459.000.

Banno, Hirokazu. Roller of a synthetic resin used for a belt-conveyor. 4,204,594, Cl. 198-827.000.

Banno, Taichi: *See—*
Yamamoto, Tadao; Takekawa, Hiroshi; Banno, Taichi; and Koshiishi, Kiyozo, 4,204,917, Cl. 204-1.00T.

Barber, Donald T.; and Scrymgeour, Thomas C., to Datafile Limited. Coded label. 4,204,639, Cl. 235-462.000.

Bardsley, Henry, III; Luiz, Fernando A.; Nilsen, Nils F.; and Simpson, Ronald C., to International Business Machines Corporation. Method and means for CPU recovery of non-logged data from a storage subsystem subject to selective resets. 4,205,374, Cl. 364-200.000.

Barker, Joseph: *See—*
Gunn, Christopher J.; and Barker, Joseph, 4,204,624, Cl. 227-45.000.

Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., to Imperial Chemical Industries Limited. Electro-

coating process for producing a semiconducting film. 4,204,933, Cl. 204-181.00N.

Barner, Richard; and Hubscher, Joseph, to Hoffmann-La Roche Inc. Cholestane derivatives. 4,204,995, Cl. 260-239.55C.

Barnhart, Carl F., to International Business Machines Corporation. Performing arithmetic using indirect digital-to-analog conversion. 4,205,303, Cl. 340-347.0DA.

Barr, Iain G.: *See—*
Pike, Marshall; Barr, Iain G.; and Tirtiaux, Florent, 4,205,095, Cl. 426-607.000.

Barrett, James H., to Independent Television Companies Association. Television system transmitting enciphered data signals during field blanking interval. 4,205,343, Cl. 358-147.000.

Barsuhn, Horst E.; Olderdissen, Ulrich; and Schmidt, Werner, to International Business Machines Corporation. Storing partial words in memory. 4,204,634, Cl. 371-38.000.

Bartell, Jeffrey M.; and D'Elia, Robert V., to Goodyear Tire & Rubber Company, The. Method and apparatus for splicing hose. 4,204,897, Cl. 156-155.000.

Barton, Lester C.; Butler, Gene R.; and Butler, L. Dennis, to Sperry Rand Corporation. Bale alignment device. 4,204,791, Cl. 414-36.000.

Barton, Richard E.; Fultz, Jack V.; Narahara, Yoshiyasu; and Shebanow, Michael S. Disk drive unit incorporating a field-replaceable fixed disk assembly. 4,205,357, Cl. 360-135.000.

Barzynski, Helmut; Hartmann, Heinrich; Lautenbach, Dieter; Osterloh, Rolf; Goethlich, Lutz; and Heil, Guenter, to BASF Aktiengesellschaft. Curable coating composition. 4,205,139, Cl. 525-38.000.

BASF Aktiengesellschaft: *See—*
Barzynski, Helmut; Hartmann, Heinrich; Lautenbach, Dieter; Osterloh, Rolf; Goethlich, Lutz; and Heil, Guenter, 4,205,139, Cl. 525-38.000.
Henkler, Herbert; Koenig, Roland; Deichelmann, Hermann; and Koch, Volker, 4,205,393, Cl. 365-133.000.
Naarmann, Herbert; McKee, Graham E.; and Schmitt, Burghard, 4,205,144, Cl. 525-273.000.

BASF Wyandotte Corporation: *See—*
Britton, Wayne E.; and Krumpelt, Michael, 4,204,921, Cl. 204-98.000.

Basham, Dean V., to Tyrone Hydraulics, Inc. Regenerative drive system. 4,204,405, Cl. 60-371.000.

Bates, Leonard T., to Winget Limited. Mixing means. 4,204,773, Cl. 366-18.000.

Batjukov, Vladimir I.: *See—*
Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V., 4,204,910, Cl. 176-30.000.

Bauer, Walter; Krobel; and Farber, to AGFA-Gevaert, A.G. Film cassette with anti-shock latching means. 4,204,724, Cl. 354-281.000.

Baughn, Milton J.: *See—*
Baughn, William E.; Williams, Kenneth R.; and McAlister, M. Khristian, 4,204,663, Cl. 254-88.000.

Baughn, William E.; Williams, Kenneth R.; and McAlister, M. Khristian, to Baughn, Milton J. Apparatus for lifting a reel. 4,204,663, Cl. 254-88.000.

Baxter, Bobby G., to Binkley Company, The. Trailer for lifting and transporting round bales of hay. 4,204,790, Cl. 414-24.500.

Baxter Travenol Laboratories, Inc.: *See—*
Bischof, Daniel F.; and Munsch, John M., 4,204,963, Cl. 210-321.00B.
Shim, Norman; and Knigge, Vincent L., 4,205,238, Cl. 235-92.0CT.

Bayer Aktiengesellschaft: *See—*
Daahn, Gahn, 4,205,062, Cl. 424-66.000.
Liebig, Lothar; Wingler, Frank; Margotte, Dieter; and Nouvertne, Werner, 4,205,140, Cl. 525-67.000.
Liebig, Lothar; Wingler, Frank; Humme, Gert; and Prinz, Richard, 4,205,141, Cl. 525-67.000.
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,205,159, Cl. 528-338.000.
Muller, Hanns P.; and Wagner, Kuno, 4,205,138, Cl. 521-158.000.

Baylor, John M., to J. I. Case Company. Track joint with a thrust ring and a seal ring. 4,204,716, Cl. 305-11.000.

BBC Brown Boveri & Company Limited: *See—*
Hani, August; Horler, Hansulrich; and Ursprung, Hans, 4,204,586, Cl. 181-229.000.
Melton, Keith N.; and Mercier, Olivier, 4,205,293, Cl. 337-140.000.
Woodger, Andrew, 4,204,804, Cl. 415-219.00R.

Beale, John H.; and Moss, Ernest K., to Celotex Corporation, The. Closed cell phenolic foam. 4,205,135, Cl. 521-116.000.

Bearden, Roby, Jr.: *See—*
Metrailer, William J.; Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,204,943, Cl. 208-50.000.

Beauchamp, Gerson E., to DeSoto, Inc. Calcium oxide or hydroxide to improve the charge acceptance of electrographic dielectric resins. 4,204,971, Cl. 252-63.500.

Beck, Hans W.: *See—*
Spits, Raymond; and Beck, Hans W., 4,204,782, Cl. 408-3.000.

Becker, Willi, to Heidelberger Druckmaschinen Aktiengesellschaft. Printing machine transfer drum adjustable to variable sheet lengths. 4,204,471, Cl. 101-410.000.

Beckman Instruments, Inc.: *See—*
Franklin, Robert C., 4,205,261, Cl. 318-480.000.
Hong, Anita L., 4,205,183, Cl. 562-401.000.
Smith, Leland B.; and Loeb, Phillip J., 4,204,546, Cl. 128-731.000.
Sternberg, James C.; and Lillig, John E., 4,204,837, Cl. 23-230.00B.

Beecham Group Limited: *See—*
Cole, Martin; Hood, John D.; and Butterworth, Dennis, 4,205,067, Cl. 424-114.000.
Rogers, Norman H.; and O'Hanlon, Peter J., 4,205,002, Cl. 260-345.80R.

Beer, Reinhard: *See—*
United States of America, National Aeronautics and Space Administration; and Beer, Reinhard, 4,205,229, Cl. 250-352.000.

Bein, Thomas W., to United States of America, Navy. Discharge and pressure relief ports for mechanisms with involute shaped vanes. 4,204,816, Cl. 418-15.000.

Bell Telephone Laboratories, Incorporated: *See—*
Cox, Herbert M., 4,204,893, Cl. 148-175.000.
Dingle, Raymond; Gossard, Arthur C.; Petroff, Pierre M.; and Wiegmann, William, 4,205,329, Cl. 357-16.000.

Bellhouse, Brian J.; and Williams, William G., to National Research Development Corporation. Prosthetic valve. 4,204,283, Cl. 3-1.500.

Beluzzi, James D.; McGregor, William H.; and Stein, Larry, to American Home Products Corporation. Dipeptide narcotic antagonists. 4,205,069, Cl. 424-177.000.

Bendix Corporation, The: *See—*
Casey, Gary L.; and Hurlong, Granville, Jr., 4,204,507, Cl. 123-139.0AW.
Taig, Alistair G., 4,204,554, Cl. 137-101.000.

Bens, Frederick P., to Kolene Corp. Method for improving and article having improved wear resistance. 4,204,886, Cl. 148-15.500.

Bentall, Simon W., to Hilary Page "Sensible" Toys Limited. Segmental walking toy. 4,204,360, Cl. 46-98.000.

Bentele, Benedikt; and Hecht, Gert, to Siemens Aktiengesellschaft. Multistage side channel compressor. 4,204,800, Cl. 415-53.00T.

Berg, Erik E.; and Tingwall, Rolf, to Ingersoll Steel Company. Method of conditioning cast steel for hot working. 4,204,884, Cl. 148-2.000.

Berger, Walter: *See—*
Seifert, Dieter; Regler, Dieter; Ofenmacher, Volker; Moritz, Alfred; Freudlsperger, August; and Berger, Walter, 4,204,515, Cl. 125-16.00R.

Bergmann, Ewald; and Kottmann, Alfred, to L. Schuler GmbH. Device for conveying, stacking, and packing aligned laminations of electrical machines. 4,204,380, Cl. 53-520.000.

Bergwerksverband GmbH: *See—*
Kroger, Carl; Romey, Ingo; and Kolling, Georg, 4,205,035, Cl. 264-120.000.
Romey, Ingo; Schlutter, Aloys; and Sommerfeld, Rolf, 4,204,986, Cl. 260-28.5AS.

Bernard, Walter J.: *See—*
Randall, John J., Jr.; and Bernard, Walter J., 4,204,919, Cl. 204-29.000.

Berrecloth, Alan H. T.: *See—*
Hayward, Terence J.; and Berrecloth, Alan H. T., 4,204,553, Cl. 137-82.000.

Bestenreiner, Freidrich: *See—*
Kohler, Robert; Muller, Jorn; Gigiberger, Dieter; and Bestenreiner, Freidrich, 4,204,731, Cl. 355-16.000.

Beutler, Robert R., to Motorola, Inc. CMOS Low current RC oscillator. 4,205,279, Cl. 331-111.000.

Beyer, Douglas E.: *See—*
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,205,016, Cl. 260-665.00R.

Bianchi, Giuseppe; deNora, Oronzio; and Spaziante, Placido M., to Oronzio deNora Impianti Elettrochimici S.p.A. Novel electrolytic amalgam denuder apparatus. 4,204,937, Cl. 204-219.000.

Biasotti, Joseph B.; Dorn, Peter; Herbstman, Sheldon; and Dille, Kenneth L., to Texaco Inc. Detergent gasoline composition. 4,204,841, Cl. 44-71.000.

Bier, Milan, to University Patents, Inc. Isoelectric focusing method. 4,204,929, Cl. 204-180.00R.

Bikbau, Marsel Y.: *See—*
Nudelman, Boris I.; Bikbau, Marsel Y.; Oborin, Pavel A.; and Kuznetsova, Tamara V., 4,204,878, Cl. 106-104.000.

Bilbrey, Robert A.; Munroe, William O.; and Powell, David G., to California Controls Company. Hydraulic safety mechanism. 4,204,513, Cl. 123-198.0DB.

Binaris, Christopher; Volz, Patricia S.; and Ohidy, Joseph. Tattooing device. 4,204,438, Cl. 81-9.220.

Bing, Valentijn B.; and Neis, Donald A., to Zenith Radio Corporation. Method for terminating an electrical resistor for a television CRT. 4,204,302, Cl. 29-25.130.

Binkley Company, The: *See—*
Baxter, Bobby G., 4,204,790, Cl. 414-24.500.

Biron, Raymond J.: *See—*
Peckinpaugh, Frank L.; and Biron, Raymond J., 4,204,828, Cl. 425-72.00S.

Bischof, Daniel F.; and Munsch, John M., to Baxter Travenol Laboratories, Inc. Sealing members for a membrane diffusion device. 4,204,963, Cl. 210-321.00B.

Bishop, Jack. Terminal pin insertion device. 4,204,319, Cl. 29-739.000.

Bitterli, William W.: *See—*
Games, John E.; Bitterli, William W.; and Healey, David M., 4,205,381, Cl. 364-505.000.

Bittle, L. Dalton. Golf hole cutter guide. 4,204,577, Cl. 172-25.000.

Bjornson, Geir, to Phillips Petroleum Company. Hydrodehydroxylation process using a rhenium-fluorided alumina catalyst. 4,205,017, Cl. 585-469.000.

Blackburn, Tom L., to GTE Automatic Electric Laboratories, Incorporated. Method and apparatus of controlling bias voltage in regulating amplifiers. 4,205,275, Cl. 330-279.000.

Blackburne, Robin M. Rackets. 4,204,680, Cl. 273-73.00D.

Blackwood, John; and Iannarone, Ronald, to Singer Company, The. Sewing machine bed extension latch. 4,204,493, Cl. 112-260.000.

Blake, Jon R., to General Mills, Inc. Food product containing orange citrus juice vessicle solids. 4,205,093, Cl. 426-333.000.

Blanchard, Clarence E., to Outboard Marine Corporation. Folding propeller. 4,204,806, Cl. 416-134.00R.

Blanton, William A., Jr.: *See—*
Flanders, Robert L.; and Blanton, William A., Jr., 4,204,944, Cl. 208-120.000.
Flanders, Robert L.; and Blanton, William A., Jr., 4,204,945, Cl. 208-120.000.

Blaupunkt-Werke GmbH: *See—*
Schindler, Bernd, 4,205,259, Cl. 315-408.000.

Blazey, Richard N., to Eastman Kodak Company. DC Biased stylus for electrostatic recording. 4,205,321, Cl. 346-153.000.

Bleiweiss, Arthur F.; Cotoara, Dumitru; and Willkes, Robert J., to Dominion Auto Accessories Limited. Emergency warning lamp. 4,205,366, Cl. 362-35.000.

Blessing, Hubert, to Levi Strauss & Co. Apparatus for hemming fabric pieces. 4,204,492, Cl. 112-121.290.

Bloomingdale, Jack W. Safety plug clip. 4,204,723, Cl. 339-36.000.

Blount, David H. Process for the production of poly(allyl halide amine silicate) reaction products. 4,205,155, Cl. 528-28.000.

Blum, Julian J.; and Thralls, Don J. W. Method and multi-layer label having pressure-sensitive mark transfer system. 4,204,706, Cl. 283-21.000.

Blundell, Kenneth, to P. H. Thermal Products Limited. Pipe insulation. 4,205,105, Cl. 428-36.000.

Bock, Erich, to Schubert & Salzer. Method and device for the production of a wrapped yarn. 4,204,392, Cl. 57-18.000.

Bodenseewerk Perkin-Elmer & Co. GmbH: *See—*
Tamm, Rolf; Tomoff, Toma; and Huber, Bernhard, 4,204,430, Cl. 73-423.00A.
Tomoff, Toma, 4,204,770, Cl. 356-312.000.

Bodig, Bernd: *See—*
Jundt, Werner; Bodig, Bernd; Roozenbeek, Herman; and Werner, Peter, 4,204,508, Cl. 123-148.00E.

Bohm, Howard A.: *See—*
Monsimer, Harold G.; and Bohm, Howard A., 4,205,060, Cl. 424-14.000.

Boie, Immo: *See—*
Kuffner, Karl; Lassig, Wolfgang; Meier, Ernst; Boie, Immo; Kirchhoff, Gertrud; Haseler, Helmut; and Stark, Herbert, 4,204,867, Cl. 430-376.000.

Bokros, Jack C.; Shim, Hong S.; and Haubold, Axel D., to CarboMedics, Inc. Multistrand carbon coated sutures. 4,204,542, Cl. 128-335.500.

Boliden Aktiebolag: *See—*
Petersson, Stig A.; and Eriksson, Bengt S., 4,204,861, Cl. 75-73.000.

Bolie, Victor W. Vertical axis wind turbine. 4,204,805, Cl. 416-119.000.

Bolt, Richard A. Implantable artificial sphincter. 4,204,282, Cl. 3-1.000.

Bonnamour, Yves B., to Southwire Company. Method of prolonging the life of a rotary casting machine band. 4,204,568, Cl. 164-87.000.

Boos, Charles J.; Hausler, Elwood B.; Hirsch, James A.; Kasprzyk, Martin R.; and Smith, Elmer G., to Carborundum Company, The. Fuel ignitor comprising a novel silicon carbide composition. 4,205,363, Cl. 361-264.000.

Borg-Warner Corporation: *See—*
Cohen, Murray S.; Noltes, Jan G.; and van Koten, Gerard, 4,205,191, Cl. 585-250.000.

Borneman, Lawrence A., to A. B. Dick Company. Duplexing copying system. 4,204,472, Cl. 101-426.000.

Borodin, Ivan V.: *See—*
Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V., 4,204,910, Cl. 176-30.000.

Bortzfield, Jon L.: *See—*
Loker, W. Aleck; Bortzfield, Jon L.; Chard, Steven D.; Hall, John W.; and Meredith, John T., 4,204,589, Cl. 192-27.000.

Bosco, Armand, to Garrett Corporation, The. Bearing assembly. 4,204,718, Cl. 308-15.000.

Bosman, Aleidus G. Spooling machine. 4,204,649, Cl. 242-43.00R.

Boston, David R., to Minnesota Mining and Manufacturing Company. Salt compound comprised of a ferricyanide anion and a protonated nitrogen-substituted hydrocarbon compound cation, and a stable solution thereof. 4,204,868, Cl. 430-461.000.

Bott, John P., to United States of America, Navy. Dual speed fluid control apparatus. 4,204,552, Cl. 137-81.00A.

Botthof, Ferdinand: *See—*
Westernacher, Helmut; Schimpff, Peter; and Botthof, Ferdinand, 4,205,045, Cl. 422-192.000.

Bouchou, Paul; Nigoghossian, Claude; and Sillioc, Guy, to Compagnie d'le Electronique et de Piezo-Electricite. Electrical frequency filter comprising piezoelectric crystals. 4,205,284, Cl. 333-189.000.

Boulton, Thomas W.; and Darwent, Brian J., to Imperial Chemical Industries Limited. Diaphragm cell. 4,204,939, Cl. 204-258.000.

Bourcet, Patrice: *See—*
Pujolle, Jean; and Bourcet, Patrice, 4,204,432, Cl. 73-599.000.

Bouy, Pierre: *See—*
Bachot, Jean; Bouy, Pierre; and Juillard, Michel, 4,204,938, Cl. 204-252.000.

Bowden, Alan P., to M. Hamburger & Sons, Inc. Cement coloring composition and method of producing same. 4,204,876, Cl. 106-90.000.

Bowden, Roy D.; and Seaton, Thomas, to Imperial Chemical Industries Limited. Chlorination process. 4,205,175, Cl. 546-345.000.

Bowling, William M. Fuel delivery system. 4,204,506, Cl. 123-137.000.

Boyle, Malachy V.; and Ouyang, Mid, to General Electric Company. Bus structure comprising an insulating support and a coated electric bus bar. 4,205,198, Cl. 174-171.000.

Braad, Poul E.; Jensen, Knud B.; Rosendal, Hans; and Sevaldsen, Flemming, to Aktieselskabet Nordiske Kabel-og Traadfabriker. Process and apparatus for continuously transforming a strip to an elongated pipe. 4,204,415, Cl. 72-52.000.

Bradley, Virginia R. Sock. 4,204,345, Cl. 36-97.000.

Brammerlo, Allen A., to General Electric Company. Prime mover and methods. 4,205,247, Cl. 310-256.000.

Brandenstein, Manfred: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,204,717, Cl. 308-6.00C.

Branzburg, Elena Z.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Braud, Societe Anonyme: *See—*
Delfosse, Gilbert, 4,204,389, Cl. 56-330.000.

Braytenbah, Andrew, to Westinghouse Electric Corp. System and method for operating a steam turbine with digital computer control with accelerating setpoint change. 4,205,380, Cl. 364-494.000.

Breger, Alexandr K.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Breguet, Jean-Luc, to Ebauches S.A. Watch. 4,204,396, Cl. 368-287.000.

Brenholt, David L., to Donaldson Company, Inc. Self-cleaning air filter. 4,204,846, Cl. 55-272.000.

Brenner, Abner. Mounting for photographs or the like. 4,204,350, Cl. 40-155.000.

Brenner, John A.: *See—*
Brueggemann, Walter H.; and Brenner, John A., 4,205,028, Cl. 264-24.000.

Brewster, Robert W.: *See—*
Warren, Lyle D.; and Brewster, Robert W., 4,204,798, Cl. 414-750.000.

Bridges, Stuart A., to Rolls-Royce Limited. Brush seal and a method of manufacture. 4,204,629, Cl. 228-160.000.

Bridgestone Tire Company Limited: *See—*
Ohashi, Takashi; Kojima, Minoru; Yoshida, Masako; Okuyama, Toru; and Sakata, Ryozo, 4,205,136, Cl. 521-118.000.

Bridoux, Edouard; Bruneel, Christian; Haine, Francis; and Thomin, Guy, to Agence Nationale de Valorisation de la Recherche (ANVAR). Devices using ultrasounds for forming images, in particular for the internal examination of the human body. 4,204,435, Cl. 73-626.000.

Bridwell, Glenn D.; Maule, James; Schrombeck, Alois; and Wognum, Willis, to WSBM Company, Inc. Boat washing apparatus. 4,204,494, Cl. 114-222.000.

Briggs, Donald L. Aluminum model airplane kit. 4,204,358, Cl. 46-76.00R.

Briggs, Kenneth: *See—*
Stables, Harry C.; and Briggs, Kenneth, 4,205,165, Cl. 544-20.000.

British Industrial Plastics Ltd.: *See—*
Hewitt, Malcolm, 4,204,822, Cl. 425-210.000.

British Petroleum Company Limited, The: *See—*
Gane, Brian R.; and Stewart, David G., 4,205,190, Cl. 568-902.000.

Britton, Wayne E.; and Krumpelt, Michael, to BASF Wyandotte Corporation. Method for rejuvenating chlor-alkali cells. 4,204,921, Cl. 204-98.000.

Brock, Horace T., Jr. Cylinder deactivator system. 4,204,512, Cl. 123-198.00F.

Broken Hill Propietary Company Limited, The: *See—*
Fraser, Donald B.; Dim, Alexander; Anthony, Kevin E.; Costello, Wayne R.; and Grazier, Phillip E., 4,204,922, Cl. 204-105.00R.

Brons, Albert J.: *See—*
Lincicome, Thomas N.; Spiro, John M.; and Brons, Albert J., 4,204,707, Cl. 285-114.000.

Brooks, Cecilia H. Reading skills development kit. 4,204,343, Cl. 35-73.000.

Brown Company: *See—*
Lancelot, Harry B., III; and Macrobbie, Robert M., 4,204,711, Cl. 294-89.000.

Brown, Floyd E. Method and apparatus for outdoor tossing game. 4,204,682, Cl. 273-401.000.

Brueggemann, Walter H.; and Brenner, John A., to Ferro Corporation. Forming protective skin on intricately molded product. 4,205,028, Cl. 264-24.000.

Bruel, Alain. Harvesting machine. 4,204,390, Cl. 56-330.000.

Bruggemann & Brand KG: *See—*
Rothaemel, Gunther; and Fengels, Gerd, 4,204,710, Cl. 294-77.000.

Bruneel, Christian: *See—*
Bridoux, Edouard; Bruneel, Christian; Haine, Francis; and Thomin, Guy, 4,204,435, Cl. 73-626.000.

Bruneel, Jean L.: *See—*
Micheron, Francois; Bruneel, Jean L.; and Leclerc, Pierre, 4,205,242, Cl. 307-400.000.

Bryan, John F., Jr., to Pyramid Manufacturing Company. Winch mechanism for crane. 4,204,664, Cl. 254-175.700.

Bryant, Cal L.: *See—*
Wynn, Edward J.; and Bryant, Cal L., 4,204,792, Cl. 414-36.000.

Brydon, Donald L., to Imperial Chemical Industries Limited. Process for producing shaped articles of polyoxadiazoles. 4,205,038, Cl. 264-184.000.

Budd Company, The: *See—*
Whitsel, Jay F., 4,204,434, Cl. 73-622.000.

Buhler, Ernst: *See—*
Ullmann, Werner; Buhler, Ernst; Kilcher, Beat; Ruh, Herbert; and Sieg, Arno, 4,205,212, Cl. 219-69.00W.

Bullard, James: *See—*
Lester, Frank R.; and Bullard, James, 4,204,292, Cl. 15-28.000.

Bullock, Norman J., to W. M. Cissell Manufacturing Company, The. Laundry dryer. 4,204,338, Cl. 34-35.000.

Bundy, Gordon L., to Upjohn Company, The. Trans-2,3,13,14-tetradehydro-9-deoxy-9-methylene-PGF compounds. 4,205,179, Cl. 560-121.000.

Bunker Ramo Corporation: *See—*
Krolak, Ronald F., 4,204,740, Cl. 339-90.00R.
Makuch, John A., 4,204,306, Cl. 29-281.500.

Burda, Robert E.: *See—*
Richardson, Raymond W.; Burda, Robert E.; and Crumrine, John C., 4,204,575, Cl. 172-1.000.

Burford, Henry H. T., Jr., to Sortex North America, Inc. Produce grading system using two visible and two invisible colors. 4,204,950, Cl. 209-558.000.

Burger, Anthony J., Jr., to Johns-Manville Corporation. Dollie for manipulating a palletized load and method of its use. 4,204,696, Cl. 280-79.10R.

Burk, Emmett H., Jr.: *See—*
Yoo, Jin S.; Burk, Emmett H., Jr.; and Karch, John A., 4,204,840, Cl. 44-1.0SR.

Burkhardt, Charles E.: *See—*
Lin, Kou C.; Ellis, Belvin B.; and Burkhardt, Charles E., 4,205,288, Cl. 336-5.000.

Burley, James D.: *See—*
Holland, Warren E.; Burley, James D.; and Arendt, Henry P., 4,204,690, Cl. 277-27.000.

Burress, George T.: *See—*
Young, Lewis B.; and Burress, George T., 4,205,189, Cl. 568-768.000.

Burroughs Wellcome Co.: *See—*
Almeida, June D., 4,205,131, Cl. 435-235.000.

Buscher, David J.; and Schneider, Marvin J., to United States of America, Army. Binary integrator for fixed cell radar alarm data. 4,205,382, Cl. 364-516.000.

Business Efficiency Aids, Inc.: *See—*
Hawkins, Graham S. W., 4,204,351, Cl. 40-372.000.

Butler County Mushroom Farm, Inc.: *See—*
Maul, Stephen B.; Lemke, Paul A.; Gerner, Walter L.; and Yoder, John B., 4,204,364, Cl. 47-1.100.

Butler, Gene R.: *See—*
Barton, Lester C.; Butler, Gene R.; and Butler, L. Dennis, 4,204,791, Cl. 414-36.000.

Butler, L. Dennis: *See—*
Barton, Lester C.; Butler, Gene R.; and Butler, L. Dennis, 4,204,791, Cl. 414-36.000.

Butterfield, Roy, to National Research Development Corporation. Apparatus for moving along or through a material. 4,205,362, Cl. 361-234.000.

Butterworth, Dennis: *See—*
Cole, Martin; Hood, John D.; and Butterworth, Dennis, 4,205,067, Cl. 424-114.000.

Byers, Charles H.; Hausslein, Robert W.; and Nestle, Mara O., to Polaroid Corporation. Method for forming noble metal silver precipitating nuclei. 4,204,869, Cl. 430-564.000.

Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Schoetensack, Wolfgang; and Riedel, Richard, 4,205,088, Cl. 424-319.000.

Byrum, Bernard W., Jr.; Ernsthausen, Roger E.; and Fein, Michael E., to Owens-Illinois, Inc. Gas discharge display device. 4,205,392, Cl. 365-116.000.

Cailliot, Serge, to Societe Normande de Services; Agence Nationale de Valorisation de la Recherche (ANVAR); Societe Generale pour le Financement de l'Innovation, Soginnove; Cor, Bertrand; and Gastinne, Arnaud, part interest to each. Continuous centrifugal filter for various filtering and automatic coffee making. 4,204,964, Cl. 210-370.000.

Cale, Roland E., to Schaefer Equipment Incorporated. Brake-rod jaw with twisted forks. 4,204,419, Cl. 72-356.000.

California Controls Company: *See—*
Bilbrey, Robert A.; Munroe, William O.; and Powell, David G., 4,204,513, Cl. 123-198.0DB.

California Institute of Technology: *See—*
Feldstein, Cyril; Lewis, Gilbert W.; and Culler, Virgil H., 4,204,544, Cl. 128-642.000.

Calvert, Scott A., to Owens-Corning Fiberglas Corporation. Moldings for articles. 4,204,376, Cl. 52-309.100.

Calvino, Ben J., to Westinghouse Electric Corp. Double-flow compressed-gas operating mechanism for a high-voltage circuit-breaker. 4,205,208, Cl. 200-82.00R.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Ward, Frederick D., 4,204,456, Cl. 89-1.50G.

Canney, Robert S.; Ouellette, Ronald J.; and Morong, William H., Jr., to General Electric Company. Transformer construction. 4,205,290, Cl. 336-90.000.

Cannon, Raymond E., to IMED Corporation. Cassette for intravenous controller. 4,204,538, Cl. 128-214.00R.

Canon Denshi Kabushiki Kaisha: *See—*
Tanaka, Fumio; and Toshimitsu, Naohiko, 4,205,356, Cl. 360-118.000.

Canon Kabushiki Kaisha: *See—*
Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; Shimizu, Masami; and Hashimoto, Teiji, 4,204,762, Cl. 354-242.000.
Goshima, Yoshitomo; Kawakubo, Kazuo; Furuichi, Katsushi; Sakamaki, Hisashi; Sawamura, Osamu; Komiya, Yutaka; and Tomosada, Masahiro, 4,204,728, Cl. 355-4.000.
Shimizu, Masami; and Hashimoto, Teiji, 4,205,287, Cl. 335-271.000.
Tanaka, Fumio; and Toshimitsu, Naohiko, 4,205,356, Cl. 360-118.000.

Canterino, Peter J.; and Arbit, Harold A., to Mobil Oil Corporation. Heat and grease resistant containers comprising poly (p-methylstyrene). 4,205,114, Cl. 428-315.000.

CarboMedics, Inc.: *See—*
Bokros, Jack C.; Shim, Hong S.; and Haubold, Axel D., 4,204,542, Cl. 128-335.500.

Carborundum Company, The: *See—*
Boos, Charles J.; Hausler, Elwood B.; Hirsch, James A.; Kasprzyk, Martin R.; and Smith, Elmer G., 4,205,363, Cl. 361-264.000.
Korklan, Harris J.; and Greany, John K., 4,204,907, Cl. 162-135.000.

Cardenas, Jorge N.; and Reichle, Walter T., to Union Carbide Corporation. Process for preparing p,p'-biphenol of high purity. 4,205,187, Cl. 568-730.000.

Carl Freudenberg, Firma: *See—*
Schmidt, Klaus; and Hoffmann, Harald, 4,205,108, Cl. 428-147.000.

Carley-Macauly, Kenneth W.: *See—*
Hodgson, Thomas D.; Carley-Macauly, Kenneth W.; and Smith, Sidney, 4,204,953, Cl. 210-58.000.

Carlson, Dana P., to Du Pont de Nemours, E. I., and Company. Cross-linking of esterified fluorocarbon polymer. 4,204,927, Cl. 204-159.180.

Carlson, Harold W. Door latch assembly. 4,204,708, Cl. 292-292.000.

Carpenter, Neil L. Method and apparatus for recovery of hydrocarbons from tar-sands. 4,204,923, Cl. 204-129.000.

Carpenter, Peter G., deceased: *See—*
Hayati, Hossein; Towers, Russell S.; and Carpenter, Peter G., deceased, 4,204,872, Cl. 106-38.350.

Carr, John B., to Shell Oil Company. 2,3-Dihydro benzofuran carboxamides. 4,205,080, Cl. 424-275.000.

Carr, John B.: *See—*
Durham, Harry G.; and Carr, John B., 4,205,076, Cl. 424-270.000.
Durham, Harry G.; and Carr, John B., 4,205,079, Cl. 424-275.000.

Carriere, Donald L., to Ford Motor Company. Constant velocity universal joint. 4,204,412, Cl. 64-17.00R.

Cartaya, Oscar A. Serum-free cell culture media. 4,205,126, Cl. 435-2.000.

Carter, William L.; Greathouse, Jack F.; and Zeilinger, Philip T., to Garrett Corporation, The. Fluid pumping system. 4,204,811, Cl. 417-288.000.

Carty, Jack. Stack design. 4,204,463, Cl. 98-58.000.

Casey, Gary L.; and Hurlong, Granville, Jr., to Bendix Corporation, The. Fuel electric fuel injection valve. 4,204,507, Cl. 123-139.0AW.

Caterpillar Tractor Co.: *See—*
Johnson, Howard L., 4,204,459, Cl. 91-445.000.
Stedman, Robert N., 4,204,578, Cl. 172-307.000.

Celanese Corporation: *See—*
Izumi, Yusuke; Maekawa, Junji; and Suzuki, Katsumi, 4,205,182, Cl. 560-247.000.

Celotex Corporation, The: *See—*
Beale, John H.; and Moss, Ernest K., 4,205,135, Cl. 521-116.000.

Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych KOMAG: *See—*
Jedo, Antoni; and Jachna, Waclaw, 4,204,949, Cl. 209-250.000.

Centre de Recherches Metallurgiques Centrum voor Research in de Metallurgie: *See—*
Economopoulos, Marios, 4,204,892, Cl. 148-145.000.

CentreElectronique Horologer S.A.: *See—*
Darwish, Mougahed Y.; and Oguey, Henri J., 4,205,342, Cl. 357-23.000.

Centrodyne Corporation: *See—*
Steiner, Jack, 4,205,388, Cl. 364-900.000.

Century Electric Motor Co.: *See—*
Shoenleben, Alden W., 4,204,739, Cl. 339-75.00R.

Chahroudi, Day, to Heat Mirror Associates. Apparatus for multilayer thin film deposition. 4,204,942, Cl. 204-298.000.

Champion International Corporation: *See—*
Hart, John R.; Lare, Donald W.; and Nault, James J., 4,205,025, Cl. 264-14.000.
Pritchard, Sheldon S., 4,204,600, Cl. 206-610.000.

Chan, David C. K., to Chevron Research Company. N-Carbamylalkyl-2,6-dialkyl-α-haloacetanilides. 4,205,168, Cl. 544-165.000.

Chang, Leroy L.: *See—*
Esaki, Leo; Sai-Halasz, George A.; and Chang, Leroy L., 4,205,331, Cl. 357-30.000.

Chang, Peter J. Y. Adjustable safety guide for skeleton type caulking gun. 4,204,616, Cl. 222-391.000.

Chang, Wen-Hsuan: *See—*
Piccirilli, Robert M.; Chang, Wen-Hsuan; McKeough, David T.; and Porter, Samuel, Jr., 4,205,115, Cl. 428-334.000.

Chapman, Derek D.; and Wu, E-ming, to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible heterocyclyazonaphthol dye-releasing compounds. 4,204,870, Cl. 430-213.000.

Chapman, Derek D., to Eastman Kodak Company. Nondiffusible 6-arylazo-2-amino-3-pyridinol dye-releasing compounds. 4,204,993, Cl. 260-156.000.

Chaput, Bertha E. Bassinette toy. 4,204,361, Cl. 46-116.000.

Chard, Steven D.: *See—*
Loker, W. Aleck; Bortzfield, Jon L.; Chard, Steven D.; Hall, John W.; and Meredith, John T., 4,204,589, Cl. 192-27.000.

Chemed Corporation: *See—*
Jacob, Jose T., 4,204,954, Cl. 210-59.000.

Chemische Werke Buls A.G.: *See—*
Westernacher, Helmut; Schimpff, Peter; and Botthof, Ferdinand, 4,205,045, Cl. 422-192.000.

Chen, James L.: *See—*
Cilento, Rudolfo D.; La Via, Anthony L.; Chen, James L.; and Hill, John A., 4,204,540, Cl. 128-283.000.

Chenel, Pierre, to Saint Gobain Industries. Multiple pane window having a thick seal and a process and apparatus for applying the seal. 4,205,104, Cl. 428-34.000.

Chetverikov, Vladimir N.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

Chevron Research Company: *See—*
Chan, David C. K., 4,205,168, Cl. 544-165.000.
Flanders, Robert L.; and Blanton, William A., Jr., 4,204,944, Cl. 208-120.000.
Flanders, Robert L.; and Blanton, William A., Jr., 4,204,945, Cl. 208-120.000.
Jacobson, Robert L.; and Gibson, Kirk R., 4,204,947, Cl. 208-243.000.
Piehl, Robert L.; and Scarborough, W. Bertram, 4,205,050, Cl. 423-228.000.
Pyle, Walter R., 4,204,563, Cl. 141-206.000.

Chiavarotti, Gian P.: *See—*
Conti, Mario; Chiavarotti, Gian P.; and Luciani, Sandro, 4,205,332, Cl. 357-34.000.

Chinoin Gyogyszes es Begyeszeti Termekek Gyara Rt.: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.

Chooljian, Leo; and Chooljian, Mehran. Apparatus for removing mold and other detritus from raisins and the like. 4,204,291, Cl. 15-3.100.

Chooljian, Mehran: *See—*
Chooljian, Leo; and Chooljian, Mehran, 4,204,291, Cl. 15-3.100.

Chorvat, Robert J., to D. G. Searle & Co. 25-Alkylcholest-5-ene-3β,22-diols and esters thereof. 4,205,004, Cl. 260-397.200.

Christensen, Jan A.: *See—*
Almqvist, Kent R.; Christensen, Jan A.; Alfheim, Roar L.; and Torgersen, Lars, 4,205,031, Cl. 264-40.400.

Christiansen, Preben: *See—*
Andersen, Hans S.; and Christiansen, Preben, 4,204,460, Cl. 91-447.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Sakamoto, Koji; Asano, Takeshi; Mizuochi, Kazuo; and Sasaki, Kanemichi, 4,205,081, Cl. 424-279.000.

Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V. Method of rolling section billets. 4,204,416, Cl. 72-204.000.

Church, Walter E. Phonograph record protective cushion. 4,204,686, Cl. 274-1.00R.

Ciba-Geigy Corporation: *See—*
Aufderhaar, Ernst; Gallay, Jean J.; Kuhne, Manfred; Meyer, Alfred; Rechsteiner, Oswald; Schellenbaum, Max; and Fumeaux, Jean-Paul, 4,205,077, Cl. 424-273.00B.
Ferrini, Pier G., 4,205,082, Cl. 424-281.000.
Gremmelmaier, Claude; and Riethmann, Jean, 4,205,167, Cl. 544-209.000.

Ciba-Geigy Limited: *See—*
Hodgson, Thomas D.; Carley-Macauly, Kenneth W.; and Smith, Sidney, 4,204,953, Cl. 210-58.000.

Cich, Frank A.; Glazer, Emmett J.; and Smith, Edwin S., to Goodyear Tire & Rubber Company, The. Method of removing vinyl chloride monomer from polyvinyl chloride resins. 4,205,149, Cl. 526-89.000.

Cicin-Sain, Ivo, to Matisa Materiel Industriel S.A. Mobile device for renewal of railway tracks. 4,204,476, Cl. 104-2.000.

Cilento, Rudolfo D.; La Via, Anthony L.; Chen, James L.; and Hill, John A., to E. R. Squibb & Sons, Inc. Ostomy composition. 4,204,540, Cl. 128-283.000.

Cincinnati Milacron Chemicals Inc.: *See—*
Zestermann, Mary J.; and Hussar, John F., 4,205,176, Cl. 548-239.000.

Cisco, Thomas F.; Hansen, George E.; and Agate, Robert N., to Stauffer Chemical Company. Process for recovering acid chlorides by distillation. 4,204,916, Cl. 203-6.000.

Cislak, Raymond S.; and Romanzi, Louis, Jr., to Gateway Industries, Inc. Retractor with a cover attached to a slide plate. 4,204,652, Cl. 242-107.40R.

Citizen Watch Co., Ltd.: *See—*
Yamada, Shigetaka, 4,204,874, Cl. 106-73.400.

Clark, David W., to PVI Industries, Inc. Heat exchanger with concentric flow tubes. 4,204,573, Cl. 165-142.000.

Clark Equipment Company: *See—*
Tallis, Thomas J., 4,204,349, Cl. 37-141.0RS.

Clarke, John R. P.: *See—*
Atherton, John H.; Dobson, Derrick C.; Hodgkinson, Ian; and Clarke, John R. P., 4,204,838, Cl. 23-230.00R.

Classic Corporation: *See—*
Fogel, Isaac, 4,204,289, Cl. 5-451.000.

Clausing, Challiss I, to Gould Inc. Draw out circuit breaker assembly. 4,205,207, Cl. 200-50.0AA.

Clayton, Hadwen A.: *See—*
Reese, Herbert E.; and Clayton, Hadwen A., 4,204,808, Cl. 417-2.000.

Clayton, James W. B.; and Clough, Douglas O., to Platt Saco Lowell Limited. Open end spinning machine frame construction. 4,204,391, Cl. 57-1.00R.

Clenney, Richard W. Telephone loop extending apparatus. 4,205,204, Cl. 179-16.00F.

Clifford, David P., to Dow Chemical Company Limited. Preparation of O,O-dialkyl phthalimido-phosphonothioate. 4,204,996, Cl. 260-326.00E.

Clifford, Peter P.: *See—*
Leger, Donald R.; Clifford, Peter P.; and Matson, William N., 4,204,803, Cl. 415-219.00R.

CLM International Corp.: *See—*
Mack, Jack E.; and Mack, Patrick K., 4,204,968, Cl. 252-26.000.

Clough, Douglas O.: *See—*
Clayton, James W. B.; and Clough, Douglas O., 4,204,391, Cl. 57-1.00R.

Cobe Laboratories, Inc.: *See—*
Lobdell, Donn D.; Herman, Stephen J.; and Giurtino, Joel F., 4,205,042, Cl. 422-47.000.

Cochrane, William. Cervical collar apparatus. 4,204,529, Cl. 128-75.000.

Cohen, Murray S.; Noltes, Jan G.; and van Koten, Gerard, to Borg-Warner Corporation. Hydrocarbon hydrogenation using zero valent metal catalysts. 4,205,191, Cl. 585-250.000.

Cohen, Noal, to Hoffmann-La Roche Inc. Inversion process. 4,205,001, Cl. 260-345.500.

Cole, Graham M., to Dreamland Electrical Appliances Limited. Heating circuits for detection of localized overheating. 4,205,223, Cl. 219-501.000.

Cole, Martin; Hood, John D.; and Butterworth, Dennis, to Beecham Group Limited. Antibiotics. 4,205,067, Cl. 424-114.000.

Coll-Palagos, Miguel, to Stauffer Chemical Company. Recovery of phosphorus from sludge. 4,204,925, Cl. 204-152.000.

Column Corporation: *See—*
Hopp, Leo A., 4,204,645, Cl. 239-341.000.

Combustion Engineering, Inc.: *See—*
Giuggio, Nicholas; Noyes, Richard C.; and Zaman, Shakir U., 4,204,909, Cl. 176-22.000.
Warren, Kenneth W.; and Prestridge, Floyd L., 4,204,934, Cl. 204-186.000.

Commissariat a l'Energie Atomique: *See—*
Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, 4,204,502, Cl. 122-32.000.
Plaige, Yves, 4,205,240, Cl. 307-350.000.

Compagnie d'le Electronique et de Piezo-Electricite: *See—*
Bouchou, Paul; Nigoghossian, Claude; and Sillioc, Guy, 4,205,284, Cl. 333-189.000.

Compagnie Generale d'Electricite: *See—*
LeGoff, Denis, 4,205,225, Cl. 250-229.000.

Compagnie Generale des Etablissements Michelin: *See—*
Lefrancois, Jean, 4,204,309, Cl. 29-412.000.

Compagnie Internationale pour l'Informatique: *See—*
Lazzari, Jean-Pierre; and Helle, Michel, 4,204,315, Cl. 29-603.000.
Morizot, Henri; and Lucan, Andre, 4,205,120, Cl. 428-676.000.

Computer Kinetics Corporation: *See—*
Nelson, Jack P., 4,205,312, Cl. 340-792.000.

Conard, William A.: *See—*
Ravn, Jacob; and Conard, William A., 4,204,605, Cl. 215-295.000.

Cone, Richard E., to Questor Corporation. Plant pot holder or reservoir. 4,204,367, Cl. 47-71.000.

Conoco, Inc.: *See—*
Stalder, John L., 4,204,574, Cl. 166-305.00R.

Conti, Mario; Chiavarotti, Gian P.; and Luciani, Sandro, to SGS-Ates Componenti Elettronici S.p.A. Quick-quenching power transistor. 4,205,332, Cl. 357-34.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Johannes, Gunter; and Pfeiffer, Hans-Dieter, 4,204,567, Cl. 152-209.00D.

Cook, Hulet H. Mail depository indicating assembly. 4,204,632, Cl. 232-34.000.

Cook, Kenneth J.: *See—*
Ruszala, Frederick B.; and Cook, Kenneth J., 4,205,386, Cl. 364-607.000.

Cooper, Donald L.: *See—*
Fox, Marvin; Cooper, Donald L.; and Warren, Walter B., 4,205,379, Cl. 364-432.000.

Cooper, Martin H., to Westinghouse Electric Corp. Method and apparatus for removing iodine from a nuclear reactor coolant. 4,204,911, Cl. 176-37.000.

Cor, Bertrand: *See—*
Cailliot, Serge, 4,204,964, Cl. 210-370.000.

Cornelius, Gail, to R. M. Wade & Co. Sprinkler leveler and wind compensating device. 4,204,643, Cl. 239-212.000.

Cornell Research Foundation, Inc.: *See—*
Mattick, Leonard R.; and Gogel, Edward V., 4,205,092, Cl. 426-271.000.

Corning Glass Works: *See—*
Dominick, Ellen K.; and Scherer, George W., 4,204,850, Cl. 65-3.00A.
Nolan, Daniel A., 4,204,851, Cl. 65-3.00A.

Cornwell Components Limited: *See—*
Cornwell, John V., 4,204,344, Cl. 36-34.00A.

Cornwell, John V., to Cornwell Components Limited. Shoe heels. 4,204,344, Cl. 36-34.00A.

Corron, Donald C.; and Tallent, Glen, Jr., to Greentex Incorporated. Strand handling system and method therefor. 4,204,301, Cl. 28-248.000.

Costello, Wayne R.: *See—*
Fraser, Donald B.; Dim, Alexander; Anthony, Kevin E.; Costello, Wayne R.; and Grazier, Phillip E., 4,204,922, Cl. 204-105.00R.

Cotoara, Dumitru: *See—*
Bleiweiss, Arthur F.; Cotoara, Dumitru; and Willkes, Robert J., 4,205,366, Cl. 362-35.000.

Coulter Systems Corporation: *See—*
Kuehnle, Manfred R.; Martinez, Ferdinand; and Ignasiak, Stanley F., 4,204,865, Cl. 430-30.000.

Courtois, Bernard, to Societe Industrielle Bertrand Faure. Seat-supporting slides. 4,204,658, Cl. 248-430.000.

Cox, Herbert M., to Bell Telephone Laboratories, Incorporated. Process for depositing chrome doped epitaxial layers of gallium arsenide utilizing a preliminary formed chemical vapor-deposited chromium oxide dopant source. 4,204,893, Cl. 148-175.000.

Crafco, Inc.: *See—*
Jacobson, Carl C.; and Crosby, Gaius P., 4,204,714, Cl. 299-1.000.

Craig, James R.; and Otto, George W., Jr., to Raytheon Company. Automatic bucky lock. 4,205,233, Cl. 250-439.00R.

Craig, Roger A.; and Pritchard, Huw O., to United States of America, National Aeronautics and Space Administration. Reduction of nitric oxide emissions from a combustor. 4,204,402, Cl. 60-39.060.

Craighead, James W. Indicia forming multiple die. 4,204,470, Cl. 101-28.000.

Creusot-Loire: *See—*
Ducreuzet, Jean, 4,204,603, Cl. 212-49.000.

Creusot-Loire Enterprises: *See—*
Schulz, Herbert, 4,204,431, Cl. 73-423.00R.

Cribbs, Robert W.; and Mahony, John E., to Litton Industrial Products, Inc. Computerized ultrasonic scanner with technique-select. 4,204,433, Cl. 73-620.000.

Crosby, Gaius P.: *See—*
Jacobson, Carl C.; and Crosby, Gaius P., 4,204,714, Cl. 299-1.000.

Crouzet, Pierre A. Method of forming a product for use as a concrete substitute. 4,204,988, Cl. 260-29.60S.

Crumrine, John C.: *See—*
Richardson, Raymond W.; Burda, Robert E.; and Crumrine, John C., 4,204,575, Cl. 172-1.000.

Cruz, Mamerto M., Jr., to Avicon, Inc. Method for preparing pyrogen free collagen. 4,204,992, Cl. 260-123.700.

Culler, Virgil H.: *See—*
Feldstein, Cyril; Lewis, Gilbert W.; and Culler, Virgil H., 4,204,544, Cl. 128-642.000.

Cunningham, James D.: *See—*
Smith, James E.; and Cunningham, James D., 4,204,622, Cl. 227-7.000.

Cunningham, John: *See—*
Feltz, Edward J.; and Cunningham, Ross, 4,204,973, Cl. 252-181.000.

Cunningham, Ross: *See—*
Feltz, Edward J.; and Cunningham, Ross, 4,204,973, Cl. 252-181.000.

Cusato, John, Jr. Filter apparatus with cleaning function. 4,204,961, Cl. 210-232.000.

Cutter Laboratories, Inc.: *See—*
Morin, Marius J.; Nichols, Colin J.; and Prouty, Myron R., 4,204,604, Cl. 215-257.000.

Cyrot, Luc P., to Parker-Hannifin Corporation. Device for controlling hydraulic motors. 4,204,457, Cl. 91-31.000.

D. G. Searle & Co.: *See—*
Chorvat, Robert J., 4,205,004, Cl. 260-397.200.

Daahn, Gahn, to Bayer Aktiengesellschaft. Perspiration-inhibiting soaps. 4,205,062, Cl. 424-66.000.

Dabrio, John W. Fuel heating, air metering valve unit for engine air inlet system. 4,204,504, Cl. 123-119.00B.

Daftary, Shashikumar H.: *See—*
Streetman, William E.; and Daftary, Shashikumar H., 4,205,039, Cl. 264-206.000.

Dahlke, Charles J., to Rosemount Inc. Two wire current transmitter with adjustable current control linearization. 4,205,327, Cl. 340-208.000.

Daicel Ltd.: *See—*
Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, 4,205,040, Cl. 264-233.000.

Dailey, Larry R.: *See—*
Neubert, Hans D.; Dailey, Larry R.; and Robinson, Richard S., 4,204,323, Cl. 433-38.000.

Dale, James A.; and Ng, Steve Y. W., to Dynapol. Polymeric N-substituted maleimide antioxidants. 4,205,151, Cl. 526-262.000.

Damour, Lawrence R. Pivoted web guide for travelling strip. 4,204,619, Cl. 226-21.000.

Danfoss A/S: *See—*
Andersen, Hans S.; and Christiansen, Preben, 4,204,460, Cl. 91-447.000.
Kirbis, Manfred; Schilde, Peter; and Englmaier, Gert, 4,204,318, Cl. 29-734.000.

Danial, Naguib F. Ellipse compass. 4,204,327, Cl. 33-30.00F.

Dardick, David. Gas generating charge for open chamber gas powered tool. 4,204,473, Cl. 102-39.000.

Darwent, Brian J.: *See—*
Boulton, Thomas W.; and Darwent, Brian J., 4,204,939, Cl. 204-258.000.

Darwish, Mougahed Y.; and Oguey, Henri J., to CentreElectronique Horologer S.A. Integrated circuit structure having regions of doping concentration intermediate that of a substrate and a pocket formed therein. 4,205,342, Cl. 357-23.000.

Data General Corporation: *See—*
Gruner, Ronald H., 4,205,372, Cl. 364-200.000.

Datafile Limited: *See—*
Barber, Donald T.; and Scrymgeour, Thomas C., 4,204,639, Cl. 235-462.000.

Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; Shimizu, Masami; and Hashimoto, Teiji, to Canon Kabushiki Kaisha. Centrifugal brakes for focal plane shutters. 4,204,762, Cl. 354-242.000.

David Brown Tractors Limited: *See—*
Jones, Maurice, 4,204,487, Cl. 123-41.350.

Davidson, James D. Compressed expandable insulation tape and method. 4,204,373, Cl. 52-204.000.

Davis, Frank E., to Smith, Robert E. Bottle carrier. 4,204,596, Cl. 206-203.000.

Davis, John A. Eyeglass frame with temple adjusting braces. 4,204,749, Cl. 351-123.000.

Davis, Joseph P.; and Nagy, Julius S., to Goodyear Tire & Rubber Company, The. Process using same stable foam latex with built-in self gel mechanism and coating. 4,205,103, Cl. 427-373.000.

Davis, M. Lewis, to Sealed Power Corporation. Oil control ring spacer-expander with improved slip latch. 4,204,688, Cl. 277-9.000.

Davis, William D., to General Electric Company. Electrode structure for halogen leak detector. 4,205,249, Cl. 313-30.000.

Dawson, Frank, to Qualcast (Lawn Mowers) Limited. Air cushion mowers. 4,204,388, Cl. 56-320.100.

Dawson, Peter, to Tweedy of Burnley Limited. Vacuum cooling. 4,204,408, Cl. 62-62.000.

De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
van der Houwen, Derk; and Wilcke, Robert, 4,205,345, Cl. 358-168.000.

DeBenedictis, Leonard C.; and Johnson, Richard V., to Xerox Corporation. Laser scanning utilizing facet tracking and acousto pulse imaging techniques. 4,205,348, Cl. 358-285.000.

de Bruyne, Norman A. Synchronous stirrer. 4,204,774, Cl. 366-102.000.

Dederichs, Knut: *See—*
Kreuzburg, Eberhard; Eichholz, Gunter; and Dederichs, Knut, 4,204,959, Cl. 210-195.100.

Defibrator Aktiebolag: *See—*
Johansson, Inge, 4,204,689, Cl. 277-27.000.

de Geus, Arie M. Horizontal wind powered reaction turbine electrical generator. 4,204,799, Cl. 415-2.000.

Deichelmann, Hermann: *See—*
Henkler, Herbert; Koenig, Roland; Deichelmann, Hermann; and Koch, Volker, 4,205,393, Cl. 365-133.000.

Dela Cruz, Luis B. Precision gravity responsive angle indicator. 4,204,334, Cl. 33-391.000.

Delfosse, Gilbert, to Braud, Societe Anonyme. Machine for harvesting in-line crops. 4,204,389, Cl. 56-330.000.

D'Elia, Robert V.: *See—*
Bartell, Jeffrey M.; and D'Elia, Robert V., 4,204,897, Cl. 156-155.000.

Del Prete, Cosimo; and Ferraro, Michael V. Open end one way torque wrench. 4,204,440, Cl. 81-111.000.

de Maight, Winfried, to Zahnradfabrik Friedrichshafen, AG. Fluid supply system for auxiliary power steering having pressure storage means. 4,204,584, Cl. 180-133.000.

DEMATEX Development & Investment Establishment: *See—*
Micheli, Antoine, 4,204,606, Cl. 215-307.000.

Dempsey, Martin E.; and Lee, Ching W., to GTE Laboratories Incorporated. Acoustic surface wave device. 4,205,285, Cl. 333-194.000.

Den-Mat, Inc.: *See—*
Ibsen, Robert L.; Glace, William R.; and Reed, William R., Jr., 4,204,978, Cl. 252-408.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Ishimatsu, Yoshiaki; Shigesada, Shigeki; Suzuki, Hiroyasu; Kitagawa, Hironoshin; and Kimura, Shoji, 4,205,128, Cl. 435-182.000.
Marubashi, Kiyonobu, 4,205,150, Cl. 526-252.000.

deNora, Oronzio: *See—*
Bianchi, Giuseppe; deNora, Oronzio; and Spaziante, Placido M., 4,204,937, Cl. 204-219.000.

Deprez, Thomas A., to Gleason Works, The. Endless chain apparatus for forming spur and helical gears with means for controlling chain. 4,204,786, Cl. 409-262.000.

Deresh, Ilya A.: *See—*
Shikhirev, Boris N.; Matrosov, Evgeny A.; and Deresh, Ilya A., 4,204,370, Cl. 51-80.00A.

Desai, Kishor A., to American Color & Chemical Corporation. Azoanilino-toluene sulfonamidoalkyleneamine cationic disazo dyes for paper. 4,204,994, Cl. 260-174.000.

Desbois, Michel, to Rhone-Poulenc Industries. Process for the dimerization of C_8-C_{20} olefins and the olefin dimers obtained thereby. 4,205,195, Cl. 585-510.000.

DeSoto, Inc.: *See—*
Beauchamp, Gerson E., 4,204,971, Cl. 252-63.500.

Dexter Corporation, The: *See—*
Lind, Herbert C.; Rumore, Peter J.; and Wysocki, Tadeusz S., 4,204,532, Cl. 128-132.00D.

Dharia, Prabodh M.: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; and Kurtz, John J., 4,205,200, Cl. 370-83.000.

Dhein, Rolf: *See—*
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,205,159, Cl. 528-338.000.

Diamond International Corporation: *See—*
Reeve, Randy F., 4,204,614, Cl. 222-153.000.

Dicon Systems Limited: *See—*
Turlej, Zbigniew W., 4,205,306, Cl. 340-629.000.

Diggs, Richard E. Apparatus for desalinating water. 4,204,914, Cl. 202-176.000.

Dille, Kenneth L.: *See—*
Biasotti, Joseph B.; Dorn, Peter; Herbstman, Sheldon; and Dille, Kenneth L., 4,204,841, Cl. 44-71.000.

Dim, Alexander: *See—*
Fraser, Donald B.; Dim, Alexander; Anthony, Kevin E.; Costello, Wayne R.; and Grazier, Phillip E., 4,204,922, Cl. 204-105.00R.

Dimeff, John. Device for recording and reproducing mandibular motion. 4,204,326, Cl. 433-50.000.

Dingle, Raymond; Gossard, Arthur C.; Petroff, Pierre M.; and Wiegmann, William, to Bell Telephone Laboratories, Incorporated. Periodic monolayer semiconductor structures grown by molecular beam epitaxy. 4,205,329, Cl. 357-16.000.

DiStefano, Thomas H.; and Kuhn, Lawrence, to International Business Machines Corporation. Apparatus for detecting information stored on photocopying media, transmitting and storing the same. 4,204,725, Cl. 355-3.00R.

Dobson, Derrick C.: *See—*
Atherton, John H.; Dobson, Derrick C.; Hodgkinson, Ian; and Clarke, John R. P., 4,204,838, Cl. 23-230.00R.

Dobson Park Industries, Limited: *See—*
Elliott, Anthony, 4,204,780, Cl. 400-261.000.

Dr. C. Otto & Comp. G.m.b.H.: *See—*
Thubeauville, Heinz, 4,205,047, Cl. 422-242.000.

Documation Incorporated: *See—*
Music, John, 4,205,309, Cl. 340-739.000.

Dominick, Ellen K.; and Scherer, George W., to Corning Glass Works. Carbon coating for a starting member used in producing optical waveguide. 4,204,850, Cl. 65-3.00A.

Dominion Auto Accessories Limited: *See—*
Bleiweiss, Arthur F.; Cotoara, Dumitru; and Willkes, Robert J., 4,205,366, Cl. 362-35.000.

Donaldson Company, Inc.: *See—*
Brenholt, David L., 4,204,846, Cl. 55-272.000.
Johnston, Gordon L., 4,204,849, Cl. 55-310.000.

Donnally, William, Jr., to United States of America, Army. Signal delay system. 4,205,283, Cl. 333-165.000.

Dorn, Peter: *See—*
Biasotti, Joseph B.; Dorn, Peter; Herbstman, Sheldon; and Dille, Kenneth L., 4,204,841, Cl. 44-71.000.

Doucin, Guy; and Marchal, Paul, to Air Industrie. Installation for treating a product in a gaseous medium. 4,204,340, Cl. 34-225.000.

Douglas, Robert R., to Western Electric Company, Inc. Laser welding system and method. 4,205,216, Cl. 219-121.00L.

Dow Chemical Company, The: *See—*
McIntyre, James A.; Phillips, Robert F.; and Lefever, Joseph D., 4,204,918, Cl. 204-24.000.
Muench, Wayne C.; Hormel, Thad S.; Kirchhoff, Pamela M.; and Robbins, Lanny A., 4,205,188, Cl. 568-764.000.
Potts, Irvin W., Jr., 4,205,014, Cl. 260-650.00R.
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,205,016, Cl. 260-665.00R.
Wang, Chun S.; McGregor, Stanley D.; and Nestrick, Terry J., 4,205,015, Cl. 260-651.00R.
Wilson, David A.; and McCrary, Avis L., 4,205,065, Cl. 424-81.000.

Dow Chemical Company Limited: *See—*
Clifford, David P., 4,204,996, Cl. 260-326.00E.

Dreamland Electrical Appliances Limited: *See—*
Cole, Graham M., 4,205,223, Cl. 219-501.000.

Dresser Industries, Inc.: *See—*
Lichtenberg, Heinz D., 4,205,266, Cl. 324-253.000.

Drucker, Melvin H., to Westinghouse Electric Corp. Power line carrier apparatus. 4,205,360, Cl. 361-68.000.

Ducreuzet, Jean, to Creusot-Loire. High-capacity crane with counterweight device. 4,204,603, Cl. 212-49.000.

Duh, Ben, to Goodyear Tire & Rubber Company, The. Method for production of high molecular weight polyester with low catalyst level and low carboxyl content. 4,205,157, Cl. 528-272.000.

Dunchock, Richard S., to Optarac Corporation. Eyeglass case display unit. 4,204,602, Cl. 211-13.000.

Dunn, Burton D., to Lava Gardens, Inc. Educational kit for solidification of a chemical compound to produce crystal growth. 4,204,599, Cl. 206-575.000.

Dunnigan, Daniel A.: *See—*
Tadanier, John S.; Dunnigan, Daniel A.; Freiberg, Leslie A.; and Martin, Jerry R., 4,205,070, Cl. 424-180.000.

Du Pont de Nemours, E. I., and Company: *See—*
Carlson, Dana P., 4,204,927, Cl. 204-159.180.
Hoeschele, Guenther K., 4,205,158, Cl. 528-300.000.

Durant, Graham J.; Ganellin, Charon R.; and Vickers, Margaret R., to Smith Kline & French Laboratories Limited. Pharmaceutical compositions having immunosuppressant activity and methods therefor. 4,205,071, Cl. 424-244.000.

Durham, Harry G.; and Carr, John B., to Shell Oil Company. Lipogenesis inhibition by certain esters of substituted benzodioxincarboxylic acids. 4,205,076, Cl. 424-270.000.

Durham, Harry G.; and Carr, John B., to Shell Oil Company. Benzodioxincarboxamides. 4,205,079, Cl. 424-275.000.

Durling, Harold, to Midland-Ross Corporation. Exhaust valve assembly. 4,204,555, Cl. 137-102.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Gauchel, Peter; and Wissinger, Waldemar, 4,204,821, Cl. 425-131.100.
Jaschke, Hans; Kautz, Rudolf; Plate, Hermann; and Ulb, Horst, 4,205,107, Cl. 428-58.000.

Dynapol: *See—*
Dale, James A.; and Ng, Steve Y. W., 4,205,151, Cl. 526-262.000.

E. Cacarda GmbH: *See—*
Rothe, Eva, 4,204,523, Cl. 126-450.000.

E.G.O. Elektro-Geraete Blanc und Fischer: *See—*
Goessler, Gerhard, 4,205,292, Cl. 337-101.000.

E. R. Squibb & Sons, Inc.: *See—*
Cilento, Rudolfo D.; La Via, Anthony L.; Chen, James L.; and Hill, John A., 4,204,540, Cl. 128-283.000.
Sykes, Richard B.; Wells, J. Scott; Principe, Pacifico A.; and Liu, Wen C., 4,205,068, Cl. 424-117.000.

Earnest, Ernest R., to Hydragon Corporation, The. Turbine engine with exhaust gas recirculation. 4,204,401, Cl. 60-39.030.

Eastman Kodak Company: *See—*
Blazey, Richard N., 4,205,321, Cl. 346-153.000.
Chapman, Derek D.; and Wu, E-ming, 4,204,870, Cl. 430-213.000.
Chapman, Derek D., 4,204,993, Cl. 260-156.000.
Horak, Jerry R.; Langworthy, Harold F.; Rauner, Frederick J.; and Gross, Robert C., 4,204,866, Cl. 430-306.000.
Howe, Dennis G., 4,205,339, Cl. 179-100.10G.
Modney, William; and Rosenburgh, Norman J., 4,204,733, Cl. 355-64.000.
O'Brien, Robert J., 4,205,220, Cl. 219-216.000.
Wu, Tai-Wing; and Sullivan, Sheryl S., 4,204,839, Cl. 23-230.00B.

Ebauches S.A.: *See—*
Breguet, Jean-Luc, 4,204,396, Cl. 368-287.000.

Ebigt, Joachim: *See—*
Hermann, Hans D.; Ebigt, Joachim; and Hutten, Ulrich M., 4,205,146, Cl. 525-61.000.

Eckendorff, Jean-Pierre. Tools for reconditioning a valve seat in a tap. 4,204,784, Cl. 408-83.500.

Economopoulos, Marios, to Centre de Recherches Metallurgiques Centrum voor Research in de Metallurgie. Heat-treating tubular steel sections. 4,204,892, Cl. 148-145.000.

Edmaier, Franz: *See—*
Schulmeister, Robert; Edmaier, Franz; and Kiefer, Gunther, 4,204,848, Cl. 55-269.000.

Edwin Cooper, Inc.: *See—*
Papay, Andrew G.; and O'Brien, Joseph P., 4,204,969, Cl. 252-45.000.

Eerkens, Jozef W. Neutrino communication arrangement. 4,205,268, Cl. 455-620.000.

Efimenko, Sergei P.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Ehehalt, Theobald: *See—*
Harlfinger, Rudolf; Ehehalt, Theobald; and Kappes, Alfred, 4,204,924, Cl. 204-129.350.

Eichholz, Gunter: *See—*
Kreuzburg, Eberhard; Eichholz, Gunter; and Dederichs, Knut, 4,204,959, Cl. 210-195.100.

Eidam, Lane L. P. Locking mechanism for machine tool holder-/adapter. 4,204,303, Cl. 29-26.00A.

Eidam, Lane L. P. Travel limit stop pin. 4,204,304, Cl. 29-26.00A.

Eidam, Manfred: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.

Eino, Tomomi: *See—*
Harada, Susumu; Kondo, Toshio; and Eino, Tomomi, 4,204,483, Cl. 123-32.0EL.

Eishima, Tetsusuke; Ikariyama, Takehiro; Jinnouchi, Raizo; Oyagi, Kunioki; and Soda, Takashi, to Iwatsu Electric Co. Ltd.; and Nippon Telegraph and Telephone Public Corporation. Carbon granule microphone with molded resin-conductive carbon electrode. 4,205,206, Cl. 179-124.000.

Eisinger, Frantisek L., to Foster Wheeler Energy Corporation. Helical spacer for heat exchanger tube bundle. 4,204,570, Cl. 165-69.000.

Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, to Veb Kombinat Fortschritt Landmaschinen Neustadt In Sachsen. Gear drive for multiple row harvester. 4,204,387, Cl. 56-98.000.

Electric Power Research Institute, Inc.: *See—*
Stubblefield, Thomas W., 4,205,289, Cl. 336-57.000.

Electro Materials Corp. of America: *See—*
Johnson, Gary W.; and Hilson, David G., 4,205,297, Cl. 338-195.000.

Eli Lilly and Company: *See—*
Kirst, Herbert A., 4,205,164, Cl. 542-421.000.

Elliott, Anthony, to Dobson Park Industries, Limited. Typewriter with improved case shift means. 4,204,780, Cl. 400-261.000.

Ellis, Belvin B.: *See—*
Lin, Kou C.; Ellis, Belvin B.; and Burkhardt, Charles E., 4,205,288, Cl. 336-5.000.

Elsasser, Heinrich: *See—*
Vinnemann, Antonius; Elsasser, Heinrich; Walter, Manfred; and Gaiser, Willi, 4,204,414, Cl. 66-145.00R.

Elton, Michael J.; Jackson, Arthur; and Harrison, John W., to Sterling Drug Inc. Process for preparing racemic 4-hydroxyphenylglycine. 4,205,185, Cl. 562-444.000.

Emblem, Harold G.: *See—*
Walters, Ian R.; and Emblem, Harold G., 4,205,032, Cl. 264-63.000.

Emerson Electric Co.: *See—*
Hildebrandt, Eugene F.; and Fellner, Herbert G., 4,205,245, Cl. 310-68.00E.

Emmert, Hermann: *See—*
Puthawala, Anwer; Hoffmann, Lutz; Emmert, Hermann; Hild, Werner; John, Hans-Erich; and Kluger, Wolfgang, 4,204,974, Cl. 252-301.10W.

Energy Conversion Devices, Inc.: *See—*
Ovshinsky, Stanford R.; Klose, Peter H.; and Messing, Wayne P., 4,205,387, Cl. 364-900.000.

Energy Transportation Group, Incorporated: *See—*
Tornay, Edmund G., 4,204,813, Cl. 417-435.000.

Englmaier, Gert: *See—*
Kirbis, Manfred; Schilde, Peter; and Englmaier, Gert, 4,204,318, Cl. 29-734.000.

Erche, Manfred; Filberich, Ludwig; Pove, Dusan; Waldmann, Hermann; and Weibelzahl, Manfred, to Siemens Aktiengesellschaft. Method for the transmission of DC current between at least one rectifier station and several inverter stations. 4,205,368, Cl. 363-35.000.

Erickson, Kent E.; Orsen, Stefan; and Rowe, Gerhardt C., to Keuffel & Esser Company. Electronic surveying system. 4,205,385, Cl. 364-560.000.

Eriksen, Harald S., to Lear Siegler, Inc. Relief valve for fluid systems. 4,204,560, Cl. 137-508.000.

Eriksson, Bengt S.: *See—*
Petersson, Stig A.; and Eriksson, Bengt S., 4,204,861, Cl. 75-73.000.

Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Ball bearing with radial apertures in end rings. 4,204,717, Cl. 308-6.00C.

Ernsthausen, Roger E.: *See—*
Byrum, Bernard W., Jr.; Ernsthausen, Roger E.; and Fein, Michael E., 4,205,392, Cl. 365-116.000.

Erskine Manufacturing Company, Inc.: *See—*
Gustafson, Wayne, 4,204,699, Cl. 280-415.00R.

Esaki, Leo; Sai-Halasz, George A.; and Chang, Leroy L., to United States of America, Army. Infrared optical devices of layered structure. 4,205,331, Cl. 357-30.000.

Esch, Victor H.; and Fristrom, Robert M. Hazardous atmosphere badge. 4,205,043, Cl. 422-56.000.

Espana, Salvador, to Smith International, Inc. Friction bearing rock bit and segment, and method for making them. 4,204,437, Cl. 76-108.00A.

Etablissement Public: Institut National de la Recherche Agronomique: *See—*
Maubois, Jean-Louis J.; Mocquot, Germain P. C. B.; and Vassal, Louis J., 4,205,090, Cl. 426-40.000.

Etaix, Jean-Francois, to U.S. Philips Corporation. Connector for coupling optical fibers to an emitter or receiver of luminous energy. 4,204,743, Cl. 350-96.200.

Ethyl Corporation: *See—*
Malec, Robert E., 4,204,481, Cl. 123-1.00A.

Euteco S.p.A.: *See—*
Invernizzi, Renzo; Ligorati, Ferdinando; and Fontanesi, Maurizio, 4,204,981, Cl. 252-429.00B.

Everbrite Electric Signs, Inc.: *See—*
Trame, Charles E., 4,205,036, Cl. 264-132.000.

Evteev, Dmitry P.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Excel Industries Inc.: *See—*
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,204,576, Cl. 172-22.000.

Exxon Production Research Company: *See—*
Holland, Warren E.; Burley, James D.; and Arendt, Henry P., 4,204,690, Cl. 277-27.000.

Exxon Research & Engineering Co.: *See—*
Metrailer, William J.; Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,204,943, Cl. 208-50.000.
Mitchell, Howard L., III; and Waghorne, Robert H., 4,205,194, Cl. 585-407.000.
Neavel, Richard C., 4,204,843, Cl. 48-210.000.

Faber, Edward S.; Hovan, John J.; and Sinsheimer, Walter J., to Western Electric Company, Inc. Substrate straightening adaptor for electrical connector assembly. 4,204,737, Cl. 339-65.000.

Fabrique Nationale Herstal, en abrege FN, Societe Anonyme: *See—*
Vincent, Rene J., 4,204,965, Cl. 210-447.000.

Fadeev, Alexandr I.: *See—*
Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V., 4,204,910, Cl. 176-30.000.

Fahey, Judith B., to Minnesota Mining and Manufacturing Company. Anthraquino-cycloalkane dyes. 4,205,005, Cl. 430-72.000.

Fahnler, Friedrich: *See—*
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,205,159, Cl. 528-338.000.

Falcon Safety Products, Inc.: *See—*
Grossman, Morris G.; Levy, Edward D.; and Meisner, Edward H., 4,204,335, Cl. 33-476.000.

Farber: *See—*
Bauer, Walter; Krobel; and Farber, 4,204,724, Cl. 354-281.000.

Faupel, Werner: *See—*
Ritter, Ernst; Schwartz, Reinhard; Muuller, Rolf; Sturm, Waldemar; and Faupel, Werner, 4,204,510, Cl. 123-179.00L.

Fay, Edward W.: *See—*
Williams, George C.; and Fay, Edward W., 4,205,323, Cl. 346-165.000.

Feather, Harvey E., to Honeywell Information Systems Inc. Data base conversion system. 4,205,371, Cl. 364-200.000.

Fehler, Adolf; Kirschey, Gunter; Kappler, Gunter; and Kirchdorffer, Gerhard, to Motoren- und Turbinen-Union Munchen GmbH. Combustion chamber for gas turbine engines, particularly an ignition device for such a combustion chamber. 4,204,404, Cl. 60-740.000.

Fein, Michael E.: *See—*
Byrum, Bernard W., Jr.; Ernsthausen, Roger E.; and Fein, Michael E., 4,205,392, Cl. 365-116.000.

Feingers, Judith: *See—*
Wagner, Daniel B.; Pick, Anthony J.; and Feingers, Judith, 4,205,058, Cl. 424-1.000.

Feldstein, Cyril; Lewis, Gilbert W.; and Culler, Virgil H., to California Institute of Technology. Simultaneous muscle force and displacement transducer. 4,204,544, Cl. 128-642.000.

Fellner, Herbert G.: *See—*
Hildebrandt, Eugene F.; and Fellner, Herbert G., 4,205,245, Cl. 310-68.00E.

Feltz, Edward J.; and Cunningham, Ross, to Cunningham, John. Treatment composition for use in chrome removal and recovery. 4,204,973, Cl. 252-181.000.

Fengels, Gerd: *See—*
Rothaemel, Gunther; and Fengels, Gerd, 4,204,710, Cl. 294-77.000.

Ferraro, Michael V.: *See—*
Del Prete, Cosimo; and Ferraro, Michael V., 4,204,440, Cl. 81-111.000.

Ferrini, Pier G., to Ciba-Geigy Corporation. Substituted coumarin compounds. 4,205,082, Cl. 424-281.000.

Ferro Corporation: *See—*
Brueggemann, Walter H.; and Brenner, John A., 4,205,028, Cl. 264-24.000.

Feuillade, Jean-Louis J., to Societe B.M. Costamagna. Process of railroad tie concrete casting. 4,204,660, Cl. 249-86.000.

Field, Thomas A.: *See—*
Serlin, Richard A.; and Field, Thomas A., 4,205,211, Cl. 219-76.130.

Figura, Gene B. Back-packing stove for a Sierra-type cup. 4,204,516, Cl. 126-9.00R.

Filberich, Ludwig: *See—*
Erche, Manfred; Filberich, Ludwig; Pove, Dusan; Waldmann, Hermann; and Weibelzahl, Manfred, 4,205,368, Cl. 363-35.000.

Fildan, Gerhard. Fastener for garments. 4,204,300, Cl. 24-201.0HE.

Filippini, Alfredo: *See—*
Filippini, Gennaro; and Filippini, Alfredo, 4,204,683, Cl. 273-371.000.

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Filter Specialists, Inc.: *See—*
Morgan, Howard W., Jr., 4,204,966, Cl. 210-455.000.

Finishing Equipment, Inc.: *See—*
Sabatka, Winston E., 4,204,913, Cl. 202-168.000.

Finney, Roy P., to Medical Engineering Corp. Sleeve implant. 4,204,530, Cl. 128-79.000.

Firmenich S.A.: *See—*
Vite, Jean P.; Francke, Ernst J. W.; and Ohloff, Gunther, 4,205,084, Cl. 424-285.000.

Fischer, Jerome A., to Lucas-Milhaupt, Inc. Container and soldering kit. 4,204,597, Cl. 206-216.000.

Fischer, Johanna: *See—*
Schatz, Franz; Stammbach, Christian; Thiele, Kurt; Wagner-Jauregg, Theodor W.; Zirngibl, Ludwig; Fischer, Johanna; and Jahn, Ulrich, 4,204,998, Cl. 260-326.150.

Fisher, Charles B.; and Fisher, Sidney T. Quantized modulation systems. 4,205,241, Cl. 307-361.000.

Fisher, Clyde. Reflective signalling device. 4,204,746, Cl. 350-99.000.

Fisher, Sidney T.: *See—*
Fisher, Charles B.; and Fisher, Sidney T., 4,205,241, Cl. 307-361.000.

Fisli, Tibor, to Xerox Corporation. System for providing electrolessly nickel coated polished high speed multi-faceted polygonal scanners. 4,205,100, Cl. 427-162.000.

Fitch, Robert H.: *See—*
Kurtz, Bruce E.; and Fitch, Robert H., 4,204,920, Cl. 204-98.000.

Flanders, Robert L.; and Blanton, William A., Jr., to Chevron Research Company. Process for removing pollutants from nonzeolitic catalyst regenerator flue gas. 4,204,944, Cl. 208-120.000.

Flanders, Robert L.; and Blanton, William A., Jr., to Chevron Research Company. Removing pollutants from flue gas in nonzeolitic catalytic cracking. 4,204,945, Cl. 208-120.000.

Flatow, Robert E. Water purification system. 4,204,956, Cl. 210-87.000.

Fleenor, Richard P., to Manning Environmental Corp. Fluid level measurement apparatus for mounting in manholes and similar structures. 4,205,315, Cl. 343-14.000.

Flentge, Robert W., to A. F. Dormeyer Manufacturing Co., Inc. Heavy duty converter. 4,205,291, Cl. 336-92.000.

FMC Corporation: *See—*
Haley, Frank P.; and McTamaney, Louis S., 4,205,308, Cl. 340-686.000.

Foam Controls Inc.: *See—*
Schrader, Joseph F.; and Szeliga, Phillip C., 4,204,612, Cl. 222-40.000.

Focke, Heinz, to Focke & Pfuhl. Packets for cigarettes, cigarillos or the like. 4,204,630, Cl. 229-15.000.

Focke & Pfuhl: *See—*
Focke, Heinz, 4,204,630, Cl. 229-15.000.

Fogel, Isaac, to Classic Corporation. Waterbed mattress. 4,204,289, Cl. 5-451.000.

Fohl, Timothy, to GTE Sylvania Incorporated. Leadless electric flash lamp. 4,204,834, Cl. 431-362.000.

Fontanesi, Maurizio: *See—*
Invernizzi, Renzo; Ligorati, Ferdinando; and Fontanesi, Maurizio, 4,204,981, Cl. 252-429.00B.

Ford, Gregory A., to Phillips Petroleum Company. Continuous analysis of beverages. 4,204,962, Cl. 210-316.000.

Ford, James P., Jr. Method and apparatus for extracting teeth. 4,204,330, Cl. 433-148.000.

Ford Motor Company: *See—*
Carriere, Donald L., 4,204,412, Cl. 64-17.00R.
Haygood, Juan C.; and Harman, Ted L., 4,205,325, Cl. 340-147.0MD.
Mohla, Prem P., 4,204,666, Cl. 266-216.000.

Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, to Commissariat a l'Energie Atomique. Once-through forced-circulation steam generator. 4,204,502, Cl. 122-32.000.

Forrest, Eali J. Pre-stressed concrete construction. 4,205,029, Cl. 264-34.000.

Forrest, William J. Wind collecting method and apparatus. 4,204,795, Cl. 415-2.000.

Forster, George; and Von Wettstein, Herbert. Surgical plate for holding the hand and the fingers during hand and finger operations. 4,204,533, Cl. 128-133.000.

Forster, Jurgen: *See—*
Klesse, Fritz; and Forster, Jurgen, 4,204,935, Cl. 204-192.00F.
Klesse, Fritz; and Forster, Jurgen, 4,205,299, Cl. 338-308.000.

Fortune, William S. Replaceable tip for desoldering tools. 4,204,299, Cl. 15-415.00R.

Foster Wheeler Energy Corporation: *See—*
Eisinger, Frantisek L., 4,204,570, Cl. 165-69.000.

Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See—*
Masumoto, Hakaru; and Sawaya, Showhachi, 4,204,887, Cl. 148-31.000.
Masumoto, Hakaru; and Sawaya, Showhachi, 4,204,888, Cl. 148-31.000.

Fournier, Herve L. Baby's companion and security blanket. 4,204,362, Cl. 46-116.000.

Fourre, Jacques: *See—*
Maire, Jacques; Fourre, Jacques; and Gervais, Jean P., 4,205,055, Cl. 423-445.000.

Fowler, Ronald J., to United States of America, Navy. Arming-safing system for airborne weapons. 4,204,475, Cl. 102-262.000.

Fox, Marvin; Cooper, Donald L.; and Warren, Walter B., to TRW Inc., Systems & Energy. Position determining and dynamic positioning method and system for floating marine well drill platforms and the like. 4,205,379, Cl. 364-432.000.

Fr. Winkler KG: *See—*
Schnee, Walter, 4,204,466, Cl. 99-443.00C.

France, Jerry; and Morgan, James P. Flexible anti-skid material and method of making same. 4,205,109, Cl. 428-150.000.

Francke, Ernst J. W.: *See—*
Vite, Jean P.; Francke, Ernst J. W.; and Ohloff, Gunther, 4,205,084, Cl. 424-285.000.

Franklin, Robert C., to Beckman Instruments, Inc. Ultracentrifuge overspeed disk detection system. 4,205,261, Cl. 318-480.000.

Fraser, Donald B.; Dim, Alexander; Anthony, Kevin E.; Costello, Wayne R.; and Grazier, Phillip E., to Broken Hill Propietary Company Limited, The. Simultaneous electrodissolution and electrowinning of metals from simple sulphides. 4,204,922, Cl. 204-105.00R.

Frazel, Wilbur H., to General Signal Corporation. Wide range control for delivery apparatus. 4,204,809, Cl. 417-15.000.

Freas, Mark S.: *See—*
Jones, William M.; and Freas, Mark S., 4,204,830, Cl. 431-8.000.

Freeman, John L. Sail apparatus for a land vehicle. 4,204,694, Cl. 280-810.000.

Freiberg, Leslie A.: *See—*
Tadanier, John S.; Dunnigan, Daniel A.; Freiberg, Leslie A.; and Martin, Jerry R., 4,205,070, Cl. 424-180.000.

French, Joseph A.: *See—*
Pasha, Mohiuddin; O'Hara, David K.; and French, Joseph A., 4,204,980, Cl. 252-428.000.

Freudlsperger, August: *See—*
Seifert, Dieter; Regler, Dieter; Ofenmacher, Volker; Moritz, Alfred; Freudlsperger, August; and Berger, Walter, 4,204,515, Cl. 125-16.00R.

Frey, Sydney W., Jr., to Allen-Bradley Company. Rheostat trimmer. 4,205,296, Cl. 338-150.000.

Fridman, Vladimir M.: *See—*
Khutoretsky, Garri M.; Fridman, Vladimir M.; Zagorodnaya, Galina A.; Vorontsov, Alexandr I.; Ignatiev, Anatoly D.; and Sudarikov, Vasily L., 4,204,313, Cl. 29-596.000.

Friedrich, Jurgen: *See—*
Gothe, Diethard; Nuske, Jeffrey J.; and Friedrich, Jurgen, 4,204,427, Cl. 73-304.00C.

Fristrom, Robert M.: *See—*
Esch, Victor H.; and Fristrom, Robert M., 4,205,043, Cl. 422-56.000.

Fugere, Albert L. Training shoe for soccer. 4,204,346, Cl. 36-114.000.

Fuji Electric Co., Ltd.: *See—*
Omori, Tsuguharu; and Kawasaki, Michio, 4,205,197, Cl. 13-27.000.

Fuji Photo Film Co., Ltd.: *See—*
Asanuma, Katsumi; and Mogi, Shigeru, 4,204,754, Cl. 353-116.000.
Hamada, Shinji; Hoshino, Fumio; and Tabata, Junichi, 4,204,736, Cl. 355-118.000.

Fujii, Ryuichi: *See—*
Nagasawa, Kohtaro; Ogitani, Osamu; and Fujii, Ryuichi, 4,205,018, Cl. 525-404.000.

Fujii, Tadashi, to Ricoh Company, Ltd. Wet type direct image recording method. 4,205,320, Cl. 346-1.100.

Fujimatsu, Masaaki, to Japan Exlan Company Limited. Process for producing acrylic synthetic fibers having anti-pilling properties. 4,205,037, Cl. 264-182.000.

Fujimoto, Masanori: *See—*
Fukami, Kousuke; Fujimoto, Masanori; Fujita, Fumio; and Nagase, Tsuneyuki, 4,205,218, Cl. 219-145.230.

Fujimoto, Yasuo; and Yamabe, Shigeru, to Nippon Chemiphar Company, Limited. Propionic acid derivatives. 4,205,170, Cl. 546-80.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, 4,205,040, Cl. 264-233.000.
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Hemmi, Keiji, 4,205,166, Cl. 544-27.000.

Fujita, Fumio: *See—*
Fukami, Kousuke; Fujimoto, Masanori; Fujita, Fumio; and Nagase, Tsuneyuki, 4,205,218, Cl. 219-145.230.

Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, to Mitsubishi Chemical Industries, Limited; and Seikagaku Kogyo Company, Ltd. Process for the renewal of an insolubilized glucose isomerase. 4,205,127, Cl. 435-179.000.

Fujitsu Limited: *See—*
Hisazawa, Masahide, 4,205,301, Cl. 371-3.000.

Fujiyoshi, Kenji: *See—*
Morita, Yoshinori; Inoue, Hiroshi; and Fujiyoshi, Kenji, 4,205,021, Cl. 525-240.000.

Fukami, Kousuke; Fujimoto, Masanori; Fujita, Fumio; and Nagase, Tsuneyuki, to Sumitomo Chemical Company, Limited; and Hayashibara Biochemical Laboratories, Inc. Covered electrode for arc welding. 4,205,218, Cl. 219-145.230.

Fukumoto, Toshito: *See—*
Kurata, Kenzi; Fukumoto, Toshito; Yoshida, Yuji; Kusama, Masanori; and Tsuruta, Shintaro, 4,204,915, Cl. 203-2.000.

Fukushima, Yasuhiro, to Kabushiki Kaisha Daini Seikosha. Micro stepping motor. 4,205,244, Cl. 310-49.00R.

Fuller Company: *See—*
Porter, Edward S., 4,204,835, Cl. 432-58.000.

Fuller, Paul, to Vickers Limited. Document handling apparatus. 4,204,640, Cl. 235-476.000.

Fultz, Jack V.: *See—*
Barton, Richard E.; Fultz, Jack V.; Narahara, Yoshiyasu; and Shebanow, Michael S., 4,205,357, Cl. 360-135.000.

Fumeaux, Jean-Paul: *See—*
Aufderhaar, Ernst; Gallay, Jean J.; Kuhne, Manfred; Meyer, Alfred; Rechsteiner, Oswald; Schellenbaum, Max; and Fumeaux, Jean-Paul, 4,205,077, Cl. 424-273.00B.

Furnas, Robert L., to Milsco Manufacturing Company. Foam mold clamp assembly. 4,204,825, Cl. 425-451.900.

Furuichi, Katsushi: *See—*
Goshima, Yoshitomo; Kawakubo, Kazuo; Furuichi, Katsushi; Sakamaki, Hisashi; Sawamura, Osamu; Komiya, Yutaka; and Tomosada, Masahiro, 4,204,728, Cl. 355-4.000.

G. D. Searle & Co.: *See—*
Hallinan, E. Ann; and Mazur, Robert H., 4,204,991, Cl. 260-112.50R.
Wagner, Hans A., 4,205,169, Cl. 544-323.000.

Gagen, Igor E.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

Gaiser, Willi: *See—*
Vinnemann, Antonius; Elsasser, Heinrich; Walter, Manfred; and Gaiser, Willi, 4,204,414, Cl. 66-145.00R.

Galileo Electro-Optics Corp.: *See—*
Tosswill, Christopher H., 4,205,228, Cl. 250-336.000.

Gallay, Jean J.: *See—*
Aufderhaar, Ernst; Gallay, Jean J.; Kuhne, Manfred; Meyer, Alfred; Rechsteiner, Oswald; Schellenbaum, Max; and Fumeaux, Jean-Paul, 4,205,077, Cl. 424-273.00B.

Game, Jacques-Marie N.; and Tiesse, Bernard A., to Sogitec. Method and apparatus for synchronizing the reading of audible and visual information carried by different supports. 4,204,751, Cl. 352-17.000.

Games, John E.; Bitterli, William W.; and Healey, David M., to United Technologies Corporation. Energy conservative control of heating, ventilating, and air conditioning (HVAC) systems. 4,205,381, Cl. 364-505.000.

Gane, Brian R.; and Stewart, David G., to British Petroleum Company Limited, The. Process for the hydrocarbonylation of methanol to ethanol in the presence of added oxygen-containing organic compounds. 4,205,190, Cl. 568-902.000.

Ganellin, Charon R.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Vickers, Margaret R., 4,205,071, Cl. 424-244.000.

Garrett Corporation, The: *See—*
Bosco, Armand, 4,204,718, Cl. 308-15.000.
Carter, William L.; Greathouse, Jack F.; and Zeilinger, Philip T., 4,204,811, Cl. 417-288.000.

Gasparaitis, Bernard; and Albright, Charles D., to Motorola, Inc. Flexible dipole antenna for hand-held two-way radio. 4,205,319, Cl. 343-792.000.

Gast Manufacturing Corporation: *See—*
Le Blanc, Joseph A., 4,204,815, Cl. 418-13.000.

Gastinne, Arnaud: *See—*
Cailliot, Serge, 4,204,964, Cl. 210-370.000.

Gates Rubber Company, The: *See—*
Newberry, Mark A., 4,205,034, Cl. 264-103.000.

Gateway Industries, Inc.: *See—*
Cislak, Raymond S.; and Romanzi, Louis, Jr., 4,204,652, Cl. 242-107.40R.

Gatto, Donald F., to Motorola, Inc. Access panel with non-destructive release. 4,204,608, Cl. 220-335.000.

Gauchel, Peter; and Wissinger, Waldemar, to Dynamit Nobel Aktiengesellschaft. Process and apparatus for the extrusion of coated skein-shaped profiles, preferably of thermoplastic synthetic resins. 4,204,821, Cl. 425-131.100.

Gaylord, Norman G.: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,205,096, Cl. 427-4.000.

Gebeke, Charles D., to Minnesota Mining and Manufacturing Company. Tape guide assemblies for video cassettes. 4,204,654, Cl. 242-199.000.

GEC-General Signal Limited: *See—*
Porter, Cyril A.; and Wardle, Malcolm R., 4,205,326, Cl. 340-147.00R.

Gehrmann, Heinz: *See—*
Merz, Georg; and Gehrmann, Heinz, 4,205,384, Cl. 364-555.000.

Gem Industries Inc.: *See—*
Stiles, Nathan; and Heininger, Richard T., 4,204,286, Cl. 5-11.000.

General Binding Corporation: *See—*
Staats, Henry N., 4,204,704, Cl. 281-21.00R.

General Dynamics Corporation Pomona Division: *See—*
Speer, Spencer J., 4,204,775, Cl. 366-336.000.

General Electric Company: *See—*
Boyle, Malachy V.; and Ouyang, Mid, 4,205,198, Cl. 174-171.000.
Brammerlo, Allen A., 4,205,247, Cl. 310-256.000.
Canney, Robert S.; Ouellette, Ronald J.; and Morong, William H., Jr., 4,205,290, Cl. 336-90.000.
Davis, William D., 4,205,249, Cl. 313-30.000.
Heartz, Robert A., 4,205,389, Cl. 364-900.000.
Houston, Douglas E.; and Loughran, James A., 4,204,628, Cl. 228-106.000.
Leger, Donald R.; Clifford, Peter P.; and Matson, William N., 4,204,803, Cl. 415-219.00R.
McVoy, Charles F., Jr., 4,204,417, Cl. 72-206.000.
Moore, Stanley E., 4,205,304, Cl. 340-365.00P.
Olander, Walter K., 4,205,007, Cl. 260-429.00C.
Thompson, Paige W., 4,204,378, Cl. 53-403.000.
Washington, Forest L., 4,205,358, Cl. 361-44.000.
Webb, Jimmy L.; and Ligon, Woodfin V., 4,204,428, Cl. 73-339.00R.

General Mills, Inc.: *See—*
Blake, Jon R., 4,205,093, Cl. 426-333.000.

General Signal Corporation: *See—*
Frazel, Wilbur H., 4,204,809, Cl. 417-15.000.

General Tire & Rubber Company, The: *See—*
Alexander, Joseph H., 4,204,903, Cl. 156-394.000.
Neubert, Terry C., 4,204,982, Cl. 260-5.000.
Neubert, Terry C., 4,204,984, Cl. 260-17.500.

George, Victor E.; Haas, Roger A.; Krupke, William F.; and Schlitt, Leland G., to United States of America, Energy. Multiple excitation regenerative amplifier inertial confinement system. 4,205,278, Cl. 331-94.50P.

Georgelis, Eric: *See—*
Wechsler, Ionel; Oberteuffer, John A.; Nolan, John J.; Kolm, Henry H.; Georgelis, Eric; and Arvidson, Bo R., 4,204,948, Cl. 209-223.00R.

Gerber Garment Technology, Inc.: *See—*
Pearl, David R., 4,204,448, Cl. 83-177.000.

Gerlach, Robert, to Perkin-Elmer Corporation, The. Auger electron spectroscopy. 4,205,226, Cl. 250-305.000.

Gerner, Walter L.: *See—*
Maul, Stephen B.; Lemke, Paul A.; Gerner, Walter L.; and Yoder, John B., 4,204,364, Cl. 47-1.100.

Gervais, Jean P.: *See—*
Maire, Jacques; Fourre, Jacques; and Gervais, Jean P., 4,205,055, Cl. 423-445.000.

Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH: *See—*
Maixner, Uwe; and Milferstadt, Dieter, 4,205,232, Cl. 250-397.000.
Michaelis, Walfried; and Weitkamp, Claus, 4,204,908, Cl. 176-19.0LD.

Gesellschaft zur Errichtung von Unweltschutzanlagen mbH: *See—*
Kreuzburg, Eberhard; Eichholz, Gunter; and Dederichs, Knut, 4,204,959, Cl. 210-195.100.

Gibson, Kirk R.: *See—*
Jacobson, Robert L.; and Gibson, Kirk R., 4,204,947, Cl. 208-243.000.

Giglberger, Dieter: *See—*
Kohler, Robert; Muller, Jorn; Giglberger, Dieter; and Bestenreiner, Freidrich, 4,204,731, Cl. 355-16.000.

Gilchrist, Forbes D.; Miller, Robert L.; and Myers, Richard W., to Zenith Radio Corporation. Surface wave device with suppressed boundary-reflected waves. 4,205,280, Cl. 333-151.000.

Gipprich, John W., to Westinghouse Electric Corp. Phase shifting circuit element. 4,205,282, Cl. 333-161.000.

Giuggio, Nicholas; Noyes, Richard C.; and Zaman, Shakir U., to Combustion Engineering, Inc. Temperature sensitive self-actuated scram mechanism. 4,204,909, Cl. 176-22.000.

Giurtino, Joel F.: *See—*
Lobdell, Donn D.; Herman, Stephen J.; and Giurtino, Joel F., 4,205,042, Cl. 422-47.000.

Givens, Edmond W. Back exerciser. 4,204,676, Cl. 272-136.000.

Glace, William R.: *See—*
Ibsen, Robert L.; Glace, William R.; and Reed, William R., Jr., 4,204,978, Cl. 252-408.000.

Glaxo Group Limited: *See—*
Stables, Harry C.; and Briggs, Kenneth, 4,205,165, Cl. 544-20.000.

Glazer, Emmett J.: *See—*
Cich, Frank A.; Glazer, Emmett J.; and Smith, Edwin S., 4,205,149, Cl. 526-89.000.

Gleason Works, The: *See—*
Deprez, Thomas A., 4,204,786, Cl. 409-262.000.

Glenn, Travis A. Tack strip nailer. 4,204,625, Cl. 227-76.000.

Gloth, Richard E.; and Tazuma, James J., to Goodyear Tire & Rubber Company, The. Indane containing polymers. 4,205,160, Cl. 528-425.000.

Godo, Einar. Word recognizing system. 4,205,302, Cl. 340-146.200.

Goel, Prabhakar, to International Business Machines Corporation. Logic chip test system with path oriented decision making test pattern generator. 4,204,633, Cl. 371-27.000.

Goessler, Gerhard, to E.G.O. Elektro-Geraete Blanc und Fischer. Electric time switch. 4,205,292, Cl. 337-101.000.

Goethlich, Lutz: *See—*
Barzynski, Helmut; Hartmann, Heinrich; Lautenbach, Dieter; Osterloh, Rolf; Goethlich, Lutz; and Heil, Guenter, 4,205,139, Cl. 525-38.000.

Gogel, Edward V.: *See—*
Mattick, Leonard R.; and Gogel, Edward V., 4,205,092, Cl. 426-271.000.

Gold, Charles. High impedance electrical testing instrument for AC and DC voltage detection and continuity testing. 4,205,264, Cl. 324-51.000.

Goldin, Vladimir A.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Goldinger, John A., to PPG Industries, Inc. Scoring device having a referencing carriage. 4,204,445, Cl. 83-880.000.

Gomi, Yoshifumi: *See—*
Miyazawa, Yoshinori; and Gomi, Yoshifumi, 4,204,778, Cl. 400-124.000.

Gonzalez, Manuel A.: *See—*
Smith, Ronald J.; and Gonzalez, Manuel A., 4,205,049, Cl. 423-167.000.

Good, Wayne W., to Harter Corporation. Frame construction for a divider wall. 4,204,375, Cl. 52-239.000.

Goodman, Richard M., to American Cyanamid Company. Mixtures of polycationic and polyanionic polymers for scale control. 4,205,143, Cl. 525-213.000.

Goodyear Tire & Rubber Company, The: *See—*
Bartell, Jeffrey M.; and D'Elia, Robert V., 4,204,897, Cl. 156-155.000.
Cich, Frank A.; Glazer, Emmett J.; and Smith, Edwin S., 4,205,149, Cl. 526-89.000.
Davis, Joseph P.; and Nagy, Julius S., 4,205,103, Cl. 427-373.000.
Duh, Ben, 4,205,157, Cl. 528-272.000.
Gloth, Richard E.; and Tazuma, James J., 4,205,160, Cl. 528-425.000.
Streets, Roger L.; Rabito, Thomas G.; and Von Kamp, John, 4,204,987, Cl. 260-29.20E.
Weinstein, Arthur H., 4,205,153, Cl. 526-292.000.

Goof, Sven K. L. Finger operated control system for hand-held appliances. 4,205,236, Cl. 307-118.000.

Gordon, William J. J.; and Poze, Anthony N. Animal track teaching. 4,204,705, Cl. 283-1.00R.

Gorgone, Robert L.: *See—*
Iannadrea, Gerald; Gorgone, Robert L.; and Kovach, Alan J., 4,204,765, Cl. 356-71.000.

Goshima, Yoshitomo; Kawakubo, Kazuo; Furuichi, Katsushi; Sakamaki, Hisashi; Sawamura, Osamu; Komiya, Yutaka; and Tomosada, Masahiro, to Canon Kabushiki Kaisha. Method and apparatus for color conversion. 4,204,728, Cl. 355-4.000.

Gossard, Arthur C.: *See—*
Dingle, Raymond; Gossard, Arthur C.; Petroff, Pierre M.; and Wiegmann, William, 4,205,329, Cl. 357-16.000.

Gotanda, Motohiro. Apparatus for controlling a power source for an electrical alarm or indicator. 4,205,328, Cl. 340-521.000.

Gothe, Diethard; Nuske, Jeffrey J.; and Friedrich, Jurgen, to VDO Adolf Schindling AG. Device for the capacitive level height measurement of liquids or solids. 4,204,427, Cl. 73-304.00C.

Goto, Kenji: *See—*
Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, 4,205,040, Cl. 264-233.000.

Gould Inc.: *See—*
Clausing, Challiss I, 4,205,207, Cl. 200-50.0AA.
Jacobs, Philip C., Jr., 4,205,294, Cl. 337-234.000.

Graham, Edward F. Life and weight saving aircraft seat structure. 4,204,657, Cl. 244-122.00R.

Gramatica, Giorgio, to Tecnimont S.p.A. Reactor for catalyzed exothermic reactions. 4,205,044, Cl. 422-191.000.

Grammer, Don O.: *See—*
Palmer, Nigel I.; and Grammer, Don O., 4,205,123, Cl. 429-147.000.

Gratzmuller, Claude A. Hydraulic control system for electric circuit-breakers. 4,204,461, Cl. 91-454.000.

Graves, Joel S. Apparatus for chronologically dispensing tablets. 4,204,611, Cl. 221-5.000.

Gray, Alan M. Ticket and reading device. 4,204,637, Cl. 235-431.000.

Gray, Lewis L. Golf aid. 4,204,332, Cl. 33-174.00F.

Grazier, Phillip E.: *See—*
Fraser, Donald B.; Dim, Alexander; Anthony, Kevin E.; Costello, Wayne R.; and Grazier, Phillip E., 4,204,922, Cl. 204-105.00R.

Greany, John K.: *See—*
Korklan, Harris J.; and Greany, John K., 4,204,907, Cl. 162-135.000.

Greathouse, Jack F.: *See—*
Carter, William L.; Greathouse, Jack F.; and Zeilinger, Philip T., 4,204,811, Cl. 417-288.000.

Green, David T., to United States Surgical Corporation. Manually powered surgical stapling instrument. 4,204,623, Cl. 227-19.000.

Greenberg, Raymond I.: *See—*
Meyer, Harry C.; Tanton, George A.; Greenberg, Raymond I.; and Williams, Joe E., 4,204,926, Cl. 204-157.10H.

Greentex Incorporated: *See—*
Corron, Donald C.; and Tallent, Glen, Jr., 4,204,301, Cl. 28-248.000.

Gremmelmaier, Claude; and Riethmann, Jean, to Ciba-Geigy Corporation. Process for producing cyameluric chloride. 4,205,167, Cl. 544-209.000.

Grier, Nathaniel: *See—*
Wagner, Arthur F.; Grier, Nathaniel; and Shen, Tsung-Ting, 4,205,064, Cl. 424-78.000.

Grinblat, Mark P.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Gringlaz, Aron G.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

Grivet, Francis, to J. Bobst & Fils, S.A. Device for conveying sheets within a sheet processing machine. 4,204,672, Cl. 271-188.000.

Gross, Robert C.: *See—*
Horak, Jerry R.; Langworthy, Harold F.; Rauner, Frederick J.; and Gross, Robert C., 4,204,866, Cl. 430-306.000.

Gross, Ulrich, to U.S. Philips Corporation. Device for automatic tonal accompaniment in electronic musical instruments. 4,204,453, Cl. 84-1.260.

Gross, William H.: *See—*
Wright, John W.; and Gross, William H., 4,205,276, Cl. 330-294.000.

Grossman, Morris G.; Levy, Edward D.; and Meisner, Edward H., to Falcon Safety Products, Inc. Instrument for positioning pictures on a mounting board. 4,204,335, Cl. 33-476.000.

Gruner, Ronald H., to Data General Corporation. Central processing unit employing microprogrammable control for use in a data processing system. 4,205,372, Cl. 364-200.000.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Blackburn, Tom L., 4,205,275, Cl. 330-279.000.

GTE Laboratories Incorporated: *See—*
Dempsey, Martin E.; and Lee, Ching W., 4,205,285, Cl. 333-194.000.

GTE Sylvania Incorporated: *See—*
Fohl, Timothy, 4,204,834, Cl. 431-362.000.

Gubaidulin, Vyacheslav F.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Gulf Oil Corporation: *See—*
Kirkpatrick, Joel L., 4,205,177, Cl. 548-265.000.

Gulick, Joseph F.; Miller, James S.; and Pue, Alan J., to United States of America, Navy. Broadband interferometer and direction finding missile guidance system. 4,204,655, Cl. 244-3.190.

Gunn, Christopher J.; and Barker, Joseph, to Whitfield Wylie Limited. Nailing machine for use in the manufacture of wooden pallets. 4,204,624, Cl. 227-45.000.

Gunning, William F., to Xerox Corporation. Reproduction scanning system having intermediate storage between input and output scanning stations. 4,205,350, Cl. 358-296.000.

Gustafson, Wayne, to Erskine Manufacturing Company, Inc. Hitch for draft implement. 4,204,699, Cl. 280-415.00R.

Guyonnet, Marcel A. R. Apparatus for packaging pasty material. 4,204,382, Cl. 53-563.000.

Haas, Roger A.: *See—*
George, Victor E.; Haas, Roger A.; Krupke, William F.; and Schlitt, Leland G., 4,205,278, Cl. 331-94.50P.

Haemonetics Corporation: *See—*
Latham, Allen, Jr., 4,204,537, Cl. 128-214.00R.

Hafener, Klaus: *See—*
Wiest, Hubert; Ludwig, Peter; Hafener, Klaus; and Lieb, Erwin, 4,205,161, Cl. 528-487.000.

Haggarty, Michael J. Baseball throwing practice target. 4,204,677, Cl. 273-26.00A.

Haine, Francis: *See—*
Bridoux, Edouard; Bruneel, Christian; Haine, Francis; and Thomin, Guy, 4,204,435, Cl. 73-626.000.

Haines, Joseph R., Sr., to Haines Towing Inc. Anti-jackknife apparatus. 4,204,700, Cl. 280-432.000.

Haines Towing Inc.: *See—*
Haines, Joseph R., Sr., 4,204,700, Cl. 280-432.000.

Haley, Frank P.; and McTamaney, Louis S., to FMC Corporation. Programmable alarm system for marine loading arms. 4,205,308, Cl. 340-686.000.

Hall, Harold E., to Stalwart Rubber Company, The. Connector assembly for anode ring of cathode ray tube. 4,204,741, Cl. 339-200.00P.

Hall, John B.: *See—*
Sprecker, Mark A.; Kryschuk, John J.; and Hall, John B., 4,205,186, Cl. 568-600.000.

Hall, John W.: *See—*
Loker, W. Aleck; Bortzfield, Jon L.; Chard, Steven D.; Hall, John W.; and Meredith, John T., 4,204,589, Cl. 192-27.000.

Hall Jr., Harleston J.; Sassin, Roger I.; and Yuhas, Drew J., to AMF Incorporated. Game ball racket wherein certain racket components are structurally integrated with the racket frame by the string with which the racket is strung. 4,204,681, Cl. 273-73.00C.

Hallinan, E. Ann; and Mazur, Robert H., to G. D. Searle & Co. Sarcosine[1] dehydroalanine[8] angiotensin II derivatives. 4,204,991, Cl. 260-112.50R.

Halverson, Robert J. Electrical terminal cleaning device. 4,204,294, Cl. 15-185.000.

Hamada, Shinji; Hoshino, Fumio; and Tabata, Junichi, to Fuji Photo Film Co., Ltd. Method and device for contact-printing. 4,204,736, Cl. 355-118.000.

Hamanaka, Kunio; and Sakurai, Yoshiki, to Tokyo Shibaura Denki Kabushiki Kaisha. Flexible disk drive apparatus. 4,205,355, Cl. 360-99.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. 4,204,901, Cl. 156-384.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. 4,204,902, Cl. 156-384.000.

Hampson, James W.: *See—*
Luddy, Francis E.; Hampson, James W.; Herb, Samuel F.; and Rothbart, Herbert L., 4,205,006, Cl. 260-410.700.

Handa, Hiroyuki; and Handa, Tomoko. Compact vacuum cleaner. 4,204,298, Cl. 15-344.000.

Handa, Tomoko: *See—*
Handa, Hiroyuki; and Handa, Tomoko, 4,204,298, Cl. 15-344.000.

Haneda, Akio: *See—*
Minezaki, Hisao; Haneda, Akio; Masaki, Asanori; Hanzawa, Takeo; and Uchiike, Yukio, 4,204,648, Cl. 242-18.00A.

Hani, August; Horler, Hansulrich; and Ursprung, Hans, to BBC Brown Boveri & Company Limited. Silencer on the intake side of a compressor with assembly of axially spaced annular sound-damping elements. 4,204,586, Cl. 181-229.000.

Hanna, James L., to Mead Corporation, The. Shelving system. 4,204,480, Cl. 108-108.000.

Hansen, George E.: *See—*
Cisco, Thomas F.; Hansen, George E.; and Agate, Robert N., 4,204,916, Cl. 203-6.000.

Hanzawa, Takeo: *See—*
Minezaki, Hisao; Haneda, Akio; Masaki, Asanori; Hanzawa, Takeo; and Uchiike, Yukio, 4,204,648, Cl. 242-18.00A.

Harada, Susumu; Kondo, Toshio; and Eino, Tomomi, to Nippondenso Co., Ltd. Fuel cut-off apparatus for electronically-controlled fuel injection systems. 4,204,483, Cl. 123-32.0EL.

Harada, Tetsuya, to Japan Synthetic Rubber Company, Limited. Process of producing 5-alkylidenenorbornene. 4,205,192, Cl. 585-363.000.

Harada, Toshiro; Kubo, Tadayuki; Kasuya, Kazusato; and Watanabe, Yukihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd. Comparator circuit adapted for use in a system for controlling the air-fuel ratio of an internal combustion engine. 4,204,482, Cl. 123-32.0EE.

Harada, Yoshiaki, to Konishiroku Photo Industry Co., Ltd. Method and apparatus for controlling toner concentration of a liquid developer. 4,204,766, Cl. 356-404.000.

Harlfinger, Rudolf; Ehehalt, Theobald; and Kappes, Alfred, to Audi NSU Auto Union Aktiengesellschaft. Method of manufacturing rubbing surfaces of cast iron. 4,204,924, Cl. 204-129.350.

Harman, Ted L.: *See—*
Haygood, Juan C.; and Harman, Ted L., 4,205,325, Cl. 340-147.0MD.

Harrington, Richard H. Flying disc. 4,204,357, Cl. 46-74.00D.

Harrington, William O. Playing aid for keyboard instruments. 4,204,455, Cl. 84-468.000.

Harris, Samuel W.: *See—*
Lee, Richard J.; and Harris, Samuel W., 4,204,970, Cl. 252-51.50A.

Harrison, John W.: *See—*
Elton, Michael J.; Jackson, Arthur; and Harrison, John W., 4,205,185, Cl. 562-444.000.

Harrison, Paul H., to M & R Seal Press Co., Inc. Embossing press. 4,204,468, Cl. 101-3.0SP.

Hart, John R.; Lare, Donald W.; and Nault, James J., to Champion International Corporation. Synthetic polymeric fibrids, fibrid products and process for their production. 4,205,025, Cl. 264-14.000.

Harter Corporation: *See—*
Good, Wayne W., 4,204,375, Cl. 52-239.000.

Hartmann, Heinrich: *See—*
Barzynski, Helmut; Hartmann, Heinrich; Lautenbach, Dieter; Osterloh, Rolf; Goethlich, Lutz; and Heil, Guenter, 4,205,139, Cl. 525-38.000.

Hartsough, Larry D., to Perkin-Elmer Corporation, The. Method and apparatus for attaching a target to the cathode of a sputtering system. 4,204,936, Cl. 204-192.00R.

Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See—*
Schulte, Fritz; and Hurter, Wilfried, 4,204,912, Cl. 201-29.000.

Hasegawa, Yoshio: *See—*
Morohoshi, Fumio; and Hasegawa, Yoshio, 4,204,400, Cl. 84-484.000.

Haseler, Helmut: *See—*
Kuffner, Karl; Lassig, Wolfgang; Meier, Ernst; Boie, Immo; Kirchhoff, Gertrud; Haseler, Helmut; and Stark, Herbert, 4,204,867, Cl. 430-376.000.

Hashimoto, Teiji: *See—*
Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; Shimizu, Masami; and Hashimoto, Teiji, 4,204,762, Cl. 354-242.000.
Shimizu, Masami; and Hashimoto, Teiji, 4,205,287, Cl. 335-271.000.

Hashimoto, Tsutomu: *See—*
Seita, Toru; Shimizu, Akihiko; Kato, Yoshio; and Hashimoto, Tsutomu, 4,205,134, Cl. 521-53.000.

Haskell, Donald M.: *See—*
Makovec, Donald J.; and Haskell, Donald M., 4,205,196, Cl. 585-701.000.

Hattori, Yoshinori; and Miyachi, Tamotu, to NGK Spark Plug Co., Ltd. Process for producing compact silicon nitride ceramics. 4,205,033, Cl. 264-65.000.

Haubold, Axel D.: *See—*
Bokros, Jack C.; Shim, Hong S.; and Haubold, Axel D., 4,204,542, Cl. 128-335.500.

Hauck, Warren J.: *See—*
Lane, Manning; Hauck, Warren J.; and Sweeney, Roy O., 4,204,287, Cl. 5-18.00R.

Hausler, Elwood B.: *See—*
Boos, Charles J.; Hausler, Elwood B.; Hirsch, James A.; Kasprzyk, Martin R.; and Smith, Elmer G., 4,205,363, Cl. 361-264.000.

Hausslein, Robert W.: *See—*
Byers, Charles H.; Hausslein, Robert W.; and Nestle, Mara O., 4,204,869, Cl. 430-564.000.

Haverland, Joseph G. Reel assembly. 4,204,651, Cl. 242-96.000.

Hawkins, Graham S. W., to Business Efficiency Aids, Inc. Rotary card index system. 4,204,351, Cl. 40-372.000.

Hayashi, Hideo: *See—*
Tsuchiya, Shozo; Oshima, Akio; and Hayashi, Hideo, 4,205,145, Cl. 525-502.000.

Hayashi, Toshimasa: *See—*
Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, 4,205,040, Cl. 264-233.000.

Hayashibara Biochemical Laboratories, Inc.: *See—*
Fukami, Kousuke; Fujimoto, Masanori; Fujita, Fumio; and Nagase, Tsuneyuki, 4,205,218, Cl. 219-145.230.

Hayashimoto, Youichi, to Shindaiwa Kogyo Co., Ltd. Sprocket shaft stay. 4,204,320, Cl. 30-386.000.

Hayati, Hossein; Towers, Russell S.; and Carpenter, Peter G., deceased, to Stauffer Chemical Company. Preparation of high temperature shell molds. 4,204,872, Cl. 106-38.350.

Hayes, Fay A.; and Hayes, Leonard L. Inplace gasket belling machine. 4,204,823, Cl. 425-393.000.

Hayes, Leonard L.: *See—*
Hayes, Fay A.; and Hayes, Leonard L., 4,204,823, Cl. 425-393.000.

Haygood, Juan C.; and Harman, Ted L., to Ford Motor Company. Keyless entry system. 4,205,325, Cl. 340-147.0MD.

Hayman, Ernest P.: *See—*
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., 4,204,859, Cl. 71-121.000.

Hayman, Richard W., to Stanley Hayman and Company. Interface between data reading wand and cash register display. 4,204,636, Cl. 235-383.000.

Haynes, Keith A. F., to John Hadland (Photograph Instrumentation) Ltd. Closure mechanism such as a camera shutter. 4,204,758, Cl. 354-152.000.

Hayward, Terence J.; and Berrecloth, Alan H. T., to HNL Instruments & Controls Limited. Valves. 4,204,553, Cl. 137-82.000.

Hayward Tyler Limited: *See—*
Richardson, John, 4,204,896, Cl. 156-49.000.

Hazome, Katsuaki: *See—*
Shimazaki; Takaichi; and Hazome, Katsuaki, 4,204,429, Cl. 73-362.0AR.

Healey, David M.: *See—*
Games, John E.; Bitterli, William W.; and Healey, David M., 4,205,381, Cl. 364-505.000.

Heartz, Robert A., to General Electric Company. Apparatus for generating a raster image from line segments. 4,205,389, Cl. 364-900.000.

Heat Mirror Associates: *See—*
Chahroudi, Day, 4,204,942, Cl. 204-298.000.

Heaton, Harry. Improvements in or relating to epicyclic gear mechanism. 4,204,436, Cl. 74-767.000.

Heberelein Maschinenfabrik AG: *See—*
Luthi, Walter, 4,204,394, Cl. 57-334.000.

Hecht, Gert: *See—*
Bentele, Benedikt; and Hecht, Gert, 4,204,800, Cl. 415-53.00T.

Hechtfischer, Gustav: *See—*
Satzinger, Gerhard; Herrmann, Manfred F.; and Hechtfischer, Gustav, 4,205,078, Cl. 424-274.000.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Becker, Willi, 4,204,471, Cl. 101-410.000.

Heil, Guenter: *See—*
Barzynski, Helmut; Hartmann, Heinrich; Lautenbach, Dieter; Osterloh, Rolf; Goethlich, Lutz; and Heil, Guenter, 4,205,139, Cl. 525-38.000.

Heimberger, Helmut, to Optilon W. Erich Heilmann GmbH. Method of thermofixing continuous coupling elements of synthetic-resin monofilament for use in slide-fastener stringers. 4,205,027, Cl. 264-23.000.

Heininger, Richard T.: *See—*
Stiles, Nathan; and Heininger, Richard T., 4,204,286, Cl. 5-11.000.

Heinrich Kuhn Metallwarenfabrik Aktiengesellschaft: *See—*
Kuhn, Jacques, 4,204,609, Cl. 220-408.000.

Helix Technology Corporation: *See—*
Hoyt, Thurber I., 4,204,571, Cl. 165-80.00A.

Helle, Michel: *See—*
Lazzari, Jean-Pierre; and Helle, Michel, 4,204,315, Cl. 29-603.000.

Hemmi, Keiji: *See—*
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Hemmi, Keiji, 4,205,166, Cl. 544-27.000.

Henderson, Mary M. Coolant band. 4,204,543, Cl. 128-402.000.

Hendy, Brian N.; Mathews, Carl F.; Nield, Eric; Rose, John B.; and Vincent, Peter I., to Imperial Chemical Industries Limited. Graft copolymers containing rubber, acrylonitrile and an aromatic olefin. 4,205,020, Cl. 525-275.000.

Henkler, Herbert; Koenig, Roland; Deichelmann, Hermann; and Koch, Volker, to BASF Aktiengesellschaft. Magnetic domain storage device. 4,205,393, Cl. 365-133.000.

Hennart, Claude; Rabussier, Bernard; Mandon, Jean-Pierre; and Sapin, Joel, to Airwick Industries, Inc. Bait compositions for anthropophilic flies. 4,205,066, Cl. 424-84.000.

Herb, Samuel F.: *See—*
Luddy, Francis E.; Hampson, James W.; Herb, Samuel F.; and Rothbart, Herbert L., 4,205,006, Cl. 260-410.700.

Herbstman, Sheldon: *See—*
Biasotti, Joseph B.; Dorn, Peter; Herbstman, Sheldon; and Dille, Kenneth L., 4,204,841, Cl. 44-71.000.

Herman, Stephen J.: *See—*
Lobdell, Donn D.; Herman, Stephen J.; and Giurtino, Joel F., 4,205,042, Cl. 422-47.000.

Hermann, Hans D.; Ebigt, Joachim; and Hutten, Ulrich M., to Hoechst Aktiengesellschaft. Process for the preparation of polyvinylbutyral having improved properties. 4,205,146, Cl. 525-61.000.

Hermansson, Hans O.; and Jonsson, Bror E., to Nordifa Industritextiller AB. Fashion felt. 4,205,113, Cl. 428-286.000.

Herrmann, Manfred F.: *See—*
Satzinger, Gerhard; Herrmann, Manfred F.; and Hechtfischer, Gustav, 4,205,078, Cl. 424-274.000.

Herscovici, Eva J., to Stauffer Chemical Company. Polymer recovery process. 4,205,162, Cl. 528-499.000.

Hewitt, Malcolm, to British Industrial Plastics Ltd. Moulding machine. 4,204,822, Cl. 425-210.000.

Heynisch, Hinrich, to Siemens Aktiengesellschaft. Wristwatch. 4,204,399, Cl. 368-240.000.

Hidaka, Mikio: *See—*
Umemura, Sumio; Ohdan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,205,010, Cl. 260-465.300.

Hilary Page "Sensible" Toys Limited: *See—*
Bentall, Simon W., 4,204,360, Cl. 46-98.000.

Hilbert, James F. Method of custom fitting eyeglass frames and article formed thereby. 4,204,750, Cl. 351-130.000.

Hild, Werner: *See—*
Puthawala, Anwer; Hoffmann, Lutz; Emmert, Hermann; Hild, Werner; John, Hans-Erich; and Kluger, Wolfgang, 4,204,974, Cl. 252-301.10W.

Hildebrandt, Eugene F.; and Fellner, Herbert G., to Emerson Electric Co. Centrifugal actuator for electric motor starting switch. 4,205,245, Cl. 310-68.00E.

Hill, John A.: *See—*
Cilento, Rudolfo D.; La Via, Anthony L.; Chen, James L.; and Hill, John A., 4,204,540, Cl. 128-283.000.

Hilson, David G.: *See—*
Johnson, Gary W.; and Hilson, David G., 4,205,297, Cl. 338-195.000.

Hirokichi, Komiya: *See—*
Ohki, Yoshinori; and Hirokichi, Komiya, 4,204,490, Cl. 123-102.000.

Hirosawa, Tamio, to Mikuni Kogyo Kabushiki Kaisha. Carburetor. 4,205,024, Cl. 261-34.00R.

Hirota, Kashichi, to Kyowa Electric & Chemical Co., Ltd. Two bottle carrier. 4,204,617, Cl. 224-45.00A.

Hirota, Yoshihisa: *See—*
Inaba, Shizuo; and Hirota, Yoshihisa, 4,204,687, Cl. 274-15.00R.

Hirsch, James A.: *See—*
Boos, Charles J.; Hausler, Elwood B.; Hirsch, James A.; Kasprzyk, Martin R.; and Smith, Elmer G., 4,205,363, Cl. 361-264.000.

Hirtle, Allen C., to Honeywell Information Systems Inc. Trace method and apparatus for use in a data processing system. 4,205,370, Cl. 364-200.000.

Hirvi, Heikki S., to Schoenherr, Leonard. Bouquet holder. 4,204,365, Cl. 47-41.00R.

Hisazawa, Masahide, to Fujitsu Limited. Error detecting system for integrated circuit. 4,205,301, Cl. 371-3.000.

Hishida, Tadashi: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,205,127, Cl. 435-179.000.

Hitachi Iruma Electronic Company Ltd.: *See—*
Shimazaki, Takaichi; and Hazome, Katsuaki, 4,204,429, Cl. 73-362.0AR.

Hitachi, Ltd.: *See—*
Araya, Takeshi; and Udagawa, Tsugio, 4,205,217, Cl. 219-124.340.
Kanai, Hiromi, 4,205,254, Cl. 313-454.000.
Nakagawa, Isao; Nabeyama, Hiroaki; and Kuroyanagi, Tomomitsu, 4,205,335, Cl. 358-31.000.
Oguro, Tomokatsu, 4,205,256, Cl. 315-39.510.
Oguro, Tomokatsu; Sakamoto, Tatsuji; and Yasukawa, Akio, 4,205,257, Cl. 315-39.690.
Ohara, Ichiro, 4,205,250, Cl. 313-242.000.
Oyama, Yoshishige; Yamauchi, Teruo; and Nishimura, Yutaka, 4,205,377, Cl. 364-431.000.
Tomita, Yoshifumi, 4,205,255, Cl. 313-470.000.

Hitachi Seiko Ltd.: *See—*
Araya, Takeshi; and Udagawa, Tsugio, 4,205,217, Cl. 219-124.340.

HNL Instruments & Controls Limited: *See—*
Hayward, Terence J.; and Berrecloth, Alan H. T., 4,204,553, Cl. 137-82.000.

Ho, Eugene Y.; and Musolino, Joseph A., to Techne Electronics, Ltd. Vehicle antitheft alarm. 4,205,300, Cl. 340-65.000.

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Barner, Richard; and Hubscher, Joseph, 4,204,995, Cl. 260-239.55C.
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Okada, Motohiro, 4,204,703, Cl. 280-734.000.
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Sakurai, Kiyoshi; Matsumoto, Tateo; and Ishikawa, Teruo, 4,205,390, Cl. 364-900.000.

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Feather, Harvey E., 4,205,371, Cl. 364-200.000.
Hirtle, Allen C., 4,205,370, Cl. 364-200.000.

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Hopp, Leo A., to Column Corporation. General purpose compression-type sprayer. 4,204,645, Cl. 239-341.000.

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Hamada, Shinji; Hoshino, Fumio; and Tabata, Junichi, 4,204,736, Cl. 355-118.000.

Hoss, Martin L.: *See—*
Loane, Charles M., Jr.; and Hoss, Martin L., 4,204,864, Cl. 75-257.000.

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Hubbard, S. Eugene, to Kawneer Company, Inc. Entrance door system with automatic astragal and panic device. 4,204,369, Cl. 49-319.000.

Huber, Bernhard: *See—*
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Hubert, Francois; Laurent, Michel; and Leger, Lucien, to B.F.G. Glassgroup. Manufacture of gas filled envelopes. 4,204,721, Cl. 316-19.000.

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Barner, Richard; and Hubscher, Joseph, 4,204,995, Cl. 260-239.55C.

Humme, Gert: *See—*
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Casey, Gary L.; and Hurlong, Granville, Jr., 4,204,507, Cl. 123-139.0AW.

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Schulte, Fritz; and Hurter, Wilfried, 4,204,912, Cl. 201-29.000.

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Husted, Royce H., to Saroy Engineering. Snowfoil ski-bob. 4,204,581, Cl. 180-190.000.

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Ibsen, Robert L.; Glace, William R.; and Reed, William R., Jr., to Den-Mat, Inc. Tooth crack detector. 4,204,978, Cl. 252-408.000.

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Miura, Yoshikazu; and Ichikura, Yoshifumi, 4,205,122, Cl. 429-144.000.

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Yasui, Hiroshi; and Ichimura, Yoshiaki, 4,204,722, Cl. 339-17.0CF.

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Kuehnle, Manfred R.; Martinez, Ferdinand; and Ignasiak, Stanley F., 4,204,865, Cl. 430-30.000.

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Khutoretsky, Garri M.; Fridman, Vladimir M.; Zagorodnaya, Galina A.; Vorontsov, Alexandr I.; Ignatiev, Anatoly D.; and Sudarikov, Vasily L., 4,204,313, Cl. 29-596.000.

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Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

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Ohki, Yoshinori; and Hirokichi, Komiya, 4,204,490, Cl. 123-102.000.

Ikariyama, Takehiro: *See—*
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Swarthout, E. Jack; and Antholz, Phillip, 4,204,983, Cl. 260-17.4GC.

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Ushioda, Katsuyoshi; and Imaizumi, Fumio, 4,204,819, Cl. 425-72.00R.

IMED Corporation: *See—*
Cannon, Raymond E., 4,204,538, Cl. 128-214.00R.

Imperial Camera Corp.: *See—*
Irwin, George; and Irwin, Mark, 4,204,757, Cl. 354-135.000.

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Atherton, John H.; Dobson, Derrick C.; Hodgkinson, Ian; and Clarke, John R. P., 4,204,838, Cl. 23-230.00R.
Baldwin, Brian C.; Shephard, Margaret C.; and Skidmore, Anthony M., 4,205,075, Cl. 424-269.000.
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., 4,204,933, Cl. 204-181.00N.
Boulton, Thomas W.; and Darwent, Brian J., 4,204,939, Cl. 204-258.000.
Bowden, Roy D.; and Seaton, Thomas, 4,205,175, Cl. 546-345.000.
Brydon, Donald L., 4,205,038, Cl. 264-184.000.
Hendy, Brian N.; Mathews, Carl F.; Nield, Eric; Rose, John B.; and Vincent, Peter I., 4,205,020, Cl. 525-275.000.
Ness, Norman M., 4,205,101, Cl. 427-233.000.
Parker, David G.; and Tompsett, Alan J., 4,205,012, Cl. 260-583.00J.
Waring, Wilson S., 4,205,087, Cl. 424-317.000.

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Barrett, James H., 4,205,343, Cl. 358-147.000.

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Tomada, Franco, 4,205,352, Cl. 360-45.000.

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Berg, Erik E.; and Tingwall, Rolf, 4,204,884, Cl. 148-2.000.

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Morita, Yoshinori; Inoue, Hiroshi; and Fujiyoshi, Kenji, 4,205,021, Cl. 525-240.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,205,213, Cl. 219-69.00W.

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Inoue, Yuichiro; and Sakaki, Masamichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pressure measuring device. 4,204,422, Cl. 73-4.00R.

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Laude, Jean-Pierre, 4,204,638, Cl. 235-454.000.

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Pochwalski, Krzysztof K., 4,205,231, Cl. 250-364.000.

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Nowak, Edmund; Zamojdo, Rudolf; Parda, Andrzej; Kurdowski, Wieslaw; and Jankowski, Stefan, 4,204,836, Cl. 432-58.000.

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Bardsley, Henry, III; Luiz, Fernando A.; Nilsen, Nils F.; and Simpson, Ronald C., 4,205,374, Cl. 364-200.000.
Barnhart, Carl F., 4,205,303, Cl. 340-347.0DA.
Barsuhn, Horst E.; Olderdissen, Ulrich; and Schmidt, Werner, 4,204,634, Cl. 371-38.000.
DiStefano, Thomas H.; and Kuhn, Lawrence, 4,204,725, Cl. 355-3.00R.
Goel, Prabhakar, 4,204,633, Cl. 371-27.000.
Patel, Arvind M., 4,205,324, Cl. 371-50.000.

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Sprecker, Mark A.; Kryschuk, John J.; and Hall, John B., 4,205,186, Cl. 568-600.000.

Inui, Taiji: *See—*
Mori, Shunro; Okamoto, Rokuro; Inui, Taiji; and Takeuchi, Tomio, 4,205,163, Cl. 536-17.00R.

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Ono, Takezo; Iribe, Seiki; and Watanabe, Mineo, 4,204,930, Cl. 204-180.00P.

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Irwin, George; and Irwin, Mark, 4,204,757, Cl. 354-135.000.
Iseki Agricultural Machinery Mfg. Co., Ltd.: *See—*
Tanaka, Shinta, 4,204,590, Cl. 192-99.00R.
Tani, Mitsuhiro; and Watanabe, Hideo, 4,204,591, Cl. 192-99.00R.
Ishibashi, Yoshiaki: *See—*
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Sakurai, Kiyoshi; Matsumoto, Tateo; and Ishikawa, Teruo, 4,205,390, Cl. 364-900.000.
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Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shin-ichi; and Uenaka, Akimitsu, 4,205,152, Cl. 526-265.000.
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Isola, Raymond O. Firearm cartridge receiver. 4,204,353, Cl. 42-1.00T.
Ito, Hiromi: *See—*
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, 4,204,767, Cl. 356-444.000.
Itoh, Tsutomu: *See—*
Yamamoto, Masahiro; Okamoto, Yasunari; Itoh, Tsutomu; and Masuda, Senichi, 4,205,359, Cl. 361-58.000.
Iuchi, Keiko: *See—*
Sawa, Natsuo; Nomoto, Tadao; Iuchi, Keiko; Suzuki, Toshihiro; and Kawata, Shunichi, 4,205,156, Cl. 528-117.000.
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Iwatsu Electric Co. Ltd.: *See—*
Eishima, Tetsusuke; Ikariyama, Takehiro; Jinnouchi, Raizo; Oyagi, Kunioki; and Soda, Takashi, 4,205,206, Cl. 179-124.000.
Izumi, Yusuke; Maekawa, Junji; and Suzuki, Katsumi, to Celanese Corporation. Process for preparing ethyl esters of aliphatic carboxylic acids. 4,205,182, Cl. 560-247.000.
J. Bobst & Fils, S.A.: *See—*
Grivet, Francis, 4,204,672, Cl. 271-188.000.
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Baylor, John M., 4,204,716, Cl. 305-11.000.
Schlapman, William J., 4,204,293, Cl. 15-79.00R.
Jachna, Waclaw: *See—*
Jedo, Antoni; and Jachna, Waclaw, 4,204,949, Cl. 209-250.000.
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Elton, Michael J.; Jackson, Arthur; and Harrison, John W., 4,205,185, Cl. 562-444.000.
Jacob, Jose T., to Chemed Corporation. Detoxification of residual quaternaries. 4,204,954, Cl. 210-59.000.
Jacob Schlaepfer & Co. AG: *See—*
Schlaepfer, Robert J., 4,204,610, Cl. 221-1.000.
Jacobs, Philip C., Jr., to Gould Inc. Solderless fuse terminal. 4,205,294, Cl. 337-234.000.
Jacobson, Carl C.; and Crosby, Gaius P., to Crafco, Inc. Pavement cutting machine with pad to stabilize and brake machine. 4,204,714, Cl. 299-1.000.
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Jahn, Ulrich: *See—*
Schatz, Franz; Stammbach, Christian; Thiele, Kurt; Wagner-Jauregg, Theodor W.; Zirngibl, Ludwig; Fischer, Johanna; and Jahn, Ulrich, 4,204,998, Cl. 260-326.150.
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Jamieson, John W.: *See—*
Lee, Sen L.; Shah, Franklin B.; and Jamieson, John W., 4,204,779, Cl. 400-144.200.
Janick, Jules; and Pence, Valerie C., to Purdue Research Foundation. Method of non-agricultural production of cotyledons. 4,204,366, Cl. 47-58.000.
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Nowak, Edmund; Zamojdo, Rudolf; Parda, Andrzej; Kurdowski, Wieslaw; and Jankowski, Stefan, 4,204,836, Cl. 432-58.000.
Japan Aviation Electronics Industry, Ltd.: *See—*
Yasui, Hiroshi; and Ichimura, Yoshiaki, 4,204,722, Cl. 339-17.0CF.
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Fujimatsu, Masaaki, 4,205,037, Cl. 264-182.000.
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Harada, Tetsuya, 4,205,192, Cl. 585-363.000.
Inokuchi, Hiroo; Murano, Kentaro; Kawazura, Hiroshi; and Kobayashi, Tsutomu, 4,205,056, Cl. 423-649.000.
Jaron, Dov: *See—*
Martin, Peter J.; and Jaron, Dov, 4,204,524, Cl. 128-1.00D.
Jaschke, Hans; Kautz, Rudolf; Plate, Hermann; and Ulb, Horst, to Dynamit Nobel Aktiengesellschaft. Endless composite sheet material. 4,205,107, Cl. 428-58.000.
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Jeanson, Rene H., to Societe Anonyme Francaise du Ferodo. Homokinetic transmission. 4,204,411, Cl. 64-2.00P.
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Jen, Tai-Kuang, to NCR Corporation. Matrix printer control system. 4,204,777, Cl. 400-124.000.
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Jahn, Walter; and Schumann, Werner, 4,204,976, Cl. 252-301.40P.
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Newman, Richard H.; Jones, William L., Jr.; and Jenkins, Robert W., Jr., 4,204,550, Cl. 131-171.00R.
Jensen, Knud B.: *See—*
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Eishima, Tetsusuke; Ikariyama, Takehiro; Jinnouchi, Raizo; Oyagi, Kunioki; and Soda, Takashi, 4,205,206, Cl. 179-124.000.
Johann, Maier, to Schwarzkopf Development Corporation. Clamping toolholder. 4,204,781, Cl. 407-105.000.
Johannes, Gunter; and Pfeiffer, Hans-Dieter, to Continental Gummi-Werke Aktiengesellschaft. Tread structure for pneumatic vehicle tires. 4,204,567, Cl. 152-209.00D.
Johansson, Inge, to Defibrator Aktiebolag. Sealing device for shafts. 4,204,689, Cl. 277-27.000.
John Hadland (Photograph Instrumentation) Ltd.: *See—*
Haynes, Keith A. F., 4,204,758, Cl. 354-152.000.
John, Hans-Erich: *See—*
Puthawala, Anwer; Hoffmann, Lutz; Emmert, Hermann; Hild, Werner; John, Hans-Erich; and Kluger, Wolfgang, 4,204,974, Cl. 252-301.10W.
John Lysaght (Australia) Limited: *See—*
Maricic, Alexander, 4,204,712, Cl. 296-35.100.
Johns-Manville Corporation: *See—*
Burger, Anthony J., Jr., 4,204,696, Cl. 280-79.10R.
Johnson, Conrad B., to Turbo Resources Ltd. Process for removing metal contaminants from used lubricating oils. 4,204,946, Cl. 208-181.000.
Johnson, Evan R.; and Tanner, David E., to United States of America, Energy. Valve assembly having remotely replaceable bearings. 4,204,558, Cl. 137-315.000.
Johnson, Gary W.; and Hilson, David G., to Electro Materials Corp. of America. Film type resistor and method of producing same. 4,205,297, Cl. 338-195.000.
Johnson, Howard L., to Caterpillar Tractor Co. Combination check and flow control valve for hydraulic systems. 4,204,459, Cl. 91-445.000.
Johnson, John A. Carton brander. 4,204,469, Cl. 101-9.000.
Johnson, John N.; and Lindenberger, Charles J. Denture hold apparatus. 4,204,322, Cl. 433-185.000.
Johnson & Johnson: *See—*
Vidra, James D., 4,205,061, Cl. 424-55.000.
Johnson, Mark; and Ulrich, Reinhard, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Fiber-optic circuit element. 4,204,742, Cl. 350-96.200.
Johnson, Mark U.; Rothmayer, Jules; and Smith, Hugh M., to Sun Chemical Corporation. Printing inks containing nucleated organic pigments. 4,204,871, Cl. 106-20.000.
Johnson Products Co., Inc.: *See—*
Khalil, Ezzat N.; and Syed, Ali N., 4,205,063, Cl. 424-70.000.
Johnson, Richard V.: *See—*
DeBenedictis, Leonard C.; and Johnson, Richard V., 4,205,348, Cl. 358-285.000.
Johnston, Gordon L., to Donaldson Company, Inc. Discharge valve assembly for multiple-stage dust collector. 4,204,849, Cl. 55-310.000.
Jones, Clyde K. Three dimensional alignment game. 4,204,685, Cl. 273-241.000.
Jones, Leith; and McGrath, N. Christian, to Sprague Electric Company. Method for making terminal bumps on semiconductor wafers. 4,205,099, Cl. 427-90.000.
Jones, Maurice, to David Brown Tractors Limited. Internal combustion engines. 4,204,487, Cl. 123-41.350.
Jones, William L., Jr.: *See—*
Newman, Richard H.; Jones, William L., Jr.; and Jenkins, Robert W., Jr., 4,204,550, Cl. 131-171.00R.
Jones, William M.; and Freas, Mark S., to North American Manufacturing Company, The. Method and apparatus for controlling burner-air-fuel ratio. 4,204,830, Cl. 431-8.000.
Jongsma, Cornelis, to Stamicarbon, B.V. Method for processing a tar containing benzyl benzoate. 4,205,184, Cl. 562-494.000.
Jonsson, Bror E.: *See—*
Hermansson, Hans O.; and Jonsson, Bror E., 4,205,113, Cl. 428-286.000.
Jordan, John H., to Mobil Oil Corporation. Chromatograph. 4,204,423, Cl. 73-23.100.
Joumas, George E.: *See—*
Kmetz, Edward R.; and Joumas, George E., 4,204,833, Cl. 431-22.000.

Juillard, Michel: *See—*
Bachot, Jean; Bouy, Pierre; and Juillard, Michel, 4,204,938, Cl. 204-252.000.
Jullien, Antonin: *See—*
Morel, Pierre; Ortega, Yasmine; Jullien, Claudette; and Jullien, Antonin, 4,204,842, Cl. 48-197.00A.
Jullien, Claudette: *See—*
Morel, Pierre; Ortega, Yasmine; Jullien, Claudette; and Jullien, Antonin, 4,204,842, Cl. 48-197.00A.
Jundt, Werner; Bodig, Bernd; Roozenbeek, Herman; and Werner, Peter, to Robert Bosch GmbH. Ignition system for internal combustion engine. 4,204,508, Cl. 123-148.00E.
Kabirov, Albert G.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.
Kabushiki Kaisha Daini Seikosha: *See—*
Asano, Kazuhiro; Ueda, Makoto; Torisawa, Akira; Shida, Masaharu; Satoh, Katsuhiko; and Mandai, Masaaki, 4,204,397, Cl. 368-202.000.
Asano, Kazuhiro, 4,205,369, Cl. 363-62.000.
Fukushima, Yasuhiro, 4,205,244, Cl. 310-49.00R.
Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,204,395, Cl. 368-35.000.
Morohoshi, Fumio; and Hasegawa, Yoshio, 4,204,400, Cl. 84-484.000.
Shida, Masaharu, 4,205,262, Cl. 318-696.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Aoshiba, Norihiro, 4,204,794, Cl. 414-723.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Miyazawa, Yoshinori; and Gomi, Yoshifumi, 4,204,778, Cl. 400-124.000.
Negita, Mutsumi, 4,205,248, Cl. 310-370.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakucho: *See—*
Miyazaki, Tsutomu; Shiraki, Masao; and Mitsuya, Kinpei, 4,204,393, Cl. 57-301.000.
Kado, Satoshi; Yamazaki, Taketomo; Sakamoto, Tetsu; Yamanaka, Mikio; and Yoshida, Kotaro, to Nippon Steel Corporation. Austenitic heat-resistant steel which forms Al_2O_3 film in high-temperature oxidizing atmosphere. 4,204,862, Cl. 75-124.000.
Kaelble, David H., to Arroyo Research and Consulting Company. Orthodontic bracket bonding system. 4,204,325, Cl. 433-9.000.
Kaelin, Joseph Richard, to Union Carbide Corporation. Method and apparatus for treatment of sludge. 4,204,958, Cl. 210-178.000.
Kagan, Jacques, to University of Illinois Foundation, The. Dibenzo-oxa-bicyclononа-2,6-dienes. 4,205,000, Cl. 260-345.200.
Kahn, Henry, to Kahn, Henry. Rubber dam holder for use during endodontic therapy. 4,204,329, Cl. 433-136.000.
Kahn, Leonard R. Method and means for reducing intelligible crosstalk in telephone systems. 4,205,201, Cl. 370-81.000.
Kahn, Leonard R. Method and means for improving the spectrum utilization of multichannel telephone systems. 4,205,202, Cl. 370-81.000.
Kakizaki, Takehiro; Tagawa, Susumu; and Sawai, Masahide, to Sony Corporation. Elimination of landing errors in electron-optical system of mixed field type. 4,205,253, Cl. 313-437.000.
Kali-Chemie Aktiengesellschaft: *See—*
Thies, Peter W., 4,205,083, Cl. 424-283.000.
Kalina, Robert F., to Western Electric Company, Inc. Boxed capacitor with bimetallic terminals and method of making. 4,205,365, Cl. 361-308.000.
Kama, Haruo: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,353, Cl. 360-61.000.
Kamae, Naohiko: *See—*
Mitsuya, Eiji; Kishimoto, Tomio; Hoshida, Katsusuke; and Kamae, Naohiko, 4,205,341, Cl. 358-135.000.
Kamata, Akira: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,205,127, Cl. 435-179.000.
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Hemmi, Keiji, to Fujisawa Pharmaceutical Co., Ltd. 7-Substituted-3-aminoalkyl-, acylaminoalkyl-, or hydroxyalkyl-substituted heterocyclic thiomethyl-3-cephem-4-carboxylic acid derivatives and preparation thereof. 4,205,166, Cl. 544-27.000.
Kamo, Yohichi. Sewage pump assembly. 4,204,801, Cl. 415-121.00G.
Kanai, Hiromi, to Hitachi, Ltd. Electron gun for a cathode ray tube. 4,205,254, Cl. 313-454.000.
Kane, Michael J. Articulated fishing drum. 4,204,354, Cl. 43-4.500.
Kanmoto, Yoshiaki: *See—*
Kawazu, Motoaki; Yokota, Takashi; Inokuchi, Toshiyuki; and Kanmoto, Yoshiaki, 4,205,349, Cl. 358-294.000.
Kanno, Tominori: *See—*
Kobayashi, Shuji; Aoyagi, Mitsuo; Kanno, Tominori; Ueno, Kazuei; and Nomura, Shin-ichi, 4,205,098, Cl. 427-76.000.
Kapitanov, Nikolai N. Surgical instrument for stitching up soft tissues with lengths of spiked suture material. 4,204,541, Cl. 128-334.00R.
Kappes, Alfred: *See—*
Harlfinger, Rudolf; Ehehalt, Theobald; and Kappes, Alfred, 4,204,924, Cl. 204-129.350.
Kappler, Gunter: *See—*
Fehler, Adolf; Kirschey, Gunter; Kappler, Gunter; and Kirchdorffer, Gerhard, 4,204,404, Cl. 60-740.000.
Karch, John A.: *See—*
Yoo, Jin S.; Burk, Emmett H., Jr.; and Karch, John A., 4,204,840, Cl. 44-1.0SR.
Karlsson, Berit: *See—*
Karlsson, Rune; and Karlsson, Berit, 4,204,501, Cl. 119-72.000.
Karlsson, Rune; and Karlsson, Berit. Anti-lick ring for automatic drinking troughs for animals. 4,204,501, Cl. 119-72.000.
Kasei Optonix, Ltd.: *See—*
Suzuki, Yujiro; Shimiya, Keiji; and Miyagawa, Takashi, 4,205,234, Cl. 250-483.000.
Kasprzyk, Martin R.: *See—*
Boos, Charles J.; Hausler, Elwood B.; Hirsch, James A.; Kasprzyk, Martin R.; and Smith, Elmer G., 4,205,363, Cl. 361-264.000.
Kasuga, Muneo: *See—*
Miyashita, Kiyoshi; and Kasuga, Muneo, 4,204,730, Cl. 355-14.00R.
Kasuya, Kazusato: *See—*
Harada, Toshiro; Kubo, Tadayuki; Kasuya, Kazusato; and Watanabe, Yukihiro, 4,204,482, Cl. 123-32.0EE.
Kato, Hideo; and Koshinaka, Eiichi, to Hokuriku Pharmaceutical Co., Ltd. Anti-spasmodic substituted quinolizidine and indolizidine compounds. 4,205,074, Cl. 424-267.000.
Kato, Hiroshi; and Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process for recovering modified polyvinyl alcohols from aqueous solution containing them. 4,205,147, Cl. 525-62.000.
Kato, Yoshio: *See—*
Seita, Toru; Shimizu, Akihiko; Kato, Yoshio; and Hashimoto, Tsutomu, 4,205,134, Cl. 521-53.000.
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, to Olympus Optical Co., Ltd. Automatic cataphoresis apparatus. 4,204,767, Cl. 356-444.000.
Kautz, Rudolf: *See—*
Jaschke, Hans; Kautz, Rudolf; Plate, Hermann; and Ulb, Horst, 4,205,107, Cl. 428-58.000.
Kawada, Izumi: *See—*
Aida, Ko; Uchida, Kinya; and Kawada, Izumi, 4,205,125, Cl. 435-133.000.
Kawagai, Kenji; and Yoshida, Shigeki, to Tokyo Shibaura Electric Co., Ltd. Temperature compensated constant current MOS field effective transistor circuit. 4,205,263, Cl. 323-22.00R.
Kawahara, Masakatsu: *See—*
Ikegami, Yoshio; Kohge, Tadashi; Kawahara, Masakatsu; and Kimura, Hirofumi, 4,204,496, Cl. 118-405.000.
Kawai, Mitsuo; and Ono, Hironobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Basic air-fuel ratio adjustment method and apparatus. 4,204,505, Cl. 123-119.0EC.
Kawakama, Motoaki: *See—*
Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, 4,205,040, Cl. 264-233.000.
Kawakami, Isao: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,205,127, Cl. 435-179.000.
Kawakita, Kenji: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,205,180, Cl. 560-168.000.
Kawakubo, Kazuo: *See—*
Goshima, Yoshitomo; Kawakubo, Kazuo; Furuichi, Katsushi; Sakamaki, Hisashi; Sawamura, Osamu; Komiya, Yutaka; and Tomosada, Masahiro, 4,204,728, Cl. 355-4.000.
Kawasaki, Michio: *See—*
Omori, Tsuguharu; and Kawasaki, Michio, 4,205,197, Cl. 13-27.000.
Kawasaki Steel Corporation: *See—*
Irie, Toshio; Matsumura, Ko; Nakamura, Hiroto; Shimanaka, Hiroshi; and Suzuki, Toshio, 4,204,890, Cl. 148-111.000.
Kawata, Shunichi: *See—*
Sawa, Natsuo; Nomoto, Tadao; Iuchi, Keiko; Suzuki, Toshihiro; and Kawata, Shunichi, 4,205,156, Cl. 528-117.000.
Kawazoe, Akio: *See—*
Maeda, Toshinobu; Nakamura, Yoshikazu; and Kawazoe, Akio, 4,205,260, Cl. 318-318.000.
Kawazu, Motoaki; Yokota, Takashi; Inokuchi, Toshiyuki; and Kanmoto, Yoshiaki, to Ricoh Company, Ltd. Optoelectronic scanning apparatus. 4,205,349, Cl. 358-294.000.
Kawazura, Hiroshi: *See—*
Inokuchi, Hiroo; Murano, Kentaro; Kawazura, Hiroshi; and Kobayashi, Tsutomu, 4,205,056, Cl. 423-649.000.
Kawecki, Henry E. Wheelchair braking apparatus. 4,204,588, Cl. 188-2.00F.
Kawneer Company, Inc.: *See—*
Hubbard, S. Eugene, 4,204,369, Cl. 49-319.000.
Kayahara, Hirohumi: *See—*
Maeda, Masahiro; and Kayahara, Hirohumi, 4,204,732, Cl. 355-55.000.

Kelly, Walter F. Two-ply duct core. 4,204,562, Cl. 138-132.000.
Kendall, Robert M.; Kesselring, John P.; and Krill, Wayne V., to Acurex Corporation. Catalytic combustion process and system. 4,204,829, Cl. 431-7.000.
Kennametal Inc.: *See—*
McCray, David M.; and Murray, Gerald D., 4,204,787, Cl. 409-234.000.
Kennecott Copper Corporation: *See—*
Smith, Richard D., 4,204,883, Cl. 148-2.000.
Keresztes nee Ordog: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.
Kernforschungasanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Thiele, Dietrich, 4,204,975, Cl. 252-301.10W.
Kersting, Emil F.; and Schulte, Rolf, to SACK GmbH. Flying cropping shears for hot strip. 4,204,449, Cl. 83-328.000.
Kervagoret, Gilbert, to Societe Anonyme D.B.A. Torque-amplifying hydraulic servo-mechanism, particularly for power steering systems in motor vehicles. 4,204,817, Cl. 418-248.000.
Kesselring, John P.: *See—*
Kendall, Robert M.; Kesselring, John P.; and Krill, Wayne V., 4,204,829, Cl. 431-7.000.
Keuffel & Esser Company: *See—*
Erickson, Kent E.; Orsen, Stefan; and Rowe, Gerhardt C., 4,205,385, Cl. 364-560.000.
Khalil, Ezzat N.; and Syed, Ali N., to Johnson Products Co., Inc. Low irritant conditioning shampoo composition. 4,205,063, Cl. 424-70.000.
Khutoretsky, Garri M.; Fridman, Vladimir M.; Zagorodnaya, Galina A.; Vorontsov, Alexandr I.; Ignatiev, Anatoly D.; and Sudarikov, Vasily L. Method of assembling stator core of electric machine inside the housing thereof. 4,204,313, Cl. 29-596.000.
Kibby, Robert M., to Reynolds Metals Company. Magnesium production. 4,204,860, Cl. 75-10.00R.
Kiefer, Gunther: *See—*
Schulmeister, Robert; Edmaier, Franz; and Kiefer, Gunther, 4,204,848, Cl. 55-269.000.
Kikuchi, Makoto, to Toyoda Koki Kabushiki Kaisha. Workpiece loading apparatus. 4,204,441, Cl. 82-2.500.
Kilcher, Beat: *See—*
Ullmann, Werner; Buhler, Ernst; Kilcher, Beat; Ruh, Herbert; and Sieg, Arno, 4,205,212, Cl. 219-69.00W.
Kimura, Hirofumi: *See—*
Ikegami, Yoshio; Kohge, Tadashi; Kawahara, Masakatsu; and Kimura, Hirofumi, 4,204,496, Cl. 118-405.000.
Kimura, Shoji: *See—*
Ishimatsu, Yoshiaki; Shigesada, Shigeki; Suzuki, Hiroyasu; Kitagawa, Hironoshin; and Kimura, Shoji, 4,205,128, Cl. 435-182.000.
Kimura, Tatsuya: *See—*
Sakai, Junichi; and Kimura, Tatsuya, 4,204,745, Cl. 350-96.310.
King, Arthur S. Apparatus for producing foam. 4,204,940, Cl. 204-272.000.
King Instrument Corporation: *See—*
King, James L., 4,204,898, Cl. 156-159.000.
King, James L., to King Instrument Corporation. Tape winding and splicing machine. 4,204,898, Cl. 156-159.000.
Kinkead, Jordan A.: *See—*
Reed, Steven P.; and Kinkead, Jordan A., 4,204,618, Cl. 225-106.000.
Kirbis, Manfred; Schilde, Peter; and Englmaier, Gert, to Danfoss A/S. Apparatus for retracting the stator coil of an electric motor. 4,204,318, Cl. 29-734.000.
Kirchdorffer, Gerhard: *See—*
Fehler, Adolf; Kirschey, Gunter; Kappler, Gunter; and Kirchdorffer, Gerhard, 4,204,404, Cl. 60-740.000.
Kirchhoff, Gertrud: *See—*
Kuffner, Karl; Lassig, Wolfgang; Meier, Ernst; Boie, Immo; Kirchhoff, Gertrud; Haseler, Helmut; and Stark, Herbert, 4,204,867, Cl. 430-376.000.
Kirchhoff, Pamela M.: *See—*
Muench, Wayne C.; Hormel, Thad S.; Kirchhoff, Pamela M.; and Robbins, Lanny A., 4,205,188, Cl. 568-764.000.
Kirkpatrick, Joel L., to Gulf Oil Corporation. Carbamyltriazole insecticides. 4,205,177, Cl. 548-265.000.
Kirrish, Hail; and McCauley, Jon R., to Textron Inc. Screw and captive compression spring fastener assembly. 4,204,566, Cl. 151-38.000.
Kirschey, Gunter: *See—*
Fehler, Adolf; Kirschey, Gunter; Kappler, Gunter; and Kirchdorffer, Gerhard, 4,204,404, Cl. 60-740.000.
Kirst, Herbert A., to Eli Lilly and Company. Antibiotic A201C, A201D and A201E. 4,205,164, Cl. 542-421.000.
Kishimoto, Tomio: *See—*
Mitsuya, Eiji; Kishimoto, Tomio; Hoshida, Katsusuke; and Kamae, Naohiko, 4,205,341, Cl. 358-135.000.
Kitagawa, Hironoshin: *See—*
Ishimatsu, Yoshiaki; Shigesada, Shigeki; Suzuki, Hiroyasu; Kitagawa, Hironoshin; and Kimura, Shoji, 4,205,128, Cl. 435-182.000.
Kitahara, Tomohiro: *See—*
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, 4,204,767, Cl. 356-444.000.
Kitazume, Shooji: *See—*
Morikawa, Hiroyuki; and Kitazume, Shooji, 4,205,193, Cl. 585-367.000.
Klein, Thomas, to National Semiconductor Corporation. Method of manufacturing a low voltage n-channel MOSFET device. 4,205,330, Cl. 357-23.000.
Klenk, Emil, to Maschinenbau Oppenweiler GmbH. Semi-circular stack sheet feeding apparatus. 4,204,667, Cl. 271-3.100.
Klesse, Fritz; and Forster, Jurgen, to Resista Fabrik Elektrischer Widerstande G.m.b.H. Thin-film resistor and process for the production thereof. 4,204,935, Cl. 204-192.00F.
Klesse, Fritz; and Forster, Jurgen. Thin film resistor. 4,205,299, Cl. 338-308.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Matzen, Max, 4,204,814, Cl. 417-437.000.
Klose, Peter H.: *See—*
Ovshinsky, Stanford R.; Klose, Peter H.; and Messing, Wayne P., 4,205,387, Cl. 364-900.000.
Kluger, Wolfgang: *See—*
Puthawala, Anwer; Hoffmann, Lutz; Emmert, Hermann; Hild, Werner; John, Hans-Erich; and Kluger, Wolfgang, 4,204,974, Cl. 252-301.10W.
Kmetz, Edward R.; and Joumas, George E., to Scotty Vent Dampers. Safety control for furnace burner. 4,204,833, Cl. 431-22.000.
Knecht, Helmut, to Adams Industries, Inc. Steam and hot liquid dispensing device. 4,204,465, Cl. 99-293.000.
Knigge, Vincent L.: *See—*
Shim, Norman; and Knigge, Vincent L., 4,205,238, Cl. 235-92.0CT.
Knippenberg, Wilhelmus F.: *See—*
Lersmacher, Bernhard; Lydtin, Hans; Schelhas, Karlheinz; and Knippenberg, Wilhelmus F., 4,204,769, Cl. 356-244.000.
Knoblauch, Wolfgang; and von Werner, Konrad, to Hoechst Aktiengesellschaft; and Teves, Alfred. Hydraulic fluids comprising nitrogen-containing boric acid esters. 4,204,972, Cl. 252-78.100.
Knochel, E. Stanley. Work table and hold-down assembly for power hand saw. 4,204,446, Cl. 83-146.000.
Knott, Philip H. Liquid containing amusement device. 4,204,363, Cl. 46-202.000.
Ko, Raymond, to American Air Filter Company, Inc. Mist eliminator device for a wet scrubber apparatus. 4,204,847, Cl. 55-257.0PV.
Kobayashi, Haro, to Minolta Camera Kabushiki Kaisha. Focus adjusting device for self-contained interchangeable lens camera. 4,204,760, Cl. 354-197.000.
Kobayashi, Shuji; Aoyagi, Mitsuo; Kanno, Tominori; Ueno, Kazuei; and Nomura, Shin-ichi, to Stanley Electric Co., Ltd. Selenium pellets for use in vacuum-deposition and method of producing such pellets. 4,205,098, Cl. 427-76.000.
Kobayashi, Tsutomu: *See—*
Inokuchi, Hiroo; Murano, Kentaro; Kawazura, Hiroshi; and Kobayashi, Tsutomu, 4,205,056, Cl. 423-649.000.
Kobayashi, Yasutoshi: *See—*
Tatsukami, Yoshiharu; Nishibara, Hazime; Kobayashi, Yasutoshi; and Shinonaga, Hideo, 4,205,148, Cl. 525-379.000.
Kobe Steel, Ltd.: *See—*
Ikegami, Yoshio; Kohge, Tadashi; Kawahara, Masakatsu; and Kimura, Hirofumi, 4,204,496, Cl. 118-405.000.
Kobori, Toshio; Sahara, Masayoshi; and Saito, Mitsuru, to Minolta Camera Kabushiki Kaisha. Camera exposure factor indicating device. 4,204,756, Cl. 354-53.000.
Koch, Volker: *See—*
Henkler, Herbert; Koenig, Roland; Deichelmann, Hermann; and Koch, Volker, 4,205,393, Cl. 365-133.000.
Koeneman, James B., to Lord Corporation. Joint prosthesis with contoured pin. 4,204,284, Cl. 3-1.910.
Koenig & Bauer Aktiengesellschaft: *See—*
Kutzner, Willi A. P.; and Schneider, Georg, 4,204,626, Cl. 227-81.000.
Kutzner, Willi A. P.; and Schneider, Georg, 4,204,627, Cl. 227-81.000.
Koenig, Roland: *See—*
Henkler, Herbert; Koenig, Roland; Deichelmann, Hermann; and Koch, Volker, 4,205,393, Cl. 365-133.000.
Kohge, Tadashi: *See—*
Ikegami, Yoshio; Kohge, Tadashi; Kawahara, Masakatsu; and Kimura, Hirofumi, 4,204,496, Cl. 118-405.000.
Kohler, Robert; Muller, Jorn; Giglberger, Dieter; and Bestenreiner, Freidrich, to Agfa-Gevaert, A.G. Apparatus for electrophotographic copying with means for effecting image penetration through the copy carriers. 4,204,731, Cl. 355-16.000.
Kohn, Jean, to Baltek Corporation. Method of producing thin balsa wood sheets. 4,204,900, Cl. 156-255.000.
Kohr, John M. Band saw guard device. 4,204,444, Cl. 83-56.000.
Kojima, Minoru: *See—*
Ohashi, Takashi; Kojima, Minoru; Yoshida, Masako; Okuyama, Toru; and Sakata, Ryozo, 4,205,136, Cl. 521-118.000.
Kokusan Denki Co., Ltd.: *See—*
Nanjo, Hirotoshi; and Watanabe, Takeshi, 4,204,509, Cl. 123-148.00E.
Kolene Corp.: *See—*
Bens, Frederick P., 4,204,886, Cl. 148-15.500.
Kolling, Georg: *See—*
Kroger, Carl; Romey, Ingo; and Kolling, Georg, 4,205,035, Cl. 264-120.000.

Kolm, Henry H.: *See—*
Wechsler, Ionel; Oberteuffer, John A.; Nolan, John J.; Kolm, Henry H.; Georgelis, Eric; and Arvidson, Bo R., 4,204,948, Cl. 209-223.00R.
Komatsu, Yoshimasa: *See—*
Suzuki, Takao; Komatsu, Yoshimasa; Takeda, Akimichi; and Baba, Toshihiko, 4,205,214, Cl. 219-97.000.
Komeda, Tadao; and Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Process for fabrication of semiconductors utilizing selectively etchable diffusion sources in combination with melt-flow techniques. 4,204,894, Cl. 148-188.000.
Komiya, Yutaka: *See—*
Goshima, Yoshitomo; Kawakubo, Kazuo; Furuichi, Katsushi; Sakamaki, Hisashi; Sawamura, Osamu; Komiya, Yutaka; and Tomosada, Masahiro, 4,204,728, Cl. 355-4.000.
Kondo, Hiroo, to Nitto Seiko Co., Ltd. Head for a power operated screwdriver. 4,204,439, Cl. 81-57.370.
Kondo, Tatuya: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Kondo, Tatuya, 4,205,054, Cl. 423-390.000.
Kondo, Toshio: *See—*
Harada, Susumu; Kondo, Toshio; and Eino, Tomomi, 4,204,483, Cl. 123-32.0EL.
Kondratovsky, Viktor S.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Harada, Yoshiaki, 4,204,766, Cl. 356-404.000.
Yamada, Minoru; and Nakagawa, Yasutsugu, 4,204,759, Cl. 354-152.000.
Kononov, Ivan V.; Makushin, Mikhail P.; Maslennikov, Ivan E.; Platonov, Vladimir N.; and Silantiev, Igor I. Pulsator for hydraulic systems controlling actuating mechanisms. 4,204,458, Cl. 91-429.000.
Kool, Bram; Warszawski, Janusz; and Moritz, Jules G., to Microform Data Systems, Inc. Rotary film strip holding apparatus. 4,204,753, Cl. 353-26.00R.
Korklan, Harris J.; and Greany, John K., to Carborundum Company, The. Conditioned colloidal silica post impregnant to prevent binder migration. 4,204,907, Cl. 162-135.000.
Korolkov, Konstantin I.: *See—*
Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V., 4,204,910, Cl. 176-30.000.
Koshiishi, Kiyozo: *See—*
Yamamoto, Tadao; Takekawa, Hiroshi; Banno, Taichi; and Koshiishi, Kiyozo, 4,204,917, Cl. 204-1.00T.
Koshinaka, Eiichi: *See—*
Kato, Hideo; and Koshinaka, Eiichi, 4,205,074, Cl. 424-267.000.
Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V. Gripping means for refuelling a nuclear reactor. 4,204,910, Cl. 176-30.000.
Kostjuk, Sergei F.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.
Kostner, Karl; and Lufi, Aldo. Gum mask. 4,204,324, Cl. 433-299.000.
Kosuga, Tadashi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,353, Cl. 360-61.000.
Kottmann, Alfred: *See—*
Bergmann, Ewald; and Kottmann, Alfred, 4,204,380, Cl. 53-520.000.
Kouno, Akiyoshi; Morishita, Masanobu; and Yui, Yoshio, to Nippon Electric Co., Ltd. Circuit for making a CRT display a TV picture for a copy with dots superposed on half-tone picture areas. 4,205,340, Cl. 358-130.000.
Kovach, Alan J.: *See—*
Iannadrea, Gerald; Gorgone, Robert L.; and Kovach, Alan J., 4,204,765, Cl. 356-71.000.
Kovacs, Gabor: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.
Koyama, Mitsuo: *See—*
Nakagawa, Tadashi; Koyama, Mitsuo; and Nemoto, Ichiro, 4,204,763, Cl. 354-267.000.
Kozima, Hiroshi: *See—*
Shima, Takesaburo; Kozima, Hiroshi; Yoshida, Tomio; and Nakamura, Joji, 4,205,019, Cl. 525-243.000.
Kozuka, Mikio, to Asahi Glass Company, Limited. Spraying apparatus for preparing glass fiber reinforced cementitious product. 4,204,644, Cl. 239-220.000.
Kraftwerk Union Aktiengesellschaft: *See—*
Puthawala, Anwer; Hoffmann, Lutz; Emmert, Hermann; Hild, Werner; John, Hans-Erich; and Kluger, Wolfgang, 4,204,974, Cl. 252-301.10W.
Kramer, Justin. Music director system. 4,205,354, Cl. 360-72.100.
Krause, Anthony V.: *See—*
Sinclair, Clive M.; and Krause, Anthony V., 4,205,252, Cl. 313-422.000.
Kreuzburg, Eberhard; Eichholz, Gunter; and Dederichs, Knut; to Gesellschaft zur Errichtung von Unweltschutzanlagen mbH. Apparatus for the treatment and composting of biological waste. 4,204,959, Cl. 210-195.100.
Kreuzman, Harry E. Tennis practice serving net. 4,204,679, Cl. 273-29.00A.
Krill, Wayne V.: *See—*
Kendall, Robert M.; Kesselring, John P.; and Krill, Wayne V., 4,204,829, Cl. 431-7.000.
Krobel: *See—*
Bauer, Walter; Krobel; and Farber, 4,204,724, Cl. 354-281.000.
Kroger, Carl; Romey, Ingo; and Kolling, Georg, to Bergwerksverband GmbH. Coal-containing shaped bodies and process for making the same. 4,205,035, Cl. 264-120.000.
Krolak, Ronald F., to Bunker Ramo Corporation. Connector coupling ring retainer apparatus and electrical connector assembly retaining means. 4,204,740, Cl. 339-90.00R.
Krumpelt, Michael: *See—*
Britton, Wayne E.; and Krumpelt, Michael, 4,204,921, Cl. 204-98.000.
Krupke, William F.: *See—*
George, Victor E.; Haas, Roger A.; Krupke, William F.; and Schlitt, Leland G., 4,205,278, Cl. 331-94.50P.
Kryschuk, John J.: *See—*
Sprecker, Mark A.; Kryschuk, John J.; and Hall, John B., 4,205,186, Cl. 568-600.000.
Kubo, Tadayuki: *See—*
Harada, Toshiro; Kubo, Tadayuki; Kasuya, Kazusato; and Watanabe, Yukihiro, 4,204,482, Cl. 123-32.0EE.
Kubota, Ltd.: *See—*
Nakagawa, Itsusuke; and Aoyama, Tokuichi, 4,204,486, Cl. 123-41.600.
Kuehnle, Manfred R.; Martinez, Ferdinand; and Ignasiak, Stanley F., to Coulter Systems Corporation. Direct-imaging flexible offset printing plate and method of manufacture. 4,204,865, Cl. 430-30.000.
Kuffner, Karl; Lassig, Wolfgang; Meier, Ernst; Boie, Immo; Kirchhoff, Gertrud; Haseler, Helmut; and Stark, Herbert, to AGFA-Gevaert, A.G. Process for the production of color photographic images using new white coupler substances. 4,204,867, Cl. 430-376.000.
Kuhn, Jacques, to Heinrich Kuhn Metallwarenfabrik Aktiengesellschaft. Cooking, serving and warm-keeping arrangement. 4,204,609, Cl. 220-408.000.
Kuhn, Lawrence: *See—*
DiStefano, Thomas H.; and Kuhn, Lawrence, 4,204,725, Cl. 355-3.00R.
Kuhne, Manfred: *See—*
Aufderhaar, Ernst; Gallay, Jean J.; Kuhne, Manfred; Meyer, Alfred; Rechsteiner, Oswald; Schellenbaum, Max; and Fumeaux, Jean-Paul, 4,205,077, Cl. 424-273.00B.
Kulakov, Valery M.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.
Kumagai, Morio, to Trio Kabushiki Kaisha. Phase-locked loop circuit for use in synthesizer tuner and synthesizer tuner incorporating same. 4,205,272, Cl. 455-83.000.
Kunz, Adolf, to Wiegand Karlsruhe GmbH. Steam jet refrigeration plant. 4,204,410, Cl. 62-500.000.
Kurata, Kenzi; Fukumoto, Toshito; Yoshida, Yuji; Kusama, Masanori; and Tsuruta, Shintaro, to Mitsui Petrochemical Industries, Ltd. Process for azeotropic distillation. 4,204,915, Cl. 203-2.000.
Kurdowski, Wieslaw: *See—*
Nowak, Edmund; Zamojdo, Rudolf; Parda, Andrzej; Kurdowski, Wieslaw; and Jankowski, Stefan, 4,204,836, Cl. 432-58.000.
Kuroda, Mototsugu: *See—*
Yasunaga, Ryuichi; Tsutsumi, Shinya; and Kuroda, Mototsugu, 4,204,297, Cl. 15-323.000.
Kuroyanagi, Tomomitsu: *See—*
Nakagawa, Isao; Nabeyama, Hiroaki; and Kuroyanagi, Tomomitsu, 4,205,335, Cl. 358-31.000.
Kurtz, Bruce E.; and Fitch, Robert H., to Allied Chemical Corporation. Electrolytic production of chlorine and caustic soda. 4,204,920, Cl. 204-98.000.
Kurtz, John J.: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; and Kurtz, John J., 4,205,200, Cl. 370-83.000.
Kurz, Karl H. Sound for insertion in the body for the determination of the internal measurements of hollow organs. 4,204,548, Cl. 128-778.000.

Kusama, Masanori: *See—*
Kurata, Kenzi; Fukumoto, Toshito; Yoshida, Yuji; Kusama, Masanori; and Tsuruta, Shintaro, 4,204,915, Cl. 203-2.000.

Kushida, Shozo: *See—*
Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,204,395, Cl. 368-35.000.

Kutaragi, Ken, to Sony Corporation. Liquid crystal display device. 4,205,311, Cl. 340-784.000.

Kutner, Barry S. Variable diameter aspirating tip. 4,204,328, Cl. 433-29.000.

Kutzner, Willi A. P.; and Schneider, Georg, to Koenig & Bauer Aktiengesellschaft. Wire stapling apparatus. 4,204,626, Cl. 227-81.000.

Kutzner, Willi A. P.; and Schneider, Georg, to Koenig & Bauer Aktiengesellschaft. Staple closing mechanism. 4,204,627, Cl. 227-81.000.

Kuznetsova, Tamara V.: *See—*
Nudelman, Boris I.; Bikbau, Marsel Y.; Oborin, Pavel A.; and Kuznetsova, Tamara V., 4,204,878, Cl. 106-104.000.

Kyowa Electric & Chemical Co., Ltd.: *See—*
Hirota, Kashichi, 4,204,617, Cl. 224-45.00A.

Kyung, Jai H.; and Richards, Harvey J., to Sherex Chemical Company, Inc. Liquid-liquid extraction of Cu, Co, Ni from ammoniacal solutions with 7-ethyl-undeca-2,4-dione. 4,205,048, Cl. 423-24.000.

L. Schuler GmbH: *See—*
Bergmann, Ewald; and Kottmann, Alfred, 4,204,380, Cl. 53-520.000.

Ladage, Cornelis A.; van Linge, Douwe J.; and van Riessen, Huibert A., to ACF Chemiefarma N.V. Solvent vehicle for the parenteral administration of therapeutics. 4,205,089, Cl. 424-365.000.

Lancaster, Patrick R.: *See—*
Lancaster, William G.; and Lancaster, Patrick R., 4,204,377, Cl. 53-399.000.

Lancaster, William G.; and Lancaster, Patrick R., to Lantech, Inc. Process and apparatus for wrapping netting material around a load. 4,204,377, Cl. 53-399.000.

Lancelot, Harry B., III; and Macrobbie, Robert M., to Brown Company. Coupling for lift system for concrete slabs. 4,204,711, Cl. 294-89.000.

Land, Elvert H., Jr.; and Land, Joseph E. Method and device for inserting a rigid liner in a helmet shell. 4,204,311, Cl. 29-451.000.

Land, Joseph E.: *See—*
Land, Elvert H., Jr.; and Land, Joseph E., 4,204,311, Cl. 29-451.000.

Lane, Manning; Hauck, Warren J.; and Sweeney, Roy O. Knock-down sofa bed with hinged mattress. 4,204,287, Cl. 5-18.00R.

Langton, Frederick H.: *See—*
Salway-Waller, Malcolm; and Langton, Frederick H., 4,205,210, Cl. 219-10.810.

Langworthy, Harold F.: *See—*
Horak, Jerry R.; Langworthy, Harold F.; Rauner, Frederick J.; and Gross, Robert C., 4,204,866, Cl. 430-306.000.

Lantech, Inc.: *See—*
Lancaster, William G.; and Lancaster, Patrick R., 4,204,377, Cl. 53-399.000.

Laptev, Fedor V.: *See—*
Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Betjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V., 4,204,910, Cl. 176-30.000.

Larbalestier, David C.: *See—*
Young, Morris S.; and Larbalestier, David C., 4,205,119, Cl. 428-614.000.

Lare, Donald W.: *See—*
Hart, John R.; Lare, Donald W.; and Nault, James J., 4,205,025, Cl. 264-14.000.

Larson, Clayton E., to White Metal Rolling and Stamping Corp. Ladder constructions. 4,204,587, Cl. 182-228.000.

Laser File Inc.: *See—*
Schaefer, Louis F., 4,205,338, Cl. 358-28.500.

Lassig, Wolfgang: *See—*
Kuffner, Karl; Lassig, Wolfgang; Meier, Ernst; Boie, Immo; Kirchhoff, Gertrud; Haseler, Helmut; and Stark, Herbert, 4,204,867, Cl. 430-376.000.

Latham, Allen, Jr., to Haemonetics Corporation. Process for pheresis procedure and disposable plasma. 4,204,537, Cl. 128-214.00R.

Laude, Jean-Pierre, to Instruments S.A. Process of coding a card with a diffraction grating having lines with irregular spacing. 4,204,638, Cl. 235-454.000.

Laughton, Malcolm; and Robinson, Sidney H., to Laughton & Sons Limited. Index-selector devices. 4,204,352, Cl. 40-389.000.

Laughton & Sons Limited: *See—*
Laughton, Malcolm; and Robinson, Sidney H., 4,204,352, Cl. 40-389.000.

Laurent, Michel: *See—*
Hubert, Francois; Laurent, Michel; and Leger, Lucien, 4,204,721, Cl. 316-19.000.

Lautenbach, Dieter: *See—*
Barzynski, Helmut; Hartmann, Heinrich; Lautenbach, Dieter; Osterloh, Rolf; Goethlich, Lutz; and Heil, Guenter, 4,205,139, Cl. 525-38.000.

Lava Gardens, Inc.: *See—*
Dunn, Burton D., 4,204,599, Cl. 206-575.000.

La Via, Anthony L.: *See—*
Cilento, Rudolfo D.; La Via, Anthony L.; Chen, James L.; and Hill, John A., 4,204,540, Cl. 128-283.000.

Lavon, Erik V., to Atlas Copco Aktiebolag. Method and device for breaking a hard compact material. 4,204,715, Cl. 299-16.000.

Lazzari, Jean-Pierre; and Helle, Michel, to Compagnie Internationale pour l'Informatique. Method of producing a magnetic transducer device. 4,204,315, Cl. 29-603.000.

Le Carbone-Lorraine: *See—*
Maire, Jacques; Fourre, Jacques; and Gervais, Jean P., 4,205,055, Cl. 423-445.000.

Leach, John M. Article accumulation conveyor. 4,204,593, Cl. 198-781.000.

Lear Siegler, Inc.: *See—*
Eriksen, Harald S., 4,204,560, Cl. 137-508.000.

Leary, Dennis J. Limb and/or body restraint. 4,204,534, Cl. 128-134.000.

Leblanc, Bernard: *See—*
Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, 4,204,502, Cl. 122-32.000.

Le Blanc, Joseph A., to Gast Manufacturing Corporation. Cartridge rotary vane pump. 4,204,815, Cl. 418-13.000.

Leclerc, Pierre: *See—*
Micheron, Francois; Bruneel, Jean L.; and Leclerc, Pierre, 4,205,242, Cl. 307-400.000.

Lee, Ching W.: *See—*
Dempsey, Martin E.; and Lee, Ching W., 4,205,285, Cl. 333-194.000.

Lee, James C. C. Teletypewriter. 4,204,776, Cl. 400-119.000.

Lee, Richard J.; and Harris, Samuel W., to Standard Oil Company (Indiana). Lubricant compositions containing alkylated aromatic amino acid antioxidants. 4,204,970, Cl. 252-51.50A.

Lee, Sen L.; Shah, Franklin B.; and Jamieson, John W., to Qume Corporation. High character capacity impact printer. 4,204,779, Cl. 400-144.200.

Lefever, Joseph D.: *See—*
McIntyre, James A.; Phillips, Robert F.; and Lefever, Joseph D., 4,204,918, Cl. 204-24.000.

Lefrancois, Jean, to Compagnie Generale des Etablissements Michelin. Process of fabricating hollow bead rings. 4,204,309, Cl. 29-412.000.

Leger, Donald R.; Clifford, Peter P.; and Matson, William N., to General Electric Company. Diaphragm support. 4,204,803, Cl. 415-219.00R.

Leger, Lucien: *See—*
Hubert, Francois; Laurent, Michel; and Leger, Lucien, 4,204,721, Cl. 316-19.000.

LeGoff, Denis, to Compagnie Generale d'Electricite. Method of generating an electric pulse of predetermined shape and application to cutting out a portion from a laser pulse. 4,205,225, Cl. 250-229.000.

Le Guelennec, Emile, to Machines et Applications. Shear for large-sized scrap. 4,204,450, Cl. 83-461.000.

Lemaire, Pierre H. Device for handling containers. 4,204,793, Cl. 414-421.000.

Lemelson, Jerome H. Method and means for automatically setting timepieces in a time zone. 4,204,398, Cl. 36 58-47.000.

Lemke, Paul A.: *See—*
Maul, Stephen B.; Lemke, Paul A.; Gerner, Walter L.; and Yoder, John B., 4,204,364, Cl. 47-1.100.

Lersmacher, Bernhard; Lydtin, Hans; Schelhas, Karlheinz; and Knippenberg, Wilhelmus F., to U.S. Philips Corporation. Cuvette for flameless atom absorption spectroscopy. 4,204,769, Cl. 356-244.000.

Lester, Frank R.; and Bullard, James, to Nuvite Chemical Compounds Corporation. Portable scrubbing tool. 4,204,292, Cl. 15-28.000.

Lever, Robert C., to Volstatic Holding Limited. Electrostatic coating apparatus having conveyor belt, fluidizing and electrostatic means for recirculation of coating particles. 4,204,497, Cl. 118-634.000.

Levering, Arie W.: *See—*
Akzo N.V.; and Levering, Arie W., 4,205,102, Cl. 427-393.500.

Levi Strauss & Co.: *See—*
Blessing, Hubert, 4,204,492, Cl. 112-121.290.

Levichev, Pavel A.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Le Viet, Toai, to Societe d'Assistance Technique pour Produits Nestle S.A. Microwave freeze drying method and apparatus. 4,204,336, Cl. 34-5.000.

Levy, Edward D.: *See—*
Grossman, Morris G.; Levy, Edward D.; and Meisner, Edward H., 4,204,335, Cl. 33-476.000.

Lewis, Gilbert W.: *See—*
Feldstein, Cyril; Lewis, Gilbert W.; and Culler, Virgil H., 4,204,544, Cl. 128-642.000.

Leyva, Rodolfo M.; and Allison, James E., Jr. Newt sanctuary. 4,204,499, Cl. 119-5.000.

Lichtenberg, Heinz D., to Dresser Industries, Inc. Method and apparatus to determine the proximity of a permanent magnet using a magnetometer. 4,205,266, Cl. 324-253.000.

Lieb, Erwin: *See—*
Wiest, Hubert; Ludwig, Peter; Hafener, Klaus; and Lieb, Erwin, 4,205,161, Cl. 528-487.000.

Liebig, Lothar; Wingler, Frank; Margotte, Dieter; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Thermoplastic moulding compositions. 4,205,140, Cl. 525-67.000.

Liebig, Lothar; Wingler, Frank; Humme, Gert; and Prinz, Richard, to Bayer Aktiengesellschaft. Thermoplastic moulding compositions. 4,205,141, Cl. 525-67.000.

Liermann, Peter; and Weise, Lutz, to WABCO Westinghouse GmbH. Device for monitoring the function of electromagnets. 4,205,307, Cl. 340-644.000.

Ligon, Woodfin V.: *See—*
Webb, Jimmy L.; and Ligon, Woodfin V., 4,204,428, Cl. 73-339.00R.

Ligorati, Ferdinando: *See—*
Invernizzi, Renzo; Ligorati, Ferdinando; and Fontanesi, Maurizio, 4,204,981, Cl. 252-429.00B.

Lillig, John E.: *See—*
Sternberg, James C.; and Lillig, John E., 4,204,837, Cl. 23-230.00B.

Lin, Kou C.; Ellis, Belvin B.; and Burkhardt, Charles E., to Westinghouse Electric Corp. Transformer with parallel magnetic circuits of unequal mean lengths and loss characteristics. 4,205,288, Cl. 336-5.000.

Lincicome, Thomas N.; Spiro, John M.; and Brons, Albert J., to UOP Inc. Vibration absorbing connector. 4,204,707, Cl. 285-114.000.

Lind, Herbert C.; Rumore, Peter J.; and Wysocki, Tadeusz S., to Dexter Corporation, The. Non-skid fenestration material. 4,204,532, Cl. 128-132.00D.

Lindenberger, Charles J.: *See—*
Johnson, John N.; and Lindenberger, Charles J., 4,204,322, Cl. 433-185.000.

Linfield, Wayne S., to United States of America, Navy. Elevation simulation for frequency scan three dimensional radar. 4,204,342, Cl. 35-10.400.

Lingaya, Stenio, to Siemens Aktiengesellschaft. Synchronous linear motor. 4,205,243, Cl. 310-13.000.

Litton Industrial Products, Inc.: *See—*
Cribbs, Robert W.; and Mahony, John E., 4,204,433, Cl. 73-620.000.

Liu, Hsin. Method of separating fusible plastics from solid waste. 4,204,906, Cl. 162-6.000.

Liu, Wen C.: *See—*
Sykes, Richard B.; Wells, J. Scott; Principe, Pacifico A.; and Liu, Wen C., 4,205,068, Cl. 424-117.000.

Lo, Grace Y-S.: *See—*
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,205,016, Cl. 260-665.00R.

Loane, Charles M., Jr.; and Hoss, Martin L., to SCM Corporation. Particulate slagging composition for the continuous casting of steel. 4,204,864, Cl. 75-257.000.

Lobdell, Donn D.; Herman, Stephen J.; and Giurtino, Joel F., to Cobe Laboratories, Inc. Blood oxygenator with a gas filter. 4,205,042, Cl. 422-47.000.

Lockshin, Robert E. Louvered window shade device. 4,204,368, Cl. 49-67.000.

Loeb, Phillip J.: *See—*
Smith, Leland B.; and Loeb, Phillip J., 4,204,546, Cl. 128-731.000.

Lofstedt, Ingemar G.: *See—*
Wicksell, Hans A.; Stahl, Stig; and Lofstedt, Ingemar G., 4,204,693, Cl. 280-809.00T.

Loker, W. Aleck; Bortzfield, Jon L.; Chard, Steven D.; Hall, John W.; and Meredith, John T., to United States of America, Navy. Shaft decoupling device. 4,204,589, Cl. 192-27.000.

Long, James F.: *See—*
Sherlock, Margaret H.; and Long, James F., 4,205,073, Cl. 424-266.000.

Lonza, Ltd.: *See—*
Michel, Urs, 4,205,174, Cl. 546-249.000.

Lord Corporation: *See—*
Koeneman, James B., 4,204,284, Cl. 3-1.910.

Loughran, James A.: *See—*
Houston, Douglas E.; and Loughran, James A., 4,204,628, Cl. 228-106.000.

Lovasz nee Gaspar, Marianna: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.

Lucan, Andre: *See—*
Morizot, Henri; and Lucan, Andre, 4,205,120, Cl. 428-676.000.

Lucas Industries Limited: *See—*
Ward, Peter J., 4,205,378, Cl. 364-431.000.

Lucas-Milhaupt, Inc.: *See—*
Fischer, Jerome A., 4,204,597, Cl. 206-216.000.

Luciani, Sandro: *See—*
Conti, Mario; Chiavarotti, Gian P.; and Luciani, Sandro, 4,205,332, Cl. 357-34.000.

Luddy, Francis E.; Hampson, James W.; Herb, Samuel F.; and Rothbart, Herbert L., to United States of America, Agriculture. Physiochemically designed fat compositions from tallow and process for making. 4,205,006, Cl. 260-410.700.

Ludwig, George C., to Tom McGuane Industries, Inc. Fuel pressure regulator assembly. 4,204,561, Cl. 137-510.000.

Ludwig, Peter: *See—*
Wiest, Hubert; Ludwig, Peter; Hafener, Klaus; and Lieb, Erwin, 4,205,161, Cl. 528-487.000.

Lufi, Aldo: *See—*
Kostner, Karl; and Lufi, Aldo, 4,204,324, Cl. 433-299.000.

Luiz, Fernando A.: *See—*
Bardsley, Henry, III; Luiz, Fernando A.; Nilsen, Nils F.; and Simpson, Ronald C., 4,205,374, Cl. 364-200.000.

Lumoprint Zindler KG (GmbH & Co.): *See—*
Opravil, Egon, 4,204,735, Cl. 355-75.000.

Luthi, Walter, to Heberelein Maschinenfabrik AG. Device relating to apparatus for texturing textile yarns. 4,204,394, Cl. 57-334.000.

Lutz, Andre: *See—*
Vignau, Michel; and Lutz, Andre, 4,205,072, Cl. 424-246.000.

Lutz, David E.: *See—*
Lutz, David W.; and Lutz, David E., 4,204,592, Cl. 198-750.000.

Lutz, David W.; and Lutz, David E. Loading and unloading apparatus for vehicles. 4,204,592, Cl. 198-750.000.

Lyashenko, Jury P.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Lydie, Phillip E. C. Ripper attachment for earth-working equipment. 4,204,348, Cl. 37-117.500.

Lydtin, Hans: *See—*
Lersmacher, Bernhard; Lydtin, Hans; Schelhas, Karlheinz; and Knippenberg, Wilhelmus F., 4,204,769, Cl. 356-244.000.

Lysov, Valery B.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

M. Hamburger & Sons, Inc.: *See—*
Bowden, Alan P., 4,204,876, Cl. 106-90.000.

M & R Seal Press Co., Inc.: *See—*
Harrison, Paul H., 4,204,468, Cl. 101-3.0SP.

Machines et Applications: *See—*
Le Guelennec, Emile, 4,204,450, Cl. 83-461.000.

Mack, Jack E.; and Mack, Patrick K., to CLM International Corp. Lubricant additive. 4,204,968, Cl. 252-26.000.

Mack, Patrick K.: *See—*
Mack, Jack E.; and Mack, Patrick K., 4,204,968, Cl. 252-26.000.

Macrobbie, Robert M.: *See—*
Lancelot, Harry B., III; and Macrobbie, Robert M., 4,204,711, Cl. 294-89.000.

Maeda, Masahiro; and Kayahara, Hirohumi, to Minolta Camera Kabushiki Kaisha. Focus adjusting mechanism for variable magnification device. 4,204,732, Cl. 355-55.000.

Maeda, Toshinobu; Nakamura, Yoshikazu; and Kawazoe, Akio, to Matsushita Electric Industrial Co., Ltd.; and Oki Electric Industry Co., Ltd. Motor control system. 4,205,260, Cl. 318-318.000.

Maekawa, Junji: *See—*
Izumi, Yusuke; Maekawa, Junji; and Suzuki, Katsumi, 4,205,182, Cl. 560-247.000.

Magnat Corp.: *See—*
Mengel, William R., 4,204,650, Cl. 242-56.00R.

Mahieu, William R. High continuous current capacity oil expulsion fuse. 4,205,295, Cl. 337-250.000.

Mahony, John E.: *See—*
Cribbs, Robert W.; and Mahony, John E., 4,204,433, Cl. 73-620.000.

Maire, Jacques; Fourre, Jacques; and Gervais, Jean P., to Le Carbone-Lorraine. Dual pore-structure artificial carbon and graphite. 4,205,055, Cl. 423-445.000.

Maixner, Uwe; and Milferstadt, Dieter, to Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH. Arrangement for preventing the alteration of the primary beam by unwanted particles, such as sputter products, charged ions and electrons and their secondary processes. 4,205,232, Cl. 250-397.000.

Makino, Shigeo: *See—*
Takase, Koyu; Makino, Shigeo; and Naitou, Tadashi, 4,204,691, Cl. 277-235.00B.

Makovec, Donald J.; and Haskell, Donald M., to Phillips Petroleum Company. Acid-type hydrocarbon alkylation with acid recycle streams at spaced points of a vertically-disposed elongated reactor. 4,205,196, Cl. 585-701.000.

Makuch, John A., to Bunker Ramo Corporation. Apparatus for aligning and terminating an optical fiber within a fiber optic connector. 4,204,306, Cl. 29-281.500.

Makushin, Mikhail P.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Maslennikov, Ivan E.; Platonov, Vladimir N.; and Silantiev, Igor I., 4,204,458, Cl. 91-429.000.

Malec, Robert E., to Ethyl Corporation. Anti-wear additives in diesel fuels. 4,204,481, Cl. 123-1.00A.

Mallick, George T., Jr., to Westinghouse Electric Corp. Method of testing induction motors. 4,204,425, Cl. 73-116.000.

Mandai, Masaaki: *See—*
Asano, Kazuhiro; Ueda, Makoto; Torisawa, Akira; Shida, Masaharu; Satoh, Katsuhiko; and Mandai, Masaaki, 4,204,397, Cl. 368-202.000.

Mandon, Jean-Pierre: *See—*
Hennart, Claude; Rabussier, Bernard; Mandon, Jean-Pierre; and Sapin, Joel, 4,205,066, Cl. 424-84.000.

Mannesmann Aktiengesellschaft: *See—*
Schwitzgobel, Rudolf; and Monreal, Karl, 4,204,880, Cl. 134-32.000.

Manning Environmental Corp.: *See—*
Fleenor, Richard P., 4,205,315, Cl. 343-14.000.

Marchal, Paul: *See—*
Doucin, Guy; and Marchal, Paul, 4,204,340, Cl. 34-225.000.

Margotte, Dieter: *See—*
Liebig, Lothar; Wingler, Frank; Margotte, Dieter; and Nouvertne, Werner, 4,205,140, Cl. 525-67.000.

Maricic, Alexander, to John Lysaght (Australia) Limited. Vehicle decking bearer. 4,204,712, Cl. 296-35.100.

Marion Plywood Corporation: *See—*
Rogers, Thomas E.; Rogers, Richard J.; Rogers, Peter T.; and Rogers, James G., 4,204,420, Cl. 72-439.000.
Rogers, Thomas E.; Rogers, Richard J.; Rogers, Peter T.; and Rogers, James G., 4,204,421, Cl. 72-439.000.

Marling, Douglas S. Screw extracting device. 4,204,308, Cl. 29-426.500.

Marrs, Clinton E., to Amax Inc. Adjustable conveyor belt skirtboard. 4,204,595, Cl. 198-836.000.

Martel, Jacques; and Tessier, Jean, to Roussel Uclaf. Optically active sulfonates of allethrolone. 4,205,008, Cl. 260-456.00R.

Martin, Jerry R.: *See—*
Tadanier, John S.; Dunnigan, Daniel A.; Freiberg, Leslie A.; and Martin, Jerry R., 4,205,070, Cl. 424-180.000.

Martin, Peter J.; and Jaron, Dov. Method and apparatus for controlling cardiac assist device. 4,204,524, Cl. 128-1.00D.

Martinez, Ferdinand: *See—*
Kuehnle, Manfred R.; Martinez, Ferdinand; and Ignasiak, Stanley F., 4,204,865, Cl. 430-30.000.

Marubashi, Kiyonobu, to Denki Kagaku Kogyo Kabushiki Kaisha. Thermo-reversible elastomer composition comprising a liquid chloroprene polymer and a polyvalent metal oxide or hydroxide. 4,205,150, Cl. 526-252.000.

Marvin Glass & Associates: *See—*
Terzian, Rouben T.; Montague, Douglas P.; and Morrison, Howard J., 4,204,613, Cl. 222-146.00C.

Masaki, Asanori: *See—*
Minezaki, Hisao; Haneda, Akio; Masaki, Asanori; Hanzawa, Takeo; and Uchiike, Yukio, 4,204,648, Cl. 242-18.00A.

Maschinenbau Oppenweiler GmbH: *See—*
Klenk, Emil, 4,204,667, Cl. 271-3.100.

Maschinenfabrik Rau oHG: *See—*
Rau, Willy; and Taus, Christian, 4,204,579, Cl. 172-657.000.

Mashio, Tasuku: *See—*
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, 4,205,117, Cl. 428-411.000.

Maslennikov, Ivan E.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Maslennikov, Ivan E.; Platonov, Vladimir N.; and Silantiev, Igor I., 4,204,458, Cl. 91-429.000.

Maslov, Anatoly R.: *See—*
Ulyanov, Gennady P.; and Maslov, Anatoly R., 4,205,391, Cl. 364-900.000.

Massachusetts General Hospital, The: *See—*
Podolsky, Daniel K.; and Weiser, Milton M., 4,205,129, Cl. 435-193.000.

Massey-Ferguson Services N.V.: *See—*
Quick, Donald J., 4,204,491, Cl. 111-3.000.

Massey, John P. Squaring device for storage of rods, tubes, and like articles. 4,204,788, Cl. 414-21.000.

Masuda, Senichi: *See—*
Yamamoto, Masahiro; Okamoto, Yasunari; Itoh, Tsutomu; and Masuda, Senichi, 4,205,359, Cl. 361-58.000.

Masumoto, Hakaru; and Sawaya, Showhachi, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. High damping capacity alloy. 4,204,887, Cl. 148-31.000.

Masumoto, Hakaru; and Sawaya, Showhachi, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. High damping capacity alloy. 4,204,888, Cl. 148-31.000.

Mathews, Carl F.: *See—*
Hendy, Brian N.; Mathews, Carl F.; Nield, Eric; Rose, John B.; and Vincent, Peter I., 4,205,020, Cl. 525-275.000.

Matisa Materiel Industriel S.A.: *See—*
Cicin-Sain, Ivo, 4,204,476, Cl. 104-2.000.

Matrosov, Evgeny A.: *See—*
Shikhirev, Boris N.; Matrosov, Evgeny A.; and Deresh, Ilya A., 4,204,370, Cl. 51-80.00A.

Matson, William N.: *See—*
Leger, Donald R.; Clifford, Peter P.; and Matson, William N., 4,204,803, Cl. 415-219.00R.

Matsugo, Ryuzo, to Sumiyoshi Denki Kabushiki Kaisha. Noise rejecting compensation circuit for developing apparatus. 4,204,764, Cl. 354-298.000.

Matsumoto, Akiyoshi: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,205,127, Cl. 435-179.000.

Matsumoto, Tateo: *See—*
Sakurai, Kiyoshi; Matsumoto, Tateo; and Ishikawa, Teruo, 4,205,390, Cl. 364-900.000.

Matsumura, Isao: *See—*
Minoura, Nobuo; Matsumura, Isao; Yoshinaga, Yasukazu; Abumi, Takao; and Nakai, Kazuhiro, 4,205,347, Cl. 358-191.100.

Matsumura, Ko: *See—*
Irie, Toshio; Matsumura, Ko; Nakamura, Hiroto; Shimanaka, Hiroshi; and Suzuki, Toshio, 4,204,890, Cl. 148-111.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Komeda, Tadao; and Ogawa, Kazufumi, 4,204,894, Cl. 148-188.000.
Maeda, Toshinobu; Nakamura, Yoshikazu; and Kawazoe, Akio, 4,205,260, Cl. 318-318.000.
Naitoh, Yasuo, 4,205,121, Cl. 429-99.000.

Matsushita, Yoshihiro: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,205,180, Cl. 560-168.000.

Matsuzaki, Tokuo: *See—*
Umemura, Sumio; Ohdan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,205,010, Cl. 260-465.300.

Mattick, Leonard R.; and Gogel, Edward V., to Cornell Research Foundation, Inc. Acid reduction in wine by ion exchange. 4,205,092, Cl. 426-271.000.

Mattson, John P., to Solarspan, Inc. Solar energy tracking collector. 4,204,521, Cl. 126-446.000.

Matzen, Max, to Klockner-Humboldt-Deutz Aktiengesellschaft. Fuel injection pump with roller shaft for internal combustion engines. 4,204,814, Cl. 417-437.000.

Maubois, Jean-Louis J.; Mocquot, Germain P. C. B.; and Vassal, Louis J., to Etablissement Public: Institut National de la Recherche Agronomique. Preparation of cheese using ultrafiltration. 4,205,090, Cl. 426-40.000.

Maul, Stephen B.; Lemke, Paul A.; Gerner, Walter L.; and Yoder, John B., to Butler County Mushroom Farm, Inc. Method and apparatus for sterile cultivation of cells on solid substrates. 4,204,364, Cl. 47-1.100.

Maule, James: *See—*
Bridwell, Glenn D.; Maule, James; Schrombeck, Alois; and Wognum, Willis, 4,204,494, Cl. 114-222.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Johnson, Mark; and Ulrich, Reinhard, 4,204,742, Cl. 350-96.200.

Mazur, Robert H.: *See—*
Hallinan, E. Ann; and Mazur, Robert H., 4,204,991, Cl. 260-112.50R.

McAleer, William J.; and Wasmuth, Edward H., to Merck & Co., Inc. Isolation of hepatitis B e antigen. 4,204,989, Cl. 260-112.00B.

McAlister, M. Khristian: *See—*
Baughn, William E.; Williams, Kenneth R.; and McAlister, M. Khristian, 4,204,663, Cl. 254-88.000.

McCarthy, Robert F., to Procter & Gamble Company, The. Fitment for rendering a container child-resistant. 4,204,615, Cl. 222-153.000.

McCauley, Jon R.: *See—*
Kirrish, Hail; and McCauley, Jon R., 4,204,566, Cl. 151-38.000.

McCrary, Avis L.: *See—*
Wilson, David A.; and McCrary, Avis L., 4,205,065, Cl. 424-81.000.

McCray, David M.; and Murray, Gerald D., to Kennametal Inc. Milling cutter. 4,204,787, Cl. 409-234.000.

McFarlane, James D.: *See—*
Patton, Franklin D.; and McFarlane, James D., 4,204,426, Cl. 73-151.000.

McGinnis, Gerald E., to Monicor Corp. Air chamber leg exercising device. 4,204,675, Cl. 272-130.000.

McGinniss, Vincent D.; and Stevenson, Donald R., to SCM Corporation. Process for electrodeposition of compositions containing carbamothioate curing agents. 4,204,932, Cl. 204-181.00R.

McGrath, N. Christian: *See—*
Jones, Leith; and McGrath, N. Christian, 4,205,099, Cl. 427-90.000.

McGregor, Stanley D.: *See—*
Wang, Chun S.; McGregor, Stanley D.; and Nestrick, Terry J., 4,205,015, Cl. 260-651.00R.

McGregor, William H.: *See—*
Beluzzi, James D.; McGregor, William H.; and Stein, Larry, 4,205,069, Cl. 424-177.000.

McGrew, Stephen P. Solar power system. 4,204,881, Cl. 136-89.0PC.

McIntyre, James A.; Phillips, Robert F.; and Lefever, Joseph D., to Dow Chemical Company, The. Electroplating procedure. 4,204,918, Cl. 204-24.000.

McKee, Graham E.: *See—*
Naarmann, Herbert; McKee, Graham E.; and Schmitt, Burghard, 4,205,144, Cl. 525-273.000.

McKeough, David T.: *See—*
Piccirilli, Robert M.; Chang, Wen-Hsuan; McKeough, David T.; and Porter, Samuel, Jr., 4,205,115, Cl. 428-334.000.

McLuskie, Albert. Cutting method and apparatus. 4,204,443, Cl. 83-37.000.

McMackins, Dudley E.: *See—*
Hobbs, Charles F.; and McMackins, Dudley E., 4,204,997, Cl. 260-326.800.

McMann, Renville H., Jr.; and Bakach, Joseph, to Thomson-CSF Laboratories, Inc. Television titling apparatus and method. 4,205,310, Cl. 340-750.000.

McMaster, Harold A.; Nitschke, John S.; and Nitschke, Dean M. Apparatus and method for bending glass sheets. 4,204,854, Cl. 65-106.000.

McTamaney, Louis S.: *See—*
Haley, Frank P.; and McTamaney, Louis S., 4,205,308, Cl. 340-686.000.

McVoy, Charles F., Jr., to General Electric Company. Apparatus and method for winding electrical coils. 4,204,417, Cl. 72-206.000.

Mead Corporation, The: *See—*
Hanna, James L., 4,204,480, Cl. 108-108.000.

Mecklenborg, Richard A., to Singer Company, The. Binocular viewing technique. 4,205,224, Cl. 250-201.000.

Medical Engineering Corp.: *See—*
Finney, Roy P., 4,204,530, Cl. 128-79.000.

Mehl, Werner: *See—*
Arledter, Hanns F.; and Mehl, Werner, 4,205,097, Cl. 427-44.000.

Mehnert, Johannes. Blow molding apparatus. 4,204,826, Cl. 425-525.000.

Mehta, Madhu A.; Pitroda, Satyan G.; and Vasanthkumar, Sagunabalan, to Wescom Switching, Inc. Methods and apparatus for digitally signaling sounds and tones in a PCM multiplex system. 4,205,203, Cl. 370-110.000.

Meier, Ernst: *See—*
Kuffner, Karl; Lassig, Wolfgang; Meier, Ernst; Boie, Immo; Kirchhoff, Gertrud; Haseler, Helmut; and Stark, Herbert, 4,204,867, Cl. 430-376.000.

Meisner, Edward H.: *See—*
Grossman, Morris G.; Levy, Edward D.; and Meisner, Edward H., 4,204,335, Cl. 33-476.000.

Melekhova, Galina D.: *See—*
Menshutin, Vasily P.; Akutin, Modest S.; Iovdalsky, Nikolai V.; Minakova, Alla N.; Zherebtsov, Evgeny R.; Sokolov, Anatoly D.; Abramov, Vsevolod V.; Melekhova, Galina D.; and Ustkachkintsev, Alexandr N., 4,205,030, Cl. 264-40.100.

Melnik, Nikolai I.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

Melton, Keith N.; and Mercier, Olivier, to BBC Brown Boveri & Company Limited. Thermoelectric switch. 4,205,293, Cl. 337-140.000.

Mengel, William R., to Magnat Corp. Apparatus for replacing rotating mandrels on which a web is wound. 4,204,650, Cl. 242-56.00R.

Menkov, Alexandr V.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

Menshutin, Vasily P.; Akutin, Modest S.; Iovdalsky, Nikolai V.; Minakova, Alla N.; Zherebtsov, Evgeny R.; Sokolov, Anatoly D.; Abramov, Vsevolod V.; Melekhova, Galina D.; and Ustkachkintsev, Alexandr N. Method for extrusion of highly viscous thermosetting material. 4,205,030, Cl. 264-40.100.

Mercier, Olivier: *See—*
Melton, Keith N.; and Mercier, Olivier, 4,205,293, Cl. 337-140.000.

Merck & Co., Inc.: *See—*
McAleer, William J.; and Wasmuth, Edward H., 4,204,989, Cl. 260-112.00B.
Wagner, Arthur F.; Grier, Nathaniel; and Shen, Tsung-Ting, 4,205,064, Cl. 424-78.000.

Meredith, John T.: *See—*
Loker, W. Aleck; Bortzfield, Jon L.; Chard, Steven D.; Hall, John W.; and Meredith, John T., 4,204,589, Cl. 192-27.000.

Mervin, Gaillard A., to Reichhold Chemicals, Incorporated. Process for forming high viscosity coating compositions for fabric substrates. 4,205,112, Cl. 428-245.000.

Merz, Georg; and Gehrmann, Heinz, to WIBAU GmbH. Method for the analytic determination of physical characteristics of a material. 4,205,384, Cl. 364-555.000.

Merz, Kenneth M.: *See—*
Shapiro, Howard E.; and Merz, Kenneth M., 4,205,298, Cl. 338-308.000.

Messing, Wayne P.: *See—*
Ovshinsky, Stanford R.; Klose, Peter H.; and Messing, Wayne P., 4,205,387, Cl. 364-900.000.

Metrailer, William J.; Bearden, Roby, Jr.; and Aldridge, Clyde L., to Exxon Research & Engineering Co. Combination hydroconversion, coking and gasification. 4,204,943, Cl. 208-50.000.

Mettille, Francis J.: *See—*
Onore, Michael J.; and Mettille, Francis J., 4,205,009, Cl. 260-464.000.

Meyer, Alfred: *See—*
Aufderhaar, Ernst; Gallay, Jean J.; Kuhne, Manfred; Meyer, Alfred; Rechsteiner, Oswald; Schellenbaum, Max; and Fumeaux, Jean-Paul, 4,205,077, Cl. 424-273.00B.

Meyer, Harry C.; Tanton, George A.; Greenberg, Raymond I.; and Williams, Joe E., to United States of America, Army. Method for the removal of phosgene impurities from boron trichloride. 4,204,926, Cl. 204-157.10H.

Meyer, Hugo G. Electrically heated soldering tool having work gripping jaws. 4,205,221, Cl. 219-230.000.

Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, to Bayer Aktiengesellschaft. Transparent polyamides from PACM and a mixture of dicarboxylic acids. 4,205,159, Cl. 528-338.000.

Michaelis, Walfried; and Weitkamp, Claus, to Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH. Method of identifying leaky components of a multi-component system. 4,204,908, Cl. 176-19.0LD.

Michals, Richard A., to Stenograph Corporation. Digital data recorder. 4,205,351, Cl. 360-4.000.

Michel, Urs, to Lonza, Ltd. Process for the production of 6-substituted 4-methyl-2-pyridones. 4,205,174, Cl. 546-249.000.

Micheli, Antoine, to DEMATEX Development & Investment Establishment. Tube and stopper combination with venting structure. 4,204,606, Cl. 215-307.000.

Michelson, Anatol. Multi-core box apparatus for the manufacture of hollow mineral products, particularly foundry cores. 4,204,569, Cl. 164-166.000.

Micheron, Francois; Bruneel, Jean L.; and Leclerc, Pierre, to Thomson-CSF. Electret bistable system. 4,205,242, Cl. 307-400.000.

Microform Data Systems, Inc.: *See—*
Kool, Bram; Warszawski, Janusz; and Moritz, Jules G., 4,204,753, Cl. 353-26.00R.

Microlife Technics, Inc.: *See—*
Sandine, William E.; and Vedamuthu, Ebenezer R., 4,205,132, Cl. 435-260.000.

Midland-Ross Corporation: *See—*
Durling, Harold, 4,204,555, Cl. 137-102.000.

Miele & Cie GmbH & Co.: *See—*
Neisen, Jurgen, 4,204,931, Cl. 204-181.00N.

Mihalik, Nicholas. Child's scooter. 4,204,698, Cl. 280-87.04R.

Mikumo, Toshihumi: *See—*
Nose, Kenkichi; and Mikumo, Toshihumi, 4,204,653, Cl. 242-178.000.

Mikuni Kogyo Kabushiki Kaisha: *See—*
Hirosawa, Tamio, 4,205,024, Cl. 261-34.00R.

Milferstadt, Dieter: *See—*
Maixner, Uwe; and Milferstadt, Dieter, 4,205,232, Cl. 250-397.000.

Miller, Gerald K., to Nartron Corporation. Liquid level sensor, pump system means and circuit means. 4,205,237, Cl. 307-118.000.

Miller, James S.: *See—*
Gulick, Joseph F.; Miller, James S.; and Pue, Alan J., 4,204,655, Cl. 244-3.190.

Miller, Paul W., to Wean United, Inc. Torque limiting drive shaft assembly. 4,204,413, Cl. 64-30.00E.

Miller, Robert F., to Modine Manufacturing Company. Gas burner device. 4,204,832, Cl. 431-20.000.

Miller, Robert L.: *See—*
Gilchrist, Forbes D.; Miller, Robert L.; and Myers, Richard W., 4,205,280, Cl. 333-151.000.

Milliken, James W., Jr., to Allis-Chalmers Corporation. Automatic height control for gathering reel for agricultural combine. 4,204,383, Cl. 56-10.200.

Millward, John D., to Rank Organisation Limited, The. Television film scanner. 4,205,337, Cl. 358-54.000.

Milsco Manufacturing Company: *See—*
Furnas, Robert L., 4,204,825, Cl. 425-451.900.

Minakova, Alla N.: *See—*
Menshutin, Vasily P.; Akutin, Modest S.; Iovdalsky, Nikolai V.; Minakova, Alla N.; Zherebtsov, Evgeny R.; Sokolov, Anatoly D.; Abramov, Vsevolod V.; Melekhova, Galina D.; and Ustkachkintsev, Alexandr N., 4,205,030, Cl. 264-40.100.

Minezaki, Hisao; Haneda, Akio; Masaki, Asanori; Hanzawa, Takeo; and Uchiike, Yukio, to Nitto Boseki Co., Ltd. Strand cutting device for continuous glass fiber winding apparatus. 4,204,648, Cl. 242-18.00A.

Minnesota Mining and Manufacturing Company: *See—*
Boston, David R., 4,204,868, Cl. 430-461.000.
Fahey, Judith B., 4,205,005, Cl. 430-72.000.
Gebeke, Charles D., 4,204,654, Cl. 242-199.000.
Snell, John B., 4,205,219, Cl. 219-160.000.

Minolta Camera Kabushiki Kaisha: *See—*
Kobayashi, Haro, 4,204,760, Cl. 354-197.000.
Kobori, Toshio; Sahara, Masayoshi; and Saito, Mitsuru, 4,204,756, Cl. 354-53.000.
Maeda, Masahiro; and Kayahara, Hirohumi, 4,204,732, Cl. 355-55.000.

Minoura, Nobuo; Matsumura, Isao; Yoshinaga, Yasukazu; Abumi, Takao; and Nakai, Kazuhiro, to Sharp Kabushiki Kaisha. Television signal determination in an automatic tuning system. 4,205,347, Cl. 358-191.100.

Mitchell, Howard L., III; and Waghorne, Robert H., to Exxon Research & Engineering Co. Process for the conversion of relatively low molecular weight hydrocarbons, to higher molecular weight hydrocarbons, catalyst-reagents for such use in such process, and the regeneration thereof. 4,205,194, Cl. 585-407.000.

Mitsubishi Chemical Industries, Limited: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,205,127, Cl. 435-179.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Suzuki, Takao; Komatsu, Yoshimasa; Takeda, Akimichi; and Baba, Toshihiko, 4,205,214, Cl. 219-97.000.

Mitsubishi Petrochemical Company Limited: *See—*
Morikawa, Hiroyuki; and Kitazume, Shooji, 4,205,193, Cl. 585-367.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Kurata, Kenzi; Fukumoto, Toshito; Yoshida, Yuji; Kusama, Masanori; and Tsuruta, Shintaro, 4,204,915, Cl. 203-2.000.
Miura, Yoshikazu; and Ichikura, Yoshifumi, 4,205,122, Cl. 429-144.000.
Morita, Yoshinori; Inoue, Hiroshi; and Fujiyoshi, Kenji, 4,205,021, Cl. 525-240.000.

Mitsuya, Eiji; Kishimoto, Tomio; Hoshida, Katsusuke; and Kamae, Naohiko, to Nippon Telegraph and Telephone Public Corporation. Picture signal coding apparatus. 4,205,341, Cl. 358-135.000.

Mitsuya, Kinpei: *See—*
Miyazaki, Tsutomu; Shiraki, Masao; and Mitsuya, Kinpei, 4,204,393, Cl. 57-301.000.

Miura, Nobuhiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Auxiliary combustion chamber of internal combustion engine. 4,204,484, Cl. 123-32.0SP.

Miura, Yoshikazu; and Ichikura, Yoshifumi, to Mitsui Petrochemical Industries, Ltd. Battery separator and method for battery separation. 4,205,122, Cl. 429-144.000.

Miyachi, Isao: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,205,127, Cl. 435-179.000.

Miyachi, Tamotu: *See—*
Hattori, Yoshinori; and Miyachi, Tamotu, 4,205,033, Cl. 264-65.000.
Miyagawa, Takashi: *See—*
Suzuki, Yujiro; Shimiya, Keiji; and Miyagawa, Takashi, 4,205,234, Cl. 250-483.000.
Miyamoto, Saburo, to Nitto Denki Kogyo Kabushiki Kaisha (Nitto Electric Industrial Co., Ltd.). Taping machine. 4,204,905, Cl. 156-351.000.
Miyashita, Kiyoshi; and Kasuga, Muneo, to Olympus Optical Co., Ltd. Electrophotographic apparatus. 4,204,730, Cl. 355-14.00R.
Miyazaki, Joichi: *See—*
Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,204,395, Cl. 368-35.000.
Miyazaki, Tsutomu; Shiraki, Masao; and Mitsuya, Kinpei, to Kabushiki Kaisha Toyoda Jidoshokki Seisakucho. Dust removing mechanism in open-end spinning frame. 4,204,393, Cl. 57-301.000.
Miyazawa, Yoshinori; and Gomi, Yoshifumi, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki. Wire type dot printer head assembly. 4,204,778, Cl. 400-124.000.
Mizelle, William R. Caloric incapacitating low-lethality projectile. 4,204,474, Cl. 102-92.700.
Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shin-ichi; and Uenaka, Akimitsu, to Nippon Paint Co., Ltd. Thermosetting resin and its production. 4,205,152, Cl. 526-265.000.
Mizuochi, Kazuo: *See—*
Sakamoto, Koji; Asano, Takeshi; Mizuochi, Kazuo; and Sasaki, Kanemichi, 4,205,081, Cl. 424-279.000.
Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Kondo, Tatuya, 4,205,054, Cl. 423-390.000.
Mizutani, Hiroyuki: *See—*
Inouye, Tamon; and Mizutani, Hiroyuki, 4,205,375, Cl. 364-414.000.
Mobil Oil Corporation: *See—*
Canterino, Peter J.; and Arbit, Harold A., 4,205,114, Cl. 428-315.000.
Jordan, John H., 4,204,423, Cl. 73-23.100.
Rollmann, Louis D.; and Valyocsik, Ernest W., 4,205,052, Cl. 423-329.000.
Rollmann, Louis D.; and Valyocsik, Ernest W., 4,205,053, Cl. 423-329.000.
Young, Lewis B.; and Burress, George T., 4,205,189, Cl. 568-768.000.
Mochizuki, Tamotsu, to Nippon Telegraph and Telephone Public Corporation. Tablet input device. 4,205,199, Cl. 178-19.000.
Mochizuki, Toraji, to Nippon Dentan Co., Ltd. Machine and method for electric forging of the end of a metallic stick in a plane generally perpendicular to the stick. 4,204,418, Cl. 72-352.000.
Mocquot, Germain P. C. B.: *See—*
Maubois, Jean-Louis J.; Mocquot, Germain P. C. B.; and Vassal, Louis J., 4,205,090, Cl. 426-40.000.
Modine Manufacturing Company: *See—*
Miller, Robert F., 4,204,832, Cl. 431-20.000.
Modney, William; and Rosenburgh, Norman J., to Eastman Kodak Company. Film positioning apparatus. 4,204,733, Cl. 355-64.000.
Mogi, Shigeru: *See—*
Asanuma, Katsumi; and Mogi, Shigeru, 4,204,754, Cl. 353-116.000.
Mohla, Prem P., to Ford Motor Company. In situ furnace metal desulfurization/nodularization by high purity magnesium. 4,204,666, Cl. 266-216.000.
Moiseenkov, Valery V.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.
Molitor, Robert P., to Questor Corporation. Golf club head and method of producing same. 4,204,684, Cl. 273-167.00R.
Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., 4,204,901, Cl. 156-384.000.
Hamisch, Paul H., Jr., 4,204,902, Cl. 156-384.000.
Monicor Corp.: *See—*
McGinnis, Gerald E., 4,204,675, Cl. 272-130.000.
Monreal, Karl: *See—*
Schwitzgobel, Rudolf; and Monreal, Karl, 4,204,880, Cl. 134-32.000.
Monsanto Company: *See—*
Baer, Massimo, 4,205,142, Cl. 525-166.000.
Hobbs, Charles F.; and McMackins, Dudley E., 4,204,997, Cl. 260-326.800.
Monsimer, Harold G.; and Bohm, Howard A., to Pennwalt Corporation. Microcapsules containing medicament-polymer salt having a water-insoluble polymer sheath, their production and their use. 4,205,060, Cl. 424-14.000.
Montague, Douglas P.: *See—*
Terzian, Rouben T.; Montague, Douglas P.; and Morrison, Howard J., 4,204,613, Cl. 222-146.00C.
Monteil, Marcel: *See—*
Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, 4,204,502, Cl. 122-32.000.
Monteil, Pierre: *See—*
Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, 4,204,502, Cl. 122-32.000.
Monteyne, Guido, to SIDMAR Maritieme Staalnihverheid N.V. Siderurgie Maritime S.A. Apparatus for dewatering granulated-slag slurry. 4,204,855, Cl. 65-141.000.
Moore, Stanley E., to General Electric Company. Two dimensional light beam selection system. 4,205,304, Cl. 340-365.00P.
Moorer, Howard H.; and Anderegg, Charles M., to Westvaco Corporation. Cement grinding aid and set retarder. 4,204,877, Cl. 106-90.000.
Moorhead, John K.: *See—*
Reilly, Richard J.; and Moorhead, John K., 4,204,503, Cl. 122-392.000.
Morel, Pierre; Ortega, Yasmine; Jullien, Claudette; and Jullien, Antonin. Process for converting biodegradable wastes into industrial gases. 4,204,842, Cl. 48-197.00A.
Morgan, Howard W., Jr., to Filter Specialists, Inc. Liquid filter and filter element. 4,204,966, Cl. 210-455.000.
Morgan, James P.: *See—*
France, Jerry; and Morgan, James P., 4,205,109, Cl. 428-150.000.
Mori, Shunro; Okamoto, Rokuro; Inui, Taiji; and Takeuchi, Tomio, to Sanraku-Ocean Co., Ltd. Tylosin derivatives. 4,205,163, Cl. 536-17.00R.
Morikawa, Hiroyuki; and Kitazume, Shooji, to Mitsubishi Petrochemical Company Limited. Process for production of isoprene cyclic trimers. 4,205,193, Cl. 585-367.000.
Morimoto, Akira: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,205,180, Cl. 560-168.000.
Morin, Marius J.; Nichols, Colin J.; and Prouty, Myron R., to Cutter Laboratories, Inc. Container with closure and closure removal means. 4,204,604, Cl. 215-257.000.
Morishita, Masanobu: *See—*
Kouno, Akiyoshi; Morishita, Masanobu; and Yui, Yoshio, 4,205,340, Cl. 358-130.000.
Morita, Yoshinori; Inoue, Hiroshi; and Fujiyoshi, Kenji, to Mitsui Petrochemical Industries, Ltd. Ethylene copolymers. 4,205,021, Cl. 525-240.000.
Moritz, Alfred: *See—*
Seifert, Dieter; Regler, Dieter; Ofenmacher, Volker; Moritz, Alfred; Freudlsperger, August; and Berger, Walter, 4,204,515, Cl. 125-16.00R.
Moritz, Jules G.: *See—*
Kool, Bram; Warszawski, Janusz; and Moritz, Jules G., 4,204,753, Cl. 353-26.00R.
Morizot, Henri; and Lucan, Andre, to Compagnie Internationale pour l'Informatique. Magnetic recording element. 4,205,120, Cl. 428-676.000.
Morohoshi, Fumio; and Hasegawa, Yoshio, to Kabushiki Kaisha Daini Seikosha. Electronic metronome. 4,204,400, Cl. 84-484.000.
Morong, William H., Jr.: *See—*
Canney, Robert S.; Ouellette, Ronald J.; and Morong, William H., Jr., 4,205,290, Cl. 336-90.000.
Morozov, Vasily P.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.
Morozowich, Walter, to Upjohn Company, The. Inter-phenylene-ω-aryl-PG amides. 4,205,011, Cl. 260-558.00R.
Morris, Richard L., to Outboard Marine Corporation. Combination ignition switch and fuel priming system. 4,204,511, Cl. 123-187.50R.
Morrison, Howard J.: *See—*
Terzian, Rouben T.; Montague, Douglas P.; and Morrison, Howard J., 4,204,613, Cl. 222-146.00C.
Morton-Norwich Products, Inc.: *See—*
Schwan, Thomas J., 4,205,172, Cl. 546-101.000.
Yu, Chia-Nien, 4,205,003, Cl. 260-347.800.
Moser, Theo; Andra Rolf; Rittler, Roland; and Strampfer, Armin, to Robert Bosch GmbH. Apparatus for sorting capsules and the like. 4,204,951, Cl. 209-625.000.
Moss, Ernest K.: *See—*
Beale, John H.; and Moss, Ernest K., 4,205,135, Cl. 521-116.000.
Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
Schulmeister, Robert; Edmaier, Franz; and Kiefer, Gunther, 4,204,848, Cl. 55-269.000.
Motoren- und Turbinen-Union Munchen GmbH: *See—*
Fehler, Adolf; Kirschey, Gunter; Kappler, Gunter; and Kirchdorffer, Gerhard, 4,204,404, Cl. 60-740.000.
Motorola, Inc.: *See—*
Beutler, Robert R., 4,205,279, Cl. 331-111.000.
Gasparaitis, Bernard; and Albright, Charles D., 4,205,319, Cl. 343-792.000.
Gatto, Donald F., 4,204,608, Cl. 220-335.000.
Parish, Edward C., 4,205,286, Cl. 333-226.000.
Muench, Wayne C.; Hormel, Thad S.; Kirchhoff, Pamela M.; and Robbins, Lanny A., to Dow Chemical Company, The. Process for the production of hydroxybenzyl alcohols. 4,205,188, Cl. 568-764.000.
Mugnai, Giorgio; and Vietto, Paolo E., to W. R. Grace & Co. Closed circuit shrink tunnel. 4,204,379, Cl. 53-512.000.
Muller, Franz, to August Lepper, Maschinen-U. Apparatebau GmbH. Tumbler washing and drying machine. 4,204,339, Cl. 34-75.000.
Muller, Hanns P.; and Wagner, Kuno, to Bayer Aktiengesellschaft. Polyurethane foams and elastomers prepared from low molecular weight polyhydroxyl compounds. 4,205,138, Cl. 521-158.000.

Muller, Jorn: *See—*
Kohler, Robert; Muller, Jorn; Gigiberger, Dieter; and Bestenreiner, Freidrich, 4,204,731, Cl. 355-16.000.
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., to Excel Industries Inc. Soil aerating device. 4,204,576, Cl. 172-22.000.
Multicore Solders Limited: *See—*
Allen, Bernard M.; Rubin, Wallace; and Watson, Brian, 4,204,889, Cl. 148-26.000.
Munroe, William O.: *See—*
Bilbrey, Robert A.; Munroe, William O.; and Powell, David G., 4,204,513, Cl. 123-198.0DB.
Munsch, John M.: *See—*
Bischof, Daniel F.; and Munsch, John M., 4,204,963, Cl. 210-321.00B.
Murano, Kentaro: *See—*
Inokuchi, Hiroo; Murano, Kentaro; Kawazura, Hiroshi; and Kobayashi, Tsutomu, 4,205,056, Cl. 423-649.000.
Murata Manufacturing Co., Ltd.: *See—*
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, 4,205,117, Cl. 428-411.000.
Murib, Jawad H., to National Distillers and Chemical Corporation. Process for preparing unsaturated esters. 4,205,181, Cl. 560-241.000.
Murphy, Raymond J. Bearing and support. 4,204,719, Cl. 308-188.000.
Murray, Gerald D.: *See—*
McCrey, David M.; and Murray, Gerald D., 4,204,787, Cl. 409-234.000.
Music, John, to Documation Incorporated. Character generator. 4,205,309, Cl. 340-739.000.
Musolino, Joseph A.: *See—*
Ho, Eugene Y.; and Musolino, Joseph A., 4,205,300, Cl. 340-65.000.
Muuller, Rolf: *See—*
Ritter, Ernst; Schwartz, Reinhard; Muuller, Rolf; Sturm, Waldemar; and Faupel, Werner, 4,204,510, Cl. 123-179.00L.
Myers, Richard W.: *See—*
Gilchrist, Forbes D.; Miller, Robert L.; and Myers, Richard W., 4,205,280, Cl. 333-151.000.
Naarmann, Herbert; McKee, Graham E.; and Schmitt, Burghard, to BASF Aktiengesellschaft. Preparation of graft copolymers. 4,205,144, Cl. 525-273.000.
Nabeyama, Hiroaki: *See—*
Nakagawa, Isao; Nabeyama, Hiroaki; and Kuroyanagi, Tomomitsu, 4,205,335, Cl. 358-31.000.
Nagao, Tsukasa. Ferrite composite circulator. 4,205,281, Cl. 333-1.100.
Nagasawa, Kohtaro; Ogitani, Osamu; and Fujii, Ryuichi, to Somar Manufacturing Co., Ltd. Radiation curable resin composition. 4,205,018, Cl. 525-404.000.
Nagase, Tsuneyuki: *See—*
Fukami, Kousuke; Fujimoto, Masanori; Fujita, Fumio; and Nagase, Tsuneyuki, 4,205,218, Cl. 219-145.230.
Nagler, Georg: *See—*
Hofmann, Otto; and Nagler, Georg, 4,204,635, Cl. 235-382.000.
Nagumo, Fumio, to Sony Corporation. Signal processing system. 4,205,336, Cl. 358-43.000.
Nagy, Julius S.: *See—*
Davis, Joseph P.; and Nagy, Julius S., 4,205,103, Cl. 427-373.000.
Naito, Hiroyuki: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Kondo, Tatuya, 4,205,054, Cl. 423-390.000.
Naitoh, Yasuo, to Matsushita Electric Industrial Co., Ltd. Storage compartment. 4,205,121, Cl. 429-99.000.
Naitou, Tadashi: *See—*
Takase, Koyu; Makino, Shigeo; and Naitou, Tadashi, 4,204,691, Cl. 277-235.00B.
Nakada, Tatsuji. Burglar alarm. 4,205,305, Cl. 340-548.000.
Nakagawa, Isao; Nabeyama, Hiroaki; and Kuroyanagi, Tomomitsu, to Hitachi, Ltd. Circuit arrangement for separating chrominance and luminance information in a composite video signal of an NTSC system. 4,205,335, Cl. 358-31.000.
Nakagawa, Itsusuke; and Aoyama, Tokuichi, to Kubota, Ltd. Cooling system for V-shaped, forced air-cooled engine. 4,204,486, Cl. 123-41.600.
Nakagawa, Tadashi; Koyama, Mitsuo; and Nemoto, Ichiro, to Seiko Koki Kabushiki Kaisha. Exposure time setting device for shutter of camera. 4,204,763, Cl. 354-267.000.
Nakagawa, Yasutsugu: *See—*
Yamada, Minoru; and Nakagawa, Yasutsugu, 4,204,759, Cl. 354-152.000.
Nakai, Kazuhiro: *See—*
Minoura, Nobuo; Matsumura, Isao; Yoshinaga, Yasukazu; Abumi, Takao; and Nakai, Kazuhiro, 4,205,347, Cl. 358-191.100.
Nakamura, Hiroto: *See—*
Irie, Toshio; Matsumura, Ko; Nakamura, Hiroto; Shimanaka, Hiroshi; and Suzuki, Toshio, 4,204,890, Cl. 148-111.000.
Nakamura, Joji: *See—*
Shima, Takesaburo; Kozima, Hiroshi; Yoshida, Tomio; and Nakamura, Joji, 4,205,019, Cl. 525-243.000.
Nakamura, Yasuo: *See—*
Umemura, Sumio; Ohdan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,205,010, Cl. 260-465.300.
Nakamura, Yoshikazu: *See—*
Maeda, Toshinobu; Nakamura, Yoshikazu; and Kawazoe, Akio, 4,205,260, Cl. 318-318.000.
Nakanishi, Hiromasa: *See—*
Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,204,395, Cl. 368-35.000.
Nalley, David J., to Singer Company, The. Forward biased switch for a reversible hammer drill. 4,204,580, Cl. 173-48.000.
Nanjo, Hirotoshi; and Watanabe, Takeshi, to Kokusan Denki Co., Ltd. Current interruption type ignition system for an internal combustion engine. 4,204,509, Cl. 123-148.00E.
Narahara, Yoshiyasu: *See—*
Barton, Richard E.; Fultz, Jack V.; Narahara, Yoshiyasu; and Shebanow, Michael S., 4,205,357, Cl. 360-135.000.
Nartron Corporation: *See—*
Miller, Gerald K., 4,205,237, Cl. 307-118.000.
National Distillers and Chemical Corporation: *See—*
Murib, Jawad H., 4,205,181, Cl. 560-241.000.
National Research Development Corporation: *See—*
Bellhouse, Brian J.; and Williams, William G., 4,204,283, Cl. 3-1.500.
Butterfield, Roy, 4,205,362, Cl. 361-234.000.
National Semiconductor Corporation: *See—*
Klein, Thomas, 4,205,330, Cl. 357-23.000.
Wright, John W.; and Gross, William H., 4,205,276, Cl. 330-294.000.
Nault, James J.: *See—*
Hart, John R.; Lare, Donald W.; and Nault, James J., 4,205,025, Cl. 264-14.000.
NCR Corporation: *See—*
Jen, Tai-Kuang, 4,204,777, Cl. 400-124.000.
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; and Kurtz, John J., 4,205,200, Cl. 370-83.000.
Shah, Niranjan S.; and Taylor, James F., 4,205,373, Cl. 364-200.000.
NDR Associates: *See—*
Neubert, Hans D.; Dailey, Larry R.; and Robinson, Richard S., 4,204,323, Cl. 433-38.000.
Neavel, Richard C., to Exxon Research & Engineering Co. Gasification process. 4,204,843, Cl. 48-210.000.
Negita, Mutsumi, to Kabushiki Kaisha Suwa Seikosha. Quartz crystal vibrator electrode configuration. 4,205,248, Cl. 310-370.000.
Neis, Donald A.: *See—*
Bing, Valentijn B.; and Neis, Donald A., 4,204,302, Cl. 29-25.130.
Neisen, Jurgen, to Miele & Cie GmbH & Co. Process for the pre-treatment of non-ferrous metals to be electrophoretically covered with ceramic materials. 4,204,931, Cl. 204-181.00N.
Nelson, Jack P., to Computer Kinetics Corporation. Method and apparatus for causing a dot matrix display to appear to travel. 4,205,312, Cl. 340-792.000.
Nemoto, Ichiro: *See—*
Nakagawa, Tadashi; Koyama, Mitsuo; and Nemoto, Ichiro, 4,204,763, Cl. 354-267.000.
Ness, Norman M., to Imperial Chemical Industries Limited. Pretreatment process. 4,205,101, Cl. 427-233.000.
Nestle, Mara O.: *See—*
Byers, Charles H.; Hausslein, Robert W.; and Nestle, Mara O., 4,204,869, Cl. 430-564.000.
Nestrick, Terry J.: *See—*
Wang, Chun S.; McGregor, Stanley D.; and Nestrick, Terry J., 4,205,015, Cl. 260-651.00R.
Neubert, Hans D.; Dailey, Larry R.; and Robinson, Richard S., to NDR Associates. Dental impression tray. 4,204,323, Cl. 433-38.000.
Neubert, Terry C., to General Tire & Rubber Company, The. Lignin amine carboxylated conjugated diene tire cord adhesives. 4,204,982, Cl. 260-5.000.
Neubert, Terry C., to General Tire & Rubber Company, The. Lignin amine carboxylated conjugated diene tire cord adhesives. 4,204,984, Cl. 260-17.500.
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Ng, Steve Y. W.: *See—*
Dale, James A.; and Ng, Steve Y. W., 4,205,151; Cl. 526-262.000.
NGK Spark Plug Co., Ltd.: *See—*
Hattori, Yoshinori; and Miyachi, Tamotu, 4,205,033, Cl. 264-65.000.
Yamamoto, Yoshihiro; Sakurai, Kenji; and Tanaka, Hiroshi, 4,204,873, Cl. 106-43.000.
N'Guyen, Van L., to Sereg. Gas analysers of the selective radiation absorption type with a calibration cell. 4,204,768, Cl. 356-243.000.
Niccolini, Giuseppe, to Solvay & Cie. Process for the manufacture of a permeable diaphragm for an electrolysis cell. 4,204,941, Cl. 204-296.000.
Nichols, Colin J.: *See—*
Morin, Marius J.; Nichols, Colin J.; and Prouty, Myron R., 4,204,604, Cl. 215-257.000.
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., to Velsicol Chemical Corporation. 2,2-Bis(haloalkyl)-3-hydroxy-1-propyl phosphoric acids. 4,205,022, Cl. 260-953.000.
Nield, Eric: *See—*
Hendy, Brian N.; Mathews, Carl F.; Nield, Eric; Rose, John B.; and Vincent, Peter I., 4,205,020, Cl. 525-275.000.
Nifco Inc.: *See—*
Sugiyama, Masaaki; and Yuda, Takuo, 4,204,960, Cl. 210-232.000.
Nigoghossian, Claude: *See—*
Bouchou, Paul; Nigoghossian, Claude; and Sillioc, Guy, 4,205,284, Cl. 333-189.000.

Nilsen, Nils F.: *See—*
Bardsley, Henry, III; Luiz, Fernando A.; Nilsen, Nils F.; and Simpson, Ronald C., 4,205,374, Cl. 364-200.000.
Nippon Chemiphar Company, Limited: *See—*
Fujimoto, Yasuo; and Yamabe, Shigeru, 4,205,170, Cl. 546-80.000.
Nippon Dentan Co., Ltd.: *See—*
Mochizuki, Toraji, 4,204,418, Cl. 72-352.000.
Nippon Electric Co., Ltd.: *See—*
Kouno, Akiyoshi; Morishita, Masanobu; and Yui, Yoshio, 4,205,340, Cl. 358-130.000.
Tsuzuki, Mitsuo; and Suga, Michihisa, 4,205,322, Cl. 346-153.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Nonaka, Terumoto; Hotta, Tadahiko; and Yamashita, Shin, 4,205,334, Cl. 357-41.000.
Uchiyama, Yasuji, 4,204,452, Cl. 84-1.010.
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Kato, Hiroshi; and Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, 4,205,147, Cl. 525-62.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Sakamoto, Koji; Asano, Takeshi; Mizuochi, Kazuo; and Sasaki, Kanemichi, 4,205,081, Cl. 424-279.000.
Nippon Kogaku K.K.: *See—*
Toyoda, Kenji; Araki, Yoshitaka; and Watanabe, Sakuji, 4,204,755, Cl. 354-36.000.
Nippon Oil Co., Ltd.: *See—*
Tsuchiya, Shozo; Oshima, Akio; and Hayashi, Hideo, 4,205,145, Cl. 525-502.000.
Nippon Paint Co., Ltd.: *See—*
Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shin-ichi; and Uenaka, Akimitsu, 4,205,152, Cl. 526-265.000.
Nippon Steel Corporation: *See—*
Kado, Satoshi; Yamazaki, Taketomo; Sakamoto, Tetsu; Yamanaka, Mikio; and Yoshida, Kotaro, 4,204,862, Cl. 75-124.000.
Shiozaki, Morio; Okamoto, Masafumi; Tanaka, Kiyoshi; and Shimazu, Takahide, 4,204,891, Cl. 148-111.000.
Suzuki, Takao; Komatsu, Yoshimasa; Takeda, Akimichi; and Baba, Toshihiko, 4,205,214, Cl. 219-97.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Eishima, Tetsusuke; Ikariyama, Takehiro; Jinnouchi, Raizo; Oyagi, Kunioki; and Soda, Takashi, 4,205,206, Cl. 179-124.000.
Mitsuya, Eiji; Kishimoto, Tomio; Hoshida, Katsusuke; and Kamae, Naohiko, 4,205,341, Cl. 358-135.000.
Mochizuki, Tamotsu, 4,205,199, Cl. 178-19.000.
Sakai, Junichi; and Kimura, Tatsuya, 4,204,745, Cl. 350-96.310.
Yamamoto, Yousuke, 4,205,333, Cl. 357-35.000.
Nippondenso Co., Ltd.: *See—*
Harada, Susumu; Kondo, Toshio; and Eino, Tomomi, 4,204,483, Cl. 123-32.0EL.
Yoshida, Matuju, 4,205,376, Cl. 364-424.000.
Nishibara, Hazime: *See—*
Tatsukami, Yoshiharu; Nishibara, Hazime; Kobayashi, Yasutoshi; and Shinonaga, Hideo, 4,205,148, Cl. 525-379.000.
Nishimura, Yutaka: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; and Nishimura, Yutaka, 4,205,377, Cl. 364-431.000.
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, to Murata Manufacturing Co., Ltd. Piezoelectric crystalline film of zinc oxide and method for making same. 4,205,117, Cl. 428-411.000.
Nitschke, Dean M.: *See—*
McMaster, Harold A.; Nitschke, John S.; and Nitschke, Dean M., 4,204,854, Cl. 65-106.000.
Nitschke, John S.: *See—*
McMaster, Harold A.; Nitschke, John S.; and Nitschke, Dean M., 4,204,854, Cl. 65-106.000.
Nitto Boseki Co., Ltd.: *See—*
Minezaki, Hisao; Haneda, Akio; Masaki, Asanori; Hanzawa, Takeo; and Uchiike, Yukio, 4,204,648, Cl. 242-18.00A.
Nitto Denki Kogyo Kabushiki Kaisha (Nitto Electric Industrial Co., Ltd.): *See—*
Miyamoto, Saburo, 4,204,905, Cl. 156-351.000.
Nitto Seiko Co., Ltd.: *See—*
Kondo, Hiroo, 4,204,439, Cl. 81-57.370.
Noack, Christian: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.
Nohmura, Ryotaro. Bag silo. 4,204,565, Cl. 150-7.000.
Nolan, Daniel A., to Corning Glass Works. Directing glass forming constituents against a lateral surface parallel to the axis of rotation of a starting member to form a monolithic blank for an optical waveguide. 4,204,851, Cl. 65-3.00A.
Nolan, John J.: *See—*
Wechsler, Ionel; Oberteuffer, John A.; Nolan, John J.; Kolm, Henry H.; Georgelis, Eric; and Arvidson, Bo R., 4,204,948, Cl. 209-223.00R.
Noltes, Jan G.: *See—*
Cohen, Murray S.; Noltes, Jan G.; and van Koten, Gerard, 4,205,191, Cl. 585-250.000.
Nomoto, Tadao: *See—*
Sawa, Natsuo; Nomoto, Tadao; Iuchi, Keiko; Suzuki, Toshihiro; and Kawata, Shunichi, 4,205,156, Cl. 528-117.000.
Nomura, Shin-ichi: *See—*
Kobayashi, Shuji; Aoyagi, Mitsuo; Kanno, Tominori; Ueno, Kazuei; and Nomura, Shin-ichi, 4,205,098, Cl. 427-76.000.
Nomura, Takayuki. Cutter holding device in a polygon cutting apparatus. 4,204,442, Cl. 82-18.000.
Nonaka, Terumoto; Hotta, Tadahiko; and Yamashita, Shin, to Nippon Gakki Seizo Kabushiki Kaisha. Integrated semiconductor device. 4,205,334, Cl. 357-41.000.
Nordifa Industritextiller AB: *See—*
Hermansson, Hans O.; and Jonsson, Bror E., 4,205,113, Cl. 428-286.000.
Norris, Philip R., to Polaroid Corporation. Portable card motion picture viewer. 4,204,752, Cl. 352-82.000.
North American Manufacturing Company, The: *See—*
Jones, William M.; and Freas, Mark S., 4,204,830, Cl. 431-8.000.
Norton, Frank E., to Babcock & Wilcox Company, The. Method of assembling a heat exchange apparatus. 4,204,305, Cl. 29-157.400.
Nortron Corporation: *See—*
van Blerk, Victor B., 4,204,333, Cl. 33-288.000.
Nose, Kenkichi; and Mikumo, Toshihumi, to Teijin Limited. Non-uniformly wound yarn package. 4,204,653, Cl. 242-178.000.
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Liebig, Lothar; Wingler, Frank; Margotte, Dieter; and Nouvertne, Werner, 4,205,140, Cl. 525-67.000.
Novikov, Vladimir I.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.
Novosibirsky Institut Organicheskoi Khimii Sibirskogo Otdelenia Akademii Nauk SSR: *See—*
Ulyanov, Gennady P.; and Maslov, Anatoly R., 4,205,391, Cl. 364-900.000.
Nowacki, Christopher A.: *See—*
Wu, Yeongchi; and Nowacki, Christopher A., 4,204,527, Cl. 128-762.000.
Nowak, Edmund; Zamojdo, Rudolf; Parda, Andrzej; Kurdowski, Wieslaw; and Jankowski, Stefan, to Instytut Przemyslu Maszyn Wiazacych Materialow Budowlanych. Cyclone furnace for intensive treatment or combustion of dispergated mineral raw materials. 4,204,836, Cl. 432-58.000.
Nowak, Paul. Transparent communication chart. 4,204,341, Cl. 35-1.000.
Noyes, Richard C.: *See—*
Giuggio, Nicholas; Noyes, Richard C.; and Zaman, Shakir U., 4,204,909, Cl. 176-22.000.
Nudelman, Boris I.; Bikbau, Marsel Y.; Oborin, Pavel A.; and Kuznetsova, Tamara V., to Tashkentsky Nauchnoissledovatelsky I Proektny Institut Stroitelnykh Materialov "Niistromproekt". Raw mixture for the production of refractory high-alumina cement. 4,204,878, Cl. 106-104.000.
Nuske, Jeffrey J.: *See—*
Gothe, Diethard; Nuske, Jeffrey J.; and Friedrich, Jurgen, 4,204,427, Cl. 73-304.00C.
Nuvite Chemical Compounds Corporation: *See—*
Lester, Frank R.; and Bullard, James, 4,204,292, Cl. 15-28.000.
Nystrand, Ernst D., to Paper Converting Machine Company. Method and apparatus for zig-zag folding. 4,204,669, Cl. 270-73.000.
Oberteuffer, John A.: *See—*
Wechsler, Ionel; Oberteuffer, John A.; Nolan, John J.; Kolm, Henry H.; Georgelis, Eric; and Arvidson, Bo R., 4,204,948, Cl. 209-223.00R.
Oborin, Pavel A.: *See—*
Nudelman, Boris I.; Bikbau, Marsel Y.; Oborin, Pavel A.; and Kuznetsova, Tamara V., 4,204,878, Cl. 106-104.000.
O'Brien, Joseph P.: *See—*
Papay, Andrew G.; and O'Brien, Joseph P., 4,204,969, Cl. 252-45.000.
O'Brien, Robert J., to Eastman Kodak Company. Electrographic fusing apparatus and method. 4,205,220, Cl. 219-216.000.
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, to Takeda Chemical Industries, Ltd. α-Alkoxyimino-β-oxo-γ-Bromobutyric acid. 4,205,180, Cl. 560-168.000.
O'Connor, John D. Grout scrubber and cleaning tool for tile. 4,204,295, Cl. 15-209.00D.
Ofenmacher, Volker: *See—*
Seifert, Dieter; Regler, Dieter; Ofenmacher, Volker; Moritz, Alfred; Freudlsperger, August; and Berger, Walter, 4,204,515, Cl. 125-16.00R.
Ogawa, Kazufumi: *See—*
Komeda, Tadao; and Ogawa, Kazufumi, 4,204,894, Cl. 148-188.000.
Ogawa, Tadashi, to Pioneer Electronic Corporation. Control device of electronic preset type tuner for multi-band radio receiver. 4,205,271, Cl. 325-459.000.
Ogawa, Tadashi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,353, Cl. 360-61.000.
Ogawa, Toshio: *See—*
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, 4,205,117, Cl. 428-411.000.

Ogitani, Osamu: *See—*
Nagasawa, Kohtaro; Ogitani, Osamu; and Fujii, Ryuichi, 4,205,018, Cl. 525-404.000.
Ogland, Thomas W. Pocket-size, adjustable exerciser. 4,204,674, Cl. 272-126.000.
Oguey, Henri J.: *See—*
Darwish, Mougahed Y.; and Oguey, Henri J., 4,205,342, Cl. 357-23.000.
Oguro, Tomokatsu, to Hitachi, Ltd. Magnetron supporting structure. 4,205,256, Cl. 315-39.510.
Oguro, Tomokatsu; Sakamoto, Tatsuji; and Yasukawa, Akio, to Hitachi, Ltd. Magnetron strap ring structure. 4,205,257, Cl. 315-39.690.
O'Hanlon, Peter J.: *See—*
Rogers, Norman H.; and O'Hanlon, Peter J., 4,205,002, Cl. 260-345.80R.
O'Hara, David K.: *See—*
Pasha, Mohiuddin; O'Hara, David K.; and French, Joseph A., 4,204,980, Cl. 252-428.000.
Ohara, Ichiro, to Hitachi, Ltd. Electronic tubes. 4,205,250, Cl. 313-242.000.
Ohashi, Takashi; Kojima, Minoru; Yoshida, Masako; Okuyama, Toru; and Sakata, Ryozo, to Bridgestone Tire Company Limited. Process for producing a rigid polyurethane foam having excellent flame retardance and low-smoke development. 4,205,136, Cl. 521-118.000.
Ohbayashi-Gumi, Ltd.: *See—*
Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, 4,205,040, Cl. 264-233.000.
Ohdan, Kyoji: *See—*
Umemura, Sumio; Ohdan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,205,010, Cl. 260-465.300.
Ohidy, Joseph: *See—*
Binaris, Christopher; Volz, Patricia S.; and Ohidy, Joseph, 4,204,438, Cl. 81-9.220.
Ohki, Yoshinori; and Hirokichi, Komiya, to Iida Denki Kogyo K.K. Over-rotation prevention method and circuit in the non-contact type ignition circuit for the internal combustion engine. 4,204,490, Cl. 123-102.000.
Ohloff, Gunther: *See—*
Vite, Jean P.; Francke, Ernst J. W.; and Ohloff, Gunther, 4,205,084, Cl. 424-285.000.
Okada, Motohiro, to Honda Giken Kogyo Kabushiki Kaisha. Device for starting air bag devices. 4,204,703, Cl. 280-734.000.
Okada, Taiiti: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,205,180, Cl. 560-168.000.
Okamoto, Masafumi: *See—*
Shiozaki, Morio; Okamoto, Masafumi; Tanaka, Kiyoshi; and Shimazu, Takahide, 4,204,891, Cl. 148-111.000.
Okamoto, Rokuro: *See—*
Mori, Shunro; Okamoto, Rokuro; Inui, Taiji; and Takeuchi, Tomio, 4,205,163, Cl. 536-17.00R.
Okamoto, Yasunari: *See—*
Yamamoto, Masahiro; Okamoto, Yasunari; Itoh, Tsutomu; and Masuda, Senichi, 4,205,359, Cl. 361-58.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, to Pioneer Electronic Corporation. Station selection indicating device. 4,205,270, Cl. 455-158.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, to Pioneer Electronic Corporation. Combination device having a magnetic recording and reproducing unit and an electronic tuning type receiver. 4,205,353, Cl. 360-61.000.
Oki Electric Industry Co., Ltd.: *See—*
Maeda, Toshinobu; Nakamura, Yoshikazu; and Kawazoe, Akio, 4,205,260, Cl. 318-318.000.
Okuyama, Toru: *See—*
Ohashi, Takashi; Kojima, Minoru; Yoshida, Masako; Okuyama, Toru; and Sakata, Ryozo, 4,205,136, Cl. 521-118.000.
Olander, Walter K., to General Electric Company. Manganese complexes of salicyl-aldehyde-alkanolimines as catalysts for the polymerization of 2,6-di-substituted phenols. 4,205,007, Cl. 260-429.00C.
Olderdissen, Ulrich: *See—*
Barsuhn, Horst E.; Olderdissen, Ulrich; and Schmidt, Werner, 4,204,634, Cl. 371-38.000.
Olin Corporation: *See—*
Rothgery, Eugene F., 4,204,857, Cl. 71-73.000.
Smith, Ronald J.; and Gonzalez, Manuel A., 4,205,049, Cl. 423-167.000.
Zwirlein, John F., 4,204,977, Cl. 252-359.00E.
Olschewski, Armin: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,204,717, Cl. 308-6.00C.
Olson, Edward A. Method and device for supplying venous pressure in a portal vein. 4,204,525, Cl. 128-1.00R.
Olson, Jan B., to Sierracin Corporation, The. Edge design for impact resistant windshield. 4,204,374, Cl. 52-208.000.
Oltrogge, Victor C. Universal quick detach accessory mount for vehicles or the like. 4,204,701, Cl. 280-491.00E.
Oltrogge, Victor C. Universal quick detach accessory mount for vehicles or the like. 4,204,702, Cl. 280-491.00E.
Olympus Optical Co., Ltd.: *See—*
Imai, Toshihiro, 4,204,747, Cl. 350-216.000.
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, 4,204,767, Cl. 356-444.000.
Miyashita, Kiyoshi; and Kasuga, Muneo, 4,204,730, Cl. 355-14.00R.
Tsuda, Hiroshi, 4,204,621, Cl. 226-137.000.
Yamamoto, Tadao; Takekawa, Hiroshi; Banno, Taichi; and Koshiishi, Kiyozo, 4,204,917, Cl. 204-1.00T.
Yonekubo, Ken, 4,204,748, Cl. 350-228.000.
Omori, Tsuguharu; and Kawasaki, Michio, to Fuji Electric Co., Ltd. Induction furnace of graphite crucible. 4,205,197, Cl. 13-27.000.
Onishi, Hiroshi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
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Onishi, Sigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha, a part interest. 2-Cycle engine of an active thermoatmosphere combustion type. 4,204,488, Cl. 123-73.00A.
Onishi, Sigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. 2-Cycle engine of an active thermoatmosphere combustion type. 4,204,489, Cl. 123-73.00A.
Ono, Hironobu: *See—*
Kawai, Mitsuo; and Ono, Hironobu, 4,204,505, Cl. 123-119.0EC.
Ono, Takezo; Iribe, Seiki; and Watanabe; Mineo, to Teijin Limited. Method and apparatus for regenerating spent photographic bleach-fixer solution. 4,204,930, Cl. 204-180.00P.
Onoda Cement Co., Ltd.: *See—*
Yamamoto, Masahiro; Okamoto, Yasunari; Itoh, Tsutomu; and Masuda, Senichi, 4,205,359, Cl. 361-58.000.
Onore, Michael J.; and Mettille, Francis J., to Velsicol Chemical Corporation. Process for the preparation of cyclopropylcyanide. 4,205,009, Cl. 260-464.000.
Opravil, Egon, to Lumoprint Zindler KG (GmbH & Co.). Exposure carriage for a copying machine. 4,204,735, Cl. 355-75.000.
Optarac Corporation: *See—*
Dunchock, Richard S., 4,204,602, Cl. 211-13.000.
Optilon W. Erich Heilmann GmbH: *See—*
Heimberger, Helmut, 4,205,027, Cl. 264-23.000.
Ordynsky, Georgy V.: *See—*
Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V., 4,204,910, Cl. 176-30.000.
Orenbuch, Louis: *See—*
Young, Paul T. K., 4,205,317, Cl. 343-720.000.
Orlov, Mikhail A.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.
Oronzio deNora Impianti Elettrochimici S.p.A.: *See—*
Bianchi, Giuseppe; deNora, Oronzio; and Spaziante, Placido M., 4,204,937, Cl. 204-219.000.
Orsen, Stefan: *See—*
Erickson, Kent E.; Orsen, Stefan; and Rowe, Gerhardt C., 4,205,385, Cl. 364-560.000.
Ortega, Yasmine: *See—*
Morel, Pierre; Ortega, Yasmine; Jullien, Claudette; and Jullien, Antonin, 4,204,842, Cl. 48-197.00A.
Oshima, Akio: *See—*
Tsuchiya, Shozo; Oshima, Akio; and Hayashi, Hideo, 4,205,145, Cl. 525-502.000.
Osterloh, Rolf: *See—*
Barzynski, Helmut; Hartmann, Heinrich; Lautenbach, Dieter; Osterloh, Rolf; Goethlich, Lutz; and Heil, Guenter, 4,205,139, Cl. 525-38.000.
Otani, Hisao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Clutch release bearing assembly. 4,204,720, Cl. 308-233.000.
Otto, George W., Jr.: *See—*
Craig, James R.; and Otto, George W., Jr., 4,205,233, Cl. 250-439.00R.
Ouellette, Ronald J.: *See—*
Canney, Robert S.; Ouellette, Ronald J.; and Morong, William H., Jr., 4,205,290, Cl. 336-90.000.
Outboard Marine Corporation: *See—*
Blanchard, Clarence E., 4,204,806, Cl. 416-134.00R.
Holtermann, Theodore J., 4,204,384, Cl. 56-10.500.
Morris, Richard L., 4,204,511, Cl. 123-187.50R.
Ouyang, Mid: *See—*
Boyle, Malachy V.; and Ouyang, Mid, 4,205,198, Cl. 174-171.000.
Ovshinsky, Stanford R.; Klose, Peter H.; and Messing, Wayne P., to Energy Conversion Devices, Inc. Data storage and retrieval system. 4,205,387, Cl. 364-900.000.
Ovsy, Eduard V.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev,

Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Owen, William L., Jr.: *See—*
Arts, Jerold F.; Owen, William L., Jr.; and Tull, Bernie D., Jr., 4,205,239, Cl. 307-328.000.

Owens-Corning Fiberglas Corporation: *See—*
Calvert, Scott A., 4,204,376, Cl. 52-309.100.

Owens-Illinois, Inc.: *See—*
Byrum, Bernard W., Jr.; Ernsthausen, Roger E.; and Fein, Michael E., 4,205,392, Cl. 365-116.000.

Oyagi, Kunioki: *See—*
Eishima, Tetsusuke; Ikariyama, Takehiro; Jinnouchi, Raizo; Oyagi, Kunioki; and Soda, Takashi, 4,205,206, Cl. 179-124.000.

Oyama, Yoshishige; Yamauchi, Teruo; and Nishimura, Yutaka, to Hitachi, Ltd. Control system for internal combustion engine. 4,205,377, Cl. 364-431.000.

P. H. Thermal Products Limited: *See—*
Blundell, Kenneth, 4,205,105, Cl. 428-36.000.

Pack, Howard. Jr. Wind powered apparatus. 4,204,796, Cl. 415-2.000.

Paglione, Robert W., to RCA Corporation. Coaxial applicator for microwave hyperthermia. 4,204,549, Cl. 128-784.000.

Pak, Ian T. Overflow protection apparatus. 4,204,285, Cl. 4-427.000.

Pal, Dharam; Huang, Kwang T.; and Smith, Maurice N., to United States of America, Navy. Automatic electrical load matching device for wind generators. 4,205,235, Cl. 290-44.000.

Palmer, Nigel I.; and Grammer, Don O., to W. R. Grace & Co. Battery separator with porous body and fused rib. 4,205,123, Cl. 429-147.000.

Papay, Andrew G.; and O'Brien, Joseph P., to Edwin Cooper, Inc. Lubricant composition containing sulfurized olefin extreme pressure additive. 4,204,969, Cl. 252-45.000.

Paper Converting Machine Company: *See—*
Nystrand, Ernst D., 4,204,669, Cl. 270-73.000.

Paradis, Joseph R. Controlled removal of molded parts. 4,204,824, Cl. 425-436.00R.

Parda, Andrzej: *See—*
Nowak, Edmund; Zamojdo, Rudolf; Parda, Andrzej; Kurdowski, Wieslaw; and Jankowski, Stefan, 4,204,836, Cl. 432-58.000.

Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; and Kurtz, John J., to NCR Corporation. Digital communications system utilizing controllable field size. 4,205,200, Cl. 370-83.000.

Parish, Edward C., to Motorola, Inc. Temperature stabilized helical resonator. 4,205,286, Cl. 333-226.000.

Parker, David G.; and Tompsett, Alan J., to Imperial Chemical Industries Limited. Manufacture of amines from alcohols with zeolite FU-1 catalysts. 4,205,012, Cl. 260-583.00J.

Parker-Hannifin Corporation: *See—*
Cyrot, Luc P., 4,204,457, Cl. 91-31.000.

Parks, Frank, Jr. Pass through hay bale retriever. 4,204,789, Cl. 414-24.500.

Pasha, Mohiuddin; O'Hara, David K.; and French, Joseph A., to American Air Filter Company, Inc. Method and composition for removing iodine from gases. 4,204,980, Cl. 252-428.000.

Paskins, Keith N.; Redman, Duncan C.; and Turner, Ian D., to Williams (Hounslow) Limited. Amino acid salts of anionic dyestuffs which have high solubility in organic solvents. 4,204,879, Cl. 106-311.000.

Patel, Arvind M., to International Business Machines Corporation. Methods and means for simultaneously correcting several channels in error in a parallel multi channel data system using continuously modifiable syndromes and selective generation of internal channel pointers. 4,205,324, Cl. 371-50.000.

Patel, Bhagubhai K.: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; and Kurtz, John J., 4,205,200, Cl. 370-83.000.

Patnaik, Haresh C.: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; and Kurtz, John J., 4,205,200, Cl. 370-83.000.

Patton, Franklin D.; and McFarlane, James D., to Westbay Instruments Ltd. Measuring casing coupler apparatus. 4,204,426, Cl. 73-151.000.

Paulisch, Karlheinz: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.

Payne, Archibald H.: *See—*
Rouse, John W.; and Payne, Archibald H., 4,204,641, Cl. 239-121.000.

Pearl, David R., to Gerber Garment Technology, Inc. Fluid jet cutting apparatus having self-healing bed. 4,204,448, Cl. 83-177.000.

Pease, William M., to Raytheon Company. Marine radar including anticollision unit. 4,205,313, Cl. 343-5.0DP.

Peckinpaugh, Frank L.; and Biron, Raymond J., to Allied Chemical Corporation. Quench system for synthetic fibers using fog and flowing air. 4,204,828, Cl. 425-72.00S.

Pence, Valerie C.: *See—*
Janick, Jules; and Pence, Valerie C., 4,204,366, Cl. 47-58.000.

Pennwalt Corporation: *See—*
Monsimer, Harold G.; and Bohm, Howard A., 4,205,060, Cl. 424-14.000.
Shetty, Bola V., 4,205,173, Cl. 546-218.000.

Peperone, Salvador J., to United States of America, Army. Enhanced accuracy doppler fuze. 4,205,316, Cl. 343-14.000.

Pereira, Robert J., Jr., to Phase Industries, Inc. Microcapacitors having beveled edges and corners. 4,205,364, Cl. 361-274.000.

Perepolkin, John. Fuel vaporizing devices for internal combustion engines. 4,204,485, Cl. 123-34.00A.

Perkin-Elmer Corporation, The: *See—*
Gerlach, Robert, 4,205,226, Cl. 250-305.000.
Hartsough, Larry D., 4,204,936, Cl. 204-192.00R.

Perobelli, Aldo: *See—*
Pessina, Giorgio; and Perobelli, Aldo, 4,204,671, Cl. 271-186.000.

Perry Bros. (Hall Green) Limited: *See—*
Perry, Donald J., 4,205,106, Cl. 428-45.000.

Perry, Donald J., to Perry Bros. (Hall Green) Limited. Doors. 4,205,106, Cl. 428-45.000.

Pessina, Giorgio; and Perobelli, Aldo. Sheet stacking machine. 4,204,671, Cl. 271-186.000.

Peters, Lester G. De-stoning and simultaneously filling a drupe. 4,204,467, Cl. 99-494.000.

Petersson, Stig A.; and Eriksson, Bengt S., to Boliden Aktiebolag. Method of producing blister copper. 4,204,861, Cl. 75-73.000.

Petroff, Pierre M.: *See—*
Dingle, Raymond; Gossard, Arthur C.; Petroff, Pierre M.; and Wiegmann, William, 4,205,329, Cl. 357-16.000.

Pfeiffer, Hans-Dieter: *See—*
Johannes, Gunter; and Pfeiffer, Hans-Dieter, 4,204,567, Cl. 152-209.00D.

Pfetzing, Rodger E. Arrow fletching method. 4,204,307, Cl. 29-407.000.

Phase Industries, Inc.: *See—*
Pereira, Robert J., Jr., 4,205,364, Cl. 361-274.000.

Philip Morris Incorporated: *See—*
Newman, Richard H.; Jones, William L., Jr.; and Jenkins, Robert W., Jr., 4,204,550, Cl. 131-171.00R.

Phillips, Norman S.; and Walcott, William B., to United States of America, Navy. Energy absorber. 4,204,659, Cl. 248-562.000.

Phillips Petroleum Company: *See—*
Bjornson, Geir, 4,205,017, Cl. 585-469.000.
Ford, Gregory A., 4,204,962, Cl. 210-316.000.
Makovec, Donald J.; and Haskell, Donald M., 4,205,196, Cl. 585-701.000.
Reese, Herbert E.; and Clayton, Hadwen A., 4,204,808, Cl. 417-2.000.
Richards, Frank P.; and Taylor, Raymond C., 4,204,462, Cl. 93-36.50R.
Vanderveen, John W., 4,204,831, Cl. 431-10.000.
Walker, Starnes E., 4,204,424, Cl. 73-23.100.

Phillips, Robert F.: *See—*
McIntyre, James A.; Phillips, Robert F.; and Lefever, Joseph D., 4,204,918, Cl. 204-24.000.

Piccirilli, Robert M.; Chang, Wen-Hsuan; McKeough, David T.; and Porter, Samuel, Jr., to PPG Industries, Inc. Polyester coating composition. 4,205,115, Cl. 428-334.000.

Pick, Anthony J.: *See—*
Wagner, Daniel B.; Pick, Anthony J.; and Feingers, Judith, 4,205,058, Cl. 424-1.000.

Pickens, George O., to United States of America, Navy. Sealed cavity hydrophone array calibration. 4,205,394, Cl. 367-13.000.

Piehl, Robert L.; and Scarborough, W. Bertram, to Chevron Research Company. Method of reducing corrosion in sour gas sweetening systems. 4,205,050, Cl. 423-228.000.

Pike, Marshall; Barr, Iain G.; and Tirtiaux, Florent. Glycerides. 4,205,095, Cl. 426-607.000.

Pikin, Nikolai I.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

Pilat, Michael J. Liquid transfer system for conductive liquids. 4,204,844, Cl. 55-10.000.

Pilkington Brothers Limited: *See—*
Watts, Julian K.; and Yarker, Colin A., 4,204,852, Cl. 65-4.00A.

Pioneer Electronic Corporation: *See—*
Inaba, Shizuo; and Hirota, Yoshihisa, 4,204,687, Cl. 274-15.00R.
Ogawa, Tadashi, 4,205,271, Cl. 325-459.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,353, Cl. 360-61.000.

Pip, Wolfgang; and Winter, Klaus, to Rohm GmbH. Laminates comprising a foamed polyimide layer. 4,205,111, Cl. 428-215.000.

Pisano, Vincent F. Mini-indoor TV antenna. 4,205,318, Cl. 343-741.000.

Pitroda, Satyan G.: *See—*
Mehta, Madhu A.; Pitroda, Satyan G.; and Vasanthkumar, Sagunabalan, 4,205,203, Cl. 370-110.000.

Plaige, Yves, to Commissariat a l'Energie Atomique. Device for progressive electrical switching. 4,205,240, Cl. 307-350.000.

Plate, Hermann: *See—*
Jaschke, Hans; Kautz, Rudolf; Plate, Hermann; and Ulb, Horst, 4,205,107, Cl. 428-58.000.

Platonov, Vladimir N.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Maslennikov, Ivan E.; Platonov, Vladimir N.; and Silantiev, Igor I., 4,204,458, Cl. 91-429.000.

Platt Saco Lowell Limited: *See—*
Clayton, James W. B.; and Clough, Douglas O., 4,204,391, Cl. 57-1.00R.

Plo, Mateo O. Flying toy. 4,204,359, Cl. 46-83.000.

Pochwalski, Krzysztof K., to Instytut Badan Jadrowych. Device for light flux attenuation, especially for additional quenching of scintillations at radionuclide activity determination. 4,205,231, Cl. 250-364.000.

Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M. Radiation curable polyborsiloxane polymer composition and method of using same to produce thermostable insulating materials. 4,205,026, Cl. 264-22.000.

Podjan, Walter H. Bird feeder construction. 4,204,500, Cl. 119-52.00R.

Podolsky, Daniel K.; and Weiser, Milton M., to Massachusetts General Hospital, The. Method for purifying galactosyltransferase isoenzymes and product. 4,205,129, Cl. 435-193.000.

Pogorzhelsky, Viktor I.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Pohlmann, Charles. Lightweight resuscitator assembly. 4,204,535, Cl. 128-202.130.

Poinas, Christian, to Societe Anonyme Dite: Compagnie Industrielle des Telecommunications Cit-Alcatel. Phase locked loop with switchable filter. 4,205,277, Cl. 331-12.000.

Polaroid Corporation: *See—*
Byers, Charles H.; Hausslein, Robert W.; and Nestle, Mara O., 4,204,869, Cl. 430-564.000.
Norris, Philip R., 4,204,752, Cl. 352-82.000.

Poling, Stephen M.: *See—*
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., 4,204,859, Cl. 71-121.000.

Popov, Alexandr N.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

Popovici, Neculai, to Institutul de Inginerie Tehnologica Si Proiectare Pentru Industria Chimica. Reactor for phosphoric acid production. 4,205,046, Cl. 422-193.000.

Porter, Cyril A.; and Wardle, Malcolm R., to GEC-General Signal Limited. Data communication apparatus. 4,205,326, Cl. 340-147.00R.

Porter, Edward S., to Fuller Company. Apparatus for treating solid particulate material. 4,204,835, Cl. 432-58.000.

Porter, Samuel, Jr.: *See—*
Piccirilli, Robert M.; Chang, Wen-Hsuan; McKeough, David T.; and Porter, Samuel, Jr., 4,205,115, Cl. 428-334.000.

Potts, Irvin W., Jr., to Dow Chemical Company, The. Process for 1,2,4,5-tetrachlorobenzene. 4,205,014, Cl. 260-650.00R.

Pove, Dusan: *See—*
Erche, Manfred; Filberich, Ludwig; Pove, Dusan; Waldmann, Hermann; and Weibelzahl, Manfred, 4,205,368, Cl. 363-35.000.

Powell, David G.: *See—*
Bilbrey, Robert A.; Munroe, William O.; and Powell, David G., 4,204,513, Cl. 123-198.0DB.

Poze, Anthony N.: *See—*
Gordon, William J. J.; and Poze, Anthony N., 4,204,705, Cl. 283-1.00R.

PPG Industries, Inc.: *See—*
Goldinger, John A., 4,204,445, Cl. 83-880.000.
Piccirilli, Robert M.; Chang, Wen-Hsuan; McKeough, David T.; and Porter, Samuel, Jr., 4,205,115, Cl. 428-334.000.
Seymour, Samuel L., 4,204,853, Cl. 65-106.000.
Shields, George B.; and Starr, Eugene W., 4,204,845, Cl. 65-25.00A.
Stevens, Henry C., 4,205,154, Cl. 526-314.000.
Yigdall, Jeffrey S.; and Zahler, James A., 4,204,856, Cl. 65-157.000.

Precision Plumbing Products, Inc.: *See—*
Sullivan, Richard N., 4,204,556, Cl. 137-206.000.

Prestridge, Floyd L.: *See—*
Warren, Kenneth W.; and Prestridge, Floyd L., 4,204,934, Cl. 204-186.000.

Pretron Electronics Pty. Ltd.: *See—*
Stubbs, Raymond F., 4,205,230, Cl. 250-356.000.

Principe, Pacifico A.: *See—*
Sykes, Richard B.; Wells, J. Scott; Principe, Pacifico A.; and Liu, Wen C., 4,205,068, Cl. 424-117.000.

Prinz, Richard: *See—*
Liebig, Lothar; Wingler, Frank; Humme, Gert; and Prinz, Richard, 4,205,141, Cl. 525-67.000.

Pritchard, Huw O.: *See—*
Craig, Roger A.; and Pritchard, Huw O., 4,204,402, Cl. 60-39.060.

Pritchard, Sheldon S., to Champion International Corporation. Dual pocket envelope. 4,204,600, Cl. 206-610.000.

Procter & Gamble Company, The: *See—*
Baird, James C.; and Warfield, Glenn R., 4,205,094, Cl. 426-459.000.
McCarthy, Robert F., 4,204,615, Cl. 222-153.000.
Strobel, Rudolf G. K., 4,204,464, Cl. 99-286.000.

Prouty, Myron R.: *See—*
Morin, Marius J.; Nichols, Colin J.; and Prouty, Myron R., 4,204,604, Cl. 215-257.000.

Prussin, Samuel: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,205,096, Cl. 427-4.000.

Pryor, Cabell N., Jr., to United States of America, Navy. Automatic DIFAR cardioid former. 4,205,396, Cl. 367-125.000.

Pue, Alan J.: *See—*
Gulick, Joseph F.; Miller, James S.; and Pue, Alan J., 4,204,655, Cl. 244-3.190.

Pujolle, Jean; and Bourcet, Patrice, to Telediffusion de France. Acoustic insulation measurement apparatus. 4,204,432, Cl. 73-599.000.

Purdue Research Foundation: *See—*
Janick, Jules; and Pence, Valerie C., 4,204,366, Cl. 47-58.000.

Puthawala, Anwer; Hoffmann, Lutz; Emmert, Hermann; Hild, Werner; John, Hans-Erich; and Kluger, Wolfgang, to Kraftwerk Union Aktiengesellschaft. Method for removing radioactive plastic wastes and apparatus therefor. 4,204,974, Cl. 252-301.10W.

PVI Industries, Inc.: *See—*
Clark, David W., 4,204,573, Cl. 165-142.000.

Pyle, Walter R., to Chevron Research Company. Discharge spout tip for a liquid fuel-dispensing nozzle. 4,204,563, Cl. 141-206.000.

Pyramid Manufacturing Company: *See—*
Bryan, John F., Jr., 4,204,664, Cl. 254-175.700.

Qualcast (Lawn Mowers) Limited: *See—*
Dawson, Frank, 4,204,388, Cl. 56-320.100.

Questor Corporation: *See—*
Cone, Richard E., 4,204,367, Cl. 47-71.000.
Molitor, Robert P., 4,204,684, Cl. 273-167.00R.

Quick, Donald J., to Massey-Ferguson Services N.V. Mobile planting apparatus. 4,204,491, Cl. 111-3.000.

Qume Corporation: *See—*
Lee, Sen L.; Shah, Franklin B.; and Jamieson, John W., 4,204,779, Cl. 400-144.200.

R. M. Wade & Co.: *See—*
Cornelius, Gail, 4,204,643, Cl. 239-212.000.

Rabito, Thomas G.: *See—*
Streets, Roger L.; Rabito, Thomas G.; and Von Kamp, John, 4,204,987, Cl. 260-29.20E.

Rabussier, Bernard: *See—*
Hennart, Claude; Rabussier, Bernard; Mandon, Jean-Pierre; and Sapin, Joel, 4,205,066, Cl. 424-84.000.

Rain Jet Corporation: *See—*
Hruby, John O., Jr., 4,204,631, Cl. 239-17.000.

Rakshys, Joseph W.: *See—*
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,205,016, Cl. 260-665.00R.

Randall, John J., Jr.; and Bernard, Walter J., to Sprague Electric Company. Treating etched aluminum electrolytic capacitor foil. 4,204,919, Cl. 204-29.000.

Rank Organisation Limited, The: *See—*
Millward, John D., 4,205,337, Cl. 358-54.000.

Rau, Willy; and Taus, Christian, to Maschinenfabrik Rau oHG. Cultivator with pivotal tines. 4,204,579, Cl. 172-657.000.

Rauner, Frederick J.: *See—*
Horak, Jerry R.; Langworthy, Harold F.; Rauner, Frederick J.; and Gross, Robert C., 4,204,866, Cl. 430-306.000.

Rauschenbach, Stefan: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.

Rauscher, Walter: *See—*
Aurscher, Franz; Zeitler, Karl-Heinz; and Rauscher, Walter, 4,204,310, Cl. 29-445.000.

Ravn, Jacob; and Conard, William A., to West Company, The. Container-closure assembly. 4,204,605, Cl. 215-295.000.

Raynaud, Bernard: *See—*
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, 4,205,209, Cl. 200-163.000.

Rayner, Bruce L., to Tektronix, Inc. Special effects memory system. 4,205,344, Cl. 358-160.000.

Raytheon Company: *See—*
Craig, James R.; and Otto, George W., Jr., 4,205,233, Cl. 250-439.00R.
Pease, William M., 4,205,313, Cl. 343-5.0DP.

RCA Corporation: *See—*
Paglione, Robert W., 4,204,549, Cl. 128-784.000.
Staebler, David L., 4,205,265, Cl. 324-158.00D.

Rechsteiner, Oswald: *See—*
Aufderhaar, Ernst; Gallay, Jean J.; Kuhne, Manfred; Meyer, Alfred; Rechsteiner, Oswald; Schellenbaum, Max; and Fumeaux, Jean-Paul, 4,205,077, Cl. 424-273.00B.

Recognition Systems, Inc.: *See—*
Balasubramanian, N., 4,204,772, Cl. 356-376.000.

Redman, Duncan C.: *See—*
Paskins, Keith N.; Redman, Duncan C.; and Turner, Ian D., 4,204,879, Cl. 106-311.000.

Reed, Bruce S., to Texas Instruments Incorporated. Single junction emitter array. 4,205,227, Cl. 250-330.000.

Reed, Steven P.; and Kinkead, Jordan A., to Sven Tveter. Dispenser for roll of ticket tapes and the like. 4,204,618, Cl. 225-106.000.

Reed, William R., Jr.: *See—*
Ibsen, Robert L.; Glace, William R.; and Reed, William R., Jr., 4,204,978, Cl. 252-408.000.

Reese, Herbert E.; and Clayton, Hadwen A., to Phillips Petroleum Company. Flow control. 4,204,808, Cl. 417-2.000.

Reeve, Randy F., to Diamond International Corporation. Fluid dispenser having a spring biased locking mechanism for a safety nozzle cap. 4,204,614, Cl. 222-153.000.

Regler, Dieter: *See—*
Seifert, Dieter; Regler, Dieter; Ofenmacher, Volker; Moritz, Alfred; Freudlsperger, August; and Berger, Walter, 4,204,515, Cl. 125-16.00R.

Rehabilitation Institute of Chicago: *See—*
Wu, Yeongchi; and Nowacki, Christopher A., 4,204,527, Cl. 128-762.000.

Reichert, Leonard K. Cutting block employing cuttable rods. 4,204,451, Cl. 83-658.000.

Reichhold Chemicals, Incorporated: *See—*
Mervin, Gaillard A., 4,205,112, Cl. 428-245.000.

Reichle, Walter T.: *See—*
Cardenas, Jorge N.; and Reichle, Walter T., 4,205,187, Cl. 568-730.000.

Reilly, Richard J. Fluid dynamic furnace cleaning system. 4,204,296, Cl. 15-316.00R.

Reilly, Richard J.; and Moorhead, John K. Fluid dynamic soot blower system. 4,204,503, Cl. 122-392.000.

Remport nee Radoczi, Julia: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.

Resista Fabrik Elektrischer Widerstande G.m.b.H.: *See—*
Klesse, Fritz; and Forster, Jurgen, 4,204,935, Cl. 204-192.00F.

Reum, Donald J. Apparatus for producing a spirally wound plastic article. 4,204,818, Cl. 425-66.000.

Reynolds, Anthony C. Valve for controlling the flow of fluids in conduits and the like. 4,204,662, Cl. 251-334.000.

Reynolds Metals Company: *See—*
Kibby, Robert M., 4,204,860, Cl. 75-10.00R.

Rhodes, Maurice: *See—*
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., 4,204,933, Cl. 204-181.00N.

Rhone-Poulenc Industries: *See—*
Bachot, Jean; Bouy, Pierre; and Juillard, Michel, 4,204,938, Cl. 204-252.000.
Desbois, Michel, 4,205,195, Cl. 585-510.000.

Richards, Frank P.; and Taylor, Raymond C., to Phillips Petroleum Company. Container handling and finishing apparatus. 4,204,462, Cl. 93-36.50R.

Richards, Harvey J.: *See—*
Kyung, Jai H.; and Richards, Harvey J., 4,205,048, Cl. 423-24.000.

Richardson, John, to Hayward Tyler Limited. Production of cable joints. 4,204,896, Cl. 156-49.000.

Richardson Manufacturing Company, Inc.: *See—*
Richardson, Raymond W.; Burda, Robert E.; and Crumrine, John C., 4,204,575, Cl. 172-1.000.

Richardson, Raymond W.; Burda, Robert E.; and Crumrine, John C., to Richardson Manufacturing Company, Inc. Method of folding a plurality of wing sections of an articulated implement. 4,204,575, Cl. 172-1.000.

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Fujii, Tadashi, 4,205,320, Cl. 346-1.100.
Inokuchi, Toshiyuki, 4,204,729, Cl. 355-11.000.
Kawazu, Motoaki; Yokota, Takashi; Inokuchi, Toshiyuki; and Kanmoto, Yoshiaki, 4,205,349, Cl. 358-294.000.
Yanagawa, Nobuyuki, 4,204,668, Cl. 271-9.000.

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Riethmann, Jean: *See—*
Gremmelmaier, Claude; and Riethmann, Jean, 4,205,167, Cl. 544-209.000.

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Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,204,576, Cl. 172-22.000.

Ritter, Ernst; Schwartz, Reinhard; Muuller, Rolf; Sturm, Waldemar; and Faupel, Werner, to Robert Bosch GmbH. RPM Governor for fuel injected internal combustion engines. 4,204,510, Cl. 123-179.00L.

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Moser, Theo; Andra Rolf; Rittler, Roland; and Strampfer, Armin, 4,204,951, Cl. 209-625.000.

Robbins, Lanny A.: *See—*
Muench, Wayne C.; Hormel, Thad S.; Kirchhoff, Pamela M.; and Robbins, Lanny A., 4,205,188, Cl. 568-764.000.

Robert Bosch GmbH: *See—*
Jundt, Werner; Bodig, Bernd; Roozenbeek, Herman; and Werner, Peter, 4,204,508, Cl. 123-148.00E.
Moser, Theo; Andra Rolf; Rittler, Roland; and Strampfer, Armin, 4,204,951, Cl. 209-625.000.
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Neubert, Hans D.; Dailey, Larry R.; and Robinson, Richard S., 4,204,323, Cl. 433-38.000.

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Laughton, Malcolm; and Robinson, Sidney H., 4,204,352, Cl. 40-389.000.

Rogers, James G.: *See—*
Rogers, Thomas E.; Rogers, Richard J.; Rogers, Peter T.; and Rogers, James G., 4,204,420, Cl. 72-439.000.
Rogers, Thomas E.; Rogers, Richard J.; Rogers, Peter T.; and Rogers, James G., 4,204,421, Cl. 72-439.000.

Rogers, Norman H.; and O'Hanlon, Peter J., to Beecham Group Limited. Antibacterial compounds. 4,205,002, Cl. 260-345.80R.

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Pip, Wolfgang; and Winter, Klaus, 4,205,111, Cl. 428-215.000.

Rohrscheid, Karl, to System Schultheis GmbH & Co. Warp beam elevating and transport carriage for twin warp beams. 4,204,797, Cl. 414-458.000.

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Rollmann, Louis D.; and Valyocsik, Ernest W., to Mobil Oil Corporation. Manufacture of nitrogenous zeolites. 4,205,053, Cl. 423-329.000.

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Bridges, Stuart A., 4,204,629, Cl. 228-160.000.
Howe, David M., 4,204,403, Cl. 60-743.000.

Romans, Ralph H. Injection molding machine. 4,204,827, Cl. 425-551.000.

Romanzi, Louis, Jr.: *See—*
Cislak, Raymond S.; and Romanzi, Louis, Jr., 4,204,652, Cl. 242-107.40R.

Romey, Ingo; Schlutter, Aloys; and Sommerfeld, Rolf, to Bergwerksverband GmbH; and Ruhrkohle AG. Sealing, caulking and protective shielding composition of thermoplastic synthetic materials and carbonaceous materials. 4,204,986, Cl. 260-28.5AS.

Romey, Ingo: *See—*
Kroger, Carl; Romey, Ingo; and Kolling, Georg, 4,205,035, Cl. 264-120.000.

Roos, Friedrich; and Bahner, Friedrich, to Babcock-BSH Aktiengesellschaft vormals Buttner-Schilde-Haas AG. Method and apparatus for monitoring and controlling the drying profile in a continuous-operation multi-zone drier. 4,204,337, Cl. 34-31.000.

Roozenbeek, Herman: *See—*
Jundt, Werner; Bodig, Bernd; Roozenbeek, Herman; and Werner, Peter, 4,204,508, Cl. 123-148.00E.

Rosa, Gilbert L. Coil containment cover. 4,204,479, Cl. 206-397.000.

Rose, John B.: *See—*
Hendy, Brian N.; Mathews, Carl F.; Nield, Eric; Rose, John B.; and Vincent, Peter I., 4,205,020, Cl. 525-275.000.

Rosemount Inc.: *See—*
Dahlke, Charles J., 4,205,327, Cl. 340-208.000.

Rosenberg, David. Roof comprising roofing tiles with solar water heating system therein. 4,204,520, Cl. 126-432.000.

Rosenburgh, Norman J.: *See—*
Modney, William; and Rosenburgh, Norman J., 4,204,733, Cl. 355-64.000.

Rosendal, Hans: *See—*
Braad, Poul E.; Jensen, Knud B.; Rosendal, Hans; and Sevaldsen, Flemming, 4,204,415, Cl. 72-52.000.

Ross, John D., to Ross Video Limited. Video transition circuitry including transition previewing means. 4,205,346, Cl. 358-181.000.

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Ross, John D., 4,205,346, Cl. 358-181.000.

Rothaemel, Gunther; and Fengels, Gerd, to Bruggemann & Brand KG. Rescue net. 4,204,710, Cl. 294-77.000.

Rothbart, Herbert L.: *See—*
Luddy, Francis E.; Hampson, James W.; Herb, Samuel F.; and Rothbart, Herbert L., 4,205,006, Cl. 260-410.700.

Rothe, Eva, to E. Cacarda GmbH. Mount for solar collectors. 4,204,523, Cl. 126-450.000.

Rothgery, Eugene F., to Olin Corporation. 5-Xanthogenato-3-trihalomethyl-1,2,4-thiadiazoles and their use as herbicides. 4,204,857, Cl. 71-73.000.

Rothmayer, Jules: *See—*
Johnson, Mark U.; Rothmayer, Jules; and Smith, Hugh M., 4,204,871, Cl. 106-20.000.

Rouse, John W.; and Payne, Archibald H., to American Can Company. Dispensing nozzle for sealing plastics. 4,204,641, Cl. 239-121.000.

Roussel Uclaf: *See—*
Martel, Jacques; and Tessier, Jean, 4,205,008, Cl. 260-456.00R.
Vignau, Michel; and Lutz, Andre, 4,205,072, Cl. 424-246.000.

Rowe, Gerhardt C.: *See—*
Erickson, Kent E.; Orsen, Stefan; and Rowe, Gerhardt C., 4,205,385, Cl. 364-560.000.

Rowlings, James W. Flush door bolt bore forming jig. 4,204,785, Cl. 408-109.000.

Rubin, Wallace: *See—*
Allen, Bernard M.; Rubin, Wallace; and Watson, Brian, 4,204,889, Cl. 148-26.000.

Ruh, Herbert: *See—*
Ullmann, Werner; Buhler, Ernst; Kilcher, Beat; Ruh, Herbert; and Sieg, Arno, 4,205,212, Cl. 219-69.00W.

Ruhrchemie Aktiengesellschaft: *See—*
Weber, Jurgen; and Springer, Helmut, 4,205,013, Cl. 568-451.000.

Ruhrkohle AG: *See—*
Romey, Ingo; Schlutter, Aloys; and Sommerfeld, Rolf, 4,204,986, Cl. 260-28.5AS.

Rumore, Peter J.: *See—*
Lind, Herbert C.; Rumore, Peter J.; and Wysocki, Tadeusz S., 4,204,532, Cl. 128-132.00D.

Rumsey, Joseph N. Fireplace furnace. 4,204,517, Cl. 126-63.000.

Ruszala, Frederick B.; and Cook, Kenneth J., to Valeron Corporation, The. Electrocardiographic and blood pressure waveform simulator device. 4,205,386, Cl. 364-607.000.

S.B.W. Engineers Limited: *See—*
Workman, John, 4,204,314, Cl. 29-597.000.

Sabatka, Winston E., to Finishing Equipment, Inc. Solvent recovery apparatus. 4,204,913, Cl. 202-168.000.

SACK GmbH: *See—*
Kersting, Emil F.; and Schulte, Rolf, 4,204,449, Cl. 83-328.000.

Safin, Rinat R.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Sahara, Masayoshi: *See—*
Kobori, Toshio; Sahara, Masayoshi; and Saito, Mitsuru, 4,204,756, Cl. 354-53.000.

Sai-Halasz, George A.: *See—*
Esaki, Leo; Sai-Halasz, George A.; and Chang, Leroy L., 4,205,331, Cl. 357-30.000.

Saint Gobain Industries: *See—*
Chenel, Pierre, 4,205,104, Cl. 428-34.000.

Saito, Masaharu: *See—*
Toyoura, Hirozumi; and Saito, Masaharu, 4,204,583, Cl. 180-9.280.

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Kobori, Toshio; Sahara, Masayoshi; and Saito, Mitsuru, 4,204,756, Cl. 354-53.000.

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Sakaki, Masamichi: *See—*
Inoue, Yuichiro; and Sakaki, Masamichi, 4,204,422, Cl. 73-4.00R.

Sakamaki, Hisashi: *See—*
Goshima, Yoshitomo; Kawakubo, Kazuo; Furuichi, Katsushi; Sakamaki, Hisashi; Sawamura, Osamu; Komiya, Yutaka; and Tomosada, Masahiro, 4,204,728, Cl. 355-4.000.

Sakamoto, Koji; Asano, Takeshi; Mizuochi, Kazuo; and Sasaki, Kanemichi, to Nippon Kayaku Kabushiki Kaisha; and Chugai Seiyaku Kabushiki Kaisha. Composition and method for preventing or treating swine dysentery. 4,205,081, Cl. 424-279.000.

Sakamoto, Tatsuji: *See—*
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Sakamoto, Tetsu: *See—*
Kado, Satoshi; Yamazaki, Taketomo; Sakamoto, Tetsu; Yamanaka, Mikio; and Yoshida, Kotaro, 4,204,862, Cl. 75-124.000.

Sakata, Ryozo: *See—*
Ohashi, Takashi; Kojima, Minoru; Yoshida, Masako; Okuyama, Toru; and Sakata, Ryozo, 4,205,136, Cl. 521-118.000.

Sakurai, Kenji: *See—*
Yamamoto, Yoshihiro; Sakurai, Kenji; and Tanaka, Hiroshi, 4,204,873, Cl. 106-43.000.

Sakurai, Kiyoshi; Matsumoto, Tateo; and Ishikawa, Teruo, to Honeywell Inc. Address converter. 4,205,390, Cl. 364-900.000.

Sakurai, Yoshiki: *See—*
Hamanaka, Kunio; and Sakurai, Yoshiki, 4,205,355, Cl. 360-99.000.

Salway-Waller, Malcolm; and Langton, Frederick H., to USM Corporation. High frequency cavity press. 4,205,210, Cl. 219-10.810.

Salzman, Marilyn F. Shopping cart child seat. 4,204,695, Cl. 280-33.99B.

Samuels, Peter B.; and Wood, Ernest. Arterial graft and package. 4,204,526, Cl. 128-1.00R.

Sandine, William E.; and Vedamuthu, Ebenezer R., to Microlife Technics, Inc. Lyophilization of bacteria. 4,205,132, Cl. 435-260.000.

Sanraku-Ocean Co., Ltd.: *See—*
Mori, Shunro; Okamoto, Rokuro; Inui, Taiji; and Takeuchi, Tomio, 4,205,163, Cl. 536-17.00R.

Santerre, David. Variable wheelbase road truck. 4,204,697, Cl. 280-80.00B.

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Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Sapin, Joel: *See—*
Hennart, Claude; Rabussier, Bernard; Mandon, Jean-Pierre; and Sapin, Joel, 4,205,066, Cl. 424-84.000.

Sarantakis, Dimitrios, to American Home Products Corporation. Somatostatin analogues. 4,204,990, Cl. 260-112.50S.

Saroy Engineering: *See—*
Husted, Royce H., 4,204,581, Cl. 180-190.000.

Sartorius Membranfilter GmbH: *See—*
Weickhardt, Ludwig, 4,204,957, Cl. 210-98.000.

Sasaki, Kanemichi: *See—*
Sakamoto, Koji; Asano, Takeshi; Mizuochi, Kazuo; and Sasaki, Kanemichi, 4,205,081, Cl. 424-279.000.

Sasaki, Shoji: *See—*
Takizawa, Masaaki; and Sasaki, Shoji, 4,204,807, Cl. 416-188.000.

Sassin, Roger I.: *See—*
Hall Jr., Harleston J.; Sassin, Roger I.; and Yuhas, Drew J., 4,204,681, Cl. 273-73.00C.

Satama, Kauko K. Air conditioning apparatus and system. 4,204,409, Cl. 62-271.000.

Sato, Reisuke: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,353, Cl. 360-61.000.

Satoh, Katsuhiko: *See—*
Asano, Kazuhiro; Ueda, Makoto; Torisawa, Akira; Shida, Masaharu; Satoh, Katsuhiko; and Mandai, Masaaki, 4,204,397, Cl. 368-202.000.

Satzinger, Gerhard; Herrmann, Manfred F.; and Hechtfischer, Gustav, to Warner-Lambert Company. 3-Pyrrolin-2-one derivatives. 4,205,078, Cl. 424-274.000.

Sawa, Natsuo; Nomoto, Tadao; Iuchi, Keiko; Suzuki, Toshihiro; and Kawata, Shunichi, to Shikoku Chemicals Corporation. Novel imidazole-isocyanuric acid adducts and utilization thereof. 4,205,156, Cl. 528-117.000.

Sawai, Masahide: *See—*
Kakizaki, Takehiro; Tagawa, Susumu; and Sawai, Masahide, 4,205,253, Cl. 313-437.000.

Sawamura, Osamu: *See—*
Goshima, Yoshitomo; Kawakubo, Kazuo; Furuichi, Katsushi; Sakamaki, Hisashi; Sawamura, Osamu; Komiya, Yutaka; and Tomosada, Masahiro, 4,204,728, Cl. 355-4.000.

Sawaya, Showhachi: *See—*
Masumoto, Hakaru; and Sawaya, Showhachi, 4,204,887, Cl. 148-31.000.
Masumoto, Hakaru; and Sawaya, Showhachi, 4,204,888, Cl. 148-31.000.

Scarato, Armand: *See—*
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, 4,205,209, Cl. 200-163.000.

Scarborough, W. Bertram: *See—*
Piehl, Robert L.; and Scarborough, W. Bertram, 4,205,050, Cl. 423-228.000.

Schaefer Equipment Incorporated: *See—*
Cale, Roland E., 4,204,419, Cl. 72-356.000.

Schaefer, Louis F., to Laser File Inc. Disc recording tracking system. 4,205,338, Cl. 358-28.500.

Schatz, Franz; Stammbach, Christian; Thiele, Kurt; Wagner-Jauregg, Theodor W.; Zirngibl, Ludwig; Fischer, Johanna; and Jahn, Ulrich, to Siegfried Aktiengesellschaft. N-Amino indole derivatives having pharmacological activity. 4,204,998, Cl. 260-326.150.

Schelhas, Karlheinz: *See—*
Lersmacher, Bernhard; Lydtin, Hans; Schelhas, Karlheinz; and Knippenberg, Wilhelmus F., 4,204,769, Cl. 356-244.000.

Schellenbaum, Max: *See—*
Aufderhaar, Ernst; Gallay, Jean J.; Kuhne, Manfred; Meyer, Alfred; Rechsteiner, Oswald; Schellenbaum, Max; and Fumeaux, Jean-Paul, 4,205,077, Cl. 424-273.00B.

Scherer, George W.: *See—*
Dominick, Ellen K.; and Scherer, George W., 4,204,850, Cl. 65-3.00A.

Schering Corporation: *See—*
Sherlock, Margaret H.; and Long, James F., 4,205,073, Cl. 424-266.000.

Schilde, Peter: *See—*
Kirbis, Manfred; Schilde, Peter; and Englmaier, Gert, 4,204,318, Cl. 29-734.000.

Schimpff, Peter: *See—*
Westernacher, Helmut; Schimpff, Peter; and Botthof, Ferdinand, 4,205,045, Cl. 422-192.000.

Schindler, Bernd, to Blaupunkt-Werke GmbH. Horizontal deflection circuit for television systems. 4,205,259, Cl. 315-408.000.

Schlaepfer, Robert J., to Jacob Schlaepfer & Co. AG. Method of filling blind holes in a stencil. 4,204,610, Cl. 221-1.000.

Schlapman, William J., to J. I. Case Company. Differential unit. 4,204,293, Cl. 15-79.00R.

Schlitt, Leland G.: *See—*
George, Victor E.; Haas, Roger A.; Krupke, William F.; and Schlitt, Leland G., 4,205,278, Cl. 331-94.50P.

Schlutter, Aloys: *See—*
Romey, Ingo; Schlutter, Aloys; and Sommerfeld, Rolf, 4,204,986, Cl. 260-28.5AS.

Schmid, Norbert: *See—*
Schonwald, Siegfried; and Schmid, Norbert, 4,204,802, Cl. 415-213.00T.

Schmidt, Gerhard: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.

Schmidt, Klaus; and Hoffmann, Harald, to Carl Freudenberg, Firma. Surface finished fabric. 4,205,108, Cl. 428-147.000.

Schmidt, Werner: *See—*
Barsuhn, Horst E.; Olderdissen, Ulrich; and Schmidt, Werner, 4,204,634, Cl. 371-38.000.

Schmitt, Burghard: *See—*
Naarmann, Herbert; McKee, Graham E.; and Schmitt, Burghard, 4,205,144, Cl. 525-273.000.

Schmitz, William E., to Westinghouse Electric Corp. Transportation vehicle flat tire safety apparatus. 4,204,478, Cl. 104-247.000.

Schnee, Walter, to Fr. Winkler KG. Plant for the automatic production of Arabic flat bread. 4,204,466, Cl. 99-443.00C.

Schneider, Georg: *See—*
Kutzner, Willi A. P.; and Schneider, Georg, 4,204,626, Cl. 227-81.000.
Kutzner, Willi A. P.; and Schneider, Georg, 4,204,627, Cl. 227-81.000.

Schneider, Marvin J.: *See—*
Buscher, David J.; and Schneider, Marvin J., 4,205,382, Cl. 364-516.000.

Schoenherr, Leonard: *See—*
Hirvi, Heikki S., 4,204,365, Cl. 47-41.00R.

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Scholz, Siegfried: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.

Schonwald, Siegfried; and Schmid, Norbert, to Siemens Aktiengesellschaft. Side channel compressor. 4,204,802, Cl. 415-213.00T.

Schrader, Joseph F.; and Szeliga, Phillip C., to Foam Controls Inc. System for applying foam insulation. 4,204,612, Cl. 222-40.000.

Schreiner, Horst, to Siemens Aktiengesellschaft. Sintered contact material of silver and embedded metal oxides. 4,204,863, Cl. 75-234.000.

Schroeder, George H.: *See—*
Wise, Kennard L.; and Schroeder, George H., 4,205,246, Cl. 310-68.00C.

Schrombeck, Alois: *See—*
Bridwell, Glenn D.; Maule, James; Schrombeck, Alois; and Wognum, Willis, 4,204,494, Cl. 114-222.000.

Schubert, Gernot, to Steigerwald Strahltechnik GmbH. Honeycomb-like panel structure and a method for manufacturing same. 4,205,118, Cl. 428-594.000.

Schubert & Salzer: *See—*
Bock, Erich, 4,204,392, Cl. 57-18.000.

Schulmeister, Robert; Edmaier, Franz; and Kiefer, Gunther, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Air filter installation. 4,204,848, Cl. 55-269.000.

Schulte, Fritz; and Hurter, Wilfried, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Method and apparatus for purifying gases leaking from coke ovens. 4,204,912, Cl. 201-29.000.

Schulte, Rolf: *See—*
Kersting, Emil F.; and Schulte, Rolf, 4,204,449, Cl. 83-328.000.

Schulz, Herbert, to Creusot-Loire Enterprises. Device for temperature measurement and sampling of a steel. 4,204,431, Cl. 73-423.00R.

Schumann, Werner: *See—*
Jahn, Walter; and Schumann, Werner, 4,204,976, Cl. 252-301.40P.

Schwan, Thomas J., to Morton-Norwich Products, Inc. 7,10-Dichloro-3-methyl-4-phenyl-1,2,3,4-tetrahydrobenz[H]isoquinoline hydrobromide. 4,205,172, Cl. 546-101.000.

Schwartz, Reinhard: *See—*
Ritter, Ernst; Schwartz, Reinhard; Muuller, Rolf; Sturm, Waldemar; and Faupel, Werner, 4,204,510, Cl. 123-179.00L.

Schwarzkopf Development Corporation: *See—*
Johann, Maier, 4,204,781, Cl. 407-105.000.

Schwitzgobel, Rudolf; and Monreal, Karl, to Mannesmann Aktiengesellschaft. High speed cooling of ingots. 4,204,880, Cl. 134-32.000.

SCM Corporation: *See—*
Loane, Charles M., Jr.; and Hoss, Martin L., 4,204,864, Cl. 75-257.000.
McGinniss, Vincent D.; and Stevenson, Donald R., 4,204,932, Cl. 204-181.00R.

Scott, Edward S. Dental post. 4,204,321, Cl. 433-177.000.

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Kmetz, Edward R.; and Joumas, George E., 4,204,833, Cl. 431-22.000.

Scragg, Edgar P. Fluid flow control valve. 4,204,557, Cl. 137-244.000.

Scrymgeour, Thomas C.: *See—*
Barber, Donald T.; and Scrymgeour, Thomas C., 4,204,639, Cl. 235-462.000.

Sealed Power Corporation: *See—*
Davis, M. Lewis, 4,204,688, Cl. 277-9.000.

Seaton, Thomas: *See—*
Bowden, Roy D.; and Seaton, Thomas, 4,205,175, Cl. 546-345.000.

Seifert, Dieter; Regler, Dieter; Ofenmacher, Volker; Moritz, Alfred; Freudlsperger, August; and Berger, Walter, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Apparatus for machining workpieces by abrasion. 4,204,515, Cl. 125-16.00R.

Seikagaku Kogyo Company, Ltd.: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,205,127, Cl. 435-179.000.

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Nakagawa, Tadashi; Koyama, Mitsuo; and Nemoto, Ichiro, 4,204,763, Cl. 354-267.000.

Seita, Toru; Shimizu, Akihiko; Kato, Yoshio; and Hashimoto, Tsutomu, to Toyo Soda Manufacturing Company, Ltd. Carrier for liquid chromatography. 4,205,134, Cl. 521-53.000.

Serck Industries Limited: *See—*
Tooker, Philip G., 4,204,312, Cl. 29-523.000.

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N'Guyen, Van L., 4,204,768, Cl. 356-243.000.

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Braad, Poul E.; Jensen, Knud B.; Rosendal, Hans; and Sevaldsen, Flemming, 4,204,415, Cl. 72-52.000.

Severn, Clare F. Instructional apparatus for stringed instrument. 4,204,454, Cl. 84-315.000.

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Conti, Mario; Chiavarotti, Gian P.; and Luciani, Sandro, 4,205,332, Cl. 357-34.000.

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Lee, Sen L.; Shah, Franklin B.; and Jamieson, John W., 4,204,779, Cl. 400-144.200.

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Shortridge, Edward J., 4,205,395, Cl. 367-115.000.

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Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

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Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V., 4,204,910, Cl. 176-30.000.

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Minoura, Nobuo; Matsumura, Isao; Yoshinaga, Yasukazu; Abumi, Takao; and Nakai, Kazuhiro, 4,205,347, Cl. 358-191.100.

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Walker, Hill M.; Sharpe, Max H.; and Simpson, William G., 4,204,899, Cl. 156-212.000.

Shea, Frank J. Seal for a public pay telephone station coin box. 4,204,709, Cl. 292-307.00R.

Shebanow, Michael S.: *See—*
Barton, Richard E.; Fultz, Jack V.; Narahara, Yoshiyasu; and Shebanow, Michael S., 4,205,357, Cl. 360-135.000.

Shell Oil Company: *See—*
Carr, John B., 4,205,080, Cl. 424-275.000.
Durham, Harry G.; and Carr, John B., 4,205,076, Cl. 424-270.000.
Durham, Harry G.; and Carr, John B., 4,205,079, Cl. 424-275.000.

Shen, Tsung-Ting: *See—*
Wagner, Arthur F.; Grier, Nathaniel; and Shen, Tsung-Ting, 4,205,064, Cl. 424-78.000.

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Baldwin, Brian C.; Shephard, Margaret C.; and Skidmore, Anthony M., 4,205,075, Cl. 424-269.000.

Shepherd, Robert G., to American Cyanamid Company. Hypolipidemic and antiatherosclerotic 4-(polyfluoroalkylamino)phenyl compounds. 4,205,085, Cl. 424-309.000.

Sheppard, William L., to AVM Corporation. Vacuum system. 4,204,812, Cl. 417-395.000.

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Kyung, Jai H.; and Richards, Harvey J., 4,205,048, Cl. 423-24.000.

Sherliker, Francis R.: *See—*
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., 4,204,933, Cl. 204-181.00N.

Sherlock, Margaret H.; and Long, James F., to Schering Corporation. Anti-diarrheal anilino nicotinic acids and method of using same. 4,205,073, Cl. 424-266.000.

Sherwood, Edward F., to Westinghouse Electric Corp. Panel mounting assembly. 4,204,665, Cl. 256-65.000.

Shetty, Bola V., to Pennwalt Corporation. 1-Heterocyclic alkyl-1,2,3,4-tetrahydroquinazolinones and analgesic intermediates thereof. 4,205,173, Cl. 546-218.000.

Shida, Masaharu, to Kabushiki Kaisha Daini Seikosha. Electronic watch. 4,205,262, Cl. 318-696.000.

Shida, Masaharu: *See—*
Asano, Kazuhiro; Ueda, Makoto; Torisawa, Akira; Shida, Masaharu; Satoh, Katsuhiko; and Mandai, Masaaki, 4,204,397, Cl. 368-202.000.

Shields, George B.; and Starr, Eugene W., to PPG Industries, Inc. Method of heat treating moving glass sheets on modified gas bed. 4,204,845, Cl. 65-25.00A.

Shigesada, Shigeki: *See—*
Ishimatsu, Yoshiaki; Shigesada, Shigeki; Suzuki, Hiroyasu; Kitagawa, Hironoshin; and Kimura, Shoji, 4,205,128, Cl. 435-182.000.

Shikhirev, Boris N.; Matrosov, Evgeny A.; and Deresh, Ilya A. Apparatus for working sheet materials with ferromagnetic powder. 4,204,370, Cl. 51-80.00A.

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Sawa, Natsuo; Nomoto, Tadao; Iuchi, Keiko; Suzuki, Toshihiro; and Kawata, Shunichi, 4,205,156, Cl. 528-117.000.

Shim, Hong S.: *See—*
Bokros, Jack C.; Shim, Hong S.; and Haubold, Axel D., 4,204,542, Cl. 128-335.500.

Shim, Norman; and Knigge, Vincent L., to Baxter Travenol Laboratories, Inc. Digital electronic apparatus and casette sized for intravenous fluid-flow limiting equipment. 4,205,238, Cl. 235-92.0CT.

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Shimanaka, Hiroshi: *See—*
Irie, Toshio; Matsumura, Ko; Nakamura, Hiroto; Shimanaka, Hiroshi; and Suzuki, Toshio, 4,204,890, Cl. 148-111.000.

Shimazaki, Takaichi; and Hazome, Katsuaki, to Hitachi Iruma Electronic Company Ltd. Thermometer using a thermo-sensitive element. 4,204,429, Cl. 73-362.0AR.

Shimazu, Takahide: *See—*
Shiozaki, Morio; Okamoto, Masafumi; Tanaka, Kiyoshi; and Shimazu, Takahide, 4,204,891, Cl. 148-111.000.

Shimiya, Keiji: *See—*
Suzuki, Yujiro; Shimiya, Keiji; and Miyagawa, Takashi, 4,205,234, Cl. 250-483.000.

Shimizu, Akihiko: *See—*
Seita, Toru; Shimizu, Akihiko; Kato, Yoshio; and Hashimoto, Tsutomu, 4,205,134, Cl. 521-53.000.

Shimizu, Masami; and Hashimoto, Teiji, to Canon Kabushiki Kaisha. Electromagnetic device. 4,205,287, Cl. 335-271.000.

Shimizu, Masami: *See—*
Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; Shimizu, Masami; and Hashimoto, Teiji, 4,204,762, Cl. 354-242.000.

Shimp, Alan B., to Westinghouse Electric Corp. Undervoltage control apparatus for circuit interrupter. 4,205,361, Cl. 361-92.000.

Shindaiwa Kogyo Co., Ltd.: *See—*
Hayashimoto, Youichi, 4,204,320, Cl. 30-386.000.

Shinonaga, Hideo: *See—*
Tatsukami, Yoshiharu; Nishibara, Hazime; Kobayashi, Yasutoshi; and Shinonaga, Hideo, 4,205,148, Cl. 525-379.000.

Shinshu Seiki: *See—*
Miyazawa, Yoshinori; and Gomi, Yoshifumi, 4,204,778, Cl. 400-124.000.

Shiozaki, Morio; Okamoto, Masafumi; Tanaka, Kiyoshi; and Shimazu, Takahide, to Nippon Steel Corporation. Method for preventing the edge crack in a grain oriented silicon steel sheet produced from a continuously cast steel slab. 4,204,891, Cl. 148-111.000.

Shiraki, Masao: *See—*
Miyazaki, Tsutomu; Shiraki, Masao; and Mitsuya, Kinpei, 4,204,393, Cl. 57-301.000.

Shkhiyan, Tsolak G.: *See—*
Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; and Borodin, Ivan V., 4,204,910, Cl. 176-30.000.

Shmerko, Vladimir P.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.

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Shortridge, Edward J., to Shakespeare Marine Electronics, Inc. Depth recorder. 4,205,395, Cl. 367-115.000.

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Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

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Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,205,022, Cl. 260-953.000.

Shulgin, Grigory M.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Shull, Arthur; and Wolga, George J. Tuning of etalons. 4,204,771, Cl. 356-346.000.

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Monteyne, Guido, 4,204,855, Cl. 65-141.000.

Sieg, Arno: *See—*
Ullmann, Werner; Buhler, Ernst; Kilcher, Beat; Ruh, Herbert; and Sieg, Arno, 4,205,212, Cl. 219-69.00W.

Siegfried Aktiengesellschaft: *See—*
Schatz, Franz; Stammbach, Christian; Thiele, Kurt; Wagner-Jauregg, Theodor W.; Zirngibl, Ludwig; Fischer, Johanna; and Jahn, Ulrich, 4,204,998, Cl. 260-326.150.

Siemens Aktiengesellschaft: *See—*
Auracher, Franz; Zeitler, Karl-Heinz; and Rauscher, Walter, 4,204,310, Cl. 29-445.000.
Bentele, Benedikt; and Hecht, Gert, 4,204,800, Cl. 415-53.00T.
Erche, Manfred; Filberich, Ludwig; Pove, Dusan; Waldmann, Hermann; and Weibelzahl, Manfred, 4,205,368, Cl. 363-35.000.
Heynisch, Hinrich, 4,204,399, Cl. 368-240.000.
Lingaya, Stenio, 4,205,243, Cl. 310-13.000.
Schonwald, Siegfried; and Schmid, Norbert, 4,204,802, Cl. 415-213.00T.
Schreiner, Horst, 4,204,863, Cl. 75-234.000.
Wittmann, Julius, 4,204,744, Cl. 350-96.200.

Sierracin Corporation, The: *See—*
Olson, Jan B., 4,204,374, Cl. 52-208.000.

Silantiev, Igor I.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Maslennikov, Ivan E.; Platonov, Vladimir N.; and Silantiev, Igor I., 4,204,458, Cl. 91-429.000.

Sillioc, Guy: *See—*
Bouchou, Paul; Nigoghossian, Claude; and Sillioc, Guy, 4,205,284, Cl. 333-189.000.

Simonidesz, Vilmos: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.

Simpson, Ronald C.: *See—*
Bardsley, Henry, III; Luiz, Fernando A.; Nilsen, Nils F.; and Simpson, Ronald C., 4,205,374, Cl. 364-200.000.

Simpson, William G.: *See—*
Walker, Hill M.; Sharpe, Max H.; and Simpson, William G., 4,204,899, Cl. 156-212.000.

Sinclair, Clive M.; and Krause, Anthony V., to Sinclair Radionics Limited. Flat cathode ray tube with repeller electrode. 4,205,252, Cl. 313-422.000.

Sinclair Radionics Limited: *See—*
Sinclair, Clive M.; and Krause, Anthony V., 4,205,252, Cl. 313-422.000.

Singer Company, The: *See—*
Blackwood, John; and Iannarone, Ronald, 4,204,493, Cl. 112-260.000.
Mecklenborg, Richard A., 4,205,224, Cl. 250-201.000.
Nalley, David J., 4,204,580, Cl. 173-48.000.

Sinsheimer, Walter J.: *See—*
Faber, Edward S.; Hovan, John J.; and Sinsheimer, Walter J., 4,204,737, Cl. 339-65.000.

SKF Kugellagerfabriken GmbH: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,204,717, Cl. 308-6.00C.

Skidmore, Anthony M.: *See—*
Baldwin, Brian C.; Shephard, Margaret C.; and Skidmore, Anthony M., 4,205,075, Cl. 424-269.000.

Slaughterbeck, David W. Apparatus for perforating corrugated plastic pipe. 4,204,447, Cl. 83-171.000.

Slednev, Vladimir P.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.

Smith, Edwin S.: *See—*
Cich, Frank A.; Glazer, Emmett J.; and Smith, Edwin S., 4,205,149, Cl. 526-89.000.

Smith, Elmer G.: *See—*
Boos, Charles J.; Hausler, Elwood B.; Hirsch, James A.; Kasprzyk, Martin R.; and Smith, Elmer G., 4,205,363, Cl. 361-264.000.

Smith, Hugh M.: *See—*
Johnson, Mark U.; Rothmayer, Jules; and Smith, Hugh M., 4,204,871, Cl. 106-20.000.

Smith International, Inc.: *See—*
Espana, Salvador, 4,204,437, Cl. 76-108.00A.

Smith, James E.; and Cunningham, James D. Electric impact tool. 4,204,622, Cl. 227-7.000.

Smith, James H., to Smith, James Howard. Wood burning heating unit. 4,204,518, Cl. 126-132.000.

Smith, James Howard: *See—*
Smith, James H., 4,204,518, Cl. 126-132.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Vickers, Margaret R., 4,205,071, Cl. 424-244.000.
Smith, LaVerne. Underwater fishing lure reciprocating device. 4,204,356, Cl. 43-26.100.
Smith, Leland B.; and Loeb, Phillip J., to Beckman Instruments, Inc. Electroencephalograph. 4,204,546, Cl. 128-731.000.
Smith, Maurice N.: *See—*
Pal, Dharam; Huang, Kwang T.; and Smith, Maurice N., 4,205,235, Cl. 290-44.000.
Smith, Otto J. M. Heated piping system for fusible salt heat exchange fluid in a solar power plant. 4,204,407, Cl. 60-641.000.
Smith, Ray E.: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,205,022, Cl. 260-953.000.
Smith, Richard D., to Kennecott Copper Corporation. Tarnish resistant copper alloy. 4,204,883, Cl. 148-2.000.
Smith, Robert E.: *See—*
Davis, Frank E., 4,204,596, Cl. 206-203.000.
Smith, Ronald J.; and Gonzalez, Manuel A., to Olin Corporation. Water injection for control of fines for producing defluorinated phosphate rock granules. 4,205,049, Cl. 423-167.000.
Smith, Sidney: *See—*
Hodgson, Thomas D.; Carley-Macauly, Kenneth W.; and Smith, Sidney, 4,204,953, Cl. 210-58.000.
Smyser, Craig: *See—*
Hobbs, Jim F.; and Smyser, Craig, 4,204,979, Cl. 252-416.000.
Snell, John B., to Minnesota Mining and Manufacturing Company. Double grooved welding backup. 4,205,219, Cl. 219-160.000.
Snyder, Lloyd R., to Technicon Instruments Corporation. Chromatographic apparatus and method. 4,204,952, Cl. 210-31.00C.
Societe Anonyme D.B.A.: *See—*
Kervagoret, Gilbert, 4,204,817, Cl. 418-248.000.
Societe Anonyme Dite: Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Poinas, Christian, 4,205,277, Cl. 331-12.000.
Societe Anonyme Dite: Delle-Alsthom: *See—*
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, 4,205,209, Cl. 200-163.000.
Societe Anonyme dite: Ets Bonduelle a Renescure: *See—*
Spinoglio, Mario, 4,204,386, Cl. 56-14.400.
Societe Anonyme Francaise du Ferodo: *See—*
Jeanson, Rene H., 4,204,411, Cl. 64-2.00P.
Societe B.M. Costamagna: *See—*
Feuillade, Jean-Louis J., 4,204,660, Cl. 249-86.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Le Viet, Toai, 4,204,336, Cl. 34-5.000.
Societe Generale pour le Financement de l'Innovation, Soginnove: *See—*
Cailliot, Serge, 4,204,964, Cl. 210-370.000.
Societe Industrielle Bertrand Faure: *See—*
Courtois, Bernard, 4,204,658, Cl. 248-430.000.
Societe Normande de Services: *See—*
Cailliot, Serge, 4,204,964, Cl. 210-370.000.
Soda, Takashi: *See—*
Eishima, Tetsusuke; Ikariyama, Takehiro; Jinnouchi, Raizo; Oyagi, Kunioki; and Soda, Takashi, 4,205,206, Cl. 179-124.000.
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Game, Jacques-Marie N.; and Tiesse, Bernard A., 4,204,751, Cl. 352-17.000.
Sokolov, Anatoly D.: *See—*
Menshutin, Vasily P.; Akutin, Modest S.; Iovdalsky, Nikolai V.; Minakova, Alla N.; Zherebtsov, Evgeny R.; Sokolov, Anatoly D.; Abramov, Vsevolod V.; Melekhova, Galina D.; and Ustkachkintsev, Alexandr N., 4,205,030, Cl. 264-40.100.
Solarspan, Inc.: *See—*
Mattson, John P., 4,204,521, Cl. 126-446.000.
Solod, Vladimir S.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Pogorzhelsky, Viktor I.; Morozov, Vasily P.; Levichev, Pavel A.; Lyashenko, Jury P.; Shalimov, Anatoly G.; Evteev, Dmitry P.; Efimenko, Sergei P.; Ignatiev, Stanislav N.; Slednev, Vladimir P.; Ovsy, Eduard V.; Solod, Vladimir S.; and Moiseenkov, Valery V., 4,204,416, Cl. 72-204.000.
Solvay & Cie: *See—*
Niccolini, Giuseppe, 4,204,941, Cl. 204-296.000.
Somar Manufacturing Co., Ltd.: *See—*
Nagasawa, Kohtaro; Ogitani, Osamu; and Fujii, Ryuichi, 4,205,018, Cl. 525-404.000.
Sommerfeld, Rolf: *See—*
Romey, Ingo; Schlutter, Aloys; and Sommerfeld, Rolf, 4,204,986, Cl. 260-28.5AS.
Sony Corporation: *See—*
Kakizaki, Takehiro; Tagawa, Susumu; and Sawai, Masahide, 4,205,253, Cl. 313-437.000.
Kutaragi, Ken, 4,205,311, Cl. 340-784.000.
Nagumo, Fumio, 4,205,336, Cl. 358-43.000.
Tsukada, Keizo, 4,205,274, Cl. 330-276.000.
Yoshida, Tadao, 4,205,273, Cl. 330-251.000.
Sortex North America, Inc.: *See—*
Burford, Henry H. T., Jr., 4,204,950, Cl. 209-558.000.
Southwire Company: *See—*
Bonnamour, Yves B., 4,204,568, Cl. 164-87.000.
Spaida, Hans-Peter: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.
Spaziante, Placido M.: *See—*
Bianchi, Giuseppe; deNora, Oronzio; and Spaziante, Placido M., 4,204,937, Cl. 204-219.000.
Speer, John, Sr. Dual-tread exerciser. 4,204,673, Cl. 272-69.000.
Speer, Spencer J., to General Dynamics Corporation Pomona Division. Mixing device for simultaneously dispensing two-part liquid compounds from packaging kit. 4,204,775, Cl. 366-336.000.
Sperry Rand Corporation: *See—*
Barton, Lester C.; Butler, Gene R.; and Butler, L. Dennis, 4,204,791, Cl. 414-36.000.
Wynn, Edward J.; and Bryant, Cal L., 4,204,792, Cl. 414-36.000.
Spinoglio, Mario, to Societe Anonyme dite: Ets Bonduelle a Renescure. Machine for cutting and gathering vegetables. 4,204,386, Cl. 56-14.400.
Spiro, John M.: *See—*
Lincicome, Thomas N.; Spiro, John M.; and Brons, Albert J., 4,204,707, Cl. 285-114.000.
Spits, Raymond; and Beck, Hans W. Automatic sizing system for numerically controlled machine. 4,204,782, Cl. 408-3.000.
Sprague Electric Company: *See—*
Jones, Leith; and McGrath, N. Christian, 4,205,099, Cl. 427-90.000.
Randall, John J., Jr.; and Bernard, Walter J., 4,204,919, Cl. 204-29.000.
Sprecker, Mark A.; Kryschuk, John J.; and Hall, John B., to International Flavors & Fragrances Inc. Process for preparing substituted oxyacetaldehydes and acetals thereof. 4,205,186, Cl. 568-600.000.
Springer, Helmut: *See—*
Weber, Jurgen; and Springer, Helmut, 4,205,013, Cl. 568-451.000.
Staats, Henry N., to General Binding Corporation. Heat reactivatible adhesive book binding. 4,204,704, Cl. 281-21.00R.
Stables, Harry C.; and Briggs, Kenneth, to Glaxo Group Limited. Processing of cephalosporin C. 4,205,165, Cl. 544-20.000.
Stadler, Istvan: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.
Staebler, David L., to RCA Corporation. Laser beam apparatus and method for analyzing solar cells. 4,205,265, Cl. 324-158.00D.
Stahl, Stig: *See—*
Wicksell, Hans A.; Stahl, Stig; and Lofstedt, Ingemar G., 4,204,693, Cl. 280-809.00T.
Stalder, John L., to Conoco, Inc. Low shear polymer injection method with ratio control between wells. 4,204,574, Cl. 166-305.00R.
Stalwart Rubber Company, The: *See—*
Hall, Harold E., 4,204,741, Cl. 339-200.00P.
Stamicarbon, B.V.: *See—*
Jongsma, Cornelis, 4,205,184, Cl. 562-494.000.
Stammbach, Christian: *See—*
Schatz, Franz; Stammbach, Christian; Thiele, Kurt; Wagner-Jauregg, Theodor W.; Zirngibl, Ludwig; Fischer, Johanna; and Jahn, Ulrich, 4,204,998, Cl. 260-326.150.
Standard Oil Company (Indiana): *See—*
Lee, Richard J.; and Harris, Samuel W., 4,204,970, Cl. 252-51.50A.
Stanley Electric Co., Ltd.: *See—*
Kobayashi, Shuji; Aoyagi, Mitsuo; Kanno, Tominori; Ueno, Kazuei; and Nomura, Shin-ichi, 4,205,098, Cl. 427-76.000.
Stanley Hayman and Company: *See—*
Hayman, Richard W., 4,204,636, Cl. 235-383.000.
Stark, Herbert: *See—*
Kuffner, Karl; Lassig, Wolfgang; Meier, Ernst; Boie, Immo; Kirchhoff, Gertrud; Haseler, Helmut; and Stark, Herbert, 4,204,867, Cl. 430-376.000.
Starr, Eugene W.: *See—*
Shields, George B.; and Starr, Eugene W., 4,204,845, Cl. 65-25.00A.
Stauffer Chemical Company: *See—*
Anzerberger, Joseph F., Sr., 4,205,023, Cl. 260-990.000.
Baker, Don R., 4,204,858, Cl. 71-111.000.
Cisco, Thomas F.; Hansen, George E.; and Agate, Robert N., 4,204,916, Cl. 203-6.000.
Coll-Palagos, Miguel, 4,204,925, Cl. 204-152.000.
Hayati, Hossein; Towers, Russell S.; and Carpenter, Peter G., deceased, 4,204,872, Cl. 106-38.350.
Herscovici, Eva J., 4,205,162, Cl. 528-499.000.
Via, Francis A., 4,204,928, Cl. 204-159.230.
Stedman, Robert N., to Caterpillar Tractor Co. Ground-engaging implement assembly. 4,204,578, Cl. 172-307.000.
Steigerwald Strahltechnik GmbH: *See—*
Schubert, Gernot, 4,205,118, Cl. 428-594.000.
Stein, Larry: *See—*
Buluzzi, James D.; McGregor, William H.; and Stein, Larry, 4,205,069, Cl. 424-177.000.
Stevens, Jack, to Centrodyne Corporation. Taximeter. 4,205,388, Cl. 364-[illegible]
Stevenson Photographic Corporation: *See—*
[illegible], Richard A., 4,205,351, Cl. 360-4.000.
Stepanova, Nadezhda M.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.

Sterling Drug Inc.: *See—*
Albertson, Noel F., 4,205,171, Cl. 546-97.000.
Elton, Michael J.; Jackson, Arthur; and Harrison, John W., 4,205,185, Cl. 562-444.000.
Szalavitz, Miklos, 4,204,875, Cl. 106-87.000.
Sternberg, James C.; and Lillig, John E., to Beckman Instruments, Inc. Method of rate immunonephelometric analysis. 4,204,837, Cl. 23-230.00B.
Stevens, Henry C., to PPG Industries, Inc. Triallyl carbonate polymers. 4,205,154, Cl. 526-314.000.
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McGinniss, Vincent D.; and Stevenson, Donald R., 4,204,932, Cl. 204-181.00R.
Stewart, David G.: *See—*
Gane, Brian R.; and Stewart, David G., 4,205,190, Cl. 568-902.000.
Stiles, Nathan; and Heininger, Richard T., to Gem Industries Inc. Spring support. 4,204,286, Cl. 5-11.000.
Stokeley-Van Camp, Inc.: *See—*
Babayan, Vigen K., 4,205,086, Cl. 424-312.000.
Strampfer, Armin: *See—*
Moser, Theo; Andra Rolf; Rittler, Roland; and Strampfer, Armin, 4,204,951, Cl. 209-625.000.
Strauch, Raymond, to Telecommunications Radioelectriques et Telephoniques T.R.T. Device for measuring the range of a moving target and the speed at which it approaches or recedes. 4,205,314, Cl. 343-9.00R.
Streetman, William E.; and Daftary, Shashikumar H., to American Cyanamid Company. Process for melt-spinning acrylonitrile polymer fiber. 4,205,039, Cl. 264-206.000.
Streets, Roger L.; Rabito, Thomas G.; and Von Kamp, John, to Goodyear Tire & Rubber Company, The. Aqueous polyester dispersion for adhering vinyl film to wood. 4,204,987, Cl. 260-29.20E.
Strobel, Rudolf G. K., to Procter & Gamble Company, The. Continuous desorption apparatus for aroma flavor concentrate. 4,204,464, Cl. 99-286.000.
Stromberg, Thore. Wasteless connecting valves. 4,204,661, Cl. 251-95.000.
Stubblefield, Thomas W., to Electric Power Research Institute, Inc. Vaporization cooled electrical inductive apparatus. 4,205,289, Cl. 336-57.000.
Stubbs, Raymond F., to Pretron Electronics Pty. Ltd. Solid materials flow rate measurement. 4,205,230, Cl. 250-356.000.
Sturm, Waldemar: *See—*
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Sudarikov, Vasily L.: *See—*
Khutoretsky, Garri M.; Fridman, Vladimir M.; Zagorodnaya, Galina A.; Vorontsov, Alexandr I.; Ignatiev, Anatoly D.; and Sudarikov, Vasily L., 4,204,313, Cl. 29-596.000.
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Tsuzuki, Mitsuo; and Suga, Michihisa, 4,205,322, Cl. 346-153.000.
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Kondo, Tatuya, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Process for recovery of nitric acid from nitrates. 4,205,054, Cl. 423-390.000.
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Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
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Sugiyama, Masaaki; and Yuda, Takuo, to Yamakawa Industry Company Ltd.; and Nifco Inc. Combination strainer and suction inlet pipe. 4,204,960, Cl. 210-232.000.
Sullivan, Richard N., to Precision Plumbing Products, Inc. Self-contained, automatic primer valve for sewer line drain traps. 4,204,556, Cl. 137-206.000.
Sullivan, Sheryl S.: *See—*
Wu, Tai-Wing; and Sullivan, Sheryl S., 4,204,839, Cl. 23-230.00B.
Sulzer Morat GmbH: *See—*
Vinnemann, Antonius; Elsasser, Heinrich; Walter, Manfred; and Gaiser, Willi, 4,204,414, Cl. 66-145.00R.
Sumitamo Naugatuck Co., Ltd.: *See—*
Shima, Takesaburo; Kozima, Hiroshi; Yoshida, Tomio; and Nakamura, Joji, 4,205,019, Cl. 525-243.000.
Sumitomo Chemical Company, Limited: *See—*
Fukami, Kousuke; Fujimoto, Masanori; Fujita, Fumio; and Nagase, Tsuneyuki, 4,205,218, Cl. 219-145.230.
Tatsukami, Yoshiharu; Nishibara, Hazime; Kobayashi, Yasutoshi; and Shinonaga, Hideo, 4,205,148, Cl. 525-379.000.
Sumiyoshi Denki Kabushiki Kaisha: *See—*
Matsugo, Ryuzo, 4,204,764, Cl. 354-298.000.
Sun Chemical Corporation: *See—*
Johnson, Mark U.; Rothmayer, Jules; and Smith, Hugh M., 4,204,871, Cl. 106-20.000.
Suys, Andre R.: *See—*
Van Landeghem, Willy K.; and Suys, Andre R., 4,205,116, Cl. 428-409.000.
Suzuki, Hiroyasu: *See—*
Ishimatsu, Yoshiaki; Shigesada, Shigeki; Suzuki, Hiroyasu; Kitagawa, Hironoshin; and Kimura, Shoji, 4,205,128, Cl. 435-182.000.
Suzuki, Katsumi: *See—*
Izumi, Yusuke; Maekawa, Junji; and Suzuki, Katsumi, 4,205,182, Cl. 560-247.000.
Suzuki, Takao; Komatsu, Yoshimasa; Takeda, Akimichi; and Baba, Toshihiko, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Steel Corporation. Apparatus for machining flash and upset material formed in flash welding operation. 4,205,214, Cl. 219-97.000.
Suzuki, Toshihiro: *See—*
Sawa, Natsuo; Nomoto, Tadao; Iuchi, Keiko; Suzuki, Toshihiro; and Kawata, Shunichi, 4,205,156, Cl. 528-117.000.
Suzuki, Toshio: *See—*
Irie, Toshio; Matsumura, Ko; Nakamura, Hiroto; Shimanaka, Hiroshi; and Suzuki, Toshio, 4,204,890, Cl. 148-111.000.
Suzuki, Yujiro; Shimiya, Keiji; and Miyagawa, Takashi, to Kasei Optonix, Ltd. Intensifying screens. 4,205,234, Cl. 250-483.000.
Suzuki, Yutaka: *See—*
Takahashi, Takehiko; and Suzuki, Yutaka, 4,205,051, Cl. 423-266.000.
Svatikov, Jury N.: *See—*
Poddubny, Isaak Y.; Averyanov, Sergei V.; Averyanova, Lidia A.; Grinblat, Mark P.; Safin, Rinat R.; Breger, Alexandr K.; Goldin, Vladimir A.; Branzburg, Elena Z.; Kondratovsky, Viktor S.; Kabirov, Albert G.; Sanzharovsky, Alexandr T.; Shtukareva, Valeria B.; Svatikov, Jury N.; and Stepanova, Nadezhda M., 4,205,026, Cl. 264-22.000.
Sven Tveter: *See—*
Reed, Steven P.; and Kinkead, Jordan A., 4,204,618, Cl. 225-106.000.
Swarthout, E. Jack; and Antholz, Phillip, to Illinois Cereal Mills. Absorbent polymeric compositions derived from amylaceous material-formaldehyde substrates. 4,204,983, Cl. 260-17.4GC.
Sweeney, Roy O.: *See—*
Lane, Manning; Hauck, Warren J.; and Sweeney, Roy O., 4,204,287, Cl. 5-18.00R.
Syed, Ali N.: *See—*
Khalil, Ezzat N.; and Syed, Ali N., 4,205,063, Cl. 424-70.000.
Sykes, Richard B.; Wells, J. Scott; Principe, Pacifico A.; and Liu, Wen C., to E. R. Squibb & Sons, Inc. β-Lactamase inhibitor EM4615. 4,205,068, Cl. 424-117.000.
System Schultheis GmbH & Co.: *See—*
Rohrscheid, Karl, 4,204,797, Cl. 414-458.000.
Szalavitz, Miklos, to Sterling Drug Inc. Cementitious compositions. 4,204,875, Cl. 106-87.000.
Szantay, Csaba: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.
Szekely, Istvan: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.
Szeliga, Phillip C.: *See—*
Schrader, Joseph F.; and Szeliga, Phillip C., 4,204,612, Cl. 222-40.000.
Tabata, Junichi: *See—*
Hamada, Shinji; Hoshino, Fumio; and Tabata, Junichi, 4,204,736, Cl. 355-118.000.
Tabor, Donald R. Roofing material handling and sealing machine. 4,204,904, Cl. 156-497.000.
Tadanier, John S.; Dunnigan, Daniel A.; Freiberg, Leslie A.; and Martin, Jerry R., to Abbott Laboratories. 6'N-Alkyl- and 6',6'-di-N-alkyl derivatives of fortimicins A and B. 4,205,070, Cl. 424-180.000.
Tagawa, Susumu: *See—*
Kakizaki, Takehiro; Tagawa, Susumu; and Sawai, Masahide, 4,205,253, Cl. 313-437.000.
Taig, Alistair G., to Bendix Corporation, The. Fluid control means. 4,204,554, Cl. 137-101.000.
Takahashi, Atsushi: *See—*
Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shin-ichi; and Uenaka, Akimitsu, 4,205,152, Cl. 526-265.000.
Takahashi, Takehiko; and Suzuki, Yutaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Stabilized zirconia for oxygen ion-conductive solid electrolyte. 4,205,051, Cl. 423-266.000.
Takai, Kiyoshi: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Kondo, Tatuya, 4,205,054, Cl. 423-390.000.
Takase, Koyu; Makino, Shigeo; and Naitou, Tadashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Break preventing gasket. 4,204,691, Cl. 277-235.00B.
Takeda, Akimichi: *See—*
Suzuki, Takao; Komatsu, Yoshimasa; Takeda, Akimichi; and Baba, Toshihiko, 4,205,214, Cl. 219-97.000.
Takeda Chemical Industries, Ltd.: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,205,180, Cl. 560-168.000.
Takekawa, Hiroshi: *See—*
Yamamoto, Tadao; Takekawa, Hiroshi; Banno, Taichi; and Koshiishi, Kiyozo, 4,204,917, Cl. 204-1.00T.
Takeuchi, Tomio: *See—*
Mori, Shunro; Okamoto, Rokuro; Inui, Taiji; and Takeuchi, Tomio, 4,205,163, Cl. 536-17.00R.
Takizawa, Masaaki; and Sasaki, Shoji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Radial turbines. 4,204,807, Cl. 416-188.000.

Tallent, Glen, Jr.: *See—*
Corron, Donald C.; and Tallent, Glen, Jr., 4,204,301, Cl. 28-248.000.

Tallis, Thomas J., to Clark Equipment Company. Corner tooth construction. 4,204,349, Cl. 37-141.0RS.

Tamm, Rolf; Tomoff, Toma; and Huber, Bernhard, to Bodenseewerk Perkin-Elmer & Co. GmbH. Automatic liquid flow sampling apparatus. 4,204,430, Cl. 73-423.00A.

Tanaka, Fumio; and Toshimitsu, Naohiko, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Erasing head. 4,205,356, Cl. 360-118.000.

Tanaka, Hiroshi: *See—*
Yamamoto, Yoshihiro; Sakurai, Kenji; and Tanaka, Hiroshi, 4,204,873, Cl. 106-43.000.

Tanaka, Kiyoshi: *See—*
Shiozaki, Morio; Okamoto, Masafumi; Tanaka, Kiyoshi; and Shimazu, Takahide, 4,204,891, Cl. 148-111.000.

Tanaka, Kunihiko: *See—*
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Hemmi, Keiji, 4,205,166, Cl. 544-27.000.

Tanaka, Shinta, to Iseki Agricultural Machinery Mfg. Co., Ltd. Control means for hydraulic clutches. 4,204,590, Cl. 192-99.00R.

Tani, Mitsuhiro; and Watanabe, Hideo, to Iseki Agricultural Machinery Mfg. Co., Ltd. Control means for hydraulic clutches. 4,204,591, Cl. 192-99.00R.

Tanner, David E.: *See—*
Johnson, Evan R.; and Tanner, David E., 4,204,558, Cl. 137-315.000.

Tanton, George A.: *See—*
Meyer, Harry C.; Tanton, George A.; Greenberg, Raymond I.; and Williams, Joe E., 4,204,926, Cl. 204-157.10H.

Tashkentsky Nauchnoissledovatelsky I Proektny Institut Stroitelnykh Materialov "Niistromproeki": *See—*
Nudelman, Boris I.; Bikbau, Marsel Y.; Oborin, Pavel A.; and Kuznetsova, Tamara V., 4,204,878, Cl. 106-104.000.

Tates, Donald W., to Xerox Corporation. Multimode reproducing apparatus. 4,204,727, Cl. 355-3.00R.

Tatsukami, Yoshiharu; Nishibara, Hazime; Kobayashi, Yasutoshi; and Shinonaga, Hideo, to Sumitomo Chemical Company, Ltd. Dyeable polyolefin composition. 4,205,148, Cl. 525-379.000.

Taus, Christian: *See—*
Rau, Willy; and Taus, Christian, 4,204,579, Cl. 172-657.000.

Taylor, Clyde L. Seed harvesting apparatus. 4,204,385, Cl. 56-14.300.

Taylor, James F.: *See—*
Shah, Niranjan S.; and Taylor, James F., 4,205,373, Cl. 364-200.000.

Taylor, Raymond C.: *See—*
Richards, Frank P.; and Taylor, Raymond C., 4,204,462, Cl. 93-36.50R.

Tazuma, James J.: *See—*
Gloth, Richard E.; and Tazuma, James J., 4,205,160, Cl. 528-425.000.

Techne Electronics, Ltd.: *See—*
Ho, Eugene Y.; and Musolino, Joseph A., 4,205,300, Cl. 340-65.000.

Technicon Instruments Corporation: *See—*
Snyder, Lloyd R., 4,204,952, Cl. 210-31.00C.

Tecnimont S.p.A.: *See—*
Gramatica, Giorgio, 4,205,044, Cl. 422-191.000.

Tecumseh Products Company: *See—*
Wise, Kennard L.; and Schroeder, George H., 4,205,246, Cl. 310-68.00C.

Teichmann, Manfred: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.

Teijin Limited: *See—*
Nose, Kenkichi; and Mikumo, Toshihumi, 4,204,653, Cl. 242-178.000.
Ono, Takezo; Iribe, Seiki; and Watanabe, Mineo, 4,204,930, Cl. 204-180.00P.

Tektronix, Inc.: *See—*
Rayner, Bruce L., 4,205,344, Cl. 358-160.000.

Tele-Alarm, Nachrichtentechnische Gerate GmbH, Herstellungs-und Vertriebsgesellschaft & Co. KG: *See—*
Hofmann, Otto; and Nagler, Georg, 4,204,635, Cl. 235-382.000.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Strauch, Raymond, 4,205,314, Cl. 343-9.00R.

Telediffusion de France: *See—*
Pujolle, Jean; and Bourcet, Patrice, 4,204,432, Cl. 73-599.000.

Teraji, Tsutomu: *See—*
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Hemmi, Keiji, 4,205,166, Cl. 544-27.000.

Termanini, Zafer A., to Zafmedico Corp. Method and apparatus for fiber-optic intravascular endoscopy. 4,204,528, Cl. 128-6.000.

Terzian, Rouben T.; Montague, Douglas P.; and Morrison, Howard J., to Marvin Glass & Associates. Liquid cooling and dispensing device. 4,204,613, Cl. 222-146.00C.

Tessier, Jean: *See—*
Martel, Jacques; and Tessier, Jean, 4,205,008, Cl. 260-456.00R.

Teves, Alfred: *See—*
Knoblauch, Wolfgang; and von Werner, Konrad, 4,204,972, Cl. 252-78.100.

Texaco Inc.: *See—*
Biasotti, Joseph B.; Dorn, Peter; Herbstman, Sheldon; and Dille, Kenneth L., 4,204,841, Cl. 44-71.000.

Texas Instruments Incorporated: *See—*
Reed, Bruce S., 4,205,227, Cl. 250-330.000.

Textron Inc.: *See—*
Kirrish, Hail; and McCauley, Jon R., 4,204,566, Cl. 151-38.000.

Therma-Plex: *See—*
Wyner, Jay S., 4,204,495, Cl. 118-300.000.

Thiele, Dietrich, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method and apparatus for encapsulating radioactively contaminated lumps or granular material in metal. 4,204,975, Cl. 252-301.10W.

Thiele, Kurt: *See—*
Schatz, Franz; Stammbach, Christian; Thiele, Kurt; Wagner-Jauregg, Theodor W.; Zirngibl, Ludwig; Fischer, Johanna; and Jahn, Ulrich, 4,204,998, Cl. 260-326.150.

Thies, Peter W., to Kali-Chemie Aktiengesellschaft. Cyclopentapyrans. 4,205,083, Cl. 424-283.000.

Thomas, Robert E. Security display rack. 4,204,601, Cl. 211-4.000.

Thomin, Guy: *See—*
Bridoux, Edouard; Bruneel, Christian; Haine, Francis; and Thomin, Guy, 4,204,435, Cl. 73-626.000.

Thompson, Paige W., to General Electric Company. Method of closing a capillary tube. 4,204,378, Cl. 53-403.000.

Thomson-CSF: *See—*
Micheron, Francois; Bruneel, Jean L.; and Leclerc, Pierre, 4,205,242, Cl. 307-400.000.

Thomson-CSF Laboratories, Inc.: *See—*
McMann, Renville H., Jr.; and Bakach, Joseph, 4,205,310, Cl. 340-750.000.

Thralls, Don J. W.: *See—*
Blum, Julian J.; and Thralls, Don J. W., 4,204,706, Cl. 283-21.000.

Thubeauville, Heinz, to Dr. C. Otto & Comp. G.m.b.H. Tubular apparatus for conducting gases. 4,205,047, Cl. 422-242.000.

Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, to Societe Anonyme Dite: Delle-Alsthom. Articulated contact finger. 4,205,209, Cl. 200-163.000.

Tiesse, Bernard A.: *See—*
Game, Jacques-Marie N.; and Tiesse, Bernard A., 4,204,751, Cl. 352-17.000.

Tillotson, Henry B., to Toro Company, The. Electrical connector retaining device. 4,204,738, Cl. 339-75.00P.

Timmerbeil, Karl E., to Weka-Handelsgesellschaft m.b.H. Banding machine, in particular for banding bundles of bank notes. 4,204,381, Cl. 53-528.000.

Tingwall, Rolf: *See—*
Berg, Erik E.; and Tingwall, Rolf, 4,204,884, Cl. 148-2.000.

Tirtiaux, Florent: *See—*
Pike, Marshall; Barr, Iain G.; and Tirtiaux, Florent, 4,205,095, Cl. 426-607.000.

Toba, Hirotaka: *See—*
Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, 4,205,040, Cl. 264-233.000.

Tokheim Corporation: *See—*
Vogel, John D., 4,204,810, Cl. 417-244.000.

Tokitoh, Hirohiko: *See—*
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, 4,204,767, Cl. 356-444.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hamanaka, Kunio; and Sakurai, Yoshiki, 4,205,355, Cl. 360-99.000.
Inoue, Yuichiro; and Sakaki, Masamichi, 4,204,422, Cl. 73-4.00R.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Inouye, Tamon; and Mizutani, Hiroyuki, 4,205,375, Cl. 364-414.000.
Kawagai, Kenji; and Yoshida, Shigeki, 4,205,263, Cl. 323-22.00R.

Tom McGuane Industries, Inc.: *See—*
Ludwig, George C., 4,204,561, Cl. 137-510.000.

Tomada, Franco, to Ing. C. Olivetti & C., S.p.A. Device for encoding and recording information with peak shift compensation. 4,205,352, Cl. 360-45.000.

Tomita, Yoshifumi, to Hitachi, Ltd. Color cathode ray tube with reflective layers having apices centered between matrix windows. 4,205,255, Cl. 313-470.000.

Tomoff, Toma, to Bodenseewerk Perkin-Elmer & Co., GmbH. Graphite furnace bore temperature measurements in flameless atomic absorption spectroscopy. 4,204,770, Cl. 356-312.000.

Tomoff, Toma: *See—*
Tamm, Rolf; Tomoff, Toma; and Huber, Bernhard, 4,204,430, Cl. 73-423.00A.

Tomosada, Masahiro: *See—*
Goshima, Yoshitomo; Kawakubo, Kazuo; Furuichi, Katsushi; Sakamaki, Hisashi; Sawamura, Osamu; Komiya, Yutaka; and Tomosada, Masahiro, 4,204,728, Cl. 355-4.000.

Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, to Chinoin Gyogyszes es Begyeszeti Termekek Gyara Rt. Process for making bicyclic lactone derivatives for use as intermediates in the synthesis of prostaglandins. 4,204,999, Cl. 260-340.300.

Tompsett, Alan J.: *See—*
Parker, David G.; and Tompsett, Alan J., 4,205,012, Cl. 260-583.00J.

Toncelli, Marcello. Slab forming conveying line. 4,204,820, Cl. 425-89.000.

Tooker, Philip G., to Serck Industries Limited. Method and apparatus for joining a tubular element to a support. 4,204,312, Cl. 29-523.000.

Torgersen, Lars: *See—*
Almqvist, Kent R.; Christensen, Jan A.; Alfheim, Roar L.; and Torgersen, Lars, 4,205,031, Cl. 264-40.400.

Torisawa, Akira: *See—*
Asano, Kazuhiro; Ueda, Makoto; Torisawa, Akira; Shida, Masaharu; Satoh, Katsuhiko; and Mandai, Masaaki, 4,204,397, Cl. 368-202.000.

Tornay, Edmund G., to Energy Transportation Group, Incorporated. LNG Pump anti-slam device. 4,204,813, Cl. 417-435.000.

Toro Company, The: *See—*
Hunter, Edwin J., 4,204,642, Cl. 239-191.000.
Tillotson, Henry B., 4,204,738, Cl. 339-75.00P.

Toshimitsu, Naohiko: *See—*
Tanaka, Fumio; and Toshimitsu, Naohiko, 4,205,356, Cl. 360-118.000.

Tosswill, Christopher H., to Galileo Electro-Optics Corp. Far field imaging. 4,205,228, Cl. 250-336.000.

Towers, Russell S.: *See—*
Hayati, Hossein; Towers, Russell S.; and Carpenter, Peter G., deceased, 4,204,872, Cl. 106-38.350.

Towery, Mark W. Forced hot air fireplace attachment. 4,204,519, Cl. 126-164.000.

Toyo Soda Manufacturing Company, Ltd.: *See—*
Seita, Toru; Shimizu, Akihiko; Kato, Yoshio; and Hashimoto, Tsutomu, 4,205,134, Cl. 521-53.000.

Toyoda, Kenji; Araki, Yoshitaka; and Watanabe, Sakuji, to Nippon Kogaku K.K. Display device in an automatic exposure control camera. 4,204,755, Cl. 354-36.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Kikuchi, Makoto, 4,204,441, Cl. 82-2.500.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Harada, Toshiro; Kubo, Tadayuki; Kasuya, Kazusato; and Watanabe, Yukihiro, 4,204,482, Cl. 123-32.0EE.
Ishida, Yasuhiko, 4,204,514, Cl. 123-198.00F.
Kawai, Mitsuo; and Ono, Hironobu, 4,204,505, Cl. 123-119.0EC.
Miura, Nobuhiro, 4,204,484, Cl. 123-32.0SP.
Onishi, Sigeru, 4,204,488, Cl. 123-73.00A.
Onishi, Sigeru, 4,204,489, Cl. 123-73.00A.
Otani, Hisao, 4,204,720, Cl. 308-233.000.
Takahashi, Takehiko; and Suzuki, Yutaka, 4,205,051, Cl. 423-266.000.
Takase, Koyu; Makino, Shigeo; and Naitou, Tadashi, 4,204,691, Cl. 277-235.00B.
Takizawa, Masaaki; and Sasaki, Shoji, 4,204,807, Cl. 416-188.000.

Toyoura, Hirozumi; and Saito, Masaharu. Wheeled vehicle with rotatable endless track. 4,204,583, Cl. 180-9.280.

Traister, Robert L., to Xerox Corporation. Sorter for a reproduction machine. 4,204,670, Cl. 271-287.000.

Trame, Charles E., to Everbrite Electric Signs, Inc. Method of making simulated three-dimensional stained glass objects. 4,205,036, Cl. 264-132.000.

Trio Kabushiki Kaisha: *See—*
Kumagai, Morio, 4,205,272, Cl. 455-83.000.

Troxel Manufacturing Company: *See—*
Worley, George W., 4,204,713, Cl. 297-214.000.

TRW Inc.: *See—*
Shapiro, Howard E.; and Merz, Kenneth M., 4,205,298, Cl. 338-308.000.

TRW Inc., Systems & Energy: *See—*
Fox, Marvin; Cooper, Donald L.; and Warren, Walter B., 4,205,379, Cl. 364-432.000.

Tsuboi, Masaharu; and Asaka, Urataro, to Honda Giken Kogyo Kabushiki Kaisha. Carburetor system for a multi-cylinder engine of a motorcycle. 4,204,585, Cl. 180-219.000.

Tsuchiya, Shozo; Oshima, Akio; and Hayashi, Hideo, to Nippon Oil Co., Ltd. Resins for printing inks. 4,205,145, Cl. 525-502.000.

Tsuda, Hiroshi, to Olympus Optical Co., Ltd. Roll sheet feeding device. 4,204,621, Cl. 226-137.000.

Tsukada, Keizo, to Sony Corporation. Power amplifier circuit. 4,205,274, Cl. 330-276.000.

Tsuruoka, Masao: *See—*
Umemura, Sumio; Ohdan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,205,010, Cl. 260-465.300.

Tsuruta, Shintaro: *See—*
Kurata, Kenzi; Fukumoto, Toshito; Yoshida, Yuji; Kusama, Masanori; and Tsuruta, Shintaro, 4,204,915, Cl. 203-2.000.

Tsutsumi, Shinya: *See—*
Yasunaga, Ryuichi; Tsutsumi, Shinya; and Kuroda, Mototsugu, 4,204,297, Cl. 15-323.000.

Tsuzuki, Mitsuo; and Suga, Michihisa, to Nippon Electric Co., Ltd. Electrostatic method of simultaneously transferring to a recording medium a toner image having different polarities. 4,205,322, Cl. 346-153.000.

Tull, Bernie D., Jr.: *See—*
Arts, Jerold F.; Owen, William L., Jr.; and Tull, Bernie D., Jr., 4,205,239, Cl. 307-328.000.

Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., to Dow Chemical Company, The. Multifunctional lithium containing initiator. 4,205,016, Cl. 260-665.00R.

Turbo Resources Ltd.: *See—*
Johnson, Conrad B., 4,204,946, Cl. 208-181.000.

Turlej, Zbigniew W., to Dicon Systems Limited. Battery operated smoke detector electronics. 4,205,306, Cl. 340-629.000.

Turner, Ian D.: *See—*
Paskins, Keith N.; Redman, Duncan C.; and Turner, Ian D., 4,204,879, Cl. 106-311.000.

Tweedy of Burnley Limited: *See—*
Dawson, Peter, 4,204,408, Cl. 62-62.000.

Tyrone Hydraulics, Inc.: *See—*
Basham, Dean V., 4,204,405, Cl. 60-371.000.

Ube Industries, Ltd.: *See—*
Umemura, Sumio; Ohdan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,205,010, Cl. 260-465.300.

Uchida, Kinya: *See—*
Aida, Ko; Uchida, Kinya; and Kawada, Izumi, 4,205,125, Cl. 435-133.000.

Uchidoi, Masanori: *See—*
Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; Shimizu, Masami; and Hashimoto, Teiji, 4,204,762, Cl. 354-242.000.

Uchiike, Yukio: *See—*
Minezaki, Hisao; Haneda, Akio; Masaki, Asanori; Hanzawa, Takeo; and Uchiike, Yukio, 4,204,648, Cl. 242-18.00A.

Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Single key preferential selection device in electronic musical instrument. 4,204,452, Cl. 84-1.010.

Uda, Taizo: *See—*
Umemura, Sumio; Ohdan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,205,010, Cl. 260-465.300.

Udagawa, Tsugio: *See—*
Araya, Takeshi; and Udagawa, Tsugio, 4,205,217, Cl. 219-124.340.

Ueda, Makoto: *See—*
Asano, Kazuhiro; Ueda, Makoto; Torisawa, Akira; Shida, Masaharu; Satoh, Katsuhiko; and Mandai, Masaaki, 4,204,397, Cl. 368-202.000.

Ueki, Yoshiharu: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,353, Cl. 360-61.000.

Uenaka, Akimitsu: *See—*
Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shin-ichi; and Uenaka, Akimitsu, 4,205,152, Cl. 526-265.000.

Ueno, Kazuei: *See—*
Kobayashi, Shuji; Aoyagi, Mitsuo; Kanno, Tominori; Ueno, Kazuei; and Nomura, Shin-ichi, 4,205,098, Cl. 427-76.000.

Ulb, Horst: *See—*
Jaschke, Hans; Kautz, Rudolf; Plate, Hermann; and Ulb, Horst, 4,205,107, Cl. 428-58.000.

Ullmann, Werner; Buhler, Ernst; Kilcher, Beat; Ruh, Herbert; and Sieg, Arno, to A.G. fur industrielle Elektronik AGIE Losone b. Locarno. Electro-erosion machine tools and head assemblies therefor. 4,205,212, Cl. 219-69.00W.

Ulrich, Reinhard: *See—*
Johnson, Mark; and Ulrich, Reinhard, 4,204,742, Cl. 350-96.200.

Ulyanov, Gennady P.; and Maslov, Anatoly R., to Novosibirsky Institut Organicheskoi Khimii Sibirskogo Otdelenia Akademii Nauk SSR. Device for encoding and inputting to computer alphabetic and topologically represented graphic data that describes, in particular, structural formulae of chemical compounds. 4,205,391, Cl. 364-900.000.

Umemura, Sumio; Ohdan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, to Ube Industries, Ltd. Method for the catalytical production of acrylonitrile. 4,205,010, Cl. 260-465.300.

Union Carbide Corporation: *See—*
Cardenas, Jorge N.; and Reichle, Walter T., 4,205,187, Cl. 568-730.000.
Kaelin, Joseph Richard, 4,204,958, Cl. 210-178.000.
Van den Sype, Jaak S., 4,204,885, Cl. 148-12.00B.

United States Government: *See—*
Whitaker, John N., 4,205,057, Cl. 424-1.000.

United States of America
Agriculture: *See—*
Luddy, Francis E.; Hampson, James W.; Herb, Samuel F.; and Rothbart, Herbert L., 4,205,006, Cl. 260-410.700.
Wick, Emil, 4,205,133, Cl. 435-287.000.
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., 4,204,859, Cl. 71-121.000.
Air Force: *See—*
Hodes, Harvey A., 4,205,124, Cl. 430-456.000.
Army: *See—*
Buscher, David J.; and Schneider, Marvin J., 4,205,382, Cl. 364-516.000.
Donnally, William, Jr., 4,205,283, Cl. 333-165.000.
Esaki, Leo; Sai-Halasz, George A.; and Chang, Leroy L., 4,205,331, Cl. 357-30.000.
Meyer, Harry C.; Tanton, George A.; Greenberg, Raymond I.; and Williams, Joe E., 4,204,926, Cl. 204-157.10H.
Peperone, Salvador J., 4,205,316, Cl. 343-14.000.
Energy: *See—*
George, Victor E.; Haas, Roger A.; Krupke, William F.; and Schlitt, Leland G., 4,205,278, Cl. 331-94.50P.
Howell, Louis J., deceased, 4,204,882, Cl. 136-202.000.

Johnson, Evan R.; and Tanner, David E., 4,204,558, Cl. 137-315.000.

National Aeronautics and Space Administration; administrator; with respect to an invention of:
Beer, Reinhard. Cooled echelle grating spectrometer. 4,205,229, Cl. 250-352.000.

National Aeronautics and Space Administration: *See—*
Craig, Roger A.; and Pritchard, Huw O., 4,204,402, Cl. 60-39.060.
Walker, Hill M.; Sharpe, Max H.; and Simpson, William G., 4,204,899, Cl. 156-212.000.

Navy: *See—*
Bein, Thomas W., 4,204,816, Cl. 418-15.000.
Bott, John P., 4,204,552, Cl. 137-81.00A.
Fowler, Ronald J., 4,204,475, Cl. 102-262.000.
Gulick, Joseph F.; Miller, James S.; and Pue, Alan J., 4,204,655, Cl. 244-3.190.
Linfield, Wayne S., 4,204,342, Cl. 35-10.400.
Loker, W. Aleck; Bortzfield, Jon L.; Chard, Steven D.; Hall, John W.; and Meredith, John T., 4,204,589, Cl. 192-27.000.
Pal, Dharam; Huang, Kwang T.; and Smith, Maurice N., 4,205,235, Cl. 290-44.000.
Phillips, Norman S.; and Walcott, William B., 4,204,659, Cl. 248-562.000.
Pickens, George O., 4,205,394, Cl. 367-13.000.
Pryor, Cabell N., Jr., 4,205,396, Cl. 367-125.000.
Webster, Henry A., III, 4,204,895, Cl. 149-19.600.

U.S. Philips Corporation: *See—*
Albarda, Scato, 4,204,536, Cl. 128-204.220.
Etaix, Jean-Francois, 4,204,743, Cl. 350-96.200.
Gross, Ulrich, 4,204,453, Cl. 84-1.240.
Lersmacher, Bernhard; Lydtin, Hans; Schelhas, Karlheinz; and Knippenberg, Wilhelmus F., 4,204,769, Cl. 356-244.000.
Willems, Gerardus A. M., 4,205,215, Cl. 219-121.00P.
Zwep, Gerrit, 4,205,251, Cl. 313-330.000.

United States Surgical Corporation: *See—*
Green, David T., 4,204,623, Cl. 227-19.000.

United Technologies Corporation: *See—*
Games, John E.; Bitterli, William W.; and Healey, David M., 4,205,381, Cl. 364-505.000.

University of Illinois Foundation, The: *See—*
Kagan, Jacques, 4,205,000, Cl. 260-345.200.

University Patents, Inc.: *See—*
Bier, Milan, 4,204,929, Cl. 204-180.00R.

UOP Inc.: *See—*
Lincicome, Thomas N.; Spiro, John M.; and Brons, Albert J., 4,204,707, Cl. 285-114.000.

Upjohn Company, The: *See—*
Axen, Udo F., 4,205,178, Cl. 560-121.000.
Bundy, Gordon L., 4,205,179, Cl. 560-121.000.
Morozowich, Walter, 4,205,011, Cl. 260-558.00R.

Ursprung, Hans: *See—*
Hani, August; Horler, Hansulrich; and Ursprung, Hans, 4,204,586, Cl. 181-229.000.

Ushioda, Katsuyoshi; and Imaizumi, Fumio, to Idemitsu Petrochemical Co. Ltd. Shaping apparatus for tubular film. 4,204,819, Cl. 425-72.00R.

USM Corporation: *See—*
Salway-Waller, Malcolm; and Langton, Frederick H., 4,205,210, Cl. 219-10.810.

Ustkachkintsev, Alexandr N.: *See—*
Menshutin, Vasily P.; Akutin, Modest S.; Iovdalsky, Nikolai V.; Minakova, Alla N.; Zherebtsov, Evgeny R.; Sokolov, Anatoly D.; Abramov, Vsevolod V.; Melekhova, Galina D.; and Ustkachkintsev, Alexandr N., 4,205,030, Cl. 264-40.100.

Valeron Corporation, The: *See—*
Ruszala, Frederick B.; and Cook, Kenneth J., 4,205,386, Cl. 364-607.000.

Valyocsik, Ernest W.: *See—*
Rollmann, Louis D.; and Valyocsik, Ernest W., 4,205,052, Cl. 423-329.000.
Rollmann, Louis D.; and Valyocsik, Ernest W., 4,205,053, Cl. 423-329.000.

van Blerk, Victor B., to Nortron Corporation. System and method for calibration wheel alignment system sensors. 4,204,333, Cl. 33-288.000.

Van Brugge, Mathews. Pumps and syringes. 4,204,539, Cl. 128-223.000.

Van den Sype, Jaak S., to Union Carbide Corporation. Method for providing strong wire. 4,204,885, Cl. 148-12.00B.

van der Houwen, Derk; and Wilcke, Robert, to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Method and device for eliminating the background brightness variation of a video signal. 4,205,345, Cl. 358-168.000.

Vanderveen, John W., to Phillips Petroleum Company. Fuel burner useful for carbon black production. 4,204,831, Cl. 431-10.000.

Van Horne, William J. Edible server. 4,205,091, Cl. 426-138.000.

van Koten, Gerard: *See—*
Cohen, Murray S.; Noltes, Jan G.; and van Koten, Gerard, 4,205,191, Cl. 585-250.000.

Van Landeghem, Willy K.; and Suys, Andre R., to AGFA-GEVAERT N.V. Fluorscent X-ray image intensifying screen. 4,205,116, Cl. 428-409.000.

van Linge, Douwe J.: *See—*
Ladage, Cornelis A.; van Linge, Douwe J.; and van Riessen, Huibert A., 4,205,089, Cl. 424-365.000.

van Riessen, Huibert A.: *See—*
Ladage, Cornelis A.; van Linge, Douwe J.; and van Riessen, Huibert A., 4,205,089, Cl. 424-365.000.

van Soest, Gerrit J. Wheel conversion kit for snow vehicle. 4,204,582, Cl. 180-183.000.

Vasanthkumar, Sagunabalan: *See—*
Mehta, Madhu A.; Pitroda, Satyan G.; and Vasanthkumar, Sagunabalan, 4,205,203, Cl. 370-110.000.

Vassal, Louis J.: *See—*
Maubois, Jean-Louis J.; Mocquot, Germain P. C. B.; and Vassal, Louis J., 4,205,090, Cl. 426-40.000.

VDO Adolf Schindling AG: *See—*
Gothe, Diethard; Nuske, Jeffrey J.; and Friedrich, Jurgen, 4,204,427, Cl. 73-304.00C.

Veb Kombinat Fortschritt Landmaschinen Neustadt In Sachsen: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.

Vedamuthu, Ebenezer R.: *See—*
Sandine, William E.; and Vedamuthu, Ebenezer R., 4,205,132, Cl. 435-260.000.

Velsicol Chemical Corporation: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,205,022, Cl. 260-953.000.
Onore, Michael J.; and Mettille, Francis J., 4,205,009, Cl. 260-464.000.

Via, Francis A., to Stauffer Chemical Company. Photopolymerizable composition stabilized with nitrogen-containing aromatic compounds. 4,204,928, Cl. 204-159.230.

Vickers Limited: *See—*
Fuller, Paul, 4,204,640, Cl. 235-476.000.

Vickers, Margaret R.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Vickers, Margaret R., 4,205,071, Cl. 424-244.000.

Vidra, James D., to Johnson & Johnson. Oral antimicrobial compositions. 4,205,061, Cl. 424-55.000.

Vietto, Paolo E.: *See—*
Mugnai, Giorgio; and Vietto, Paolo E., 4,204,379, Cl. 53-512.000.

Vignau, Michel; and Lutz, Andre, to Roussel Uclaf. 3-Carbamoyloxymethyl-7-(amino-4-thiazolyl-acetamido)-cephalosporanic acid derivatives. 4,205,072, Cl. 424-246.000.

Vihko, Pirkko. Method of purification of human prostatic acid phosphatase. 4,205,130, Cl. 435-196.000.

Villa, Alfred S. Convertible seat-bed. 4,204,288, Cl. 5-47.000.

Vincent, Peter I.: *See—*
Hendy, Brian N.; Mathews, Carl F.; Nield, Eric; Rose, John B.; and Vincent, Peter I., 4,205,020, Cl. 525-275.000.

Vincent, Rene J., to Fabrique Nationale Herstal, en abrege FN, Societe Anonyme. Safety device for oil filters and the like. 4,204,965, Cl. 210-447.000.

Vinnemann, Antonius; Elsasser, Heinrich; Walter, Manfred; and Gaiser, Willi, to Sulzer Morat GmbH. Clamping means for material in thread, ribbon or strip form. 4,204,414, Cl. 66-145.00R.

Visky nee Gombos, Zsuzsa: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,204,999, Cl. 260-340.300.

Vite, Jean P.; Francke, Ernst J. W.; and Ohloff, Gunther, to Firmenich S.A. Control of insects with 2-ethyl-1,6-dioxaspiro[4.4]nonane. 4,205,084, Cl. 424-285.000.

Vogel, John D., to Tokheim Corporation. Bi-directional pump. 4,204,810, Cl. 417-244.000.

Volstatic Holding Limited: *See—*
Lever, Robert C., 4,204,497, Cl. 118-634.000.

Volz, Patricia S.: *See—*
Binaris, Christopher; Volz, Patricia S.; and Ohidy, Joseph, 4,204,438, Cl. 81-9.220.

von Hagens, Gunther. Animal and vegetal tissues permanently preserved by synthetic resin impregnation. 4,205,059, Cl. 427-4.000.

Von Kamp, John: *See—*
Streets, Roger L.; Rabito, Thomas G.; and Von Kamp, John, 4,204,987, Cl. 260-29.20E.

von Werner, Konrad: *See—*
Knoblauch, Wolfgang; and von Werner, Konrad, 4,204,972, Cl. 252-78.100.

Von Wettstein, Herbert: *See—*
Forster, George; and Von Wettstein, Herbert, 4,204,533, Cl. 128-133.000.

Vorontsov, Alexandr I.: *See—*
Khutoretsky, Garri M.; Fridman, Vladimir M.; Zagorodnaya, Galina A.; Vorontsov, Alexandr I.; Ignatiev, Anatoly D.; and Sudarikov, Vasily L., 4,204,313, Cl. 29-596.000.

Voth, Elmer D.: *See—*
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,204,576, Cl. 172-22.000.

W. M. Cissell Manufacturing Company, The: *See—*
Bullock, Norman J., 4,204,338, Cl. 34-35.000.

W. R. Grace & Co.: *See—*
Mugnai, Giorgio; and Vietto, Paolo E., 4,204,379, Cl. 53-512.000.
Palmer, Nigel I.; and Grammer, Don O., 4,205,123, Cl. 429-147.000.

WABCO Westinghouse GmbH: *See—*
Liermann, Peter; and Weise, Lutz, 4,205,307, Cl. 340-644.000.

Wacker-Chemie GmbH: *See—*
Wiest, Hubert; Ludwig, Peter; Hafener, Klaus; and Lieb, Erwin, 4,205,161, Cl. 528-487.000.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Seifert, Dieter; Regler, Dieter; Ofenmacher, Volker; Moritz, Alfred; Freudlsperger, August; and Berger, Walter, 4,204,515, Cl. 125-16.00R.

Waghorne, Robert H.: *See—*
Mitchell, Howard L., III; and Waghorne, Robert H., 4,205,194, Cl. 585-407.000.

Wagner, Arthur F.; Grier, Nathaniel; and Shen, Tsung-Ting, to Merck & Co., Inc. Bile acid sequestering composition containing poly{[alkyl-(3-ammoniopropyl)imino}-trimethylenedihalides]. 4,205,064, Cl. 424-78.000.

Wagner, Daniel B.; Pick, Anthony J.; and Feingers, Judith, to Ames-Yissum, Ltd. Column chromatography specific binding assay method and test kit. 4,205,058, Cl. 424-1.000.

Wagner, Hans A., to G. D. Searle & Co. N-[4-Azido-5-(2-ethoxyethyl)-6-phenyl-2-pyrimidinyl]acetamide and congeners. 4,205,169, Cl. 544-323.000.

Wagner-Jauregg, Theodor W.: *See—*
Schatz, Franz; Stammbach, Christian; Thiele, Kurt; Wagner-Jauregg, Theodor W.; Zirngibl, Ludwig; Fischer, Johanna; and Jahn, Ulrich, 4,204,998, Cl. 260-326.150.

Wagner, Kuno: *See—*
Muller, Hanns P.; and Wagner, Kuno, 4,205,138, Cl. 521-158.000.

Wagner, Stuart J. Line tap valve. 4,204,559, Cl. 137-318.000.

Walcott, William B.: *See—*
Phillips, Norman S.; and Walcott, William B., 4,204,659, Cl. 248-562.000.

Waldmann, Hermann: *See—*
Erche, Manfred; Filberich, Ludwig; Pove, Dusan; Waldmann, Hermann; and Weibelzahl, Manfred, 4,205,368, Cl. 363-35.000.

Walker, Hill M.; Sharpe, Max H.; and Simpson, William G., to United States of America, National Aeronautics and Space Administration. Cork-resin ablative insulation for complex surfaces and method for applying the same. 4,204,899, Cl. 156-212.000.

Walker, Joseph B. Light enhancement camera attachment. 4,204,761, Cl. 354-202.000.

Walker, Starnes E., to Phillips Petroleum Company. Chromatographic analyzer detector gain adjustment. 4,204,424, Cl. 73-23.100.

Walter, Lothar: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,204,717, Cl. 308-6.00C.

Walter, Manfred: *See—*
Vinnemann, Antonius; Elsasser, Heinrich; Walter, Manfred; and Gaiser, Willi, 4,204,414, Cl. 66-145.00R.

Walters, Ian R.; and Emblem, Harold G., to Zirconal Processes Limited. Method for producing rigid articles of refractory fibers. 4,205,032, Cl. 264-63.000.

Wang, Chun S.; McGregor, Stanley D.; and Nestrick, Terry J., to Dow Chemical Company, The. Dehydrohalogenation of (polyhaloalkyl) benzenes with support Lewis acid catalysts. 4,205,015, Cl. 260-651.00R.

Ward, Frederick D., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Pneumatic ejector for bomb. 4,204,456, Cl. 89-1.50G.

Ward, Patrick C., to Westinghouse Electric Corp. Internal shorting fuse for a high-intensity discharge lamp. 4,205,258, Cl. 315-73.000.

Ward, Peter J., to Lucas Industries Limited. Internal combustion engine fuel control system. 4,205,378, Cl. 364-431.000.

Wardle, Malcolm R.: *See—*
Porter, Cyril A.; and Wardle, Malcolm R., 4,205,326, Cl. 340-147.00R.

Warfield, Glenn R.: *See—*
Baird, James C.; and Warfield, Glenn R., 4,205,094, Cl. 426-459.000.

Waring, Wilson S., to Imperial Chemical Industries Limited. Acetic acid derivatives. 4,205,087, Cl. 424-317.000.

Warner-Lambert Company: *See—*
Satzinger, Gerhard; Herrmann, Manfred F.; and Hechtfischer, Gustav, 4,205,078, Cl. 424-274.000.

Warren, Kenneth W.; and Prestridge, Floyd L., to Combustion Engineering, Inc. Process for application of electrostatic fields to mixing and separating fluids. 4,204,934, Cl. 204-186.000.

Warren, Lyle D.; and Brewster, Robert W. Automatic sawmill. 4,204,798, Cl. 414-750.000.

Warren, Walter B.: *See—*
Fox, Marvin; Cooper, Donald L.; and Warren, Walter B., 4,205,379, Cl. 364-432.000.

Warszawski, Janusz: *See—*
Kool, Bram; Warszawski, Janusz; and Moritz, Jules G., 4,204,753, Cl. 353-26.00R.

Washington, Forest L., to General Electric Company. Ground fault protection system. 4,205,358, Cl. 361-44.000.

Wasmuth, Edward H.: *See—*
McAleer, William J.; and Wasmuth, Edward H., 4,204,989, Cl. 260-112.00B.

Watanabe, Hideo: *See—*
Tani, Mitsuhiro; and Watanabe, Hideo, 4,204,591, Cl. 192-99.00R.

Watanabe, Masakatsu, to Hochiki Corporation. Remote control variable attenuation device for an antenna amplifier. 4,205,269, Cl. 455-4.000.

Watanabe, Mineo: *See—*
Ono, Takezo; Iribe, Seiki; and Watanabe, Mineo, 4,204,930, Cl. 204-180.00P.

Watanabe, Sakuji: *See—*
Toyoda, Kenji; Araki, Yoshitaka; and Watanabe, Sakuji, 4,204,755, Cl. 354-36.000.

Watanabe, Takeshi: *See—*
Nanjo, Hirotoshi; and Watanabe, Takeshi, 4,204,509, Cl. 123-148.00E.

Watanabe, Yukihiro: *See—*
Harada, Toshiro; Kubo, Tadayuki; Kasuya, Kazusato; and Watanabe, Yukihiro, 4,204,482, Cl. 123-32.0EE.

Watson, Brian: *See—*
Allen, Bernard M.; Rubin, Wallace; and Watson, Brian, 4,204,889, Cl. 148-26.000.

Watts, Julian K.; and Yarker, Colin A., to Pilkington Brothers Limited. Method of and apparatus for producing a glass fibre bundle for use in optical communications systems. 4,204,852, Cl. 65-4.00A.

Wean United, Inc.: *See—*
Miller, Paul W., 4,204,413, Cl. 64-30.00E.

Webb, Jimmy L.; and Ligon, Woodfin V., to General Electric Company. Thermal detection system for failure in electrical apparatus and thermal detecting paint compositions. 4,204,428, Cl. 73-339.00R.

Weber, Jurgen; and Springer, Helmut, to Ruhrchemie Aktiengesellschaft. Process for the manufacture of 2,3-dimethylpentanal. 4,205,013, Cl. 568-451.000.

Webster, Henry A., III, to United States of America, Navy. Green flare compositions. 4,204,895, Cl. 149-19.600.

Wechsler, Ionel; Oberteuffer, John A.; Nolan, John J.; Kolm, Henry H.; Georgelis, Eric; and Arvidson, Bo R., to Allis-Chalmers Corporation. Self-purging seal. 4,204,948, Cl. 209-223.00R.

Weibelzahl, Manfred: *See—*
Erche, Manfred; Filberich, Ludwig; Pove, Dusan; Waldmann, Hermann; and Weibelzahl, Manfred, 4,205,368, Cl. 363-35.000.

Weickhardt, Ludwig, to Sartorius Membranfilter GmbH. Artificial kidney. 4,204,957, Cl. 210-98.000.

Weinstein, Arthur H., to Goodyear Tire & Rubber Company, The. Diene interpolymers with halogenated monomers. 4,205,153, Cl. 526-292.000.

Weis, Ray P. Tennis playing apparatus. 4,204,678, Cl. 273-29.00A.

Weise, Lutz: *See—*
Liermann, Peter; and Weise, Lutz, 4,205,307, Cl. 340-644.000.

Weiser, Milton M.: *See—*
Podolsky, Daniel K.; and Weiser, Milton M., 4,205,129, Cl. 435-193.000.

Weitkamp, Claus: *See—*
Michaelis, Walfried; and Weitkamp, Claus, 4,204,908, Cl. 176-19.0LD.

Weka-Handelsgesellschaft m.b.H.: *See—*
Timmerbeil, Karl E., 4,204,381, Cl. 53-528.000.

Wells, J. Scott: *See—*
Sykes, Richard B.; Wells, J. Scott; Principe, Pacifico A.; and Liu, Wen C., 4,205,068, Cl. 424-117.000.

Werner, Peter: *See—*
Jundt, Werner; Bodig, Bernd; Roozenbeek, Herman; and Werner, Peter, 4,204,508, Cl. 123-148.00E.

Wertepny, Alexander W.: *See—*
Wertepny, Stanley A.; and Wertepny, Alexander W., 4,204,331, Cl. 33-172.00R.

Wertepny, Stanley A.; and Wertepny, Alexander W. Keyway gauge. 4,204,331, Cl. 33-172.00R.

Wescom Switching, Inc.: *See—*
Mehta, Madhu A.; Pitroda, Satyan G.; and Vasanthkumar, Sagunabalan, 4,205,203, Cl. 370-110.000.

West Company, The: *See—*
Ravn, Jacob; and Conard, William A., 4,204,605, Cl. 215-295.000.

Westbay Instruments Ltd.: *See—*
Patton, Franklin D.; and McFarlane, James D., 4,204,426, Cl. 73-151.000.

Western Electric Company, Inc.: *See—*
Arts, Jerold F.; Owen, William L., Jr.; and Tull, Bernie D., Jr., 4,205,239, Cl. 307-328.000.
Douglas, Robert R., 4,205,216, Cl. 219-121.00L.
Faber, Edward S.; Hovan, John J.; and Sinsheimer, Walter J., 4,204,737, Cl. 339-65.000.
Kalina, Robert F., 4,205,365, Cl. 361-308.000.

Westernacher, Helmut; Schimpff, Peter; and Botthof, Ferdinand, to Chemische Werke Buls A.G. Radial-flow reactor with heatable catalyst filling. 4,205,045, Cl. 422-192.000.

Westinghouse Electric Corp.: *See—*
Braytenbah, Andrew, 4,205,380, Cl. 364-494.000.
Calvino, Ben J., 4,205,208, Cl. 200-82.00R.
Cooper, Martin H., 4,204,911, Cl. 176-37.000.
Drucker, Melvin H., 4,205,360, Cl. 361-68.000.
Gipprich, John W., 4,205,282, Cl. 333-161.000.
Lin, Kou C.; Ellis, Belvin B.; and Burkhardt, Charles E., 4,205,288, Cl. 336-5.000.
Mallick, George T., Jr., 4,204,425, Cl. 73-116.000.
Schmitz, William E., 4,204,478, Cl. 104-247.000.
Sherwood, Edward F., 4,204,665, Cl. 256-65.000.
Shimp, Alan B., 4,205,361, Cl. 361-92.000.
Ward, Patrick C., 4,205,258, Cl. 315-73.000.

Westvaco Corporation: *See—*
Moorer, Howard H.; and Anderegg, Charles M., 4,204,877, Cl. 106-90.000.

Weyerhaeuser Company: *See—*
Adams, Michael G., 4,204,598, Cl. 206-426.000.
Whitaker, John N., to United States Government. Cerebrospinal fluid protein fragments. 4,205,057, Cl. 424-1.000.
White Metal Rolling and Stamping Corp.: *See—*
Larson, Clayton E., 4,204,587, Cl. 182-228.000.
Whitfield Wylie Limited: *See—*
Gunn, Christopher J.; and Barker, Joseph, 4,204,624, Cl. 227-45.000.
Whitsel, Jay F., to Budd Company, The. Ultrasonic testing of welds in wheels. 4,204,434, Cl. 73-622.000.
WIBAU GmbH: *See—*
Merz, Georg; and Gehrmann, Heinz, 4,205,384, Cl. 364-555.000.
Wick, Emil, to United States of America, Agriculture. Apparatus for fermenting liquids. 4,205,133, Cl. 435-287.000.
Wicksell, Hans A.; Stahl, Stig; and Lofstedt, Ingemar G. Device for waxing skis. 4,204,693, Cl. 280-80.00T.
Wiegand Karlsruhe GmbH: *See—*
Kunz, Adolf, 4,204,410, Cl. 62-500.000.
Wiegmann, William: *See—*
Dingle, Raymond; Gossard, Arthur C.; Petroff, Pierre M.; and Wiegmann, William, 4,205,329, Cl. 357-16.000.
Wiest, Hubert; Ludwig, Peter; Hafener, Klaus; and Lieb, Erwin, to Wacker-Chemie GmbH. Process for reducing content of free vinyl chloride by posttreating copolymer with redox catalyst. 4,205,161, Cl. 528-487.000.
Wikstrom, Axel T., to AB Scandinavian Energy Saving Co. Devices for cleaning heating batteries. 4,204,572, Cl. 165-95.000.
Wilcke, Robert: *See—*
van der Houwen, Derk; and Wilcke, Robert, 4,205,345, Cl. 358-168.000.
Willems, Gerardus A. M., to U.S. Philips Corporation. Method and device for welding in a thermally ionized gas. 4,205,215, Cl. 219-121.00P.
Williams, Bruce T. High speed electrostatic voltmeter. 4,205,267, Cl. 324-458.000.
Williams, Edward W.: *See—*
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., 4,204,933, Cl. 204-181.00N.
Williams, George C.; and Fay, Edward W., to Alden Research Foundation. Paper feed control. 4,205,323, Cl. 346-165.000.
Williams (Hounslow) Limited: *See—*
Paskins, Keith N.; Redman, Duncan C.; and Turner, Ian D., 4,204,879, Cl. 106-311.000.
Williams, Joe E.: *See—*
Meyer, Harry C.; Tanton, George A.; Greenberg, Raymond I.; and Williams, Joe E., 4,204,926, Cl. 204-157.10H.
Williams, Kenneth R.: *See—*
Baughn, William E.; Williams, Kenneth R.; and McAlister, M. Khristian, 4,204,663, Cl. 254-88.000.
Williams, Stanley A. Electrode type water heating boiler. 4,205,222, Cl. 219-290.000.
Williams, William G.: *See—*
Bellhouse, Brian J.; and Williams, William G., 4,204,283, Cl. 3-1.500.
Willkes, Robert J.: *See—*
Bleiweiss, Arthur F.; Cotoara, Dumitru; and Willkes, Robert J., 4,205,366, Cl. 362-35.000.
Wilson, David A.; and McCrary, Avis L., to Dow Chemical Company, The. Non-yellowing compositions containing hexamethylenetetramine 1,3-dichloropropene salts. 4,205,065, Cl. 424-81.000.
Wilson, William J. Solar heaters. 4,204,522, Cl. 126-447.000.
Winget Limited: *See—*
Bates, Leonard T., 4,204,773, Cl. 366-18.000.
Wingler, Frank: *See—*
Liebig, Lothar; Wingler, Frank; Margotte, Dieter; and Nouvertne, Werner, 4,205,140, Cl. 525-67.000.
Liebig, Lothar; Wingler, Frank; Humme, Gert; and Prinz, Richard, 4,205,141, Cl. 525-67.000.
Winn, Clarence W., to Arnold Engineering Company, The. Method of making a lead frame. 4,204,317, Cl. 29-827.000.
Winter, Klaus: *See—*
Pip, Wolfgang; and Winter, Klaus, 4,205,111, Cl. 428-215.000.
Wise, Kennard L.; and Schroeder, George H., to Tecumseh Products Company. Explosion resistant overload and relay mounting for explosion resistant motor. 4,205,246, Cl. 310-68.00C.
Wissinger, Waldemar: *See—*
Gauchel, Peter; and Wissinger, Waldemar, 4,204,821, Cl. 425-131.100.
Wittmann, Julius, to Siemens Aktiengesellschaft. Switch for light conducting fibers. 4,204,744, Cl. 350-96.200.
Wognum, Willis: *See—*
Bridwell, Glenn D.; Maule, James; Schrombeck, Alois; and Wognum, Willis, 4,204,494, Cl. 114-222.000.
Wolga, George J.: *See—*
Shull, Arthur; and Wolga, George J., 4,204,771, Cl. 356-346.000.
Wolters, Tjako A., to Ballast-Nedam Groep N.V., Amsterdamse Ballast Bagger en Grond (Amsterdam Ballast/Dredging) B.V. and Banegbo B.V. Device for cutting loose hard ground material. 4,204,347, Cl. 37-67.000.
Wood, Ernest: *See—*
Samuels, Peter B.; and Wood, Ernest, 4,204,526, Cl. 128-1.00R.
Woodger, Andrew, to BBC Brown Boveri & Company Limited. Turboset support. 4,204,804, Cl. 415-219.00R.
Workman, John, to S.B.W. Engineers Limited. Method of making cast windings for electric motors. 4,204,314, Cl. 29-597.000.
Worley, George W., to Troxel Manufacturing Company. Means for attaching a cover to a bicycle saddle. 4,204,713, Cl. 297-214.000.
Wright, John W.; and Gross, William H., to National Semiconductor Corporation. Audio amplifier with low AM radiation. 4,205,276, Cl. 330-294.000.
WSBM Company, Inc.: *See—*
Bridwell, Glenn D.; Maule, James; Schrombeck, Alois; and Wognum, Willis, 4,204,494, Cl. 114-222.000.
Wu, E-ming: *See—*
Chapman, Derek D.; and Wu, E-ming, 4,204,870, Cl. 430-213.000.
Wu, Tai-Wing; and Sullivan, Sheryl S., to Eastman Kodak Company. Fluorimetric analysis method for bilirubin. 4,204,839, Cl. 23-230.00B.
Wu, Yeongchi; and Nowacki, Christopher A., to Rehabilitation Institute of Chicago. Disposable urethral catheter assembly. 4,204,527, Cl. 128-762.000.
Wurfel, Reinhart, to AGFA-Gevaert, A.G. Apparatus for removing exposed films and backing strips from cassettes. 4,204,620, Cl. 226-91.000.
Wyner, Jay S., to Therma-Plex. Apparatus for applying a liquid to a surface. 4,204,495, Cl. 118-300.000.
Wynn, Edward J.; and Bryant, Cal L., to Sperry Rand Corporation. Bale alignment mechanism actuating device. 4,204,792, Cl. 414-36.000.
Wysocki, Tadeusz S.: *See—*
Lind, Herbert C.; Rumore, Peter J.; and Wysocki, Tadeusz S., 4,204,532, Cl. 128-132.00D.
Xerox Corporation: *See—*
DeBenedictis, Leonard C.; and Johnson, Richard V., 4,205,348, Cl. 358-285.000.
Fisli, Tibor, 4,205,100, Cl. 427-162.000.
Gunning, William F., 4,205,350, Cl. 358-296.000.
Tates, Donald W., 4,204,727, Cl. 355-3.00R.
Traister, Robert L., 4,204,670, Cl. 271-287.000.
Yakushenko, Evgeny A.: *See—*
Bakanovich, Eduard A.; Orlov, Mikhail A.; Kostjuk, Sergei F.; Shmerko, Vladimir P.; Gagen, Igor E.; Gringlaz, Aron G.; Kulakov, Valery M.; Lysov, Valery B.; Menkov, Alexandr V.; Pikin, Nikolai I.; Chetverikov, Vladimir N.; Melnik, Nikolai I.; Novikov, Vladimir I.; Popov, Alexandr N.; and Yakushenko, Evgeny A., 4,205,383, Cl. 364-554.000.
Yamabe, Shigeru: *See—*
Fujimoto, Yasuo; and Yamabe, Shigeru, 4,205,170, Cl. 546-80.000.
Yamada, Minoru; and Nakagawa, Yasutsugu, to Konishiroku Photo Industry Co., Ltd. Camera with built-in motor. 4,204,759, Cl. 354-152.000.
Yamada, Shigetaka, to Citizen Watch Co., Ltd. Light-transmitting, polycrystalline alumina body and method for producing the same. 4,204,874, Cl. 106-73.400.
Yamakawa Industry Company Ltd.: *See—*
Sugiyama, Masaaki; and Yuda, Takuo, 4,204,960, Cl. 210-232.000.
Yamakoshi, Kenichi, to Asahi Medical Co., Ltd. Limb blood flowmeter. 4,204,545, Cl. 128-693.000.
Yamamoto, Masahiro; Okamoto, Yasunari; Itoh, Tsutomu; and Masuda, Senichi, to Onoda Cement Co., Ltd. Safety type electric field curtain apparatus. 4,205,359, Cl. 361-58.000.
Yamamoto, Tadao; Takekawa, Hiroshi; Banno, Taichi; and Koshiishi, Kiyozo, to Olympus Optical Co., Ltd. Method for measuring ion activity. 4,204,917, Cl. 204-1.00T.
Yamamoto, Yoshihiro; Sakurai, Kenji; and Tanaka, Hiroshi, to NGK Spark Plug Co., Ltd. Sintered ceramic body for cutting tools. 4,204,873, Cl. 106-43.000.
Yamamoto, Yousuke, to Nippon Telegraph and Telephone Public Corporation. Lateral transistor with multi-base contacts. 4,205,333, Cl. 357-35.000.
Yamanaka, Mikio: *See—*
Kado, Satoshi; Yamazaki, Taketomo; Sakamoto, Tetsu; Yamanaka, Mikio; and Yoshida, Kotaro, 4,204,862, Cl. 75-124.000.
Yamashita, Shin: *See—*
Nonaka, Terumoto; Hotta, Tadahiko; and Yamashita, Shin, 4,205,334, Cl. 357-41.000.
Yamauchi, Teruo: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; and Nishimura, Yutaka, 4,205,377, Cl. 364-431.000.
Yamazaki, Taketomo: *See—*
Kado, Satoshi; Yamazaki, Taketomo; Sakamoto, Tetsu; Yamanaka, Mikio; and Yoshida, Kotaro, 4,204,862, Cl. 75-124.000.
Yanagawa, Nobuyuki, to Ricoh Company, Ltd. Paper feeding apparatus. 4,204,668, Cl. 271-9.000.
Yarker, Colin A.: *See—*
Watts, Julian K.; and Yarker, Colin A., 4,204,852, Cl. 65-4.00A.
Yasui, Hiroshi; and Ichimura, Yoshiaki, to Japan Aviation Electronics Industry, Ltd. Means for locking a circuit board to a connector. 4,204,722, Cl. 339-17.0CF.
Yasukawa, Akio: *See—*
Oguro, Tomokatsu; Sakamoto, Tatsuji; and Yasukawa, Akio, 4,205,257, Cl. 315-39.690.
Yasunaga, Ryuichi; Tsutsumi, Shinya; and Kuroda, Mototsugu. Vacuum cleaner. 4,204,297, Cl. 15-323.000.
Yigdall, Jeffrey S.; and Zahler, James A., to PPG Industries, Inc. Edge stretching apparatus including insulated seal. 4,204,856, Cl. 65-157.000.
Yoder, John B.: *See—*
Maul, Stephen B.; Lemke, Paul A.; Gerner, Walter L.; and Yoder, John B., 4,204,364, Cl. 47-1.100.

Yokogawa, Tomohisa: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,270, Cl. 455-158.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,205,353, Cl. 360-61.000.
Yokota, Takashi: *See—*
Kawazu, Motoaki; Yokota, Takashi; Inokuchi, Toshiyuki; and Kanmoto, Yoshiaki, 4,205,349, Cl. 358-294.000.
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., to United States of America, Agriculture. Method of increasing the yield of hydrocarbons from plants. 4,204,859, Cl. 71-121.000.
Yonekubo, Ken, to Olympus Optical Co., Ltd. Focal relay lens system for an inverted microscope. 4,204,748, Cl. 350-228.000.
Yoo, Jin S.; Burk, Emmett H., Jr.; and Karch, John A., to Atlantic Richfield Company. Process for removing sulfur from coal. 4,204,840, Cl. 44-1.0SR.
Yoshida, Akira: *See—*
Aoyama, Tsuyoshi; Hayashi, Toshimasa; Toba, Hirotaka; Yoshida, Akira; Goto, Kenji; and Kawakama, Motoaki, 4,205,040, Cl. 264-233.000.
Yoshida, Kotaro: *See—*
Kado, Satoshi; Yamazaki, Taketomo; Sakamoto, Tetsu; Yamanaka, Mikio; and Yoshida, Kotaro, 4,204,862, Cl. 75-124.000.
Yoshida, Masako: *See—*
Ohashi, Takashi; Kojima, Minoru; Yoshida, Masako; Okuyama, Toru; and Sakata, Ryozo, 4,205,136, Cl. 521-118.000.
Yoshida, Matuju, to Nippondenso Co., Ltd. Method and apparatus for initializing vehicle-mounted computers. 4,205,376, Cl. 364-424.000.
Yoshida, Shigeki: *See—*
Kawagai, Kenji; and Yoshida, Shigeki, 4,205,263, Cl. 323-22.00R.
Yoshida, Tadao, to Sony Corporation. Pulse signal amplifier. 4,205,273, Cl. 330-251.000.
Yoshida, Tomio: *See—*
Shima, Takesaburo; Kozima, Hiroshi; Yoshida, Tomio; and Nakamura, Joji, 4,205,019, Cl. 525-243.000.
Yoshida, Yuji: *See—*
Kurata, Kenzi; Fukumoto, Toshito; Yoshida, Yuji; Kusama, Masanori; and Tsuruta, Shintaro, 4,204,915, Cl. 203-2.000.
Yoshinaga, Yasukazu: *See—*
Minoura, Nobuo; Matsumura, Isao; Yoshinaga, Yasukazu; Abumi, Takao; and Nakai, Kazuhiro, 4,205,347, Cl. 358-191.100.
Young, Lewis B.; and Burress, George T., to Mobil Oil Corporation. Method for producing 3-alkylphenols and 1,3-dihydroxybenzene. 4,205,189, Cl. 568-768.000.
Young, Morris S.; and Larbalestier, David C., to Airco, Inc. Wrapped tantalum diffusion barrier. 4,205,119, Cl. 428-614.000.
Young, Paul T. K., to Orenbuch, Louis. Broadband miniature antenna. 4,205,317, Cl. 343-720.000.
Young, Prussin, MGK, J.V.: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,205,096, Cl. 427-4.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Case III (C) adherent controlled release pesticide. 4,205,096, Cl. 427-4.000.
Yu, Chia-Nien, to Morton-Norwich Products, Inc. 2-[5-(4-Chlorophenyl)furfuryl]-1,3,-propanediol. 4,205,003, Cl. 260-347.800.
Yuda, Takuo: *See—*
Sugiyama, Masaaki; and Yuda, Takuo, 4,204,960, Cl. 210-232.000.
Yuhas, Drew J.: *See—*
Hall Jr., Harleston J.; Sassin, Roger I.; and Yuhas, Drew J., 4,204,681, Cl. 273-73.00C.
Yui, Yoshio: *See—*
Kouno, Akiyoshi; Morishita, Masanobu; and Yui, Yoshio, 4,205,340, Cl. 358-130.000.
Zafmedico Corp.: *See—*
Termanini, Zafer A., 4,204,528, Cl. 128-6.000.
Zagorodnaya, Galina A.: *See—*
Khutoretsky, Garri M.; Fridman, Vladimir M.; Zagorodnaya, Galina A.; Vorontsov, Alexandr I.; Ignatiev, Anatoly D.; and Sudarikov, Vasily L., 4,204,313, Cl. 29-596.000.
Zahler, James A.: *See—*
Yigdall, Jeffrey S.; and Zahler, James A., 4,204,856, Cl. 65-157.000.
Zahnradfabrik Friedrichshafen, AG.: *See—*
de Maight, Winfried, 4,204,584, Cl. 180-133.000.
Zaman, Shakir U.: *See—*
Giuggio, Nicholas; Noyes, Richard C.; and Zaman, Shakir U., 4,204,909, Cl. 176-22.000.
Zamojdo, Rudolf: *See—*
Nowak, Edmund; Zamojdo, Rudolf; Parda, Andrzej; Kurdowski, Wieslaw; and Jankowski, Stefan, 4,204,836, Cl. 432-58.000.
Zani, Tarcisio. Cooking utensil. 4,204,607, Cl. 220-68.000.
Zeilinger, Philip T.: *See—*
Carter, William L.; Greathouse, Jack F.; and Zeilinger, Philip T., 4,204,811, Cl. 417-288.000.
Zeitler, Karl-Heinz: *See—*
Auracher, Franz; Zeitler, Karl-Heinz; and Rauscher, Walter, 4,204,310, Cl. 29-445.000.
Zenith Radio Corporation: *See—*
Bing, Valentijn B.; and Neis, Donald A., 4,204,302, Cl. 29-25.130.
Gilchrist, Forbes D.; Miller, Robert L.; and Myers, Richard W., 4,205,280, Cl. 333-151.000.
Zestermann, Mary J.; and Hussar, John F., to Cincinnati Milacron Chemicals Inc. Ester substituted oxazolines. 4,205,176, Cl. 548-239.000.
Zherebtsov, Evgeny R.: *See—*
Menshutin, Vasily P.; Akutin, Modest S.; Iovdalsky, Nikolai V.; Minakova, Alla N.; Zherebtsov, Evgeny R.; Sokolov, Anatoly D.; Abramov, Vsevolod V.; Melekhova, Galina D.; and Ustkachkintsev, Alexandr N., 4,205,030, Cl. 264-40.100.
Zirconal Processes Limited: *See—*
Walters, Ian R.; and Emblem, Harold G., 4,205,032, Cl. 264-63.000.
Zirngibl, Ludwig: *See—*
Schatz, Franz; Stammbach, Christian; Thiele, Kurt; Wagner-Jauregg, Theodor W.; Zirngibl, Ludwig; Fischer, Johanna; and Jahn, Ulrich, 4,204,998, Cl. 260-326.150.
Zumpe, Bernd: *See—*
Eistert, Theodor; Schmidt, Gerhard; Noack, Christian; Teichmann, Manfred; Zumpe, Bernd; Eidam, Manfred; Spaida, Hans-Peter; Rauschenbach, Stefan; Paulisch, Karlheinz; and Scholz, Siegfried, 4,204,387, Cl. 56-98.000.
Zwep, Gerrit, to U.S. Philips Corporation. X-ray tube for the examination of fine structures. 4,205,251, Cl. 313-330.000.
Zwirlein, John F., to Olin Corporation. Polyurethane foam generating apparatus. 4,204,977, Cl. 252-359.00E.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF MAY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Babington, Robert S. Spraying devices, in particular nebulizing devices. Re. 30,285, Cl. 261-78.00A.

Carborundum Company, The: *See—*
Coppola, John A.; and Smoak, Richard H., Re. 30,286, Cl. 264-65.000.

Coppola, John A.; and Smoak, Richard H., to Carborundum Company, The. Method of producing high density silicon carbide product. Re. 30,286, Cl. 264-65.000.

Doodewaard, Jean: *See—*
Marx, Arthur F.; and Doodewaard, Jean, Re. 30,287, Cl. 562-503.000.

Dow Chemical Company, The: *See—*
Frenier, Wayne W.; and Settineri, William J., Re. 30,283, Cl. 252-151.000.

Frenier, Wayne W.; and Settineri, William J., to Dow Chemical Company, The. Sulfonium compounds as corrosion inhibitors in aqueous acidic cleaning solutions. Re. 30,283, Cl. 252-151.000.

Gist-Brocades N.V.: *See—*
Marx, Arthur F.; and Doodewaard, Jean, Re. 30,287, Cl. 562-503.000.

Hackett, Kenneth R., to Pittway Corporation. Intrusion detection system. Re. 30,288, Cl. 343-5.0PD.

Hunt, Merrill R.; Ladas, Christopher A.; and Mastroianni, Sal T., to Motorola, Inc. Double master mask process for integrated circuit manufacture. Re. 30,282, Cl. 148-1.500.

Ladas, Christopher A.: *See—*
Hunt, Merrill R.; Ladas, Christopher A.; and Mastroianni, Sal T., Re. 30,282, Cl. 148-1.500.

Magee, Walter L., Jr., to Stauffer Chemical Company. Polymeric alkoxysilanes. Re. 30,284, Cl. 556-428.000.

Marathon Oil Company: *See—*
Tackett, James E.; and Stewart, Paul H., Re. 30,281, Cl. 137-13.000.

Marx, Arthur F.; and Doodewaard, Jean, to Gist-Brocades N.V. 19 Hydroxy prostaglandins. Re. 30,287, Cl. 562-503.000.

Mastroianni, Sal T.: *See—*
Hunt, Merrill R.; Ladas, Christopher A.; and Mastroianni, Sal T., Re. 30,282, Cl. 148-1.500.

Motorola, Inc.: *See—*
Hunt, Merrill R.; Ladas, Christopher A.; and Mastroianni, Sal T., Re. 30,282, Cl. 148-1.500.

Pittway Corporation: *See—*
Hackett, Kenneth R., Re. 30,288, Cl. 343-5.0PD.

Settineri, William J.: *See—*
Frenier, Wayne W.; and Settineri, William J., Re. 30,283, Cl. 252-151.000.

Smoak, Richard H.: *See—*
Coppola, John A.; and Smoak, Richard H., Re. 30,286, Cl. 264-65.000.

Stauffer Chemical Company: *See—*
Magee, Walter L., Jr., Re. 30,284, Cl. 556-428.000.

Stewart, Paul H.: *See—*
Tackett, James E.; and Stewart, Paul H., Re. 30,281, Cl. 137-13.000.

Tackett, James E.; and Stewart, Paul H., to Marathon Oil Company. Transportation of waxy hydrocarbon mixture as a slurry. Re. 30,281, Cl. 137-13.000.

LIST OF PLANT PATENTEES

Briggs, Carroll G., to Upjohn Company, The. Tomato plant. 4,539, 5-27-80, Cl. 89.000.

Bringhurst, Royce S.; and Voth, Victor, to University of California, The Regents of the. Strawberry plant. 4,538, 5-27-80, Cl. 49.000.

Flemer, William, III, to Treesearch. *Prunus subhirtella*. 4,540, 5-27-80, Cl. 37.000.

Treesearch: *See—*
Flemer, William, III, 4,540, Cl. 37.000.

University of California, The Regents of the: *See—*
Bringhurst, Royce S.; and Voth, Victor, 4,538, Cl. 49.000.

Upjohn Company, The: *See—*
Briggs, Carroll G., 4,539, Cl. 89.000.

Voth, Victor: *See—*
Bringhurst, Royce S.; and Voth, Victor, 4,538, Cl. 49.000.

LIST OF DESIGN PATENTEES

Abbott, Clarence F. Combined waterfall and garden pond. 255,142, 5-27-80, Cl. D23-13.000.

Abbott, Clarence F. Garden pond. 255,143, 5-27-80, Cl. D23-13.000.

Abbott, Clarence F. Combined waterfall and garden pond. 255,144, 5-27-80, Cl. D23-13.000.

Adkinson, Joseph E. Cabinet or similar article. 255,071, 5-27-80, Cl. D6-154.000.

Adkinson, Joseph E. Breakfront or the like. 255,072, 5-27-80, Cl. D6-154.000.

Adkinson, Joseph E. Cocktail table. 255,074, 5-27-80, Cl. D6-175.000.

Adkinson, Joseph E. Cocktail table. 255,075, 5-27-80, Cl. D6-175.000.

Adkinson, Joseph E. Cocktail table. 255,076, 5-27-80, Cl. D6-177.000.

Advertising Metal Display Co.: *See—*
Slaga, Case J.; and Nelson, Douglas, 255,070, Cl. D6-114.000.

Aktiebolaget Bofors: *See—*
Korpi, Jouko K., 255,119, Cl. D15-29.000.

Alexander, Steven B., to American Turbo-Pak, Inc. Engine exhaust header pipe unit. 255,112, 5-27-80, Cl. D12-194.000.

Allsop, Ivor J. Combined carrying and retaining device for shoes. 255,064, 5-27-80, Cl. D3-36.000.

American Turbo-Pak, Inc.: *See—*
Alexander, Steven B., 255,112, Cl. D12-194.000.

Anchor Hocking Corporation: *See—*
Gobleck, Peter A., Jr., 255,079, Cl. D7-3.000.
Gobleck, Peter A., Jr., 255,080, Cl. D7-3.000.

Arbib, Philip B., to Bib Hi-Fi Accessories Ltd., a British Company of Kelsey House. Gramophone record cleaning device. 255,088, 5-27-80, Cl. D7-161.000.

Arvey Corporation: *See—*
Gordon, William D., Sr., 255,131, Cl. D21-114.000.

Ayukawa, Isao; Takaoka, Tamaki; and Hayano, Teruko, to Sharp Kabushiki Kaisha (Sharp Corp.). Electric shaver. 255,166, 5-27-80, Cl. D28-50.000.

Balzano, Alfiero F. Exercise support. 255,130, 5-27-80, Cl. D21-191.000.

Bardeau, William M. Automatic coffee maker. 255,120, 5-27-80, Cl. D15-113.000.

Bare, Rex O.: *See—*
Robinson, Earl F.; Bare, Rex O.; and Hayob, Wayne, 255,148, Cl. D24-8.000.

Barrera, John R. Carving board. 255,082, 5-27-80, Cl. D7-46.000.

Baxter Travenol Laboratories, Inc.: *See—*
Jess, Thurman S.; and Zissimopoulos, Nicholas, 255,147, Cl. D24-8.000.

Bevilacqua, Albert J., to C. R. Bard, Inc. Dual terminal electrode for medical monitoring. 255,149, 5-27-80, Cl. D24-29.000.

Bib Hi-Fi Accessories Ltd., a British Company of Kelsey House: *See—*
Arbib, Philip B., 255,088, Cl. D7-161.000.

Bienwald, Wolfgang F.; and Tufano, Anthony, to Leviton Manufacturing Company, Inc. Snap-in switch housing. 255,114, 5-27-80, Cl. D13-32.000.

Bodenrader, Frederick F.; and Gilleo, John F., Jr., to GTE Sylvania Incorporated. Indicator lamp assembly. 255,106, 5-27-80, Cl. D10-114.000.

Booty, Donald J. Electric clock. 255,101, 5-27-80, Cl. D10-15.000.

Borsuk, Robert; Crandall, Jerry; and Koslow, David, to Revlon, Inc. Display card holder for a nail polish bottle or the like. 255,099, 5-27-80, Cl. D9-261.000.

Bowen, John J. Table tennis paddle. 255,137, 5-27-80, Cl. D21-213.000.

Brentham, Jerry D. Arm curl exercising machine. 255,136, 5-27-80, Cl. D21-195.000.

Brimatco Corporation: *See—*
Dacunto, Alfred V., 255,090, Cl. D8-21.000.

Byrne, David S., to Warner-Lambert Company. Razor handle. 255,164, 5-27-80, Cl. D28-48.000.

Byrne, David S., to Warner-Lambert Company. Razor handle. 255,165, 5-27-80, Cl. D28-48.000.

C. R. Bard, Inc.: *See—*
Bevilacqua, Albert J., 255,149, Cl. D24-29.000.
Robinson, Earl F.; Bare, Rex O.; and Hayob, Wayne, 255,148, Cl. D24-8.000.

Cachet Designs, Inc.: *See—*
Petrie, Ross J., 255,084, Cl. D7-76.000.

Cardinal Industries, Inc.: *See—*
Subtirelu, Monica P., 255,156, Cl. D25-22.000.
Subtirelu, Monica P., 255,157, Cl. D25-22.000.

Carroll, James C.; and Johnson, Lewis T., to Phillips Petroleum Company. Bakery tray or the like. 255,097, 5-27-80, Cl. D9-248.000.

CBS Inc.: *See—*
Strongin, Ned, 255,129, Cl. D21-17.000.

Cha Industries: *See—*
Mahl, Gunard O. B., 255,122, Cl. D15-199.000.

Chase, Richard A.; Williams, D. Michael; and Simpson, Danny E., to Johnson & Johnson. Animate figure toy. 255,135, 5-27-80, Cl. D21-150.000.

Chen, Evan N., to Warner-Lambert Company. Safety razor cartridge with clean-out device. 255,161, 5-27-80, Cl. D28-47.000.

Chen, Evan N., to Warner-Lambert Company. Safety razor cartridge with clean-out device. 255,163, 5-27-80, Cl. D28-47.000.

Christie, Cary L. Turntable. 255,115, 5-27-80, Cl. D14-17.000.

Clark, Earl J., to Tandy Brands, Inc. Holster. 255,141, 5-27-80, Cl. D22-13.000.

CPG Products Corp.: *See—*
Nowak, Ralph M., 255,132, Cl. D21-129.000.

Crandall, Jerry: *See—*
Borsuk, Robert; Crandall, Jerry; and Koslow, David, 255,099, Cl. D9-261.000.

Dacunto, Alfred V., to Brimatco Corporation. Wrench. 255,090, 5-27-80, Cl. D8-21.000.

Dart Industries Inc.: *See—*
Free, John H.; and Painter, David L., 255,085, Cl. D7-94.000.

De Dietrich & Cie: *See—*
Kuhl, Eugene, 255,146, Cl. D23-105.000.

Duerr, Dennis C. Contact printing cabinet. 255,123, 5-27-80, Cl. D16-29.000.

Etelson, Doris C., to Howard Johnson Company. Takeout food container. 255,096, 5-27-80, Cl. D9-219.000.

Ethyl Products Company: *See—*
Hayes, Thomas H.; and Kruck, Ralph E., 255,098, Cl. D9-258.000.

Filice, George E. Paint brush prop. 255,100, 5-27-80, Cl. D9-289.000.

Free, John H.; and Painter, David L., to Dart Industries Inc. Yogurt maker. 255,085, 5-27-80, Cl. D7-94.000.

Freedom Zoo, Inc., The: *See—*
Tingey, Sheri, 255,133, Cl. D21-148.000.
Tingey, Sheri, 255,134, Cl. D21-148.000.

Furnell, Glen H. Telephone booth. 255,067, 5-27-80, Cl. D6-25.000.

Fuzere Manufacturing Co., Inc.: *See—*
Ramorini, Lorin A., 255,081, Cl. D7-38.000.

Garza, Luis R.; and Tedesco, Francis A., to Lifetime Foam Products, Inc. Base for a van seat. 255,077, 5-27-80, Cl. D6-194.000.

Genal Strap, Inc.: *See—*
Hofman, Bronislaw L., 255,108, Cl. D11-3.000.

Gera, Mary Ann: *See—*
Gera, Robert A.; and Gera, Mary Ann, 255,068, Cl. D6-63.000.

Gera, Robert A.; and Gera, Mary Ann, to Kroehler Mfg. Co. Seat or similar article. 255,068, 5-27-80, Cl. D6-63.000.

Geronimo Trooper, Inc.: *See—*
Sermersheim, Gerald M., 255,138, Cl. D21-242.000.

Gilleo, John F., Jr.: *See—*
Bodenrader, Frederick F.; and Gilleo, John F., Jr., 255,106, Cl. D10-114.000.

Gillette Company, The: *See—*
Gray, Michael J., 255,160, Cl. D28-46.000.
Trotta, Robert A., 255,162, Cl. D28-47.000.

Gobleck, Peter A., Jr., to Anchor Hocking Corporation. Combined decal and glass receptacle. 255,079, 5-27-80, Cl. D7-3.000.

Gobleck, Peter A., Jr., to Anchor Hocking Corporation. Combined decal and glass receptacle. 255,080, 5-27-80, Cl. D7-3.000.

Gordon, William D., Sr., to Arvey Corporation. Toy doll house. 255,131, 5-27-80, Cl. D21-114.000.

Gould Inc., Modicon Division: *See—*
MacDonald, John B.; and Mercadante, Michael J., 255,116, Cl. D14-43.000.

Gray, Michael J., to Gillette Company, The. Razor. 255,160, 5-27-80, Cl. D28-46.000.

Groundworks, Inc.: *See—*
Kott, Gerald P., 255,083, Cl. D7-72.000.

GTE Sylvania Incorporated: *See—*
Bodenrader, Frederick F.; and Gilleo, John F., Jr., 255,106, Cl. D10-114.000.

Hadgis, Gregory S. Combined key ring and clip lock for holding a gas pump trigger in the open position. 255,066, 5-27-80, Cl. D3-62.000.

Haidek, Thomas N. Accessory mount for theodolite. 255,104, 5-27-80, Cl. D10-74.000.

Hanaford, Donald E. Gazebo. 255,158, 5-27-80, Cl. D25-23.000.

Hartung, Philip F.; and Tramonti, John J. Bottle. 255,093, 5-27-80, Cl. D9-168.000.

Hayano, Teruko: *See—*
Ayukawa, Isao; Takaoka, Tamaki; and Hayano, Teruko, 255,166, Cl. D28-50.000.

Hayes, Thomas H.; and Kruck, Ralph E., to Ethyl Products Company. Actuator cap for pressurized container or similar article. 255,098, 5-27-80, Cl. D9-258.000.

Hayob, Wayne: *See—*
Robinson, Earl F.; Bare, Rex O.; and Hayob, Wayne, 255,148, Cl. D24-8.000.

Hazama, Shigetoshi; and Ikeda, Matafumi, to Sharp Kabushiki Kaisha (Sharp Corp.). Calculating machine. 255,125, 5-27-80, Cl. D18-7.000.

Hetrick, Vernon L., to Meyer Products, Inc. Auxiliary light for vehicle having attached plow blade. 255,167, 5-27-80, Cl. D26-35.000.

Hill, Ernest H.: *See—*
Hill, Ernie H.; and Hill, Ernest H., 255,062, Cl. D2-381.000.

Hill, Ernie H.; and Hill, Ernest H. Competition gun belt for supporting gun boots. 255,062, 5-27-80, Cl. D2-381.000.

Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 255,108, 5-27-80, Cl. D11-3.000.

Honeywell Inc.: *See—*
Wolfe, Norbert T., 255,103, Cl. D10-51.000.

Houston, Isaac B. Golf ball holder. 255,063, 5-27-80, Cl. D2-400.000.

Howard Johnson Company: *See—*
Etelson, Doris C., 255,096, Cl. D9-219.000.

Hurco Manufacturing Co., Inc.: *See—*
Roch, Gerald V., 255,121, Cl. D15-138.000.

Hutec Corporation: *See—*
Pease, Hugh R.; and Stadtmiller, Malcolm L., 255,113, Cl. D13-11.000.

Ikeda, Matafumi: *See—*
Hazama, Shigetoshi; and Ikeda, Matafumi, 255,125, Cl. D18-7.000.
Ohie, Yoshihisa; and Ikeda, Matafumi, 255,126, Cl. D18-7.000.

Jess, Thurman S.; and Zissimopoulos, Nicholas, to Baxter Travenol Laboratories, Inc. Fluid metering apparatus. 255,147, 5-27-80, Cl. D24-8.000.

Johnson & Johnson: *See—*
Chase, Richard A.; Williams, D. Michael; and Simpson, Danny E., 255,135, Cl. D21-150.000.

Johnson, Lewis T.: *See—*
Carroll, James C.; and Johnson, Lewis T., 255,097, Cl. D9-248.000.

Kanold, Bernhard. Handle for screw drivers or the like. 255,091, 5-27-80, Cl. D8-83.000.

Kimberly-Clark Corporation: *See—*
Woon, Paul S., 255,150, Cl. D24-51.000.
Woon, Paul S., 255,151, Cl. D24-51.000.
Woon, Paul S., 255,152, Cl. D24-51.000.

Knoll International, Inc.: *See—*
Zapf, Otto W., 255,073, Cl. D6-161.000.

Kone Osakeyhtio: *See—*
Perjo, Pekka, 255,105, Cl. D10-108.000.

Korpi, Jouko K., to Aktiebolaget Bofors. Tooth for excavating equipment. 255,119, 5-27-80, Cl. D15-29.000.

Koslow, David: *See—*
Borsuk, Robert; Crandall, Jerry; and Koslow, David, 255,099, Cl. D9-261.000.

Kott, Gerald P., to Groundworks, Inc. Napkin ring. 255,083, 5-27-80, Cl. D7-72.000.

Kroehler Mfg. Co.: *See—*
Gera, Robert A.; and Gera, Mary Ann, 255,068, Cl. D6-63.000.

Kruck, Ralph E.: *See—*
Hayes, Thomas H.; and Kruck, Ralph E., 255,098, Cl. D9-258.000.

Kuhl, Eugene, to De Dietrich & Cie. Stove. 255,146, 5-27-80, Cl. D23-105.000.

Leviton Manufacturing Company, Inc.: *See—*
Bienwald, Wolfgang F.; and Tufano, Anthony, 255,114, Cl. D13-32.000.

Lifetime Foam Products, Inc.: *See—*
Garza, Luis R.; and Tedesco, Francis A., 255,077, Cl. D6-194.000.

Longly, James M.: *See—*
Van Horn, William R.; and Longly, James M., 255,118, Cl. D14-68.000.

Lonnstedt, Bo G. Support for ear protector. 255,058, 5-27-80, Cl. D2-259.000.

MacDonald, John B.; and Mercadante, Michael J., to Gould Inc., Modicon Division. Portable programmer for programmable controller. 255,116, 5-27-80, Cl. D14-43.000.

Mahl, Gunard O. B., to Cha Industries. Vacuum deposition apparatus. 255,122, 5-27-80, Cl. D15-199.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Ohta, Kikuo; and Usami, Satoru, 255,117, Cl. D14-68.000.

Matthews, Robert J. Trailer. 255,110, 5-27-80, Cl. D12-105.000.

Mercadante, Michael J.: *See—*
MacDonald, John B.; and Mercadante, Michael J., 255,116, Cl. D14-43.000.
Meurer, Charles L. Tube settler module. 255,153, 5-27-80, Cl. D24-99.000.
Meurer, Charles L. Circular tube settler module. 255,154, 5-27-80, Cl. D24-99.000.
Meurer, Charles L. Curved tube settler module section. 255,155, 5-27-80, Cl. D24-99.000.
Meyer Products, Inc.: *See—*
Hetrick, Vernon L., 255,167, Cl. D26-35.000.
Mobius, Werner. Pencil sharpener. 255,127, 5-27-80, Cl. D19-73.000.
Nederman, Bill P. P. Connection fitting for tubular conduits. 255,145, 5-27-80, Cl. D23-43.000.
Nelson, Douglas: *See—*
Slaga, Case J.; and Nelson, Douglas, 255,070, Cl. D6-114.000.
Nichols, Richard D. E. Buckleless belt. 255,061, 5-27-80, Cl. D2-380.000.
Nowak, Ralph M., to CPG Products Corp. Toy circus train. 255,132, 5-27-80, Cl. D21-129.000.
Ohie, Yoshihisa, to Sharp Kabushiki Kaisha (Sharp Corp.). Calculating machine. 255,124, 5-27-80, Cl. D18-7.000.
Ohie, Yoshihisa; and Ikeda, Matafumi, to Sharp Kabushiki Kaisha (Sharp Corp.). Calculating machine. 255,126, 5-27-80, Cl. D18-7.000.
Ohta, Kikuo; and Usami, Satoru, to Matsushita Electric Industrial Co., Ltd. Motor vehicular citizens' band transceiver. 255,117, 5-27-80, Cl. D14-68.000.
Okazawa, Kyozo, to Okazawa U.S.A. Inc. Insole. 255,060, 5-27-80, Cl. D2-318.000.
Okazawa U.S.A. Inc.: *See—*
Okazawa, Kyozo, 255,060, Cl. D2-318.000.
Oneida Ltd.: *See—*
Richmond, Colin B., II, 255,086, Cl. D7-150.000.
Richmond, Colin B., II, 255,087, Cl. D7-150.000.
Painter, David L.: *See—*
Free, John H.; and Painter, David L., 255,085, Cl. D7-94.000.
Palmer, Jack P. Electric powered tricycle. 255,111, 5-27-80, Cl. D12-110.000.
Parsons, Roger C. Athletic protective shirt or similar article. 255,056, 5-27-80, Cl. D2-27.000.
Pease, Hugh R.; and Stadtmiller, Malcolm L., to Hutec Corporation. Electric power load controller. 255,113, 5-27-80, Cl. D13-11.000.
Perjo, Pekka, to Kone Osakeyhtio. Up and down directional signal for an elevator. 255,105, 5-27-80, Cl. D10-108.000.
Petrie, Ross J., to Cachet Designs, Inc. Lunchbox. 255,084, 5-27-80, Cl. D7-76.000.
Phillips Petroleum Company: *See—*
Carroll, James C.; and Johnson, Lewis T., 255,097, Cl. D9-248.000.
Pirolozzi, Kenneth. Holder for a writing instrument or similar article. 255,128, 5-27-80, Cl. D19-82.000.
Ramorini, Lorin A., to Fuzere Manufacturing Co., Inc. Utility tray. 255,081, 5-27-80, Cl. D7-38.000.
Reach Electronics, Inc.: *See—*
Van Horn, William R.; and Longly, James M., 255,118, Cl. D14-68.000.
Revlon, Inc.: *See—*
Borsuk, Robert; Crandall, Jerry; and Koslow, David, 255,099, Cl. D9-261.000.
Scalice, John J., 255,095, Cl. D9-191.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 255,086, 5-27-80, Cl. D7-150.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 255,087, 5-27-80, Cl. D7-150.000.
Riley, Thomas J., to Ry-Co Corporation. Side pattern for footwear. 255,059, 5-27-80, Cl. D2-309.000.
Robinson, Earl F.; Bare, Rex O.; and Hayob, Wayne, to C. R. Bard, Inc. Electrosurgical current suppressor. 255,148, 5-27-80, Cl. D24-8.000.
Roch, Gerald V., to Hurco Manufacturing Co., Inc. Milling machine control panel. 255,121, 5-27-80, Cl. D15-138.000.
Ross, Preston. Household water leak indicator. 255,102, 5-27-80, Cl. D10-46.000.
Ry-Co Corporation: *See—*
Riley, Thomas J., 255,059, Cl. D2-309.000.
Salacuse, Frank S. Compartmented tray for storing cosmetics and the like. 255,065, 5-27-80, Cl. D3-39.000.
Scalice, John J., to Revlon, Inc. Combined display package and advertising holder. 255,095, 5-27-80, Cl. D9-191.000.
Selbee, James A. Portable post. 255,159, 5-27-80, Cl. D25-78.000.
Sermersheim, Gerald M., to Geronimo Trooper, Inc. Jump tower for amusement ride. 255,138, 5-27-80, Cl. D21-242.000.
Sharp Kabushiki Kaisha (Sharp Corp.): *See—*
Ayukawa, Isao; Takaoka, Tamaki; and Hayano, Teruko, 255,166, Cl. D28-50.000.
Hazama, Shigetoshi; and Ikeda, Matafumi, 255,125, Cl. D18-7.000.
Ohie, Yoshihisa, 255,124, Cl. D18-7.000.
Ohie, Yoshihisa; and Ikeda, Matafumi, 255,126, Cl. D18-7.000.
Simpson, Danny E.: *See—*
Chase, Richard A.; Williams, D. Michael; and Simpson, Danny E., 255,135, Cl. D21-150.000.
Slaga, Case J.; and Nelson, Douglas, to Advertising Metal Display Co. Hose clamp display rack. 255,070, 5-27-80, Cl. D6-114.000.
Slepetz, Richard V. Emergency vehicle warning light. 255,107, 5-27-80, Cl. D10-114.000.
Smith, James A. Electric b[illegible]n for law enforcement personnel. 255,139, 5-27-80, Cl. D22-1.000.
Squier, Gary L. Live poultry transfer station. 255,109, 5-27-80, Cl. D12-60.000.
Stadtmiller, Malcolm L.: *See—*
Pease, Hugh R.; and Stadtmiller, Malcolm L., 255,113, Cl. D13-11.000.
Strongin, Ned, to CBS Inc. Game board. 255,129, 5-27-80, Cl. D21-17.000.
Subtirelu, Monica P., to Cardinal Industries, Inc. Building. 255,156, 5-27-80, Cl. D25-22.000.
Subtirelu, Monica P., to Cardinal Industries, Inc. Residential building. 255,157, 5-27-80, Cl. D25-22.000.
Takaoka, Tamaki: *See—*
Ayukawa, Isao; Takaoka, Tamaki; and Hayano, Teruko, 255,166, Cl. D28-50.000.
Talley Industries, Inc.: *See—*
Walker, George A., 255,089, Cl. D8-4.000.
Tandy Brands, Inc.: *See—*
Clark, Earl J., 255,141, Cl. D22-13.000.
Tedesco, Francis A.: *See—*
Garza, Luis R.; and Tedesco, Francis A., 255,077, Cl. D6-194.000.
Tingey, Sheri, to Freedom Zoo, Inc., The. Stuffed animal toy. 255,133, 5-27-80, Cl. D21-148.000.
Tingey, Sheri, to Freedom Zoo, Inc., The. Stuffed animal toy. 255,134, 5-27-80, Cl. D21-148.000.
Tramonti, John J.: *See—*
Hartung, Philip F.; and Tramonti, John J., 255,093, Cl. D9-168.000.
Trotta, Robert A., to Gillette Company, The. Razor blade assembly. 255,162, 5-27-80, Cl. D28-47.000.
Tufano, Anthony: *See—*
Bienwald, Wolfgang F.; and Tufano, Anthony, 255,114, Cl. D13-32.000.
Usami, Satoru: *See—*
Ohta, Kikuo; and Usami, Satoru, 255,117, Cl. D14-68.000.
Van Horn, William R.; and Longly, James M., to Reach Electronics, Inc. Paging terminal. 255,118, 5-27-80, Cl. D14-68.000.
Van Koert, John. Mirror or the like. 255,078, 5-27-80, Cl. D6-241.000.
Vetter, John D.: *See—*
Weast, Gerald T., 255,140, Cl. D22-7.000.
Walker, George A., to Talley Industries, Inc. Floral stem stripper or similar article. 255,089, 5-27-80, Cl. D8-4.000.
Walker, Rees D. Solar cap. 255,057, 5-27-80, Cl. D2-250.000.
Warner-Lambert Company: *See—*
Byrne, David S., 255,164, Cl. D28-48.000.
Byrne, David S., 255,165, Cl. D28-48.000.
Chen, Evan N., 255,161, Cl. D28-47.000.
Chen, Evan N., 255,163, Cl. D28-47.000.
Weast, Gerald T., to Vetter, John D., a part interest. Side mount for telescopic sight. 255,140, 5-27-80, Cl. D22-7.000.
Wierdo, William J. Bedstead. 255,069, 5-27-80, Cl. D6-84.000.
Williams, D. Michael: *See—*
Chase, Richard A.; Williams, D. Michael; and Simpson, Danny E., 255,135, Cl. D21-150.000.
Wolfe, Norbert T., to Honeywell Inc. Room thermostat or similar article. 255,103, 5-27-80, Cl. D10-51.000.
Wong, Johnson N. S. Combined vial and supporting base. 255,092, 5-27-80, Cl. D9-12.000.
Woon, Paul S., to Kimberly-Clark Corporation. Embossed patterned sheet of material for sanitary napkins. 255,150, 5-27-80, Cl. D24-51.000.
Woon, Paul S., to Kimberly-Clark Corporation. Embossed patterned sheet of material for sanitary napkins. 255,151, 5-27-80, Cl. D24-51.000.
Woon, Paul S., to Kimberly-Clark Corporation. Embossed patterned sheet of material for sanitary napkins. 255,152, 5-27-80, Cl. D24-51.000.
Wright, William V. Bottle case. 255,094, 5-27-80, Cl. D9-177.000.
Zapf, Otto W., to Knoll International, Inc. Desk. 255,073, 5-27-80, Cl. D6-161.000.
Zissimopoulos, Nicholas: *See—*
Jess, Thurman S.; and Zissimopoulos, Nicholas, 255,147, Cl. D24-8.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 27, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 3
1 4,204,282
1.5 4,204,283
1.91 4,204,284

CLASS 4
427 4,204,285

CLASS 5
11 4,204,286
18 R 4,204,287
47 4,204,288
451 4,204,289

CLASS 8
478 4,204,290

CLASS 13
27 4,205,197

CLASS 15
3.1 4,204,291
28 4,204,292
79 R 4,204,293
185 4,204,294
209 D 4,204,295
316 R 4,204,296
323 4,204,297
344 4,204,298
415 R 4,204,299

CLASS 23
230 B 4,204,837
4,204,839
230 R 4,204,838

CLASS 24
201 HE 4,204,300

CLASS 28
248 4,204,301

CLASS 29
25.13 4,204,302
26 A 4,204,303
4,204,304
61 N 4,204,316
157.4 4,204,305
281.5 4,204,306
407 4,204,307
412 4,204,309
426.5 4,204,308
445 4,204,310
451 4,204,311
523 4,204,312
596 4,204,313
597 4,204,314
603 4,204,315
734 4,204,318
739 4,204,319
827 4,204,317

CLASS 30
386 4,204,320

CLASS 33
30 F 4,204,327
172 R 4,204,331
174 F 4,204,332
288 4,204,333
391 4,204,334
476 4,204,335

CLASS 34
5 4,204,336
31 4,204,337
35 4,204,338
75 4,204,339
225 4,204,340

CLASS 35
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10.4 4,204,342
73 4,204,343

CLASS 36
34 A 4,204,344
97 4,204,345
114 4,204,346

CLASS 37
67 4,204,347
117.5 4,204,348
141 RS 4,204,349

CLASS 40
155 4,204,350
372 4,204,351
389 4,204,352

CLASS 42
1 T 4,204,353

CLASS 43
4.5 4,204,354
15 4,204,355
26.1 4,204,356

CLASS 44
1 SR 4,204,840
71 4,204,841

CLASS 46
74 D 4,204,357
76 R 4,204,358
83 4,204,359
98 4,204,360
116 4,204,361
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202 4,204,363

CLASS 47
1.1 4,204,364
41 R 4,204,365
58 4,204,366
71 4,204,367

CLASS 48
197 A 4,204,842
210 4,204,843

CLASS 49
67 4,204,368
319 4,204,369

CLASS 51
80 A 4,204,370
141 4,204,371

CLASS 52
64 4,204,372
204 4,204,373
208 4,204,374
239 4,204,375
309.1 4,204,376

CLASS 53
399 4,204,377
403 4,204,378
512 4,204,379
520 4,204,380
528 4,204,381
563 4,204,382

CLASS 55
10 4,204,844
257 PV 4,204,847
269 4,204,848
272 4,204,846
310 4,204,849

CLASS 56
10.2 4,204,383
10.5 4,204,384
14.3 4,204,385
14.4 4,204,386
98 4,204,387
320.1 4,204,388
330 4,204,389
4,204,390

CLASS 57
1 R 4,204,391
18 4,204,392
301 4,204,393
334 4,204,394

CLASS 58
47 4,204,398

CLASS 60
39.03 4,204,401
39.06 4,204,402
371 4,204,405
398 4,204,406
641 4,204,407
740 4,204,404
743 4,204,403

CLASS 62
62 4,204,408
271 4,204,409
500 4,204,410

CLASS 64
2 P 4,204,411
17 R 4,204,412
30 E 4,204,413

CLASS 65
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4 A 4,204,852
25 A 4,204,845
106 4,204,853
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141 4,204,855
157 4,204,856

CLASS 66
145 R 4,204,414

CLASS 71
73 4,204,857
111 4,204,858
121 4,204,859

CLASS 72
52 4,204,415
204 4,204,416
206 4,204,417
352 4,204,418
356 4,204,419
439 4,204,420
4,204,421

CLASS 73
4 R 4,204,422
23.1 4,204,423
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116 4,204,425
151 4,204,426
304 C 4,204,427
339 R 4,204,428
362 AR 4,204,429
423 A 4,204,430
423 R 4,204,431
599 4,204,432
620 4,204,433
622 4,204,434
626 4,204,435

CLASS 74
767 4,204,436

CLASS 75
10 R 4,204,860
73 4,204,861
124 4,204,862
234 4,204,863
257 4,204,864

CLASS 76
108 A 4,204,437

CLASS 81
9.22 4,204,438
57.37 4,204,439
111 4,204,440

CLASS 82
2.5 4,204,441
18 4,204,442

CLASS 83
37 4,204,443
56 4,204,444
146 4,204,446
171 4,204,447
177 4,204,448
328 4,204,449
461 4,204,450
658 4,204,451
880 4,204,445

CLASS 84
1.01 4,204,452
1.24 4,204,453
315 4,204,454
468 4,204,455
484 4,204,400

CLASS 89
1.5 G 4,204,456

CLASS 91
31 4,204,457
429 4,204,458
445 4,204,459
447 4,204,460
454 4,204,461

CLASS 93
36.5 R 4,204,462

CLASS 98
58 4,204,463

CLASS 99
286 4,204,464
293 4,204,465
443 C 4,204,466
494 4,204,467

CLASS 101
3 SP 4,204,468
9 4,204,469
28 4,204,470
410 4,204,471
426 4,204,472

CLASS 102
39 4,204,473
92.7 4,204,474
262 4,204,475

CLASS 104
2 4,204,476
106 4,204,477
247 4,204,478

CLASS 106
20 4,204,871
38.35 4,204,872
43 4,204,873
73.4 4,204,874
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104 4,204,878
311 4,204,879

CLASS 108
108 4,204,480

CLASS 111
3 4,204,491

CLASS 112
121.29 4,204,492
260 4,204,493

CLASS 114
222 4,204,494

CLASS 118
300 4,204,495
405 4,204,496
634 4,204,497
693 4,204,498

CLASS 119
5 4,204,499
52 R 4,204,500
72 4,204,501

CLASS 122
32 4,204,502
392 4,204,503

CLASS 123
1 A 4,204,481
32 EE 4,204,482
32 EL 4,204,483
32 SP 4,204,484
34 A 4,204,485
41.35 4,204,487
41.6 4,204,486
73 A 4,204,488
4,204,489
102 4,204,490
119 B 4,204,504
119 EC 4,204,505
137 4,204,506
139 AW 4,204,507
148 E 4,204,508
4,204,509
179 L 4,204,510
187.5 R 4,204,511
198 DB 4,204,513
198 F 4,204,512
4,204,514

CLASS 125
16 R 4,204,515

CLASS 126
9 R 4,204,516
63 4,204,517
132 4,204,518
164 4,204,519
432 4,204,520
446 4,204,521
447 4,204,522
450 4,204,523

CLASS 128
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1 R 4,204,525
4,204,526
6 4,204,528
75 4,204,529
79 4,204,530
92 BC 4,204,531
132 D 4,204,532
133 4,204,533
134 4,204,534
202.13 4,204,535
204.22 4,204,536
214 R 4,204,537
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223 4,204,539
283 4,204,540
334 R 4,204,541
335.5 4,204,542
402 4,204,543
642 4,204,544
693 4,204,545
731 4,204,546
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762 4,204,527
778 4,204,548
784 4,204,549

CLASS 131
171 R 4,204,550
178 4,204,551

CLASS 134
32 4,204,880

CLASS 136
89 PC 4,204,881
202 4,204,882

CLASS 137
13 Re.30,281
81 A 4,204,552
82 4,204,553
101 4,204,554
102 4,204,555
206 4,204,556
244 4,204,557
315 4,204,558
318 4,204,559
508 4,204,560
510 4,204,561

CLASS 138
132 4,204,562

CLASS 141
206 4,204,563
311 A 4,204,564

CLASS 148
1.5 Re.30,282
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12 B 4,204,885
15.5 4,204,886
26 4,204,889
31 4,204,887
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145 4,204,892
175 4,204,893
188 4,204,894

CLASS 149
19.6 4,204,895

CLASS 150
7 4,204,565

CLASS 151
38 4,204,566

CLASS 152
209 D 4,204,567

CLASS 156
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159 4,204,898
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497 4,204,904

CLASS 162
6 4,204,906
135 4,204,907

CLASS 164
87 4,204,568
166 4,204,569

CLASS 165
69 4,204,570
80 A 4,204,571
95 4,204,572
142 4,204,573

CLASS 166
305 R 4,204,574

CLASS 172
1 4,204,575
22 4,204,576
25 4,204,577
307 4,204,578
657 4,204,579

CLASS 173
48 4,204,580

CLASS 174
171 4,205,198

CLASS 176
19 LD 4,204,908
22 4,204,909
30 4,204,910
37 4,204,911

CLASS 178
19 4,205,199

CLASS 179
16 F 4,205,204
100.1 G 4,205,339
115.5 R 4,205,205
124 4,205,206

CLASS 180
9.28 4,204,583
133 4,204,584
183 4,204,582
190 4,204,581
219 4,204,585

CLASS 181
229 4,204,586

CLASS 182
228 4,204,587

CLASS 188
2 F 4,204,588

CLASS 192
27 4,204,589
99 R 4,204,590
4,204,591

CLASS 198
750 4,204,592
781 4,204,593
827 4,204,594
836 4,204,595

CLASS 200
50 AA 4,205,207
82 R 4,205,208
163 4,205,209

CLASS 201
29 4,204,912

CLASS 202
168 4,204,913
176 4,204,914

CLASS 203
2 4,204,915
6 4,204,916

CLASS 204
1 T 4,204,917
24 4,204,918
29 4,204,919
98 4,204,920
4,204,921
105 R 4,204,922
129 4,204,923
129.35 4,204,924
152 4,204,925
157.1 H 4,204,926
159.18 4,204,927
159.23 4,204,928
180 P 4,204,930
180 R 4,204,929
181 N 4,204,931
4,204,933
181 R 4,204,932
186 4,204,934
192 F 4,204,935
192 R 4,204,936
219 4,204,937
252 4,204,938
258 4,204,939
272 4,204,940
296 4,204,941
298 4,204,942

CLASS 206
203 4,204,596
216 4,204,597
397 4,204,479
426 4,204,598
575 4,204,599
610 4,204,600

CLASS 208
50 4,204,943
120 4,204,944
4,204,945
181 4,204,946
243 4,204,947

CLASS 209
223 R 4,204,948
250 4,204,949
558 4,204,950
625 4,204,951

CLASS 210
31 C 4,204,952
58 4,204,953
59 4,204,954
61 4,204,955
87 4,204,956
98 4,204,957
178 4,204,958
195.1 4,204,959
232 4,204,960
4,204,961
316 4,204,962
321 B 4,204,963
370 4,204,964
447 4,204,965
455 4,204,966
459 4,204,967

CLASS 211
4 4,204,601
13 4,204,602

CLASS 212
49 4,204,603

CLASS 215
257 4,204,604
295 4,204,605
307 4,204,606

CLASS 219
10.81 4,205,210
69 W 4,205,212
4,205,213
76.13 4,205,211
97 4,205,214
121 L 4,205,216
121 P 4,205,215
124.34 4,205,217
145.23 4,205,218
160 4,205,219
216 4,205,220
230 4,205,221
290 4,205,222
501 4,205,223

CLASS 220
68 4,204,607
335 4,204,608
408 4,204,609

CLASS 221
1 4,204,610
5 4,204,611

CLASS 222
40 4,204,612
146 C 4,204,613
153 4,204,614
4,204,615
391 4,204,616

CLASS 224
45 A 4,204,617

CLASS 225
106 4,204,618

CLASS 226
21 4,204,619
91 4,204,620
137 4,204,621

CLASS 227
7 4,204,622
19 4,204,623
45 4,204,624
76 4,204,625
81 4,204,626
4,204,627

CLASS 228
106 4,204,628
160 4,204,629

CLASS 229
15 4,204,630

CLASS 232
34 4,204,632

CLASS 235
92 CT 4,205,238
382 4,204,635
383 4,204,636
431 4,204,637
454 4,204,638
462 4,204,639
476 4,204,640

CLASS 239
17 4,204,631
121 4,204,641
191 4,204,642
212 4,204,643
220 4,204,644
341 4,204,645
443 4,204,646

CLASS 241
82.6 4,204,647

CLASS 242
18 A 4,204,648
43 R 4,204,649
56 R 4,204,650
96 4,204,651
107.4 R 4,204,652
178 4,204,653
199 4,204,654

CLASS 244
3.19 4,204,655
30 4,204,656
122 R 4,204,657

CLASS 248
430 4,204,658
562 4,204,659

CLASS 249
86 4,204,660

CLASS 250
201 4,205,224
229 4,205,225
305 4,205,226
330 4,205,227
336 4,205,228
352 4,205,229
356 4,205,230
364 4,205,231
397 4,205,232
439 R 4,205,233
483 4,205,234

CLASS 251
95 4,204,661
334 4,204,662

CLASS 252
26 4,204,968
45 4,204,969
51.5 A 4,204,970
63.5 4,204,971
78.1 4,204,972
151 Re.30,283
181 4,204,973
301.1 W 4,204,974
4,204,975
301.4 P 4,204,976
359 E 4,204,977
408 4,204,978
416 4,204,979
428 4,204,980
429 B 4,204,981

CLASS 254
88 4,204,663
175.7 4,204,664

CLASS 256
65 4,204,665

CLASS 260
5 4,204,982
17.4 GC 4,204,983
17.5 4,204,984
28.5 AS 4,204,986
29.2 E 4,204,987
29.6 S 4,204,988
112 B 4,204,989
112.5 R 4,204,991
112.5 S 4,204,990
123.7 4,204,992
156 4,204,993
174 4,204,994
239.55 C 4,204,995
326 E 4,204,996
326.15 4,204,998
326.8 4,204,997
340.3 4,204,999
345.2 4,205,000
345.5 4,205,001
345.8 R 4,205,002
347.8 4,205,003
397.2 4,205,004
410.7 4,205,006
429 C 4,205,007
456 R 4,205,008
464 4,205,009
465.3 4,205,010
558 R 4,205,011
583 J 4,205,012
650 R 4,205,014
651 R 4,205,015
665 R 4,205,016
953 4,205,022
990 4,205,023

CLASS 261
34 R 4,205,024
78 A Re.30,285

CLASS 264
14 4,205,025
22 4,205,026
23 4,205,027
24 4,205,028
34 4,205,029
40.1 4,205,030
40.4 4,205,031
63 4,205,032
65 Re.30,286
4,205,033
103 4,205,034
120 4,205,035
132 4,205,036
182 4,205,037
184 4,205,038
206 4,205,039
233 4,205,040
261 4,205,041

CLASS 266
216 4,204,666

CLASS 270
73 4,204,669

CLASS 271
3.1 4,204,667
9 4,204,668
186 4,204,671
188 4,204,672
287 4,204,670

CLASS 272
69 4,204,673
126 4,204,674
130 4,204,675
136 4,204,676

CLASS 273
26 A 4,204,677
29 A 4,204,678
4,204,679
73 C 4,204,681
73 D 4,204,680
167 R 4,204,684
241 4,204,685
371 4,204,683
401 4,204,682

CLASS 274
1 R 4,204,686
15 R 4,204,687

CLASS 277
9 4,204,688
27 4,204,689
4,204,690
235 B 4,204,691

CLASS 279
81 4,204,692

CLASS 280
33.99 B 4,204,695
79.1 R 4,204,696
80 B 4,204,697
87.04 R 4,204,698
415 R 4,204,699
432 4,204,700
491 E 4,204,701
4,204,702
734 4,204,703
809 T 4,204,693
810 4,204,694

CLASS 281
21 R 4,204,704

CLASS 283
1 R 4,204,705
21 4,204,706

CLASS 285
114 4,204,707

CLASS 290
44 4,205,235

CLASS 292
292 4,204,708
307 R 4,204,709

CLASS 294
77 4,204,710
89 4,204,711

CLASS 296
35.1 4,204,712

CLASS 297
214 4,204,713

CLASS 299
1 4,204,714
16 4,204,715

CLASS 305
11 4,204,716

CLASS 307
118 4,205,236
4,205,237
328 4,205,239
350 4,205,240
361 4,205,241
400 4,205,242

CLASS 308
6 C 4,204,717
15 4,204,718
188 4,204,719
233 4,204,720

CLASS 310
13 4,205,243
49 R 4,205,244
68 C 4,205,246
68 E 4,205,245
256 4,205,247
370 4,205,248

CLASS 313
30 4,205,249
242 4,205,250
330 4,205,251
422 4,205,252
437 4,205,253
454 4,205,254
470 4,205,255

CLASS 315
39.51 4,205,256
39.69 4,205,257
73 4,205,258
408 4,205,259

CLASS 316
19 4,204,721

CLASS 318
318 4,205,260
480 4,205,261
696 4,205,262

CLASS 323
22 R 4,205,263

CLASS 324
51 4,205,264
158 D 4,205,265
253 4,205,266
458 4,205,267

CLASS 325
459 4,205,271

CLASS 330
251 4,205,273
276 4,205,274
279 4,205,275
294 4,205,276

CLASS 331
12 4,205,277
94.5 P 4,205,278
111 4,205,279

CLASS 333
1.1 4,205,281
151 4,205,280
161 4,205,282
165 4,205,283
189 4,205,284
194 4,205,285
226 4,205,286

CLASS 335
271 4,205,287

CLASS 336
5 4,205,288
57 4,205,289
90 4,205,290
92 4,205,291

CLASS 337
101 4,205,292
140 4,205,293
234 4,205,294
250 4,205,295

CLASS 338
150 4,205,296
195 4,205,297
308 4,205,298
4,205,299

CLASS 339
17 CF 4,204,722
36 4,204,723
65 4,204,737
75 P 4,204,738
75 R 4,204,739
90 R 4,204,740
200 P 4,204,741

CLASS 340
65 4,205,300
146.2 4,205,302
147 MD 4,205,325
147 R 4,205,326
208 4,205,327
347 DA 4,205,303
365 P 4,205,304
521 4,205,328
548 4,205,305
629 4,205,306
644 4,205,307
686 4,205,308
739 4,205,309
750 4,205,310
784 4,205,311
792 4,205,312

CLASS 343
5 DP 4,205,313
5 PD Re.30,288
9 R 4,205,314
14 4,205,315
4,205,316
720 4,205,317
741 4,205,318
792 4,205,319

CLASS 346
1.1 4,205,320
153 4,205,321
4,205,322
165 4,205,323

CLASS 350
96.20 4,204,742
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4,204,744
96.31 4,204,745
99 4,204,746
216 4,204,747
228 4,204,748

CLASS 351
123 4,204,749
130 4,204,750

CLASS 352
17 4,204,751
82 4,204,752

CLASS 353
26 R 4,204,753
116 4,204,754

CLASS 354
36 4,204,755
53 4,204,756
135 4,204,757
152 4,204,758
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197 4,204,760
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242 4,204,762
267 4,204,763
281 4,204,724
298 4,204,764

CLASS 355
3 R 4,204,725
4,204,727
4 4,204,728
11 4,204,729
14 R 4,204,730
16 4,204,731
55 4,204,732
64 4,204,733
68 4,204,734
75 4,204,735
118 4,204,736

CLASS 356
71 4,204,765
243 4,204,768
244 4,204,769
312 4,204,770
346 4,204,771
376 4,204,772
404 4,204,766
444 4,204,767

CLASS 357
16 4,205,329
23 4,205,330
4,205,342
30 4,205,331
34 4,205,332
35 4,205,333
41 4,205,334

CLASS 358
28.5 4,205,338
31 4,205,335
43 4,205,336
54 4,205,337
130 4,205,340
135 4,205,341
147 4,205,343
160 4,205,344
168 4,205,345
181 4,205,346
191.1 4,205,347
285 4,205,348
294 4,205,349
296 4,205,350

CLASS 360
4 4,205,351
45 4,205,352
61 4,205,353
72.1 4,205,354
99 4,205,355
118 4,205,356
135 4,205,357

CLASS 361
44 4,205,358
58 4,205,359
68 4,205,360
92 4,205,361
234 4,205,362
264 4,205,363
274 4,205,364
308 4,205,365

CLASS 362
35 4,205,366
61 4,205,367

CLASS 363
35 4,205,368
62 4,205,369

CLASS 364
200 4,205,370
4,205,371
4,205,372
4,205,373
4,205,374
414 4,205,375
424 4,205,376
431 4,205,377

4,205,378
432 4,205,379
494 4,205,380
505 4,205,381
516 4,205,382
554 4,205,383
555 4,205,384
560 4,205,385
607 4,205,386
900 4,205,387
4,205,388
4,205,389
4,205,390
4,205,391

CLASS 365
116 4,205,392
133 4,205,393

CLASS 366
18 4,204,773
102 4,204,774
336 4,204,775

CLASS 367
13 4,205,394
115 4,205,395
125 4,205,396

CLASS 368
35 4,204,395
202 4,204,397
240 4,204,399
287 4,204,396

CLASS 370
81 4,205,201
4,205,202
83 4,205,200
110 4,205,203

CLASS 371
3 4,205,301
27 4,204,633
38 4,204,634
50 4,205,324

CLASS 400
119 4,204,776
124 4,204,777
4,204,778
144.2 4,204,779
261 4,204,780

CLASS 407
105 4,204,781

CLASS 408
3 4,204,782
68 4,204,783
83.5 4,204,784
109 4,204,785

CLASS 409
234 4,204,787
262 4,204,786

CLASS 414
21 4,204,788
24.5 4,204,789
4,204,790
36 4,204,791
4,204,792
421 4,204,793
458 4,204,797
723 4,204,794
750 4,204,798

CLASS 415
2 4,204,795
4,204,796
4,204,799
53 T 4,204,800
121 G 4,204,801
213 T 4,204,802
219 R 4,204,803
4,204,804

CLASS 416
119 4,204,805
134 R 4,204,806
188 4,204,807

CLASS 417
2 4,204,808
15 4,204,809
244 4,204,810
288 4,204,811
395 4,204,812
435 4,204,813
437 4,204,814

CLASS 418
13 4,204,815
15 4,204,816
248 4,204,817

CLASS 422
47 4,205,042
56 4,205,043
191 4,205,044
192 4,205,045
193 4,205,046
242 4,205,047

CLASS 423
24 4,205,048
167 4,205,049
228 4,205,050
266 4,205,051
329 4,205,052
4,205,053
390 4,205,054
445 4,205,055
649 4,205,056

CLASS 424
1 4,205,057
4,205,058
14 4,205,060
55 4,205,061
66 4,205,062
70 4,205,063
78 4,205,064
81 4,205,065
84 4,205,066
114 4,205,067
117 4,205,068
177 4,205,069
180 4,205,070
244 4,205,071
246 4,205,072
266 4,205,073
267 4,205,074
269 4,205,075
270 4,205,076
273 B 4,205,077
274 4,205,078
275 4,205,079
4,205,080
279 4,205,081
281 4,205,082
283 4,205,083
285 4,205,084
309 4,205,085
312 4,205,086
317 4,205,087
319 4,205,088
365 4,205,089

CLASS 425
66 4,204,818
72 R 4,204,819
72 S 4,204,828
89 4,204,820
131.1 4,204,821
210 4,204,822
393 4,204,823
436 R 4,204,824
451.9 4,204,825
525 4,204,826
551 4,204,827

CLASS 426
40 4,205,090
138 4,205,091
271 4,205,092
333 4,205,093
459 4,205,094
607 4,205,095

CLASS 427
4 4,205,059
4,205,096
44 4,205,097
76 4,205,098
90 4,205,099
162 4,205,100
233 4,205,101
373 4,205,103
393.5 4,205,102

CLASS 428
34 4,205,104
36 4,205,105
45 4,205,106
58 4,205,107
147 4,205,108
150 4,205,109
213 4,205,110
215 4,205,111
245 4,205,112
286 4,205,113
315 4,205,114
334 4,205,115
409 4,205,116
411 4,205,117
594 4,205,118
614 4,205,119
676 4,205,120

CLASS 429
99 4,205,121
144 4,205,122
147 4,205,123

CLASS 430
30 4,204,865
72 4,205,005
213 4,204,870
306 4,204,866
376 4,204,867
456 4,205,124
461 4,204,868
564 4,204,869

CLASS 431
7 4,204,829
8 4,204,830
10 4,204,831
20 4,204,832
22 4,204,833
362 4,204,834

CLASS 432
58 4,204,835
4,204,836

CLASS 433
9 4,204,325
29 4,204,328
38 4,204,323
50 4,204,326
136 4,204,329
148 4,204,330
177 4,204,321
185 4,204,322
299 4,204,324

CLASS 435
2 4,205,126
133 4,205,125
179 4,205,127
182 4,205,128
193 4,205,129
196 4,205,130
235 4,205,131
260 4,205,132
287 4,205,133

CLASS 455
4 4,205,269
83 4,205,272
158 4,205,270
620 4,205,268

CLASS 521
53 4,205,134
116 4,205,135
118 4,205,136
145 4,205,137
158 4,205,138

CLASS 525
38 4,205,139
61 4,205,146
62 4,205,147
67 4,205,140
4,205,141
166 4,205,142
213 4,205,143
240 4,205,021
243 4,205,019
273 4,205,144
275 4,205,020
379 4,205,148
404 4,205,018
502 4,205,145

CLASS 526
89 4,205,149
252 4,205,150
262 4,205,151
265 4,205,152
292 4,205,153
314 4,205,154

CLASS 528
28 4,205,155
117 4,205,156
272 4,205,157
300 4,205,158
338 4,205,159
425 4,205,160
487 4,205,161
499 4,205,162

CLASS 536
17 R 4,205,163

CLASS 542
421 4,205,164

CLASS 544
20 4,205,165
27 4,205,166
165 4,205,168
209 4,205,167
323 4,205,169

CLASS 546
80 4,205,170
97 4,205,171
101 4,205,172
218 4,205,173
249 4,205,174
345 4,205,175

CLASS 548
239 4,205,176
265 4,205,177

CLASS 556
428 Re.30,284

CLASS 560
121 4,205,178
4,205,179
168 4,205,180
241 4,205,181
247 4,205,182

CLASS 562
401 4,205,183
444 4,205,185
494 4,205,184
503 Re.30,287

CLASS 568
451 4,205,013
600 4,205,186
730 4,205,187
764 4,205,188
768 4,205,189
902 4,205,190

CLASS 585
250 4,205,191
363 4,205,192
367 4,205,193
407 4,205,194
469 4,205,017
510 4,205,195
701 4,205,196

CLASSIFICATION OF DESIGNS

D2— 27 255,056
250 255,057
259 255,058
309 255,059
318 255,060
380 255,061
381 255,062
400 255,063
D3— 36 255,064
39 255,065
62 255,066
D6— 25 255,067
63 255,068
84 255,069
114 255,070
154 255,071
255,072
161 255,073
175 255,074
255,075
177 255,076
194 255,077
241 255,078
D7— 3 255,079
255,080
38 255,081
46 255,082
72 255,083
76 255,084
94 255,085
150 255,086
255,087
161 255,088
D8— 4 255,089
21 255,090
83 255,091
D9— 12 255,092
168 255,093
177 255,094
191 255,095
219 255,096
248 255,097
258 255,098
261 255,099
289 255,100
D10— 15 255,101
46 255,102
51 255,103
74 255,104
108 255,105
114 255,106
255,107
D11— 3 255,108
D12— 60 255,109
105 255,110
110 255,111
194 255,112
D13— 11 255,113
32 255,114
D14— 17 255,115
43 255,116
68 255,117
255,118
D15— 29 255,119
113 255,120
138 255,121
199 255,122
D16— 29 255,123
D18— 7 255,124
255,125
255,126
D19— 73 255,127
82 255,128
D21— 17 255,129
114 255,131
129 255,132
148 255,133
255,134
150 255,135
191 255,130
195 255,136
213 255,137
242 255,138
D22— 1 255,139
7 255,140
13 255,141
D23— 255,142
255,143
255,144
43 255,145
105 255,146
D24— 8 255,147
255,148
29 255,149
51 255,150
255,151
255,152
99 255,153
255,154
255,155
D25— 22 255,156
255,157
23 255,158
78 255,159
D26— 35 255,167
D28— 46 255,160
47 255,161
255,162
255,163
48 255,164
255,165
50 255,166

CLASSIFICATION OF PLANTS

P.— 37 4,540
49 4,538
89 4,539

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,204,663		4,204,407		4,205,312		4,205,318	18 :	4,204,366		4,204,521
4 :	4,204,706		4,204,437		4,205,315		4,205,319		4,204,494		4,204,525
	4,204,708		4,204,457		4,205,324		4,205,389		4,204,554		4,204,532
	4,204,929		4,204,468		4,205,338		4,205,395		4,204,564		4,204,537
6 :	4,204,288		4,204,513		4,205,344	13 :	4,204,480		4,204,895		4,204,650
	4,204,317		4,204,526		4,205,348		4,204,568		4,204,904		4,204,684
	4,204,323		4,204,534		4,205,350		4,205,091		4,204,907		4,204,705
	4,204,325		4,204,535		4,205,354	16 :	4,204,686		4,204,966		4,204,752
	4,204,326		4,204,538		4,205,373	17 :	4,204,302		4,205,086		4,204,785
	4,204,332		4,204,542		4,205,374		4,204,303		4,205,164		4,204,803
	4,204,374		4,204,544	08 :	Re.30,281		4,204,304	19 :	4,204,516		4,204,824
	4,204,385		4,204,552		Re.30,288		4,204,316		4,204,529		4,204,834
	4,204,433		4,204,558		4,204,330		4,204,327		4,204,716		4,204,865
	4,204,477		4,204,601		4,204,470		4,204,331	20 :	4,204,311		4,204,869
	4,204,504		4,204,604		4,204,533		4,204,345		4,204,462		4,204,883
	4,204,520		4,204,614		4,204,546		4,204,378		4,204,575		4,204,898
	4,204,563		4,204,618		4,204,622		4,204,417		4,204,576		4,204,909
	4,204,631		4,204,642		4,204,701		4,204,440		4,204,677		4,204,919
	4,204,651		4,204,645		4,204,968		4,204,459		4,204,940		4,204,948
	4,204,676		4,204,692		4,205,034		4,204,472		4,205,177		4,205,099
	4,204,936		4,204,749		4,205,042		4,204,511	21 :	4,204,338		4,205,123
	4,204,947		4,204,753	09 :	Re.30,284		4,204,527		4,204,371		4,205,126
	4,204,956		4,204,761		4,204,306		4,204,566		4,204,377		4,205,129
	4,205,133		4,204,772		4,204,328		4,204,578		4,204,827		4,205,142
	4,205,151		4,204,775		4,204,562		4,204,581		4,204,980		4,205,228
	4,205,330		4,204,779		4,204,623		4,204,613	22 :	4,204,574		4,205,285
	4,205,394		4,204,791		4,204,656		4,204,652		4,204,625		4,205,294
8 :	4,204,282		4,204,829		4,204,673		4,204,682		4,204,943		4,205,313
	4,204,702		4,204,837		4,204,857		4,204,704		4,205,194		4,205,317
9 :	4,204,448		4,204,858		4,204,977		4,204,707		4,205,239		4,205,323
	4,205,297		4,204,859		4,205,143		4,204,740	23 :	4,205,290		4,205,357
01 :	4,204,662		4,204,942		4,205,310		4,204,757	24 :	4,204,289		4,205,370
	4,204,899		4,204,944		4,205,358		4,204,788		4,204,342		4,205,371
	4,204,926		4,204,945		4,205,381		4,204,815		4,204,350		4,205,372
04 :	4,204,409		4,204,978	10 :	4,205,158		4,204,840		4,204,446	26 :	4,204,307
	4,204,506		4,205,050	11 :	4,204,474		4,204,954		4,204,589		4,204,349
	4,204,512		4,205,076	12 :	4,204,292		4,204,963		4,204,636		4,204,353
	4,204,599		4,205,079		4,204,295		4,204,970		4,204,655		4,204,356
	4,204,714		4,205,100		4,204,368		4,204,971		4,204,657		4,204,357
	4,204,718		4,205,155		4,204,401		4,204,983		4,204,816		4,204,369
	4,204,811		4,205,168		4,204,530		4,204,991		4,204,864		4,204,373
	4,205,367		4,205,183		4,204,559		4,205,000		4,205,043		4,204,375
05 :	4,204,355		4,205,229		4,204,569		4,205,004		4,205,173		4,204,412
06 :	Re.30,282		4,205,235		4,204,608		4,205,063		4,205,282		4,204,454
	4,204,291		4,205,261		4,204,632		4,205,070		4,205,316		4,204,481
	4,204,299		4,205,268		4,204,750		4,205,169		4,205,382		4,204,500
	4,204,319		4,205,275		4,204,799		4,205,233		4,205,396		4,204,507
	4,204,329		4,205,276		4,204,823		4,205,238	25 :	4,204,286		4,204,555
	4,204,333		4,205,278		4,205,039		4,205,247		4,204,362		4,204,561
	4,204,334		4,205,300		4,205,135		4,205,280		4,204,406		4,204,598
	4,204,348		4,205,303		4,205,204		4,205,291		4,204,444		4,204,602
	4,204,363		4,205,304		4,205,264		4,205,351		4,204,451		4,204,611
	4,204,402		4,205,308		4,205,309		4,205,365		4,204,467		4,204,666

	4,204,688	30 :	4,204,358		4,204,473		4,205,321		4,204,796	47 :	4,204,405
	4,204,746	31 :	4,205,216		4,204,495		4,205,331		4,204,808		4,204,543
	4,204,783	32 :	4,204,361		4,204,519		4,205,339		4,204,831		4,204,713
	4,204,812	33 :	4,204,737		4,204,528		4,205,363		4,204,934		4,205,057
	4,204,833	34 :	4,204,285		4,204,547		4,205,364		4,204,962	48 :	4,204,322
	4,204,872		4,204,335		4,204,587	37 :	4,204,290		4,205,017		4,204,423
	4,204,886		4,204,341		4,204,593		4,204,517		4,205,196		4,204,499
	4,204,918		4,204,398		4,204,612		4,205,112	41 :	4,204,551		4,204,573
	4,205,009		4,204,438		4,204,628	39 :	4,204,287		4,204,556		4,204,596
	4,205,011		4,204,465		4,204,633		4,204,367		4,204,643		4,204,600
	4,205,014		4,204,493		4,204,646		4,204,376		4,204,798		4,204,664
	4,205,015		4,204,540		4,204,670		4,204,413		4,205,132		4,204,685
	4,205,016		4,204,549		4,204,694		4,204,419		4,205,279		4,204,690
	4,205,022		4,204,570		4,204,698		4,204,447	42 :	4,204,284		4,204,711
	4,205,178		4,204,588		4,204,725		4,204,464		4,204,305		4,204,843
	4,205,179		4,204,619		4,204,727		4,204,469		4,204,364		4,204,921
	4,205,188		4,204,641		4,204,733		4,204,475		4,204,425		4,204,923
	4,205,211		4,204,681		4,204,771		4,204,615		4,204,434		4,204,979
	4,205,237		4,204,700		4,204,777		4,204,659		4,204,445		4,205,049
	4,205,246		4,204,709		4,204,786		4,204,679		4,204,478		4,205,065
	4,205,325		4,204,774		4,204,813		4,204,739		4,204,479		4,205,080
	4,205,386		4,204,893		4,204,839		4,204,741		4,204,518		4,205,205
	4,205,387		4,204,955		4,204,841		4,204,765		4,204,592		4,205,227
27 :	4,204,296		4,204,992		4,204,850		4,204,810		4,204,605		4,205,266
	4,204,503		4,205,001		4,204,851		4,204,830		4,204,665		4,205,286
	4,204,560		4,205,052		4,204,866		4,204,871		4,204,675		4,205,379
	4,204,654		4,205,053		4,204,870		4,204,901		4,204,723	51 :	Re.30,285
	4,204,674		4,205,061		4,204,875		4,204,902		4,204,787		4,204,580
	4,204,678		4,205,064		4,204,885		4,204,903		4,204,792		4,204,616
	4,204,699		4,205,068		4,204,897		4,204,932		4,204,835		4,204,696
	4,204,738		4,205,073		4,204,900		4,204,973		4,204,845		4,204,828
	4,204,818		4,205,114		4,204,906		4,204,982		4,204,853		4,204,860
	4,204,846		4,205,119		4,204,916		4,204,984		4,204,856		4,204,950
	4,204,849		4,205,124		4,204,920		4,204,987		4,204,882		4,205,289
	4,204,868		4,205,186		4,204,925		4,205,025		4,204,911	53 :	4,204,346
	4,204,913		4,205,187		4,204,928		4,205,028		4,204,961		4,204,354
	4,205,005		4,205,189		4,204,952		4,205,048		4,204,989		4,204,844
	4,205,041		4,205,191		4,204,993		4,205,094		4,204,990		4,204,881
	4,205,093		4,205,207		4,205,003		4,205,103		4,204,994		4,205,302
	4,205,219		4,205,258		4,205,007		4,205,149		4,205,006		
	4,205,221		4,205,265		4,205,023		4,205,153		4,205,060	54 :	4,204,927
	4,205,226		4,205,283		4,205,085		4,205,154		4,205,069	55 :	4,204,293
	4,205,327		4,205,329		4,205,092		4,205,157		4,205,115		4,204,294
28 :	4,204,577		4,205,360		4,205,096		4,205,160		4,205,198		4,204,308
29 :	4,204,383		4,205,380		4,205,110		4,205,176		4,205,208		4,204,384
	4,204,695		4,205,385		4,205,162		4,205,181		4,205,288		4,204,420
	4,204,719	35 :	4,204,595		4,205,171		4,205,200		4,205,298		4,204,421
	4,204,790		4,204,805		4,205,172		4,205,392		4,205,361		4,204,597
	4,204,854		4,205,109		4,205,201	40 :	Re.30,283	44 :	4,204,524		4,204,669
	4,204,914	36 :	Re.30,286		4,205,202		4,204,321		4,204,571		4,204,806
	4,204,969		4,204,343		4,205,220		4,204,424		4,204,809		4,204,825
	4,204,997		4,204,428		4,205,224		4,204,492	45 :	4,204,301		4,204,832
	4,205,245		4,204,455		4,205,249		4,204,789		4,204,580		4,205,036
	4,205,295		4,204,463		4,205,267		4,204,795		4,204,877		4,205,296

DESIGN PATENTS

4 :	255,062		255,113		255,147	25 :	255,059		255,083		255,167
	255,067		255,115		255,149		255,106		255,086	40 :	255,102
6 :	255,060		255,122	18 :	255,056		255,116		255,087		255,104
	255,061	08 :	255,153		255,121		255,132		255,095	44 :	255,093
	255,123		255,154		255,138		255,160		255,096	48 :	255,057
	255,128		255,155	19 :	255,110		255,162		255,108		255,077
	255,130	09 :	255,089	20 :	255,148	26 :	255,140		255,111		255,136
	255,142		255,090	21 :	255,097	27 :	255,103		255,114	50 :	255,082
	255,143		255,161	22 :	255,098		255,109		255,129	51 :	255,107
	255,144		255,163	24 :	255,071		255,137	37 :	255,094	53 :	255,064
8 :	255,139	12 :	255,069		255,072	31 :	255,118		255,159	55 :	255,085
04 :	255,158		255,084		255,074	34 :	255,099	39 :	255,066		255,150
06 :	255,081	17 :	255,068		255,075		255,164		255,079		255,151
	255,092		255,070		255,076		255,165		255,080		255,152
	255,100		255,101		255,135	36 :	255,065		255,156	56 :	255,133
	255,112		255,131		255,141		255,078		255,157		255,134

PLANT PATENTS

6 :	4,538	06 :	4,539	39 :	4,540		

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